FREE STANDING QUICK SERVICE RESTAURANT w/ AN EXTERIOR PATIO

SHAKE SHACK

4071 W. 95TH ST., OAK LAWN, IL 60453

ISSUE FOR PERMIT / BID: 11/24/2020

PROJECT TEAM

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CONTACT: JAMESON SKAIFE

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- ● FIRST ISSUE OR REVISION
- ○ NO REVISION
- ✕ SHEET HAS BEEN OMITTED

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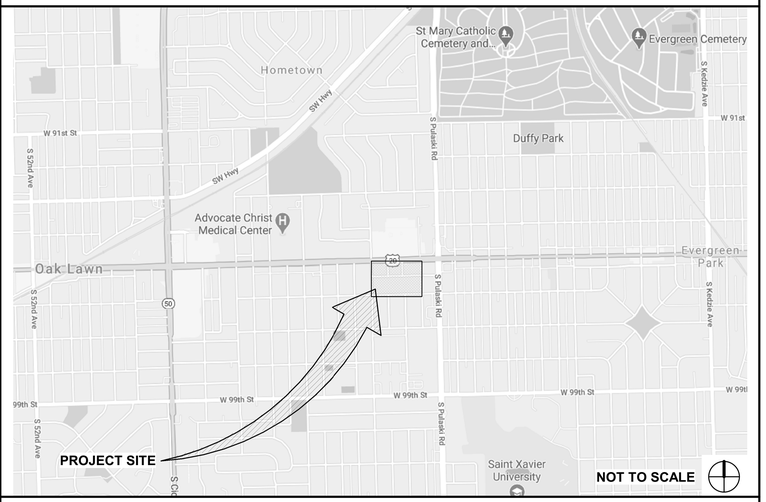
AREA/LOCATION MAP



SUBMITTAL MATRIX

SUBMITTAL	REQUIRED REVIEW TIME (BUSINESS DAYS)	ARCHITCT OF RECORD	DESIGNER	SHAKE SHACK	PHYSICAL SAMPLE REQUIRED	SUBMITTAL FOR RECORD
ANCHOR BOLT SHOPS	5	X	-	-	-	-
ATAS - DETAILED SHOP DRAWING (SUBMITTED BY OWNER VENDOR DIRECTLY TO OWNER / AOR)	5	X	-	-	-	-
CONCRETE MIX DESIGN	5	X	-	-	-	-
DECORATIVE METAL SHOP DRAWINGS	5	X	-	-	-	-
DIFFUSERS, GRILLS & REGISTERS	5	X	-	-	-	-
DOORS, FRAMSE & HARDWARE	7	X	-	-	-	-
DRYWALL	-	-	-	-	-	X
DUCTWORK LAYOUT	5	X	-	-	-	-
ELECTRICAL DISTRIBUTION EQUIPMENT	5	X	-	-	-	-
ELEVATOR & VERTICAL TRANSPORTATION SHOP DRAWINGS	5	X	-	-	-	-
EPOXY FLOOR	5	X	-	-	-	X
FIRE ALARM SHOP DRAWINGS & DEVICE CUT SHEETS	5	X2	-	-	-	-
FIRE SPRINKLER SHOP DRAWINGS, HYDRAULIC CALCULATION & DEVICE CUT SHEETS	5	X2	-	-	-	-
HVAC EQUIPMENT (SUBMITTED BY OWNER VENDOR DIRECTLY TO OWNER / AOR)	5	X2	-	-	-	-
LIGHTING FIXTURES (SUBMITTED BY OWNER VENDOR DIRECTLY TO OWNER / AOR)	5	X	-	-	-	-
METAL STUDS (INTERIOR)	-	X	-	-	-	-
MILWORK - MATERIAL SUBMITTALS	5	X	X	X	X	X
MILWORK - SHOP DRAWINGS	5	X	-	-	-	-
PAINT DRAWDOWNS	5	X	X	-	X	-
RESTROOM PARTITIONS	5	X	-	-	-	-
PLUMBING FIXTURES	5	X	-	-	-	-
RAILING SHOP DRAWINGS	5	X	-	-	-	-
REBAR	5	X	-	-	-	-
STAIR SHOP DRAWINGS	5	X2	-	-	-	-
STRUCTURAL STEEL SHOP DRAWINGS	7	X2	-	-	-	-
STOREFRONT - MATERIAL SUBMITTALS	5	X	-	-	X4	-
STOREFRONT - SHOP DRAWINGS	5	X	-	-	X	-
TILE	5	X	X	-	X	X
TRANSITION STRIPS - PRODUCT DATA AND SAMPLES	5	X	-	-	-	-
WINDOW FILM	5	X	-	-	-	X

X2: SHOPS& CALACULATIONS TO BE SIGNED & SEALED BYREGISTED PROFESSIONAL ENGINNER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED

X4: PROVIDE SAMPLE OF STOREFRONT MULLION (PROFILE & FINISH) FOR APPROVAL

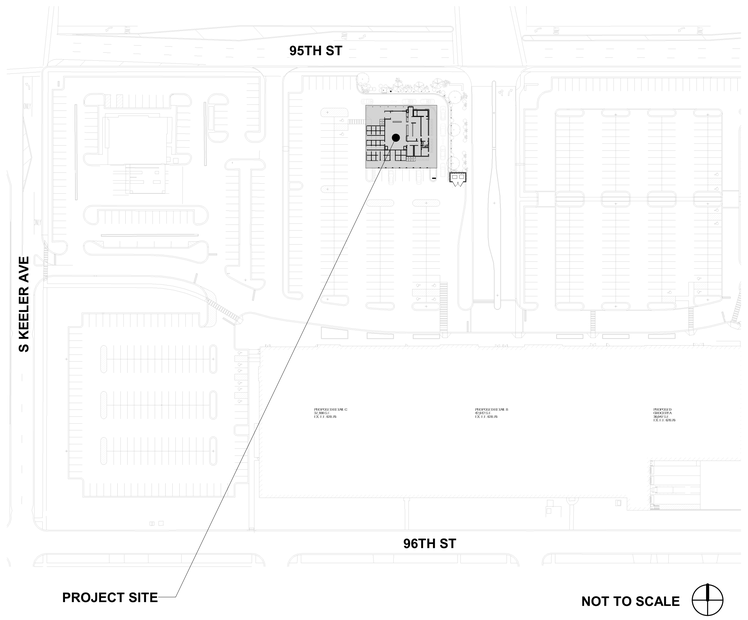
PLEASE SEND ALL PHYSICAL SAMPLES DIRECTLY TO SHAKE SHACK FFOR APPROVAL

SHAKE SHACK - DESIGN TEAM
ATT: 66 E. OHIO ST., IL. REMODEL
225 VARICK STREET, SUIET 301
NEW YORK, NY 10014

SHOP DRAWING SUBMITTAL PROCEDURES:

1. PLEASE FOLLOW THE BELOW PROCEDURE FOR SUBMITTALS AND SHOP DRAWINGS.
2. G.C. RECEIVES SUBMITTAL FROM SUBCONTRACTOR, THOROUGHLY REVIEWS FOR COMPLIANCE WITH PLANS AND MAKES RED MARKS ON SUBMITTAL. THE SUBMITTAL MUST BEAR G.C. REVIEW STAMP AND APPROVER SIGNATURE. IF SUBMITTALS ARE SENT DIRECTLY FROM SUB CONTRACTORS, THEY WILL BE RETURNED TO THE G.C., ANY SHOP DRAWINGS THAT ARE COPIES OF THE CONSTRUCTION DOCUMENTS WILL BE IMMEDIATELY RETURNED WITHOUT REVIEW OR COMMENT.
3. G.C. SENDS ELECTRONIC SHOP DRAWING COPY IN 24-BIT COLOR PDF FORMAT (OR 300 DPI MINIMUM IF SCANNED), CLEAR AND TO SCALE WITH TRANSMITTAL TO THE ARCHITECT. G.C. TRANSMITTAL MUST CONTAIN DUE DATE. EACH SUBMITTAL MUST BE ATTACHED AS A SEPARATE FILE AND NAMED ACCORDINGLY. DO NOT SET PERMISSION RESTRICTIONS ON ATTACHMENTS. WHENEVER POSSIBLE, CREATE DIGITAL FILES FROM ORIGINALS FOR CLARITY. UNREADABLE OR ILLEGIBLE SUBMITTALS WILL BE REJECTED.
4. THE ARCHITECT FORWARDS THE ELECTRONIC PDF COPY TO THE APPROPRIATE CONSULTANT(S) WITH COPY OF G.C. SUBMITTAL.
5. THE CONSULTANT MAKES COMMENTS AND RETURNS ONE ELECTRONIC PDF COPY TO THE ARCHITECT FOR FINAL COMMENTS.
6. ARCHITECT MAKES FINAL COMMENTS AND SENDS ELECTRONIC PDF COPY TO G.C. AND RETAINS ONE RECORD FILE COPY FOR THE ARCHITECT.
7. FOR MATERIAL SAMPLE SUBMITTALS, A MINIMUM OF (3) ACTUAL SAMPLES IN THE COLOR, PATTERN, TEXTURE, FINISH, ETC. SPECIFIED ARE REQUIRED TO BE SENT TO THE ARCHITECT FOR REVIEW. SAMPLES SHALL BE OF A SIZE TO CLEARLY ILLUSTRATE THE FULL RANGE OF COLOR, TEXTURE, AND PATTERN. THE ARCHITECT WILL RETURN TWO SAMPLES TO THE G.C. AND RETAIN ONE RECORD COPY.
8. ONE COPY OF BOOTH DRAWINGS WITH A FABRIC SAMPLE INDICATING THE DIRECTION OF THE FABRIC OFF THE BOLT IS SENT TO THE ARCHITECT BY THE BOOTH MANUFACTURER. THE ARCHITECT SENDS FINAL COMMENTS TO THE BOOTH MANUFACTURER AND COPIES OWNER.
9. FAILURE TO SUBMIT SHOP DRAWINGS BEFORE THE WORK IS FURNISHED & INSTALLED WILL MAKE THE G.C. RESPONSIBLE FOR COST OF REPLACEMENT OF WORK AS WELL AS ALL OVERTIME COSTS, SO AS NOT TO DELAY THE PROJECT SCHEDULE. BELOW IS A LIST OF SHOP DRAWINGS THAT REQUIRE EXTENDED REVIEW TIMES. G.C. TO SUBMIT IN A TIMELY MANNER TO AVOID DELAY. REVIEW TIME REQUIRED IS FROM THE DATE OF RECEIPT BY ARCHITECT.
10. REFER TO 'SECTION 01330 - SUBMITTAL PROCEDURES' ON THE 'SPECIFICATIONS' SHEETS WITHIN THIS DRAWINGS SET FOR ADDITIONAL REQUIREMENTS ON SHOPS AND OTHER REQUIRED SUBMITTALS.

KEY PLAN



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SHAKE SHACK

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SHACK #1345

FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

REGISTERED ARCHITECT
JAMES R. LECOCQ
001-020226
EXPIRES: NOV. 30, 2022
STATE OF ILLINOIS

11/24/20

Drawing Title
TITLE SHEET

Job No.	Drawn
204461	MVK

Scale	Date
As indicated	11/24/20

Sheet No.
T001

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11/24/2020 6:03:25 PM

DESCRIPTION	FURNISHED: GENERAL CONTRACTOR	FURNISHED: OWNER	FURNISHED: LANDLORD	INSTALLED: GENERAL CONTRACTOR	INSTALLED: OWNER	INSTALLED: LANDLORD	REMARKS
DIVISION 01: GENERAL DATA							
1.1 PERMITS AND FEES							
1.1.1 PERMIT FEES		●			●		GENERAL CONTRACTOR TO PULL PERMITS FOR THE BUILDING, MECHANICAL, ELECTRICAL, PLUMBING, HEALTH, AND/OR ENVIRONMENT
1.1.2 OTHER PERMITS AND FEES	●			●			GENERAL CONTRACTOR TO SECURE AND PAY FOR OTHER REQUIRED PERMITS AND FEES NOT NOTED IN LINE ITEM 1.1.1
1.2 TEMPORARY UTILITIES			●			●	
1.3 TEMPORARY BARRICADES OR SITE FENCING			●			●	IF REQUIRED
1.3.1 BARRICADE GRAPHICS		●			●		IF REQUIRED
1.4 CONSTRUCTION DUMPSTERS AND TRASH BINS	●			●			GENERAL CONTRACTOR TO COORDINATE WITH LANDLORD, WASTE MANAGEMENT, CITY AND COUNTY
1.5 FINAL CLEANING	●			●			SITE TO BE PROFRESSIONALLY CLEANED PRIOR TO STOCKING, TRAINING AND OPENING
1.6 CERTIFICATE OF OCCUPANCY	●			●			TO INCLUDE BUILDING, FIRE AND HEALTH INSPECTIONS
1.7 SITE PREPARATION FOR NEW PAD			●			●	
DIVISION 02: EXISTING CONDITIONS							
2.1 DEMOLITION			●			●	IF REQUIRED
DIVISION 03: CONCRETE							
3.1 CONCRETE SLAB AND FOUNDATION	●			●			REFER TO STRUCTUAL DRAWINGS AND ARCHITECTURALS FOR ADDITIONAL INFORMATION
3.2 CONCRETE CUTTING AND CORING	●			●			SCOPE OF WORK INCLUDES ALL CORING REQUIRED BY OWNER-VENDOR SCOPE COORDINATE WITH OWNER-VENDOR INCLUDE SCAN OR X-RAY AS NEEDED
DIVISION 04: MASONRY							
4.1 MASONRY AND STUCCO	●			●			
DIVISION 05: METALS							
5.1 STRUCTURAL STEEL	●			●			SCOPE OF WORK INCLUDES ROOF AND WALL PENETRATIONS
5.2 SIGN STEEL BEAM	●			●			SCOPE OF WORK TO INCLUDE INTERIOR AND EXTERIOR BEAMS
5.3 ROOF LADDER AND HATCH	●			●			
5.4 FRAMING	●			●			
5.5 REVEALS AND TRIMS	●			●			
5.6 UNISTRUT, THREADED ROD AND AIRCRAFT CABLE	●			●			
5.7 STEEL STAIRS AND RAILINGS							N/A
DIVISION 06: WOOD, PLASTICS AND COMPOSITES							
6.1 STRUCTURAL FRAMING	●			●			SCOPE OF WORK TO INCLUDE REINFORCEMENT IN ROOF PENETRATIONS
6.2 PATIO TRELLIS	●			●			
6.3 FINISH CARPENTRY							
6.3.1 WOOD TRIM, WAINSCOT, MILLWORKS WALLS	●			●			
6.3.2 RECLAIMED WOOD	●			●			
6.4 ARCHITECTURAL WOODWORK							
6.4.1 MILLWORK CASEWORK	●			●			
6.4.2 REQUIRED WALL AND CEILING BACKING	●			●			
6.5 WOOD PANELING	●			●			
DIVISION 07: THERMAL AND MOISTURE PROTECTION							
7.1 INSULATION	●			●			
7.2 ROOF PENETRATIONS	●			●			
7.3 PRE-FINISHED PARAPET COPING	●			●			
7.4 SEALANTS AND CAULKING	●			●			
7.5 EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)							N/A
DIVISION 08: OPENINGS							
8.1 DOORS AND FRAMES	●			●			
8.2 METAL CEILING ACCESS PANELS	●			●			
8.3 STOREFRONT SYSTEMS AND CURTAIN WALL	●			●			
8.4 DOOR HARDWARE	●			●			
8.5 INTERIOR BUTT GLAZING AND METAL CHANNEL FRAME	●			●			
DIVISION 09: FINISHES							
9.1 GYPSUM WALLBOARD AND ACCESSORIES	●			●			
9.2 SUSPENDED GYPSUM BOARD CEILING AND FRAMING	●			●			
9.3 SUSPENDED 'T' BAR LAY-IN CEILING	●			●			
9.4 WALL TILES	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 4 VENDOR SUBSTITUTION IS NOT PERMITTED
9.5 PRE-FINISHED CORRUGATED METAL PANELING AND FLAT STOCK	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 3 VENDOR SUBSTITUTION IS NOT PERMITTED
9.6 FLOORING	●			●			
9.6.1 TILE FLOORING	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 4 VENDOR SUBSTITUTION IS NOT PERMITTED
9.6.2 CONCRETE POLISHING AND SEALER	●			●			
9.6.3 THRESHOLDS	●			●			
9.6.4. REDUCERS	●			●			
9.6.5 PRE-FINISHED WALK-IN COOLER AND FREEZER		●			●		PROVIDED BY VENDOR NO. 27
9.7 INTERIOR PAINT	●			●			
DIVISION 10: SPECIALTIES							
10.1 IDENTIFICATION DEVICES							
10.1.1 EXTERIOR BUILDING MOUNTED SIGNAGE		●			●		GENERAL CONTRACTOR TO COORDINATE AND REVIEW SIGN PACKAGE WITH VENDOR NO. 35 FOR ADDITIONAL SCOPE OF WORK (E.G. PROVIDING POWER AND BLOCKING)
10.1.2 TACTILE SIGNAGE		●			●		SUPPLIED BY VENDOR NO. 35
10.1.3 SERVICE DOOR IDENTIFICATION		●			●		
10.1.4 ACCESSIBILITY AND MISCELLANEOUS RESTROOM SIGNAGE		●			●		SUPPLIED BY VENDOR NO. 35
10.1.5 BAND LETTERS		●			●		GENERAL CONTRACTOR TO COORDINATE AND REVIEW SIGN PACKAGE WITH VENDOR NO. 35 FOR ADDITIONAL SCOPE OF WORK (E.G. PROVIDING POWER, BLOCKING, AND SUPPORT)
10.1.6 ARTWORK AND ARTIFACTS		●			●		GENERAL CONTRACTOR TO COORDINATE LOCATIONS WITH OTHER FOR ADDITIONAL SCOPE OF WORK (E.G. PROVIDING BLOCKING)
10.1.7 MENU BOARD, WINE RACK, AND MERCHANDISE DISPLAYS		●			●		GENERAL CONTRACTOR TO COORDINATE WITH VENDOR NO. 35 FOR ADDITIONAL SCOPE OF WORK (E.G. PROVIDING BLOCKING)
10.2 FIRE PROTECTION DEVICES							
10.2.1 FIRE EXTINGUISHERS AND CABINETS	●			●			
10.2.2 RISER ROOM IDENTIFICATION	●			●			GENERAL CONTRACTOR TO COORDINATE WITH THE FIRE DEPARTMENT
10.3 TOILET ROOMS							
10.3.1 TOILET ROOM ACCESSORIES		●			●		SUPPLIED BY VENDOR NO. 21
10.3.2 TOILET ROOM HARDWARE		●			●		
10.3.3 HAND DRYERS		●			●		SUPPLIED BY VENDOR NO. 21
10.4 KITCHEN DISPLAY SYSTEM (KDS) MOUNTS		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 27
10.5 GLOVE BOXES		●			●		
10.6 OFFICE SAFE	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 5 AND TO INCLUDE BOLT-DOWN SERVICES VENDOR SUBSTITUTION IS NOT PERMITTED REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL INFORMATION
10.7 FIBERGLASS REINFORCED PANELS (FRP) AND ACCESSORIES	●			●			
10.8 STAINLESS STEEL KITCHEN WALL PANELS		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 27 GENERAL CONTRACTOR TO PROVIDE SUBSTRATE STAINLESS
10.9 STAINLESS STEEL KITCHEN CORNER GUARDS AND END CAPS		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 27

DESCRIPTION	FURNISHED: GENERAL CONTRACTOR	FURNISHED: OWNER	FURNISHED: LANDLORD	INSTALLED: GENERAL CONTRACTOR	INSTALLED: OWNER	INSTALLED: LANDLORD	REMARKS
NOTE: 1. REFER TO A601 FOR LIST OF VENDORS 2. ALL WORK WITHIN THE CONSTRUCTION LIMIT LINE BY GC 3. ALL WORK OUTSIDE OF CONSTRUCTION LIMIT LINE BY LL							
DIVISION 11: EQUIPMENT							
11.1 FOOD SERVICE EQUIPMENT		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 27 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE FINAL UTILITY CONNECTIONS
11.2 STAINLESS STEEL FABRICATED COUNTERS AND SHELVING		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 27
11.3 CONDIMENT COUNTER		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 27 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE FINAL UTILITY CONNECTIONS
11.4 STORAGE RACKS AND SHELVING		●			●		GENERAL CONTRACTOR TO COORDINATE WITH VENDOR NO. 27 FOR ADDITIONAL SCOPE OF WORK (E.G. PROVIDING BLOCKING)
11.5 SODA SYSTEM							SUPPLIED AND INSTALLED BY VENDOR NO. 28
11.5.1 SYSTEM COMPONENTS		●			●		
11.5.2 CONDUIT	●			●			GENERAL CONTRACTOR TO COORDINATE WITH VENDOR NO.28
11.6 CARBON DIOXIDE (CO2) SYSTEM							SUPPLIED AND INSTALLED BY VENDOR NO. 25
11.6.1 CO2 TANKS		●			●		
11.6.2 CO2 LINES		●			●		
11.6.3 CONDUIT	●			●			
11.6.4 EXTERIOR FILL BOX		●		●			
11.7 OIL RECOVERY SYSTEM							SUPPLIED AND INSTALLED BY VENDOR NO. 29
11.7.1 OIL TANKS		●			●		
11.7.2 OIL LINES		●			●		
11.7.3 CONDUIT	●			●			GENERAL CONTRACTOR TO COORDINATE WITH VENDOR NO.29
11.7.4 EXTERIOR FILL BOX		●			●		
DIVISION 12: FURNISHINGS							
12.1 FIXED SEATING (BOOTHS, BENCHES, ETC.)		●		●			SUPPLIED BY VENDORS NO. 36, 37, AND 38 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE DELIVERY COORDINATION AND STAGING OF MATERIALS, TABLE ASSEMBLY, BOOTH / HIGHT-TOP ANCHORING, AND INSTALLATION OF HOOKS AND BRACKETS
12.2 TABLE TOP BASES		●		●			SUPPLIED BY VENDOR NO. 36
12.3 CHAIRS AND STOOLS		●		●			SUPPLIED BY VENDOR NO. 37
12.4 OFFICE MILLWORK	●			●			
12.5 WINDOW SHADES	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 14 VENDOR SUBSTITUTION IS NOT PERMITTED
12.6 OFFICE AND BACK OF HOUSE MISCELLANEOUS SUPPLIES	●			●			
12.7 KIOSK TABLE		●		●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RECEIPT AND INSTALLATION OF MATERIALS
12.8 KIOSK PADS		●			●		
12.9 INTERIOR TRASH RECEPTACLES		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 27
12.10 SITE FURNISHINGS							
12.10.1 UMBRELLAS AND BASES		●		●			SUPPLIED BY VENDOR NO. 39 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RECEIPT, ASSEMBLY, AND INSTALLATION OF MATERIALS
12.10.2 PATIO CEILING FANS	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 1 VENDOR SUBSTITUTION IS NOT PERMITTED
12.10.3 MOBILE PLANTER BOXES		●		●			SUPPLIED BY VENDOR NO. 37 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RECEIPT, ASSEMBLY, AND INSTALLATION OF MATERIALS
12.10.4 FIXED PLANTER BOXES AND LINERS	●			●			
12.10.5 PATIO RAILING AND GATES	●			●			
12.10.6 EXTERIOR TRASH RECEPTACLES		●			●		
12.11 WALK-OFF MATS		●			●		
12.12 EMPLOYEE LOCKERS		●			●		
DIVISION 13: SPECIAL CONSTRUCTION							
13.1 WALK-IN FREEZER AND COOLER		●			●		GENERAL CONTRACTOR TO COORDINATE INSTALLATION DETAILS WITH VENDOR NO. 27
13.2 REFRIGERATED TRASH ENCLOSURE		●			●		GENERAL CONTRACTOR TO COORDINATE INSTALLATION DETAILS WITH VENDOR NO. 27
DIVISION 21: FIRE SUPPRESSION							
21.1 FIRE SUPPRESSION IDENTIFICATION							
21.1.1 PIPING SYSTEM IDENTIFICATION	●			●			
21.1.2 VALVE TAGS	●			●			
21.2 SPRINKLER STANDPIPE							
21.2.1 BACKFLOW PREVENTER			●		●		
21.2.2 ISOLATION VALVE			●		●		
21.2.3 ADDITIONAL APPURTENCES (E.G. TAMPER SWITCH)	●			●			
21.3 AUTOMATIC SPRINKLER SYSTEM							
21.3.1 SYSTEM ENGINEERING (E.G. STAMPED PLANS AND CALCULATIONS)	●			●			
21.3.2 SPRINKLER COVERAGE	●			●			
21.3.3 SPRINKLER GRID APPURTENANCES (E.G. AIR VALVES AND DRAINS)	●			●			
21.4 ANSUL FIRE PROTECTION SYSTEM		●			●		GENERAL CONTRACTOR TO SCOPE OF WORK REFERENCED IN DIVISION 23
DIVISION 22: PLUMBING							
22.1 PLUMBING IDENTIFICATION							
22.1.1 PIPING SYSTEM IDENTIFICATION	●			●			MATERIAL TO CONSIST OF 2" VINYL LETTERING
22.1.2 UTILITY SHUT OFF IDENTIFICATION IN KITCHEN	●			●			MATERIAL TO CONSIST OF 2" VINYL RED LETTERING
22.1.3 VALVE TAGS AND CHART	●			●			
22.2 DRAINS AND CLEANOUTS							
22.2.1 DRAINS AND FLOOR SINKS	●			●			
22.2.2 THROUGH DRAIN FOR ICE MACHINE	●			●			REFER TO KITCHEN AND PLUMBING SHEET FOR SPECIFICATION
22.3 PIPING SYSTEMS AND SPECIALTIES							
22.3.1 STORM DRAINAGE	●			●			
22.3.2 SANITARY WASTE	●			●			
22.3.3 DOMESTIC WATER	●			●			
22.3.4 GREASE WASTE	●			●			
22.3.5 CONDENSATE	●			●			
22.3.6 VENT	●			●			
22.3.7 NATURAL GAS	●			●			
22.3.8 PIPING FITTINGS	●			●			
22.3.9 VALVES AND SHUT OFF VALVES	●			●			
22.3.10 WATER BOOSTER PUMP			●			●	IF REQUIRED
22.3.11 GAS BOOSTER PUMP	●			●			
22.3.12 GREASE INTERCEPTOR			●			●	
22.4 INCOMING WATER FILTER SYSTEM		●		●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE FINAL UTILITY CONNECTIONS
22.5 WATER HEATER	●			●			
22.6 MOP SINK							
22.6.1 FLOOR MOUNTED MOP SINK	●			●			REFER TO KITCHEN AND PLUMBING SHEET FOR SPECIFICATION
22.6.2 SERVICE FAUCET FOR MOP SINK		●		●			SUPPLIED BY VENDOR NO. 27
22.7 PLUMBING FIXTURES							SUPPLIED BY VENDOR NO. 21
22.7.1 TOILETS, URINAL, AND LAVATORIES	●			●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE ALL NECESSARY FITTINGS (E.G. FLUSH VALVES, FAUCETS, AND FITTINGS)
22.7.2 KITCHEN FAUCETS		●		●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE FINAL UTILITY CONNECTIONS
DIVISION 23: HEATING, VENTILATING, AND AIR CONDITIONING							
23.1 HVAC DUCTWORK AND PIPING IDENTIFICATION							
23.1.1 HVAC DUCTWORK SYSTEM IDENTIFICATION	●			●			
23.1.2 PIPING SYSTEM IDENTIFICATION	●			●			
23.1.3 UTILITY SHUT OFF IDENTIFICATION IN KITCHEN	●			●			
23.1.4 VALVE TAGS AND CHART	●			●			
23.1.5 HVAC DAMPER IDENTIFICATION	●			●			
23.2 ROOF CURBS							
23.2.1 EXHAUST FAN CURBS	●			●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.2.2 ROOFTOP UNIT CURBS	●			●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.2.3 CONDENSING UNIT CURBS	●			●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES

DESCRIPTION	FURNISHED: GENERAL CONTRACTOR	FURNISHED: OWNER	FURNISHED: LANDLORD	INSTALLED: GENERAL CONTRACTOR	INSTALLED: OWNER	INSTALLED: LANDLORD	REMARKS
NOTE: THIS SCHEDULE IS PROVIDED FOR QUICK REFERENCE ONLY. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ALL WORK DESCRIBED IN THE CONSTRUCTION DOCUMENTS. CONFLICTS BETWEEN THIS SCHEDULE AND THE REST OF THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ARCHITECTS ATTENTION PRIOR TO BEGINNING WORK.							
DIVISION 23: HEATING, VENTILATING, AND AIR CONDITIONING							
23.2.4 MAKE UP AIR UNIT CURBS	●			●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.2.5 KITCHEN EXHAUST FAN CURBS	●			●			GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING, CURBS, AND ACCESSORIES
23.3 HVAC DUCTWORK SYSTEM COMPONENTS							
23.3.1 HVAC DUCTWORK	●			●			
23.3.2 INSULATION AND FIRE WRAP	●			●			GENERAL CONTACTOR SCOPE OF WORK TO INCLUDE TENANT FIT OUT FROM LANDLORD POINT OF CONNECTION
23.3.3 DAMPERS	●			●			
23.3.4 SMOKE DETECTORS	●			●			
23.3.5 SUPPLY, RETURN, AND EXHAUST GRILLS AND REGISTERS	●			●			
23.4 MECHANICAL PIPING SYSTEM COMPONENTS							
23.4.1 WALK-IN COOLER AND FREEZER REFRIGERATION		●			●		WALK-IN COOLER AND FREEZER SUPPLIED BY VENDOR NO. 27 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE PIPING INSTALLATION AND FINAL CONNECTION
23.4.2 REFRIGERATION FOR OTHER HVAC EQUIPMENT	●			●			
23.4.3 CHILLED WATER	●			●			
23.4.4 CONDENSER WATER	●			●			
23.4.5 HEATING HOT WATER	●			●			
23.4.6 VALVES AND ACCESSORIES (E.G. AIR VENTS)	●			●			
23.5 HVAC EQUIPMENT							GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE RIGGING FOR ALL ROOFTOP EQUIPMENT
23.5.1 SUPPLY FAN	●			●			
23.5.2 TOILET EXHAUST FAN	●			●			
23.5.3 KITCHEN EXHAUST FAN		●		●			SUPPLIED BY VENDOR NO. 26
23.5.4 DUCTED AND NON-DUCTED HEATING AND COOLING UNITS	●			●			
23.5.5 MAKE UP AIR UNITS		●		●			SUPPLIED BY VENDOR NO. 26
23.5.6 ELECTRIC PATIO HEATERS	●			●			
23.5.7 CONDENSING UNITS	●			●			
23.6 KITCHEN EXHAUST WITH FIRE SUPPRESSION SYSTEM							
23.6.1 HOOD CONTROL PANEL		●		●			SUPPLIED BY VENDOR NO. 26
23.6.2 KITCHEN EXHAUST HOOD		●		●			SUPPLIED BY VENDOR NO. 26
23.6.3 STRUCTURAL SUPPORT	●			●			
23.6.4 ELECTRICAL AND CONTROL WIRING	●			●			
23.6.5 ANSUL SYSTEM		●		●			SUPPLIED BY VENDOR NO. 26 GENERAL CONTRACTOR TO COORDINATE AND FACILITATE SYSTEM SIGN-OFF
23.6.6 ANSUL WIRING AND UTILITIES CONNECTION	●			●			
23.6.7 ANSUL GAS VALVE		●		●			SUPPLIED BY VENDOR NO. 26
23.7 COMMISSIONING ACTIVITIES							
23.7.1 GREASE EXHAUST WATER LEAKAGE TEST	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 10 VENDOR SUBSTITUTION IS NOT PERMITTED
23.7.2 TESTING AIR BALANCE (TAB) REPORT	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 12 VENDOR SUBSTITUTION IS NOT PERMITTED
DIVISION 26: ELECTRICAL							
26.1 ELECTRICAL IDENTIFICATION	●			●			
26.2 POWER DISTRIBUTION SYSTEM							
26.2.1 MAIN SERVICE GEAR AND TRANSFORMERS	●			●			
26.2.2 MAIN SERVICE CONDUIT			●			●	LANDLORD TO TERMINATE CONDUIT WITHIN WITHIN 5 FEET OF BUILDING PAD
26.2.3 MAIN SERVICE WIRING	●			●			
26.2.4 MAIN SERVICE FUSES	●			●			
26.2.5 TRANSFORMER			●			●	
26.2.6 TENANT DISTRIBUTION PANELS AND BREAKERS	●			●			
26.2.7 CONDUIT, WIRE, OUTLETS, AND SWITCHES	●			●			
26.2.8 KITCHEN EQUIPMENT FINAL CONNECTION	●			●			
26.2.9 SIGNAGE CONDUIT AND WIRING	●			●			
26.3 LIGHTING DEVICES							
26.3.1 PARKING LOT LIGHTING			●			●	EXISTING TO REMAIN
26.3.2 EXTERIOR LIGHTING	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 1 VENDOR SUBSTITUTION IS NOT PERMITTED. INCLUDES DECORATIVE LIGHTING BOLLARDS
26.3.3 EMERGENCY LIGHTING	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 1 VENDOR SUBSTITUTION IS NOT PERMITTED SCOPE OF WORK TO INCLUDE INTERIOR AND EXTERIOR
26.3.4 INCANDESCENT, DECORATIVE, AND FLUORESCENT LIGHTING	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 1 VENDOR SUBSTITUTION IS NOT PERMITTED
26.3.5 CUSTOM FIXTURES	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 1 VENDOR SUBSTITUTION IS NOT PERMITTED
26.3.6 DIMMING SYSTEM	●			●			GENERAL CONTRACTOR TO PURCHASE FROM VENDOR NO. 1 VENDOR SUBSTITUTION IS NOT PERMITTED
26.4 LOW VOLTAGE							
26.4.1 CONDUIT AND WIRING	●			●			GENERAL CONTRACTOR TO COORDINATION WITH VENDOR NO. 31
26.4.2 DEVICES AND COVERPLATES		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 31
DIVISION 27: COMMUNICATIONS							
27.1 TELECOMMUNICATIONS IDENTIFICATION		●			●		
27.2 TELECOMMUNICATIONS							
27.2.1 IT EQUIPMENT RACK AND CABLE BOX RACK		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 31
27.2.2 TELEPHONE - 25 PAIR CABLE	●				●		GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE INSTALLATION OF CABLE FOR DEMARK EXTENSION FROM BASE BUILDING TELEPHONE CLOSET
27.2.3 PHONE - 66 BLOCK	●			●			
27.2.4 (2) 2" CONDUIT FOR TELEPHONE SERVICE			●			●	VOICE OVER IP
27.3 TELEVISIONS							
27.3.1 CONDUIT AND WIRING	●			●			
27.3.2 MOUNTS		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 31 GENERAL CONTRACTOR SCOPE OF WORK TO INCLUDE PROVIDING BLOCKING
27.3.3 DEVICES		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 31
27.4 POINT OF SALE (P.O.S.) EQUIPMENT							
27.4.1 POWER	●			●			
27.4.2 EQUIPMENT		●			●		
DIVISION 28: ELECTRONIC SAFETY AND SECURITY							
28.1 SECURITY ALARM SYSTEM							
28.1.1 CONDUIT AND WIRING	●			●			
28.1.2 DEVICES		●			●		GENERAL CONTRACTOR TO COORDINATE WITH VENDOR NO. 33 ON ADDITIONAL SCOPE OF WORK WHICH INCLUDES THE INSTALLATION OF CONDUIT FROM KEYPAD TO MANAGER'S OFFICE, BACK BOX, CONDUIT AND WIRING TO EMERGENCY CIRCUIT
28.2 SECURITY CAMERAS							
28.2.1 CONDUIT AND WIRING	●			●			
28.2.2 DEVICES		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 33 CONSTRUCTION CAMERAS ARE PURCHASED BY THE G.C. FROM VENDOR NO. 44 AND INSTALLED BY THE G.C.
28.3 SPEAKERS							
28.3.1 CONDUIT AND WIRING	●			●			
28.3.2 DEVICES		●			●		SUPPLIED AND INSTALLED BY VENDOR NO. 33
28.4 FIRE ALARM SYSTEM							
28.4.1 SYSTEM ENGINEER	●			●			
28.4.2 CONNECTION TO BASE BUILDING SYSTEM	●			●			
28.4.3 DEVICES	●			●			
DIVISION 32: EXTERIOR IMPROVEMENTS							
32.1 IRRIGATION SYSTEM	●			●			GENERAL CONTRACTOR TO COORDINATE WITH LANDLORD FOR POINT OF CONNECTION
32.2 PARKING LOT PATCH, SEAL, AND STRIP	●			●			
32.3 RAMPS	●			●			
32.4 PAVING AND HARDSCAPE	●			●			
32.5 CONCRETE CURBS	●			●			
32.6 TRASH ENCLOSURE	●			●			
32.7 LANDSCAPE PLANT MATERIAL	●			●			SCOPE OF WORK IS LIMITED TO THE CONSTRUCTION LINE REFER TO CIVIL AND LANDSCAPE PLANS FOR ADDITIONAL INFORMATION PROVIDE LANDSCAPE MAINTENANCE CONTRACT PROPOSAL TO OWNER FOR REVIEW AND APPROVAL

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SHAKE SHACK

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SHACK #1345

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REVISIONS

LICENSED ARCHITECT JAMES R. LEVCHIN 001-020045 EXPIRES: 11/30/22

11/24/20

Drawing Title
RESPONSIBILITY MATRIX

Job No. 204461 | Drawn Author

Scale | Date 11/24/20

Sheet No.
T002

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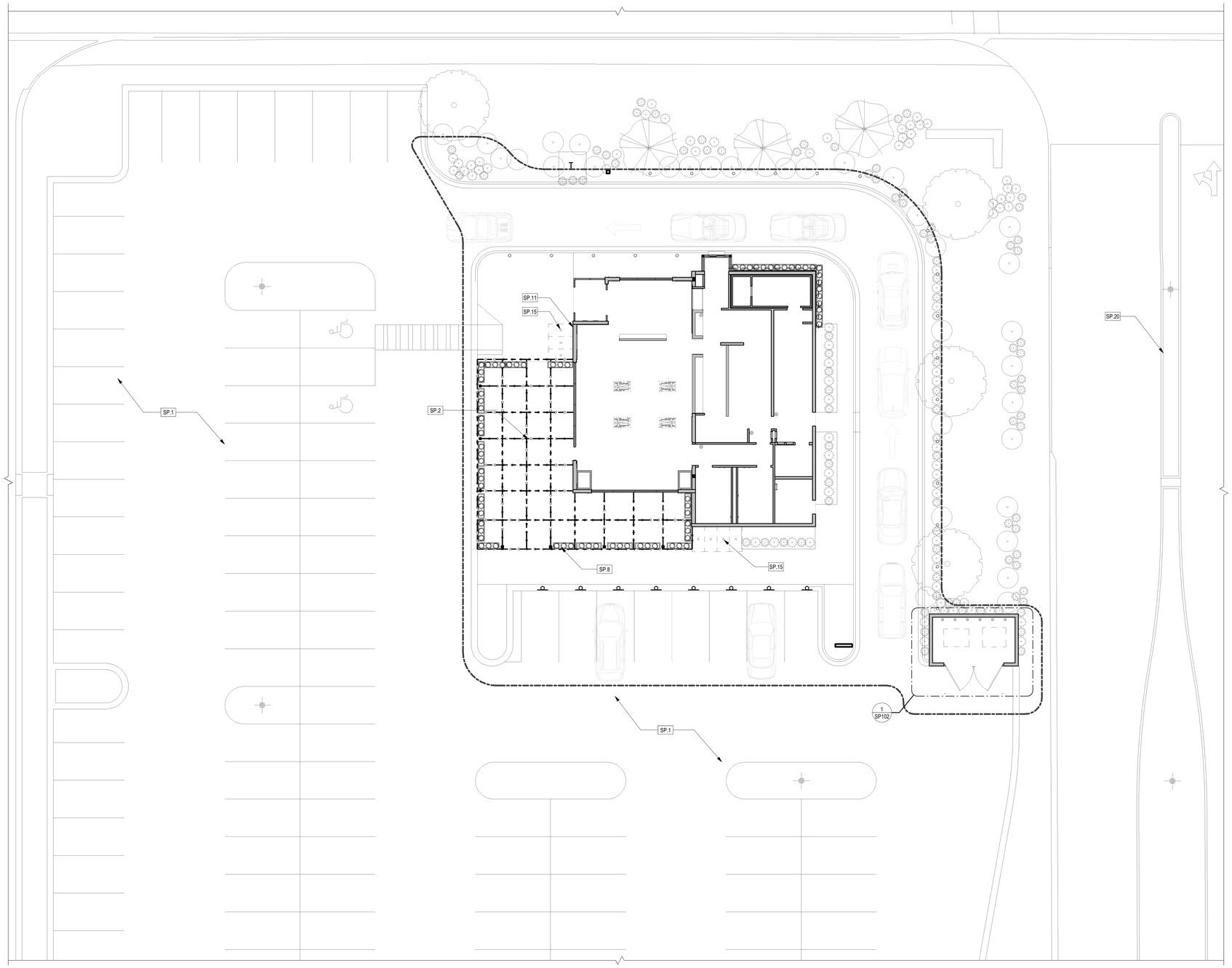
KEYNOTES

SP.1	EXISTING PARKING LOT
SP.2	EXTERIOR PATIO, REFER TO GENERAL ARRANGEMENT PLANS
SP.8	PLANTERS, REFER TO SHEET A104
SP.11	KNOX BOX, COORDINATE FINAL LOCATION W/ FIRE MARSHAL
SP.15	BIKE RACK, FORMS + SURFACES, MOSS TEXTURE, REFER TO LANDSCAPING FOR DETAILS
SP.20	EXISTING MEDIAN TO REMAIN



N

1 SITE PLAN
3/32" = 1'-0"

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LICENSED ARCHITECT
JAMES R. LUCZNIK
001-020345
STATE OF ILLINOIS
Expires 11/30/22
11/24/20

Drawing Title

SITE PLAN

Job No.	Drawn
204461	Author

Scale	Date
3/32" = 1'-0"	11/24/20

Sheet No.

SP101

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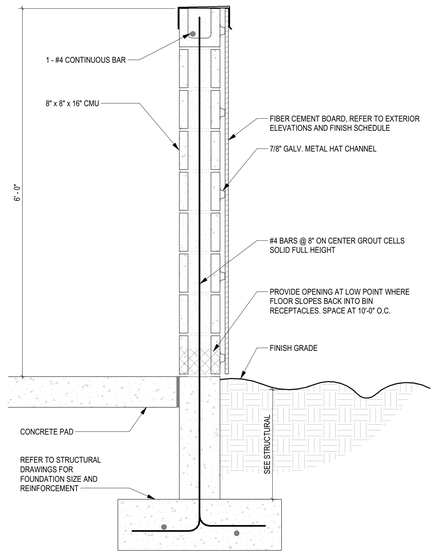
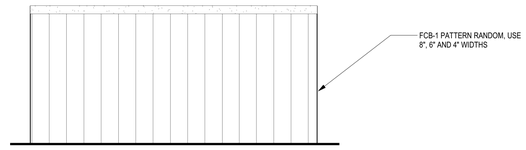
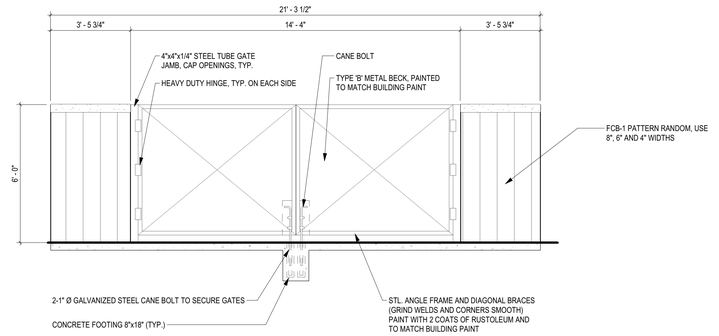


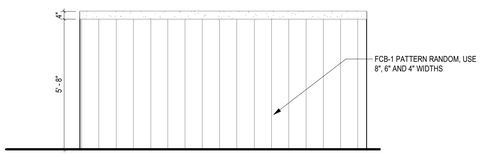
6 TRASH ENCLOSURE WALL SECTION
1" = 1'-0"



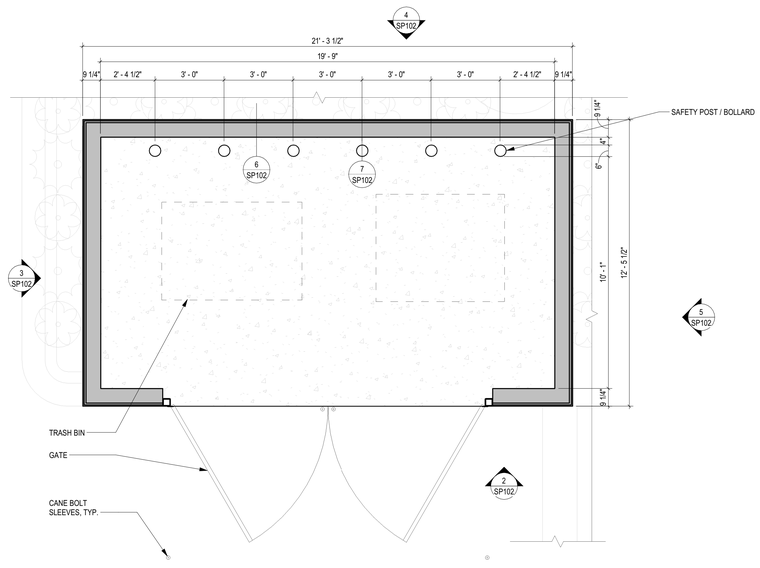
3 WEST ELEVATION
3/8" = 1'-0"

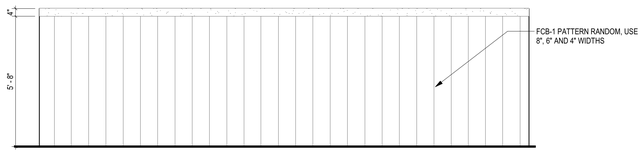


2 SOUTH ELEVATION
3/8" = 1'-0"

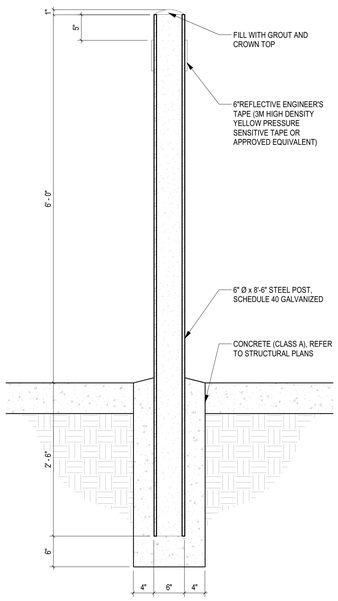


5 EAST ELEVATION
3/8" = 1'-0"





4 NORTH ELEVATION
3/8" = 1'-0"



7 TRASH ENCLOSURE BOLLARD SECTION
1" = 1'-0"

N

1 TRASH ENCLOSURE PLAN
3/8" = 1'-0"

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REVISIONS

JAMES R. LATHORP 001-020349 REGISTERED ARCHITECT STATE OF ILLINOIS
EXPIRES: 11/30/2022
11/24/20

Drawing Title
SITE PLAN DETAILS

Job No.	Drawn
204461	Author
Scale	Date
As indicated	11/24/20

Sheet No.
SP102

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MATERIAL DESIGNATIONS

- EARTH
- GRANULAR FILL (STONE OR GRAVEL, SUB BASE, ETC.)
- ROCK
- CONCRETE (CAST IN PLACE OR PRECAST)
- BRICK (COMMON OR FACE)
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE, CASE STONE, NATURAL STONE
- METAL (LARGE SCALE)
- METAL (SMALL SCALE STRUCTURAL & SHEET)
- PLYWOOD
- WOOD FINISH
- WOOD ROUGH (CONTINUOUS)
- WOOD ROUGH (BLOCKING)
- INSULATION / ATTENUATION (LOOSE OR BATT)
- INSULATION (RIGID)
- GLASS (LARGE SCALE)
- ACOUSTICAL TILE
- CERAMIC TILE (LARGE SCALE)
- GYPSUM WALL BOARD, PLASTER, SAND, CEMENT, GROUT
- TERRAZZO
- GLASS BLOCK
- EXISTING PARTITION OR WALL
- NEW PARTITION OR WALL
- HALF WALL - SEE ELEVATION FOR HEIGHT
- COOLER WALL WITH INSULATION

GRAPHIC SYMBOLS

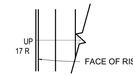
- ROOM/SPACE NUMBER (ROOM XXX)
- DOOR NUMBER (XXX)
- WINDOW NUMBER (XX)
- WALL TYPES (X)
- KEYNOTE SYMBOL (X)
- CEILING HEIGHT (X'-X")
- CEILING FINISH
- FLOOR FINISH
- WALL FINISH
- BUILDING SECTION (REFERENCE DRAWING NUMBER) (X / AX.X)
- WALL SECTION (REFERENCE DRAWING NUMBER) (X / AX.X)
- DETAIL (REFERENCE DRAWING NUMBER) (X / AX.X)
- ELEVATION (REFERENCE DRAWING NUMBER) (X / AX.X)

REFERENCES

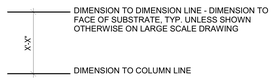
- INDICATES DETAIL NUMBER
- INDICATES SHEET NUMBER

- COLUMN REFERENCE GRIDS (A, 1)

STAIR DIRECTION SYMBOL



DIMENSION SYMBOL



- CENTER LINES, FLOOR LINES, PROJECTED LINES
- PROPERTY LINES, BOUNDARY LINES
- NEW OR REQUIRED POINT ELEVATION (DESC. 100'-0")
- REVISION TO DRAWING

STANDARD ABBREVIATION

SYMBOLS USED AS ABBREVIATIONS

@	AT SPACING OF
<	CENTER LINE
Ø	DIAMETER

ABBREVIATIONS

A/C	AIR CONDITIONING
ACT	ACOUSTICAL TILE
ACR	ACRYLIC PLASTIC
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AGG	AGGREGATE
ALT	ALTERNATE
AL	ALUMINUM
ANOD	ANODIZED
ARCH	ARCHITECT, ARCHITECTURAL
ASPH	ASPHALT
AUTO	AUTOMATIC
B/	BOTTOM OF
B.O.	BY OWNER
BD	BOARD
BL	BASE LINE
BLDG	BUILDING
BPL	BEARING PLATE
BRG	BEARING
BRK	BRICK
BRZ	BRONZE
BSMT	BASEMENT
C.O.	CASED OPENING
CAB	CABINET
CB	CEMENT BOARD
CG	CORNER GUARD
CIR	CIRCLE
CIRC	CIRCUMFERENCE
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR, CLEARANCE
CM	CENTIMETER(S)
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPRESS, (ED), (ION), (IBLE)
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUE, CONTINUOUS
CONTR	CONTRACT(OR)
CORR	CORRUGATED
CPT	CARPET
CSMT	CASEMENT
CT	CERAMIC TILE
CTR	COUNTER
CU.FT.	CUBIC FOOT
CYD	CUBIC YARD
DL	DEAD LOAD
DEMO	DEMOLISH, DEMOLITION
DTL	DETAIL
DIAG	DIAGONAL
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DN	DOWN
DS	DOWN SPOUT
DT	DRAIN TILE
DWR	DRAWER
DWG	DRAWING
DF	DRINKING FOUNTAIN
DW	DUMBWAITER
E	EAST
EA	EACH
EB	EXPANSION BOLT
EF	EXHAUST FAN (MECH)
EJ	EXPANSION JOINT
EL	ELEVATION (VERTICAL HEIGHT)
ELEC	ELECTRIC(AL)
ELEV	ELEVATION (VIEW)
EMER	EMERGENCY
ENCL	ENCLOSE, (URE)
EP	ELECTRICAL PANEL
EQ	EQUAL
EQP	EQUIPMENT
ESMNT	EASEMENT
EST	ESTIMATE
EX(IE)	EXISTING
EXH	EXHAUST
EXT	EXTERIOR
FA	FIRE ALARM
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FFE	FINISHED FLOOR ELEVATION
FFL	FINISHED FLOOR LINE
FIN	FINISH(ED)
FIXT	FIXTURE
FLR	FLOOR(ING)
FND	FOUNDATION
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FRT	FIRE-RETARDANT
FT	FIRE TREATED
FTG	FOOTING
FUR	FURRED, (ING)
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GL	GLASS, GLAZING
GLAM	GLUED LAMINATE
GYP BD	GYPSUM WALLBOARD
HB	HOSE BIBB
HDR	HEADER
HDWD	HARDWOOD
HDWR	HARDWARE
HM	HOLLOW METAL
HORZ	HORIZONTAL
HP	HIGH POINT
HT	HEIGHT
HVAC	HEATING/ VENTILATING/ AIR CONDITIONING
ID	INSIDE DIAMETER
IGU	INSULATING GLAZING UNIT
INCAN	INCANDESCENT
INCIN	INCINERATOR
INCL	INCLUDE, (ED), (ING)
INS	INSULATE, (ED), (ING)
INT	INTERIOR
INV	INVERT
JT	JOINT
KO	KNOCKOUT
L	LENGTH
LAM	LAMINATE(D)
LAV	LAVATORY
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LL	LIVE LOAD
LOC	LOCATION
LP	LOW POINT
LT	LIGHT
LW	LIGHTWEIGHT
M	METER(S)
MAS	MASONRY
MAU	MAKE-UP AIR UNIT (MECH)
MAX	MAXIMUM
MBR	MEMBRANE
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANIC(AL)
MED	MEDIUM
MFR	MANUFACTURE(R)
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MM	MILLIMETER(S)
MOD	MODIFIED
MOV	MOVABLE
MR	MOISTURE RESISTANT
MT	MOUNT, (ED), (ING)
MTL	METAL
N	NORTH
NAT	NATURAL
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OVERALL
OC	ON CENTER(S)
OD	OUTSIDE DIAMETER
OH	OVERHEAD
OPP. HAND	OPPOSITE HAND
ORN	ORNAMENTAL
PAR	PARALLEL
PCF	POUNDS PER CUBIC FOOT
PER	PERIMETER
PERF	PERFORATE(D)
PRE FAB	PREFABRICATED
PRE FIN	PREFINISHED
PG	PLATE GLASS
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PNL	PANEL(ING)
PRPT	PARAPET
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QT	QUARRY TILE
R	RISER
RA	RETURN AIR
RAD	RADIUS
RB	RUBBER BASE
RD	ROOF DRAIN
REF	REFER(ENCE)
REFR	REFRIGERATOR
REG	REGISTER
REINF	REINFORCE, (ED), (ING)
REQ'D	REQUIRED
RET	RETURN
REV	REVISE, REVISION
RFL	REFLECT, (ED), (IVE), (OR)
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RTU	ROOF TOP UNIT (MECH)
S	SOUTH
SC	SOLID CORE
SCH	SCHEDULE
SCUP	SCUPPER
SD	STORM DRAIN
SEC	SECTION
SF	SQUARE FEET
SHT	SHEET
SIM	SIMILAR
SPKR	SPEAKER
SPEC	SPECIFICATION
SQ	SQUARE
SST	STAINLESS STEEL
ST	STEEL
STCO	STUCCO
STD	STANDARD
STOR	STORAGE
STR	STRUCTURAL
SUSP	SUSPENDED
SVYD	SERVICE YARD
SYM	SYMMETRY, (ICAL)
SYS	SYSTEM
T	TEMPERED
T/	TOP OF...
T&G	TONGUE AND GROOVE
TEL	TELEPHONE
THK	THICK(NESS)
THR	THRESHOLD
TOL	TOLERANCE
TPG	TOPPING
TR	TRANSOM
TV	TELEVISION
TYP	TYPICAL
UC	UNDERCUT
UNF	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VNR	VENEER
VT	VINYL TILE
W	WEST
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WG	WIRE GLASS
WH	WATER HEATER
WI	WROUGHT IRON
WIN	WINDOW
WM	WIRE MESH
WP	WATERPROOFING
WR	WATER RESISTANT
WS	WATERSTOP
WWF	WELDED WIRE FABRIC

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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JAMES R. LATHROPE
001-020345
STATE OF ILLINOIS
Expires 11/30/21

11/24/20

Drawing Title
ARCHITECTURAL ABBREVIATIONS & SYMBOLS

Job No.	Drawn
204461	Author

Scale	Date
12" = 1'-0"	11/24/20

Sheet No.
A001

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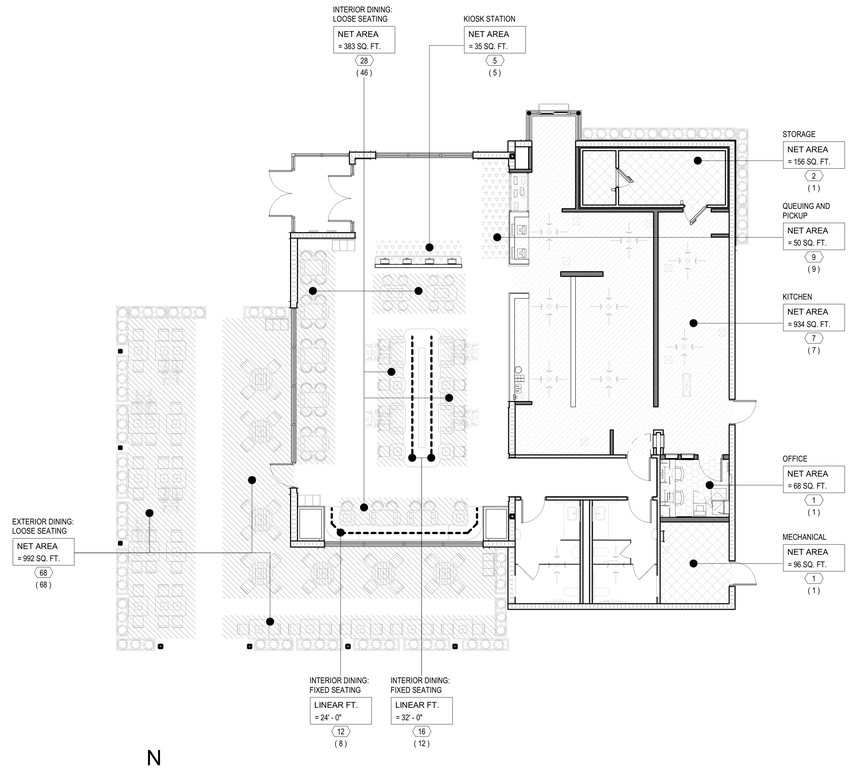
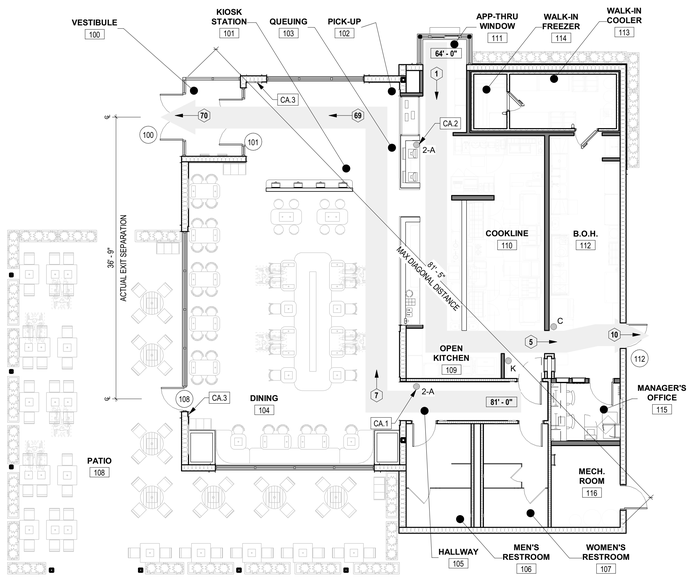


1 OCCUPANCY PLAN
1/8" = 1'-0"



2 EGRESS PLAN
1/8" = 1'-0"

SQUARE FOOTAGE & OCCUPANCY CHART

TOTAL SHACK SF :	4,689 SF
INTERIOR SEATING :	66 OCC.
EXTERIOR SEATING :	68 OCC.
TOTAL SEATS :	134 OCC.
INTERIOR SF :	3,286 SF
EXTERIOR SF :	1,403 SF
FOH / DINING SF :	1,465 SF
BOH SF :	1,821 SF

KEYNOTES

CA.1	RECESSED FIRE EXTINGUISHER CABINET
CA.2	FIRE EXTINGUISHER LOCATED UNDER COUNTER
CA.3	TACTILE EXIT SIGNAGE

SYMBOL LEGEND

	INDICATES EGRESS TRAVEL DIRECTION
XX'-XX"	INDICATES TRAVEL DISTANCE
■ × ■ × ▮	INDICATES 1-HOUR FIRE BARRIER UL# U404 FOR EXTERIOR WALLS
X	INDICATES TOTAL NUMBER OF OCCUPANTS IN AN AREA EXITING. ARROW INDICATES DIRECTION OF EGRESS
X / (X)	INDICATES ALLOWABLE OCCUPANCY OF SPACE / INDICATES ACTUAL OCCUPANCY OF SPACE
X	DOOR NUMBER TAG, REFER TO DOOR SCHEDULE

OCCUPANCY LOAD CHART

DINING	LOOSE SEATING: = 1 OCCUPANT PER 15 NET SQ. FT.
DINING	FIXED SEATING: BOOTH SEATING (SECTION 1004.4) = 1 OCCUPANT PER 24 LINEAR INCHES
QUEUING AREA	1 OCCUPANT PER 5 NET SQ. FT.
OFFICE AND LOCKER AREA	1 OCCUPANT PER 100 GROSS SQ. FT.
COMMERCIAL KITCHEN	1 OCCUPANT PER 200 GROSS SQ. FT.
STORAGE / MECH. / COOLERS	1 OCCUPANT PER 300 GROSS SQ. FT.

NOTES:
1. VALUES ARE PER 2012 INTERNATIONAL BUILDING CODE

ALLOWABLE OCCUPANCY

Number	Name	Area	Occupancy Load Factor	Fixed Seating	Total
101	KIOSK STATION	35 SF	7 SF per occupant (CONCENTRATED)	0 in / 0 in per occupants	5
102	PICK-UP	29 SF	5 SF per occupant (CONCENTRATED)	0 in / 0 in per occupants	6
103	QUEUING	20 SF	7 SF per occupant (CONCENTRATED)	0 in / 0 in per occupants	3
104	DINING	385 SF	15 SF per occupant (UNCONCENTRATED)	0 in / 0 in per occupants	26
104	DINING	0 SF	0 SF per occupant (FIXED SEATING)	672 in / 24 in per occupants	28
108	PATIO	984 SF	15 SF per occupant (UNCONCENTRATED)	0 in / 0 in per occupants	67
109	OPEN KITCHEN	299 SF	200 SF per occupant (KITCHEN)	0 in / 0 in per occupants	2
110	COOKLINE	259 SF	200 SF per occupant (KITCHEN)	0 in / 0 in per occupants	2
111	APP-THRU WINDOW	83 SF	200 SF per occupant (KITCHEN)	0 in / 0 in per occupants	1
112	B.O.H.	293 SF	200 SF per occupant (KITCHEN)	0 in / 0 in per occupants	2
113	WALK-IN COOLER	116 SF	300 SF per occupant (STORAGE / MECH.)	0 in / 0 in per occupants	1
114	WALK-IN FREEZER	39 SF	300 SF per occupant (STORAGE / MECH.)	0 in / 0 in per occupants	1
115	MANAGER'S OFFICE	68 SF	100 SF per occupant (BUSINESS)	0 in / 0 in per occupants	1
116	MECH. ROOM	96 SF	300 SF per occupant (STORAGE / MECH.)	0 in / 0 in per occupants	1
TOTAL ALLOWABLE OCCUPANCY		2,705 SF			148

TOILET REQUIREMENTS

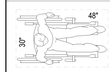
TOILET REQUIREMENTS: PER STATE OF ILLINOIS PLUMBING CODE 2014 - APPENDIX A - TABLE B
OCCUPANCY DISTRIBUTION: 148 TOTAL ALLOWABLE = 74 MEN, 74 WOMEN
OCCUPANCY: A2 - FOOD SERVICE ESTABLISHMENT

REQUIRED:			REQUIRED:		
MALE:	WATER CLOSET	1	FEMALE:	WATER CLOSET	2
	LAVATORIES	1		LAVATORIES	1
ACTUAL:	WATER CLOSET	1	ACTUAL:	WATER CLOSET	2
	URINALS	1		LAVATORIES	1
	LAVATORIES	1			
TOTAL:	W/C & URINALS	2	TOTAL:	WATER CLOSET	2
	LAVATORIES	1		LAVATORIES	1

ACTUAL OCCUPANCY LOAD (BASED ON SEAT COUNT)

Location	Seat Count
EXTERIOR	68
INTERIOR	66
TOTAL ACTUAL OCCUPANCY	134

ADA LEGEND



DENOTES WHEELCHAIR ACCESSIBLE SEATING

(ACCESSIBILITY: PER 2012 IBC - TABLE 1108.2.9.1)
WHERE DINING SURFACES FOR CONSUPTION OF FOOD OR DRINK ARE PROVIDED, AT LEAST 5% TO BE ADA ACCESSIBLE

TOTAL ACTUAL SEATING:	TOTAL ADA SEATING REQUIRED:
INTERIOR DINING AREA - 66 SEATS	INDOOR SEATING - 4 REQUIRED
EXTERIOR DINING AREA - 68 SEATS	OUTDOOR SEATING - 4 REQUIRED

EGRESS COMPONENT CALCULATIONS

DOOR #	NOTE: PER SECTION 1005.3.2 OF THE 2012 IBC
100	(2) 3'-0" DOOR (72") / (0.2" PER OCCUPANT) = 360 PERSON MAXIMUM OCCUPANT CAPACITY
101	(2) 3'-0" DOOR (72") / (0.2" PER OCCUPANT) = 360 PERSON MAXIMUM OCCUPANT CAPACITY
108	3'-0" DOOR (36") / (0.2" PER OCCUPANT) = 108 PERSON MAXIMUM OCCUPANT CAPACITY
112	3'-0" DOOR (36") / (0.2" PER OCCUPANT) = 108 PERSON MAXIMUM OCCUPANT CAPACITY

GENERAL NOTES

1. REFER TO SHEET A211 FOR F.O.H. WALL FINISHES, SHEET A105 FOR CEILING FINISHES, & SHEET A103 FOR FLOOR FINISHES & B.O.H. WALL FINISHES
2. REFER TO K-SHEETS FOR KITCHEN EQUIPMENT INFORMATION
3. REFER TO SHEET A601 FOR ROOM FINISH SCHEDULE & SPECIFICATIONS
4. REFER TO SHEET A105 & E-SHEETS FOR EMERGENCY LIGHTING LOCATIONS
5. ALL EXIT DOORS SHALL BE OPERABLE FROM INSIDE WITHOUT USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. SPECIAL LOCKING DEVICES SHALL BE AN APPROVED TYPE
6. DOOR MUST OPEN OVER A LANDING NOT MORE THAN 1/2" BELOW THRESHOLD & THE THRESHOLD SHALL BE BEVELED SUCH THAT THERE IS A 1/4" MAX. DROP
7. G.C. TO VERIFY AND COORDINATE FIRE EXTINGUISHER TYPES, LOCATIONS AND QUANTITIES WITH LOCAL FIRE PREVENTION OFFICIAL
8. REFER TO A003 FOR ACCESSIBILITY CLEARANCES & DETAILS

INT. FINISH REQUIREMENTS

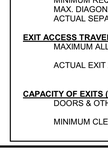
1. ALL INTERIOR FINISH MATERIALS TO HAVE THE FOLLOWING FLAME SPREAD RATINGS PER TABLE 803.9 (2012 INTERNATIONAL BUILDING CODE) FOR THE LOCATION IN WHICH THE MATERIAL IS BEING INSTALLED:
   A. ROOMS AND ENCLOSED SPACES (SPRINKLERED) - CLASS - C
   B. CORRIDORS (SPRINKLERED) - CLASS - B

NOTES:
CLASS-B = FLAME SPREAD INDEX OF 26 -75, SMOKE-DEVELOPED INDEX OF 0-450 PER ASTM E84
CLASS-C = FLAME SPREAD INDEX OF 76-200, SMOKE DEVELOPED INDEX OF 0-450 PER ASTM E84

FIRE EXTINGUISHER SCHEDULE

SYMBOL	DESCRIPTION
2-A	TYPE 2-A EXTINGUISHER: FOR CLASS A HAZARDS IN ORDINARY (MODERATE) HAZARD OCCUPANCY, (1) EXTINGUISHER PROVIDES 1,500 S.F. OF PROTECTION IN DINING AREAS - DISTANCE TO EXTINGUISHER NOT TO EXCEED 75'-0"
C	TYPE C EXTINGUISHER: REQUIRED WHERE ENERGIZED ELECTRICAL EQUIPMENT CAN BE ENCOUNTERED THAT WOULD REQUIRE NON-CONDUCTING EXTINGUISHING MEDIUM
K	TYPE K EXTINGUISHER: REQUIRED WHERE COMBUSTIBLE COOKING MEDIA (GREASE/OIL) CAN BE ENCOUNTERED - DISTANCE TO EXTINGUISHER NOT TO EXCEED 30'-0"

FIRE EXTINGUISHER CABINETS

SYMBOL	DESCRIPTION
	SEMI-RECESSED FIRE EXTINGUISHER CABINET MANUF. : JL INDUSTRIES INCORPORATED MODEL : COSMOPOLITAN SERIES MODEL #8137V10 (w/ HANDLE) / 2 1/2" ROLLED TRIM STYLE / 9"W x 18"H x 5 1/2"D NOTES : 1. PROVIDE AS REQUIRED PER PLAN. MOUNT FRONT OF HOUSE TYPE 'A' FIRE EXTINGUISHERS IN A CLEARLY VISIBLE AREA WITHIN A FIRE EXTINGUISHER CABINET AS SELECTED. FINAL LOCATION & QUANTITY TO BE DETERMINED BY THE LOCAL FIRE MARSHAL 2. FIRE EXTINGUISHER SIZE TO BE C OMPATIBLE w/ FIRE CABINET DIMENSIONS

CODE ANALYSIS

PROJECT DESCRIPTION
NEW FREE STANDING ONE-STORY QUICK SERVICE RESTAURANT

APPLICABLE CODES

BUILDING:	2012 INTERNATIONAL BUILDING CODE
ELECTRICAL:	2013 CHICAGO ELECTRIC CODE
FIRE:	2012 INTERNATIONAL FIRE CODE
PLUMBING:	2014 STATE OF ILLINOIS PLUMBING CODE
MECHANICAL:	2012 INTERNATIONAL MECHANICAL CODE
ACCESSIBILITY:	2018 ILLINOIS ACCESSIBLE CODE
ENERGY:	2018 INTERNATIONAL ENERGY CONSERVATION CODE

NOTE: AN ORDINANCE APPROVING AN EXTERIOR WALL CONSTRUCTION VARIATION TO USE WOOD FRAME CONSTRUCTION INSTEAD OF CMU BLOCK CONSTRUCTION HAS BEEN APPROVED PER ORDINANCE # 18-17-69.

CONSTRUCTION TYPE (SECTION 601, TABLE 601)
TYPE V-B (SPRINKLERED)

FIRE RESISTANCE RATING (SECTION 601, TABLE 601

STRUCTURAL FRAME	0 HR
EXTERIOR BEARING WALLS:	0 HR
INTERIOR BEARING WALLS:	0 HR
INTERIOR NON BEARING WALLS:	0 HR
FLOOR CONSTRUCTION & SECONDARY MEMBERS:	0 HR
ROOF CONSTRUCTION & SECONDARY MEMBERS:	0 HR

SEPARATION DISTANCE (SECTION 602 TABLE 602)

SEPARATION X < 5 FT	1 HR
SEPARATION 5 FT < X 10 FT	1 HR
SEPARATION 10 FT < X < 30 FT	0 HR
SEPARATION X > 30 FT	0 HR

OCCUPANCY (SECTION 303.3)
RESTAURANT = A-2 — A-2

MAX HEIGHT (TABLE 504.3)

ALLOWABLE HEIGHT =	60'-0"
ACTUAL HEIGHT =	15'-0"

HEIGHT AND AREA LIMITATIONS (TABLE 503 & SECTION 504.2)

ALLOWABLE HEIGHT =	2 STORIES / 60'-0"
ACTUAL HEIGHT =	23'-4"
ALLOWABLE STORIES (A-2) =	2
ACTUAL STORIES (A-2) =	1
ALLOWABLE AREA =	5,500 SF
ACTUAL AREA =	3,276 SF

FRONTAGE INCREASE (SECTION 506.2 EQUATION 5-2)

FRONTAGE BUILDING PERIMITER (F) =	60'-0"
TOTAL BUILDING PERIMITER (P) =	15'-0"
WIDTH OF PUBLIC WAY (W) =	20'-0"

$I_f = [F / P - 0.25] W / 30$
$I_f = [60'-0" / 15'-0" - 0.25] 20'-0" / 30$
$I_f = 2.5$

SPRINCLER SYSTEM INCREASE (SECTION 506.3)
BUILDING AREA INCREASE (I_s) = 3

BUILDING AREA MODIFIATIONS (SECTION 506.1 EQUATION 5-1)
$A_a = [A_t + [A_x \times I_f] + [A_z \times I_s]]$
$A_a = [5,500 + [5,500 \times 2.5] + [5,500 \times 3]]$
$A_a = 35,750$

REQUIRED EXITS (SECTION SECTION 1021.2)

REQUIRED EXITS =	2
EXITS PROVIDED =	3 (2 PUBLIC + 1 KITCHEN)

REQUIRED EXIT SEPARATION (SECTION 1015.2.1)

MAX. DIAGONAL DISTANCE =	81'-5"
MINIMUM REQUIRED EXIT SEPARATION : MAX. DIAGONAL DISTANCE /3 =	27'-2"
ACTUAL SEPARATION =	36'-7"

EXIT ACCESS TRAVEL DISTANCE (TABLE 1016.2)

MAXIMUM ALLOWABLE EXIT ACCESS TRAVEL DISTANCE =	250'-0" (SPRINKLERED)
ACTUAL EXIT ACCESS TRAVEL DISTANCE =	81'-0"

CAPACITY OF EXITS (SECTION 1008.1.1)

DOORS & OTHER EGRESS COMPONENT UNIT WIDTH =	0.2" PER OCCUPANT
MINIMUM CLEAR WIDTH OF EXIT DOORS =	32"

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REVISIONS

JAMES R. LONDON
062-020343
EXPIRES 11/30/22
11/24/20

Drawing Title
CODE ANALYSIS, OCCUPANCY & EGRESS PLAN

Job No.	Drawn
204461	MVK
Scale	Date
As indicated	11/24/20

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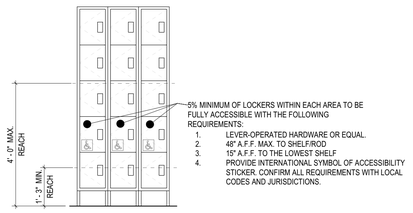
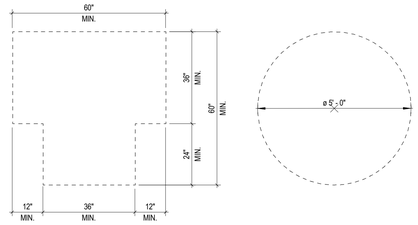
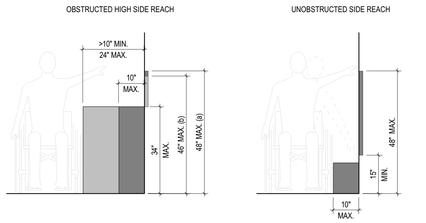


18 ACCESSIBLE LOCKER DETAIL
1/2" = 1'-0" — PER SECTION 308 & 803

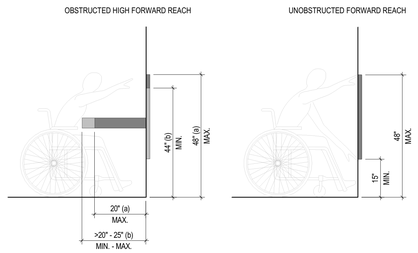


T-SHAPED SPACE — CIRCULAR SPACE

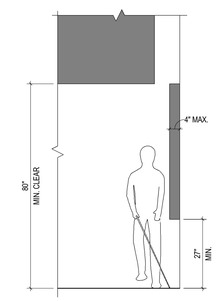
17 CLEAR TURNING SPACE
1/2" = 1'-0" — PER SECTION 304



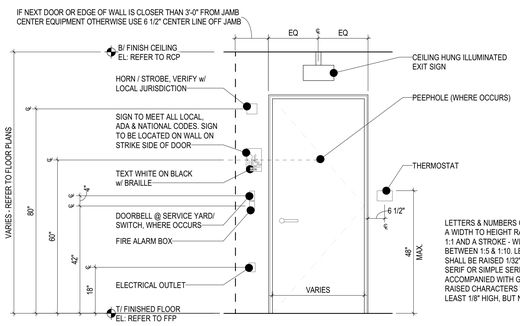
16 SIDE REACH
1/2" = 1'-0" — PER SECTION 308



15 FORWARD REACH
1/2" = 1'-0" — PER SECTION 308

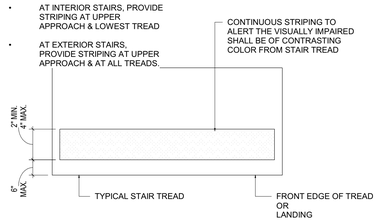


14 LIMITS OF PROTRUDING OBJECTS
1/2" = 1'-0" — PER SECTION 307

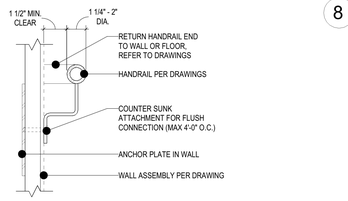


13 TYPICAL EQUIPMENT LAYOUT @ DOOR
1 1/2" = 1'-0"

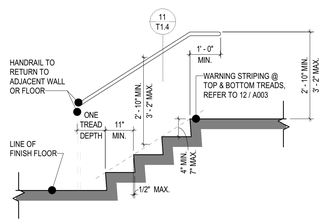
NOTES:
- STRIPING SHALL BE AT LEAST AS SLIP RESISTANT AS STAIR TREAD.
- AT INTERIOR STAIRS, PROVIDE STRIPING AT UPPER APPROACH & LOWEST TREAD
- AT EXTERIOR STAIRS, PROVIDE STRIPING AT UPPER APPROACH & AT ALL TREADS.



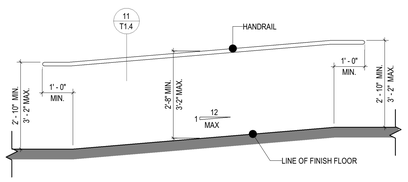
12 WARNING STRIPPING DETAIL
3" = 1'-0"



11 TYPICAL HANDRAIL DETAIL
3" = 1'-0" — PER SECTION 505

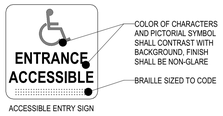


10 TYPICAL HANDRAIL @ STAIR
1/2" = 1'-0" — PER SECTION 504 & 505

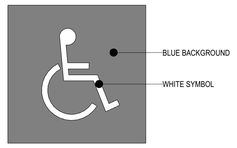


9 ACCESSIBLE HANDRAIL @ RAMP
1/2" = 1'-0" — PER SECTION 405 & 505

PICTOGRAM FILED

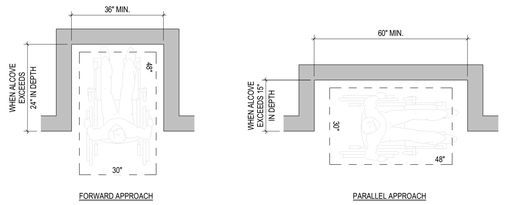


ACCESSIBLE ENTRY SIGN

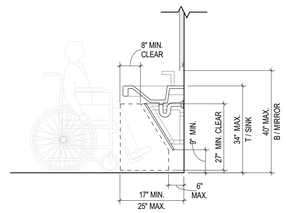


INTERNATIONAL ACCESSIBILITY SYMBOL

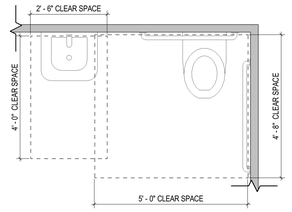
8 SIGNAGE DETAILS
NOT TO SCALE — PER SECTION 703



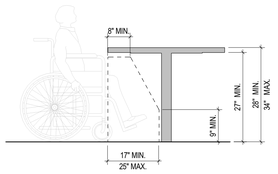
7 MANEUVING CLEARANCES
1/2" = 1'-0" — PER SECTION 305.7



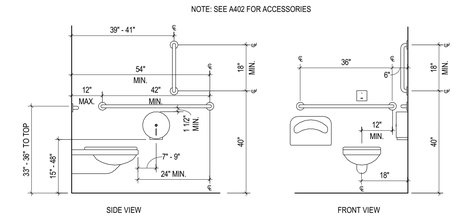
6 ACCESSIBLE LAVATORY
1/2" = 1'-0" — PER SECTION 306 & 603



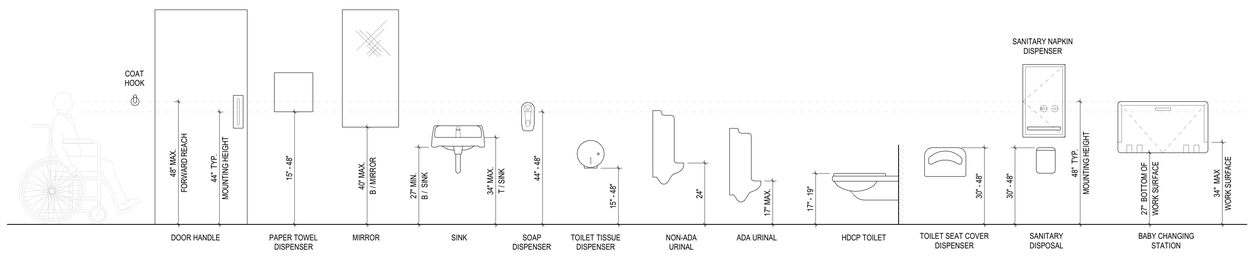
5 ACCESSIBLE WATER CLOSET CLEARANCES
1/2" = 1'-0" — PER SECTION 604



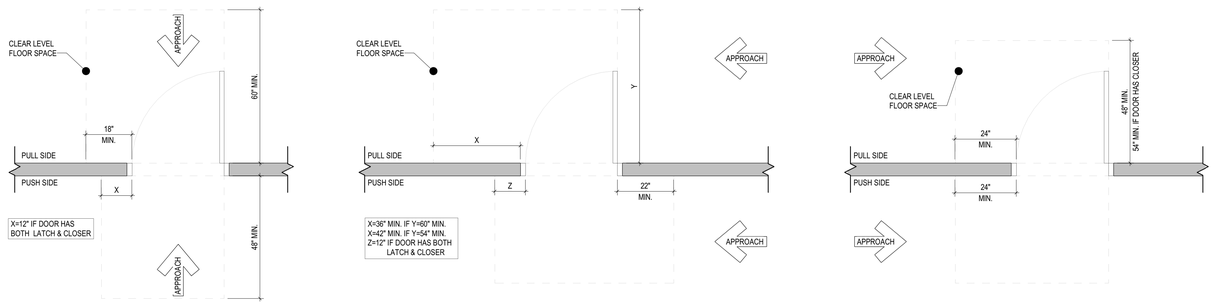
4 ACCESSIBLE TABLE
1/2" = 1'-0" — PER SECTION 306



3 ACCESSIBLE WATER CLOSET MOUNT HEIGHT
1/2" = 1'-0" — PER SECTION 604



2 PLUMBING FIXTURE MOUNTING HEIGHT
1/2" = 1'-0" — PER SECTION 604 & 605



1 TYPICAL DOOR CLEARANCES
1/2" = 1'-0" — PER SECTION 404

GENERAL NOTES

1. ALL DETAILS SHOWN ON THIS SHEET ARE BASED ON 2018 ILLINOIS ACCESSIBILITY CODE
2. PROJECT HAS A FULLY ACCESSIBLE MAIN ENTRY AT GROUND LEVEL OR A FULLY ACCESSIBLE ROUTE TO THE GROUND LEVEL.
3. PROJECT HAS A FULLY ACCESSIBLE ROUTE FROM THE MAIN ENTRY TO THE LOBBY AREA.
4. PROJECT HAS FULLY ACCESSIBLE PUBLIC TOILET ROOMS.
5. PROJECT HAS PROVIDED PROPER MANEUVERING CLEARANCES AT DOOR PER SECTION 404.2.3. & DETAIL 1/A003
6. DOORS IN PUBLIC AND COMMON AREAS LEADING INTO ACCESSIBLE ROOMS AND SPACES TO BE 3'-0" WIDE MIN.
7. ALL DOORS MUST HAVE 32" MIN. CLEAR DOOR OPENING MEASURED FROM THE FACE OF THE DOOR WHEN IT IS OPENED 90% TO THE DOOR STOP.
8. ALL NEW OR ALTERED DOORS TO HAVE LEVER OPERATED HARDWARE.
9. ALL PUBLIC AND COMMON AREA INTERIOR DOORS TO HAVE 5# MAX. FORCE TO OPEN. ALL PUBLIC AND COMMON AREA EXTERIOR DOOR TO HAVE 8.5# MAX. FORCE TO OPEN.
10. REFER TO CHAPTER 6 FOR ACCESSIBLE TOILETS & SHEET A402 FOR ACCESSIBLE TOILET ACCESSORIES. CONTRACTOR TO PROVIDE IN-WALL F.R.T. WOOD BLOCKING FOR ATTACHMENT OF ALL ACCESSORIES
11. G.C. TO FOLLOW ALL LOCAL JURISDICTION'S CODES AND REQUIREMENTS. CONTACT ARCHITECT w/ ANY DISCREPANCIES
12. CONFIRM MOUNTING HEIGHTS OF EACH SPECIFIC ACCESSORY w/ MANUFACTURER'S RECOMMENDATIONS & INSTRUCTIONS FOR PROPER COMPLIANCE.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title: ACCESSIBITLY DETAILS

Job No.	Drawn
204461	Author
Scale: 1/2" = 1'-0"	Date: 11/24/20

Sheet No. A003

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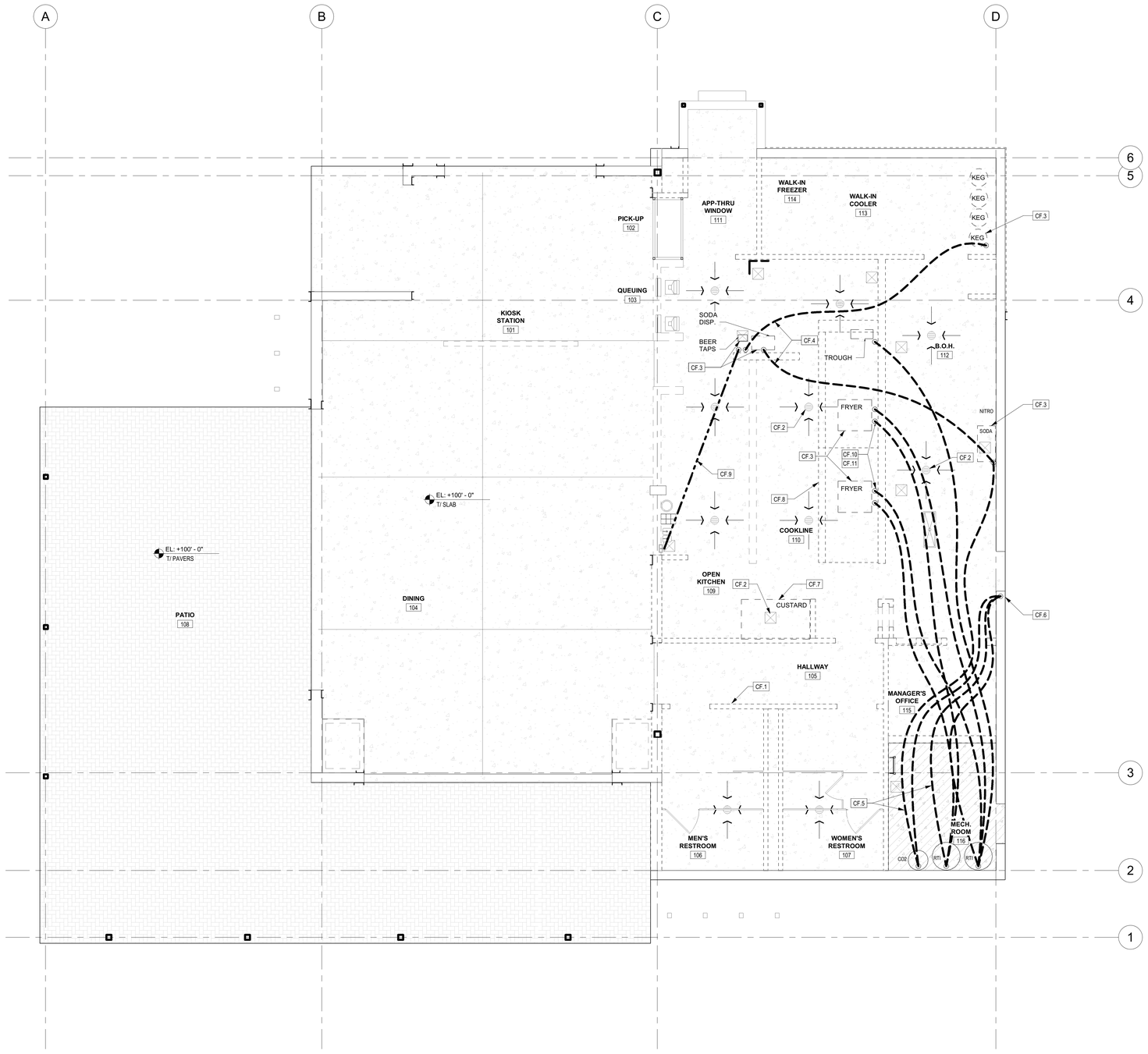

N

1 CURB AND FOUNDATION PLAN

1/4" = 1'-0"

GENERAL NOTES

1. REFER TO S-SHEETS FOR ADDITIONAL INFORMATION ON CONCRETE DETAILING, MIX DESIGN, & REINFORCING
2. ALL DIMENTIONS ARE TO FACE OF CONCRETE UNLESS NOTED OTHERWISE, ALLOW FOR CONCRETE SHRINKAGE
3. G.C. TO PROVIDE TERMITE TREATMENT @ FOUNDATION WALLS, SLAB, AND ALL AREAS REQUIRED BY CODE
4. G.C. TO ENSURE THAT THE FLOOR SLAB IS AT AN ACCEPTABLE TOLERANCE LEVEL TO MINIMIZE THE LIPPAGE FOR THE REQUIRED FLOOR FINISH INSTALLATION, REFER TO FINISH SPECIFICATIONS FOR MORE INFORMATION, G.C. TO INFORM ARCHITECT OF DISCREPANCIES
5. PITCH CONCRETE FLOOR FINISH 1/8" PER FOOT TO ALL FLOOR DRAINS
6. G.C. TO PROVIDE CONTROL JOINTS FOR CONCRETE SLAB, TYP., REFER TO DETAILS ON THIS SHEET
7. ALL CONTRACTORS TO VERIFY EXISTING SITE CONDITIONS BEFORE ANY WORK IS TO BEGIN. NOTIFY ARCHITECT OF DISCREPANCIES, TYP.

PLAN LEGEND

- CONCRETE SLAB
- STOREFRONT, INTERIOR WALLS, & EXTERIOR WALLS
- FLOOR SINKS, REFER TO P-SHEETS
- FLOOR DRAINS, REFER TO P-SHEETS
- TRENCH DRAIN, REFER TO P-SHEETS
- SLOPE SLAB TOWARD DRAIN, 1/8" PER 12"
- X +X'-X" — INDICATES SPOT ELEVATION A.F.F.
- DENOTES BEER, SODA, CO2, & RTI LINE RUNS TO EQUIPMENT, G.C. TO VERIFY IN FIELD & COORDINATE W/ O.C. LINES TO RUN UNDER SLAB & UP THROUGH PARTITION TO CONNECT TO RESPECTIVE EQUIPMENT
- DENOTES BEER, SODA, CO2, & RTI LINE RUNS TO EQUIPMENT, G.C. TO VERIFY IN FIELD & COORDINATE W/ O.C. LINES TO RUN ABOVE CEILING & DOWN THROUGH PARTITION TO CONNECT TO RESPECTIVE EQUIPMENT

KEYNOTES

CF.1	ALL INTERIOR WALLS SHOWN DASHED FOR REFERENCE, REFER TO GENERAL ARRANGEMENT PLAN
CF.2	FLOOR DRAINS & FLOOR SINKS, REFER TO P-SHEETS, TYP.
CF.3	EQUIPMENT TO RECEIVE LINE RUNS, REFER TO GENERAL ARRANGEMENT PLAN & K-SHEETS
CF.4	6" BEER & SODA LINES, PROVIDE A 90 DEG. SWEEP, W/ MIN. 18" RADIUS, REFER TO K-SHEETS
CF.5	4" CO2 & RTI LINES, PROVIDE A 90 DEG. SWEEP W. MIN. 18" RADIUS
CF.6	RTI & CO2 FILL BOX CONNECTION POINT, G.C. TO PROVIDE ACCESS PANEL ON INTERIOR SIDE OF FILL BOX
CF.7	PROVIDE A LEVEL FLOOR (NO SLOPE) UNDERNEATH THE CUSTARD MACHINE, AREA OF LEVEL FLOOR TO EXTEND 6" BEYOND ALL SIDES OF CUSTARD MACHINE
CF.8	KITCHEN EXHAUST HOOD SHOWN DASHED FOR REFERENCE
CF.9	3" CHILLED WATER EXTENSION PVC CONDUIT
CF.10	ADD CONDUIT STUB AT 24" A.F.F. FOR CONTROL WIRING
CF.11	PROVIDE PVC CONDUIT FROM POC OF FRYER THROUGH WALL BEYOND HOOD

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SHACK #1345

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

JAMES R. LEVCHUK 001-020345 REGISTERED ARCHITECT

Expires 11/30/22

11/24/20

Drawing Title
CURB & FOUNDATION PLAN

Job No.	Drawn
204461	Author
Scale: As indicated	Date: 11/24/20

Sheet No.
A100

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ABBREVIATIONS

BY G.C.	PROVIDED & INSTALLED BY GENERAL CONTRACTOR
BY OWNER	PROVIDED BY OWNER, INSTALLED BY GENERAL CONTRACTOR
BY O.C.	BY OWNER'S CONTRACTOR, INSTALLED BY GENERAL CONTRACTOR, U.N.O.
BY K.E.C.	PROVIDED & INSTALLED BY KITCHEN EQUIPMENT CONTRACTOR, FINAL CONNECTION OF PLUMBING OR ELECTRIC BY GENERAL CONTRACTOR

SYMBOL LEGEND

- X — DOOR TAG, REFER TO DOOR SCHEDULE ON SHEET A602
- X — INDICATES WALL TYPE, REFER TO SHEET A511 FOR MORE INFORMATION
- INDICATED STEEL TUBE IN LOW HEIGHT PARTITION WALL, REFER TO DETAIL 15/A511
- X — STOREFRONT TAG, REFER TO GLAZING SCHEDULE ON SHEET A601

WALL LEGEND

- EXISTING PARTITION WALL TO REMAIN
- AREA NOT IN CONTRACT
- PARTITION WALL
- FURRED OUT PARTITION WALL
- PARTITION WALL W/ SOUND ATTENUATION BATTS OR THERMAL INSULATION
- LOW HEIGHT PARTITION WALL

WALL SUBSTRATE NOTES

1. PROVIDE FIRE TREATED PLYWOOD SUBSTRATE AT ALL MILLWORK WALL FINISHES
2. FOR FIRE RATED ASSEMBLIES, TYP. 'X' GYPSUM BOARD MUST BE APPLIED ON ALL FINISHED SIDES OF THE WALL ASSEMBLY. PROVIDE FIRE TREATED PLYWOOD SUBSTRATE ON TOP OF THE TYPE 'X' GYPSUM SUBSTRATE AT ALL MILLWORK
3. FOR NON-FIRE RATED ASSEMBLIES (AT MILLWORK WALL FINISHES ONLY, UNLESS NOTED OTHERWISE), FIRE TRATED PLYWOOD SUBSTRATE TO BE APPLIED DIRECTLY ONTO THE WALL STUDS (WILL REPLACE THE STANDARD GYPSUM BOARD SUBSTRATE). IN CASES WHERE THERE IS PAINTED GYPSUM BOARD ABOVE THE MILLWORK, THE WALL SUBSTRATE SHOULD TRANSITION FROM FIRE TREATED PLYWOOD TO GYPSUM BOARD
4. PROVIDE 3/4" FIRE TREATED PLYWOOD AT ALL WALLS IN THE MANAGER'S OFFICE, FROM FLOOR TO CEILING. THE FIRE TREATED PLYWOOD SHOULD BE INSTALLED BETWEEN THE WALL STUDS AT ALL INTERIOR SIDES OF THE WALLS, INCLUDING WITHING RATED WALL ASSEMBLIES. THE WALL SUBSTRATE REQUIRED PER THE FLOOR FINISH PLAN WILL THEN BE APPLIED TO THE WALL STUDS

KEYNOTES

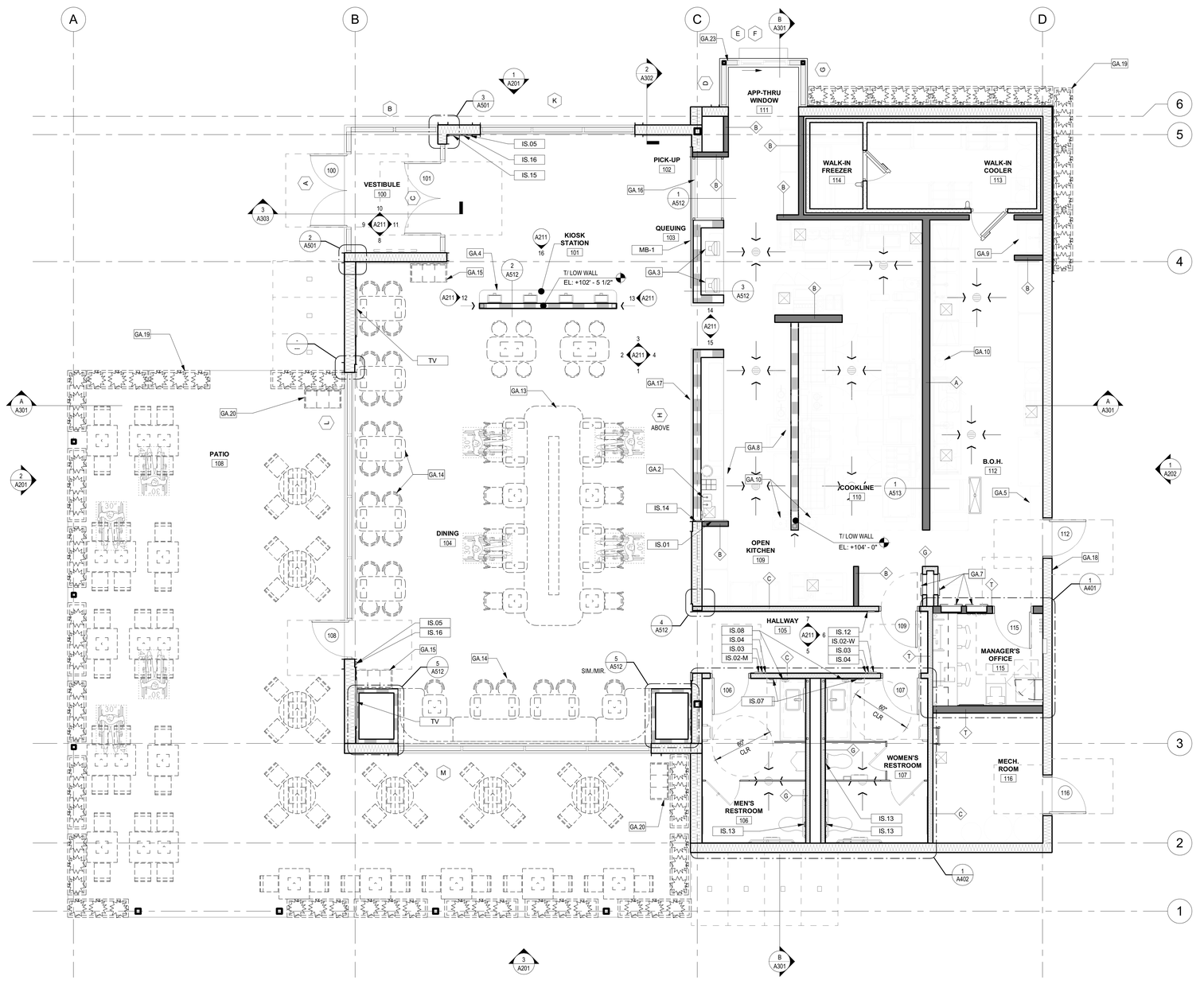
GA.2	CONDIMENT COUNTER BY KEC, REFER TO K-SHEETS
GA.3	P.O.S. STATION, G.C. TO PROVIDE POWER, DATA & BLOCKING AS REQUIRED, VERIFY FINAL LOCATION W/ OWNER PRIOR TO INSTALLATION
GA.4	ORDER COUNTER W/ KIOSKS, REFER TO E-SHEETS, K-SHEETS, & FURNITURE LAYOUT PLAN
GA.5	EMPLOYEE LOCKERS BY KEC, REFER TO K-SHEETS
GA.7	RECESSED ELECTRICAL EQUIPMENT / PANELS, REFER TO E-SHEETS
GA.8	F.R.T. WOOD BLOCKING IN WALL FOR KITCHEN EQUIPMENT, REFER TO K-SHEETS
GA.9	MOP SINK, G.C. TO PROVIDE BLOCKING AS NECESSARY, REFER TO K-SHEETS & P-SHEETS
GA.10	HAND SINK, G.C. TO PROVIDE BLOCKING AS NECESSARY, REFER TO K-SHEETS & P-SHEETS
GA.13	FIXED SEATING & TABLES, INSTALLED BY G.C., REFER TO FURNITURE LAYOUT PLAN, TYP.
GA.14	LOOSE SEATING INSTALLED BY G.C., REFER TO FURNITURE LAYOUT PLAN, TYP.
GA.15	TRASH BINS BY KEC, REFER TO K-SHEETS & FURNITURE PLAN
GA.16	APP PICKUP SHELVES BY G.C., REFER TO INTERIOR ELEVATIONS
GA.17	PICKUP COUNTER & LOW WALL, REFER TO INTERIOR ELEVATIONS, TYP.
GA.18	DOOR BUZZER, REFER TO SITE PLAN
GA.19	EXTERIOR PLANTERS BY G.C., REFER TO FURNITURE LAYOUT PLAN, TYP.
GA.20	EXTERIOR TRASH BINS & RECYCLING BINS BY O.C., REFER TO FURNITURE PLAN
GA.23	APP-THRU PICKUP WINDOW, REFER TO WINDOW SCHEDULE

GENERAL NOTES

1. REFER TO KITCHEN DRAWINGS FOR ALL EQUIPMENT AND ROUGH-IN REQUIREMENTS OF KITCHEN EQUIPMENT
2. PROVIDE IN-WALL FRT WD. BLOCKING FOR MILLWORK, SHELVING, PANELS, T.V.s, ETC. REFER TO KITCHEN DRAWINGS FOR ADDITIONAL INFORMATION
3. ALL PARTITIONS WITH SINKS AND/OR "WET EQUIPMENT", ALL WALLS IN TOILET ROOMS, AND ALL WALLS IN KITCHEN AREAS TO HAVE 5/8" MOISTURE RESISTANT GYPSUM BOARD w/ A 5/8" CEMENT BOARD BASE TO 12" A.F.F., U.N.O. (SMOOTH SIDE OUT)
4. ALL WOOD BLOCKING, FRAMING, PLYWOOD, SUBFLOORS, ETC. TO BE FIRE RETARDANT TREATED (DESIGNATED F.R.T.)
5. MOUNT ALL FIXTURES & ACCESSORIES AT HEIGHTS CONFORMING WITH ALL GOVERNING CODES & A.D.A. REQUIREMENTS
6. ALL CONTRACTORS TO VERIFY EXISTING SITE CONDITIONS BEFORE ANY WORK IS TO BEGIN. NOTIFY ARCHITECT OF DISCREPANCIES, TYP.
7. COORDINATE ELECTRICAL DEVICES AT MILLWORK (PHONE, ETC.) WITH MILLWORKER, OWNER'S AUDIO / VIDEO CONTRACTOR & ELECTRICAL DRAWINGS. PROVIDE SHOP DRAWINGS FOR REVIEW
8. ALL WORK IS TO BE DONE IN ACCORDANCE WITH ALL GOVERNING STATE & LOCAL CODES AND ORDINANCES
9. ARCHITECT TO BE NOTIFIED AFTER FLOOR / WALL LAYOUT FOR REVIEW PRIOR TO CONSTRUCTION
10. PLUG & SEAL ALL OPENINGS IN FLOOR SLAB
11. REFER TO KITCHEN DRAWINGS, P-SHEETS & THE FLOOR FINISH PLAN FOR FLOOR DRAINS, FLOOR SINKS & DEPRESSION LOCATIONS
12. FIRE EXTINGUISHERS SUPPLIED BY G.C., QUANTITY & LOCATIONS TO BE COORDINATED w/ FIRE DEPARTMENT. REFER TO SHEET A002 FOR MORE INFORMATION
13. ALL FLOOR, EXTERIOR WALL, FOUNDATION WALL & ROOF PENETRATIONS TO BE SLEEVED & WATERPROOFED
14. G.C. TO PROVIDE VAPOR RETARDER TO UNDERSIDE OF STRUCTURE AT ALL METAL FRAMED EXTERIOR WALLS. G.C. TO PROVIDE FIBERGLASS BATT INSULATION AT FULL WIDTH OF STUD CAVITY
15. ALL FLOOR AND WALL PENETRATIONS THROUGH RATED ASSEMBLIES TO BE FIRE SEALED AS REQUIRED TO ACHIEVE A FIRE RESISTANCE RATING EQUAL TO THE RATED ASSEMBLY IN WHICH THE PENETRATION OCCURS. REFER TO SHEET A002 FOR ADDITIONAL INFORMATION
16. FIRE TAPE, SAND & PAINT ONLY AT WALLS BEHIND WALK-IN COOLERS / FREEZERS
17. G.C. TO SUBMIT TO OWNER (1) HARD COPY AND (1) ELECTRONIC COPY OF THE OPERATION & MAINTENANCE MANUAL
18. REFER TO TITLE SHEET FOR SUBMITTAL REVIEW MATRIX
19. REFER TO M-SHEETS FOR THE FOLLOWING: ANSUL SYSTEM CONTROL TANK W/ ENCLOSED AGENT TANK, REMOTE ANSUL PULL STATION(S)
20. REFER TO FIRE PROTECTION SHEETS (AND E-SHEETS WHERE APPLICABLE) FOR THE FOLLOWING: SPRINKLER SYSTEM DETAILS, FIRE ALARM CONTROL PANEL, FIRE ALARM MANUAL PULL STATION(S), FIRE ALARM ANNUNCIATOR PANEL
21. REFER TO PLUMBING SHEETS FOR THE CONNECTION POINTS FOR: GAS, GREASE WASTE, CABLE, TELEPHONE, ELECTRICAL CONDUIT
22. REFER TO KITCHEN DRAWINGS FOR BEER AND SODA LINE RUNS
23. LOCATION OF THE KNOX BOX & LOCK SYSTEM TO BE COORDINATED W/ LOCAL FIRE DEPARTMENT
24. 24. PROVIDE 3/4" F.R.T. PLYWOOD BLOCKING @ ALL WALLS ABOVE PREP SINK
25. 25. PROVIDE 3/4" F.R.T. PLYWOOD BLOCKING @ K.D.S. MOUNT LOCATIONS, REFER TO KITCHEN DRAWINGS
26. REFER TO E-SHEETS FOR COVER PLATES / DEVICES FINISHES
27. ALL TARGET ELEVATIONS ARE TAKEN FROM PROJECT T/ FINISH FLOOR +100'-0"
28. G.C. TO IDENTIFY THE MAIN UTILITY SHUTOFF CONNECTIONS WITH PRINTED LABELS FOR WATER, GAS, ELECTRIC AND ANY BASE BUILDING SYSTEM WATER (CHILLED / CONDENSER WATER) – IF THE SHUTOFF IS BELOW THE CEILING, POST LABEL ON THE WALL – IF THE SHUTOFF IS ABOVE THE CEILING, POST LABEL ON THE CEILING TILE OR ACCESS PANEL AND TAG THE SHUTOFF WITH A WIRE HUNG LABEL
29. ALL DIMENSIONS ARE NOMINAL & ARE FROM FACE OF GYPSUM BOARD
30. TEMPORARY SITE CAMERA TO BE IN USE DURING CONSTRUCTION, REFER TO SITE PLAN FOR LOCATION

SIGNAGE, GRAPHICS, & MISC. SCHEDULE

KEY	QTY.	ITEM	MANUFACTURER	MODEL #	RESPONSIBILITY FURNISH	RESPONSIBILITY INSTALL	COMMENTS
IS.01	1	SHACKMEISTER LOGO	OWNER'S VENDOR	--	OWNER	OWNER	--
IS.02-M	1	ADA RESTROOM SIGNAGE - MEN	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.02-W	1	ADA RESTROOM SIGNAGE - WOMEN	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.03	2	ACCESSIBLE SIGN	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.04	2	BABY CHANGE STATION SIGN	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.05	2	NO SMOKING SIGN	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.07	2	HAND DRYER SIGN	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.08	2	EMPLOYEE WASH HANDS SIGN	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.12	1	EMPLOYEE ONLY	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.13	3	WHOA THERE	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.14	1	TRIPLE FILTERED WATER	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK
IS.15	1	OCCUPANCY PLACARD	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK, COORDINATE LOCATION w/ FIRE MARSHALL
IS.16	2	EXIT	--	--	G.C.	G.C.	CONTACT OWNER FOR SIGNAGE ARTWORK, COORDINATE LOCATION w/ FIRE MARSHALL
MB-1	1	MENU BOARD	?	--	OWNER	OWNER	?
TV	2	TV	?	?	OWNER	OWNER	MOUNT B/TV @ 8'-3" AFF, GC TO PROVIDE NECESSARY POWER - REFER TO E-SHEETS



N

1 FLOOR PLAN
1/4" = 1'-0"

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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

REGISTERED ARCHITECT
JAMES R. LEVCHIN
001-020055
EXPIRES: 11/30/22
11/24/20

Drawing Title
GENERAL ARRANGEMENT PLAN

Job No.	Drawn
204461	HB

Scale	Date
As indicated	11/24/20

Sheet No.
A101

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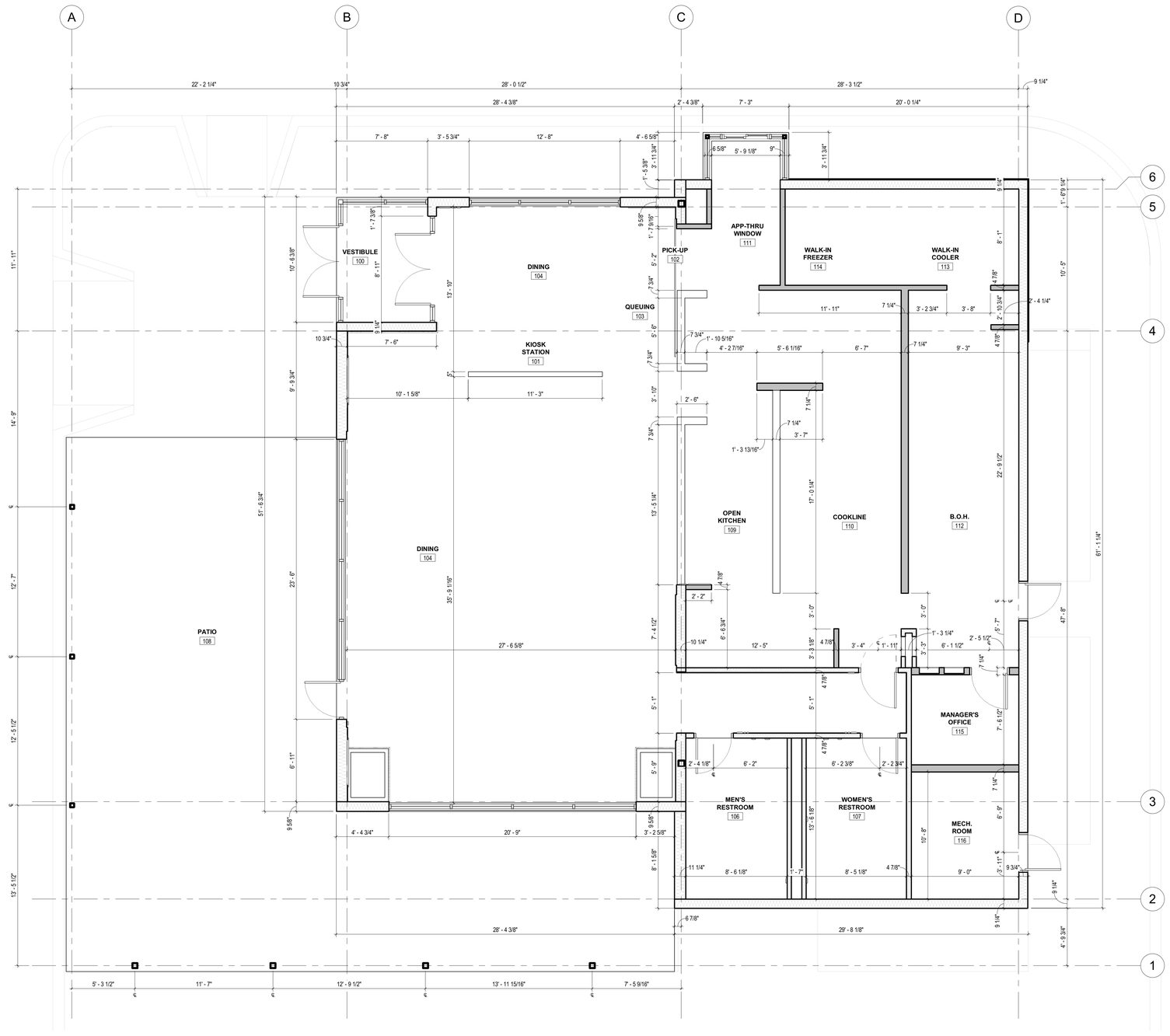
GENERAL NOTES

REFER TO A111 FOR ALL FLOOR PLAN GENERAL NOTES AND KEY NOTES



N

1 DIMENSIONED FLOOR PLAN
1/4" = 1'-0"

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REVISIONS

LICENSED ARCHITECT JAMES R. LONDON 001-020640 STATE OF ILLINOIS
Expires November 30, 2022
11/24/20

Drawing Title
DIMENSIONED FLOOR PLAN

Job No.	Drawn
204461	HB

Scale	Date
As indicated	11/24/20

Sheet No.
A102

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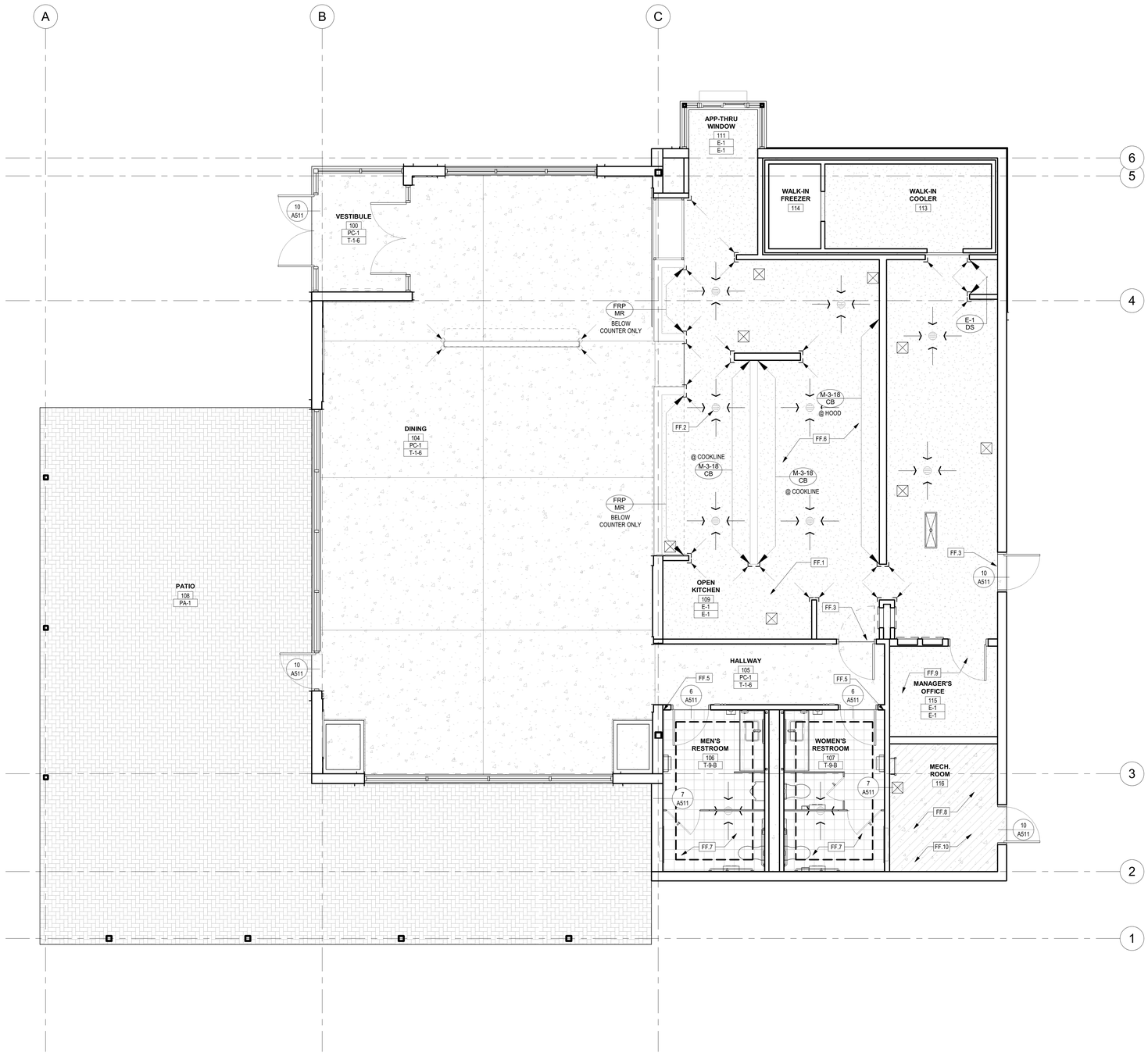

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1 WALL & FLOOR FINISH PLAN
1/4" = 1'-0"

FINISH PLAN GENERAL NOTES

1. ALL FLOOR FINISHES, INCLUDING PATTERNS, TO EXTEND UNDER BOOTH SEATING, TABLES, CHAIRS, KITCHEN EQUIPMENT, AND ALSO EXTEND TO ALL WALLS BELOW COUNTER TOPS
2. REFER TO RCP, INTERIOR ELEVATINS, & THE 'FINISH SCHEDULE' LOCATED ON SHEET A601 FOR MORE INFORMATION ON FINISHES
3. AT BACK OF HOUSE PROVIDE CONTINUOUS SEALANT JOINT @ ALL FRP AND STAINLESS STEEL INTERSECTIONS @ TILE BASE, CEILINGS, DOOR FRAMES, PLUMBING / GAS / ELECTRICAL ROUGH-INS, AND MISCELLANEOUS PENETRATIONS
4. CAULK ALL JOINTS BETWEEN WALL TILE AND DOOR FRAMES COLOR TO MATCH GROUT U.N.O. IN DRAWING SET. INSTALL CLEAR SEALANT JOINTS WHERE WINDOWS ABUT A WOOD / METAL FINISH U.N.O. IN DRAWING SET. INSTALL COLORED SEALANT JOINTS WHERE WINDOWS ABUT AN INTERIOR WALL SURFACE. COLOR TO MATCH STOREFRONT U.N.O. IN DRAWING SET
5. PROVIDE F.R.T. BLOCKING IN KITCHEN WALL AS REQUIRED BY F.S.E.C. FOR EQUIPMENT MILLWORK SHELVES, ETC., VERIFY HEIGHTS & LOCATIONS, REFER TO KITCHEN EQUIPMENT DRAWINGS
6. REFER TO MEP AND KITCHEN DRAWINGS FOR ALL UNDER SLAB WORK
7. REFER TO PLUMBING DRAWINGS FOR EXACT FLOOR DRAIN AND FLOOR SINK LOCATIONS. G.C. TO COORDINATE ALL KITCHEN AND FLOOR DRAWINGS WITH KITCHEN EQUIPMENT PRIOR TO PLACEMENT TO AVOID TABLE LEGS FROM FALLING WITHIN A FLOOR SINK OR ON A FLOOR DRAIN
8. TILE CONTRACTOR TO ENSURE THAT FLOOR TILE IS FLUSH WITH COVED BASE TILE PER HEALTH DEPARTMENT AT KITCHEN AND TOILET ROOMS
9. WALLS AND CEILINGS OF KITCHEN AND PREP AREAS SHALL HAVE A SMOOTH & WASHABLE FINISH
10. G.C. TO ENSURE THAT NEW FLOOR SLAB IS AT AN ACCEPTABLE TOLERANCE LEVEL TO MINIMIZE THE LIPPAGE FOR THE REQUIRED FLOOR FINISH INSTALLATION, REFER TO FINISH SPECIFICATIONS FOR MORE INFORMATION, G.C. TO INFORM ARCHITECT OF DISCREPANCIES
11. FLOOR TILES TO BE NON-SLIP WITH A MIN. SLIP CO-EFFICIENT OF FRICTION OF 0.6 OR BETTER
12. G.C. TO PROVIDE WATERPROOFING 12" UP THE WALL
13. ALL MATERIAL TRANSITIONS TO MEET A.D.A. GUIDELINES
14. ALL FLOOR PENETRATIONS TO BE SEALED, WATERPROOFED, AND FIRE RATED
15. TENANT G.C. TO COORDINATE LOCATION AND QUANTITY OF MOVEMENT JOINTS IN ALL TILE FLOORING WITH DETAILS ON SHEET A511
16. MAXIMUM FLOOR SLOPE IN ANY DIRECTION IS 1 IN 8
17. ALL KITCHEN FLOORS TO HAVE NO MORE THAN 1/8" PER FOOT SLOPE TO FLOOR DRAINS.
18. ALL INTERIOR WOOD BLOCKING TO BE FIRE RETARDANT TREATED (F.R.T.), U.N.O., V.I.F.
19. G.C. TO MODIFY EXISTING CONCRETE FLOOR SLAB AS REQUIRED TO MATCH NEW CONCRETE POUR, U.N.O.
20. PROVIDE ANTI-FRACTURE ISOLATION MEMBRANE AT ALL NEW CONCRETE SLAB JOINTS
21. REFER TO FLOOR PLAN FOR LOW WALL, MILLWORK & WINDOW SILL HEIGHTS, TYP.
22. TEMPORARY SITE CAMERA TO BE IN USE DURING CONSTRUCTION, REFER TO SITE PLAN FOR LOCATION.
23. FOR TILE SIZES OF 15" OR SMALLER, MORTAR BED TO BE NO GREATER THAN 1/4" THICK
24. FOR TILE SIZES GREATER THAN 15", MORTAR BED TO BE NO GREATER THAN 1/16" THICK

SYMBOLS

- FLOOR SINK, REFER TO SHEET A511 FOR WATERPROOFING DETAILS & P-SHEETS FOR MORE INFORMATION
- FLOOR DRAIN, REFER TO SHEET A511 FOR WATERPROOFING DETAILS & P-SHEETS FOR MORE INFORMATION
- DENOTES FLOOR FINISH, REFER TO FINISH SCHEDULE ON SHEET A601
- DENOTES WALL BASE FINISH, REFER TO FINISH SCHEDULE ON SHEET A601
- DENOTES WALL FINISH, REFER TO FINISH SCHEDULE ON SHEET A601
- DENOTES SUBSTRATE, REFER TO SUBSTRATE LEGEND
- INDICATES WATERPROOFING 12" UP BASE OF WALL AND 12" ONTO FLOOR, REFER TO INTERIOR DETAIL 2/A511 G.C. TO USE 30mm POLYETHYLENE CLEAVAGE MEMBRANE (EQUAL TO NOBLESEAL TS) INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND ANSI A108
- STAINLESS STEEL CORNER GUARDS
- INDICATES BLACK ALUMINUM CORNER GUARDS BY SCHLUTER, JOLLY, REFER TO DETAIL 12 / A511

SUBSTRATE LEGEND

MR	MOISTURE-RESISTANT GYPSUM BOARD
CB	CEMENTITIOUS BACKER BOARD
GYP	GYPSUM WALL BOARD
DS	DENS SHIELD

KEYNOTES

FF.1	PROVIDE A LEVEL FLOOR (NO SLOPE) UNDERNEATH THE CUSTARD MACHINE, AREA OF LEVEL FLOOR TO EXTEND 6" BEYOND ALL SIDES OF CUSTARD MACHINE
FF.2	SEAMLESS URETHANE FLOORING FINISH TO DRAIN, TYP.
FF.3	SEAMLESS URETHANE FLOORING FINISH TO DOOR TRANSITION
FF.5	TILE STARTING POINT (FULL TILE)
FF.6	STAINLESS STEEL TO BE INSTALLED ABOVE COUNTERTOP
FF.7	PROVIDE INTEGRAL WATERPROOFING TO RUN 12" UP BASE OF WALL OVER ENTIRE RESTROOM FLOOR
FF.8	BROOM FINISH CONCRETE
FF.9	PAINT MANAGER'S OFFICE WALLS P-1
FF.10	MECHANICAL ROOM TO RECEIVE FRP, REFER TO FINISH SCHEDULE

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REVISIONS

JAMES R. LATIMORE 001-020045 REGISTERED ARCHITECT
Expires 11/30/22
Signature
11/24/20
Date

Drawing Title
WALL & FLOOR FINISH PLAN

Job No.	Drawn
204461	Author

Scale	Date
As indicated	11/24/20

Sheet No.
A103

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SMALLWARES SCHEDULE

NOTE: COORDINATE FINAL LOCATIONS w/ OWNER

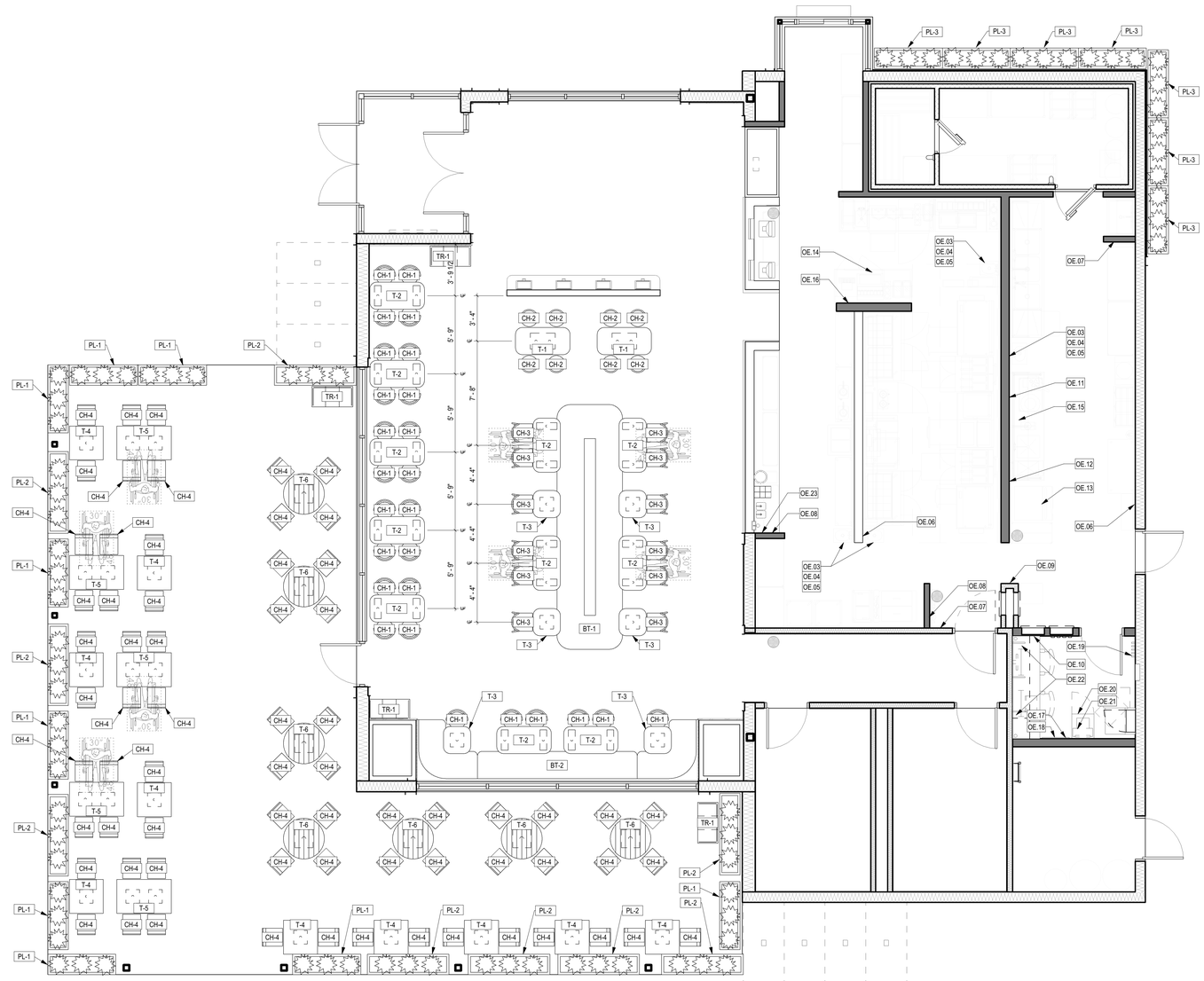
TAG NO.	QTY.	ITEM NAME	VENDOR	MANUFACTURER	MODEL NO.	ITEM NO.	LOCATION	RESPONSIBILITY		NOTES
								FURNISH	INSTALL	
OE.03	4	GLOVE BOX DISPENSER	WASSERSTROM	SAN JAMAR	G0801	464924	AT HAND SINKS	O	GC	QUANTITY DEPENDENT ON QUANTITY OF HAND SINKS HEIGHT: 10" | WIDTH: 5 1/2" | DEPTH: 3 3/4"
OE.04	4	HORIZONTAL SOAP DISPENSER	WASSERSTROM	BOBRICK	2112	66705	AT HAND SINKS	O	GC	QUANTITY DEPENDENT ON QUANTITY OF HAND SINKS HEIGHT: 4 3/4" | WIDTH: 8 1/8" | DEPTH: 3 1/2"
OE.05	4	PAPER TOWEL DISPENSER	N/A	TORK	551028A	-	AT HAND SINKS	O	GC	HEIGHT: 14 3/4" | WIDTH: 13 1/4" | DEPTH: 8 1/8"
OE.06	2	HAIRNET DISPENSER	WASSERSTROM	CELLUCAP	D903	122190	NEAR EMPLOYEE LOUNGE AREA NEAR ENTRANCE TO KITCHEN (ABOVE / BESIDE A HANDSINK)	O	GC	HEIGHT: 6" | WIDTH: 4 1/2" | DEPTH: 4 1/2"
OE.07	2	MOP AND BROOM HOLDER	WASSERSTROM	FRANKLIN MACHINE PRODUCTS	159-1140	6008318	NEAR MOP SINK NEAR THE KITCHEN AND/OR F.O.H.	O	GC	LENGTH: 23 1/2"
OE.08	2	WET FLOOR SIGN HOLDER	WASSERSTROM	GEERPRES	5047	305516	B.O.H., NEAR ENTRANCE TO F.O.H. F.O.H. BEHIND CONDIMENT STATION (IF FEASIBLE)	O	GC	LENGTH: 18"
OE.09	1	FIRST AID CABINET	WASSERSTROM	AFASSCO	186	701106	OUTSIDE MANAGER'S OFFICE	O	GC	HEIGHT: 15" | WIDTH: 16" | DEPTH: 5 3/4"
OE.10	1	SPARE KEY LOCKBOX	OFFICE DEPOT	TS822	-	307405	MANAGER'S OFFICE	O	GC	WALL MOUNTED AND SAND COLOR HEIGHT: 12 11/16" | WIDTH: 8 1/8" | DEPTH: 2 1/2"
OE.11	1	PREP PEG BOARD	N/A	DIAMOND LIFE	PEGBOARD MX	2' x 4'	ON WALL NEAR PREP SINK	O	GC	HEIGHT: 21 1/2" | WIDTH: 45 1/2"
OE.12	1	ICE BUCKET HANGING BRACKET	WASSERSTROM	SAN JAMAR	101558	112509	ON WALL NEAR ICE MACHINE	O	GC	HOLDER FOR 6 GALLON ICE TOTE
OE.13	1	ICE SCOOP - LARGE	WASSERSTROM	SAN JAMAR	SI770	6021258	INSIDE ICE MACHINE	O	O	-
OE.14	1	ICE SCOOP - SMALL	WASSERSTROM	SAN JAMAR	SI770	650629	IN FRONT OF SODA MACHINE	O	O	-
OE.15	1	KNIFE HOLDER	WASSERSTROM	SAN JAMAR	STK1008	6014881	NEAR PREP AREA (AVOID WALL MOUNTED RACK)	O	GC	-
OE.16	1	FRAMED CHOKING SIGN	ALPHAGRAPHICS	N/A	N/A	N/A	ON WALL NEAR CONDIMENT STATION	O	GC	-
OE.17	1	CORK BOARD	CONTAINER STORE	-	10080705	-	MANAGER'S OFFICE	GC	GC	-
OE.18	1	MONTHLY CALENDAR	CONTAINER STORE	-	10063520	-	MANAGER'S OFFICE	GC	GC	-
OE.19	1	COAT HOOK	CONTAINER STORE	-	10016305	-	MANAGER'S OFFICE	GC	GC	-
OE.20	1	SAFE	ACME SAFE CO.	-	B3018	-	MANAGER'S OFFICE	GC	GC	SAFE SHOULD HAVE ELECTRONIC LOCK AND LARGE KEYPAD. HEIGHT: 30 1/2" | WIDTH: 19 1/2" | DEPTH: 21 1/5"
OE.21	1	PRINTER	OFFICE DEPOT	HP OFFICEJET PRO ALL-IN-ONE	9010	-	MANAGER'S OFFICE	O	O	-
OE.22	2	FILE CABINET	OFFICE DEPOT	HID8506	884092	-	MANAGER'S OFFICE (UNDER OR BEHIND DESK)	O	GC	CHECK OFFICE DEPOT SITE FOR SIZE - 23" DEPTH
OE.23	1	ENCLOSED BULLETIN BOARD	SCHOOL OUTFITTERS	NORWOOD COMMERCIAL FURNITURE	NOR-EB0203-I-BULLETIN	-	NEAR REGISTER IN BOH, VISIBLE TO GUEST	GC	GC	HEIGHT: 3'-0" | WIDTH: 2'-0"

FURNITURE NOTES

1. FOR OCUPANCY BASED ON SEAT COUNT, REFER TO "ACTUAL OCCUPANCY LOAD" SCHEDULE ON A002
2. INSTALL ALL PRODUCTS PER MANUFACTURER'S RECOMMENDATIONS
3. G.C. TO FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION AND / OR INSTALLATION OF ANY EQUIPMENT AND ACCESSORIES. G.C. TO IMMEDIATELY NOTIFY ARCHITECT OF ANY DISCREPANCIES

FURNITURE SCHEDULE

ITEM #	TYPE	DESCRIPTION	DIMENSIONS	STYLE / MFG. # / COLOR	NOTES	QUANTITY
EXTERIOR						
CH-4	SEAT/CHAIR	EXTERIOR CHAIR	TBD	TBD	-	68
PL-1	PLANTER	PLANTER - SMALL	TBD	TBD	-	9
PL-2	PLANTER	PLANTER - LARGE	TBD	TBD	-	9
PL-3	PLANTER	PLANTER - CORNER	TBD	TBD	-	7
T-4	TABLE	EXTERIOR 2-TOP	TBD	TBD	-	10
T-5	TABLE	EXTERIOR 4-TOP	TBD	TBD	-	5
T-6	TABLE	EXTERIOR ROUND	TBD	TBD	-	7
TR-1	TRASH UNIT	TRASH	TBD	TBD	-	4
INTERIOR						
CH-1	SEAT/CHAIR	CIRCLE CHAIR	TBD	TBD	-	26
CH-2	SEAT/CHAIR	BAR STOOL	TBD	TBD	-	8
CH-3	SEAT/CHAIR	SQUARE CHAIR	TBD	TBD	-	12
T-1	TABLE	INTERIOR 4-TOP BAR	TBD	TBD	-	2
T-2	TABLE	INTERIOR 4-TOP	TBD	TBD	-	11
T-3	TABLE	INTERIOR 2-TOP	TBD	TBD	-	6



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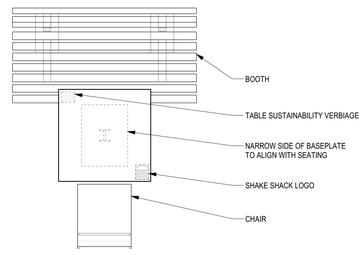
1 FURNITURE LAYOUT PLAN
1/4" = 1'-0"

FURNITURE NOTES



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REGISTERED ARCHITECT
JAMES R. LONDON
001-020348
EXPIRES: 11/30/2022
STATE OF ILLINOIS
Signature
11/24/20
DATE

Drawing Title
FURNITURE LAYOUT PLAN

Job No.	Drawn
204461	Author
Scale	**Date**
As indicated	11/24/20

Sheet No.
A104

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RCP LEGEND

SYMBOL	
	SUPPLY AIR DIFFUSER. ALL DIFFUSERS TO BE ON FLEX DUCTWORK AND TO BE EASILY REMOVABLE FOR ACCESS, REFER TO M-SHEETS FOR MORE INFO, ADD PER M.E.P. ONCE READY
	RETURN AIR DIFFUSER. ALL DIFFUSERS TO BE ON FLEX DUCTWORK AND TO BE EASILY REMOVABLE FOR ACCESS, REFER TO M-SHEETS FOR MORE INFO, ADD PER M.E.P. ONCE READY
X'-X"	INDICATES CEILING HEIGHT. ALL CEILING HEIGHTS INDICATED ARE TO UNDERSIDE OF CEILING FINISH FROM T/ CONCRETE SLAB
X-X	INDICATES CEILING FINISH, REFER TO FINISH SCHEDULE ON SHEET A601
X-X	INDICATES CEILING FINISH SUBSTRATE, REFER TO SUBSTRATE TABLE ON SHEET A601
T.L. = X'-X"	X'-X" - INDICATES TRACK LENGTH
	DOME CAMERA, REFER TO E-SHEETS, COORDINATE QUANTITY AND FINAL LOCATION w/ OWNER, F.O.H. CAMERAS TO BE PENDANT MOUNTED, SUSPENDED AT EL: 11'-6" A.F.F. IN F.O.H. AREAS
SP SP	IN-CEILING SPEAKER, REFER TO E-SHEETS, COORDINATE QUANTITY AND FINAL LOCATION w/ OWNER, AT EL:11'-6" A.F.F., IN F.O.H. AREAS

LIGHT FIXTURE LEGEND

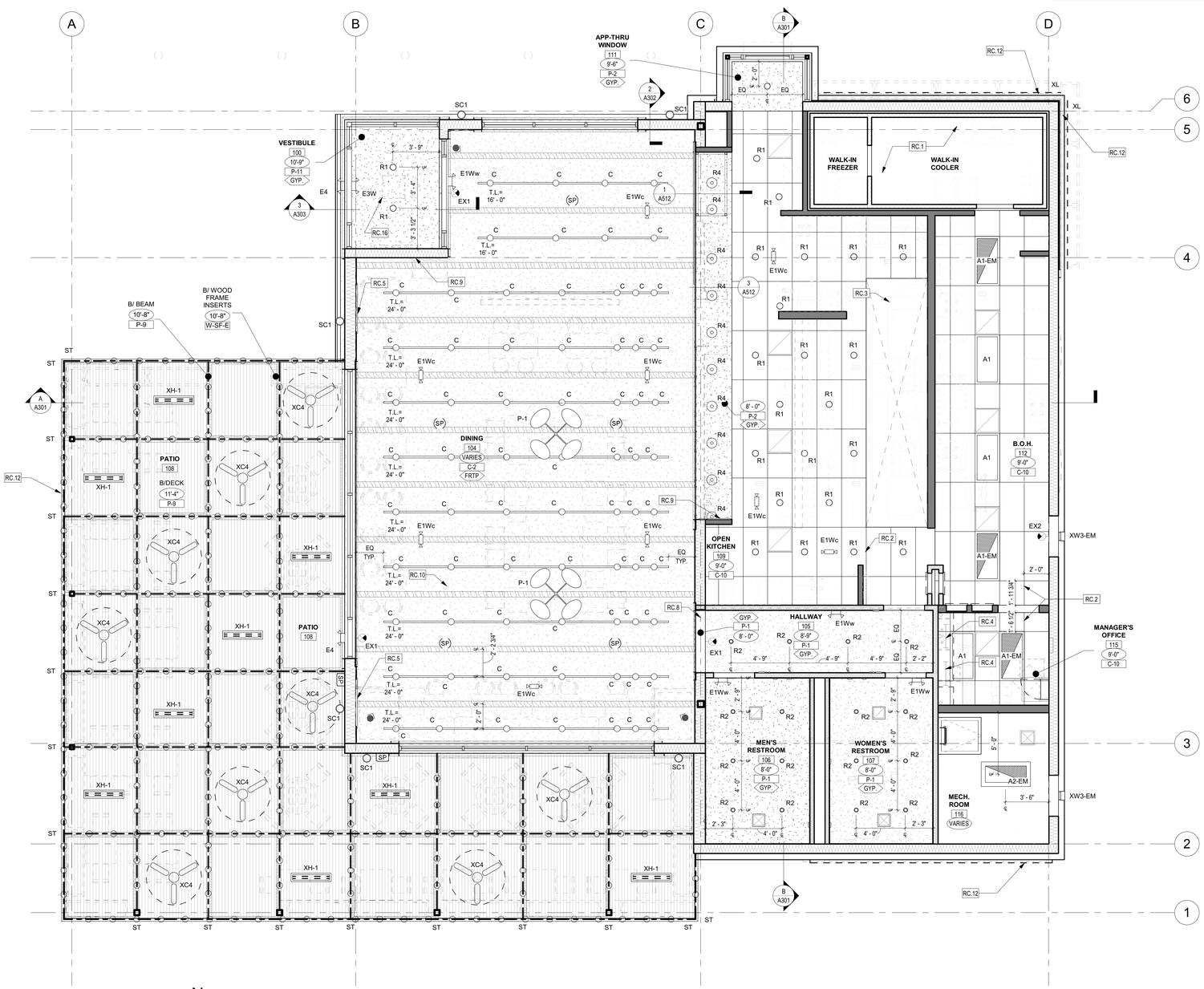
ITEM #	TYPE	SIZE	MOUNT	NOTES
A1	FLOURESCENT LIGHT FIXTURE	2'X4'	RECESSED	ATTAIN LED AT-PN 24 45 37 W
A1-EM	FLOURESCENT LIGHT FIXTURE	2'X4'	RECESSED	ATTAIN LED AT-PN 24 45 37 W EM
A2-EM	FLOURESCENT LIGHT FIXTURE	2'X4'	SUSPENDED	ATTAIN LED AT-PN 24 45 37 W
C	TRACK LIGHT HEAD			
CAM	CAMERA	REFER TO E-SHEETS	PER MANUFACTURER'S RECOMMENDATIONS	COORDINATE QUANTITY AND FINAL LOCATION w/ OWNER
E3W			WALL	
P-1	CUSTOM PENDANT LIGHT	OAH 8'-1", APPROX. 59" W	RIGID PIPE DROP	CONTACT: MATT PROCTOR (847) 717-4700 x228
R1	LENSED LED CAN	REFER TO E-SHEETS	RECESSED	CREE LIGHTING - LR6-18L-27K-A-DR
R2	LED CAN	REFER TO E-SHEETS	RECESSED	JUNO - TC922EDG4-27K-U-W24
R4	MINI DOWNLIGHT	3" DIA.	RECESSED	JUNO - ICRLEDG3-27K-17B-WH
SC1	EXTERIOR SCONCE	5" DIA. , 10" HEIGHT	SURFACE	CENTER OF FIXTURE @ 7'-0" A.F.F., LANTERA 900A 9004-W1-DOWN-RW-LED3090-W-BK-L2-UNV-WRS
SP-1	SPEAKER	REFER TO E-SHEETS	SUSPENDED	COORDINATE QUANTITY AND FINAL LOCATION w/ OWNER
SP-2	SPEAKER	REFER TO E-SHEETS	WALL	COORDINATE QUANTITY AND FINAL LOCATION w/ OWNER
XB	EXTERIOR BOLLARD	2'	FLOOR	IBL-S-2-4QD-3000K-SV-04
XC4	EXTERIOR FAN - BLACK	54" DIA.	SURFACE	MONDO - MND54FB3, CONTACT: LISA NOE, CONTRACT ALLIANCE (773) 330-3308
XH-1	EXTERIOR HEATER - WHITE	REFER TO M & E-SHEETS	SURFACE	WD-6028
XW3-EM	EXTERIOR SCONCE			CENTER OF FIXTURE @ 7'-0" A.F.F., LUMARX XTORBA-N- -CBP
XL	EXTERIOR LED TAPE	DIODE LED - D1-12V-0160 BLAZE	SURFACE	3000K, ALUMINUM CHANNEL, PROVIDE REMOTE POWER SUPPLY
E1Wc	INTERIOR EMERGENCY LIGHT		CEILING	
E1Ww	INTERIOR EMERGENCY LIGHT		WALL	
E4	EXTERIOR EMERGENCY LIGHT		WALL	
EX1	EXIT SIGN	REFER TO E-SHEETS	CEILING / WALL	FRONT OF HOUSE
EX2	EXIT SIGN	REFER TO E-SHEETS	CEILING / WALL	BACK OF HOUSE
ST	HEAVY DUTY STRING LIGHTS	REFER TO E-SHEETS	SURFACE	MOUNT PER EXTERIOR WALL SECTIONS

RCP GENERAL NOTES

1. ALL CEILING HEIGHTS ARE TAKEN FROM PROJECT T/ FLOOR FINISH +/- 100'-0"
2. REFER TO E-SHEETS FOR ADDITIONAL LIGHTING INFORMATION INCLUDING MANUFACTURER, FIXTURE MODEL, SPECIFICATIONS, FINISHS & SUPPLEMENTARY NOTES & REQUIREMENTS
3. CONTRACTOR TO SUBMIT ALL LIGHTING CUT SHEETS TO ARCHITECT FOR APPROVAL PRIOR TO ORDERING. CONTRACTOR TO VERIFY ALL LIGHTING CATALOG NUMBERS WITH FIXTURE DESCRIPTION AS SHOWN IN THE E-SHEETS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES
4. CONTRACTOR TO INFORM ARCHITECT OF ANY LIGHT FIXTURE DISCREPANCIES BETWEEN THE ARCHITECTURAL DRAWINGS & E-SHEETS
5. LOCATE ALL LIGHT FIXTURES IN THE CENTER OF ACOUSTICAL CEILING TILES IN THE OPEN KITCHEN & ALL FRONT OF HOUSE (F.O.H.) AREAS, U.N.O. ALIGN LIGHT FIXTURES IN THESE AREAS IN BOTH DIRECTIONS PER R.C.P., U.N.O. CEILING GRID TO BE LAID OUT AS SHOWN ON THE R.C.P. SO THAT ALIGNMENT IS CONSISTENT, U.N.O. FIELD VERIFY GRID LAYOUT FOR PROPER LIGHT FIXTURE LAYOUT
6. IF NOT SHOWN ON DRAWINGS, G.C. MUST PROVIDE A MINIMUM 24" x 24" ACCESS PANEL TO ALL EQUIPMENT WHICH REQUIRE MAINTENANCE ACCESS THAT ARE LOCATED ABOVE GYP. BD. CEILINGS. PAINT ACCESS PANEL TO MATCH COLOR OF ADJACENT CEILING, U.N.O. COORDINATE WITH ALL RELATED CONTRACTORS INCLUDING HVAC, PLUMBING & ELECTRICAL
7. CONTRACTOR TO COORDINATE RECESSED CAN LIGHT CLEARANCE REQUIREMENTS PER SPECIFICATIONS WITH ABOVE-CEILING UTILITES PRIOR TO COMMENCING UTILITY WORK. NOTIFY ARCHITECT OF ANY CONFLICTS
8. PAINT ALL RECESSED DOWNLIGHT TRIM RINGS TO MATCH ADJACENT CEILING FINISHES IN FRONT OF HOUSE (F.O.H.) AREAS, U.N.O.
9. ALL EXPOSED DUCTWORK, PIPING, DIFFUSERS, & CONDUIT TO MATCH ADJACENT FINISHES AS INDICATED ON THE RCP, U.N.O.
10. ALL GYP. BD. CEILINGS TO RECEIVE PAINT, U.N.O., REFER TO RCP FOR LOCATIONS AND FINISHES
11. REFER TO SITE PLAN, EXTERIOR ELEVATIONS, INTERIOR ELEVATIONS AND ROOF PLAN FOR ADDITIONAL LIGHTING INFORMATION & LOCATIONS NOT SHOWN ON THE RCP
12. ELECTRICAL CONTRACTOR TO VERIFY ALL LOCATIONS OF WALL MOUNTED CLOCK, ELECTRICAL OUTLETS, J-BOXES, ITEMS PROVIDED BY THE OWNER'S CONTRACTOR AND OWNER PROVIDED ITEMS PRIOR TO INSTALLATIONS. REFER TO E-SHEETS FOR MORE INFORMATIONS. CONTRACTOR TO NOTIFY ARCHITECT OF ANY DISCREPANCIES & CONFLICTS
13. G.C. TO PROVIDE POWER & BLOCKING AS REQUIRED FOR ALL EXTERIOR SIGNAGE, U.N.O. COORDINATE WITH OWNER'S SIGNAGE CONTRACTOR
14. G.C. TO INSTALL CONDUIT AND PULL STRINGS IN CEILING AS REQUIRED BY CODE. COORDINATE WITH OWNER'S SECURITY & SOUND SYSTEM VENDOR
15. G.C. TO COORDINATE LOCATION OF ALL FIRE ALARM DEVICES WITH OWNER PRIOR TO INSTALLATION. NO FIRE ALARM DEVICES SHALL BE INSTALLED ON ANY WALLS WITH THE MENU BOARD UNLESS REQUIRED BY CODE
16. CONTRACTOR TO INFORM ARCHITECT OF ANY LIGHT FIXTURE CONFLICTS w/ DUCTWORK, PLUMBING, & ANY ISSUES NOT SHOWN IN DRAWINGS PRIOR TO INSTALLATION
17. REFER TO E-SHEETS FOR DIMMER PANEL LOCATIONS
18. REFER TO FIRE PROTECTION SHEETS FOR PULL STATION LOCATIONS
19. NO TV OR OTHER EXPOSED WIRES SHOULD BE VISIBLE BY THE PUBLIC THROUGH THE STOREFRONT WINDOWS. USE WIRE MANAGEMENT TO CONCEAL
20. ALIGN SPRINKLERS w/ LIGHT FIXUTRES AS REQUIRED
21. PRIOR TO INSTALLATION OF J-BOXES & WIRING, G.C. TO VERIFY W/ OWNER, TYP.
22. CONCEALED SPRINKLER HEAD CAP FINISHES TO BE PRE-FINISHED WHITE AT SERVICE AREAS. ALL FINISHES AT DINING, RESTROOM, AND OTHER PUBLIC AREAS TO BE CONFIRMED WITH ARCHITECT PRIOR TO ORDERING
23. TEMPORARY SITE CAMERA TO BE IN USE DURING CONSTRUCTION, REFER TO SITE PLAN FOR LOCATION

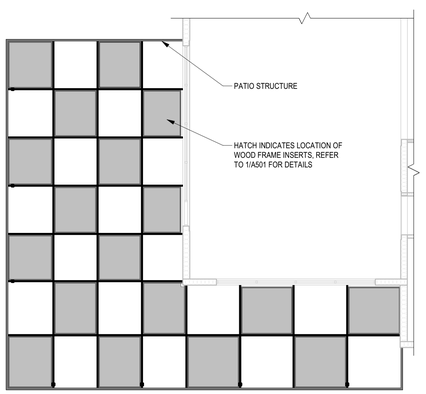
KEYNOTES

RC.1	WALK-IN COOLER CEILING & LIGHTING BY KEC, REFER TO K-SHEETS
RC.2	CEILING GRID STARTING POINT
RC.3	KITCHEN EXHAUST HOOD, PROVIDE STRUCTURAL SUPPORT AS REQUIRED, REFER TO S-SHEETS & M-SHEETS
RC.4	PLUG-IN OFFICE LIGHT FIXTURE UNDER SHELVES BY G.C., REFER TO ENLARGED OFFICE PLAN FOR MORE INFORMATION AND E-SHEETS
RC.5	T.V. & MOUNT BY OWNER, G.C. TO PROVIDE DATA & POWER AS REQUIRED, PRIOR TO INSTALLATION OF J-BOXES & WIRING, G.C. TO VERIFY W/ OWNER, REFER TO INTERIOR ELEVATIONS
RC.8	INTERIOR SIGN CHANNEL BY O.C., G.C. TO PROVIDE POWER & BLOCKING AS NECESSARY, COORDINATE W/ O.C., REFER TO INTERIOR ELEVATIONS FOR ADDITIONAL INFORMATION
RC.9	INTERIOR NEON SIGNAGE BY O.C, G.C. TO PROVIDE POWER & BLOCKING AS NECESSARY, COORDINATE W/ O.C., REFER TO INTERIOR ELEVATIONS & E-SHEETS
RC.10	ACOUSTIC PANELS TO BE APPLIED TO UNDERSIDE OF DECKING, REFER TO FINISH SCHEDULE
RC.12	EXTERIOR INTERNALLY LIT SIGNAGE BY O.C., G.C. TO PROVIDE POWER, J-BOXES & BLOCKING AS NECESSARY, COORDINATE W/ O.C., REFER TO ELEVATIONS FOR ADDITIONAL SIGNAGE LOCATIONS
RC.16	SURFACE MOUNTED ELECTRIC HEATER, REFER TO E-SHEETS



N

1 REFLECTED CEILING PLAN
1/4" = 1'-0"



2 Patio Wood Insert Key Plan
1/8" = 1'-0"

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REVISIONS

JAMES R. LICHTENAU 001-010045 STATE OF ILLINOIS
Expires 11/30/ 22
Signature
11/24/20
Date

Drawing Title
REFLECTED CEILING PLAN

Job No.	Drawn
204461	Author

Scale	Date
As indicated	11/24/20

Sheet No.
A105

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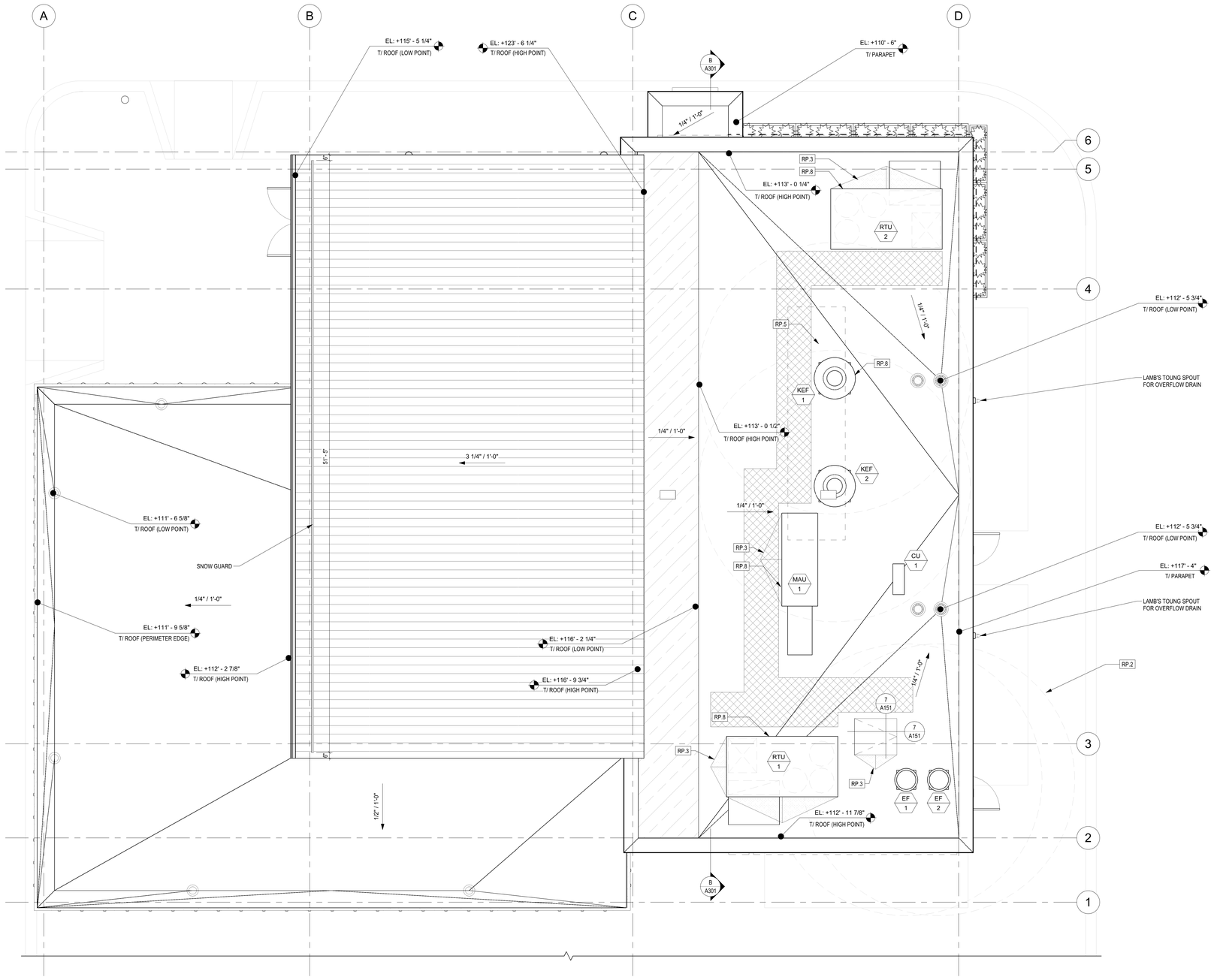

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1 ROOF PLAN

1/4" = 1'-0"

GENERAL NOTES

1. ALL TARGET ELEVATIONS ARE TAKEN FROM PROJECT FINISH FLOOR (+/- 100'-0")
2. NO PENETRATIONS WITHIN 12" OF ANY PARAPET, U.N.O.
3. ALL SEALANTS & WATERPROOF MASTICS TO BE COMPATIBLE WITH THE MATERIAL WHICH THEY WILL COME IN CONTACT WITH CAUSING NO DELETERIOUS EFFECTS
4. G.C. TO COORDINATE INSTALLATION OF NEW ROOFING EQUIPMENT w/OTHER TRADES. REPORT CONFLICTS w/ITEMS INSTALLED BY OTHER TRADES TO ARCHITECT
5. ALL PLUMBING VENTS SHALL EXTEND ABOVE THE FINISHED SURFACE OF THE ROOF SYSTEM AS REQUIRED TO PROVIDE FOR A MINIMUM OF 8" BASE FLASHING
6. ALL EXPOSED METAL FLASHING/ TRIM PIECES TO BE PRE-FINISHED, U.N.O., PROVIDE PRE-FINISHED OR FIELD PAINT FLASHING ONLY AS NOTED
7. PROVIDE TAPERED INSULATION CRICKETS 1/4" PER FOOT MINIMUM SLOPE @ HIGH SIDE OF ALL NEW MECHANICAL UNITS TO SHED WATER AROUND AND MAINTAIN POSITIVE ROOF DRAINAGE
8. ALL WD. BLOCKING AT ROOF EDGES, RIDGES AND ALL INSTALLATIONS TO BE FIRE TREATED (F.R.T.)
9. ALL EXTERIOR METALS TO BE CORROSION-RESISTANT, PROTECT ALL DISSIMILAR METALS FROM DIRECT CONTACT
10. ALL DRIP EDGES TO HAVE HEMMED EDGES, TYP.
11. REFER TO SPECIFICATIONS FOR ROOFING SYSTEM PERFORMANCE CRITERIA
12. CONTRACTOR TO VERIFY THE LOCATIONS OF ALL ROOF DRAINS, ROOF PENETRATIONS & OTHER ROOF ELEMENTS NOT SHOWN IN THIS PLAN INCLUDING BUT NOT LIMITED TO ROOF VENTS, ROOF TOP UNITS, PITCH BOXES AND SO FORTH. REFER TO M-SHEETS
13. GC TO SPEC DUROLAST PVC AS NOTED IN SPEC SHEETS. GC TO PRICE ALTERNATE FIRESTONE EPDM SYSTEM

SYMBOL LEGEND

X / X	ROOF MECHANICAL EQUIPMENT TAG, REFER TO M-SHEETS
	INDICATES ROOF PIPING RUNS, REFER TO P-SHEETS
	INDICATES AIR INTAKE DIRECTION

KEYNOTES

RP.2	DASHED LINE REPRESENTS EXHAUST FAN BOUNDARY, REFER TO M-SHEETS
RP.3	ROOF CRICKET, TYP.
RP.5	DASHED LINE INDICATES KITCHEN HOOD BELOW
RP.8	ROOF MECHANICAL EQUIPMENT, REFER TO M-SHEETS

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JAMES R. LICOCCHI
001-020345
EXPIRATION DATE

Expires November 30, 2021

Signature 11/24/20 Date

Drawing Title

ROOF PLAN

Job No.	Drawn
204461	Author

Scale	Date
As indicated	11/24/20

Sheet No.

A150

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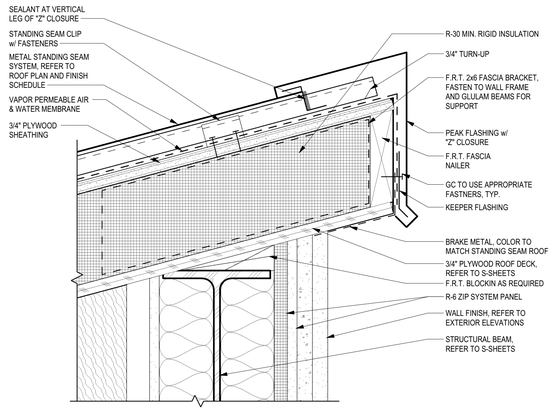
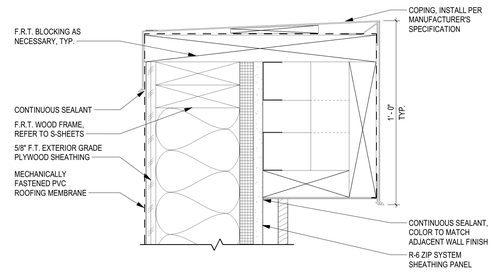
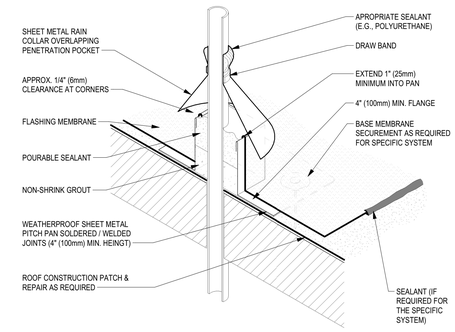


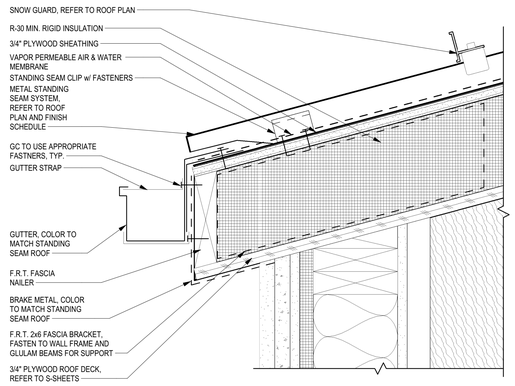
11 SHED ROOF HIGH POINT COPING
3" = 1'-0"



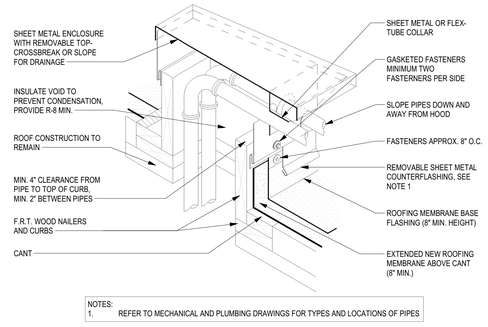
8 TYP. PARAPET COPING DETAIL
3" = 1'-0"



4 AXONOMETRIC PENETRATION POCKET
1 1/2" = 1'-0"



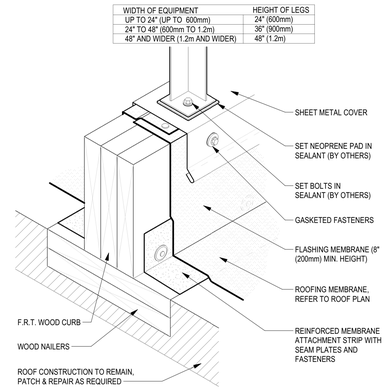
9 SHED ROOF LOW POINT COPING
3" = 1'-0"



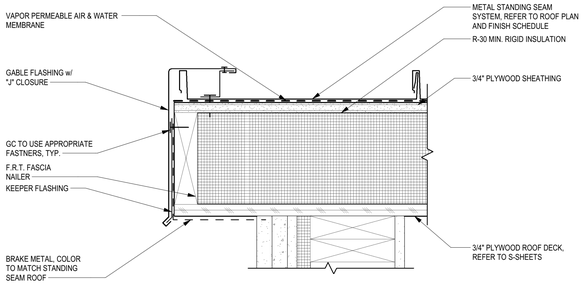
NOTES:
1. REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR TYPES AND LOCATIONS OF PIPES

6 TYPICAL MULTIPLE PIPE PENETRATION DETAIL
1 1/2" = 1'-0"

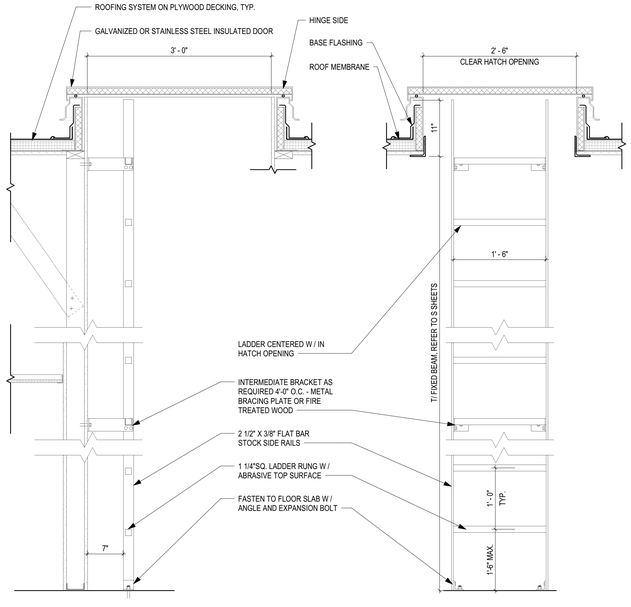
WIDTH OF EQUIPMENT	HEIGHT OF LEGS
UP TO 24" (UP TO 600mm)	24" (600mm)
24" TO 48" (600mm TO 1.2m)	36" (900mm)
48" AND WIDER (1.2m AND WIDER)	48" (1.2m)



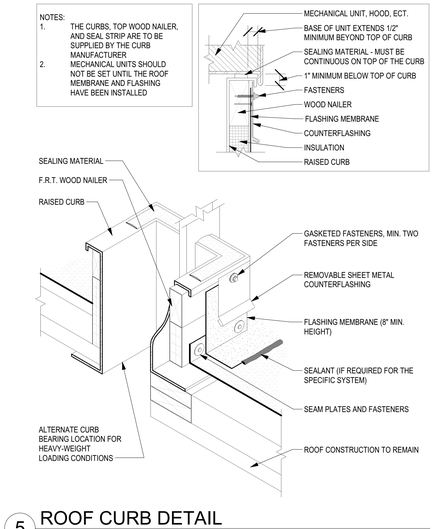
3 AXONOMETRIC EQUIPMENT SUPPORT RAIL
1 1/2" = 1'-0"



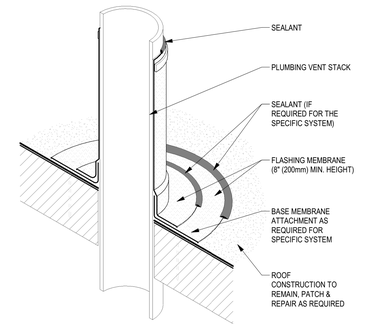
10 SHED ROOF SIDE COPING
3" = 1'-0"



7 ROOF HATCH DETAIL
1" = 1'-0"



5 ROOF CURB DETAIL
1 1/2" = 1'-0"



2 AXONOMETRIC PLUMBING VENT (FIELD WRAP)
1 1/2" = 1'-0"

1 SERVICE WALKWAY DETAIL
1 1/2" = 1'-0"

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JAMES R. LATIMORE
001-020026
STATE OF ILLINOIS
Expires 11/30/ 22
Signature
11/24/20
Date

Drawing Title
ROOF DETAILS

Job No.	Drawn
204461	Author
Scale	Date
As indicated	11/24/20

Sheet No.
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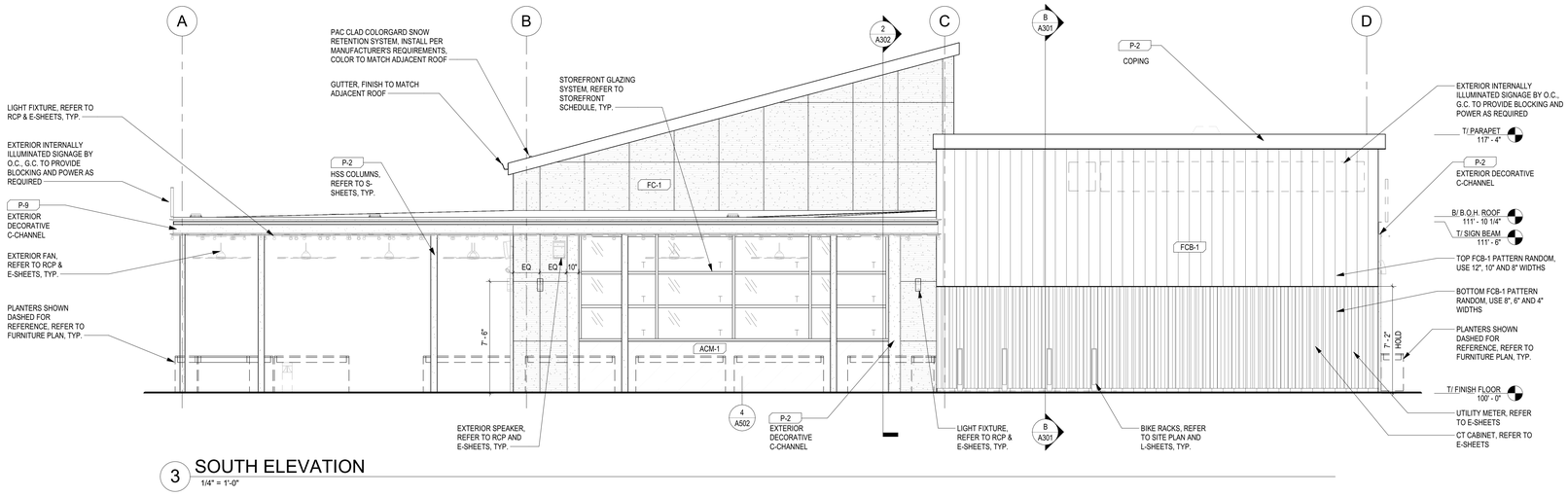
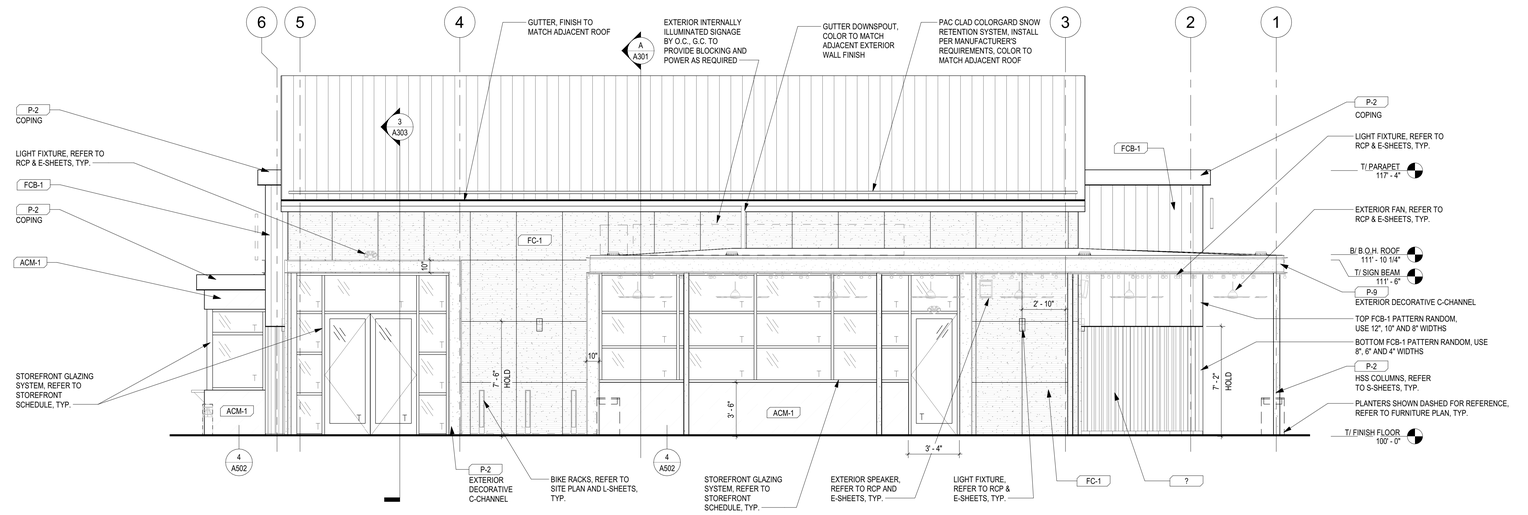


3 SOUTH ELEVATION
1/4" = 1'-0"



2 WEST ELEVATION
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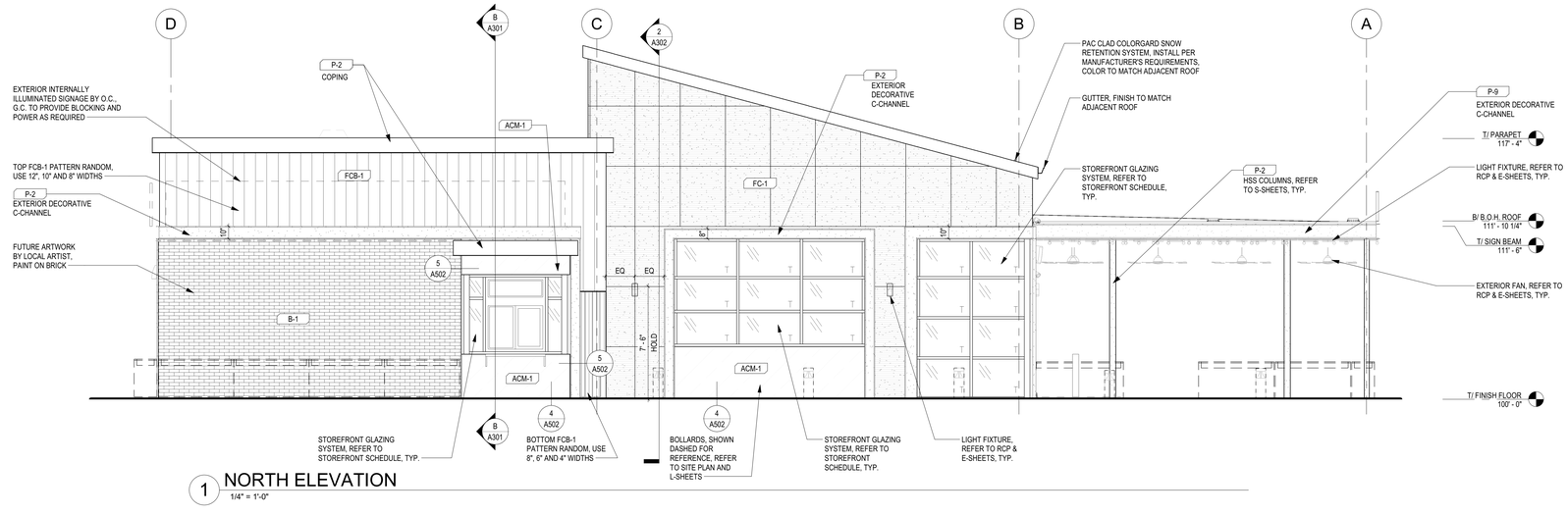

1 NORTH ELEVATION
1/4" = 1'-0"

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Drawing Title
EXTERIOR ELEVATIONS

Job No.	Drawn
204461	Author

Scale	Date
1/4" = 1'-0"	11/24/20

Sheet No.
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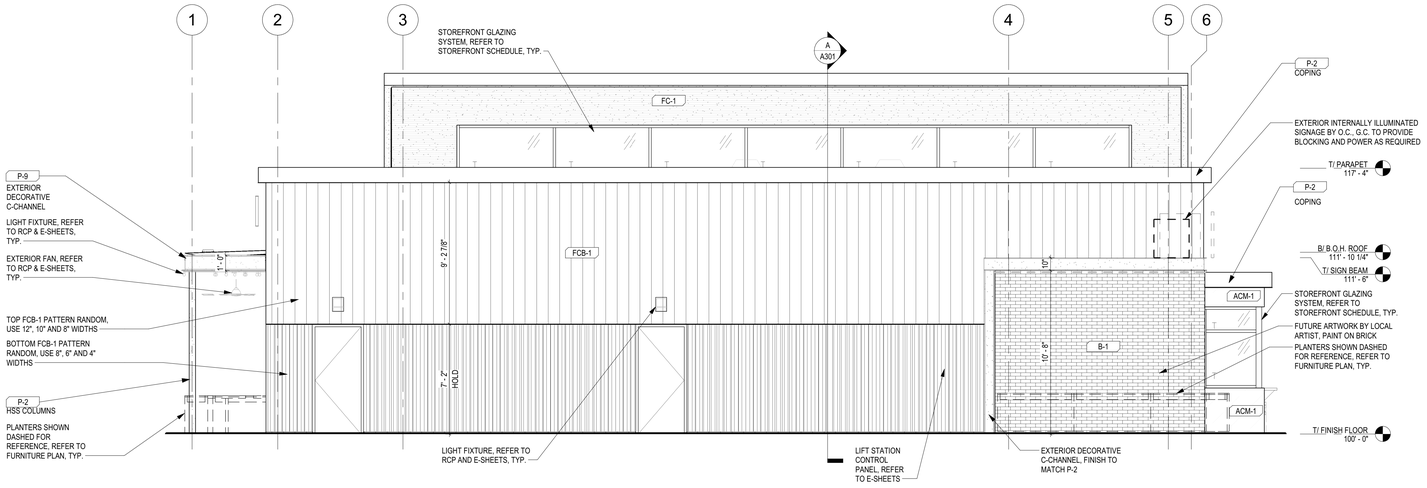

1 EAST ELEVATION
1/4" = 1'-0"

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	11/09/20	ISSUE FOR LL REVIEW

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JAMES R. LONDON
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EXPIRES: 11/30/2022
STATE OF ILLINOIS

11/24/20

Drawing Title
EXTERIOR ELEVATIONS

Job No.	Drawn
204461	Author

Scale	Date
1/4" = 1'-0"	11/24/20

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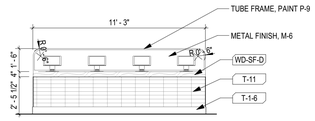
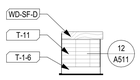


16 INTERIOR ELEVATION
1/4" = 1'-0"



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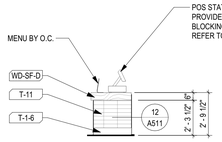
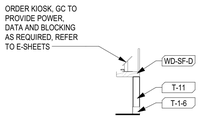
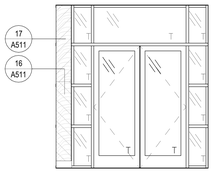


14 INTERIOR ELEVATION
1/4" = 1'-0"

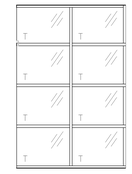
13 INTERIOR ELEVATION
1/4" = 1'-0"



12 INTERIOR ELEVATION
1/4" = 1'-0"

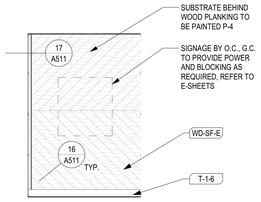


11 INTERIOR ELEVATION
1/4" = 1'-0"



10 INTERIOR ELEVATION
1/4" = 1'-0"

9 INTERIOR ELEVATION
1/4" = 1'-0"



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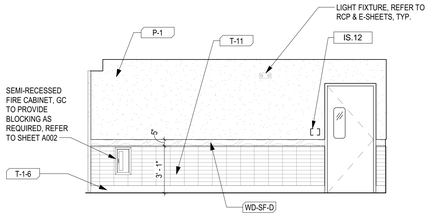
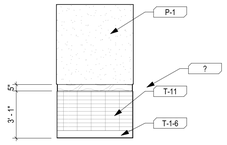


7 INTERIOR ELEVATION
1/4" = 1'-0"



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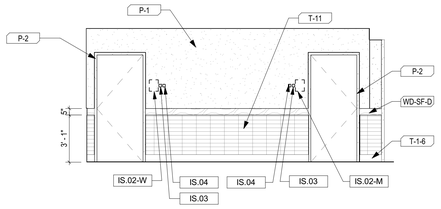
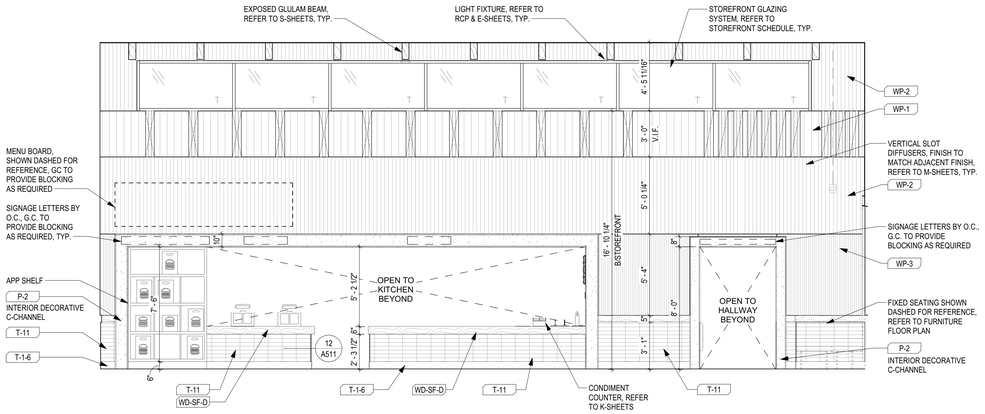
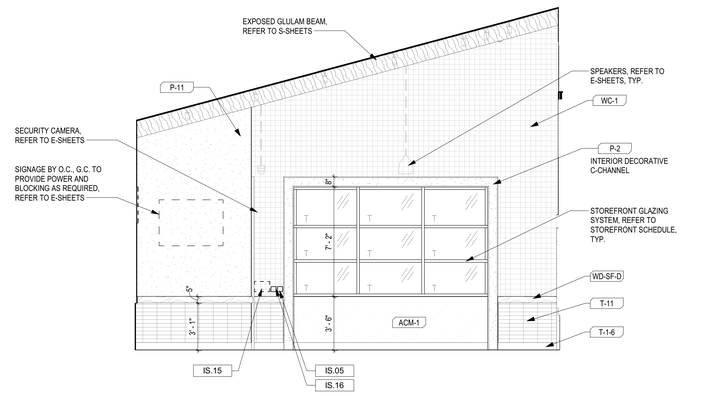
1/4" = 1'-0"



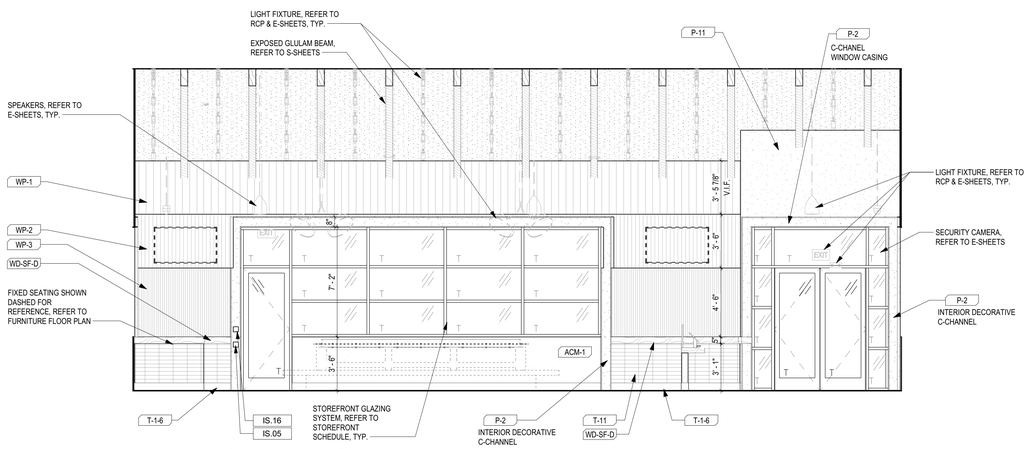
5 INTERIOR ELEVATION
1/4" = 1'-0"



4 INTERIOR ELEVATION
1/4" = 1'-0"



3 INTERIOR ELEVATION
1/4" = 1'-0"



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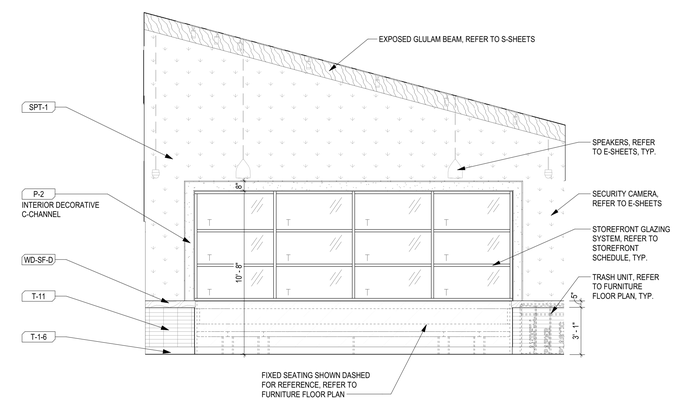
1/4" = 1'-0"



1 INTERIOR ELEVATION
1/4" = 1'-0"

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SHAKE SHACK
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SHACK #1345

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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JAMES R. LEDBETTER
001-020245
STATE OF ILLINOIS
Expires 11/30/ 23
Signature
11/24/20
Date

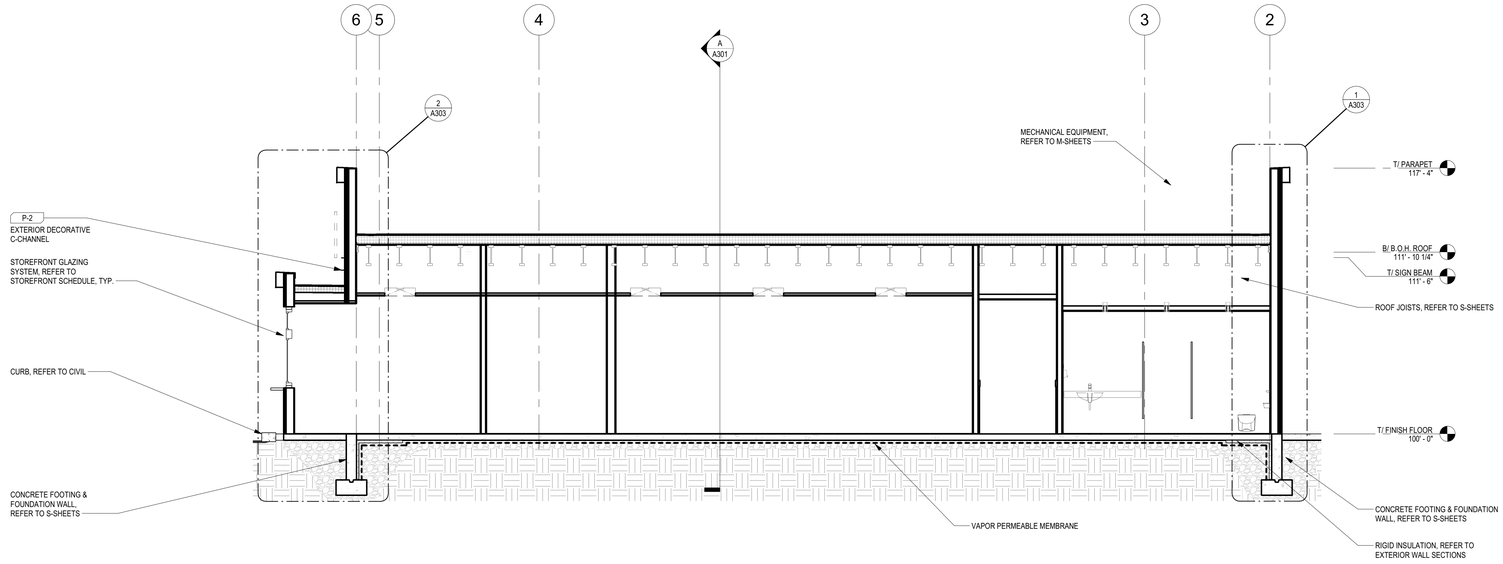
Drawing Title
INTERIOR ELEVATIONS

Job No.	Drawn
204461	Author

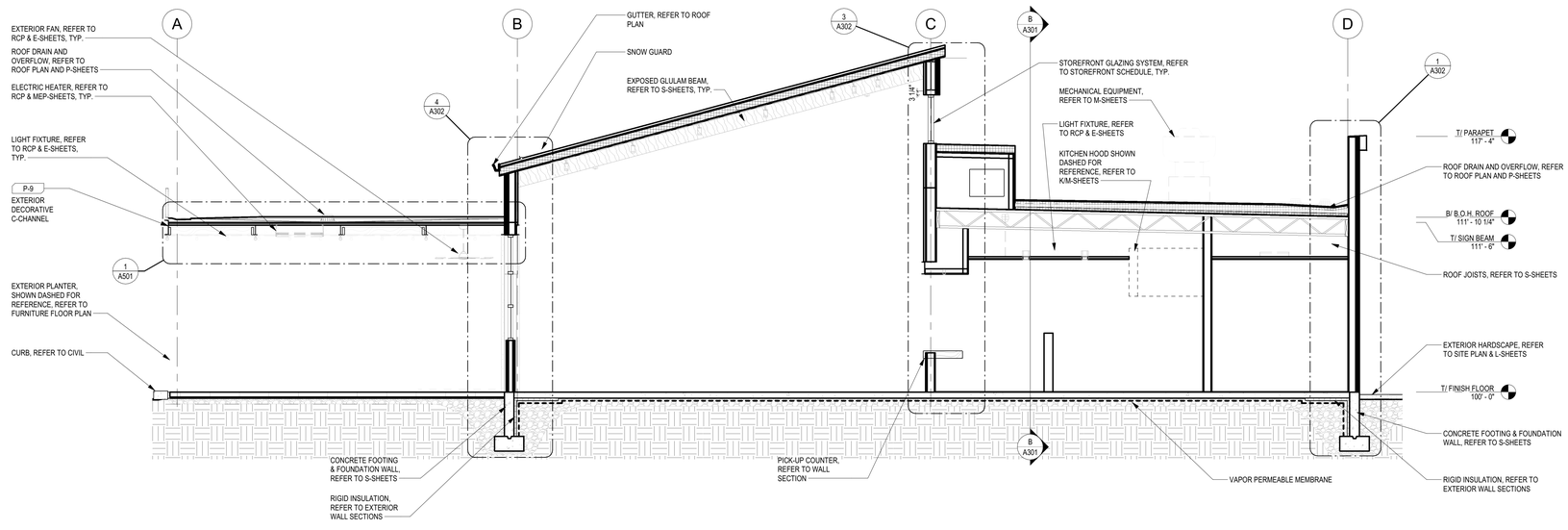
Scale	Date
1/4" = 1'-0"	11/24/20

Sheet No.
A211

11/24/2020 6:02:21 PM C:\Users\mkurdaliev\Documents\204461_R21_A_SHAKE SHACK OAK LAWN_CENTRAL_mkurdaliev.rvt



B BUILDING SECTION B-B
1/4" = 1'-0"



A BUILDING SECTION A-A
1/4" = 1'-0"

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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JAMES R. LUCIANI
001-020348
STATE OF ILLINOIS
EXPIRES 11/30/22
11/24/20

Drawing Title
BUILDING SECTIONS

Job No.	Drawn
204461	Author

Scale	Date
1/4" = 1'-0"	11/24/20

Sheet No.
A301

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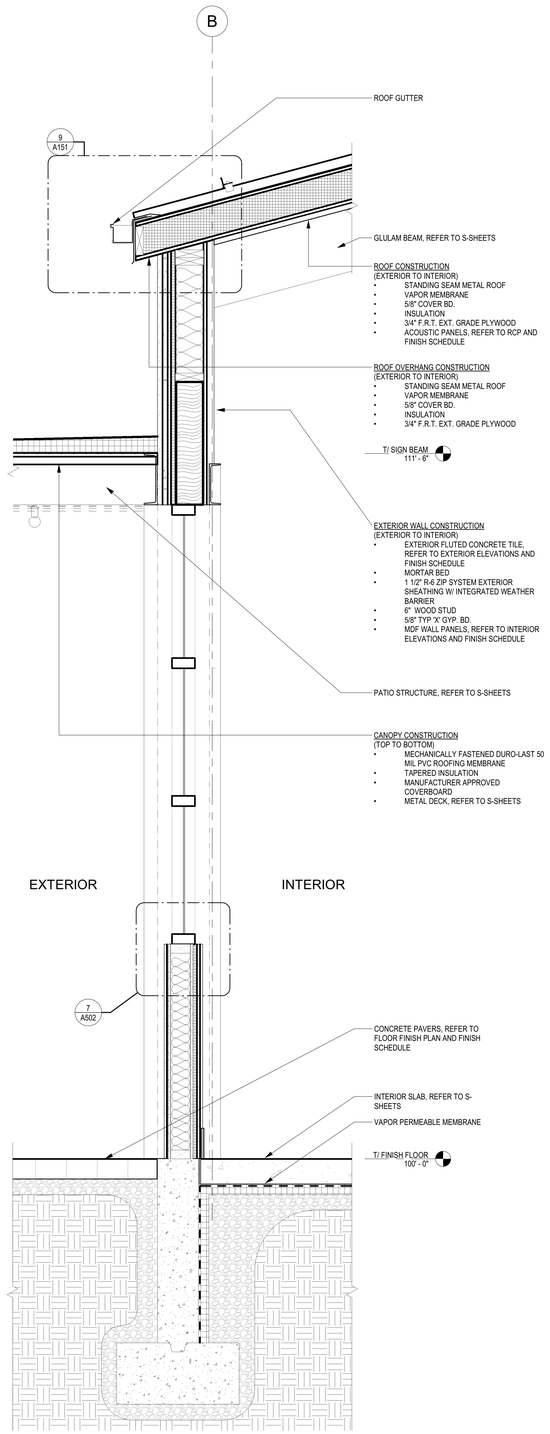
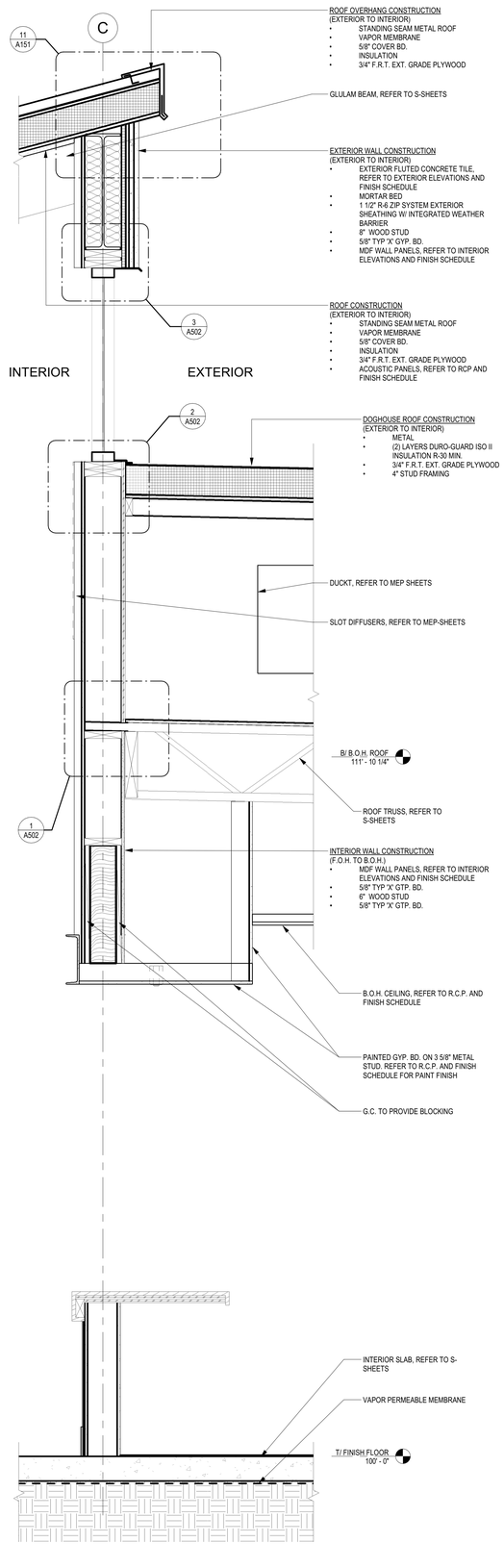


4 WALL SECTION
1" = 1'-0"



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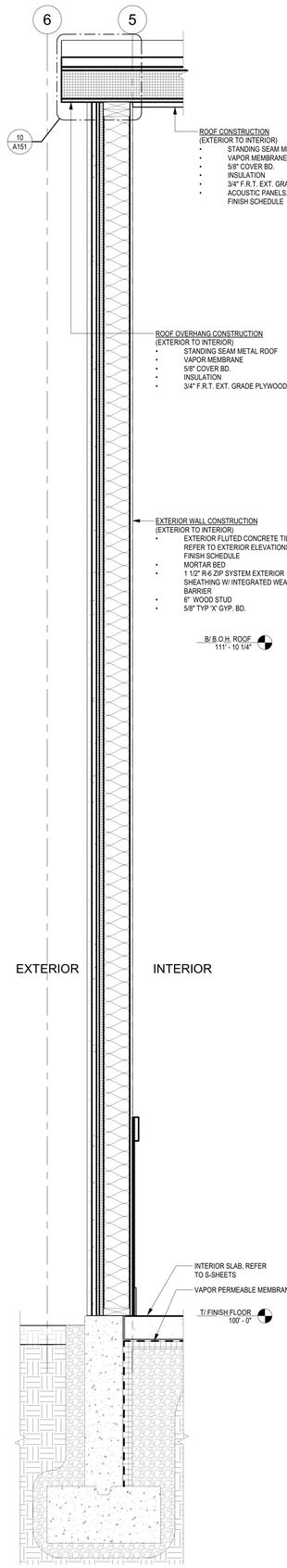

2 Section 2
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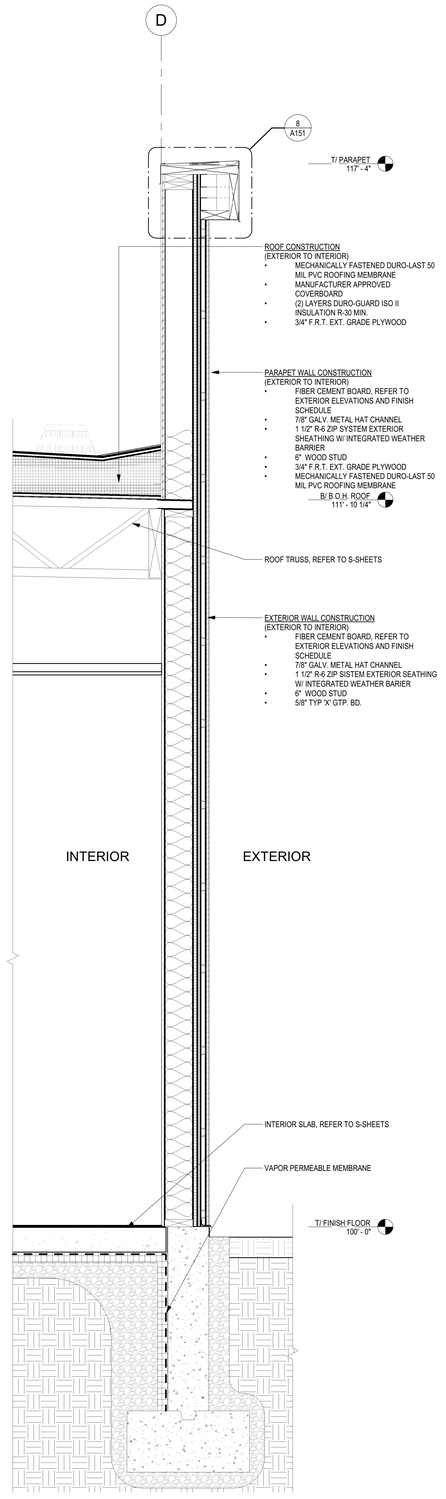

1 WALL SECTION
1" = 1'-0"

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Oak Park, Illinois
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SHAKE SHACK

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SHACK #1345

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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

JAMES R. LEVCHUK
001-020058
REGISTERED ARCHITECT
STATE OF ILLINOIS
Expires 11/30/ 22
Signature
11/24/20
Date

Drawing Title
WALL SECTIONS

Job No.	Drawn
204461	Author

Scale	Date
1" = 1'-0"	11/24/20

Sheet No.
A302

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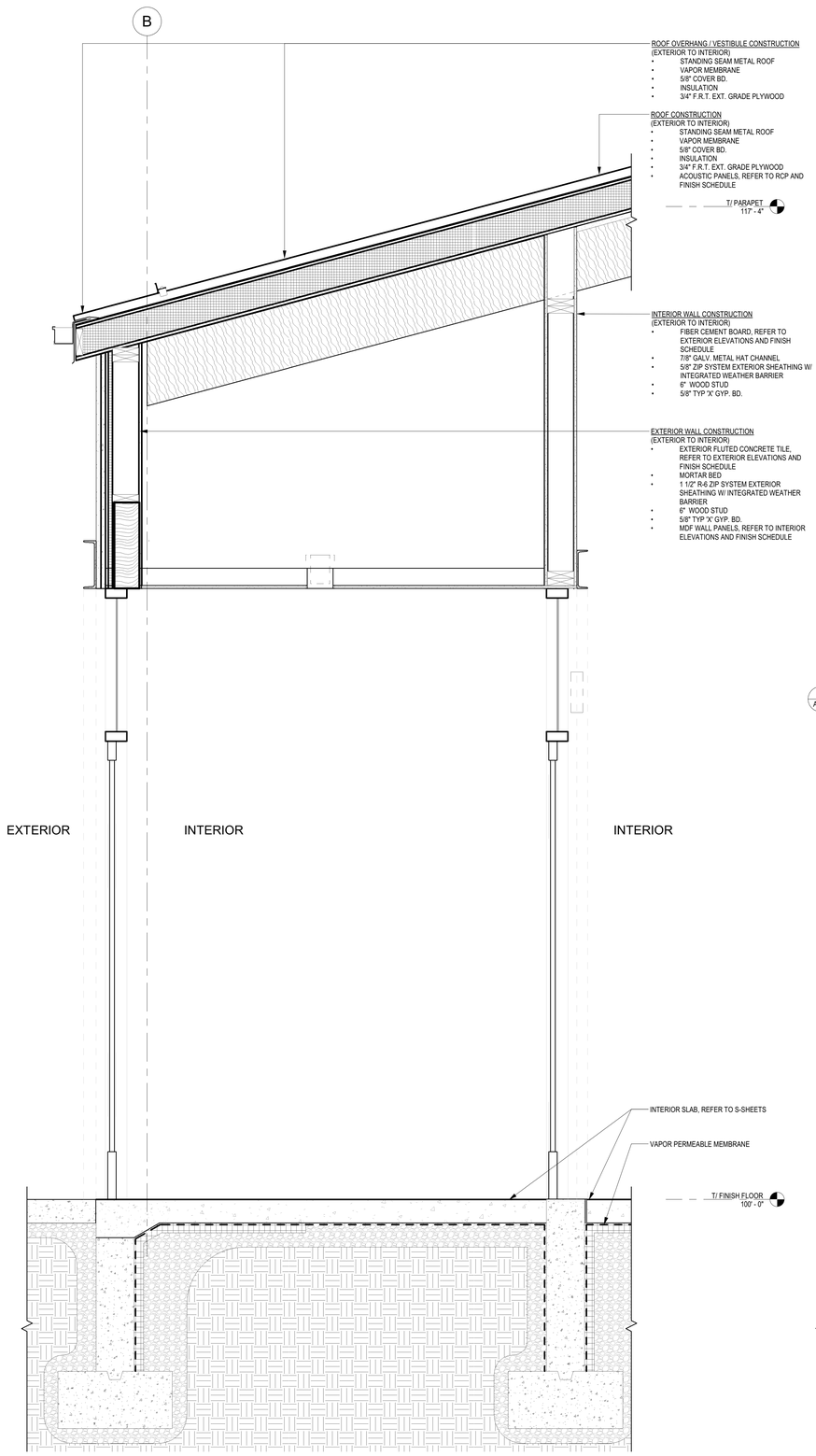
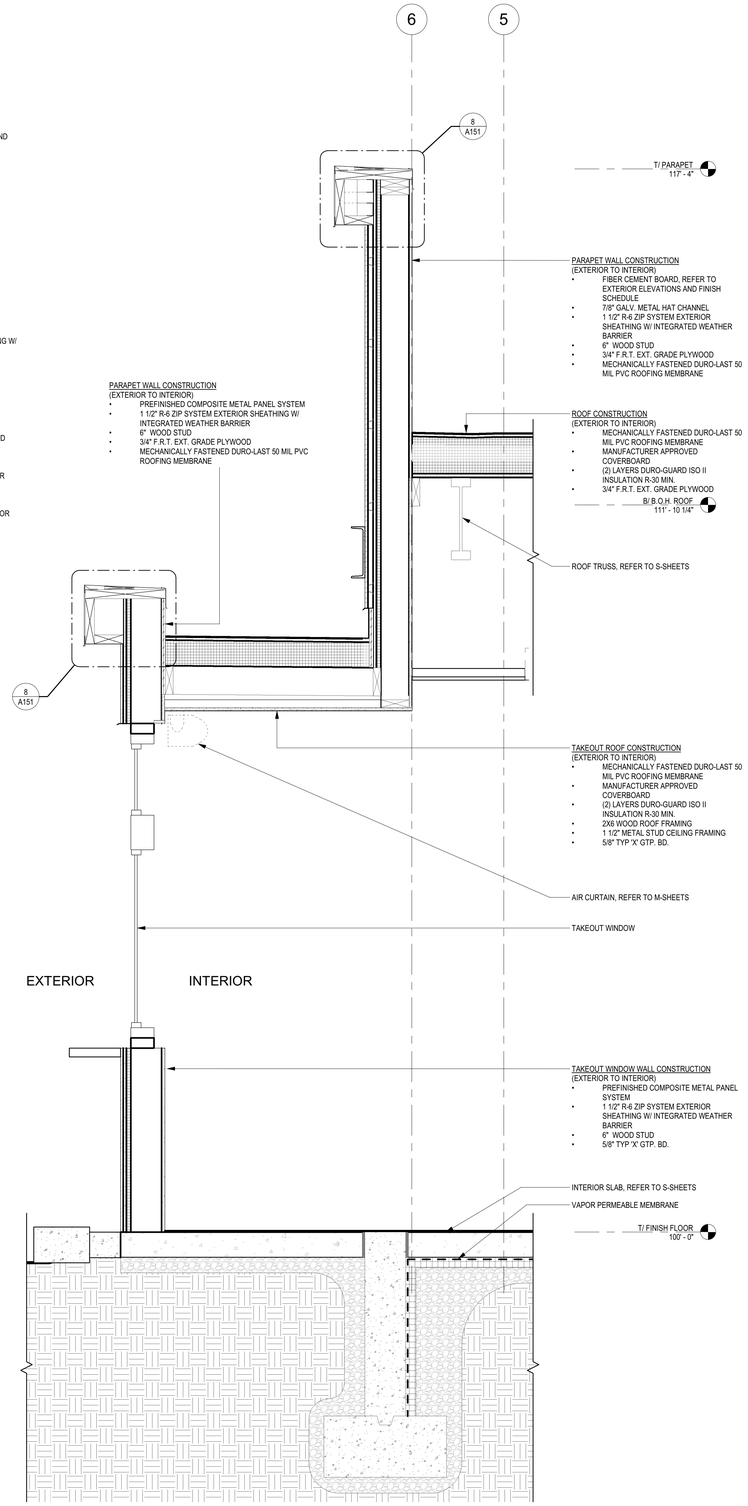


3 Section 1
1" = 1'-0"



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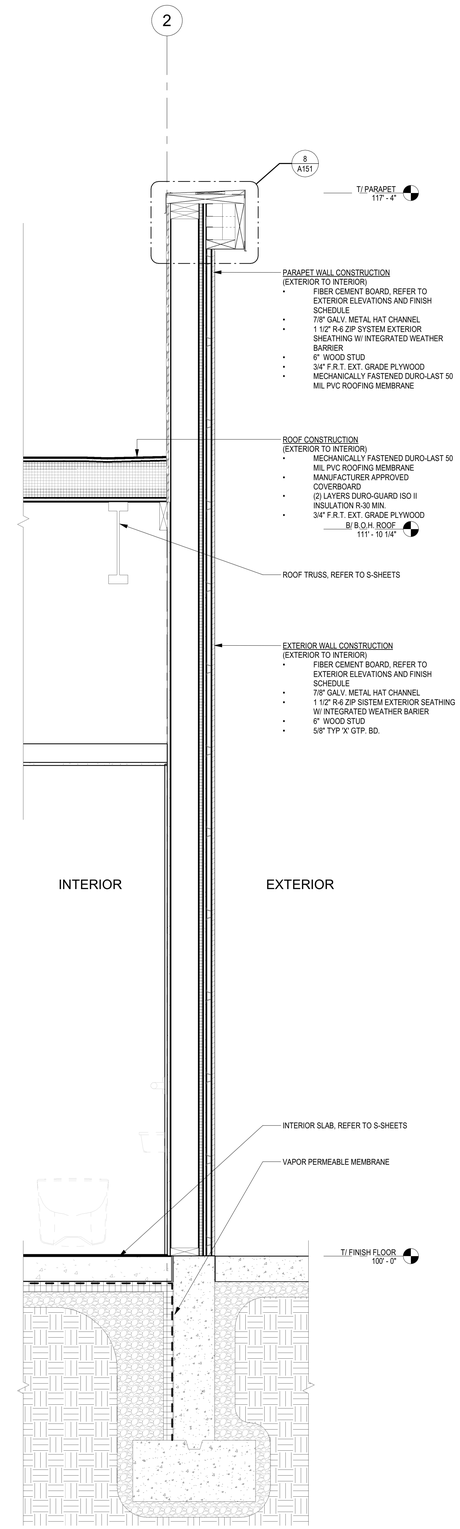

1 WALL SECTION
1" = 1'-0"

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SHAKE SHACK
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SHACK #1345

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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

JAMES R. LEVCHUK 001-020058 REGISTERED PROFESSIONAL ARCHITECT
Expires 11/30/22
11/24/20

Drawing Title
WALL SECTIONS

Job No.	Drawn
204461	Author

Scale	Date
1" = 1'-0"	11/24/20

Sheet No.
A303

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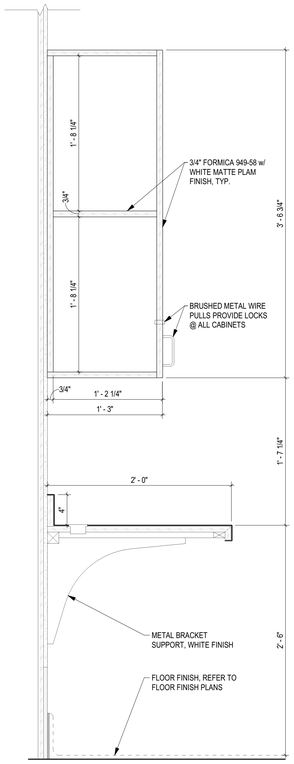
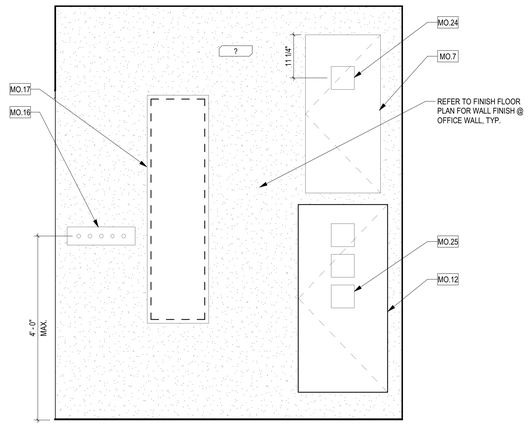
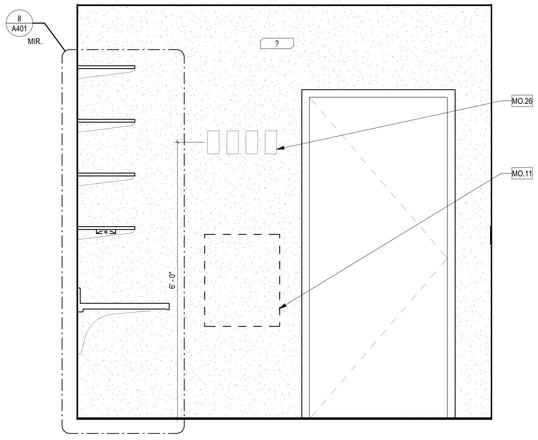


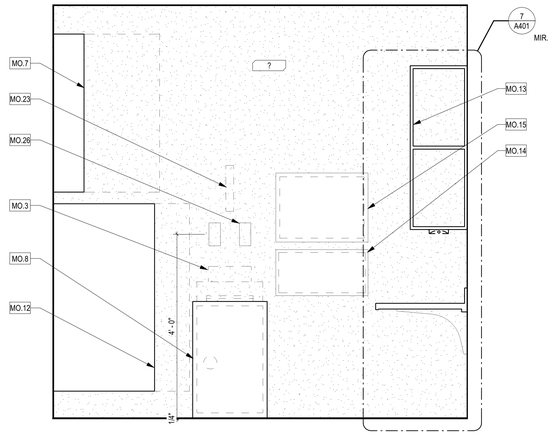
7 OFFICE CABINET DETAIL
1 1/2" = 1'-0"



5 INTERIOR ELEVATION
3/4" = 1'-0"



4 INTERIOR ELEVATION
3/4" = 1'-0"



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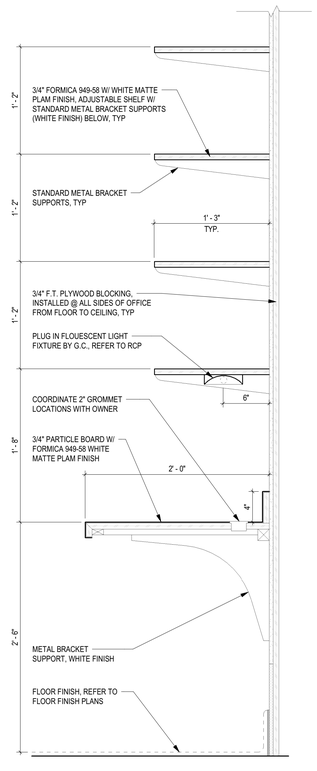
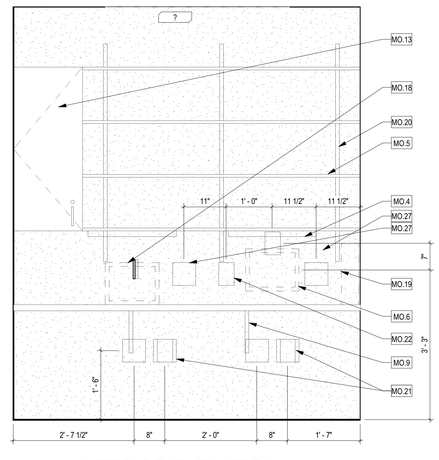
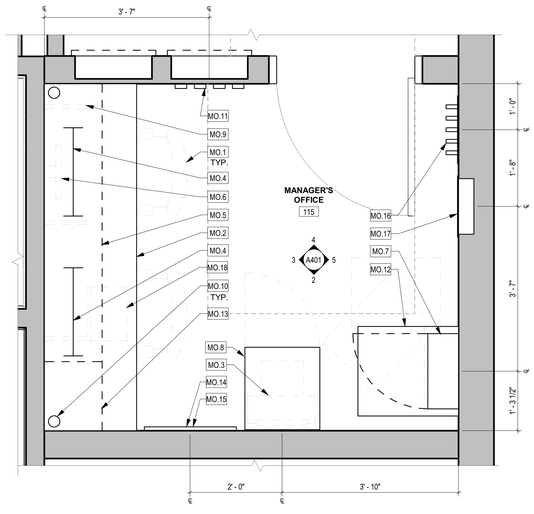


8 OFFICE COUNTER DETAIL
1 1/2" = 1'-0"



3 INTERIOR ELEVATION
3/4" = 1'-0"



1 ENLARGED MANAGER'S OFFICE PLAN
3/4" = 1'-0"

KEYNOTES

MO.1	OFFICE CHAIR BY OWNER
MO.2	EDGE OF COUNTER, COUNTER FINISH FORMICA 949-58 WHITE MATTE PLAM FINISH
MO.3	PRINTER ON SAFE, BY OWNER
MO.4	PLUG-IN FLUORESCENT LIGHT STRIP, E.C. TO PROVIDE ELECTRICAL OUTLET @ 44" A.F.F. AS NOTED ON PLAN, REFER TO E-SHEETS
MO.5	ADJUSTABLE WALL SHELVING ABOVE OFFICE COUNTER
MO.6	WALL-MOUNTED COMPUTER MONITOR BY OWNER, G.C. TO PROVIDE BLOCKING AS REQUIRED
MO.7	VIDEO RACK PROVIDED BY O.C., INSTALLED BY G.C., VERIFY FINAL LOCATION W/ O.C. PRIOR TO INSTALLATION
MO.8	SAFE BY G.C., SAFE MODEL #B3018 W/ (2) REQUIRED ELECTRONIC LOCKS, MODEL #L G 5715-SC / L/G. 4200
MO.9	METAL BRACKET SUPPORT UNDER COUNTER AS REQUIRED, TYP.
MO.10	2" DIA. GROMMET
MO.11	DESIGNATED AREA FOR HVAC CONTROLS, REFER TO M-SHEETS
MO.12	I.T. RACK PROVIDED BY OWNER, INSTALLED BY G.C., VERIFY FINAL LOCATION W/ O.C. PRIOR TO INSTALLATION
MO.13	WALL-MOUNTED LOCKABLE CABINET BY G.C.
MO.14	(1) 23 1/2" x 12" MONTHLY MAGNETIC DRY ERASE BOARD, PROVIDED & INSTALLED BY G.C., FROM CONTAINER STORE - ITEM #10063520, G.C. TO COORDINATE FINAL LOCATION W/ OWNER
MO.15	(1) 23" x 35" CORK BOARD NATURAL, PROVIDED & INSTALLED BY G.C., FROM CONTAINER STORE - ITEM #10080705, G.C. TO COORDINATE FINAL LOCATION W/ OWNER
MO.16	(1) STAINLESS STEEL COAT & HAT RACK, PROVIDED & INSTALLED BY G.C., FROM CONTAINER STORE - ITEM #10007060, G.C. TO COORDINATE FINAL LOCATION W/ OWNER
MO.17	RECESSED LIGHTING DIMMER CONTROL PANEL & SWITCHES BY G.C., REFER TO E-SHEETS
MO.18	LAPTOP BY OWNER
MO.19	COMPUTER BY OWNER
MO.20	VERTICAL BRACKETS, TYP.
MO.21	(2) QUAD DATA W/ SINGLE GANG MUD RING & (2) ISOLATED GROUND OUTLETS, REFER TO E-SHEETS, TYP.
MO.22	(1) DUAL DATA ABOVE DESK, TYP.
MO.23	(1) 66 BLOCK, SHOWN DASHED FOR REFERENCE
MO.24	(1) QUAD ISOLATED GROUND OUTLETS BEHIND VIDEO RACK
MO.25	(3) QUAD ISOLATED GROUND OUTLETS CENTERED BEHIND IT RACK, LOWEST OUTLET TO BE A/V OUTLET
MO.26	(1) DUAL DATA OUTLET (1) DUPLEX OUTLET
MO.27	(2) CONVENIENCE QUAD OUTLET, REFER TO E-SHEETS, TYP.

GENERAL NOTES

1. G.C. TO COORDINATE MILLWORK HARDWARE INCLUDING BUT NOT LIMITED TO LOCKS, HINGES, AND PULLS PRIOR TO INSTALLATION
2. ALL MILLWORK TO BE MANUFACTURED AND INSTALLED PER THE CUSTOM GRADE CLASSIFICATION OF THE A.W.I. (ARCHITECTURAL WOODWORK INSTITUTE)
3. PROVIDE SHOP DRAWINGS OF ALL MILLWORK FOR REVIEW PRIOR TO FABRICATION
4. REFER TO E-SHEETS FOR SCHEMATIC POWER & DATA LAYOUT, G.C. TO COORDINATE FINAL LAYOUT W/ OWNER'S A.V., SECURITY, & I.T. CONSULTANTS
5. PROVIDE 3/4" F.T. PLYWOOD BLOCKING FOR ALL WALLS IN THE OFFICE FROM FLOOR TO CEILING, TYP.
6. G.C. TO COORDIANTE ALL EQUIPMENT & LOCATIONS W/ OWNER'S A.V., SECURITY, & I.T. CONSULTANTS PRIOR TO INSTALLATION OF BLOCKING & UTILITIES

CONTACT INFORMATION:
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GIANCARLO FIORARANCIO, (646) 747-7180, GFIORARANCIO@SHAKESHACK.COM

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SHACK #1345

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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

JAMES R. LICOCCIO 001-020045 STATE OF ILLINOIS
Expires 11/30/22
11/24/20

Drawing Title
ENLARGED MANAGER'S OFFICE PLAN

Job No.	Drawn
204461	Author
Scale: As indicated	Date: 11/24/20

Sheet No.
A401

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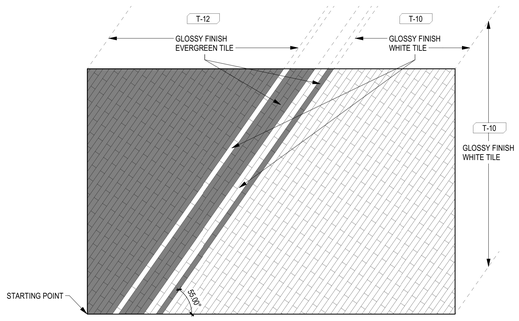
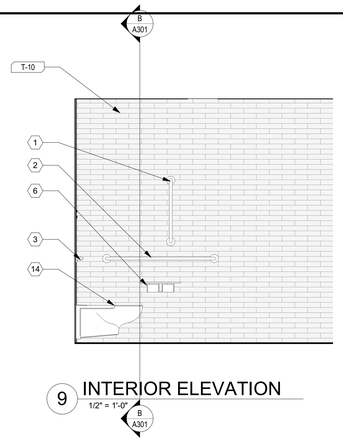
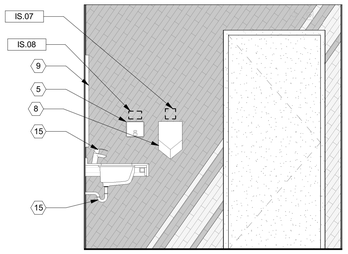


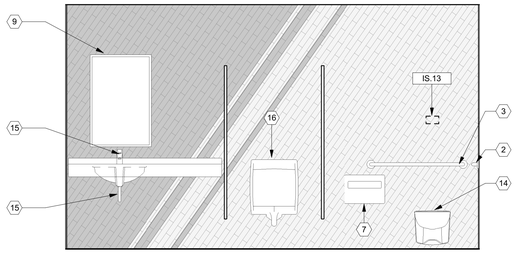
11 WALL TILE PATTERN DETAIL
1/2" = 1'-0"



9 INTERIOR ELEVATION
1/2" = 1'-0"



5 INTERIOR ELEVATION
1/2" = 1'-0"



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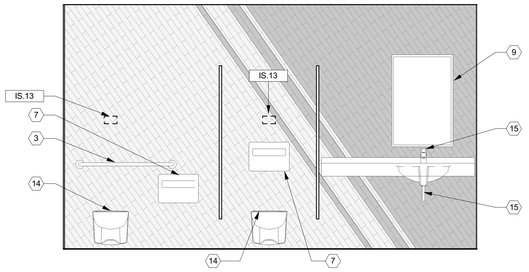
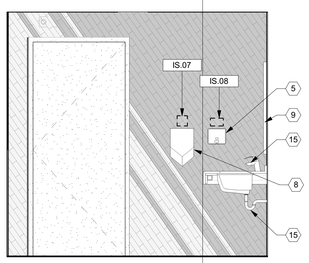
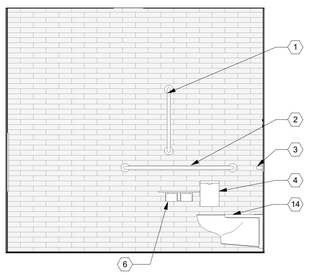
1/2" = 1'-0"



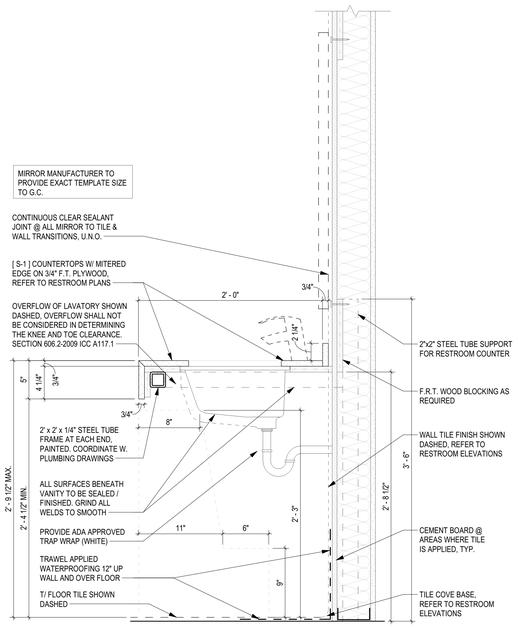
4 INTERIOR ELEVATION
1/2" = 1'-0"



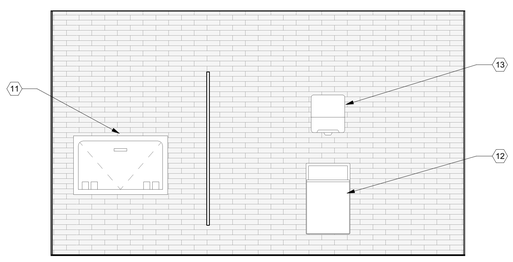
7 INTERIOR ELEVATION
1/2" = 1'-0"



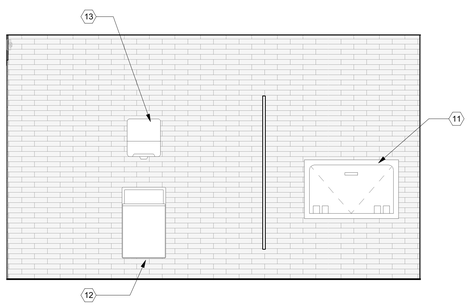
3 INTERIOR ELEVATION
1/2" = 1'-0"



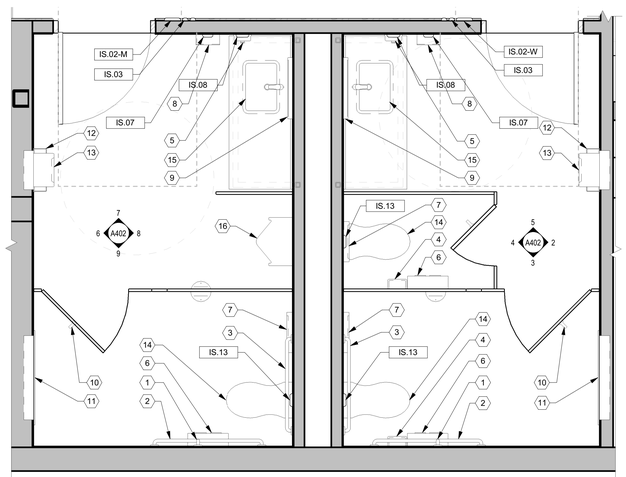
10 LAVATORY SECTION DETAIL
1 1/2" = 1'-0"



6 INTERIOR ELEVATION
1/2" = 1'-0"



2 INTERIOR ELEVATION
1/2" = 1'-0"



1 ENLARGED RESTROOM PLAN
1/2" = 1'-0"

TOILET PARTITIONS:

METPAR FT-700-LUXOR FLOOR MOUNTED PARTITIONS
- FINISH @ WOMEN'S TOILET 106: CUSTOM #675 BURGUNDY
- FINISH @ MEN'S TOILET 107: #950 HUNTER GREEN

CONTINUOUS FULL BRACKET WALL ANCHORED. SIDE PANELS TO BE 12" OFF THE GROUND, ALIGN TOP OF ALL PANELS

TRAP WRAPS:

- FINISH: WHITE
- TRAP WRAPS TO BE INSTALLED AT ALL LAV'S IN PROJECT
- PROVIDED AND INSTALLED BY G.C.

NOTES:

1. REEFR TO A003 FOR PLUMBING FIXTURE MOUNTING HEIGHTS
2. NO SUBSTITUTIONS
3. GRAB BARS MUST BE RATED TO RESIST A SINGLE CONCENTRATED LOAD OF 250 POUNDS APPLIED IN ANY DIRECTION AT ANY POINT
4. NO GAPS BETWEEN WALLS AND WALL MOUNTED ACCESSORIES
5. GAPS BETWEEN TOILET PARTITIONS AND WALLS MAY NOT BE LARGER THAN 3/4"
6. GAPS BETWEEN TOILET PARTITIONS AND DOORS MAY NOT BE LARGER THAN 1/4"
7. ALL ACCESSORIES PROVIDED & INSTALLED BY G.C., U.N.O.

TOILET ACCESSORY SCHEDULE (NO SUBSTITUTIONS)

KEY	ACCESSORY TYPE	MANUFACTURER	MATERIAL	MODEL	FINISH	MOUNT TYPE	NOTES	QUANTITY
1	24" VERTICAL GRAB BAR	BOBRICK	STAINLESS STEEL	B-5806	SATIN STAINLESS STEEL	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	2
2	42" HORIZONTAL GRAB BAR	BOBRICK	STAINLESS STEEL	B-5806	SATIN STAINLESS STEEL	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	2
3	36" HORIZONTAL GRAB BAR	BOBRICK	STAINLESS STEEL	B-5806	SATIN STAINLESS STEEL	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	2
4	SANITARY NAPKIN DISPOSAL	BOBRICK	STAINLESS STEEL	B-270	SATIN STAINLESS STEEL	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	2
5	SOAP DISPENSER	BOBRICK	STAINLESS STEEL	B-4112	SATIN STAINLESS STEEL	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	2
6	DOUBLE-ROLL TOILET TISSUE DISPENSER	BOBRICK	STAINLESS STEEL	B-2840	SATIN STAINLESS STEEL	SURFACE- MIN. 15" A.F.F. W/ MIN. 6" BELOW GRAB BAR	PROVIDED BY OWNER & INSTALLED BY G.C.	3
7	SEAT COVER DISPENSER	BOBRICK	STAINLESS STEEL	CONTURA SERIES #B-4221	SATIN STAINLESS STEEL	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	3
8	AIRBLADE V HAND DRYER	DYSON	POLYCARBONATE ABS	#HJ02	SPRAYED NICKEL	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	2
9	MIRROR	BOBRICK	STAINLESS STEEL ANGLE WITH SATIN FINISH	B-2908	STAINLESS STEEL ANGLE WITH SATIN FINISH	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C. REFER TO RESTROOM ELEVATIONS FOR LOCATION & SIZE	2
10	COAT HOOK	BOBRICK	STAINLESS STEEL	B-2116	SATIN STAINLESS STEEL	BACK OF DOOR	PROVIDED BY OWNER & INSTALLED BY G.C.	3
11	BABY CHANGEING TABLE	BOBRICK	STAINLESS STEEL W/ MICROBAM INTERIOR	KB 100-01ST	POLYETHYLENE W/ STAINLESS STEEL FLANGE	RECESSED	PROVIDED BY OWNER & INSTALLED BY G.C.	2
12	WASTE RECEPTACLE	BOBRICK	STAINLESS STEEL	B-43644	STAINLESS STEEL	RECESSED	PROVIDED BY OWNER & INSTALLED BY G.C.	2
13	ELEVATION MATIC HAND PAPER TOWEL HAND DISPENSER	BOBRICK	PLASTIC	5511282	BLACK	SURFACE	PROVIDED BY OWNER & INSTALLED BY G.C.	2
14	CONNERCIAL HEAVY DUTY TOILET SEAT	KOHLER	SOLID POLYCARBONATE PLASTIC	KB 100-01ST	WHITE	ATTACHED TO TOILET AS SPECIFIED	PROVIDED BY OWNER & INSTALLED BY G.C.	3
15	LAVATORY	REFER TO P-SHEETS	-	-	-	-	PROVIDED AND INSTALLED BY G.C. WALL ANCHORED SIDE PANELS TO BE 12" OFF THE FINISH FLOOR, TOP OF ALL PANELS TO ALIGN	2
16	URINAL	REFER TO P-SHEETS	-	-	-	-	PROVIDED AND INSTALLED BY G.C.	1

TACTILE SIGNAGE SCHEDULE (NO SUBSTITUTIONS)

KEY	ACCESSORY TYPE	Manufacturer	Material	Model	Finish	MOUNT	NOTES
IS.02-M	RESTROOM IDENTIFICATION TACTILE SIGNAGE	SIGN OF OUR TIMES (302-A RIVERSIDE, AVE., ROSEVILLE, CA 95678)	1/8" MODIFIED ACRYLIC PANEL	ADA/ CLEAR BRAILLE- S110/ S150 -NO ISA (COORDINATE W/ OWNER)	CHARCOAL GREY BACKGROUND / WHITE LETTERING	MOUNT W/ CLEAR SILICONE	REFER TO FLOOR PLANS & INTERIOR ELEVATIONS FOR LOCATIONS & MOUNTING HEIGHTS, G.C. TO INSTALL PER ADA ACCESSIBILITY CODES, COORDINATE W/ OWNER FOR FINAL LOCATIONS
IS.02-W	RESTROOM IDENTIFICATION TACTILE SIGNAGE	SIGN OF OUR TIMES (302-A RIVERSIDE, AVE., ROSEVILLE, CA 95678)	1/8" MODIFIED ACRYLIC PANEL	ADA/ CLEAR BRAILLE- S110/ S150 -NO ISA (COORDINATE W/ OWNER)	CHARCOAL GREY BACKGROUND / WHITE LETTERING	MOUNT W/ CLEAR SILICONE	REFER TO FLOOR PLANS & INTERIOR ELEVATIONS FOR LOCATIONS & MOUNTING HEIGHTS, G.C. TO INSTALL PER ADA ACCESSIBILITY CODES, COORDINATE W/ OWNER FOR FINAL LOCATIONS
IS.03	ADA ACCESSIBLE RESTROOM SIGNAGE	SIGN OF OUR TIMES (302-A RIVERSIDE, AVE., ROSEVILLE, CA 95678)	1/8" MODIFIED ACRYLIC PANEL	ADA/ CLEAR BRAILLE- SS250 -NO ISA (COORDINATE W/ OWNER)	CHARCOAL GREY BACKGROUND / WHITE LETTERING	MOUNT W/ CLEAR SILICONE	REFER TO FLOOR PLANS & INTERIOR ELEVATIONS FOR LOCATIONS & MOUNTING HEIGHTS, G.C. TO INSTALL PER ADA ACCESSIBILITY CODES. MOUNTED DIRECTLY LEFT OF RESTROOM IDENTIFICATION SIGN & ALIGN W/ BOTTOM
IS.07	HAND DRYER SIGNAGE	SIGN OF OUR TIMES (302-A RIVERSIDE, AVE., ROSEVILLE, CA 95678)	1/8" MODIFIED ACRYLIC PANEL	ADA/ CLEAR BRAILLE (COORDINATE W/ OWNER)	CHARCOAL GREY BACKGROUND / WHITE LETTERING	MOUNT W/ CLEAR SILICONE	MOUNT CENTERED ABOVE HAND DRYER. COORDINATE FINAL LOCATION W/ OWNER/ COORDINATE PLACEMENT W/ "NO SMOKING" & "EMPLOYEE MUST WASH HANDS" SIGNAGE, V.I.F.
IS.08	"NO SMOKING" & "EMPLOYEE MUST WASH HANDS" SIGNAGE	SIGN OF OUR TIMES (302-A RIVERSIDE, AVE., ROSEVILLE, CA 95678)	1/8" MODIFIED ACRYLIC PANEL	ADA/ CLEAR BRAILLE (COORDINATE W/ OWNER)	CHARCOAL GREY BACKGROUND / WHITE LETTERING	MOUNT W/ CLEAR SILICONE	MOUNT 6" TO THE RIGHT / LEFT OF MIRROR AND 6" UP FROM THE B/ OF MIRROR, V.I.F., REFER TO FLOOR PLANS FOR LOCATIONS
IS.13	FLUSH WARNING SIGNAGE	TBD	TBD	TBD	-	-	REFER TO SIGNAGE SCHEDULE ON A101

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REVISIONS

LICENSED ARCHITECT JAMES R. LONDON 001-022048 STATE OF ILLINOIS
Expires November 30, 2021
11/24/2020

Drawing Title
ENLARGED RESTROOM PLAN

Job No.	Drawn
204461	Author
Scale: As indicated	Date: 11/24/20

Sheet No.
A402

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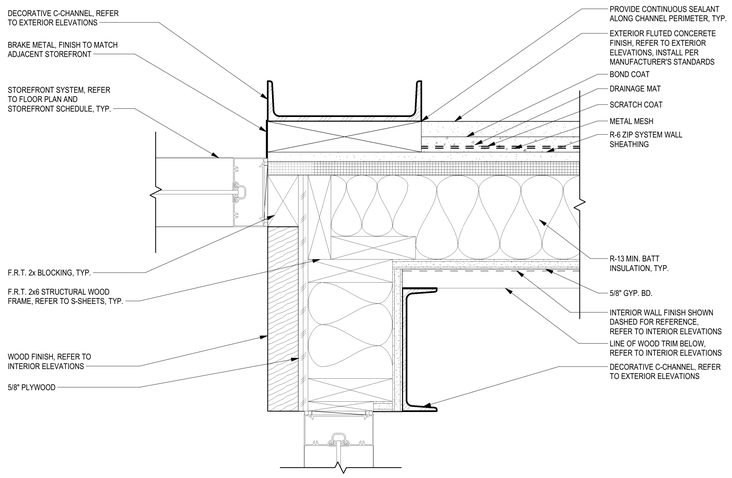

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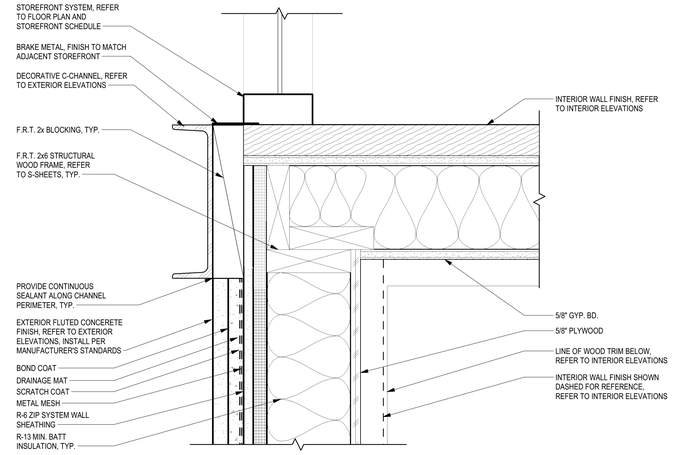
3 SECTION DETAIL
3" = 1'-0"



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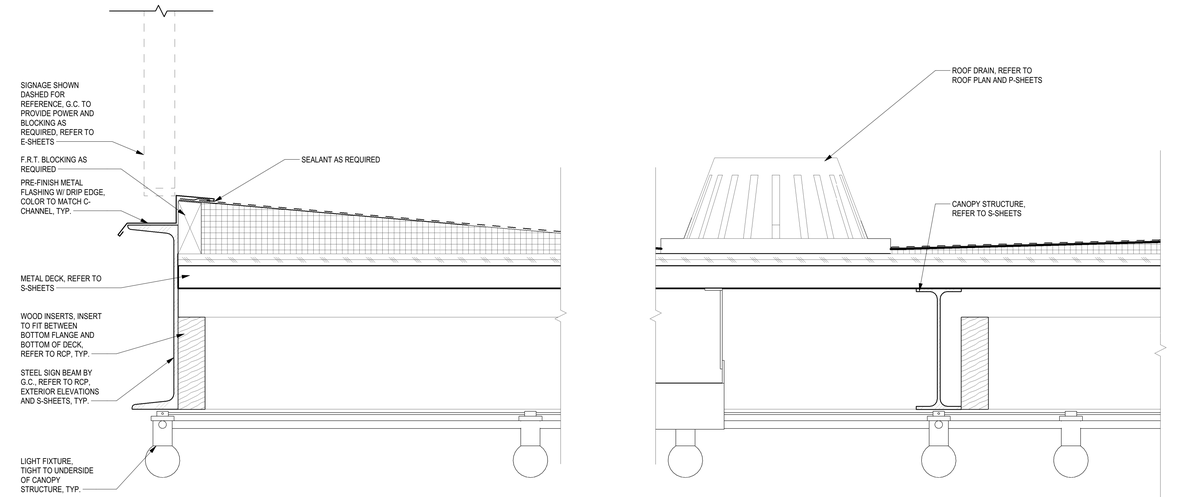

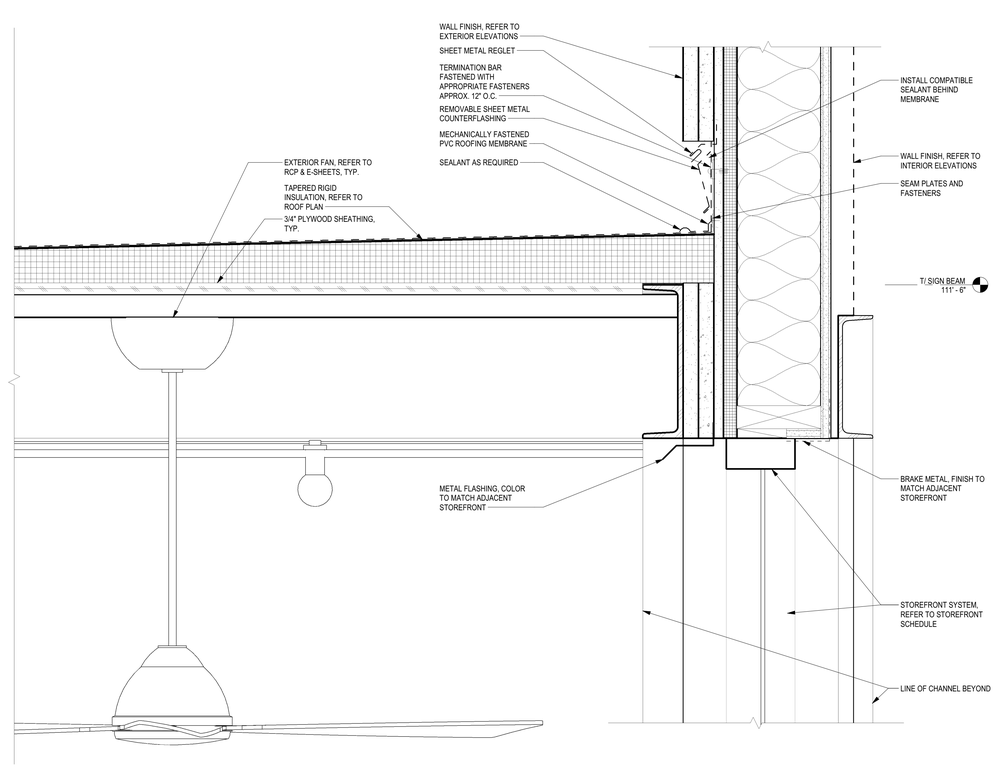

1 PATIO CANOPY SECTION
3" = 1'-0"

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JAMES R. LEVOSKI
001-020345
STATE OF ILLINOIS
Expires 11/30/ 22
11/24/20

Drawing Title
EXTERIOR DETAILS

Job No.	Drawn
204461	Author
Scale	Date
3" = 1'-0"	11/24/20

Sheet No.
A501

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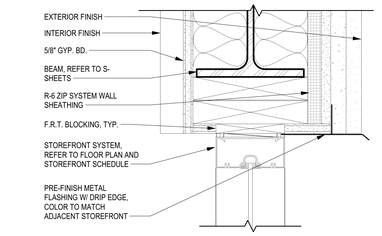
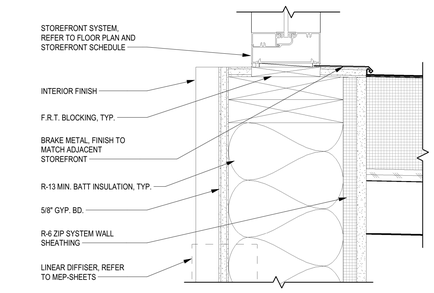


3 RIBBON WINDOW HEAD DETAIL
3" = 1'-0"

7 STOREFRONT SILL SECTION DETAIL
3" = 1'-0"



2 RIBBON WINDOW SILL DETAIL
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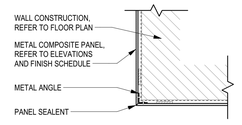
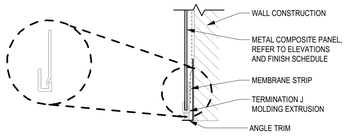


5 TYP. ACM CORNER
3" = 1'-0"



4 TYP. ACM TERMINATION
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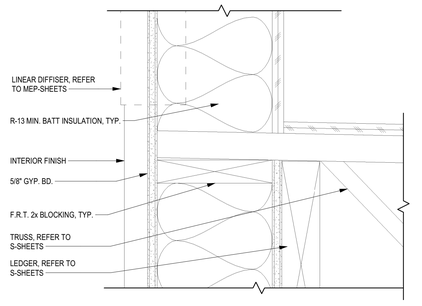

1 SECTION DETAIL
3" = 1'-0"

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JAMES R. LENDON
001-020245
STATE OF ILLINOIS
Expires 11/30/22
11/24/20
DATE

Drawing Title
EXTERIOR DETAILS

Job No.	Drawn
204461	Author

Scale	Date
3" = 1'-0"	11/24/20

Sheet No.
A502

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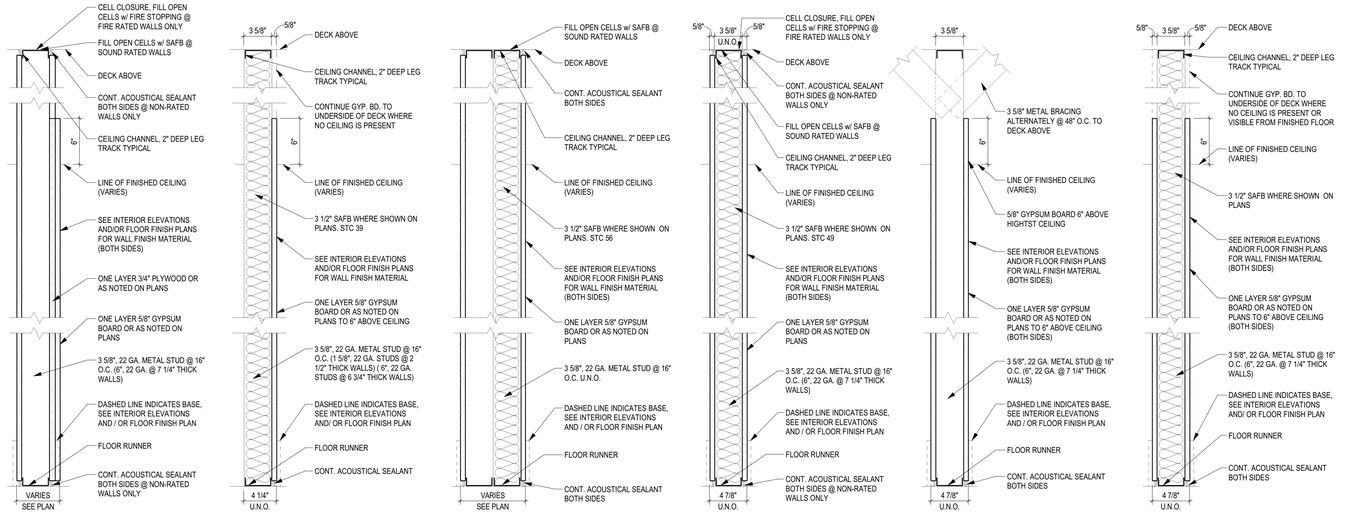
WALL TYPES



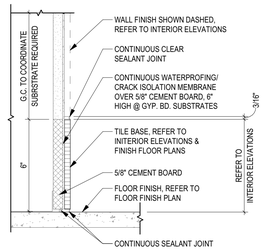
INTERIOR, NON-STRUCTUIRAL, NON-COMPOSITE LIMITING HEIGHTS

MEMBER				LATERAL LOAD		
				5 PSF		
DEPTH	GAUGE	MILS	SPACING	DEFLECTION LIMIT		
				L/120	L/240	L/360
1-5/8"	22	27 (33 ksi)	12"	11'-3"	8'-11"	7'-10"
			16"	10'-3"	8'-2"	7'-1"
			24"	8'-4"	7'-1"	6'-3"
	20	30 (33 ksi)	12"	11'-8"	9'-3"	8'-1"
			16"	10'-7"	8'-5"	7'-4"
			24"	8'-11"	7'-4"	6'-5"
2-1/2"	22	27 (33 ksi)	12"	15'-7"	12'-4"	10'-10"
			16"	13'-6"	11'-3"	9'-10"
			24"	11'-0"	9'-10"	8'-7"
	20	30 (33 ksi)	12"	16'-1"	12'-9"	11'-2"
			16"	14'-5"	11'-7"	10'-2"
			24"	11'-10"	10'-2"	8'-10"
	18	43 (33 ksi)	12"	18'-1"	14'-4"	12'-6"
			16"	16'-5"	13'-0"	11'-5"
			24"	14'-4"	11'-5"	9'-11"
3-5/8"	22	27 (33 ksi)	12"	18'-10"	16'-6"	14'-5"
			16"	16'-4"	15'-0"	13'-1"
			24"	13'-4"	13'-1"	11'-5"
	20	30 (33 ksi)	12"	20'-3"	17'-0"	14'-10"
			16"	17'-7"	15'-6"	13'-6"
			24"	14'-4"	13'-6"	*
	18	43 (33 ksi)	12"	24'-2"	19'-2"	16'-9"
			16"	21'-11"	17'-5"	15'-3"
			24"	18'-10"	15'-3"	13'-4"
	16	54 (50 ksi)	12"	25'-10"	20'-6"	17'-11"
			16"	13'-5"	18'-7"	16'-3"
			24"	20'-6"	16'-3"	14'-2"

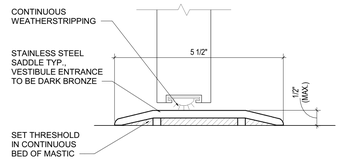
MEMBER				LATERAL LOAD		
				5 PSF		
DEPTH	GAUGE	MILS	SPACING	DEFLECTION LIMIT		
				L/120	L/240	L/360
4"	22	27 (33 ksi)	12"	19'-11"	17'-10"	15'-7"
			16"	17'-3"	15'-2"	14'-2"
			24"	15'-2"	14'-1"	12'-4"
	20	30 (33 ksi)	12"	21'-5"	18'-5"	16'-1"
			16"	18'-6"	16'-8"	14'-7"
			24"	15'-2"	14'-7"	12'-9"
	18	43 (33 ksi)	12"	26'-1"	20'-9"	18'-1"
			16"	23'-9"	18'-10"	16'-5"
			24"	19'-11"	16'-5"	14'-4"
	16	54 (50 ksi)	12"	27'-11"	22'-2"	19'-4"
			16"	25'-4"	20'-2"	17'-7"
			24"	22'-2"	17'-7"	15'-4"
6"	22	27 (33 ksi)	12"	24'-10"	24'-4"	21'-3"
			16"	21'-6"	21'-6"	19'-4"
			24"	17'-7"	17'-7"	16'-10"
	20	30 (33 ksi)	12"	26'-10"	25'-2"	22'-0"
			16"	23'-3"	22'-11"	20'-0"
			24"	18'-11"	18'-11"	17'-6"
	16	54 (50 ksi)	12"	38'-9"	30'-9"	26'-10"
			16"	35'-3"	27'-11"	24'-5"
			24"	30'-9"	24'-5"	21'-4"
8"	18	43 (33 ksi)	12"	40'-11"	35'-1"	31'-6"
			16"	35'-5"	32'-9"	28'-8"
			24"	29'-11"	28'-8"	25'-0"
	16	54 (50 ksi)	12"	46'-10"	38'-9"	33'-10"
			16"	44'-4"	35'-2"	30'-9"
			24"	38'-9"	30'-9"	26'-10"

"e" - WEB STIFFENERS REQUIRED AT ENDS

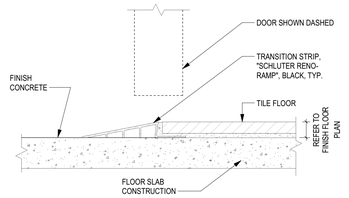
1. STUD GAUGE MAY VARY PER WALL TYPE DEPENDING ON THE ACTUAL HEIGHT AND SHEATHING TYPE REQUIRED
2. WEB-HEIGHT TO THICKNESS RATIO EXCEEDS 200. WEB STIFFENERS ARE REQUIRED AT ALL SUPPORT POINTS AND CONCENTRATED LOADS
3. 5 PSF (POUNDS PER SQUARE FOOT), 75 PSF AND 10PSF LOADS HAVE NOT BEEN REDUCED FOR STRENGTH DEFLECTION CHECKS, FULL LATERAL LOADS IS APPLIED
4. LIMITING HEIGHTS ARE BASED ON PROPERLY FASTENED SHEATHING ON BOTH FLANGES OVER THE FULL HEIGHT OF THE STUD
5. LIMITING HEIGHTS ARE BASED ON STEEL PROPERTIES ONLY (NON-COMPOSITE)
6. WEB CRIPPLING CHECK BASED ON 1 INCH END BEARING. WHERE LIMITING HEIGHTS ARE FOLLOWED BY "E", WEB STIFFENERS ARE REQUIRED
7. ALLOWABLE MOMENT IS THE LESSER OF M(ai) AND M(ad). STUD DISTORTIONAL BUCKLING BASED ON AN ASSUMED K=0
8. REFER TO SPECIFICATIONS FOR DEFLECTION LIMIT



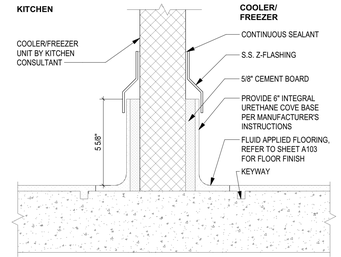
14 TYPICAL BASE DETAIL
3" = 1'-0"



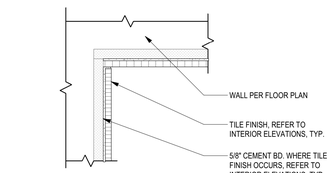
10 THRESHOLD DETAIL
6" = 1'-0"



6 FLOOR TRANSITION DETAIL
6" = 1'-0"



3 TYP. COOLER BASE DETAIL
3" = 1'-0"



18 INSIDE CORNER DETAIL
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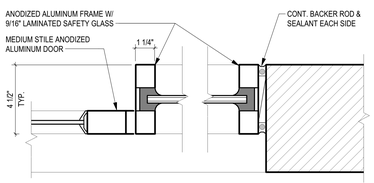
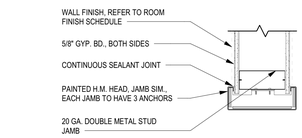
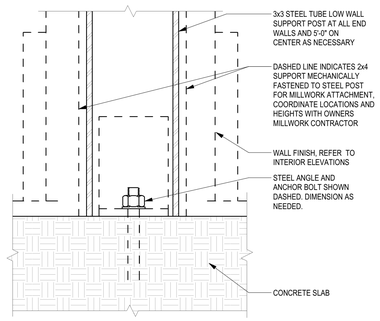


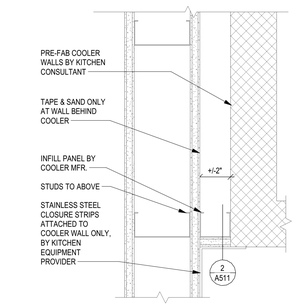
13 DOOR HEAD / JAMB DETAIL
3" = 1'-0"



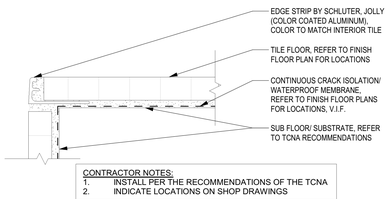
9 DOOR HEAD / JAMB DETAIL
1 1/2" = 1'-0"



5 LOW-WALL STIFFENER BASE DETAIL
6" = 1'-0"

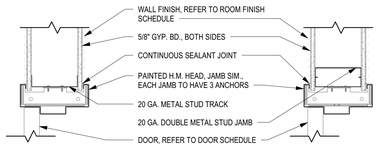


2 TYP. COOLER WALL IN-FILL DETAIL
3" = 1'-0"

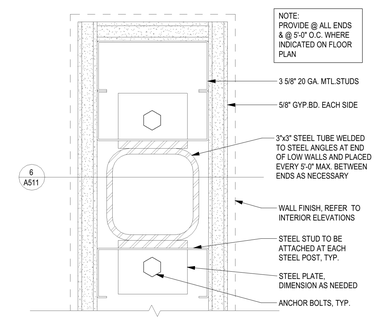


CONTRACTOR NOTES:
1. INSTALL PER THE RECOMMENDATIONS OF THE TCNA
2. INDICATE LOCATIONS ON SHOP DRAWINGS

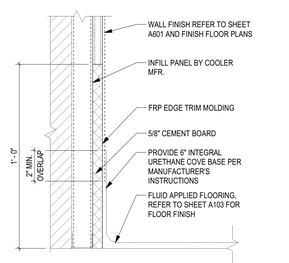
12 INTERIOR TRANSITION DETAIL
12" = 1'-0"



8 DOOR HEAD / JAMB DETAIL
1 1/2" = 1'-0"



4 LOW-WALL STIFFNER PLAN DETAIL
6" = 1'-0"



1 TYP. COOLER WALL IN-FILL BASE DETAIL
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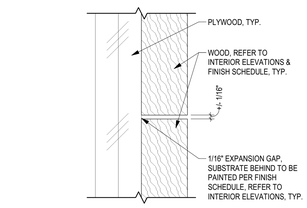
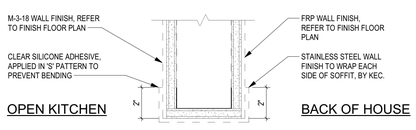
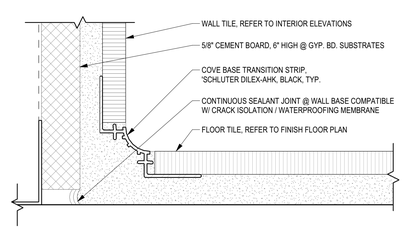


16 TYP. TRANSITION @ WOOD FINISH
12" = 1'-0"



11 SOFFIT DETAIL
3" = 1'-0"



7 FLOOR BASE TRANSITION
12" = 1'-0"

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SHACK #1345

FIELD VERIFICATION
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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT JAMES R. LONDON 001-020245 STATE OF ILLINOIS
Expires 04/30/22
11/24/20

Drawing Title
INTERIOR DETAILS

Job No.	Drawn
204461	Author

Scale	Date
As indicated	11/24/20

Sheet No.
A511

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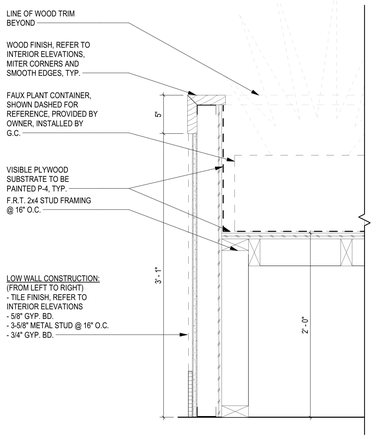
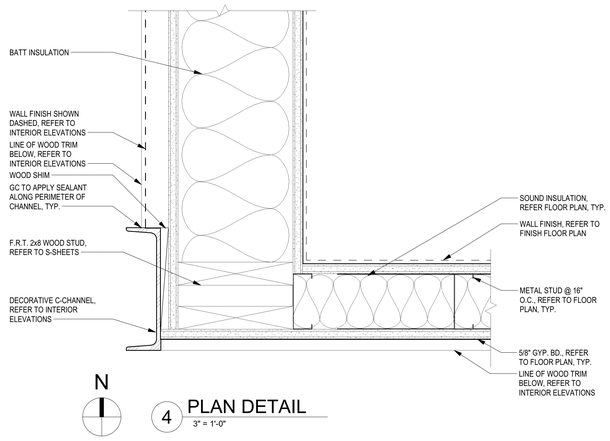


6 DETAIL SECTION
1 1/2" = 1'-0"



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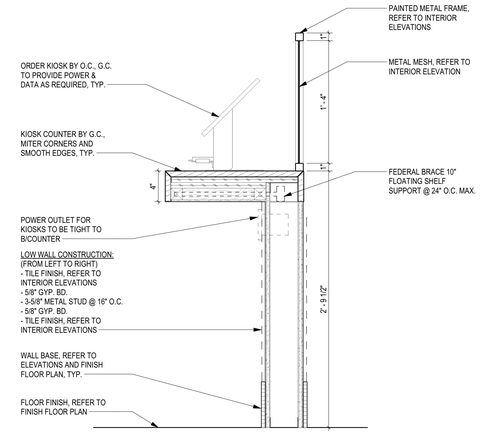
3" = 1'-0"



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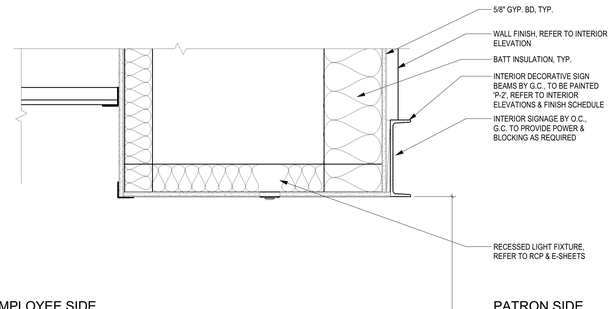

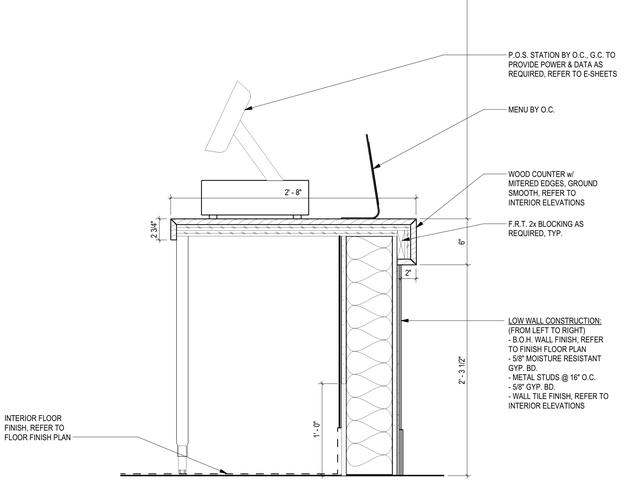

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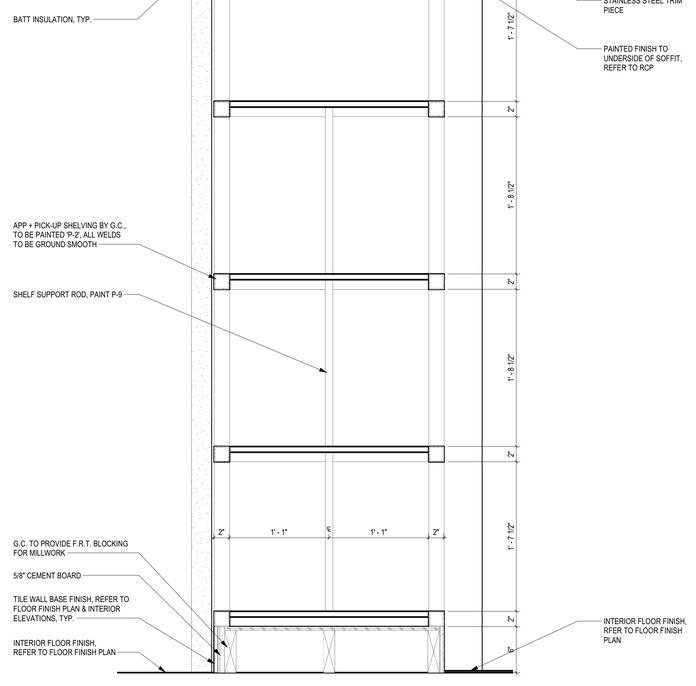
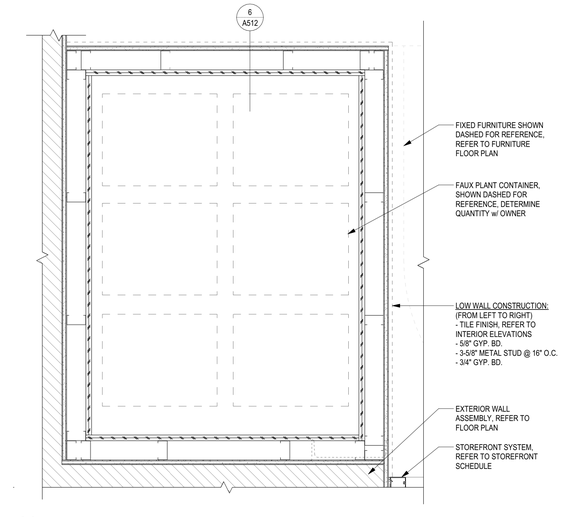
1 1/2" = 1'-0"



1 DETAIL SECTION
1 1/2" = 1'-0"



5 PLAN DETAIL
1 1/2" = 1'-0"

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED PROFESSIONAL ENGINEER
JAMES R. LONDON
062-020049
STATE OF ILLINOIS
Expires 11/30/22
Signature
11/24/20
Date

Drawing Title
INTERIOR DETAILS

Job No.	Drawn
204461	Author
Scale: As indicated	Date: 11/24/20

Sheet No.
A512

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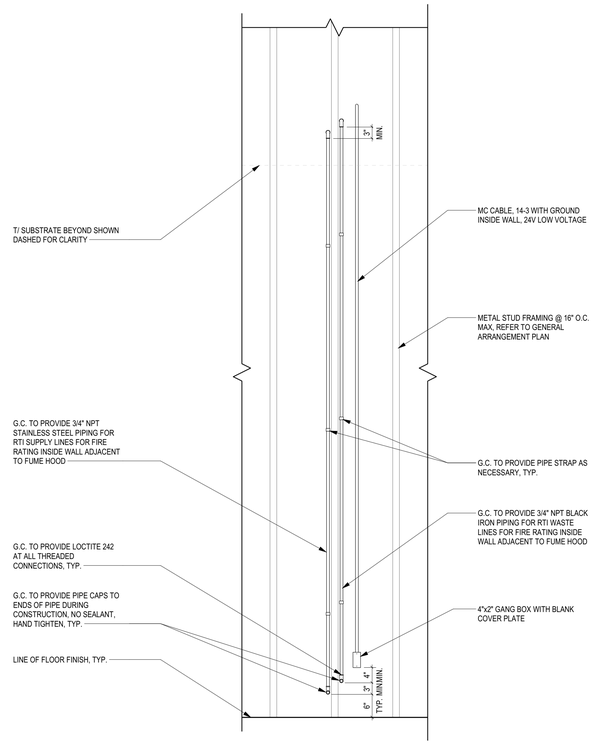
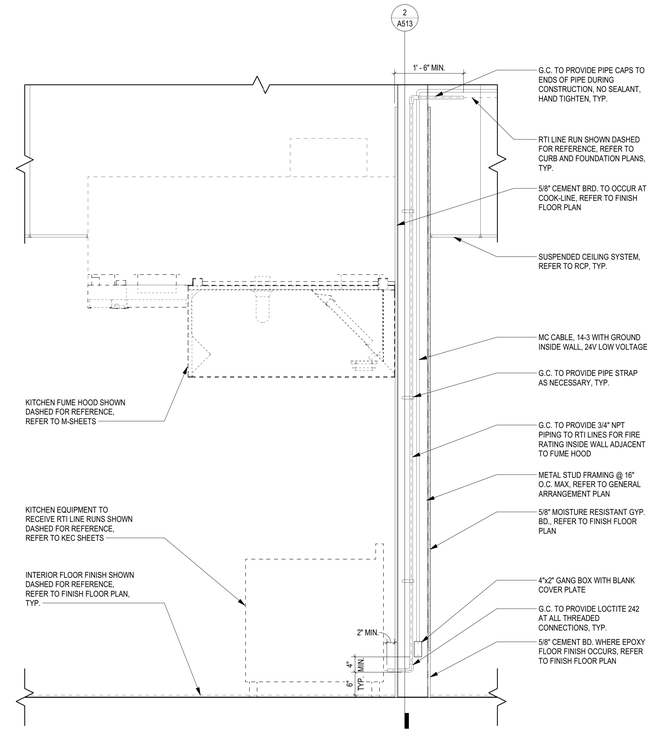


2 SECTION DETAIL
3/4" = 1'-0"



1 SECTION DETAIL
3/4" = 1'-0"

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ariainc.com

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SHACK #1345

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

JAMES R. LONDON
001-020026
REGISTERED ARCHITECT
EXPIRES: 11/30/2022
11/24/20
DATE

Drawing Title
INTERIOR DETAILS

Job No.	Drawn
204461	Author

Scale	Date
3/4" = 1'-0"	11/24/20

Sheet No.
A513

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SECTION 00701 - GENERAL CONDITION

1. GENERAL

Refer to owner contract

SECTION 00750 - INSURANCE REQUIREMENTS

1. GENERAL

1.1 CERTIFICATE OF INSURANCE

Refer to contract for all insurance requirements

A. Provide for additional insured for the following:

1. Aria Group Architects, Inc.

SECTION 01000 - GENERAL REQUIREMENTS

1. GENERAL

1.1 GENERAL REQUIREMENTS

A. Contractor shall coordinate use of premises w/owner, including but not limited to:

1. Storage
2. Staging
3. Parking
4. Refuse
5. Other required uses

B. The following specifications are general in nature and allow Contractor to select manufacturers for materials on the basis of cost and availability of such materials unless preselected manufacturers are indicated and items indicated as supplied by Owner

C. It is understood that the Owner may be purchasing and/or installing materials, equipment and furnishings under separate contract. This Contract shall cooperate with the Owner to allow the delivery and installation of such materials, equipment and furnishings by other Contractors and suppliers which commence prior to final acceptance of the remodeled space by Owner so as to assure the Owner of the earliest possible completion date.

D. The Contract Documents are intended to include either directly or by implication all items required for the proper execution and completion of the work. The General Contractor shall provide all labor, material and equipment to complete the work as shown and specified in the contract documents.

E. The Contractor is solely responsible for the complete coordination of the work and required trades so that no part of the work shall be left in an unfinished state as a result of lack of coordination, disagreements between the parties performing the work, or any other reason

F. The Contractor shall be solely responsible for obtaining access to the site to determine and verify the existing conditions, materials, systems, sizes, dimensions, quantities, layouts, locations, and potential limitations for the performance of the work completed herein

G. These drawings are not to be scaled. If the required dimensions or information cannot be found herein, the Architect shall be requested to interpret the documents, and his interpretations shall be final and binding.

H. The General Contractor shall be solely responsible for all trash removal from the demised premises at the end of working day. Coordinate with Owner and Landlord.

I. The General Contractor shall be responsible for repair or replacement for any damage caused by him or his Sub-Contractors to existing work in place

J. The General Contractor is responsible for providing temporary bracing, as necessary to ensure the vertical and lateral stability of the entire structure or a portion thereof during construction as necessary

K. The General Contractor is responsible for providing all engineering services required by code including but not limited to design, inspection, and certification

1.2 NOTES REGARDING INSPECTION OF EXISTING SPACES/BUILDING

A. While the size and location of new work and equipment in the existing building has been indicated on the drawings as accurately as possible, the Contractor shall adjust his work as required to avoid existing ducts, pipes, conduits, structural members and the like not shown on the plans. Contractor shall adapt his work to meet all actual conditions on the site and in the existing building without additional cost to the Tenant.

B. Contractor shall inspect the premises and make a detailed examination of all locations where new work is to be installed. Contractor shall verify location of all utilities and shall notify Architect of any discrepancies prior to commencing work. The Contractor shall be responsible for any damages to underground utilities encountered in areas where excavations are indicated and shall repair any such damage at his own expense. Where utility lines must be maintained under building, they shall be properly sleeved through foundation walls.

C. After inspecting the premises and examining the drawings, the Contractor shall notify the Engineer and Architect of any defects, discrepancies, problems, uncertainties or clearances required for the installation of new work. Contractor shall await resolution prior to proceeding with the work and will be responsible for all changes necessary without additional cost to the Owner if he neglects to notify the Architect.

D. No extras will be allowed for claims due to unforeseen or unanticipated conditions which could have been discovered by each Contractor during inspection of the site, during bidding period and prior to the commencement of the work

1.3 REGULATORY REQUIREMENTS

A. All work is to be performed and installed in compliance with governing local building codes and regulations. The Contractor shall be responsible for obtaining any required building permits for the performance of this work. Permit fees shall be reimbursed by Owner.

B. The General Contractor is to build and maintain construction barricades (all necessary lights, sign, etc.) for the protection of the public, as per local ordinances and Landlord requirements and obtain all required permits

1.4 BASE BUILDING COORDINATION

A. All new Construction is to be properly integrated with the existing perimeter walls, structural framing, roofing, plumbing, electrical, and other building components as applicable

B. Owner's General Contractor shall consult and coordinate with the Landlord's Construction Coordinator in all matters of workmen parking, delivery and storage of materials, safety protection, trash removal, use of temporary facilities and other such operations in advance

C. The General Contractor shall provide blocks, openings, cores, etc. not specifically shown on the drawings as necessary for mechanical and electrical equipment, vents, ducts, and typical details. All cores and penetrations are to be approved by Landlord's structural engineer.

D. Any alterations, additions, reinforcements, or modifications to Landlord's structure, piping, conduit, or ductwork to accommodate Owner's work, including slab infill, shall not be performed without in each instance Owner obtaining Landlord's prior written approval. Owner shall leave Landlord's structure as strong as or stronger than the original design and with finishes unimpaired. Landlord may require that approved structural or mechanical/electrical modifications be performed by Landlord's contractor under contract to Owner at Owner's expense and Landlord may further required that engineering analysis, review, or design be performed by Landlord's engineer at Owner's expense. If changes are made without written approval, such changes shall be the legal and financial responsibility of the Contractor to replace or repair as directed by the Landlord's structural engineer.

E. Extra care must be taken to control dust, noise and safety of workmen, patrons, tenants, etc. General Contractor shall properly protect work for public safety and against accident, weather or any other hazard with lights, guard rails, etc. as necessary (temporary barricade if needed). Any damage between construction line & temporary barricade shall be repaired or replaced at G.C.'s expense.

1.5 SELECTIVE DEMOLITION

A. Work included: Contractor to provide all work, labor, materials, and equipment to complete all the demolition as specified herein or shown on these drawings and notes

B. Summary: Demolish and remove selected portions of building, demolish and remove selected site elements, demolish and remove below grade abandoned building foundation as required for new construction, disconnect, cap, or seal utilities prior to demolition

C. Patch and repair damaged surfaces caused by selective demolition operations. Demolished materials become Contractor's property, unless noted otherwise. Dispose of demolished materials off site at a government approved dumping site.

SECTION 01330 - SUBMITTAL PROCEDURES

1. GENERAL

1.1 SUMMARY

A. This section outlines requirements for submittals during the construction process. Refer to individual specification section for specific submittals required for each section.

1.2 PROCEDURES

A. Submittals:

1. Identify project, contractor, subcontractor, major supplier
2. Identify deviations from Contract Documents
3. Provide space for Contractor and Architect review stamps
4. Contractor: Thoroughly review and stamp submittals from subcontractors prior to submitting to Architect
   a. Thoroughly review submittals and indicate where conflicts occur with Contract Documents and with work of other subcontractors
   b. Return submittals which may vary significantly from Contract Documents
   c. Cursory review and stamping of subcontractor submittal by Contractor shall not be acceptable
   d. When emailing the submittal, the contractor shall copy more than one Aria team member on the email
   e. The Architect takes no responsibility for emailed submittals that have technological incompatibilities

B. After Architect review of submittal, revise and resubmit as required and identify changes made since previous submittal

1.3 CONSTRUCTION PROGRESS SCHEDULES

A. Submit one (1) electronic copy of the construction progress schedule with separate item for each major trade and operation, identifying first day of each week within fourteen (14) days after the award of contract, and at least ten (10) business days prior to submitting applications of payment

1.4 SHOP DRAWINGS

A. Submit electronic shop drawing copy in 24-bit color pdf format (or 300 dpi minimum if scanned), clear and to scale with transmittal to the Architect. Transmittal must contain due date. Each submittal must be attached as a separate file and named accordingly. Do not set permission restrictions on attachments. Whenever possible, create digital files from originals for clarity. Unreadable or illegible submittals will be rejected.

B. After General Contractor review, distribute.

C. Shop Drawing to be presented in a clear and thorough manner. Title each drawing with Project name and number; identify each element of drawings by reference to sheet number and detail, schedule or room number of contract documents. Identify field dimensions, show relation to adjacent or critical features or work or products.

1.5 SAMPLES

A. Submit full range of manufacturer's standard colors, textures, and patterns except when more restrictive requirements are specified for Architect's selection

B. Submit a minimum of three (3) samples unless otherwise specified; Architect will retain one sample; maintain one set of approved samples at Project Field Office

1.6 PRODUCT DATA

A. Submit only pages which are pertinent in electronic format. Mark each page to identify pertinent products referenced to project manual section and article number. Show reference standards, performance characteristics and capacities, wiring and piping diagrams and controls component parts finishes dimensions and required clearances.

1.7 MATERIAL SAFETY DATA SHEET (MSDS)

A. Submit a MSDS that states all physical properties of the specific product or assembly that is submitted. If the V.O.C. value is not explicitly shown on the MSDS submit additional information as required to vary the V.O.C. quantities of the product or assembly.

1.8 MOCK-UPS

A. Erect field samples and mock-ups on site in accordance with requirements where included in Specification section or where referenced in finish schedule.

1.9 SCHEDULE OF VALUES

A. The general contractor shall submit one (1) electronic copy of the schedule of values within 14 days after the award of contract, and at least 10 business days prior to submitting applications for payment.

B. Show a line item for each section used in this specification that is subdivided into material, labor, and overhead and profit. Contractor to provide percentage of total completion and percentage of completion achieved for each progress payment. Provide unit costs for material and labor.

C. For each line item show all Sub contractors, material suppliers and the amounts to become due each.

D. Itemized separate line item costs for each of the following general costs:

1. Performance and Payment Bonds
2. Field supervision
3. Temporary utilities and controls
4. Temporary construction
5. Daily cleaning
6. General contractor overhead and profit
7. List allowances separately

1.10APPLICATION FOR PAYMENT

A. Submit application at least ten (10) days before the date established for each progress payment per Article 9 of the AIA document A201"General Conditions of the Contract for Construction"

B. Submit an adjusted schedule of values for each line item where payment is requested showing the following:

1. Monetary amounts requested for the progress payment
2. Percentage of completion achieved for the progress payment
3. Total percentage of completion at the date of progress payment request

C. Monetary amount of payment requested to match percentage of completion achieved for progress payment on the date of submission of application for payment

D. Submit all other data as required by other sections of this specification

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

1. GENERAL

1.1 ELECTRICITY AND LIGHTING

A. Provide electrical service required for construction operations, with branch wiring and distribution boxes located to allow service and lighting by means of construction-type power cords

B. Provide lighting for construction operations

1. Permanent lighting may be used during construction; maintain lighting and relamp prior to turnover

1.2 HEAT AND VENTILATION

A. Provide temporary heat and ventilation as required to maintain specified conditions for construction operation, to protect materials and finishes from damage due to temperature and humidity

B. Do not use the permanent HVAC system for temporary heat & ventilation unless written approval from the owner is granted

C. Seal all registers, grills, diffusers and transfer ducts completely until final building flush out has started and all other construction has ceased

D. Replace all unit filters with new before turnover

1.3 WATER AND SANITARY FACILITIES

A. Provide water service required for construction operations; extend branch piping with outlets located so water is available by use of hoses

B. Provide and maintain sanitary facilities and enclosures as required by applicable authorities

1.4 BARRIERS

A. Provide barriers as required to prevent public entry to construction areas and to protect adjacent properties from damage from construction operations

1. Fence: Provide minimum of 6'-0" high commercial grade chain link or painted solid wood fence around construction site; equip with gates with locks
2. Interior demising barriers: Construct interior demising barriers in compliance with Landlord's requirements

B. Where potentially in danger of damage by construction operations, provide barriers around trees and plants designated to remain

1.5 CLEANING DURING CONSTRUCTION

A. Control accumulation of waste materials and rubbish; dispose of off-site at intervals approved by Architect, landlords' rep and other applicable authorities

B. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations

SECTION 01632 - SUBSTITUTIONS

1. GENERAL

1.1 SUBSTITUTIONS

A. Requests will be considered only when a product becomes unavailable due to no fault of Contractor. More than one request for substitution will be considered if necessary.

B. Provide identification with manufacturer's literature and samples where applicable

C. Itemize comparison of proposed substitution with product specified and list significant variations

D. Note effect of substitution on other work, products, or separate contracts

E. Substitutions will not be considered for acceptance when:

1. They are indicated or implied on submittals without a formal request from Contractor
2. They are requested directly by a subcontractor or supplier
3. Acceptance will require substantial revision of Contract Documents

F. Substitute products shall not be ordered without written acceptance of Architect

G. Architect will determine acceptability of proposed substitutions and reserves the right to reject proposals due to insufficient information

1.2 CONTRACTOR'S REPRESENTATION

A. Requests constitute a representation that Contractor:

1. Has investigated proposed product and determined it meets or exceeds, in all respects, specified product
2. Will provide same warranty for substitution as for specified product
3. Will coordinate installation and make other changes which may be required for work to be complete in all respects
4. Waives claims for additional costs which subsequently become apparent
5. Will pay costs of changes to drawings, details and specifications required by accepted substitutions

SECTION 01741 - WARRANTIES

1. GENERAL

1.1 CONSTRUCTION WARRANTY

A. General Contractor to warranty all work and materials from defects for one year from date of Substantial Completion. Construction Warranty to have to following provisions during the duration of the warranty:

1. Contractor shall promptly correct work rejected by Architect as defective or as failing to conform to Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed
2. Contractor shall bear costs of correcting such rejected work, including compensation for Architect's additional services made necessary because of corrections
3. Period of correction shall be one year after Date of Substantial Completion of Work or designated portion of Work, or within such longer period as prescribed by law and by terms of special warranties required in Contract Documents

1.2 MANUFACTURE WARRANTY

A. Standard product warranties are preprinted written warranties published by the individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the Warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

D. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or remove and replace to provide access for correction of warranted construction

E. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

F. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

G. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligation, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents

H. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.

SECTION 01770 - CLOSEOUT PROCEDURES

1. GENERAL

1.1 SUBSTANTIAL COMPLETION

A. When work is substantially complete and ready for a walk through, submit written certification indicating:

1. In the Statement for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the Work claimed as substantially complete. Advise the Owner of pending insurance changeover requirements.
2. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents
3. Submit record drawings, maintenance manuals, property surveys, and similar final record information
4. Deliver tools, spare parts, extra stock, and similar items
5. Changeover locks and transmit keys to the Owner
6. Complete startup testing of systems and instruction of operation and maintenance personnel. Remove temporary facilities, mockups, construction tools, and similar elements.
7. Complete final cleanup requirements, including touch-up painting and change-out of equipment filters. Touch up and repair and restore marred, exposed finishes.

1.2 FINAL COMPLETION

A. When comments and work from the review at substantial completion are resolved and completed, submit written certification indicating:

1. Work has been inspected for compliance with Contract Documents
2. Work has been completed in accordance with Contract Documents and have deficiencies listed with Certificate of Substantial Completion have been corrected
3. Equipment and systems have been tested in presence of Owner's representative and are operational
4. Work is complete and ready for final inspection

1.3 FINAL CLEANING

A. Execute final cleaning prior to final inspection

1. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces; vacuum soft surfaces
2. Clean equipment and fixtures to a sanitary condition, clean filters of mechanical equipment, replace filters where cleaning is impractical
3. Clean site; sweep paved areas
4. Remove waste, surplus materials and rubbish from Project and site

1.4 PROJECT RECORD DOCUMENTS

A. Indicate actual work on as-built Drawings; indicate actual products used in Project Manual, including manufacturer, model number and options

B. At Contract close-out submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor

C. Affidavits A.I.A. G706, G706A, G707

1.5 OPERATION AND MAINTENANCE DATA

A. Provide data for:

1. Electrically operated items
2. Mechanical equipment and controls
3. Electrical equipment and controls
4. Submit two sets prior to final inspection, bound in 8½" by 11" three-ring binders and systems, using operation and maintenance data as basis of instruction

1.6 SYSTEMS DEMONSTRATION

A. Instruct owner's personnel in operation, adjustment, and maintenance of equipment and systems, using operation and maintenance data as basis of instruction

1.7 WARRANTIES

A. Submit written warranties to the Architect prior to the date stated for Substantial Completion as required by each individual section per "Section 01741 - Warranties"

B. Bind warranties in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2 - by - 11 inch paper

1. When warranted construction requires operation and maintenance manuals provide additional copies of each required warranty, as necessary, for inclusion in each required manual

SECTION 03301 - CAST IN PLACE CONCRETE

1. GENERAL

1.1 SUMMARY

A. Provide all labor, material, work and equipment necessary to complete all Cast-In-Place Concrete as shown on the drawings or specified herein, including but not limited to:

1. Cast-in-place concrete-not shown on the structural drawings
2. Vapor retarder (same as vapor barrier)
3. Steel reinforcement bars, & accessory ties, anchors, supports, etc.
4. Steel reinforcement wire fabric, & accessories
5. Floor sealer/hardener
6. Flatwork control joints

1.2 SUBMITTALS

A. Submit product data for each product used:

1. Mix design description
2. Mix design testing reports for each mix used
3. Cold weather placement procedures
4. Warm Weather placement procedures

B. Submit shop drawing showing the following:

1. Steel reinforcing detailing and fabrication
2. Location of control and expansion joints

1.3 DESIGN REQUIREMENTS

A. Concrete materials and workmanship shall be in accordance with the latest edition of the American Concrete Institute's publications unless more stringent requirements are specified on the contract drawings or these specifications:

1. ACI 117 - Tolerances for Concrete Construction
2. ACI 201.2 - Guide to Durable Concrete
3. ACI 301 - Specifications or Structural Concrete
4. ACI 302 - Recommended practice for Concrete Floor and Slab Construction
5. ACI 304 - ACI manual for Concrete Inspection
6. ACI 311 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
7. ACI 315 - Details and Detailing of Concrete Reinforcement
8. ACI 318 - Building Code Requirements for Reinforced Concrete
9. ACI 347 - Recommended Practice for Concrete Form Work

2. PRODUCTS

2.1 MATERIALS

A. Portland Cement: Conforming to ASTM C150 in types as recommended by the ACI for the specific project conditions to which the concrete will encounter during curing and after installation

B. Fly Ash: If fly ash is used it must conform to ASTM C618, Class C or F

C. Aggregates:

1. Fine and coarse aggregates for normal weight structural and non-structural concrete: ASTM C33
2. Aggregates for lightweight structural and non-structural concrete: ASTM C330
3. Alkali Silicate Reactivity: Expansion of fine aggregate tested per ASTM C1260 shall not exceed 0.15%
4. If fly ash or other pozzolans are used to reduce shrinkage to meet this requirement, expansion of Fine aggregate tested per ASTM C1260 without fly ash or other pozzolans shall not exceed 0.25%
5. Coarse aggregates shall not contain quartzite or gneiss

D. Water: Potable, clean, and free from deleterious amounts of acids, alkalies or organic materials

E. Admixtures:

1. Air Entraining Admixture: ASTM C260
2. Water Reducing Admixtures: ASTM C494, Type A and free from chlorides and added lignin
3. High-Range Water-Reducing Admixture (Superplasticizer): ASTM C494, Type F or G, free from chlorides and added lignin
4. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than .05% chloride ions

2.2 Accessories:

A. Under slab vapor barrier: Provide under slab vapor retarder as show on construction drawings per "Section 07191 - Under Slab Vapor Retarders"

B. Expansion joint and isolation joint filler: Preformed, resilient, non-extruding asphalt impregnated cane fiber, ASTM D1751

C. Reinforcing Steel: ASTM A615 or ASTM A996

D. Welded Wire Fabric: ASTM A185

E. Sheet Materials for Curing Concrete: ASTM C171

F. Splash Blocks: Poured-in-place, factory precast, or job site cast

2.3 MIXES

A. Submit concrete mix design for each type of concrete at least 14 days prior to the proposed start of placement. Mix designs must be reviewed prior to pouring concrete. Review is for conformance with specification requirements only. Contractor is responsible for performance.

B. Concrete shall conform to the requirements of ASTM C94 (Option A) unless other requirements of this project specification are more stringent. Establish mix proportions according to the procedure in ACI 301.

C. Concrete Materials and Mixing for fiber-reinforced concrete: ASTM C1116 alternative number 2, performance level 1, and toughness index I5

D. Provide concrete with workability such that it will fill the forms, without voids or honeycombs, when properly vibrated, without permitting materials to separate or excess water to collect on the surface

E. Provide mixes meeting the following minimum requirements:

1. Exterior Concrete:
   a. Minimum 28 day compressive strength: 3,000 psi
   b. Maximum water to cement ratio: 0.45
   c. Minimum Cement Content: 564 lb./cu. yd.
   d. Air-entrainment by volume: 6%-8% depending upon size of aggregate used
2. Exterior Concrete Flat Work:
   a. Minimum 28 day compressive strength: 3,000 psi
   b. Maximum water to cement ratio: 0.45
   c. Minimum Cement Content: 564 lb./cu. yd.
   d. Air-entrainment by volume: 6%-8% depending upon size of aggregate used
3. Interior Concrete Slab on Grade:
   a. Minimum 28 day compressive strength: 3,000 psi
   b. Maximum water to cement ratio: 0.45
   c. Minimum Cement Content: 564lb./cu. yd.
   d. Air-entrainment by volume: 2%-3% depending upon size of aggregate used

F. Substitution of fly ash for Portland Cement shall not exceed 30% by weight of cement for footings and 25% by weight of cement for other concrete

G. Exterior concrete includes: exterior sidewalks, aprons and slabs; semi-exterior slabs at overhead doors, loading docks, etc.; exterior walls, piers, columns, etc.

H. Structural lightweight concrete shall have an air-dry unit weight, per ASTM C567, of 115 pcf ±3 pcf

I. Lightweight non-structural concrete topping shall have a freshly mixed weight of 80 pcf ±3 pcf, Air-dry density to be 70 pcf, Determine weights per ASTM C567

3. EXECUTION

3.1 INSTALLATION

A. Formwork: Design, construct, erect, shore, brace, and maintain formwork according to ACI 301

B. Graded Aggregate Fill: Install minimum 4" thick layer of number 57 stone, clean and washed sand or clean river rock under slab unless noted otherwise in these specifications or the contract drawings. Compact aggregate fill later to 100% Standard Proctor.

C. Vapor Retarder: Install, protect, and repair under slab vapor retarder sheets according to ASTM E1643; place sheets in position with the longest dimension parallel with direction of pour

D. Steel Reinforcement: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

E. Joints: Install expansion and control joints as indicated on drawings and as required to control cracking and allow for normal thermal expansion and contraction

F. Concrete Placement: Comply with recommendations in ACI 304R for measuring, mixing, transporting, and placing concrete

1. Do not add water to concrete during delivery, at Project site, or during placement
2. Consolidate concrete with mechanical vibrating equipment

G. Tolerances: Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials"

H. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection, and follow recommendations in ACI 305R for hot-weather protection during curing

I. Curing Methods: Cure formed and unformed concrete for at least seven days by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these

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FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

JAMES R. LONDON 081-000348 STATE OF ILLINOIS
Expires 11/30/22
11/24/20

Drawing Title
SPECIFICATIONS

Job No. 204461
Drawn Author
Scale 12" = 1'-0"
Date 11/24/20

Sheet No.
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SECTION 04200 - UNIT MASONRY

1. GENERAL

1.1 SUMMARY

A. Furnish and Install: All masonry work indicated on the drawings and specified, including but not limited to the following:

1. Decorative cut concrete unit masonry
2. Concrete masonry units (CMU)
3. Clay masonry units (Common Brick or Face Brick)
4. Furnish and install control joints as indicated on the drawings
5. Installation of steel lintels and other built-in miscellaneous metal items and required accessories and/or reinforcement

B. The price for all work specified in this Section shall be included in the total price indicated by the Bidder in General Contract Work

1.2 QUALITY ASSURANCE

A. Certification:

1. Competence: The approved mason must have a reputation for doing satisfactory work on time and shall have successfully completed comparable work. The Architect reserves the right to approve the mason selected.

B. Materials:

1. Masonry Units: Obtain masonry units from one manufacturer cured by one process and of uniform texture and color, for each type required for each continuous area and visually related areas. Whenever concrete units are shown or scheduled to be painted, provide fine textured units.
2. Mortar: Do not change source or brands of masonry mortar materials during the course of the work
3. Decorative Cut Masonry Units: Uniform texture, color and tolerances
4. Do not use metal reinforcing, or ties having loose rust or other coating, including ice, which will reduce or destroy bond

C. Codes: Comply with the applicable requirements of governing authorities and codes for the types of masonry construction shown

D. Coordination: Review installation procedures and coordinate with other work that must be integrated with masonry

E. Cut stone workmanship and fabrication shall comply with quality standards and practices of Indiana Limestone Institute

1.3 SUBMITTALS

A. Submit product data for each product used

2. PRODUCTS

2.1 Masonry Units

A. Concrete Masonry Units (CMU): Nom. Size, 8in x 8in x 16in or 4in x 8in x 16in

1. Hollow load-bearing units: ASTM C90, Grade N, Type I, normal weight
2. Provide for lintels and bull nose corners as indicated on drawings

B. Clay Masonry Units (Common Brick or Face Brick):

1. Building (common) brick, ASTM C62, Grade SW
2. Facing brick, unglazed, ASTM C216, Grade SW, Type FBS

2.2 Mortar & Grout

A. Mortar: ASTM C270, Type N, color to match color selected by architect from manufacture's full range of colors

B. Portland Cement: ASTM C150, Type I, non-staining, without air entrainment. Use Type III high-early strength as required for laying masonry in cold weather.

C. Masonry Cement: ASTM C91, Type II, non-staining, except with 12% maximum air content by volume, not acceptable for exterior applications

D. Hydrate Lime: ASTM C207, Type S, special finishing hydrated lime, non-air entrained

E. Aggregate for Mortar: Sand, ASTM C144

F. Water: Clean potable water free of deleterious materials which would impair strength or bond

G. Commercial Cement Grout: Proprietary compound of Portland cement and additives, factory blended to decrease shrinkage and increase moisture resistance

1. Products offered by manufacturers to comply with the requirements and include the following:
   a. Hydroment Joint Filler; Upco Chem/USM
   b. L & M Acid-R Grout; L & M-Surco
   c. SAC; Syracuse

H. Fine Aggregate for Grout; Sand, ASTM C404, size No 1

I. Coarse Aggregate for Grout: ASTM C404, size No. 8 or size No. 89

2.3 STEEL REINFORCEMENT BARS: Steel Bars complying with ASTM A615, Grade 60 unless otherwise specified by structural engineer

2.4 Masonry Accessories

A. Manufactures: Provide products that comply with the project requirements and are manufactured by the following

1. Dur-O-Wal
2. AA Wire Products
3. Masonry Reinforcing Corp of America
4. Heckmann Building Products Inc.

B. Single Wythe Joint Reinforcement: To consist of ladder type joint reinforcement manufactured per ASTM A951 from hot dip galvanized steel per ASTM A153

C. Multi-Wythe Adjustable Joint Reinforcement: To consist of adjustable ladder type joint reinforcement equal to Dur-O-Wal's Ladder-Eye- DA3600 system manufactured per ASTM A951 from hot dip galvanized steel per ASTM A153

D. Wire mesh ties: Wire mesh ties or hardware cloth used to anchor non load-bearing partitions to intersecting masonry

1. Manufacture from at least 15-guage zinc or copper-coated steel wire, have a ½ in mesh and be at least 12 in. long. The width should be 1 in. less than the wall thickness.

E. Adjustable Wall Ties- Metal Stud Back-up:

1. Veneer Anchor Screw on Plates: Hot dip galvanized steel per ASTM A153. Plat should be equal to Dur-O-Wal # DA210 veneer anchor screw on plate
2. Triangular Wall Tie: 3/16" diameter Hot dip galvanized steel per ASTM A153

F. Adjustable Wall Ties- Structural Steel Back-up:

1. Channel anchor slot manufactured from galvanized sheet steel per either ASTM A153 or ASTM A653. Channel anchor should be equal to Dur-O-Wal # DA901 Channel Anchor Slot.

G. Wall Flashing: The product supplied shall be marked with the manufacturer or brand name factory's applied at frequent intervals, permitting easy identification. The Contractor has the option of installing any one of the types of materials listed below.

1. Copper reinforced with inter-lacing sisal fibers and bonded with two layers of asphalt to heavy creped craft paper. Copper Armored Sisalkraft, Sandell, Wasco or equal, 3 oz. psf.
2. Non-reinforced, homogeneous, waterproof, impermeable sheeting compound of elastomeric substances which have been reduced to a thermoplastic state and extruded into continuous sheeting approximately 0.02" thick and weighing approximately 22 ounces per square yard. Nervastral, Sandell Nu-Flex, or equal.

H. Compressible Filler: Expanded polyethylene.

I. Control Joint: Install masonry control joint in walls as indicated on plans and elevations or as required. Joint material fabricated of PVC with a hardness of 70 durometer. Vinylex type CJ-A, or Dur-O-Wal. Provide full bond break at all control joints.

J. Mortar Net: Dur-O-Wal, DA1008 Mortar Net or equal installed in at base of all cavities where a cell vent is installed

K. Cell Vent: Dur-O-Wall, DA1006 Cell Vent or equal as install as shown on drawings

2.5 MIXES

A. General: Do not lower the freezing point by use of admixtures or anti-freeze agents. Do not use calcium chloride in mortar or grout.

B. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specifications for Type 'N' Mortar, except where indicated otherwise

C. Grout: Portland cement, sand gravel, and water, proportioned as required per ASTM C476 to provide a 28-day minimum compressive strength of 3,000 psi

D. Job Mixing Mortar or Grout:

1. All materials for mortar or grout shall be measured by volume. Combine and mix cement, lime water and aggregates for a minimum of 5 minutes in a mechanical batch mixer. For mortar, add as much water as is required for workability. Mortar may be re-tempered by adding water and remixing, as required for workability. Do not use mortar or grout which has begun to set or if more than 2-1/2 hours or 1-1/2 hours if the temperature is 80 degrees, has elapsed after initial mixing.
2. Mix grout to have a slump of 10" plus or minus 1" at time of placement
3. Do not add air-entraining agents or other admixtures
4. Add tint to mortar as recommended by manufacture to ensure uniformity from batch to batch

2.6 INSULATION (where noted on drawings)

A. Rigid Insulation - see Section 07210 for products

B. Zonolite vermiculite loose fill in all CMU block core

3. EXECUTION

3.1 EXAMINATION

A. General:

1. Build masonry construction to the full thickness shown
2. Examine conditions, with installer present, for compliance with requirements, for installation tolerances, for site specific conditions, and other conditions affecting performance of unit masonry
3. Examine rough-in and built-in construction to verify actual locations prior to installation
4. Start of work will indicate acceptance of conditions

3.2 INSTALLATION

A. Basic Requirements:

1. Comply with ACI 530.1, the "Recommended Practices & Guides Specifications for Severe (Cold-Hot) Weather, Masonry Construction", all local codes and regulations, and this specification
2. Build chases and recesses as shown or required for the work of other trades. Provide not less than 8" of masonry between chases or recess and jamb of openings, and between adjacent chases and recesses.
3. Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.
4. Build chases and recesses as shown or required for the work of other trades. Provide not less than 8" of masonry between chases or recess and jamb of openings, and between adjacent chases and recesses.
5. Cut masonry units using motor driven saws to provide clean, sharp unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full-sized units without cutting wherever possible.
6. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to properly locate openings, movement type joints, returns and offsets. Avoid the use of less than half-size units at corner, jambs and wherever possible at other locations.
7. Lay-up walls plumb and true to comply with specified tolerances, with courses level, accurately spaced and coordinated with other work
8. Set decorative cut stone per "Section - 04851 Manufactured Masonry Veneer" and cast stone sections per "Section 04720- Cast Stone" of this specification
9. Lay exposed masonry in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners. Do not use units with less than 4" horizontal face dimensions at corners and jambs.

B. Construction Tolerances:

1. Variation from Plumb: For lines and surfaces of columns, walls and arises, do not exceed 1/4" in 10' or 3/8" in a story height of 20' maximum. Except for external corners, expansion joints and other conspicuous lines do not exceed 1/4" in any story or 20' maximum.
2. Variation from level: For lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4" in any bay or 20' maximum, nor 3/4" in 40' or more
3. Variation of Linear Building Lines: For position shown in plan related portion of columns, walls and partitions, do not exceed 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more
4. Variation in Cross Sectional Dimensions of Multi-Width Elements: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/4" nor plus 1/2"
5. Variation in Plans: Do not exceed 1/16" offset, unit to unit at joint
6. Comply with ACI 530.1, section 2.3.3.2

C. Setting - Stone:

1. All decorative cut stone units shall be set accurately in strict accordance with the contract and shop drawings
2. All castdstone units shall be set accurately in strict accordance with the contract and shop drawings

D. Composite Walls:

1. Fill the vertical, longitudinal joint between withes (collar joint) solidly with mortar by parging the in-place wythe and shoving units into the parging
2. Provide weepholes in exterior applications located immediately above ledges and flashing, spaced maximum 2'-0" O.C.
3. Use 12" lengths of 1/4" cotton rope (sash cord) cut flush with face of wall

E. Cavity Walls:

1. Keep cavity clean of mortar droppings and other materials during construction
2. Tie exterior wythe to back up with continuous horizontal joint reinforcement as specified
3. Provide rope wicks and cell vents in head joints of exterior wythe of cavity wall located immediately above ledges and flashing, spaced maximum 2'-0" O.C. Recess cell vents 1/8" from face of masonry. Cut rope wicks flush with face of wall.
4. At rigid cavity wall insulation, install rope wicks so that the back of the rope wick comes in contact with the drainage plane of the rigid cavity wall insulation
5. Remove mortar from face of CMU prior to installation of liquid applied air barrier per Division 7 of this specification. Ensure direct contact of back of the ridged cavity wall insulation.
6. Cut insulation units to fit tight to each other. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly in all directions. Press units firmly against inside of wythe.

F. Mortar Bedding and Jointing:

1. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and foundation walls and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout.
2. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.
3. Tool exposed joints slightly concave, except as otherwise shown or required to match existing
4. Cut joints flush for masonry walls, which are to be concealed or to be covered by other materials
5. Remove masonry units disturbed after lying, clean and reset in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

G. Stopping and Resuming Work:

1. Rack back 1/2 masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units prior to laying fresh masonry.

H. Built-In Work:

1. As the work progresses, build-in items specified under this and other sections and as required to complete the project. Fill in solidly with masonry around built-in items.
2. Fill space between hollow metal frames and masonry solidly with mortar
3. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core

I. Horizontal Joint Reinforcing and Structural Bonding:

1. Provide continuous horizontal joint reinforcing at 16" O.C. vertically. Fully embed longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side walls and 1/2" at other locations. Lap reinforcement a minimum of 6" at ends of units. Do not bridge control and expansion joints with reinforcing except at wall openings.
2. Provide continuity at corners and wall intersections by use of pre-fabricated "L" and "T" sections. Cut and bed units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.
3. Reinforce masonry openings greater than 1'-0" wide, with horizontal joint reinforcing placed in two horizontal joints approximately 8" apart, immediately above the lintel and immediately below the sill. Extend reinforcing a minimum of 2'-0" beyond jambs of the opening, bridging control joints where provided.
   a. In addition to wall reinforcing, provide additional reinforcing at openings as required to comply with the above
   b. For exterior walls, use truss type reinforcing for interior partitions; use either truss type or ladder type reinforcing

J. Anchoring Masonry Work:

1. Anchor masonry to structural members where masonry abuts or faces such member to comply with the following:
   a. Provide compressible filler not less than 1" thickness between masonry and structural member
   b. Provide expansion filler under all shelf angles and at face brick vertical masonry expansion joints
   c. Anchor masonry to structural members with metal ties embedded in masonry joints and attached to structure. Provide anchors with flexible tie sections.
   d. Space anchors as shown but not more than 16" O.C. vertically or 16" O.C. horizontally
   e. Weld veneer anchor plates to steel
2. Anchor single wythe masonry veneer to metal studs with masonry veneer anchors to comply with the following requirements:
   a. Fasten each anchor section through sheathing and air barrier to studs with self-sealing anti corrosive fastener to ensure a weather tight seal
   b. Embed tie section in masonry joints. Provide not less than 1-1/2" Air space between back of masonry veneer wythe and face of sheathing
   c. Locate anchor section relative to course in which tie section is embedded to allow maximum vertical differential movement of tie up or down
   d. Space anchors as shown but not more than 16" O.C. vertically or 16" O.C. horizontally

K. Flashing of Masonry Work:

1. Provide flashing at masonry work, whether shown or not shown, at shelf angles, lintels, ledges, and other obstructions to interrupt the downward flow of water in the wall so as to divert such water to the exterior
2. Prepare masonry surfaces to be smooth, level, and free from projections, which might puncture flashing
3. Seal flashing penetrations with mastic before covering with mortar
4. At lintels and shelf angles, install shelf adhering flexible flashing directly on steel surface
5. Extend flashing beyond edge of lintels and walls at least 8" and turn up edge on sides to form pan to direct moisture to the exterior
6. Install flashings in accordance with manufacturer's instructions
7. Install reglets and nailers for flashing and other related work where shown to be built into masonry work
8. Copper reinforced flashing: Extend flashing through the exterior face of the masonry wall and terminate flashing 1/2" from face of wall. Turn down to form drip edge unless otherwise shown.
   a. Overlap flashing joints 4" minimum and provide flat locked seams set in mastic. Extend flashing beyond edge of lintels, sills and end terminations and turn up edges on sides to form end dam pan to direct moisture to the exterior.
9. Non-Reinforced, Homogeneous, Waterproof, Sheet Flashing: Remove Dust from contact surfaces. Prime as recommended by manufacture when surfaces are too dirty or dusty for good adhesion at initial touch and at temperatures below 40 degrees Fahrenheit.
   a. Install 2" stainless steel drip edge by extending 1-3/4" under the edge of exterior face of masonry wall, 1-3/4" over the edge of concrete at top of foundation walls, and 1-3/4" over edge of steel lintels or shelf angles. Edge of stainless steel drip edge to be bent down 1/4" at (45 degrees) to form drip. At foundation set 2" stainless steel drip edge in either bed of mastic or strip of self-adhering flexible flashing.
   b. Install the sheet flashing with the edge of the sheet set 1-1/2" onto the 1-3/4" horizontal portion of the 2" stainless steel drip edge. Overlap and press seams tight to provide a water tight seal.
   c. Install preformed boots at inside, outside corners, and at end dams at end terminations. Install sheet flashing 4" minimum over preformed boots. At end dams extend sheet flashing to exterior face of masonry and cut flush. In all cases overlap and press seam tight to achieve a water tight seal.
   d. In cavity wall construction where a concrete masonry unit back up wall abuts horizontal or vertical members of a structural frame, cover joint with a continuous sheet of rubberized asphalt flashing

3.3 Repair

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement

B. During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar

C. Point up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds

3.4 CLEANING

A. Cleaning exposed, unglazed masonry surfaces: Wipe off excess mortar as the work progresses. Dry brush at the end of each day's work.

B. Final Cleaning:

1. After mortar is thoroughly set and cured, clean sample wall area of approximately 20 square feet. Obtain Architect's acceptance of sample cleaning before proceeding to clean rest of masonry work.
2. Prior to cleaning, remove all stains and graffiti using Sure-Klean Stand-Off Graffiti Remove, per manufacturer's instructions
3. Clean new concrete masonry surfaces with a product recommended by Sure-Klean or Process Solvent Company for the type of substrate. Conform to cleaning product manufacturer's instructions.
4. Acid cleaning of masonry will not be permitted
5. Other specially formulated masonry cleaning products will be acceptable required to match existing

C. Sealer at Exterior Masonry: Provide sealer as noted on drawings or compatible with finished Masonex

SECTION 05400 - COLD-FORMED METAL FRAMING

1. GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior steel-stud wall framing for cladding system per drawings
2. Interior steel stud partition framing gypsum wallboard assemblies

1.2 SYSTEM DESCRIPTION

A. AISI "Specifications": Calculate structural characteristics of cold-formed metal framing according to AISI's "Load and resistance Factor Design Specification for Cold-Formed Steel Structural Members"

B. Structural Performance: Engineer, fabricate and erect cold-formed metal framing to withstand design loads within limits and under conditions required

1. Design framing systems to withstand design loads without lateral deflections greater than 1/240 of the wall height
2. Exterior Framing; Wind Loads: Uniform pressure (velocity pressure of 40 lb per sq. ft. within 20 feet each building corner), acting inwards or outwards
3. Interior Framing: Design loads for interior framing shall be 5 lbs per sq. ft.
4. Design framing systems to provide for movement of framing members without damage or overstressing, exterior insulation and finish system component failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change (range) of 120 deg F. (67 deg C)
5. Design framing system to accommodate deflection of primary building structure and construction tolerances, and to maintain clearances at opening

C. Design exterior nonload-bearing framing to accommodate lateral deflection without regard to contribution of exterior finish system

D. Engineering Responsibility: Engage a fabricator who assumes undivided responsibility for engineering cold-formed metal framing by employing a Registered Structural Engineer in the State which the project occurs to prepare design calculations, shop drawings, and other structural data

1.3 SUBMITTALS

A. Submit product data for each type of cold-formed metal framing, accessory, and product

B. Shop drawings showing layout, spacing, sizes, thicknesses, and types of cold-formed metal framing, fabrication, fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details and attachments to other units of Work.

1. For cold-formed metal framing indicated to comply with certain design loadings, include structural analysis data sealed and signed by a Registered Structural Engineer in the State which the project occurs who was responsible for its preparation

1.4 QUALITY ASSURANCE

A. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding CodeSteel" and AWS D1.3 "Structural Welding CodeSheet Steel"

B. Fire-Resistance Ratings: As indicated by design designations listed in UL "Fire Resistance Directory", or by Warnock Hersey or another testing and inspecting agency acceptable to authorities having jurisdiction

C. Structural Engineer Qualifications: A structural Engineer legally authorized to practice in the State where the project occurs and experienced in providing engineering services of the kind indicated that have resulted in the installation of cold-formed metal framing similar to this Project in material, design, and extent and that have a record of successful in-service performance

2. PRODUCTS

2.1 MATERIALS

A. For Exterior Framing; Galvanized-Steel Sheet: ASTM A446, zinc coated according to ASTM A525, and as follows:

1. Coating Designation: G 60
2. Grade: As required by structural performance

B. Galvanized Steel Studs: Manufacturer's standard C-shaped steel studs of web depths indicated, with lipped flanges, and complying with the following:

1. Design Uncoated-Steel Thickness:
   a. 0.0358 inch (20-gauge)
   b. 0.0474 inch (18-gauge)
   c. 0.0598 inch (16-gauge)
2. Web: Punched

C. For Interior Wall framing; Prime-Painted Steel Sheet: ASTM A570 or ASTM A611, cleaned, pretreated, and primed with manufacturer's baked-on, lead-and chromate-free, rust-inhibitive primer conforming to the performance requirements of FS TT-P-664

1. Grade: As required by structural performance

D. Steel Studs: Manufacturer's standard C-shaped steel studs of web depths indicated, with lipped flanges, and complying with the following:

1. Design Uncoated-Steel Thickness:
   a. 0.0358 inch (20-gauge)
   b. 0.0474 inch (18-gauge)
   c. 0.0598 inch (16-gauge)
2. Web: Punched

E. Galvanized Steel Track: Manufacturer's standard U-shaped steel track, unpunched, of web depths indicated, with straight flanges, and complying with the following:

1. Design Uncoated-Steel Thickness: Matching steel studs
2. Flange Width: Manufacturers standard deep flange deflection track where indicated, standard flange elsewhere

3. EXECUTION

3.1 INSTALLATION

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled

B. Install cold-formed metal framing and accessories plumb, square, true to line, and with connections securely fastened, according to manufacturer's recommendations and the requirements of this Section

1. Cut framing members by sawing or shearing; do not torch cut
2. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
   a. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work
   b. Locate mechanical fasteners and install according to cold-framed metal framing manufacturer's instructions with screw penetration joined members by not less than 3 exposed screw threads

C. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members

D. Provide temporary bracing and leave in place until framing is permanently stabilized

E. Fasten reinforcement plate over web penetrations that exceed size of manufacturer's standard punched openings

F. Erection Tolerances: Install cold-formed metal framing to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.2 INSTALLATION (EXTERIOR WALL)

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:

1. Stud spacing: See contract documents

C. Set studs plumb except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements

D. Isolate steel framing form building structure at locations indicated to prevent transfer of vertical loads while providing lateral support

1. Connect studs with vertical slide clips to continuous angles or supplementary framing anchored to building structure

E. Install horizontal bridging in curtainwall studs, spaced in rows not more than 48 inches apart. Fasten at each stud intersection.

1. Bridging: Combination of flat, steel-sheet strips of width and thickness indicated and stud-track blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtainwall-framing system

G. Erection Tolerances: Bolt or weld framing at horizontal and vertical junctures to produce flush, even, true-to-line joints

1. Maximum variation in plane and true position between prefabricated assemblies should not exceed 1/16 inch

3.3 INSTALLATION (INTERIOR WALL)

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacing recommended by the manufacturer, but not greater 24 inches for power-driven anchors

B. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom track. Space studs as indicated on drawings.

C. Set studs plumb except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements

D. Isolate steel framing from building structure at locations indicated to prevent transfer of vertical loads while providing lateral support

E. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing

F. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system

3.4 REPAIRS

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanizing repair paint according to ASTM A780 and the manufacturer's instructions

B. Touchup Painting: Wire brush, clean, and paint scarred areas, welds, and rust spots on fabricated and installed prime-painted, cold-formed metal framing

1. Touchup painted surfaces with same type of shop paint used on adjacent surfaces

3.5 FIELD QUALITY CONTROL

A. Testing and Inspection Laboratory: A qualified Independent Testing and Inspection Laboratory employed and paid by Owner will perform field quality-control testing

B. Field and shop welds will be subject to inspection and testing

C. Testing laboratory will report test results promptly and in writing to Contractor and Architect

D. Remove and replace Work that does not comply with Specified requirements

E. Additional testing will be performed to determine compliance of corrected Work with specified requirements

3.6 PROTECTION

A. Provide final protection and maintain conditions in a manner acceptable to manufacturer and Installer to ensure that cold-formed metal framing is without damage or deterioration at the time of Substantial Completion

SECTION 05510 - METAL STAIRS

1. GENERAL

1.1 WORK INCLUDED

A. Steel-framed stairs

B. Steel pipe handrails and railing systems attached to metal stairs

C. Steel pipe handrails attached to walls adjacent to metal stairs

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Engineer, fabricate, and install steel stairs to withstand the following structural loads unless more stringent requirements are required by the local governing code

1. Metal Stair assembly shall carry minimum uniform live load of 100 lbs/sf
2. Metal Stair tread assembly shall carry a minimum concentrated load of 300lbs in an area of 4 square inches applied on the center of the stair tread
3. Railing assembly shall withstand a single concentrated load of 200 pounds applied in any direction at any point along the top, and transfer this load through the supports to the structure
4. Railing assembly shall withstand a minimum uniform load of 50 lbs. per linear ft. applied in any direction at any point along the top, and transfer this load through the supports to the structure
5. Glass used in handrail assemblies shall comply with safety glazing requirements of ANSI Z97.1 and also be able to with stand the Railing assembly loads stated above

B. Stair & Railing Certification: Submit engineer certification by licensed civil or structural engineer in the state the project occurs indicating stairs and railing system comply with Contract Documents and applicable code requirements

1.3 SUBMITTALS

A. Submit shop drawings and product data

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm experienced in producing steel stairs similar to those indicated for this Project with a record of successful in-service performance and with sufficient production capacity to produce required units without delaying the work

B. Installer Qualification: Arrange for steel stair installation specified in this Section by the same firm that fabricated them

C. Engineer Qualifications: A professional engineer legally authorized to practice in the State and experienced in providing engineering services of the kind indicated that have resulted in the installation of metal stairs (including handrails and railing system) similar to this Project in material, design, and extent and that have a record of successful in-service performance

D. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code - Steel" and AWS D1.3 "Structural Welding code-Sheet Steel"

2. PRODUCTS

2.1 MATERIALS

A. Metal Surfaces, General: For surfaces exposed to view in the completed work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, roughness, or, for steel sheet, variations in flatness exceeding those permitted by referenced standards for stretcher-leveled sheet.

B. Steel Plates, Shapes, and Bars: ASTM A36

C. Steel Tubing: Product type (manufacturing method) and as follows:

1. Hot-Formed Steel Tubing: ASTM A501

D. Steel Pipe: ASTM A53, standard with (schedule 40), unless otherwise indicated, or another weight required by structural loads

1. Black finish, unless otherwise indicated

E. Rolled Steel Floor Plate: ASTM A786

F. Uncoated Structural Steel Sheet: Product type (manufacturing method), quality, and grade as follows:

1. Hot-Rolled Structural Steel Sheet: ASTM A570, grade as follows:
   a. Grade 30, unless otherwise indicated or required by design loading

G. Welding Rods and Bar Electrodes: Select according to AWS specifications for the metal alloy to be welded

2.2 PAINT

A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure

B. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers

2.3 FABRICATION

A. Form steel stairs from materials of size, thickness, and shapes indicated, but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support.

2.4 STEEL-FRAMED STAIRS

A. Construct stairs to conform to sizes and arrangements indicated. Join pieces together by welding, unless otherwise indicated. Provide complete stair assemblies, including meal framing, hangers, columns, handrails, railing system, balusters, struts, clips, brackets, bearing plates, or other components necessary for the support of stairs and platforms and as required to anchor and contain the stairs on the supporting structure.

1. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM "Metal Stair Manual" for class of stair designated, except where more stringent requirements are indicated
   a. Commercial class, unless otherwise indicated

3. EXECUTION

3.1 FINISHES

A. General: Finish metal stairs after assembly

1. Comply with NAAMM "Metal Finishes Manual" for recommendations on application and designations of finishes

3.2 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, weld plates, and anchor bolts. Coordinate delivery of such items to Project site.

3.3 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing steel stairs to in-place construction; include threaded fasteners for precast concrete, concrete and masonry inserts, through-bolts, lag bolts, and other connectors as required

SECTION 05700 - ORNAMENTAL METALS

1. GENERAL

1.1 SUMMARY

A. Metal fabrications includes items made from iron and steel shapes, plates, bars, strips, tubes, pipes and castings which are not a part of structural steel or metal systems specified elsewhere

1.2 SUBMITTALS

A. Submit shop drawings for each fabrication and product data for each material

2. PRODUCTS

2.1 MATERIALS

A. Steel Shapes, Plates and Bars: ASTM A36

B. Structural Steel Sheet: Hot rolled, ASTM A570; or cold rolled, ASTM A611, Class 1; of grade required for design loading

C. Steel Pipe: ASTM A53, Type S seamless, grade as selected by fabricator and as required for design loading; minimum standard weight, STD or Schedule 40

D. Steel tubing: Cold formed ASTM A500; or hot rolled, ASTM A501; minimum Grade 9; seamless where exposed

E. Fasteners and Rough Hardware: Type required for specific usage; provide zinc-coated fasteners for exterior use or where built into exterior walls

F. Grind exposed welds continuous, smooth and flush with adjacent finished surfaces, and ease exposed edges to approximate 1/32" uniform radius

G. Exposed Mechanical Fastenings: Flush countersink fasteners unobtrusively located, consistent with design of structure

H. Ladders: Comply with ANSI A14.3 and Cal/OSHA; finishes as selected by Architect from manufacturers full range of available finishes

1. Roof Ladder: Fixed aluminum access ladder with roof hatch. O'Keefe Precision L.L.C. or equal. (Mill finish) Contractor responsible to determine correct length, platform return configuration, and attachment detail. All ladders to comply with O'Keefe specification #05510.

I. Finishes: Unless otherwise scheduled, galvanize and prime paint exterior steel work and prime paint interior work

1. Provide minimum ASTM A123 or A924 and A653 G90 galvanized coating; iron and steel hardware galvanized conforming with ASTM A153

3. EXECUTION

3.1 INSTALLATION

A. Field bolt and weld to match standard of shop bolting and welding; hide bolts and screw whenever possible, where not hidden, use flush countersunk fastenings

B. Perform field welding in accordance with AWS D1.1

SECTION 05721 - ORNAMENTAL RAILINGS

1. GENERAL

1.1 SUMMARY

A. Provide ornamental items including attachment devises and accessories, as required for complete, finished installation

1.2 QUALITY ASSURANCE

A. Structural Performance: Engineer, fabricate, and install steel stairs to withstand the following structural loads unless more stringent requirements are required by the local governing code

1. Railing assembly shall withstand a single concentrated load of 200 pounds applied in any direction at any point along the top, and transfer this load through the supports to the structure
2. Railing assembly shall withstand a minimum uniform load of 50 lbs per linear ft. applied in any direction at any point along the top, and transfer this load through the supports to the structure
3. Glass used in handrail assemblies shall comply with safety glazing requirements of ANSI Z97.1 and also be able to with stand the Railing assembly loads stated above

1.3 SUBMITTALS

A. Submit shop drawings samples and product data for each product

2. PRODUCTS

2.1 MATERIALS

A. Comply with following standards for forms and types of brass

1. Seamless Tubing: ASTM B135
2. Sheet, Plate and Bar: ASTM B36
3. Castings: ASTM B176

B. Copper: ASTM B370, cold rolled or soft temper, minimum 16 oz. (0.0216" thick); finish NAAMM Specular, M22, buffed finish

C. Stainless steel: Grade 304 stainless steel or where severe corrosion conditions exist, Grade 316 shall be provided

1. Finish: BHMA 630 (US32D) or NAAMM Number 4, satin directional polished stainless steel
2. Seamless Tubing: ASTM A269
3. Sheet and Plate: ASTM A666
4. Bar Stock: ASTM A666

D. Steel Components: ASTM A36

2.2 FABRICATION

A. Hand Railings: Comply with applicable codes and ADAAG and with requirements of NAAMM "Pipe Railing Manual"; welded construction; cap exposed ends

B. Comply with AWS for recommended practices in welding each type of material; provide welds behind finished surfaces without distortion or discoloration on exposed side; dress exposed and contact surfaces

C. Exposed Mechanical Fastenings: Flush countersink fasteners unobtrusively located, consistent with design of structure

D. Separate dissimilar materials with bituminous paint where concealed, with preformed separators, or similar method to prevent corrosion

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FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT JAMES R. LICHOTA 001-020043 STATE OF ILLINOIS
Expires 04/30/22
11/24/20

Drawing Title
SPECIFICATIONS

Job No. 204461
Drawn Author
Scale 12" = 1'-0"
Date 11/24/20

Sheet No.
A591

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SECTION 06100 - ROUGH CARPENTRY

1. GENERAL
   1.1 SUMMARY
      A. This section includes minimum grading and quality standards for rough carpentry. Review local codes for additional requirements.
   1.2 QUALITY ASSURANCE
      A. All wood provide must be grade marked by one of the following associations or standards
      B. WWPA: Western Wood Products Association
      C. WCLIB: West Coast Lumber Inspection Bureau Standard Grading Rules No.17
      D. Plywood Standard: Comply with PS-1 (ANSI A199.1) and grade marked by the Engineered Wood Association (APA)
      E. RIS: Red Wood Inspection Service, Standard Specifications for Grades of California
2. PRODUCTS
   2.1 MATERIALS
      A. Provide rough dimensional that is seasoned to have a moisture content of no more than 19% and is marked either "S-DRY" per the WCLIB or "KD or S-DRY"per the WWPA
      B. Provide dimensional lumber per the National Grading Rule for Dimensional Lumber
         1. Structural Light Framing: Douglas Fir - Hemlock, No.1 grade per the WWPA and WCLIB not to exceed design values described in the WWPA Product Use Manual
         2. Light Framing: Douglas Fir - Hemlock, Standard & Better(STAND & BTR) and STUD grade, per the WWPA or Construction or Standard grades per the WCLIB
         3. Sills on Concrete or Blocking in Exterior Assemblies: Pressure Treated Douglas Fir - Hemlock No.2 grade or better per the WWPA that complies with AWPA standards for pressure impregnation containing no Urea-Formaldehyde, or Redwood, Merchantable Heart Grade
         4. Fire Retardant Treatment (F.R.T.): Comply with AWPA standards for pressure impregnation containing no Urea-Formaldehyde to achieve flame spread rating of not more than 25 in accordance with ASTM E84 or UL723
      C. Provide APA rated plywood in the thickness described on the contract drawings and as required by code. Grades and locations will be as follows unless noted otherwise.
         1. Exterior Walls, Roofs, and Subflooring: APA Structural I Rated Sheathing, EXP 1, C-D
         2. Marine Grade Plywood: APA Marine EXT, A-B
      D. Nails, Spikes, and Staples: Galvanized and conforming to requirements of ASTM F1667 and article 2303.6 - IBC 2009. Provide size and type to suite application.
      E. Bolts, Nuts, Washers, Lags, Pins, and Screws - Medium Carbon Steels; galvanized; size and type to suit application
3. EXECUTION
   3.1 INSTALLATION
      A. Provide wood nailers of size, shape where indicated, required
      B. Fasten securely to substrate with appropriate fasteners. Use expansion-type anchors at masonry or concrete, self-tapping screws at steel. Use corrosive resistant fasteners for roofing applications or where otherwise exposed to moisture.
      C. Install work that is component of the roofing system according to roofing material manufacturer's current printed instructions
      D. Install blocking for windows, storefront and entrances according to approved Shop Drawings. Blocking shall be continuous the width or height of rough openings, unless otherwise shown on Drawings. Install sill sealer under windowsill blocking as detailed
      E. Install blocking for finish materials, such as windows and sheet metal fascias, with minimum number of joints, plumb and level, true and straight with no distortions. Discard materials which are unsound, warped, bowed, twisted, improperly treated, and not adequately seasoned.

SECTION 06200 - FINISHED CARPENTRY

1. GENERAL
   1.1 SUMMARY
      A. This section includes performance and installation criteria for finished carpentry elements
   1.2 SUBMITTALS
      A. Submit samples and shop drawings
   1.3 QUALITY ISSUANCE
      A. All work in this section shall comply with premium grade quality of the current edition of the AWI Quality Standards Illustrated
      B. Manufacturers and installers shall demonstrate successful experience with work of comparable extent, complexity and quality to that shown and specified
      C. Manufacturers and installers are members and who are in good standing with the Architectural Woodwork Institute and are familiar with this standard
      D. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and a maximum relative humidity of 25% to 55%
2. PRODUCTS
   2.1 MATERIALS
      A. Wood Trim and Jambs:
         1. Exterior, Transparent Finished: For semi-transparent stain
         2. Quality: AWI/Premium Grade
         3. Wood: Type and finish on drawings
         4. Interior, Transparent and Stained Finished Quality: AWI/Premium Grade
         5. Wood: Type and finish on Drawings
      B. Wood Panel Products
         1. Quality: AWI/Premium Grade, Grade AA
         2. Wood: Type and finish on drawings
      C. Matching: Book match unless otherwise noted on contract documents
      D. Anchors, Nails and Screws: Select the material, type, size and finish required by each substrate for secure anchorage; provide toothed steel or lead expansion bolt screws for drilled-in-lace anchors
      E. Wood filler: Color to match wood being filled
      F. Use exposed fastening devices or nails only when approved and unavoidable; arrange neatly
3. EXECUTION
   3.1 INSTALLATION
      A. Install work consistent with specified AWI quality grade, plumb, level true and straight with no distortions; shim as required, using concealed shims
      B. Install trim in single, unjointed lengths for openings and for runs less than 10'-0"
      C. For longer runs, use only one piece less than 10'-0" in any straight run; provide scarf joints between members
      D. Variation from True Position: Maximum 1/16" at any position and maximum 1/8" in any 10'-0" length
      E. Apply wood filler in exposed nail and screw indentations and leave ready to receive site-applied finishes

SECTION 06400 - ARCHITECTURAL WOODWORK

1. GENERAL
   1.1 SUMMARY
      A. Section includes, but is not limited to the following items of architectural woodwork:
         1. Casework
         2. Pre-manufactured Casework
         3. Solid Surface Counter Tops
         4. Decorative Laminate for ceiling feature, misc. millwork, and cabinets
   1.2 SUBMITTALS
      A. Submit shop drawings
      B. Submit samples for each exposed product
      C. Submit product data for each hardware product
   1.3 QUALITY ASSURANCE
      A. All work in this section shall comply with premium grade quality of the current edition of the AWI Quality Standards Illustrated
      B. Manufacturers and installers shall demonstrate successful experience with work of comparable extent, complexity and quality to that shown and specified
      C. Manufacturers and installers are members and who are in good standing with the Architectural Woodwork Institute and are familiar with this standard
      D. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and a maximum relative humidity of 25% to 55%
   1.4 PROJECT CONDITIONS
      A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet-work is complete, and HVAC system is operational and will maintain temperature and relative humid at occupancy levels during the remainder of the construction period
   1.5 ENVIRONMENTAL REQUIREMENTS
      A. Composite wood and agrifiber products must not contain any urea-formaldehyde resins as required by the LEED NC Version 2 rating system
      B. Adhesives and Sealants must adhere to Rule 1168 of California's South Coast Air Quality Management District (Rule 1168) VOC requirements as defined by the LEED NC Version 2 Rating system
2. PRODUCTS
   2.1 MATERIALS
      A. General: Provide materials that comply with requirements of the AWI woodworking standard for each type of woodwork and quality grade indicated and where the following products are part of woodwork, with requirements of the referenced product standards that apply to product characteristics indicated
      B. Wood Species for Standing and Running Trim and Jambs and Frames: Any closed-grain hardwood listed in referenced woodworking standard unless noted otherwise on the contract drawings
      C. Lumber Products: Where indicated, use materials pressure-impregnated with Interior Type A fire-retardant chemical to comply with AWPA C20 Kiln dried material after treatment per AWI Section 100 Lumber Grades to a moisture content of 5%-10% unless noted otherwise. Grades per AWI 400A-T-1standards are as follows:
         1. Exposed surfaces: Premium
         2. Semi-exposed surfaces: Premium
         3. Concealed Surfaces: Economy
      D. Panel Products: Core material for high pressure decorative laminate (HPDL) cabinet: from grade AA veneer plywood or high density moisture resistant industrial grade particleboard (MD): ANSI A208.1 per AWI section 400 standards
      E. Fasteners and anchorages: Provide nails, screws and other anchoring devices of the proper type, size, material and finish for application indicated to provide secure attachment, concealed where possible
      F. Adhesive for Bonding Plastic Laminate: Contact cement
   2.2 PLASTIC LAMINATE CLAD CABINETS and CASEWORK
      A. Quality Standard: Comply with AWI Section 400 requirements for laminate-clad cabinets
      B. Quality Standard: Comply with WIC Section 15, "Plastic-Covered Casework"
         1. Grade: Premium
   2.3 PLASTIC LAMINATE MATERIALS
      A. Plastic Laminate: Comply with NEMA LD-3; shall be of types and thickness indicated for each application
      B. Plastic Laminate for bases and dividers shall be 0.0625 inch thick, General Purpose Type (high-pressure)
      C. Plastic Laminate for External Vertical Surfaces: 0.0625-inch minimum thick, General Purpose Type (high-pressure)
      D. Plastic Laminate for Cabinet Linings: Chemical resistant plastic, 0.0625 inch thick, Cabinet Liner Type (high-pressure)
      E. Plastic Laminate for Concealed Panel Backing: 0.020 inch thick, Backer Type (high-pressure)
      F. Plastic laminate exterior shall be of colors, patterns and finishes as indicated on the contract drawings
      G. Plastic laminate interior surfaces shall be of colors standard as described for the exterior surfaces
      H. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated, or if not indicated, as required by casework quality standard
      I. Refer to Finish Legend for colors, finish, and manufacture of plastic laminate materials provided
   2.4 HARDWARE AND ACCESSORY MATERIALS
      A. Casework Hardware: Provide casework hardware items as required for complete installation as indicated
         1. Plug-In Pin Type Shelf Supports: Provide holes 1" on center
            a. Acceptable Manufacturers:
               1) Hafele American Co./No. 282.04.711
               2) Knape & Vogt/No. 333
         2. Cabinet Hinges: Concealed type, minimum 160 degree opening, with spring closer
            a. Acceptable Manufacturers (concealed type)
               1) Hafele America Co./No.345.47.665
               2) Julius Blum Inc./No. 91.650
               3) Stanley Hardware/No. 1511
         3. Cabinet Pulls: As indicated on Drawings
         4. Cabinet Locks: Pin and tumbler slide bolt lock, two keys each
            a. Acceptable Manufacturers:
               1) National Lock Hardware/No. C8133/5 drawer, C8139 door lock
               2) Schlage Lock Co./46-002 Cabinet Locks
               3) Best Lock Corp./5L Series
         5. Anchors, Nails and Screws: Select material, type, size and finish required by each substrate for secure anchorage; provide toothed steel or lead expansion bolt screws for drilled-in-place anchors
         6. Wood Filler: Color to match wood being filled
   2.5 PLASTIC LAMINATE CABINET FABRICATION:
      A. Fabricate casework to dimensions, profiles and details shown
      B. Assemble units in the shop in as large components as practicable to minimize field jointing
      C. Install hardware uniformly and precisely after final finishing is complete. Set hinges snug, and flat in mortises unless otherwise indicated. Turn screws to flat seat. Adjust and align hardware so that moving parts operate freely and contact points meet accurately. Allow for final field adjustment after installation.
      D. Base Cabinets, Floor Mounted and Suspended:
         1. Top Panel: 3/4-inch, front edge edge banded as specified above
         2. Bottom Panel:
            a. Floor Mounted: 3/4 inch engineered wood product, front edge banded as specified above
            b. Suspended: 1-inch hardwood particleboard, front edge banded as specified above
         3. Side Panels: 3/4 inch engineered wood product front edge banded as specified above
         4. Back Construction: 3/8-inch engineered wood product with 3/8 inch x 3-inch full width engineered wood product cross rails top and bottom. All components perimeter glued with hot melt glue.
         5. Door Fronts: 3/4-inch engineered wood product with front edge edge banded as specified above
         6. Shelves: Less than 36 inches in length shall be 3/4 inch thick engineered wood product. Shelves 36 inches long and over shall be l inch thick engineered wood product. Leading edge of shelf shall be finished with a high impact, rigid PVC extrusion, in color to match shelf surface and cabinet interior.
         7. Toe Base: Separate toe base frame to be constructed on the job site of 3/4-inch plywood provided by the casework manufacturer; shall be approximately 6 inches high by 3 inches deep, with no open pockets unless noted otherwise on the contract drawings
      E. Wall and Upper Cases:
         1. Top Panel: 3/4-inch engineered wood product, front edge banded as specified above
         2. Bottom Panel: 1-inch hardwood plywood, front edge banded as specified above
         3. Side Panels: 3/4-inch engineered wood product, front edge banded as specified above
         4. Back Construction: 3/8-inch with 3/4 inch x 3-inch full width engineered wood product cross rails top and bottom (additional center rail on upper case). All components hot melt perimeter glued.
         5. Door Construction:
            a. Solid: 3/4-inch engineered wood product, edge banded as specified above
      F. Filler Strips: Provide where required for closing space between cabinets and walls of same material and finish as cabinets
      G. Utility Openings & Space: Provide cutouts and holes for pipes, conduits, wall outlets, switches, computer wiring, ventilation holes, and fittings in cabinet bodies to accommodate services
      H. All open shelves, exposed to view, shall have interior surfaces and shelving of same plastic laminate materials as specified for cabinet door fronts
      I. All cabinet, equipment, work stations, etc., surfaces exposed to view (where not shown to be wood,) including underneath open countertops at work stations etc., shall be Plastic Laminate faced, 0.030 inch thick, General Purpose Type (high-pressure).
   2.6 SOLID SURFACING MATERIAL COUNTERTOPS
      A. Fabrication: Fabricate tops in one piece with shop-applied backsplashes and edges, unless otherwise indicated. Comply with solid surfacing material manufacturer's recommendations for adhesives, sealers, fabrication, and finishing.
      B. Install sink bowl openings in countertops in the shop. Filed verify size and location of openings.
      C. Drill holes in countertops for plumbing fittings and soap dispensers in the shop
      D. Solid Surfacing Material Thickness: 3/4 inch minimum
      E. Build up exposed edges of tops to 1-1/2 inch thickness. Provide back & side splashes. All edges to be eased slightly rounded. Provide manufacturer's recommended sealant at back and sides of back splash. Tops shall be one piece.
      F. Countertops spanning between supports, open underneath, or overhanging shall be built to support 300 lbs. (per lineal foot) vertical down load, less than l/180 deflection. Supports shall be solid surfacing panels, approved steel brackets and or steel angles, or as detailed.
      G. Refer to Finish Legend for colors, finish, and manufacture of solid surface materials provided
3. EXECUTION
   3.1 INSPECTION
      A. Examine the substrate and conditions under which the work under this section is to be performed and notify the Contractor in writing of unsatisfactory conditions. Do not proceed with work under this section until unsatisfactory conditions have been corrected.
   3.2 PREPARATION
      A. Condition casework to average prevailing humidity conditions in installation areas before installing for a minimum of 48 hours
      B. Before installing architectural casework, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing
   3.3 INSTALLATION
      A. Unless shown or specified otherwise installation shall be in accordance with the recommendations of the manufacturer of the item installed. Attachments shall be rigid and substantial. The work shall be left in a first-class condition.
      B. The Contractor shall furnish all anchors, hangers, screws, bolts, expansion and toggle bolts, clip angles, inserts, nails, etc., required for approved complete assembly and installation of all items herein specified. Where bolts, screws, etc., are exposed, they shall be bronze, brass, stainless steel or chromium finish, as selected by Architect.
      C. Woodwork Quality Standard: Install woodwork to comply with AWI for the same grade specified of this Section for type of woodwork involved
      D. Install all casework plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches for plumb and level (including tops).
      E. Architectural casework includes furring, blocking, shims, and hanging strips for installing casework items unless concealed within other construction prior to casework installation
      F. Scribe and cut casework to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts
      G. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
      H. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line
      I. Tops: Anchor securely to base units and other support systems as indicated. Caulk space between backsplash and wall with specified sealant.
      J. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line
   3.4 ADJUSTING AND CLEANING
      A. Repair damaged and defective casework where possible to eliminate functional and visual defects; where not possible to repair, replace casework. Adjust joinery for uniform appearance.
      B. Clean, lubricate, and adjust hardware
      C. Clean casework on exposed and semi exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.
   3.5 PROTECTION
      A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that casework is without damage or deterioration at the time of Substantial Completion

SECTION 06415 - STONE COUNTERTOPS

1. GENERAL
   1.1 SUMMARY
      A. This section includes performance and installation criteria for stone counter tops.
   1.2 SUBMITTALS
      A. Complete shop and erection drawings that show method of fastening, thicknesses, joints and location
      B. Submit samples for each product
      C. Submit manufacturer's written maintenance instructions
   1.3 QUALITY ASSURANCE
      A. Manufacturer Qualifications: Installer must have a Minimum of five (5) years' experience on comparable projects
      B. Installer Qualifications: Installer must have a Minimum of five (5) years' experience on comparable projects
   1.4 WARRANTY
      A. Submit the manufacturer's standard written warranty
2. PRODUCTS
   2.1 MATERIALS
      A. Stone: Refer to "Finish Legend" for manufacturer, color and finish
      B. Adhesive - ANSI A108.4
      C. Grout - ANSI A108.10
      D. Substrate - Marine grade plywood
      E. Sealer - as recommended by stone counter top manufacturer
      F. Stone shall be fabricated to thicknesses and dimensions indicated with clean true edges and arris. Provide all cutouts as indicated or required. All surfaces shall be true and not warped.
3. EXECUTION
   3.1 INSPECTION
      A. Installer must examine the areas and conditions under which tone is to be installed. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner to the installer.
      B. Starting of work will be construed as the installer's acceptance of the surfaces within any particular area
   3.2 INSTALLATION
      A. Install stone counter tops in accordance with manufacturer's written instructions
      B. Each piece of stone shall be washed clean before being set. Mortar splashing shall be removed immediately, using clean water and sponge.
      C. Seal all exposed surfaces with penetrating sealer. Apply as recommended by manufacturer.
   3.3 PROTECTION
      A. Protect all stone work under this section during installation and until accepted by the Owner. Stone shall be protected from physical damage and staining.

SECTION 07141 - INTERIOR WATERPROOFING

1. GENERAL
   1.1 SUMMARY
      A. Includes but not limited to furnishing and installing liquid applied water proofing membrane on the interior as described by the Contract Documents
   1.2 QUALITY ASSURANCE
      A. Meet requirements of ANSI A 118.10 for load bearing, bonded, waterproof membranes
      B. Meet the requirements of ANSI A 118.12 system for crack isolation material
      C. After membrane has fully cured, water test all penetrations to ensure water tight seal
      D. Adhere to Rule 1168 of California's South Coast Air Quality Management District (Rule 1168) VOC limit of 250 g/l. for applications classified as a Multipurpose Construction Sealant
   1.3 SUBMITTALS
      A. Submit product data for each product
   1.4 WARRANTY
      A. Submit standard manufacturer's warranty
2. PRODUCTS
   2.1 LIQUID APPLIED WATER PROOFING MEMBRANE
      A. Laticrete - Laticrete 9235 liquid applied water proofing membrane or equal and compatible with thin set tile system
      B. Mapei - Mapelastic HPG liquid applied water proofing membrane or equal and compatible with thin set tile system
3. EXECUTION
   3.1 INSTALLATION
      A. Install in accordance with Manufacturer's instruction specific instructions and per this specification
      B. All substrates must be level structurally, sound and clean free of: dirt, dust, oil, grease, loose/ peeling paint, laitance, efflorescence, concrete sealers, curing compounds or any other bond inhibiting materials
      C. The surface temperature should be between 50 degrees and 90 degrees Fahrenheit at time of application unless specified otherwise by manufacturer. Temperature must be maintained until membrane has fully cured.
      D. Pre-treat cracks and unleveled surfaces per manufacture's installation requirements
      E. Reinforce membrane with mesh reinforcing compatible with membrane system at any change in plane and around drains
      F. Do not install membrane on concrete substrate if moisture pressure is greater the 3lb per 1,000 sf per 24 hrs. per ASTM F1869 or up to 75% relative humidity as measured with moisture probes

SECTION 07190 - WATER REPELLENTS

1. GENERAL
   1.1 SUMMARY
      A. Provide all work, labor, materials, and equipment to complete all the work as shown on the contract drawing and as specified in this specification.
   1.2 QUALITY ASSURANCE
      A. Engage an experienced applicator who employs only persons trained and approved by water repellent manufacture for application of manufacture's products.
      B. Provide a minimum 5 year warrant from date of substantial competition.
      C. Absorption: Provide a 90% reduction of absorption after 24 hours in comparison of treated and untreated specimens: Concrete Masonry Units, Clay Masonry Units, Stone.
      D. Water-vapor transmission: Provide a maximum 10% reduction in rate of vapor transmission in comparison of treated and untreated specimens measured per ASTM E96.
      E. Water Penetration and leakage through masonry: Provide a maximum 90% reduction in leakage rate in comparison of treated and untreated specimens measured per ASTM E514
      F. Durability: Provide a maximum 5% loss of water repellency after 2500 hours of weathering in comparison to specimens before weathering measured per ASTM G53.
      G. Permeability: minimum 80% breathable in comparison of treated and untreated specimens measured per ASTM D1653.
2. PRODUCTS
   2.1 MANUFACTURERS
      A. Dietrich Technologies, Inc.
      B. Dayton Superior Company
      C. Chemical Products, Inc.
   2.2 MATERIAL
      A. Silanes: Penetrating water repellent. A monomeric compound containing alkyltrialkoxsilanes with alcohol, mineral spirits, water, or other proprietary solvent carrier. Product should contain a VOC concentration no more than 400g/L.
      B. Siloxanes: Penetrating water repellent. Alkyltrialkoxsilanes that is oligomerous with alcohol, ethanol, mineral spirits, water, or other proprietary solvent carrier. Product should contain a VOC concentration no more than 400g/L.
      C. Silane/ Siloxane Blends: Consisting of silanes and siloxanes blended to achieve a particular penetration and protection on specific substrates.
      D. Proprietary Blends: Consisting of resins blended to produce breathable penetrating water repellent that dries clear and does not change the color or appearance of the substrate in any way. Product should contain a VOC concentration no more than 400g/L.
3. EXECUTION
   3.1 INSTALLATION
      A. Install in accordance with Manufacturer's specific instructions and per this specification
      B. Installers to test install water repellant on a small section of every substrate to receive treatment as specified by the architect
      C. Verify that Masonry is thoroughly cleaned and free of dirt, oil, or other containments that would hinder a chemical bond
      D. Test for PH level, acceding to water repellent manufacturer's written instructions, to ensure chemical bond.
      E. Protect Adjoining Work: Cover nearby surfaces of aluminum and glass. Cover live plants and grass.
      F. Coordinate with Sealants: Do not apply water repellent until sealants have been installed and cured
      G. Application: Comply with manufacturer's written instructions. Apply a heavy- saturation coat using low pressure spray equipment. Apply a second coat per manufacturer's written instructions.
      H. Manufacturer's Field Service: Provide Services of a factory-authorized technical service representative to inspect substrate before application and to instruct applicator on product and application method.
      I. Remove all protective covering from adjacent surfaces and other protected areas
      J. Clean adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses per manufacturer's written cleaning instructions. Repaired damage cause by water-repellent application.

SECTION 07191 - UNDER SLAB VAPOR RETARDERS

1. GENERAL
   1.1 SUMMARY
      A. Provide all work associated with the installation of vapor retarders under all concrete slabs on grade and were noted in exterior wall assemblies on the contract drawings
   1.2 SUBMITTALS
      A. Submit product data for each product
      B. Submit samples for each product
   1.3 QUALITY ASSURANCE
      A. Provide vapor retarder products from a manufacturer with at least ten (10) years' experience in the production of vapor retarder materials
      B. The installer of vapor retarder products shall have at least ten (10) years' experience in the installation of specified vapor retarder materials
2. PRODUCTS
   2.1 MATERIALS
      A. Under Slab Vapor Retarder: Provide under all concrete slabs on grade
         1. Vapor Retarder Classification: Class A, per ASTM E1745
         2. Thickness: Not less than 10 mil
         3. Puncture Resistance: 2,000 grams, as measured by ASTM D1709
         4. Tensile Strength: Not less than 50/lbs.
         5. Vapor Permeance: .03 perms or less as measured by ASTM E96 Method B
         6. Durability: All materials must be resistant to organisms, substrates, and chemicals that come in contact with the under slab vapor retarder
      B. Vapor Retarder: Provide Class I Polyethylene vapor barrier with a vapor permeance of less than 0.1 perms as defined by, ASTM E96 Method A, in exterior wall assemblies as shown on the contract drawings
3. EXECUTION
   3.1 INSTALLATION
      A. Install vapor retarding materials per the written recommendations of the manufacturer, all materials to be compatible with each other, the concrete slab, and any soil conditions

SECTION 07210 - BUILDING INSULATION

1. GENERAL
   1.1 SECTION INCLUDES
      A. Types and general applications of insulation specified in this section include the following:
         1. Sound Insulation; Unfaced Semi-Refractory or Glass Fiber Blanket/Batt: Used in interior partitions and on top of ceilings when indicated for sound ratings where indicated on contract drawings
         2. Faced Batt Insulation; Faced semi-Refractory or Glass Fiber Blanket/Batt: Used in exterior walls for thermal insulation where indicated on contract drawings
         3. Foundation Drainage Board: Used at exterior side of foundation walls where indicated on the contract drawings
         4. Rigid Insulation: As indicated on the contract drawings
   1.2 SUBMITTALS
      A. Submit product data for each product
   1.3 QUALITY ASSURANCE
      A. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of the Work
   1.4 DELIVERY, STORAGE AND HANDLING
      A. Protect insulation materials from physical damage and from deterioration by moisture, soiling and other sources. Store inside and in a dry location. Comply with manufacturer's recommendations for handling, storage and protection during installation.
2. PRODUCTS
   2.1 MANUFACTURERS
      A. Manufacturers: Subject to compliance with requirements, provide insulation products of one of the following:
         1. Manufacturers of Glass Fiber Insulation:
            a. CertainTeed Corp
            b. Schuller (Johns-Manville)
            c. Owens/Corning Fiberglas Corp
         2. Manufacturers of Semi-Refractory Fiber Insulation:
            a. Cafco Industries Ltd.
            b. Fibrex Inc.
            c. USG: Thermafiber Div., USG Interiors, Inc.
         3. Rigid Insulation:
            a. Dow Corporation
            b. Owens/Corning Corp.
   2.2 MATERIALS
      A. Sound Insulation: Unfaced Mineral Fiber Blanket/Batt Insulation: Sound insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C665 for Type I (blankets without membrane facing); and as follows:
         1. Mineral Fiber Type: Fibers manufactured from glass or slag
         2. Surface Burning Characteristics: Maximum flame spread and smoke developed values of 25 and 50 respectively
      B. Foil Faced Thermal Insulation Mineral Fiber Blanket Insulation: Thermal insulation produced by combining mineral fibers of type described below with thermosetting resins and faced on one side with foil scrim kraft vapor retarder to comply with ASTM C665 for Type III (blankets with membrane facing) and as follows:
         1. Mineral Fiber Type: Fibers manufactured from glass or slag
      C. Foil-Faced, Glass-Fiber Board Insulation: Thermal insulation combining glass fibers with thermosetting resin binders and faced on one side with foil-scrim-kraft or foil-scrim-polyethylene vapor retarder to comply with ASTM C612, Type IA or Type IA and IB; and with other requirements indicated below:
         1. Nominal density of 3 lb./cu. ft. (48 kg/cu. M), thermal resistivity f 4.3 deg F. x h x sq. ft./Btu x in. at 75 deg F (29.8 K x m/W at 24 deg C)
         2. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indices of 25 and 50, respectively
      D. Foundation Drainage Board: Extruded poly-styrene closed-cell foam panel with fabricated drainage channels and a non-woven filtration fabric on one side equal to Foamular Insul Drain
      E. Rigid Insulation: 24" wide rigid insulation, USG Foamular, Dow Styrofoam SM, Styropar, weight 2.1 lbs. per cut ft., CPR Rigid Board, BASF Wyandotte Styropar or equal, conforming to Fed. Spec. HH-I-524b, Type II, Class 1
      F. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation or mechanical anchors securely to substrates indicated without damaging or corroding either insulation, anchors, or substrates
3. EXECUTION
   3.1 EXAMINATION
      A. Examine substrates and conditions with Installer present, for compliance with requirements of the Sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.
   3.2 PREPARATION
      A. Clean substrates of substances harmful to insulations including removal of projections that might puncture insulation
   3.3 INSTALLATION
      A. Comply with insulation manufacturer's instructions applicable to products and application indicated. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with installation of insulation.
      B. Extend insulation full thickness as indicated to envelop entire area to be insulated. If insulation provided by another trade is present, fit insulation of this contract tightly to existing insulation. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections that interfere with placement.
      C. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness
      D. Apply insulation units to substrate by method indicated complying with manufacturer's recommendations
      E. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units
      F. Stuff glass fiber blanket/batt insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume (to a density of approximately 2.5 pcf).
   3.4 PROTECTION
      A. General: Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse and other causes. Provide temporary covering or enclosures where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

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FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JAMES R. ANTHONY
001-020245
STATE OF ILLINOIS
Expires 11/30/ 23

Drawing Title
SPECIFICATIONS

Job No. 204461
Drawn Author
Scale 12" = 1'-0"
Date 11/24/20

Sheet No.
A592

SECTION 07271-SELF - ADHERING AIR AND VAPOR BARRIER

1. GENERAL

1.1 SUMMARY

A. Provide all work associated with the installation of water-resistant self-adhering sheet air and vapor barrier in exterior wall assemblies.

1.2 PERFORMANCE REQUIREMENTS

A. Material Performance: Provide materials which have an air permeance not to exceed 0.004 cubic feet per minute per square foot under a pressure differential of 0.3 in. water (1.57 pounds per square foot) (0.02 liters per second per square meter at 75 Pascals) when tested according to ASTM E2178, and a vapor permeance of 10 perms or more when tested according to ASTM E96. Entire building to measure 0.22 cfm/ft2 at 75 Pa or better, when tested in accordance with ASTM E779 or ASTM E1827.

B. Assembly shall perform as a liquid drainage plane flashed to discharge condensation or water penetration to the exterior. Assembly shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air and vapor seal materials at such locations, changes in substrate and perimeter conditions.

1. Assembly shall be capable of withstanding positive and negative combined design wind, fan and stack pressures on the envelope without damage or displacement, and shall transfer the load to the structure.

2. Assembly shall not displace adjacent materials under full load.

3. Assembly shall be joined in an airtight and flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of assemblies due to thermal and moisture variations and creep, and anticipated seismic movement.

1.3 SUBMITTALS

A. Submit product data for each product

1. Submit letter from primary materials manufacturer indicating approval of products not manufactured by primary manufacturer.

2. Include statement that materials are compatible with adjacent materials proposed for use.

3. Submit reports indicating that field peel-adhesion test on all materials to which sealants are adhered have been performed and the changes made, if required, to other approved materials, in order to achieve successful adhesion.

4. Include VOC content of each material, and applicable legal limit in the jurisdiction of the project.

B. Submit samples for each product

1.4 QUALITY ASSURANCE

A. Air Barrier Contractor Qualifications: Currently accredited by the Air Barrier Association of America (ABAA) whose applicators are certified in accordance with the ABAA Quality Assurance Program.

B. Manufacturer: Obtain primary materials from a single manufacturer regularly engaged in manufacturing air and vapor barrier membranes. Obtain secondary materials from a source acceptable to the primary materials manufacturer.

1.5 WARRANTY

A. Provide the following standard manufacturer's written warranty

1. Provide manufacturer's standard product warranty, for a minimum three (3) years from date of Substantial Completion

2. Provide installer's two (2) year warranty from date of Substantial Completion, including all components of the air and vapor barrier assembly, against failures including loss of air tight seal, loss of watertight seal, loss of adhesion, loss of cohesion, failure to cure properly

2. PRODUCTS

2.1 MATERIALS

A. Sheet Air and Vapor Barrier: Self-adhering membrane composed of flexible facing material coated completely and uniformly on one side with adhesive material, formed into uniform, flexible sheets, interleaved with disposable release liner that is removed prior to application. Use regular or low-temperature formulation depending on site conditions, within temperature ranges specified by manufacturer. Provide related accessories including primers, mastics, adhesives, tapes, sealants, flashings, and counter-flashings recommended by manufacturer. Subject to compliance with requirements, provided by one of the following manufacturers:

1. Carlisle Coatings and Waterproofing

2. Grace Construction Products

3. Henry

4. Protective Coatings Technology, Inc.

5. Tremco, Inc.

6. W. R. Meadows, Inc.

2.2 AUXILIARY MATERIALS

A. Membrane at Transitions in Substrate and Connections to Adjacent Elements: Neoprene, ASTM D2000 Designation 2BC415 to 3BC620, 50 to 65 mils (1.3 mm to 1.6 mm) thick with non-corrosive termination bars and fasteners. Adhesive and lap sealant as recommended by manufacturer.

B. Transition Membrane between Air and Vapor Barrier Membrane and Roofing and Other Adjacent Materials: Comply with both air and vapor barrier manufacturer's recommendations and material manufacturer's recommendations.

3. EXECUTION

3.1 PREPARATION

A. Examine substrates, areas, and conditions under which air and vapor barrier assemblies will be applied, with Installer present, for compliance with manufacturer's requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Clean, prepare, and treat substrate according to manufacturer's written instructions. Ensure clean, dust-free, and dry substrate for air and vapor barrier application.

3.2 INSTALLATION

A. Install membrane to provide continuity throughout the building envelope. Install materials in accordance with manufacturer's recommendations.

B. Apply primer at rate recommended by manufacturer prior to membrane installation. Allow primer to dry completely before membrane application. Apply as many coats as necessary for proper adhesion.

1. When membrane is properly positioned, press into place and roll membrane with roller immediately after placement

2. Apply membrane sheets to shed water naturally without interception by a sheet edge, unless that edge is sealed with permanently flexible termination mastic.

3. Position sheets of membrane applied above so that membrane overlaps the membrane sheet by a minimum of 4 inches unless greater overlap is recommended by the manufacturer.

4. Seal around all penetrations in accordance with manufacturer's written recommendations to guarantee water and air tight seal.

5. Connect air and vapor barrier in exterior wall assembly continuously to the air barrier of the roof, to concrete below-grade structures, to windows, curtain wall, storefront, louvers, exterior doors and other intersection conditions and perform sealing of penetrations, using accessory materials and in accordance with the manufacturer's recommendations.

6. At changes in substrate plane, provide transition material (bead of sealant, mastic, extruded silicone sealant, membrane counter-flashing or other material recommended by manufacturer) under membrane to eliminate all sharp 90 degree inside corners and to make a smooth transition from one plane to another.

7. Provide mechanically fastened non-corrosive metal sheet to span gaps in substrate plane and to make a smooth transition from one plane to the other. Membrane shall be continuously supported by substrate.

8. At through-wall flashings, provide an additional 6 inch wide strip of manufacturer's recommended membrane counter-flashing to seal top of through-wall flashing to membrane. Seal exposed top edge of strip with bead of mastic as recommended by manufacturer.

9. Do not expose membrane to sunlight longer than as recommended by the manufacturer.

10. Inspect installation prior to enclosing assembly and repair punctures, damaged areas and inadequately lapped seams with a patch of membrane lapped as recommended by manufacturer.

3.3 PROTECTION & CLEANING

A. Protect air and vapor barrier assemblies from damage during application and remainder of construction period, according to manufacturer's written instructions

B. Coordinate with installation of materials which cover air and vapor membrane, to ensure exposure period does not exceed that recommended by the air and vapor barrier manufacturer.

C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction and acceptable to the primary material manufacturer.

SECTION 07272 - FLUID APPLIED AIR AND VAPOR BARRIER

1. GENERAL

1.1 SUMMARY

A. Provide all work associated with the installation of water-resistant fluid applied air and vapor barrier in exterior wall assemblies

1.2 PERFORMANCE REQUIREMENTS

A. Material Performance: Provide materials which have an air permeance not to exceed 0.004 cubic feet per minute per square foot under a pressure differential of 0.3 in. water (1.57 pounds per square foot) (0.02 liters per second per square meter at 75 Pascals) when tested according to ASTM E2178, and a vapor permeance of 10 perms or more when tested according to ASTM E96. Entire building to measure 0.22 cfm/ft2 at 75 Pa or better, when tested in accordance with ASTM E779 or ASTM E1827.

B. Assembly shall perform as a liquid drainage plane flashed to discharge condensation or water penetration to the exterior. Assembly shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air and vapor seal materials at such locations, changes in substrate and perimeter conditions.

1. Assembly shall be capable of withstanding positive and negative combined design wind, fan and stack pressures on the envelope without damage or displacement, and shall transfer the load to the structure

2. Assembly shall not displace adjacent materials under full load

3. Assembly shall be joined in an airtight and flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of assemblies due to thermal and moisture variations and creep, and anticipated seismic movement

1.3 SUBMITTALS

A. Submit product data for each product

1. Submit letter from primary materials manufacturer indicating approval of products not manufactured by primary manufacturer

2. Include statement that materials are compatible with adjacent materials proposed for use

3. Include VOC content of each material, and applicable legal limit in the jurisdiction of the project

B. Submit samples for each product

1.4 QUALITY ASSURANCE

A. Air Barrier Contractor Qualifications: Currently accredited by the Air Barrier Association of America (ABAA) whose applicators are certified in accordance with the ABAA Quality Assurance Program

B. Manufacturer: Obtain primary materials from a single manufacturer regularly engaged in manufacturing air and vapor barrier membranes. Obtain secondary materials from a source acceptable to the primary materials manufacturer.

1.5 WARRANTY

A. Provide the following standard manufacturer's written warranty

1. Provide manufacturer's standard product warranty, for a minimum three (3) years from date of Substantial Completion

2. Provide installer's two (2) year warranty from date of Substantial Completion, including all components of the air and vapor barrier assembly, against failures including loss of air tight seal, loss of watertight seal, loss of adhesion, loss of cohesion, failure to cure properly

2. PRODUCTS

2.1 MATERIALS

A. Fluid-Applied Air and Vapor Barrier: Fluid-applied proprietary materials as specified. Use regular or low-temperature formulation depending on site conditions, within temperature ranges specified by manufacturer. Provide related accessories including primers, mastics, adhesives, tapes, sealants, flashings and counter-flashings recommended by manufacturer. Subject to compliance with requirements, provided by one of the following manufacturers:

1. Carlisle Coatings and Waterproofing

2. Grace Construction Products

3. Henry

4. Protective Coatings Technology, Inc.

5. Tremco, Inc.

6. W. R. Meadows, Inc.

2.2 AUXILIARY MATERIALS

A. Membrane at Transitions in Substrate and Connections to Adjacent Elements: Neoprene, ASTM D2000 Designation 2BC415 to 3BC620, 50 to 65 mils (1.3 mm to 1.6 mm) thick with non-corrosive termination bars and fasteners. Adhesive and lap sealant as recommended by manufacturer.

B. Transition Membrane between Air and Vapor Barrier Membrane and Roofing and Other Adjacent Materials: Comply with both air and vapor barrier manufacturer's recommendations and material manufacturer's recommendations

3. EXECUTION

3.1 PREPARATION

A. Examine substrates, areas, and conditions under which air and vapor barrier assemblies will be applied, with Installer present, for compliance with manufacturer's requirements. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Clean, prepare, and treat substrate according to manufacturer's written instructions. Ensure clean, dust-free, and dry substrate for air and vapor barrier application.

3.2 INSTALLATION

A. Install transition strip materials and fluid-applied air and vapor barrier to provide continuity throughout the building envelope. Install materials in accordance with manufacturer's recommendations and as follows, unless manufacturer recommends other procedures in writing based on project conditions or particular requirements of their recommended materials:

1. Apply primer for transition strips at rate recommended by manufacturer. Allow primer to dry completely before transition strip application. Apply as many coats as necessary for proper adhesion.

2. Apply primer for fluid-applied air and vapor barrier as recommended by fluid-applied air and vapor barrier manufacturer. Based on manufacturer's recommendation, no primer may be required for the fluid-applied materials.

3. Apply fluid-applied air and vapor barrier using equipment and methods recommended by manufacturer, to achieve a dry film thickness as recommended by the manufacturer

4. Apply fluid-applied air and vapor barrier and transition strips to shed water naturally without interception by a sheet edge, unless that edge is sealed with permanently flexible termination mastic

5. Position transition strips so that transition strips overlaps the membrane sheet below by a minimum of 4 inches, unless a greater overlap is recommended by manufacturer. Roll into place with roller.

6. Seal around all penetrations with termination mastic, extruded silicone sealant, membrane counter-flashing or other procedure in accordance with manufacturer's recommendations

7. Connect air and vapor barrier in exterior wall assembly continuously to the air barrier of the roof, to concrete below-grade structures, to windows, curtain wall, storefront, louvers, exterior doors and other intersection conditions and perform sealing of penetrations, using accessory materials and in accordance with the manufacturer's recommendations

8. At changes in substrate plane, provide transition material (bead of sealant, mastic, extruded silicone sealant, membrane counter-flashing or other material recommended by manufacturer) under membrane to eliminate all sharp 90 degree inside corners and to make a smooth transition from one plane to another

9. Provide mechanically fastened non-corrosive metal sheet to span gaps in substrate plane and to make a smooth transition from one plane to the other. Membrane shall be continuously supported by substrate or as recommended by the manufacturer.

10. At through-wall flashings, provide an additional 6 inch wide strip of manufacturer's recommended membrane counter-flashing to seal top of through-wall flashing to membrane or as recommended by manufacturer. Seal exposed top edge of strip with bead of mastic or as recommended by manufacturer.

11. Do not allow materials to come in contact with chemically incompatible materials

12. Do not expose membrane to sunlight longer than as recommended by the manufacturer

13. Inspect installation prior to enclosing assembly and repair punctures, damaged areas and inadequately lapped seams with a patch of membrane lapped as recommended by manufacturer

3.3 PROTECTION & CLEANING

A. Protect air and vapor barrier assemblies from damage during application and remainder of construction period, according to manufacturer's written instructions

B. Coordinate with installation of materials which cover air and vapor membrane, to ensure exposure period does not exceed that recommended by the air and vapor barrier manufacturer

C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction and acceptable to the primary material manufacturer

SECTION 07280 - WATER RESISTIVE BARRIERS

1. GENERAL

1.1 SUMMARY

A. Provide all work associated with the installation of water resistive barriers in exterior wall assemblies

1.2 PERFORMANCE REQUIREMENTS

A. Air Penetration: 0.001 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E2178. Type I per ASTM E1677. ≤0.04 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E2357. Entire building to measure 0.22 cfm/ft2 at 75 Pa or better, when tested in accordance with ASTM E779 or ASTM E1827.

B. Water Vapor Transmission: 28 perms, when tested in accordance with ASTM E96, Method B.

C. Water Penetration Resistance: Minimum 280 cm when tested in accordance with AATCC Test Method 127.

D. Air Resistance: Air infiltration at >1500 seconds, when tested in accordance with TAPPI Test Method T-460.

E. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84.

1.3 SUBMITTALS

A. Submit product data for each product used

1.4 WARRANTY

A. Provide a ten (10) year manufacturer warranty on all materials installed

2. PRODUCTS

2.1 MANUFACTURERS

A. Provide water resistive barriers and accessories from one of the following manufacturers:

1. Dupont (Tyvek)

2. Owens Corning

3. VaproShield

4. Dow

2.2 MATERIALS

A. Basis of Design: Spunbonded polyolefin, non-woven, non-perforated, weather barrier is based upon DuPont™ Tyvek® CommercialWrap® and related assembly components

B. PHYSICAL REQUIREMENTS

1. Basis Weight: Minimum 2.7 oz./yd2, when tested in accordance with TAPPI Test Method T-410

2. Tensile Strength: Minimum 38/35 lbs/in., when tested in accordance with ASTM D882, Method A

3. Tear Resistance: 12/10 lbs., when tested in accordance with ASTM D1117

2.3 ACCESSORIES

A. Provide and install accessories as required by manufacturer to guaranty a weather tight barrier over exterior sheathing

3. EXECUTION

3.1 EXAMINATION

A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barrier and accessories

3.2 INSTALLATION

A. Install weather barrier Install in accordance with manufacturer's instruction over exterior sheathing. Seal joints and penetrations through weather resistant barrier with specified tape and fasteners prior to installation of finish material. Air infiltration barrier shall be air-tight and free from holes, tears, and punctures. All window and door penetrations are to be taped per manufacturer instruction.

SECTION 07531 - EDPM ROOF SYSTEM

1. GENERAL

1.1 WORK INCLUDED

[Note to Specifier:

1. Coordinate selected system with part two of this specification. Select the application method required. Delete other options.
2. The normal EPDM assembly is a fully adhered membrane over minimum two layers of rigid board roof insulation
3. Do not specify stone ballasted systems along light lines, in wind zones exceeding 160km/h 100mph, within 8km 5 miles of coastline, within 1500 feet of open body of water, and on or adjacent to critical facilities such as hospitals
4. Mechanically fastened system must incorporate an air barrier
5. Use reinforced membrane in wind zones exceeding 160/km/h 100 mph, within 8km 5 miles of coastline, within 1500 feet of open body of water
6. Specify a combination system as required to resist wind loads and for isolated geographic areas that experience extended severe wind conditions
7. Where more than one membrane system occurred add successive descriptions of the membrane system with locations in the project where they occur]

A. Furnish and install the following to ensure a water tight assembly:

1. [Fully Adhered] [Mechanically fastened] [Ballasted] [Combination fully adhered and mechanically fastened] EDPM single ply roof membrane system applied over roof insulation

2. Roof Insulation - Substrate cover board, tapered roof insulation, thermal roof insulation

3. Accessory Items - Flashing, fasteners, adhesives, and all other accessory items required by roofing manufacture to maintain a water tight assembly

1.2 SUBMITTALS

A. Submit project data for each type of product

B. Submit shop drawings for the roofing system including the following requirements

1. Submit shop drawings to roofing system manufacturer for approval

2. Submit only system manufacturer-approved shop drawings to Architect

3. Submit details at a minimum scale of 1-1/2" equal 1 foot

a. Submit details on all conditions in project including attachment to other work

4. Submit plans at a minimum scale of 1/8" equal 1 foot

C. Submit installer certificates signed by roofing system manufacturer certifying that installer is approved authorized or licensed by manufacturer to install roofing system

D. Submit roofing inspection reports by the roof membrane manufacturer, submitted on roofing manufacturer's letter head

1.3 QUALITY ASSURANCE

A. Materials and methods shall from one manufacturer and be as recommended by the manufacturer of the principal roofing materials for slopes and types of substrates shown

B. Materials and installation shall comply with all laws, codes, ordinances and regulations of governmental authorities having jurisdiction over this part of the work

C. The roofing installer shall have applied this roofing system on at least two (2) projects and must have been approved by the roofing manufacturer and in business for a period of five (5) years minimum. Installer must be eligible to install products that are eligible to receive manufacturer's warranty.

D. Conform to the latest recommendations of NRCA except were more stringent requirements are shown or specified

E. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, date of expiration and direction of storage

1.4 FIRE TEST RESPONSE REQUIREMENTS

[Note to Specifier: Confirm class requirement for roof with local code]

A. Exterior Fire-Test Exposure: All materials used in roof assembly must be comprised of materials and assembled to achieve a Class A rating per ASTM E108

1.5 MANUFACTURER'S INSPECTION

A. The roofing installer shall notify the membrane manufacturer's technical service department, in writing, of job completion. The membrane manufacturer will make the final inspection with the roofing installer's representative.

B. The final inspection report shall list any items not meeting the membrane manufacturer's requirements and shall be discussed with the roofing contractor at the time of the final inspection. A copy of this report shall be submitted to the Architect as well as the general contractor and roofing installer. The roofing installer shall notify the membrane manufacturer in writing, when all defects are corrected. Upon acceptance by the membrane manufacturer, the specified warranty shall be issued.

C. The membrane manufacturer's representative shall be available to make recommendations of compliance

1.6 WARRANTIES

A. Submit a twenty (20) year manufacturer's warranty with no dollar limit signed by the manufacturer of the roofing membrane system agreeing to replace/ repair defective materials and workmanship, including leakage of water, abnormal aging or deterioration of materials

B. Submit a five (5) year contractor warranty with no dollar limit signed by the roofing installer agreeing to replace/ repair defective materials and workmanship, including leakage of water, abnormal aging or deterioration of materials

2. PRODUCTS

2.1 MANUFACTURERS

A. EPDM Roof System to be comprised from compatible components of one of the following manufacturers:

1. Firestone Building Products

2. CertainTeed Corporation

3. Johns Manville International, Inc.

4. Carlisle Syntec

2.2 MEMBRANE MATERIALS

[Note to Specifier

1. Refer to note in part one note for guidance regarding membrane attachment method and in editing the membrane material requirements
2. Specify 0.045 inch Type II reinforced membrane for mechanically fastened applications in wind zones exceeding 100mph, within 5 miles of coast line or within 1500 feet of open body of water
3. Typically specify 1.5mm 0.060 inch Type II non-reinforced membrane for fully adhered or ballasted application. Type III membrane with fleece-backing maybe used in fully adhered installations. When type III membrane is required the adhesive is typically a spray applied compound, spray foam adhesive or hot asphalt. Modify related portions of this specification for proper adhesive and application parameters when type III membranes is specified
4. Specify 0.090 inch membrane only for applications that experience regular heavy traffic conditions. mm 0.090 inch membrane is a special material with limited availability. 0.090 inch membrane must only be fully adhered.]

A. EPDM Single Ply Membrane: ASTM D4637, [Type I-non-reinforced], [Type II-scrim or fabric reinforced], [Type III - fabric or fleece backed] single ply membrane material [1.1mm 0.045 inch], [1.5mm 0.060 inch], [2.3mm 0.090 inch] thick for [Fully Adhered] [Mechanically fastened] [Ballasted] [Combination fully adhered and mechanically fastened] application, White color

2.3 Roof Insulation

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated

B. Polyioscyanurate Board Insulation: ASTM C1289, Type II, Class 1, glass-fiber mat facer on both major surfaces

1. Insulation to be at least 3 inches thick or as thick as necessary to provide a [R-15] R value per ASHRE 90.1 whichever is thicker

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of ¼ inch per 12 inches, unless otherwise indicated, by the same manufacturer of polyisocyanurate board insulation

D. Substrate Cover Board: Install manufacturer's recommended cover board so that the cover board is between the tapered insulation and the EDPM membrane

2.4 Roof Accessories

A. General: All roofing accessories are to be recommended by roofing manufacturer and compatible with roofing membrane

B. Seam Tape: All seams shall be spliced with membrane manufacturer's seam tape. Tape shall be a minimum 0.060" thick and a minimum 6" wide unless membrane manufacturer requires more stringent requirements.

C. Membrane Flashings: Pipe, drain and corner flashings shall be manufacturer's factory fabricated preformed EPDM Single Ply Membrane Flashings. Wall and curb flashings shall be 0.060" thick and a minimum 6" wide unless membrane manufacturer requires more stringent requirements.

D. Metal Flashing: Refer to other spec sections

E. Bonding Adhesive: Manufacturer's standard bonding adhesive that is compatible with the materials to which the membrane is to be bonded

F. Lap Sealant: Standard single-component sealer used for forming watertight bond of EPDM sheet membrane materials to each other

G. Water Cutoff Mastic: Standard mastic sealant as recommended by the manufacturer's print data

H. Mechanical Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion resistance provisions in FMG 4470, design for fastening roofing membranes and insulation components to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer

[Note to Specifier: delete language for vapor barrier if one is not required. It is recommended that a vapor retarded is necessary when average outside temperature in January is below 4 degrees C or 40 degrees F and the expected winter relative humidity is above 45%.]

I. Vapor retarder: Install manufacture's recommended vapor barrier system per manufacturer's written requirements.

[Note to Specifier: delete language for stone ballast if not required]

J. Stone Ballast: Smooth rounded, river-washed stone graded in accordance with ASTM D448 and as recommended by the roofing manufacturer

K. Wood nailers: Pressure treated wood as specified. Do not allow treated wood materials to be in direct contact with EPDM membrane or EPDM accessory products, unless approved in writing by the membrane manufacturer.

2.5 PRE-MANUFACTURED ACCESSORIES

A. Pre-fabricated curbs: Provide corrosion resistant metal curbs with a min. 4" flange for attachment to roof nailers. Curbs must be a minimum height of 8" above the finished roof membrane.

B. EDPM Walkpads: Preformed walk pads compatible with the EPDM sheet as shown on the drawings. Walkpads must be a minimum of ¼" thick.

[Note to Specifier: delete language for stone ballast if not required]

C. Ballast Pavers: Provide weather resistant, precast concrete roof pavers as recommended by the roof membrane manufacturer for all high traffic areas of the roof

3. EXECUTION

3.1 GENERAL

A. Roofing contractor shall examine substrate and conditions under which roofing work is to be performed and notify the contractor in writing of unsatisfactory conditions. Do not proceed with roofing work until unsatisfactory conditions have been corrected

B. Do not perform any work during any precipitation. If precipitation is anticipated, immediately proceed to complete the construction of the current portion of work and take steps to adequately protect any un-waterproofed work.

C. All new roofing material must be dry

3.2 INSULATION

A. Do not install roofing materials at cold temperatures without special precautions to insure satisfactory performance of the installations as approved by the roofing material manufacturer

B. The top surface of the insulation shall slope from the high points down to the low points at roof drains

C. All insulation shall be kept dry at all times. Leave no insulation board areas exposed at the end of each day. Installed materials shall be covered and waterproofed at once. Seal edges of materials exposed at the end of each day. Any material that has absorbed moisture shall be removed.

3.3 INSTALLATION

A. Preparation of Substrate: Comply with manufacturer's instruction for preparation of substrate to receive roofing system. Clean substrate of dust, debris, and other substrates detrimental to roofing sheet system work. Remove any sharp projections. Substrate shall be completely dry.

B. General:

1. Comply with manufacturer's recommendations, except where more stringent requirements are herein indicated or specified. Provide all materials & work as required to provide roofing system that can receive the specified warranty. To be roofed as per manufacturer's recommendations.

2. Comply with the National Roofing Contractors Association (NRCA) publication; "The NRCA Roofing and Waterproofing Manual, current edition, recommendations and detail, except where more stringent requirements are drawn and herein indicated or specified

3. Allow no work to be done to roof assembly by anyone other than roofing manufacture's authorized installers

C. Drainage: Provide insulation as shown as well as additional tapered insulation, or custom field shaving to provide positive pitch to drains as required to prevent standing water, field verify the location of roof drains prior to design layout of insulation

D. Flashing:

1. Install flashing at the entire periphery of roof areas, at free standing roof edges and at all penetrations of the membrane

2. Return the up walls not less the 8 inches and anchor thereto

3. Return flashing at all curbs, up sides and over top and return at least ½" down the inside face

4. Install flashing as recommended by manufacturer to ensure a water tight system

SECTION 07620 - FLASHING AND SHEET METAL

1. GENERAL

1.1 WORK INCLUDED

A. Provide flashing and accessories as required for complete weather tight installation of exterior envelope assemblies

B. The information in this section is intended for general flashing products and does not override flashing requirements described in other sections

1.2 PERFORMANCE

A. All flashing materials must possess the following properties:

1. Impervious to moisture penetration

2. Resistant to corrosion caused by exposure to the atmosphere or by caustic materials in adjacent materials

3. Resistant to puncture, abrasion and other damage during installation

4. Formability so that the flashing can be worked to the correct shape and retain this shape after installation

1.3 SUBMITTALS

A. Submit product data for each product used noting the application and location for each product as part of the submittal

1.4 QUALITY ASSURANCE

A. Conform to the most stringent of the recommendations of the following publications except as herein exceeded:

1. Sheet Metal and Air Conditioning Contractors National Associations, Inc.

2. NRCA Roofing Manuals, latest version

1.5 WARRANTIES

A. Provide a three (3) year warranty covering flashing assemblies for water tightness and from buckling

2. PRODUCTS

2.1 METAL FLASHING

[note to specifier:

1. Aluminum is subject to attack by the caustic alkalis present in fresh, in hardened mortar. Dry seasoned mortar will not affect aluminum however corrosion can occur in the adjacent mortar becomes wet. Therefore aluminum should not be used by itself as masonry or stone wall flashing. If aluminum must be used it must be coated complete to protect it from contact with mortar]

A. Aluminum Sheet Metal: ASTM B209, Alloy 3003 with a thickness greater than 0.019 inches thick and have a 16,000 psi tensile strength

B. Extruded Aluminum: ASTM B221, Alloy 6063

[note to specifier:

1. Base, valley, gable end, other flashings, gravel stops, downspouts, and some other flashings should weigh between 20 and 24oz/sq. ft. depending upon their use. Consult the Copper Development Association's COA publication "Copper, Brass, Bronze Design Handbook, Sheet Copper Applications"]

C. Sheet Copper: ASTM B37, with a weight greater than 16oz/sq. ft.

[note to specifier:

1. Galvanized sheet steel will corrode when in contact with fresh mortar and may even corrode when in contact with cured mortar. Therefore it should not be used in masonry or stone when possible. If galvanized sheet steel must be used than it should be protected completely with a bituminous coating.
2. Galvanized sheet steel will also eventuality corrode when in contact with air unless coated with a bituminous coating or paint]

D. Galvanized Sheet Steel: ASTM A653, with a thickness greater than 0.0396 inches

[note to specifier:

1. Stainless steel used for masonry wall flashing should be ASI Type 304 with a No. 2B finish. It should be specified by number and not the generic term alone.]

E. Stainless Sheet Steel: AISI Type 302/304, ASTM A666, with a thickness greater than 0.0156 inches with a 2B finish

F. All metals to arrive to the job site with a factory finish in the color that is specified on the contract documents

2.2 FLEXIBLE FLASHING

A. Concealed Though-Wall Flashing: Combination Sheet flashing consisting of at least one (1) 7oz copper sheet laminated between 2 layers of bituminous impregnated Kraft paper or saturated fabric

2.3 ACCESSORIES

A. Solder: Use solder conforming to ASTM B32 that is compatible with the metal being installed

B. Fasteners: Noncorrosive metal compatible and in the same finish as the metal being installed

C. Asphalt Mastic: SSPC-Paint 12, asbestos free, solvent type

D. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant

E. Elastomeric Sealant: As specified by "Section - Joint Sealants & Joint Fillers"

F. Epoxy Seam Sealer: 2 part noncorrosive seam cementing compound compatible with the flashing material being installed

G. Adhesives: Type recommended for waterproof and weather resistant seaming and adhesion

H. Clips, Straps, Anchoring Devices, and Similar Accessories: Noncorrosive metal compatible with the metal being installed

I. Paper Slip Sheet: 5lb/square red rosin, sized building paper conforming to FS VV-B-790, Type I, Style 1b

3. EXECUTION

3.1 INSPECTION

A. Verify that substrates are smooth and clean to extent needed for flashing work

B. Verify that cants and blocking to receive flashing material are installed and free of concrete and soil

C. Do not start flashing work until conditions are satisfactory

3.2 INSTALLATION

A. Install work water-light, without waves, warps, buckles, fastening stresses or distortion, allowing for expansion and contraction

B. Install pre-manufactured sheet metal systems in compliance with manufacturer's recommendations, except where more stringent requirements are specified herein

C. Protect metals from galvanic action of dissimilar materials

D. Protect materials from deterioration or corrosion caused by exposure to caustic materials in adjacent materials

E. Hem all exposed Edges

F. Angle bottom edges of exposed vertical surfaces to form drips

G. Provide a 4 inch minimum over lap when splicing flashing materials

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FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

JAMES R. LEVCHUK 001-020045 REGISTERED ARCHITECT

Expires 11/30/22

11/24/20

Drawing Title

SPECIFICATIONS

Job No.	Drawn
204461	Author

Scale	Date
12" = 1'-0"	11/24/20

Sheet No.

A593

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SECTION 07811 - SPRAY FIRE-RESISTIVE MATERIALS

1. GENERAL
   1.1 WORK INCLUDED
      A. Furnish and install sprayed-fiber and cementitious sprayed fire-resistive materials
   1.2 QUALITY ASSURANCE
      A. Installer Qualifications: Engage an experienced installer certified, licensed, or otherwise qualified by sprayed fire-resistive material manufacturer with a signed certificate by the manufacturer as having the necessary experience, staff, and training to install manufacturer's product according to specified requirements
      B. Testing Agency Qualifications: An independent testing and inspecting agency with the experience and capability to conduct the testing indicated without delaying the Work as documented according to ASTM E699
   1.3 WARRANTY
      A. General Warranty: Warranty Period: 2 years from date of Substantial Completion
2. PRODUCTS
   2.1 MATERIALS
      A. Material Composition: Fire resistive materials to be composed of the following dry or wet applied products
         1. Gypsum or Portland cement binders and mineral or synthetic aggregate
         2. Cement binders and cement aggregate
         3. Inorganic binders and mineral fibers
      B. Material Density Classification and Usage:
         1. Low Density: At all interior applications
         2. Medium Density: At all interior exposed applications
         3. High Density: At all exterior applications with indirect exposure
      C. Physical Properties: These are minimum values, unless otherwise indicated, or required to attain designated fire-resistance rating described in the contract documents
         1. Dry Density: As measured per ASTM E605
            a. Low Density: 15 pcf (240 kg/m3)
            b. Medium Density: 22 pcf (3252 kg/m3)
            c. High Density: 40 pcf (641 kg/m3)
         2. Thickness: Minimum average thickness not less than 1/4 inch as determined per ASTM E605 or as required to attain designated fire-resistance rating
         3. Cohesion / Adhesion: As measured per ASTM E736
            a. Low Density: 150 psf (72 kPa)
            b. Medium Density: 434 psf (208 kPa)
            c. High Density: 1,000 psf (479 kPa)
         4. Compressive Strength: As measured per ASTM E761
            a. Low Density: 750 psf (359 kPa)
            b. Medium Density: 7,344 psf (351 kPa)
            c. High Density: 43,200 psf (2,068 kPa)
         5. Corrosion Resistance: No evidence of corrosion per ASTM E937
         6. Deflection: no cracking, spalling, delamination, or the like per ASTM E759
         7. Effect of Impact on Bonding: No cracking, spalling, delamination, or the like per ASTM E760
         8. Air Erosion: Maximum weight loss of 0025 g/sq. ft. in 24 hours per ASTM E859
         9. Combustion Characteristics: Pass ASTM E136
         10. Fire Test-Response Characteristics: Flame spread of 10 or less and smoke developed of 0 per ASTM E84
      D. Products: Subject to compliance with requirements, provide products by one of the following manufacturers:
         1. Cementitious Sprayed Fire-Resistive Material:
            a. Carboline Co, Fireproofing Products Div
            b. Grace & Co Conn, Construction Products Div
            c. Isolatek International Corp, Cafco Products
         2. Sprayed-Fiber Fire-Resistive Material:
            a. Isolatek International Corp, Cafco Products
   2.2 ACCESSORIES
      A. General: Provide auxiliary fire-resistive materials that are compatible with sprayed fire-resistive materials and substrates and are approved by UL or of another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistive designs indicated
3. EXECUTION
   3.1 INSTALLATION: GENERAL
      A. Comply with fire-resistive material manufacturer's written instruction for mixing materials, application procedures and types of equipment used to convey and spray on fire-resistive material, as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated
      B. Cover other work subject to damage from fall out or over spray of fire-resistive materials during application Provide temporary enclosures as required to confine spraying operations, protect the environment, and ensure maintenance of adequate ambient conditions of temperature and ventilation
      C. Apply fire-resistive material in thicknesses and densities indicated, but not less than those required to achieve fire-resistance ratings designated on contract documents
      D. Where sealers are used, apply products that are tinted to differentiate them from the sprayed fire-resistive material over which they are applied
   3.2 FIELD QUALITY CONTROL
      A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports
         1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements
      B. Testing and inspecting of completed applications of sprayed fire-resistive material will take place in successive stages, in areas of extent and using methods as follows: Do not proceed with application of fire-resistive material for the next area until test result for previously completed applications of fire-resistive material show compliance with requirements
      C. Remove and replace applications of fire-resistive material where test results indicate that they do not comply with specified requirements of cohesion and adhesion or for density & thickness, or both
   3.3 CLEANING AND PROTECTION
      A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling
      B. Cure exposed cementitious sprayed fire-resistive material according to product manufacturer's written recommendations to prevent premature drying
      C. Repair or replace work that has not been successfully protected

SECTION 07842 - FIRE RESISTIVE JOINT SYSTEMS

1. GENERAL
   1.1 SUMMARY
      A. This section contains general performance criteria for fire resistive joint systems for this project
   1.2 QUALITY ASSURANCE
      A. Fire resistive system installation must meet requirements of ASTM E814, UL 1479 or UL 2079
      B. For those fire resistive joint applications that exist for which no UL tested system is available through a manufacturer, a manufacturer's engineering judgment derived from similar UL system designs or other tests will be submitted to local authorities having jurisdiction for their review and approval prior to installation Engineer judgment drawing must follow requirements set forth by the International Fire Stop Council
2. PRODUCTS
   2.1 GENERAL
      A. Provide fire resistive system composed of components that are compatible with each other, the substrates forming openings, and items, if any, penetrating the fire resistive system under conditions of service application, as demonstrated by the fire resistive system manufacturer based on testing and fiied experience
      B. Use only components specified by the fire resistive system manufacturer and approved by the qualified testing agency for designated fire-resistance -rated systems
   2.2 MANUFACTURERS
      A. Manufacturers are subject to compliance with through penetrations fire stop systems (XHEZ) and joint systems (XHBN) listed in Volume II of the UL Fire Resistance Directory for all systems and products provided
   2.3 MATERIALS
      A. Use only fire resistive products that have been UL 1479, ASTM E814, or UL 2079 tested for specific fire-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance
      B. Provide a fire resistive system with an "F" rating as determined by UL 1479 or ASTM E814 which is equal to the time rating of construction being penetrated
      C. Provide a fire resistive system with an assembly rating as determined by UL 2079 which is equal to the time rating of construction being penetrated
3. EXECUTION
   3.1 INSTALLATION
      A. Install fire resistive materials in accordance with the UL Fire Resistance Directory & manufacturer's instructions for installation of through-penetration and construction join materials

SECTION 07920 - JOINT SEALANTS & JOINT FILLERS

1. GENERAL
   1.1 SUMMARY
      A. Provide sealants and caulking materials indicated on contract drawings and described in the contract specifications
   1.2 PERFORMANCE REQUIREMENTS
      A. Provide sealants and caulking material in joints fitting descriptions and locations listed below and complying with C920
         1. Joints on exterior of building and joints on interior of building in horizontal (traffic) surfaces such as: concrete, metal, mortar & concrete to precast concrete: Multi-Part Pourable Urethane
         2. Exposed metal to metal joints: One-Part Non-Acid Curing Silicone
         3. Joints on interior of building in vertical and overhead surfaces, top of partitions, unless otherwise indicated, and joints subject to maximum movement of plus or minus 12.5 percent: Acrylic
         4. Non-moving joints on interior of building in vertical and overhead surfaces at perimeter of elevator door frames, hollow metal door frames, and other metal frames, gypsum drywall, and other interior locations, unless otherwise indicated: Acrylic-emulsion
         5. Joints in Toilet Rooms and other wet areas, and perimeter of hot pipes through non-fire-rated floors or walls: One-Part Mildew-Resistant Silicone
         6. Acoustical Sealant: Concealed acoustical sealed joints in interior partition construction and at perimeter of interior partition which abut other materials:
         7. Acoustical non-drying, non-hardening, non-skinning, non-staining, gunnable synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound
      B. Joint Seals and Fillers: Provide the following joint seals and fillers:
         1. Joint fillers in exterior concrete paving
         2. Reticulated filler foam
         3. Cellular foam fillers for non-fire-rated interior drywall partitions
   1.3 WARRANTIES
      A. Provide warranty that the exterior sealant installation will remain weather tight or will not lose adhesion to its sealed surfaces for a period of five (5) years
2. PRODUCTS
   2.1 MATERIALS, MISCELLANEOUS
      A. Compatibility: Provide sealants, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience
      B. Standard Colors: Provide color of exposed joint sealers as selected by Architect from manufacturer's standard color
      C. General: Provide sealant backings of material and type which are non-staining and are compatible with joint substrates, sealants, primers and other joint fillers
3. EXECUTION
   3.1 INSTALLATION
      A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturer
      B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience
      C. Masking Tape: Use masking tape to prevent contact of sealant with adjoining surfaces
      D. Install all materials as recommended by manufacture for application and materials indicated

SECTION 08110 - HOLLOW METAL DOORS AND FRAMES

1. GENERAL
   1.1 SUMMARY
      A. This section includes performance criteria for work and material for hollow metal doors and frames
   1.2 SUBMITTALS
      A. Submit shop drawings, samples and product data
   1.3 QUALITY ASSURANCE
      A. Manufacturer Qualifications: Minimum 5 years' experience in manufacturing similar systems
      B. Installer Qualifications: Minimum 2 years' experience installing similar systems and acceptable to the manufacturer
      C. Fabrication methods and product quality shall meet the standards set by the Hollow Metal Manufacturers Associations, HMMA, a Division of the National Association of Architectural Manufacturers, NAAMM, as set forth in these specifications
2. PRODUCTS
   2.1 HOLLOW METAL DOORS
      A. Interior doors shall be made of commercial quality, level cold rolled steel conforming to ASTM A366, or hot rolled, pickled and oiled steel conforming to ASTM A569 and free of scale, pitting or surface defects. Face sheets shall not be less than 18 gauge.
      B. Refer to door schedule for types, sizes, and finish of doors to be provided and shall as be constructed in accordance with The Performance test for Steel Doors and Hardware Reinforcing's (ANSI A151.1)
         1. The testing specimen shall be a 3'-0" x 7'-0" normal size 1 ¾" door
         2. The specimen shall be tested in a accordance with the ANSI A 151.1 procedure for the level A doors (1,000,000 cycles)
         3. The specimen shall be tested in accordance with the ANSI A151.1 procedure for twist test which requires maximum pressure of 300lbs
      C. Doors shall be designed and constructed per the recommendations NAAMM Standard HMMA 860 and conform to the requirements of SDI-100
   2.2 HOLLOW METAL FRAMES
      A. Interior Openings: Frames shall be, either commercial grade cold-rolled steel conforming to ASTM A366 or commercial grade hot-rolled and pickled steel conforming to ASTM A569. Metal thickness shall be not less than 16 gauge for frames that receive hollow metal doors.
      B. Frames shall be designed and constructed per the recommendations NAAMM Standard HMMA 860 and with the following additional requirements
      C. Refer to Door Schedule for types, size, and finish of frame
      D. Refer to wall thickness for throat thickness
   2.3 FINISHING REQUIREMENTS
      A. After fabrication, all tool marks and surface imperfections shall be removed, and exposed faces of all welded joints shall be dressed smooth. Frames shall he treated to insure maximum paint adhesion and shall be coated on all accessible surfaces with a rust inhibitive primer which meets or exceeds ASTM B117 salt spray for 150 hours, and ASTM D1735 water fog test for organic coatings for 200 hours and which is fully cured prior to shipment.
      B. All doors and frames to be field painted. Refer to Door Schedule for color.
3. EXECUTION
   3.1 INSTALLATION
      A. Store and protect material according to the recommendations of NAAMM Standard HMMA 860
      B. Prior to installation all frames must be checked and corrected for size, swing, squareness, alignment, twist and plumbness
      C. Plaster guards and junction boxes are intended to protect hardware morlises and tapped holes from masonry grout of 4" maximum slump consistency which is hand troweled in place. If a light consistency grout (greater than 5" slump) is to be used, special precautions must be taken in the field by the installation contractor to protect the aforementioned.
      D. Any grout or other bonding material shall be cleaned off the frames or doors immediately following installation. Hollow metal surfaces shall be kept free of grout, lar, or other bonding material or sealer.
      E. Maintain proper clearances and tolerances as defined by recommendations of NAAMM Standard HMMA 860
      F. Exposed field welds shall be ground smooth and touched up with a rust inhibitive primer prior to field painting

SECTION 08125 - ALUMINUM DOORS AND FRAMES

1. GENERAL
   1.1 SUMMARY
      A. This section contains performance criteria for aluminum doors and frames
   1.2 SUBMITTALS
      A. Submit shop drawings, samples and product data
   1.3 QUALITY ASSURANCE
      A. Manufacturer Qualifications: Minimum 5 years' experience in manufacturing similar systems
      B. Installer Qualifications: Minimum 2 years' experience installing similar systems and acceptable to the manufacturer
   1.4 WARRANTY
      A. Submit a written three (3) year manufacturer's warranty executed by the manufacturer agreeing to repair or replace units that fail in materials or workmanship with in the specified warranty period. Failures included but are not limited to:
         1. Structural failures including excessive deflection, excessive leakage or air circulation
         2. Faulty operation
         3. Deterioration of metals, metal finishes and other materials beyond normal weathering
2. PRODUCTS
   2.1 MATERIALS
      A. Aluminum for framing members and door: Alloy and temper recommended by the manufacturer for strength, corrosion resistance, and application of required finish indicated, complying with the requirements of the standards indicated below:
         1. Sheets and Plate: ASTM B209
         2. Aluminum Extrusions: ASTM B221
         3. Extruded Structural Pipe and Tubes: ASTM B429
   2.2 ALUMINUM DOORS
      A. Door Frames: Provide tubular and channel frame entrance door frame assemblies, as indicated, with welded or mechanical joints in accordance with manufacturer's standards. Reinforce as necessary to support required loads.
      B. Stile and Rail Type Doors: Provide tubular frame members, fabricated with mechanical joints using heavy inserted reinforcing plates and concealed tie rod or j-bolts
         1. Door Glazing: Fabricate doors to facilitate replacement of glass or panels, without disassembly of stiles and rails. Provide snap-on extruded aluminum glazing stops, with exterior stops anchored for non-removal.
         2. Door Design: Provide 1-3/4 inch thick doors of design indicated. Provide ADA compliant bottom rail.
         3. Exterior Doors are to be thermally broken
      C. Door Hardware: Refer to "Section 08710 - Door Hardware" and the Hardware Schedule in the contract drawings
      D. Exterior Framing System: Provide inside-outside matched resilient flush-glazed storefront framing system with provisions for glass replacement. Shop-fabricate and preassemble frame components where possible.
      E. Thermally Broken, Framing Systems
      F. Weather-Stripping: For exterior doors and where indicated, EPDM or vinyl blade gasket weather-stripping in bottom door rail, adjustable for contact with threshold
      G. At interior doors and other locations without weather-stripping, provide neoprene silencers on stops to prevent metal-to-metal contact
   2.3 FABRICATION
      A. General: Factory-fabricate assemblies to greatest extent possible, assuring that installed units will be without warp, twist, bow, or other defect in appearance or function
      B. Door Frames: Self-morlising, non-handed, and reversible. Throat openings as required. All fasteners concealed except in finish hardware.
      C. Windows / Frames: Factory fabricated and complete per manufacturer's standard extrusion details. Coordinate with glass provided as work of another specification section.
      D. Reinforcement: Reinforce frames for field-installed exposed hardware items. Provide frames non-handed, Self-Morlising and Reversible, for placement of Hinges and Strike Plates in the field.
      E. Thermal-Break Construction: Fabricate exterior door and framing systems with integrally concealed, low conductive thermal barrier, located between exterior materials and exposed interior members to eliminate direct metal-to-metal contact. Use manufacturer's standard construction that has been in use for similar projects for period of not less than 3 years.
   2.4 FINISHES
      A. Finish all exposed aluminum with manufacturer's standard system in the finishes described in the contract drawing complying with the following performance standards:
         1. Interior Pigmented Organic Coating: Baked Enamel compliant with the performance standards set forth in AAMA 2603
         2. Exterior High Performance Organic Coating: 50% Kynar 500/Hylar 5000 compliant with the performance standards set forth in AAMA 2604
         3. Exterior High Performance Andoic Finish: Class I anodized architectural aluminum compliant with the performance standards set forth in AAMA 611
         4. Interior / Light Exterior Anodic Finish: Class II anodized architectural aluminum compliant with the performance standards set forth in AAMA 611
3. EXECUTION
   3.1 INSTALLATION
      A. Install in accordance with manufacturer's instructions
      B. General: Install aluminum frames and accessories to comply with manufacturer's recommendations
      C. Comply with detailed installation requirements of final shop drawings
      D. Frame Installation:
         1. General: Adhere to manufacturer's recommendations
         2. Place pre-finished frames after wall finishing is complete, braced securely to achieve plumb, planar installation. Remove braces after anchorages have achieved final set, leaving frames in smooth, undamaged condition.
         3. Anchors: Use screws, per manufacturer's standard installation instruction, for secure attachment to wall conditions
   3.2 PROTECTION
      A. After installation, adequately protect from damage by grinding and polishing machines, plaster, lime, acid, cement or other harmful compounds per the recommendations of the manufacturer
   3.3 CLEANING
      A. Remove protective materials and clean materials per the manufacturer's recommendations, being careful to use materials which will not damage frame or glazing material

SECTION 08311 - ACCESS DOORS AND FRAMES

1. GENERAL
   1.1 SUMMARY
      A. This Section includes the following:
         1. Wall access doors and frames
2. PRODUCTS
   2.1 MANUFACTURERS
      A. Manufacturers: Subject to compliance with requirements, provide access doors by one of the following:
         1. J. L. Industries, Inc.
         2. Larsen's Manufacturing Company
         3. Nystrom Building Products Co.
         4. Architect approved equal
   2.2 ACCESS DOORS AND FRAMES
      A. Flush Access Doors and Trimless Frames: Fabricated from metallic-coated steel sheet
         1. Locations: Gypsum board wall and ceiling surfaces
         2. Door: Minimum 0.060 inch thick sheet metal, set flush with surrounding finish surfaces, complying with ASTM A653
         3. Frame: Minimum 0.060 inch thick sheet metal with drywall bead
         4. Hinges: Spring-loaded concealed pin type
         5. Latch: Screwdriver-operated cam latch
      B. General: Provide access door assemblies manufactured as integral units ready for installation
3. EXECUTION
   3.1 INSTALLATION
      A. Comply with manufacturer's written instructions for installing access doors and frames
      B. Install access doors with trimless frames flush with adjacent finish surfaces or recessed to receive finish material

SECTION 08710 - DOOR HARDWARE

1. GENERAL
   1.1 SUMMARY
      A. Section Includes:
         1. Door Hardware, including electric hardware
   1.2 SUBMITTALS
      A. Submit a hardware schedule and Organize schedule into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include the following information:
         1. Type, style, function, size, quantity and finish of hardware items
         2. Use BHMA Finish codes per ANSI A156.18
         3. Name, part number and manufacturer of each item
         4. Fastenings and other pertinent information
         5. Location of hardware set coordinated with floor plans and door schedule
         6. Explanation of abbreviations, symbols, and codes contained in schedule
         7. Mounting locations for hardware
         8. Door and frame sizes, materials and degrees of swing
         9. List of manufacturers used and their nearest representative with address and phone number
         10. Catalog cuts
         11. Manufacturer's technical data and installation instructions for electronic hardware
      B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued
      C. Furnish as-built/as-installed schedule with closeout documents, manufacturer's installation, adjustment and maintenance information, and supplier's final inspection report
   1.3 QUALITY ASSURANCE:
      A. Hardware supplier must be a recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 2 years who is or who employs an experienced architectural hardware consultant who is available, at reasonable times during the course of the Work, for consultation about project's hardware requirements to Owner, Architect and Contractor
         1. Responsible for detailing, scheduling and ordering of finish hardware
      B. Hardware: New, free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.
      C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort
      D. Fire-Rated Openings: In compliance with NFPA 80. Provide proper latching hardware, non-flaming door closers and approved-bearing hinges. Furnish openings complete.
      E. Pre-Installation Meetings: Prior to start of hardware installation, contractor shall schedule and conduct pre-installation meeting with hardware supplier, lock, exit device, and door closer manufacturers' representative(s), installer and related trades, to coordinate materials and techniques, and sequence complex hardware items and systems installation. Proper and correct installation and adjustment of hardware is to be reviewed, and criteria for punch list review will be established. Convene at least one week prior to commencement of related work.
   1.4 SEQUENCING AND COORDINATION:
      A. Reinforce walls for wall stops
      B. Coordinate finish floor materials and floor-mounted hardware
      C. Conduit and raceways as needed for electrical hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
      D. Furnish manufacturer templates to door and frame fabricators
      E. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation
   1.5 WARRANTY:
      A. Provide manufacturer's warranty for the following items:
         1. Closers; Ten years mechanical, two years electrical
         2. Locksets: Two Years
         3. Exit Devices: Three years
         4. Hinges: Life of Building
         5. Other Hardware: Two years
2. PRODUCTS
   2.1 MATERIALS
      A. Refer to the Hardware Schedule and Door Schedule for the following items:
         1. Hardware sets
         2. Hardware types
         3. Hardware styles and finishes
         4. Hardware quantities and locations
3. EXECUTION
   3.1 INSTALLATION
      A. Ensure that walls and frames are square and plumb before hardware installation
      B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes
      C. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachement substrate for proper installation and operation.
   3.2 ADJUSTING
      A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
      B. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner's satisfaction at no additional cost to Owner
      C. Inspection: Use hardware supplier. Include suppliers with closeout documents.
   3.3 PROTECTION/CLEANING
      A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
      B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process

SECTION 08800 - GLASS AND GLAZING

1. GENERAL
   1.1 SUMMARY
      A. Provide all work associated with the installation of glass and glazing as described in the contract drawings and these specifications
   1.2 SUBMITTALS
      A. Submit the following product data for each product used
         1. Manufacturer's glass data including specifications and installation instructions for each type of glass specified
         2. Manufacturer's glazing material data including specifications and installation instructions for each type of glazing material used
         3. Submit a certificate from the respective manufacturer attesting the glass and glazing materials furnished for project comply with the project requirements and project conditions
         4. Submit samples of each glass material that is used
   1.3 QUALITY ASSURANCE:
      A. Primary float glass shall comply with ASTM C1036
      B. All safety glazing shall comply with ASTM C1036, ASTM C1048; ANSI Z97.1 and the Safety Glazing Certification Council (SGCC)
      C. Heat strengthened glass shall comply with ASTM C1048
      D. Insulated glass shall comply with ASTM E2190 and the Certification of Sealed Insulating Glass Certification Council (IGCC)
      E. Laminated Glass shall comply with ASTM E1172
      F. Mirrors shall comply with ASTM C1651
   1.4 WARRANTY
      A. Provide a ten (10) year manufacturer warranty on all materials installed
         1. Provide a special Project Warranty on Insulated Glass: Provide written warranty signed by manufacturer of insulating glass agreeing to furnish replacements for those insulated glass that fail due to defects. Defects are defined as failure of hermetic seal of air space beyond that due to glass breakage, as evidenced by intrusion of dirt or moisture, internal condensation or fogging. Additional defects are deterioration of protected internal glass coating, if any, and other visual indications of seal failure or performance.
2. PRODUCTS
   2.1 MANUFACTURERS
      A. Provide glass and glazing products from one of the following manufacturers:
         1. PPG Industries
         2. Pilkington North America, Inc.
         3. Old Castle Glass
         4. Visteon
         5. AFG Industries, Inc.
         6. Guardian Industries Corp.
   2.2 GLASS MATERIALS
      A. Clear Float Glass: Type I, Class 1, Quality q3 (glazing select), ¼" thick minimum unless shown otherwise or project conditions require a greater thickness
      B. Clear Tempered: Heat treated to 4-5 times annealed strength. Type I, Class 1, Quality q3 (glazing select), ¼" thick minimum unless shown otherwise or project conditions require a greater thickness. Us in locations indicated on the contract drawings and as required by local health life safety codes and regulations require.
      C. Clear Insulating Glass Unit, 1" thick, Tempered Glass Unit: Type I, Class 2, Quality q3 (glazing select), 2 panes of ¼" thick minimum unless shown otherwise or project conditions require a greater thickness. Unit is made up of 2 panes of glass separated by a 1/2 inch air space. Use for new exterior windows and storefronts as indicated on the contract drawings. Refer to contract drawings and local health life safety codes and regulations to determine the location of tempered glazing.
         1. The following Shading Heat Gain Coefficients (SHGC), U-factors, and Visible Light Transmittance values will be project minimums unless local codes and regulations require more stringent requirements
            a. (SHGC): 0.40
            b. U-Factor: 0.40
            c. Visible Light Transmittance: 70%
      D. Clear Laminated Monolithic Two-Ply Laminated Glass, Tempered Glass Unit: Type I, Class 1, Quality q3 (glazing select) glass laminated together with a clear polyvinyl butyral interlayer or alternatives such as resin laminates, conforming to previously stated laminate glass requirements. Refer to contract drawings and local health life safety codes and regulations to determine the location of tempered glazing.
      E. Heat Strengthened Glass: Type I, Class 1, Quality q3 (glazing select) ¼" thick minimum unless shown otherwise or project conditions require a greater thickness. (Heat Strengthened Glass does not qualify as safety glazing.)
      F. Ceramic-Opacified Spandrel Glass, Tempered Ceramic-Opacified Spandrel Glass: Condition B (spandrel glass, one surface ceramic-coated as specified by the selected manufacture), Type I, Quality q3 (glazing select). Refer to contract drawings and local health life safety codes and regulations to determine the location of tempered glazing.
         1. Color: Refer to Contract Drawings
      G. Film-Opacified Spandrel Glass, Tempered Ceramic-Opacified Spandrel Glass: Condition C (spandrel glass, one surface coated with film as specified by the selected manufacture), Type I, Quality q3 (glazing select). Refer to contract drawings and local health life safety codes and regulations to determine the location of tempered glazing.
         1. Color: Refer to Contract Drawings
      H. Frosted Glass, Tempered Frosted Glass: All frosted glass types manufactured by acid etching Type I, Class 1, Quality q3 (glazing select) glass. The thickness of the glass to be ½" thick minimum unless shown otherwise or project conditions require a greater thickness. Refer to contract drawings and local health life safety codes and regulations to determine the location of tempered glazing.
         1. Pattern: Refer to Contract Drawings
   2.3 GLAZING MATERIALS
      A. General: Provide glazing materials, selected from items below, as recommended by manufacturer's for their intended use and for their compatibility with other glazing materials and others surfaces they will contact. Compatibility with other materials must be verifiable via acceptable 3rd party test results.
      B. Silicone Glazing Sealant: Correct type, grade, class, and use silicone sealant as recommended in writing by manufacturers for application indicated and complying with ASTM C920
      C. Glazing tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; non-staining and non-migrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800
      D. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; as recommended in writing by manufacturers for application indicated and complying with AAMA 800
      E. Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required as recommended in writing by manufacturers for application indicated to maintain watertight seal, made from one of the following:
         1. Neoprene complying with ASTM C864
         2. EPDM complying with ASTM C864
         3. Silicone complying with ASTM C1115
         4. Thermoplastic polyolefin rubber complying with ASTM C1115
      F. Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned gaskets complying with ASTM C509, Type II, black; of profile and hardness required as recommended in writing by manufacturers for application indicated to maintain watertight seal from the following materials
         1. Neoprene
         2. EPDM
         3. Silicone
         4. Thermoplastic polyolefin rubber
      G. Miscellaneous Glazing Materials: Products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials involved for glazing application indicated, and with a proven record of compatibility with surfaces contacted in installation
   2.4 SPECIALTY PRODUCTS
      A. Mirrors: Furnish and install mirrors, 1/4 inch thick, 3.25#/sq. ft., quality float glass silvered, copper sprayed and protected with black mirror backing, grind edges smooth and paint jet black, Globe-Emerada, Pittsburgh, or Falconer
   2.5 FABRICATION
      A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing publications as required to comply with system performance requirements
3. EXECUTION
   3.1 INSTALLATION
      A. Comply with combined recommendations of manufacturers of glass, sealants, gaskets, and other glazing materials, except where more stringent requirements are indicated, including those in "GANA Glazing Manual"
      B. Protect glass from edge damage during handling and installation
      C. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites
      D. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics
      E. Protect glass from contact with contaminating substances resulting from construction operations including weld splatter
      F. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents and vandalism, during construction period

aria GROUP
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ARIA GROUP ARCHITECTS, INC.

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JANICE R. MCGOOKIN
001-020249
STATE OF ILLINOIS
Expires: 11/30/22
11/24/20

Drawing Title
SPECIFICATIONS

Job No.	Drawn
204461	Author
Scale	Date
12" = 1'-0"	11/24/20

Sheet No.
A594

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SECTION 09251 - GYPSUM BOARD ASSEMBLIES

1. GENERAL

1.1 SUMMARY

A. Provide gypsum board systems including non-load-bearing light gage metal framing, suspension system for gypsum board systems, joints treatment, acoustical accessories, and general accessories for complete installation

1.2 SUBMITTALS

A. Submit product data for each product used

1.3 QUALITY ASSURANCE

A. Sound Transmission Characteristics: For gypsum board assemblies with STC rating, provide materials and construction identical to those of assemblies whose STC ratings were determined according to ASTM E90 and classified according to ASTM E413 by a qualified independent testing agency

B. Fire Resistance: Provide gypsum board assemblies with fire-resistance rating indicated. Assemblies must be tested for fire resistance according to ASTM E119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1.4 PROJECT CONDITIONS

A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C840 requirements or gypsum board manufacturer's recommendations, whichever are more stringent

B. Maintain areas to receive gypsum board at minimum 50 degree F for 48 hours prior to application and continuously after application until drying of joint compound is complete; comply with ASTM C840

2. PRODUCTS

2.1 GYPSUM MATERIALS

A. Gypsum material to be manufactured from one of the following:

1. United States Gypsum Co., USG Corp.
2. Georgia-Pacific Corp.
3. National Gypsum Co.

B. Shall meet the requirements of ASTM C473. Panels shall be of thickness indicated on drawings column A only; shall have tapered edges and shall be of types suitable for conditions of use and as follows:

1. Gypsum Board (GB or GYP): Shall meet the requirements of ASTM C1396
   a. Type X Gypsum Board shall be used in fire rated assemblies
2. Gypsum Backing Board: Shall meet the requirements of ASTM C442
3. Moisture Resistant Gypsum Board (MR): Shall meet the requirements of ASTM C1396 and score a 10 or better in the mold growth test performed per ASTM D3273
4. Cement Backer Board (CB): Aggregated Portland cement board with woven glass fiber mesh facing; complying with ANSI A118.9 and score a 10 or better in the mold growth test performed per ASTM D3273
5. DensShield (DS): Fiberglass-Mat Faced Gypsum Backing Board ASTM C1178
   a. Mold Resistance of 10 per ASTM D3273

C. Gypsum Board Accessories: Comply with ASTM C840

1. Provide protective coated steel corner beads and edge trim; type designed to concealed in finished construction by tape and joint compound
2. Corner Beads: Manufacturer's standard metal beads
3. Edge Trim: "L" "LK" or "LC" casing beads

2.2 FRAMING MATERIALS

A. General: Comply with ASTM C754 for conditions indicated. Provide gages as recommended by manufacturer for spans and loads indicated and as required by applicable codes.

1. Seismic Requirements: Comply with state and local requirements for seismic bracing

B. Steel Studs and Runners: ASTM C645

C. Firestop Track: As specified by approved fire resistive assembly

D. Hat-Shaped, Rigid Furring Channels: ASTM C645

E. Channels: ASTM C754

F. Grid Suspension System for Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock from one of the following manufacture systems

1. Armstrong World Industries, Inc.: Drywall Grid Systems.
2. USG Corporation: Drywall Suspension System

G. Hangers: ASTM A641, Class 1 wire, not less than sizes in Table No. 5 of ASTM C754 and as required by applicable codes; hanger rods, flat hangers, and angle-type hangers as required.

3. EXECUTION

3.1 INSTALLATION

A. Metal Framing Erection: Erect metal framing in accordance with ASTM C754 and manufacturer's recommendations

1. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall

B. Ceiling Framing Installation: Erect in accordance with ASTM C754 and manufacturer's recommendations

1. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement

C. Gypsum Board Installation: Install in accordance with ASTM C840 and manufacturer's recommendations

D. Finishing: Comply with Gypsum Association (GA) "Levels of Gypsum Board Finish"

1. GA Level 4, three coat finishing and sanding is required for surfaces indicated to be painted. Provide flush, smooth joints and surfaces ready for applied paint finishes.

SECTION 09300 - TILE

1. GENERAL

1.1 WORK INCLUDED

A. Provide tile installations with accessories, as required for complete installation

1. Tile work includes various types of stone, quarry, and ceramic floor and wall tile

1.2 SUBMITTALS

A. Submit samples and product data for each product

1.3 WARRANTY

A. Provide manufacturer's standard warranty for each product specified

2. PRODUCTS

2.1 MATERIALS

A. Tile: Comply with ANSI A137.1 Specifications for Ceramic Tile for types of grades of tiles. Furnish tile complying with Standard Grade requirements unless otherwise indicated.

1. Acceptable Manufacturers: Refer to Finish Legend located on the drawings
2. Color, Style and Pattern: As indicated on Finish Legend and conforming to Architect approved samples
3. Floor Tile: Provide non-slip units with minimum wet and dry value of 0.60 coefficient of friction when tested in accordance with ASTM C1028. Contractor shall notify Architect if any floor material listed in the Finish Legend does not comply with this standard.
4. Base and Trim: Provide matching trim pieces, coordinated with sizes and coursing of adjoining flat tile as directed by Architect; types as indicated, as selected by Architect where not indicated

B. Latex Portland Cement Mortar-Thin Set: (All areas except quarry tile). Thinset bond coat, consisting of latex-cementitious mortar conforming to ANSI A118.4 to be compatible with liquid applied waterproofing.

C. Water Cleanable, Chemical Resistant, Tile-Setting Epoxy Adhesive: (At all quarry tile and if noted in the Finish Legend) conform to ANSI A118.3 to be compatible with liquid applied waterproofing

1. Color: Match specified epoxy grout color

D. Latex - Portland Cement Grout (At Latex-Thin Set): ANSI A118.7 latex-cementitious type, uniform in color, resistant to shrinkage

1. Color: See Finish Legend

E. Chemical Resistant 100% Solids, Nonsagging Epoxy Grout system (at epoxy adhesive and if noted on the Finish Legend): Conform to ANSI A118.3

F. Concrete Slab-On-Grade Sealer: Creteseal (800-278-4273)/CS2000 curing, hardener, sealer

G. Applied Waterproofing: Refer to "Section 07141 - Waterproofing"

2.2 MIXING

A. Mix and proportion cementitious materials for site-made leveling coats, setting beds and grout as recommended by the TCNA Handbook for Ceramic Tile Installation most current edition

B. Mix and proportion pre-mixed setting beds and grout materials in accordance with manufacturer's recommendations

3. EXECUTION

3.1 PREPARATION

A. Prior to installing tile, ensure surfaces are level

1. Substrate Tolerances: maximum surface variation of 1/8" in 10'-0" and 1/16" in 1'-0" from the required plane

B. Ensure surfaces are clean and well cured

C. Do not commence work until surface conditions are within tolerances required for proper installation; apply latex leveling material where necessary to meet required tolerances

D. Slab-on-Grade Sealer: Apply curing, hardener, sealer in accordance with manufacturer recommendations and application instructions to prevent damage to epoxy set floors from water intrusion from beneath slab

E. Cementitious Backer Units: Install units in accordance with ANSI A108.11, manufacturer's recommendations, and as required to provide fire ratings indicated on drawings

3.2 INSTALLATION

A. Install tile in accordance with referenced ANSI Standards and TCNA recommendations for type of substrate and indicated setting method

1. Latex-Cement Thin Set Floors over Concrete: TCNA F113
2. Epoxy Thin Set Floors over Concrete: TCNA F131, with epoxy grout
3. Latex-Cement Thins Set Wall Tile over Cementitious Backer Units: TCNA W244
4. Exterior Thin Set Tile over EIFS: TCNA W202, with highly modified latex-cement mortar

B. Place tile in accordance with patterns indicated on Drawings or as directed by Architect; carefully plan tile layouts, ensure pattern is uninterrupted from one surface to the next and through doorways

C. Apply latex thin set to back of tile where necessary to ensure 100% bond between bond coat and substrate; replace tiles which break due to voids between tile and substrate

D. Neatly cut tile around fixtures and drains; accurately form corners, base, intersections and returns

E. Locate expansion joints, control joints, contraction joints, and isolation joints where indicated, where not indicated, provide as recommended by TCNA Handbook and as approved by Architect

F. Ensure tile joints are uniform in width, subject to normal variance in tolerance allowed in tile size; ensure joints are watertight, without voids, cracks, excess mortar or grout

G. Sound tile after setting, remove and replace hollow sounding units

H. Allow tile to set for a minimum 48 hours prior to grouting

I. Grout tile to comply with recommendations of TCNA and as specified. (Trowel grout FLUSH to quarry tile in Food Prep. Areas).

J. Leave completed installation free of broken, damaged and faulty tile

K. Back-butter 100% all tiles at exterior and all interior large format tiles. Use non-sag mortars for all large format tiles.

3.3 CLEANING AND SEALING

A. Clean tile surfaces free of foreign matter upon completion of grouting

B. Seal and grout surfaces where recommended by manufacturer for materials and applications involved. Comply with manufacturer's recommendations.

C. Install grout sealer at all tile

SECTION 09511 - ACOUSTICAL PANEL CEILINGS

1. GENERAL

1.1 SUBMITTALS

A. This section includes performance criteria for all work associated with suspended vinyl-face gypsum (VGT) ceiling systems and suspended acoustical ceiling tile (ACT) systems

1.2 SUBMITTALS

A. Submit product data for each product used

1.3 QUALITY ASSURANCE

A. Surface-burning characteristics of acoustical panels comply with ASTM E1264 for Class A materials as determined by testing identical products per ASTM E84

B. Products are identified with appropriate markings of applicable testing and inspecting agency

C. Back of house ceiling systems must be acceptable to USDA for food processing areas

1.4 QUALITY ASSURANCE

A. Products: Subject to compliance with requirements, provide one of the products indicated for each designation in the Finish Legend

B. Metal Suspension System: Manufacturer's standard direct-hung suspension system complying with applicable ASTM C635 requirements and with requirements indicated in the Finish Schedule

C. Surface-burning characteristics of acoustical panels comply with ASTM E84 for Class A materials

D. Finishes and Colors for Metal Suspension System, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

1.5 WARRANTY

A. Submit standard manufacturer's written warranty

2. PRODUCTS

2.1 MATERIALS

A. Provide ACT ceiling system as indicated in the Finish Legend and as described in the contract drawings

B. Provide VGT ceiling system as indicated in the Finish Legend and as described in the contract drawings. System must be acceptable to USDA for food processing areas.

C. Suspension System Attachment Devices: Fabricated from corrosion-resistant materials and sized for five times design load indicated in ASTM C635, Table 1, Direct Hung, unless otherwise indicated

D. Metal suspension system: In colors and materials as described on the contract drawings. In areas that require VGT ceilings suspension systems must meet USDA requirements for food processing areas.

E. Cast-in-Place and Post-installed Anchors in Concrete: Cast-in-place, or post-installed expansion or chemical anchors with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E488, conducted by a qualified testing and inspecting agency.

F. Post-installed Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E1190, conducted by a qualified testing and inspecting agency

G. Wire Hangers, Braces, and Ties: Zinc-coated, carbon-steel wire complying with ASTM A641/A641M, Class 1 zinc coating, soft temper. Size wire diameter so its stress, at three times hanger design load, (ASTM C635, Table 1, Direct Hung) will be less than yield stress of wire, but provide not less than 0.106-inch diameter wire.

H. Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical panel edge details and suspension systems indicated; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners

3. EXECUTION

3.1 INSTALLATION

A. General: Install acoustical panel ceilings to comply with publications referenced below per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook"

1. Standard practice for installation of metal Suspension Systems for acoustical tile and lay-in panels. Comply with ASTM C635 & ASTM C636
2. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E580
3. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings-Seismic Zones 0-2
4. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies-Seismic Zones 3 & 4
5. Install ceiling suspension system to resist seismic loads as required by State and local codes, including extra hanger wires and compression supports for ceilings and light fixtures.

B. Secure ceiling hangers from suspension system members to building's structural members. Install hangers plumb and free from contact with other objects within ceiling plenum. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

1. Do not support ceilings directly from permanent metal forms, or floor or roof deck. Do not attach hangers to steel deck tabs.
2. Space hangers not more than 48 inches O.C. along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 8 inches from ends of each member.

C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Install acoustical panels with undamaged edges and fitted accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

SECTION 0966 - VINYL FLOORING FOR WALK IN COOLER AND FREEZER FLOOR AREAS

1. GENERAL

1.1 SUMMARY

A. Provide and install commercial resilient vinyl flooring per manufacturer's installation requirements and recommendations.

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for watertight application.

B. Samples: Submit representative sample of each material specified, indicating visual characteristics and finish.

1.3 QUALITY ASSURANCE

A. Contractor will assure compliance with 2.3 Job Conditions to allow for proper installation.

B. Comply with local governing codes and regulations.

C. Use Protect-All factory trained installers provided by local distributor.

D. Manufacturer provides a limited product warranty against manufacturing defects. Warranty does not in any way cover installation-related issues.

2. PRODUCTS

2.1 NO SUBSTITUTIONS PERMITTED

2.2 PRE-APPROVED PRODUCTS

A. Protect-All Commercial Flooring as manufactured by Oscoda Plastics®, Inc.

1. Protect-All sheets in 5' x 8' or 5' x 5' in ¼" thickness with color chosen from manufacturer's samples in matte finish.
2. Protect-All 2-part epoxy flooring adhesives.
3. Protect-All cove base system with a minimum height of 6".
4. Protect-All Rapid Weld™ or corner rod for the cove base system.
5. Protect-All Rapid Weld or V-Rod for floor seams.
6. Protect-All aluminum or stainless steel cove base cap (Z-bar).
7. Protect-All stainless steel drain rings, corner guards, and transition strips as provided by Oscoda Plastics.
8. Protect-All stainless steel fasteners and anchors for drain rings, corner guards, and transition strips
9. Protect-All E-6100 sealant.
10. Other installation materials as required and supplied by Protect-All.

2.3 INSTALLATION VERIFICATIONS

A. Manufacturer installation instructions for watertight applications along with required accessories, located at www.protect-all flooring.com.

B. Experience of installer pertaining to Protect-All Rapid Weld and heat welding the Protect-All system.

C. Provide representative samples of product depicting color and finished surface of installed flooring material. Include range samples, if variation of finish is anticipated.

D. Provide a mock-up showing cove base, corner, and drain details with welding example.

E. Provide documentation attesting to the successful use of product in wet areas.

F. Provide copy of manufacturer's product warranty.

2.4 VERIFICATION OF JOB CONDITIONS

A. Proper substrate

1. Assure that the substrate material is suitable for installation of flooring as indicated by manufacturer. Approved substrates include: marine-grade or underlayment grade plywood, cement board, and concrete (non-gypsum based only), properly cleaned and prepared per manufacturer's guidelines.

   1a. Protect-All is not to be installed over any existing finish, such as quarry tile, any paint, or any type of tile.

   1b. Protect-All must not be installed in an "operating environment," meaning an environment that is not prepared to close entirely for the duration of the installation.

2. Concrete substrates must be dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with bonding of adhesive. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by floor covering manufacturer.
3. Verify a clean, dry, and structurally sound surface to accept adhesive, free of cracks, ridges, depression, scales, and foreign deposits of any kind.
4. Use only cementitious patching and filling compounds (3500 PSI). Consult manufacturer for details.
5. Assure that the levelness (FL 15), and flatness (FF20 5/16 in 10 Ft.) of surface is in compliance with manufacturer's guidelines.
6. Verify that sub-floor surfaces (concrete, marine-grade or underlayment grade plywood, cement board) are ready for resilient flooring installation by testing moisture emission rate and alkalinity, in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer. Reference ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
7. The following standards apply:
   - ASTM E 1745-97 - Standard Specification for Water Vapor Retarders
   - ASTM E 1643 - Standard Practice for Installation of Water Vapor Retarders used in contact with Earth or Granular Fill Under Concrete Slabs
   - ASTM E 96-00 - Standard Test Method for Water Vapor Transmission of Materials
   - ACI 302.1R-04 - Guide for Floor and Concrete Slab Construction
   - ACI 302.2R-06 - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials
   - ASTM F710-08 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
   - ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

B. For wood sub-floors verify the following:

1. Underlayment over sub-floor complies with requirements specified in Division 6 "Rough Carpentry".
2. Underlayment surface is free of surface irregularities and substances that have potential to interfere with adhesive bond, show through surface or stain floor coverings. Reference ASTM F1482 Standard Practice for Installing and Preparation of Panel Type Underlayments to Receive Resilient Flooring.

C. Environmental Conditions

1. The contractor and installer of product are responsible for providing and maintaining a proper installation environment.
2. Installation area must be enclosed and watertight with all walls, wall finishes, doors, and floor penetrations in place.
3. Proper temperature acclimation of flooring material is required prior to installation at a minimum of 24 hours.
4. Assure confinement of space during installation and curing of adhesives to prevent other trades from damaging the product or compromising the adhesion.
5. Maintain a constant temperature during the installation and throughout the curing of adhesives.
6. Provide a secure area to store materials for installation.
7. Building must be completely enclosed and watertight. HVAC system must be on at least 7 days prior to installation beginning, keeping the interior temperature at 70°. This temperature should be maintained during the installation, and an additional 8 days after completion.

   7a. Protect-All cannot have any heavy foot, or rolling load traffic until flooring adhesive has fully cured, 7-8 days.

D. Proper Drain and Other Floor Penetration Elevations.

1. All drains to be installed level and 3/16" above the surface of the substrate with a proper slope of 1/8" - 1/4" per foot.
2. When sloping to the drain area is specified, the slope should not be less than 36" in diameter and more than 3/8" in depth.
3. All other penetrations should be installed 3/16" above the substrate.
4. Wall penetrations must be a minimum of 8" above the floor surface.

3. EXECUTION

3.1 INSTALLATION

A. Follow manufacturer recommendations for laying sheets out.

B. Flooring must be cut tight to all penetrations.

C. Adhere the floor material using manufacturer's recommended adhesive for the particular substrate type, job conditions, and in compliance with spread rate and proper trowel size.

D. Roll floor into adhesive with 100 lb. roller immediately and a second time one hour later, as per manufacturer directions.

E. Install stainless steel drain rings around all drains and other surface penetrations. Drain rings are to be routed into the floor surface and mounted flush with the top of the flooring. Secure drain rings using Stainless Steel fasteners and anchors to provide a mechanical bond to the substrate.

F. Install cove base as recommended by manufacturer with proper adhesive and top sealant. Protect-All Rapid Weld or heat-weld all seams.

G. Install cove base cap fastening to wall a minimum of 8" on-center using stainless steel fasteners.

H. Protect-All Rapid Weld or heat-weld all field material seams using manufacturer's welding material, proper tools, and installation methods.

I. Stainless steel transitions as provided by the manufacturer must be used in doorways and transition areas. Use stainless steel fasteners, and anchors to secure.

J. All exposed edges are to be sealed with manufacturer's E-6100 sealant.

3.2 CLEANING

A. Refer to the manufacturer's cleaning recommendations located at www.Protect-Allflooring.com.

SECTION 096723 - RESINOUS FLOORING (POLY-CRETE MDB AND POLY CRETE COLOR-FAST TOPCOAT (Flintshot)

1. General

1.1 RELATED DOCUMENTS

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

1. This section includes the following:
   a. Resinous flooring system as shown on the drawings and in schedules.
2. Related sections include the following:
   a. Cast-in-Place Concrete, section 03 30
   b. Concrete Curing, section 03 39 00

1.3 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of a cementitious urethane based self-leveling seamless flooring system with flintshot quartz aggregate broadcast and urethane topcoat.

B. The system shall have the color and texture as specified by the Owner with a nominal thickness of 1/4 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

C. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted

1.4 SUBMITTALS

A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.

B. Manufacturer's Material Safety Data Sheet (MSDS) for each product being used.

C. Samples: A 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

1.5 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.

B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.

C. No requests for substitutions shall be considered that would change the generic type of the specified System.

D. System shall be in compliance with requirements of United States Department of Agriculture (USDA), Food, Drug Administration (FDA), and local Health Department.

E. System shall be in compliance with the Indoor Air Quality requirements of California section 01350 as verified by a qualified independent testing laboratory.

F. System shall be certified "High Traction" by National Floor Safety Institute (NFSI)

G. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping

1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.
2. Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

B. Storage and Protection

1. The Applicator shall be provided with a dry storage area for all components. The area shall be between 60 F and 85 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
2. Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

C. Storage and Protection

1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.7 PROJECT CONDITIONS

A. Site Requirements

1. Application may proceed while air, material and substrate temperatures are between 60 F and 85 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
2. The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.
3. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.

B. Conditions of new concrete to be coated with cementitious urethane material.

1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured for 14 days in accordance with ACI-308 prior to the application of the coating in eastern coastal moisture tests. Outside of these parameters manufacturer shall be consulted.
2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary nor desirable).
3. Sealers and curing agents should not to be used.
4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.

C. Safety Requirements

1. The Owner shall be responsible for the removal of foodstuffs from the work area.
2. Non-related personnel in the work area shall be kept to a minimum.

1.8 WARRANTY

A. Dur-A-Flex, Inc. warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to Dur-A-Flex, Inc. published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.

B. Dur-A-Flex, Inc. liability with respect to this warranty is strictly limited to the value of the material purchase.

2. PRODUCTS

2.1 FLOORING

A. Dur-A-Flex, Inc, Poly-Crete MDB (self-leveling broadcast quartz), Urethane topcoat seamless flooring system.

1. System Materials:
   a. Topping: Dur-A-Flex, Inc, Poly-Crete MD resin, hardener and aggregate.
   b. The aggregate shall be Dur-A-Flex, Inc. flintshot quartz aggregate.
   c. Topcoat: Dur-A-Flex, Inc. Poly-Crete Color-Fast resin, hardener and powder aggregate.Dur-
2. Patch Materials:
   a. Shallow Fill and Patching: Use Dur-A-Flex, Inc. Poly-Crete MD (up to ¼ inch).
   b. Deep Fill and Sloping Material (over ¼ inch): Use Dur-A-Flex, Inc. Poly-Crete WR.

2.2 MANUFACTURER

A. Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802

B. Manufacturer of Approved System shall be single source and made in the USA.

2.3 PRODUCT REQUIREMENTS

A. Topping — Poly-Crete MD

1. Percent Reactive — 100 %
2. VOC — 0 g/L
3. Bond Strength to Concrete substrates fails — 400 psi, ASTM D 4541
4. Compressive Strength, ASTM C 579 — 7,400 psi
5. Tensile Strength, ASTM D 638 — 1,800 psi
6. Impact Resistance @ 125 mils, MIL D-3134, No visible damage or deterioration — 160 inch lbs

B. TopCoat — Poly-Crete Color-Fast

1. Percent Solids — 100 %
2. VOC — 0 g/L
3. Compressive Strength, ASTM C 579 — 7,800 psi
4. Tensile Strength, ASTM D 638 — 4,200 psi
5. Flexural Strength, ASTM D 790 — 1,000 psi
6. Abrasion Resistance, ASTM D 4060 — 30 mg loss
   CS-17 wheel, 1,000gm load, 1,000 cycles
7. Impact Resistance, ASTM D 1709 — 160 inch lbs
8. Shore D Hardness, ASTM D 2240 — 65
9. Gloss, ASTM D 523, 600 — Semi-gloss appearance

3. EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.

1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.2 PREPARATION

A. General

1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.
2. Moisture Testing: Perform tests recommended by manufacturer and as follows.
   a. Perform relative humidity test using is situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 99% relative humidity level measurement.
   b. If the relative humidity exceeds 99% then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.
   c. If the vapor drive exceeds 99% relative humidity or 20 lbs/1,000 sf/24 hrs then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value to the acceptable limit.

3.3 APPLICATION

A. General

1. The system shall be applied in three distinct steps as listed below:
   a. Substrate preparation
   b. Topping/overlay application with quartz aggregate broadcast.
   c. Topcoat application, with an anti-slip aggregate broadcast if required
2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.
3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

B. Topping

1. The topping shall be applied as a self-leveling system as specified. The topping shall be applied in one lift with a nominal thickness of 3/16 inch.
2. The topping shall be comprised of three components, a resin, hardener and filler as supplied by the Manufacturer.
3. The hardener shall be added to the resin and thoroughly dispersed by suitably approved mechanical means. Aggregate shall then be added to the catalyzed mixture and mixed in a manner to achieve a homogenous blend.
4. The topping shall be applied over horizontal surfaces using a pin rake, trowels or other systems approved by the Manufacturer.
5. Immediately upon placing, the topping shall be degassed with a 15/16 inch spiked roller.
6. Quartz aggregate shall be broadcast to excess into the wet material at the rate of 1 lbs/sf.
7. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.

C. Topcoat

1. The topcoat shall be mixed and applied per manufacturer recommended procedure.
2. The topcoat shall be comprised of three components, a resin, hardener and filler as supplied by the manufacturer.
3. The topcoat will be applied at the rate of 100 sf per kit (1.1 gal).
4. Non-Skid if required is broadcast at the rate of 1 lb per 100 sf and back rolled into the coating.
5. The finish floor will have a nominal thickness of 1/4 inch.

3.4 FIELD QUALITY CONTROL

A. Tests, Inspection

1. The following tests shall be conducted by the Applicator:
   a. Temperature
      1) Air, substrate temperatures, relative humidity, and, if applicable, dew point.
   b. Coverage Rates
      1) Rates for all layers shall be monitored by checking quantity of material used against the area covered.

3.5 CLEANING AND PROTECTION

A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.

B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.

SECTION 09775 - FIBER REINFORCED PLASTIC (FRP) WALL PANELS

1. GENERAL

1.1 SECTION INCLUDES

A. Furnish all labor, materials, services, equipment, and appliances required for fiberglass reinforced plastic wall paneling (FRP) work indicated on drawings and specified herein

B. Work includes, but is not limited to, the following:

1. Fiberglass reinforced plastic wall paneling (FRP)
2. Adhesives
3. Vinyl moldings

1.2 SUBMITTALS

A. Submit samples and product data for each product

2. PRODUCTS

2.1 MANUFACTURERS

A. Refer to Finish Legend

2.2 MATERIALS

A. Fiberglass reinforced plastic (FRP) 0.09" thickness, and weighing 0.7 pounds per square foot

B. Material must have USDA - Meat Inspection Division approval

C. Refer to Finish Legend in drawing set for finish and color

D. Class A if noted on drawings

2.3 ACCESSORIES

A. Adhesive:

1. C-551 Marlite FRP adhesive, or equal

B. Vinyl Moldings: Apply moldings to all joints, corners (inside and out), and top and bottom of panels. Set moldings in sealant.

3. EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions under which work of this Section will be installed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install all FRP, adhesives, and moldings in accordance with manufacturer's recommendation. Gypsum drywall surface to which paneling is to be applied shall be smooth, clean, dry, and free from defects which might lead to distortion of FRP work. Do not install with exposed fasteners.

B. Securely install the selected products, setting panels straight, plumb, level, and true to lines and profiles shown on the Drawings

C. Attach to walls and ceilings with adhesive in accordance with recommendations of the panel manufacturer

D. Finish butt joints, wall juncture, wall/ceiling, and wall/curb joints with the specified sealant, tooling to a smooth finish. Provide moldings at joints and corners.

E. Promptly upon completion of this portion of the Work, clean all surfaces. Use method and materials recommended by the panel manufacturer.

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ARIA GROUP ARCHITECTS, INC.

SHAKE SHACK

4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JAMES R. LEVCHUK
001-020045
STATE OF ILLINOIS
Expires 11/30/ 23
11/24/20
SIGNATURE DATE

Drawing Title

SPECIFICATIONS

Job No.	Drawn
204461	Author

Scale	Date
12" = 1'-0"	11/24/20

Sheet No.

A595

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SECTION 09900 - PAINTING

1. GENERAL

1.1 SUMMARY

A. Surface preparation and priming in addition to shop-priming and surface treatment specified under other Sections

B. Painting and finishing of exposed interior items and surfaces

C. Painting and finishing of exposed exterior items and surfaces

1.2 SUBMITTALS

A. Submit product data and samples for each product

1.3 QUALITY ASSURANCE

A. Single-Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats

1.4 ENVIRONMENTAL REQUIREMENTS

A. For interior applications use paints and coating that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA method 24) or ASTM D 3960 for the following standards:

1. Green Seal Standard GS-11, Paints, 1st Edition, May 20, 1993

a. Flat Paints and Coatings: VOC content not more than 50 g/L

b. Non-Flat Paints and Coatings: VOC content not more than 150 g/L

2. Green Seal Standard GS-03, Anti-Corrosive Paints, 2nd Edition, January 7, 1997

a. Anti-Corrosive Coatings: VOC content not more than 250g/L

3. SCAQMD Rule 1113, Architectural Coatings, rules in effect January 1, 2004

a. Varnishes and Sanding Sealers: VOC content not more than 350g/L

b. Stains: VOC content not more than 250g/L

4. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings)

2. PRODUCTS

2.1 MANUFACTURER

A. Refer to Finish Legend located on the contract drawings for acceptable manufacturers

1. No Substitutions

2.2 MATERIALS

A. Material Compatibility: Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field experience

B. Provide colors and finishes as indicated on contract drawings. Colors must be pure, non-fading, applicable types to suit substrates and service indicated.

3. EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements

B. Do not begin to apply paint until satisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry

C. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area

3.2 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved

B. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces

2. Ferrous metals: Touch up bare areas and shop applied prime coats that have been damaged prior to painting

C. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions

D. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoat to distinguish each separate coat.

3.3 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the schedules

2. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

3. Apply materials uniformly, showing no runs, sags, "crawls", "holidays", or other defects

4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

5. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces as indicated on contract drawings

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration

1. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer

2. Omit primer on metal surfaces that have been shop primed and touchup painted

3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

4. Heated Items: Pipes containing heat shall not be painted until system is cold and remains cold until after final coat has dried

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions

1. Spray Equipment: If spray application is to be used, use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required

D. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through (paint holidays) or other defects due to insufficient sealing

E. Block Fillers: Apply block fillers to concentrate masonry block at a rate to ensure complete coverage with pores filled

F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.

I. Completed Work: Match accepted samples of color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site

B. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting.

B. Provide "Wet Paint" signs to protect newly painted finished. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces

3.6 PAINT SCHEDULE

A. Exterior Work: Provide the following painting systems in the colors and sheens as indicated on the contract drawings

1. Concrete, Stucco, and Masonry:

a. Flat or Low-Luster Acrylic: Two coats over primer

b. Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over primer

2. Concrete Masonry Units:

a. Flat or Low-Luster Acrylic: Two coats over block filler and primer

b. Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over block filler and primer

3. Mineral-Fiber-Reinforced Cement Panels:

a. Flat Acrylic: Two coats over primer

4. Exterior Gypsum Soffit Board:

a. Flat or Low-Luster Acrylic: Two coats over primer

b. Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over primer

5. Smooth Wood:

a. Flat or Low-Luster Acrylic: Two coats over primer

b. Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over primer

c. Full-Gloss Alkyd Enamel: Two coats over primer

6. Wood Trim:

a. Medium-Shade, Semi-gloss, or Full-Gloss Acrylic Enamel: Two coats over primer

b. Medium-Shade or Full-Gloss Alkyd Enamel: Two coats over primer

c. Deep-Color, Full-Gloss, Acrylic Enamel: Two coats over primer

d. Deep-Color, Full-Gloss, Alkyd Enamel: Two coats over primer

7. Wood Shakes and Rough Siding:

a. Flat Acrylic Enamel: Two coats over primer

b. Flat Alkyd Enamel: Two coats over primer

8. Plywood:

a. Flat or Low Luster Acrylic Enamel: Two coats over primer

9. Stained Wood:

a. Flat Acrylic: One coat semitransparent, waterborne, penetrating wood stain

b. Flat Alkyd: One coat semitransparent, alkyd, penetrating wood stain

10. Ferrous Metal:

a. Flat, Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over rust-inhibiting primer

b. Low Luster Acrylic: Two coats over rust-inhibiting primer

c. Full-Gloss or Deep-Color Full-Gloss Alkyd Enamel: Two coats over rust-inhibiting primer

11. Zinc-Coated Metal:

a. Low Luster: Two coats over galvanized metal primer

b. Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over galvanized metal primer

c. Full-Gloss Alkyd Enamel: Two coats over galvanized metal primer

12. Aluminum:

a. Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over primer

b. Full-Gloss Alkyd Enamel: Two coats over prime

B. Interior Work: Provide the following painting systems in the colors and sheens as indicated on the contract drawings

1. Concrete and Masonry:

a. Flat Acrylic: Two coats over primer

b. Flat Alkyd: Two coats over primer

c. Semi-gloss Alkyd Enamel: Two coats over primer

2. Concrete Masonry Units:

a. Flat Acrylic: Two coats over block filler and primer

b. Low-Luster or Semi-gloss, Acrylic Enamel: Two coats over block filler and primer

c. Semi-gloss Alkyd Enamel: Two coats over block filler and primer

3. Mineral-Fiber-Reinforced Cement Panels:

a. Flat Acrylic: Two coats over primer

4. Gypsum Board:

a. Flat Acrylic: Two coats over primer

b. Low-Luster, Semi-gloss, or Full-Gloss Acrylic Enamel: Two coats over primer

c. Semi-gloss or Full-Gloss Alkyd Enamel: Two coats over primer

5. Plaster:

a. Flat Acrylic: Two coats over primer

b. Flat Alkyd: Two coats over primer

c. Low-Luster or Full-Gloss Acrylic Enamel: Two coats over primer

d. Semi-gloss Acrylic Enamel: One coat over undercoat and primer

e. Semi-gloss Alkyd Enamel: One coat over undercoat and primer

f. Full-Gloss Alkyd Enamel: Two coats over primer

6. Acoustical Plaster:

a. Flat Acrylic Latex: Two coats

7. Woodwork and Hardboard:

a. Low Luster or Semi-gloss Acrylic Enamel: Two coats over primer

b. Semi-gloss or Full-Gloss Acrylic Enamel: Two coats over wood undercoat

c. Semi-gloss Alkyd Enamel: Two coats over primer

d. Full-Gloss Alkyd Enamel: Two coats over wood undercoat

8. Stained Woodwork:

a. Alkyd- Base, Satin Varnish: Two coats clear-satin varnish over sealer and wood stain

b. Waterborne, Satin Varnish: Two coats clear-satin varnish over sealer and wood stain

c. Water-Based Stain, Full Gloss, Varnish: Two coats full-gloss varnish over sealer and wood stain

d. Alkyd-Based Stain, Wax Polished Finish: Three coats paste wax over sealer and wood stain

9. Natural-Finish Woodwork:

a. Alkyd-Based, Satin Varnish: Two coats clear-satin varnish over sealer

b. Waterborne, Satin Varnish: Two coats clear-satin varnish over sealer

c. Water-Based, Full-Gloss, Varnish: Two coats full-gloss varnish over sealer

d. Wax-Polished Finish: Three coats paste wax over sealer

10. Ferrous Metal:

a. Flat Acrylic: Two coats over primer

b. Low-Luster or Full-Gloss Acrylic Enamel: Two coats over primer

c. Semi-gloss Acrylic Enamel: One coat over undercoat and primer

d. Semi-gloss Alkyd enamel: One coat over undercoat and primer

e. Full-Gloss, Alkyd Enamel: Two coats over primer

11. Zinc-Coated Metal:

a. Flat Acrylic: Two coats over primer

b. Low-Luster, Semi-gloss, or Full Gloss Acrylic Enamel: Two coats over primer

c. Semi-gloss, or Full-Gloss Alkyd Enamel: One cost over undercoat and primer

SECTION 10520 - FIRE EXTINGUISHERS AND ACCESSORIES

1. GENERAL

1.1 SUMMARY

A. Section includes performance criteria for fire extinguishers, fire extinguisher cabinets, and fire extinguisher mounting brackets

1.2 SUBMITTALS

A. Submit product data for each product

1.3 QUALITY ASSURANCE

A. NFPA Compliance: Fire extinguishers shall comply with NFPA-10

B. UL-Listed Products: Fire extinguishers shall be UL listed with UL Listing Mark for type, rating, and classification of extinguisher

C. FM-Listed Products: Fire extinguishers approved by Factory Mutual Research Corporation for type, rating, and classification of extinguisher

2. PRODUCTS

2.1 MATERIALS

A. Fire Extinguishers: Provide fire extinguishers for locations as indicated on the drawing set and as maybe additionally required by authorities having jurisdiction. Types as described below:

1. Multi-purpose Dry Chemical: Type 2-A, UL-299, Rated for Class-A fires

2. Dry Chemical: Type -K, UL-299, Rated for Class-B fires involving combustible cooking media.

3. Carbon Dioxide: Type-C, UL-154, Rated for Class-C fires, fire extinguish shall contain agents that are nonconductive to electricity

4. Fire Extinguisher Cabinets: Size suitable for housing fire extinguishers to ensure fit and function of types and capacities indicated

B. Construction: Enameled steel box, trim, frame door, and hardware to suit cabinet type, trim style and door style as indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.

1. Fire-Rated Cabinets: UL listed with UL Listing Mark with rating of wall where it is installed

2. Cabinet Mounting: Fully recessed in walls of sufficient depth to suit trim style

3. Trim Style: Trim-less with hidden flange of same metal and finish as box that overlaps surrounding wall finish and is concealed from view by overlapping door

4. Door Material and Construction: Manufacturer's standard enameled steel

5. Door Hardware: Provide door-operating hardware of proper type for cabinet type. Provide friction latch. Provide concealed hinge permitting door to open 180 degrees.

6. Steel Cabinet Finishes: Baked enamel finish selected by architect from manufacturer's standard colors

7. Identification: Complying with authorities having jurisdiction, identify the bracket mount fire extinguisher with the words "FIRE EXTINGUISHER" using letter decals applied to the door

C. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure

1. Identification: Complying with authorities having jurisdiction, identify the bracket mount fire extinguisher with the words "FIRE EXTINGUISHER" using letter decals applied to mounting surface

3. EXECUTION

3.1 INSTALLATION

A. Install per manufacturer's written instructions

B. Install at heights indicated, or if not indicated at heights to comply with applicable regulations of governing authorities

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FIELD VERIFICATION
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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JAMES R. LICOCCIA
001-020345
PROFESSIONAL SEAL

License Number 23

Signature

11/24/20
Date

Drawing Title

SPECIFICATIONS

Job No.	Drawn
204461	Author

Scale	Date
12" = 1'-0"	11/24/20

Sheet No.

A596

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National Account and Owner-Vendor List -10.20.2020

GC PROVIDED ITEMS

1. Lighting
Specialty Lighting Group
Sandy Kinne
P) 860-767-0110 x210
E) sandy.kinne@sslighting.com
Anush Kazarian
P) 860-767-0110 x252
E) anush.kazarian@sslighting.com

2. HVAC Units
Carrier - Strategic Accounts
Bob Eckweiler
P) 973-222-6742
E) bob.eckweiler@carrier.com

3. Aluminum Panels
ATAS International Inc.
David Weidl
P) 484-553-5409
E) dweidl@atas.com

4. Tile
Creative Materials Corporation (CMC)
Allison Piche
P) 518-713-5395
E) APiche@creativematerialscorp.com
Doug Salatino
P) 518-713-5371
E) dsalatino@creativematerialscorp.com

5. Safe
Acme Safe Company
Dina Oliveri
P) 212-226-2500 x284
E) doliveri@acmesafenewyork.com

10. Black Iron Water Leak Test
Enviromatic
Don Pflederer
P) 800-325-8476
E) inspections@enviromatic.com

12. Testing and Balancing
National Tab
Will Turnbough
P) 314-954-6244
E) will@nationaltab.com

14. Shades
Roll-A-Shade
Allie Smith
P) 951.245.5077 x 123
E) allie.smith@rollashade.com

16. Instakey Key Control & Locks
Cushman Wakefield
Haley D'Anna
P) 603-362-7500
P) 978-973-6235
E) haley.danna@cushwake.com

17. Kitchen Epoxy Flooring
Duraflex
John Conway
P) 609.238.1265
E) johnc@dur-a-flex.com

18. Special / Deputy / 3rd-Party Inspections
Terracon
Alicia H. Dunstan, PE
P) 603-361 9048
E) alicia.dunstan@terracon.com

19. Welded Seam Flooring (Walk In)
Protect-All
Jerry Lee
P) 989-739-6900 ext. 6000
E) JLee@protect-allflooring.com

20. Roofing Membrane System
Duro-Last
Mike Suman
P) 614-370-5569
E) msuman@duro-last.com

21. Restroom Accessories
Haines, Jones, & Cadbury
Whitney Ashbridge
P) 954-588-8194
E) whitney.ashbridge@hjcinc.com

OWNER PROVIDED ITEMS

25. CO2 Equipment
NuCO2
Debbie Oliver
P) 770-833-0802
E) doliver@nuco2.com
Brent Fairchild
P) 772-323-3693
E) BFairchild@nuco2.com

26. Exhaust Hood & Fans
Halton
David Harpring
P) 502-445-6239
E) david.harpring@halton.com

27. Kitchen Equipment Contractor
Trimark United East
Stephen Dungey
P) 508-431-3410
E) stephen.dungey@trimarkusa.com

29. Oil Recovery System
Restaurant Technologies, Inc.
Aimee Krueger
P) 850-525-9366
E) akrueger@rti-inc.com

30. Specialty Beverage Equipment
Harney Tea
Andrew Wilson
P) 845-233-0255
E) andrew@harneyteas.com

31. Low Voltage Contractor
Spencer Technologies
Lyndie Thompson
P) 440-417-4666
E) lythompson@spencertech.com
Brittany Winchell
P) 508-618-9524
E) bwinchell@spencertech.com

33. Security System
Protection 1 (ADT Security)
Chrystal Kanjia
P) 214.277.7206
E) ckanjia@adt.com
Michael Krey
P)973-885-6092
E) michaelkrey@adt.com

35. Signage Contractor
Jones Sign
Sara Kostka
P) 414-687-3175
P) 267-324-8969
E) skostka@jonessign.com

36. Dining Tables (Indoor)
CounterEvolution
Jim Malone
P) 917-297-9737
E) jim@counterev.com

37. Dining Chairs, Stools & Outdoor Tables
Uhuru
Jason Horvath
P) 718-885-6519
E) jason@uhurudesign.com

38. Dining Booths & Picnic Tables
Staach
Ben Gordon
C) 585-319-6627
E) ben@staach.com

39. Patio Umbrellas
Tuuci Inc
Frank Martin
P) 305.636.7890
E) fmartin@tuuci.com

40. Cable
DirecTV
Jerome Hawkes
P) 303-264-0020
E) jh231e@att.com

41. Trash + Recycle Bins (Outdoor)
Facility Concepts Inc
William Day
P) 800-915-8890 ext. 117
E) wday@fcius.com

43. Chemicals / Dishwasher / Water Softener
SSDC / Kay Chemical
Martin Bradshaw
P) 612-220-6266
E) martin.bradshaw@ecolab.com

44. Site Camera
EarthCam
Maria Cury
P) 201-488-1111 x1031
E) maria@earthcam.com

ROOM FINISH SCHEDULE

ROOM #	ROOM NAME	FLOOR	BASE	WALLS N	WALLS E	WALLS S	WALLS W	CEILING	CEILING HEIGHT	COMMENTS
100	VESTIBULE	PC	T	GL	WD	WD	WD, GL	P	10'-9"	
101	KIOSK STATION	PC	T	T	T	T	T	P	VARIES	
102	PICK-UP	PC	T	WC, T	T, C	-	-	P	VARIES	
103	QUEUING	PC	T	-	T, C	-	-	P	VARIES	
104	DINING	PC	T	WC, T	T, C	VE	T, C	P	VARIES	
105	HALLWAY	PC	T	P, T	P, T	P, T	P, T	P	8'-9"	
106	MEN'S RESTROOM	T	T	T	T	T	T	P	8'-0"	
107	WOMEN'S RESTROOM	T	T	T	T	T	T	P	8'-0"	
108	PATIO	B	-	-	C, GL	-	-	P		
109	OPEN KITCHEN	E	E	SS	SS	SS	SS	C-10	9'-0"	
110	COOKLINE	E	E	SS	SS	SS	SS	C-10	9'-0"	
111	APP-THRU WINDOW	E	E	SS	SS	SS	SS	C-10	9'-6"	
112	B.O.H.	E	E	FRP	FRP	FRP	FRP	C-10	9'-0"	
113	WALK-IN COOLER	E	E	-	-	-	-	-	-	CEILING & WALLS BY MANUFACTURER
114	WALK-IN FREEZER	-	E	-	-	-	-	-	-	FLOOR, CEILING AND WALLS BY MANUFACTURER
115	MANAGER'S OFFICE	E	E	P	P	P	P	C-10	9'-0"	
116	MECH. ROOM	C	V	FRP	FRP	FRP	FRP	EXP	VARIES	BROOM FINISH

NOTES:

1. ALL CEILING HEIGHTS ARE TAKEN FROM TOP OF PROJECT FINISH FLOOR +100'-0", REFER TO RCP FOR HEIGHTS NOT INDICATED
2. REFER TO FLOOR FINISH PLAN FOR ADDITIONAL INFORMATION REGARDING WALL FINISHES IN BACK OF HOUSE AREAS. REFER TO INTERIOR ELEVATIONS FOR PUBLIC AREAS
3. ALL BACK OF HOUSE STAINLESS STEEL BY KITCHEN EQUIPMENT PROVIDER UNLESS NOTED OTHERWISE

ROOM FINISH KEY:

B	BRICK	GL	GLASS
EXP	EXPOSED STRUCTURE	MTL	METAL
E	EPOXY	P	PAINT
FRP	FIBERGLASS REINFORCED PLASTIC PANEL	PC	POLISHED CONCRETE
PL	PLASTIC LAMINATE	C-10	VINYL FACED GYPSUM
SS	STAINLESS STEEL	WD	WOOD
T	TILE	V	VINYL
VE	VEGETATION	C	CONCRETE
		WC	WALL COVERING

FINISH SCHEDULE

KEY	MATERIAL	MANUFACTURER	COLOR / NUMBER	NUMBER / SIZE	FINISH / GROUT	LEAD TIMES	NOTES & LOCATION	CONTACT
CEILING								
C-2	ACOUSTIC PANELS	ARMSTRONG	TECTUM DIRECT ATTACH	8182T10	WHITE	-	DIRECT MOUNT TO UNDERSIDE OF SLOPED ROOF. REFER TO RCP. INSTALL w/ IMPALING OR APPROPRIATE ADHESIVES. PROVIDE SAMPLE TO OWNER FOR APPROVAL, SHEEN TO BE EGGSHELL OR LOWER, SPRAY APPLY PAINT AS PER MANUFACTURER'S SPECIFICATIONS	STEPHEN BLAKE (312) 405-98711
C-10	VINYL FACED GYPSUM CEILING TILES	USG	LAY-IN CEILING PANEL CLIMA-PLUS, WHITE 3270	24" X 48" , 15/16 THICK	-	1 WEEK	REFER TO REFLECTED CEILING PLANS (R.C.P.), G.C. TO USE USG ZXLA 15/16" WHITE T-GRID	ANNIE ABDELNOUR (312) 597-2582
FLOORING								
D-1	EPOXY FLOOR COATING	DUR-A-FLEX	POLY-CRETE MDB WITH TF PLUS TOPCOAT	-	DARK GRAY	-	REFER TO FLOOR & WALL FINISH PLAN	REFER TO OWNER-VENDOR LIST ON A601
PA-1	EXTERIOR PAVERS	UNILOCK	HOLLAND PREMIER - GRANITE	3-7/8" X 7-7/8" X 2-3/8"	BLACK SAND	IN STOCK	EXTERIOR FLOOR	BRAD SWANSON (630) 742-4168
PC-1	CONCRETE	-	-	-	REFER TO FLOOR FINISH PLAN. ON SITE MOCK UP REQUIRED PRIOR TO INSTALLATION - I PASS 80 GRIT METAL BOND PAD (TO ACHIEVE SALT & PEPPER) - I PASS 150 GRIT METAL BOND PAD - I PASS 100 GRIT RESIN BOND PAD - I PASS 200 GRIT RESIN BOND PAD - DENSIFY WITH CONSOLIDECK - I PASS 400 GRIT RESIN BOND PAD - I PASS 800 GRIT RESIN BOND PAD – CONSOLIDECK POLISH GUARD PROTECTIVE COATING	-	REFER TO FLOOR FINISH PLAN. ON SITE MOCK UP REQUIRED PRIOR TO INSTALLATION - I PASS 80 GRIT METAL BOND PAD (TO ACHIEVE SALT & PEPPER) - I PASS 150 GRIT METAL BOND PAD - I PASS 100 GRIT RESIN BOND PAD - I PASS 200 GRIT RESIN BOND PAD - DENSIFY WITH CONSOLIDECK - I PASS 400 GRIT RESIN BOND PAD - I PASS 800 GRIT RESIN BOND PAD - I PASS 1500 GRIT BUFF - HIGH SPEED - CONSOLIDECK POLISH GUARD PROTECTIVE COATING	-
T-9-B	PORCELAIN TILE	STONE SOURCE	PUZZLE - EDGE SLATE & COAL	10" X 10"	SLATE GRAY & COAL, MATTE FINISH	-	AT TOILET ROOMS, COEFFICIENT OF FRICTION <0.6	-
MISCELLANEOUS								
ACM-1	COMPOSITE METAL PANELS	PAC CLAD	TBD	TBD	TBD	TBD	TBD	-
B-1	THIN BRICK	BY G.C.	OLD CHICAGO WHITE	-	-	-	EXTERIOR WALL	-
M-5	STANDING SEAM METAL	PAC CLAD	MATTE BLACK, SNAP-CLAD	16" O.C.	-	4-5 WEEKS	ROOF, INSTALL w/ PAC CLAD COLORGARD SNOW RETENTION SYSTEM	PETER DROZDZ (630) 290-0326
SPT-1	GREEN WALL	MATERIALS INC.	CERTOSA FS	HYDRA	-	3-4 WEEKS	INTERIOR WALLS	ALBERTO MENNUTI (201)968-0101, EMAIL: ALBERTO@MATERIALS-INC.COM
PAINT								
P-1	PAINT	SHERWIN WILLIAMS	PASSIVE	SW7064	-	IN STOCK	REFER TO RCP	JESSICA NEWELL (224) 223-5180
P-2	PAINT	SHERWIN WILLIAMS	IRON ORE	SW 7069	-	IN STOCK	REFER TO INTERIOR AND EXTERIOR ELEVATIONS	JESSICA NEWELL (224) 223-5180
P-9	PAINT	SHERWIN WILLIAMS	PURE WHITE	SW 7005	-	IN STOCK	REFER TO INTERIOR AND EXTERIOR ELEVATIONS	JESSICA NEWELL (224) 223-5180
P-11	PAINT	SHERWIN WILLIAMS	ARUGULA	SW 6446	-	IN STOCK	REFER TO INTERIOR ELEVATIONS	JESSICA NEWELL (224) 223-5180
WALL								
FC-1	FLUTED CONCRETE	2STONE	IVORY, PITTED	4' x 3'	-	-	REFER TO EXTERIOR ELEVATIONS	LISE BROWN (403) 236-3657
FCB-1	FIBER CEMENT BOARD	WOODTONE	MIDNIGHT GRAY	12'-0" LENGHTS AND 12", 10", 8", 6" 4" WIDTHS	ALLURA PROFILE	-	REFER TO EXTERIOR ELEVATIONS, FASTENERS TO MATCH BOARD COLOR	-
M-3-18	STAINLESS STEEL	BY KEC, UNO	COMMERCIAL KITCHEN GRADE	18 GA.	BRUSHED, 'OIL FREE' TYPE	-	LOCATED AT FRONT OF HOUSE (F.O.H.) ORDER COUNTER, COLUMN, AND SOFFIT. MINIMAL VERTICAL TRIMS. NIFORM 2" WIDE FACE ROLLED EDGE TRIM. REFER TO INTERIOR ELEVATIONS	-
M-6	PERFORATED METAL	PAC CLAD	STONE WHITE	1/8" ROUND	-	4-6 WEEKS	INTERIOR WALLS	PETER DROZDZ (630) 290-0326
T-10	PORCELAIN TILE	CREATIVE MATERIALS CORP.	CHROMA WHITE	2" x 10"	1/8" LATICRETE SPECTRA LOCK PRO PREMIUM, SMOKE GREY 89	6-8 WEEKS	LOCATED AT RESTROOMS, SUBMIT SAMPLE FOR ARCHITECT'S APPROVAL, SCHLUTER - AHKA BLACK	ALLISON PICHE (518) 713-5395
T-11	PORCELAIN TILE	CREATIVE MATERIALS CORP.	BRICKWORK SOLID BLACK	3" X 12"	-	-	REFER TO INTERIOR ELEVATIONS	ALLISON PICHE (518) 713-5395
T-12	PORCELAIN TILE	CREATIVE MATERIALS CORP.	CHROMA EVERGREEN	2" x 10"	1/8"1/8" LATICRETE SPECTRA LOCK PRO PREMIUM, SMOKE GREY 89	6-8 WEEKS	LOCATED AT RESTROOMS, SUBMIT SAMPLE FOR ARCHITECT'S APPROVAL, SCHLUTER - AHKA BLACK	ALLISON PICHE (518) 713-5395
W-SF-E	WOOD PLANKS	BARNWOOD NATURALS	CLEAR MATTE SEALER	6" WIDE OREGON WHITE OAK	-	5-6 WEEKS	REFER TO INTERIOR ELEVATIONS, SUBMIT SAMPLE FOR ARCHITECT'S APPROVAL	BRUCE WADLEIGH (503) 580-3900
WC-1	WALLCOVERING	INNOVATIONS	CUSTOM QR CODE PRINT	-	-	15-20 DAYS	INTERIOR WALLS	TAMMY BERGAMINI (312) 222-9320
WP-1	WALL PANEL	FCI	PAINTED TO MATCH P-10	6.25"	-	6-8 WEEKS	INTERIOR WALLS	DON MIZE (317) 402-0141
WP-2	WALL PANEL	FCI	PAINTED TO MATCH P-10	3.5"	-	6-8 WEEKS	INTERIOR WALLS	DON MIZE (317) 402-0141
WP-3	WALL PANEL	FCI	PAINTED TO MATCH P-10	1.75"	-	6-8 WEEKS	INTERIOR WALLS	DON MIZE (317) 402-0141
WALL BASE								
T-1-6	6" x 24"	CREATIVE MATERIALS CORPORATION	RM-QUARTZ-4104V SMOOTH	6" x 24"	1/8" LATICRETE SPECTRA LOCK PRO PREMIUM, RAVEN 45	IN STOCK	REFER TO INTERIOR ELEVATIONS & FINISH FLOOR PLAN	ALLISON PICHE (518) 713-5395
WALL WAINSCOT								
WD-SF-D	1-1/2" THICK x 5" W/ 6"W x LENGTHS VARY	BARNWOOD NATURALS	WHITE OAK GRADE A	REFER TO GENERAL NOTE 6	-	5-6 WEEKS	REFER TO INTERIOR ELEVATIONS	BRUCE WADLEIGH (503) 580-3900
WD-SF-E	1-1/2" THICK x 5-1/2" W x LENGTHS VARY	BARNWOOD NATURALS	WHITE OAK GRADE A	REFER TO GENERAL NOTE 6	-	5-6 WEEKS	REFER TO INTERIOR ELEVATIONS	BRUCE WADLEIGH (503) 580-3900

GENERAL NOTES:

1. CHECK LEAD TIMES ON ALL TILES. SOME MAY HAVE A 6-8 WEEK LEAD TIME
2. TILE INSTALLER TO VERIFY ALIGNMENT OF GROUT LINES OF WALL AND FLOOR TILE PRIORTO INSTALLATION
3. THE GENERAL CONTRACTOR IS TO PROVIDE CONTROL SAMPLES FOR ALL MILLWORK TO ARCHITECT FOR REVIEW
4. ALL PAINT TO BE LATEX BASED U.N.O.. ALL EXTERIOR PAINT TO BE EXTERIOR GRADE. ALL METAL PAINT, INTERIOR OR EXTERIOR TO BE ALKYD BASED
5. ALL INTERIOR WALLS IN F.O.H. TO BE EGGSHELL FINISH AND ALL CEILINGS TO BE FLAT FINISH. ALL PAINT IN RESTROOMS TO BE EGGSHELL FINISH. EACH FACE & JAMBS OF DOORS TO MATCH THE DOOR FRAME. ALL EXTERIOR METAL TO BE SEMI GLOSS FINISH
6. PROVIDE CLEAR 'FLAME STOP II' FIRE RETARDANT, G.C. TO APPLY FIRE RETARDANT PER MANUFACTURER'S RECOMMENDATION ON ALL SIDES OF PANELING, PRIOR TO SEALER
7. NO BURN MARKS TO SHOW ON ANY FACE
8. ALL EXTERIOR WOOD TO BE SEALED USING SHERWIN WILLIAMS - HOMOCLAD SEALER V81V1

STOREFRONT SCHEDULE

SCALE : 1/4" = 1'-0"

NOTES:

1. STOREFRONT SYSTEMS
'A' THROUGH 'D', AND 'H' THROUGH 'M' TO BE 'KAWNEER VERSAGLAZE 451T FRAMING SYSTEM', 4 1/2" DEPTH W/ 2" SIGHTLINE, BLACK ANODIZED #29. SUBMIT SAMPLES OF AVAILABLE FINISHES FOR APPROVAL

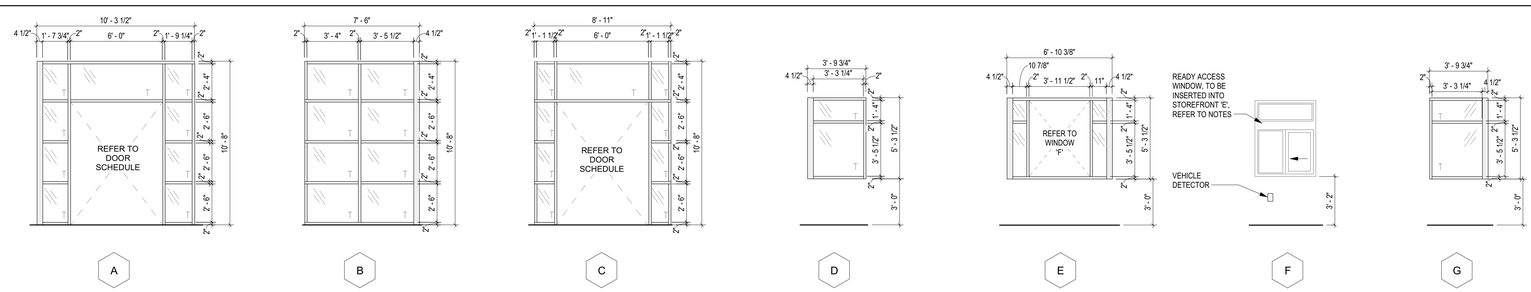
INSULATED GLAZING TO BE THE FOLLOWING:
SOLARBAN 70XL (2) ON OPTIGRAY, 1" INSULATED GLASS (1/4" CLEAR TEMPERED GLASS w/ LOW-E COATING ON SURFACE #2, 1/2" AIR SPACE, 1/4" CLEAR TEMPERED GLASS)
- U-VALUE = 0.38 MAX FOR WINDOWS, 0.77 MAX FOR DOORS PER 2018 COMMERCIAL IECC
- SHGC = 0.38 FOR SEW ORIENATION w/ PF < 0.2, 0.61 FOR SEW & N ORIENTATION w/ PF ≥ 0.5

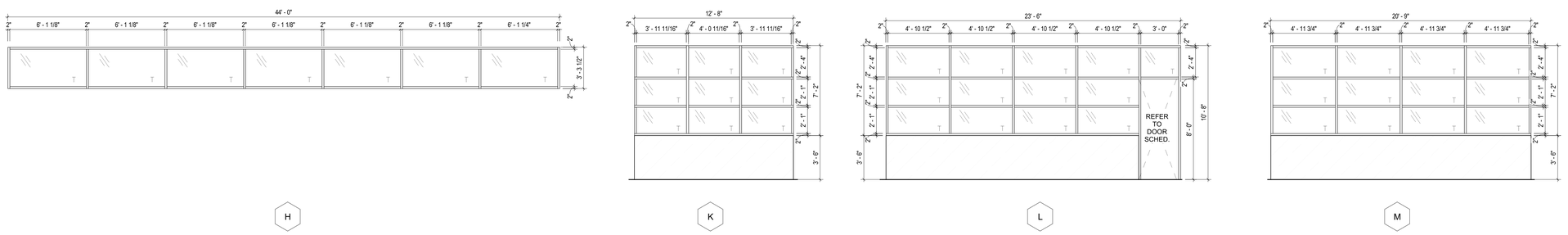
'F' PICKUP WINDOW TO BE READY ACCESS 600 FULLY AUTOMATED ELECTRIC, SUBMIT SAMPLES OF FINISH TO ARCHITECT FOR APPROVAL, BEMIS WAVE PLATE W/ NOTIFICATION LIGHT & NOISE INDICATION, WINDOW LEDGE TO BE READY ACCESS MODEL 275 SHELF STAINLESS STEEL FINISH

2. GLASS TYPES DESIGNATIONS:
- "T" = TEMPERED INSULATED GLASS UNIT

3. VERIFY ALL ROUGH OPENING IN FIELD PRIOR TO FABRICATION

4. ALL STOREFRONTS & WINDOWS TO BE DESIGNED IN ACCORDANCE W/ ALL LOCAL CODES





aria GROUP
830 North Blvd.
Oak Park, Illinois
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ariainc.com
ARIA GROUP ARCHITECTS, INC.

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT JAMES R. ANTHONY DAVIDSON STATE OF ILLINOIS
Expires 11/30/ 22
11/24/20

Drawing Title
FINISH SCHEDULE

Job No.	Drawn
204461	Author

Scale	Date
As indicated	11/24/20

Sheet No.
A601

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KEY PROGRAM NOTES

- G.C. TO PROVIDE & INSTALL NEW INSTAKEY KEY CONTROL KEYS & CYLINDERS TO SHAKE SHACK AT TURNOVER FROM NATIONAL ACCOUNT, SECURITY SOURCE

  SECURITY SOURCE CONTACT:
  JENNIFER DUBAY
  PHONE - (502) 377-1708
  EMAIL - JDUBAY@SECURITYSOURCE.COM

- ALL KEYED DOORS IN THE RESTAURANT TO BE PART OF THE SAME INSTAKEY KEY SONTROLL SYSTEM - WHETHER PROVIDED BY LANDLORD, G.C., OR VENDOR. G.C. TO CONFIRM W/ ARCHITECT AND OWNER PRIOR TO ORDERING AND INSTALLING

RED - 'MASTER' KEY
- OPENS ALL DOORS IN THE RESTOURANT
- G.C. TO PROVIDE (6) MASTER KEYS W/ RED GRIP
  - (6) MASTER KEYS & (5) NEW RE-KEY INSTAKEY SET DELIVERED TO SHAKE SHACK OPERATIONS TEAM ON PREMISES

BLUE - 'VENDOR' KEY
- OPENS ALL DOORS IN THE TENANT SPACE EXCEPT FOR MANAGER'S OFFICE
- PROVIDE (4) VENDOR KEYS AND (2) NEW RE-KEY INSTAKEY SET DELIVERED TO SHAKE SHACK OPERATIONS TEAM ON-PREMISES

GENERAL NOTES

1. NO EXPOSED FASTENERS ALLOWED AT FRONT OF HOUSE CLOSERS AND EXIT HARDWARE. PROVIDE INTERNAL BLOCKING IN DOOR FOR CONCEALED ATTACHMENT
2. HARDWARE SETS ARE DESCRIBED FOR SINGLE DOORS. U.N.O. WHERE A PAIR OF DOORS IS LISTED IN THE DOOR SCHEDULE, DOUBLE THE QUANTITY OF EACH ITEM LISTED IN THE HARDWATE SCHEDULE, UNLESS NOTED OTHERWISE
3. G.C. TO INSTALL TEMPERED GLASS IN ALL DOORS AS REQUIRED
4. TEMPERED GLASS REQUIRED IF GLAZING IS LESS THAN 1/8" A.F.F. OR ADJACENT TO DOORS
5. G.C. TO VERIFY ALL THRESHOLD CONDITIONS IN THE FEELD
6. REFER TO FLOOR PLAN FOR DOOR SWING HINGE AND DIRECTION

ABBREVIATIONS:

MTL - METAL	P-PAINTED
WD - WOOD	AL - ALUMINUM
SS - STAINLESS STEEL	SC - SOLID CORE DOOR
CL - COPPER CLAD	HM - HOLLOW METAL DOOR / FRAME
EX - EXISTING	GL - GALVANNEALED A60 COAT
CLC - CLEAR COAT	ST - STAIN
TG - TEMPERED GLAZING	T - TILE
CB - CEMENT BOARD	

LOUVER w/ BUG SCREEN FOR DOOR 116 ONLY, REFER TO M-SHEETS FOR SPEC

HANDLE

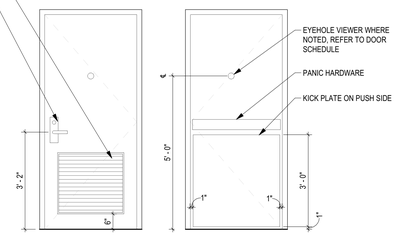
PULL SIDE

PUSH SIDE

EYEHOLE VIEWER WHERE NOTED, REFER TO DOOR SCHEDULE

PANIC HARDWARE

KICK PLATE ON PUSH SIDE



DOOR TYPE 4 SCHEDULE

DOOR #	SIZE	THICKNESS	CONSTRUCTION	DOOR FACING / FINISH	FRAME CONSTRUCTION	THRESHOLD	HEAD DETAIL	JAMB DETAIL	U.L. LABEL	THERMALLY BROKEN	REMARKS
112	3'-0" x 7'-0"	1' - 0 3/4"	HM	P-2	HM, P-2 SEMI-GLOSS	6/A511			-	N	DOOR FRAME TO HAVE SEMI-GLOSS
116	3'-0" x 7'-0"	1' - 0 3/4"	HM	P-2	HM, P-2 SEMI-GLOSS	6/A511			-	N	DOOR FRAME TO HAVE SEMI-GLOSS

HARDWARE

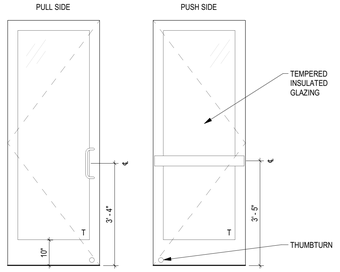
ITEM	QTY.	MANUFACTURER	NUMBER	FINISH	REMARKS
CLOSER	1	LCN	4040XP SERIES	-	REGULAR ACTION
VIEWPORT	1	DOOR-SCOPE	DS/2000 4LS	ALUMINUM BODY, SILVER	DOOR 012 ONLY
LOCKSET	1	VON DUPRIN	388x550 DT	CHROMIUM, DULL (US26D)	NIGHT LATCH
PANIC HARDWARE	1	VON DUPRIN	3547A-NL-06-F	CHROMIUM, DULL (US26D)	CONCEALED VERTICAL ROD
HINGES	1	HANGRE	790-900	US32D STAIN	CONTINUOUS HINGE
WALL STOP	1	HANGER	256S	US26D	-
KICK PLATE	1	ROCKWOOD	36"H x 2"LDW	STAINLESS STEEL	-
WEATHER STRIP	1	KAWNEER	STANDARD	-	EXTERIOR RATED
THRESHOLD	-	-	-	-	REFER TO DETAIL
LOUVER	1	-	-	-	LOUVER w/ INSECT SCREEN, REFER TO M-SHEETS
REMARKS	DOOR 116 ORIENTATION IS MIRRORED FROM DOOR 112, REFER TO SHEET A101				

PULL SIDE

PUSH SIDE

TEMPERED INSULATED GLAZING

THUMBTURN



DOOR TYPE 7 SCHEDULE

DOOR #	SIZE	THICKNESS	CONSTRUCTION	DOOR FACING / FINISH	FRAME CONSTRUCTION	THRESHOLD	HEAD DETAIL	JAMB DETAIL	U.L. LABEL	THERMALLY BROKEN	REMARKS
101	PR 3'-0" x 8'-0" INT.	1' - 0 3/4"	TG/ AL	TG/ AL	AL	10/A511	8/A511 (SIM.)	8/A511 (SIM.)	-	N	KAWNEER MEDIUM STILE

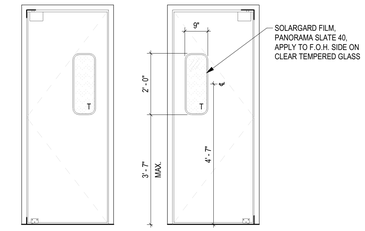
HARDWARE

ITEM	QTY.	MANUFACTURER	NUMBER	FINISH	REMARKS
CLOSER	1	LCN	4040XP SERIES	-	HOLD OPEN FUNCTION
HINGES	1	HAGER	790-900	US32D SATIN	CONTINUOUS HINGE
PANIC HARDWARE	1	VON DUPRIN	5547NL (KEYED LEAF) 5547DT (NON-KEYED LEAF)	CHROMIUM, DULL (US26D)	-
PULL HANDLE	1	VON DUPRIN	555NL (KEYED LEAF) 550DT (NON-KEYED LEAF)	CHROMIUM, DULL (US26D)	CONCEALED VERTICAL ROD
REMARKS	ALL HARDWARE TO MATCH STOREFRONT FINISH				

PULL SIDE

PUSH SIDE

SOLARGARD FILM, PANORAMA SLATE 40, APPLY TO F.O.H. SIDE ON CLEAR TEMPERED GLASS



DOOR TYPE 3 SCHEDULE

DOOR #	SIZE	THICKNESS	CONSTRUCTION	DOOR FACING / FINISH	FRAME CONSTRUCTION	THRESHOLD	HEAD DETAIL	JAMB DETAIL	U.L. LABEL	THERMALLY BROKEN	REMARKS
109	3'-0" x 7'-0"	0' - 1"	HM	SS	SS	REFER TO FLOOR FINISH PLAN	9/A511	9/A511	-	N	ELIASON SCP-3, HARDWARE BY MANUF. U.N.O.

HARDWARE

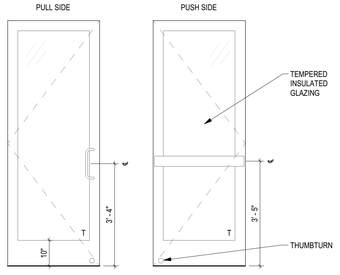
ITEM	QTY.	MANUFACTURER	NUMBER	FINISH	REMARKS
HINGES	1	ELIASON	-	-	INCLUDED
FILM	1	SOLARGARD	PANORAMA SLATE 40	-	-
REMARKS	--				

PULL SIDE

PUSH SIDE

TEMPERED INSULATED GLAZING

THUMBTURN



DOOR TYPE 6 SCHEDULE

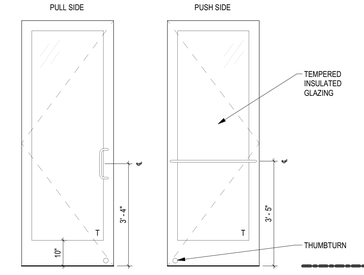
DOOR #	SIZE	THICKNESS	CONSTRUCTION	DOOR FACING / FINISH	FRAME CONSTRUCTION	THRESHOLD	HEAD DETAIL	JAMB DETAIL	U.L. LABEL	THERMALLY BROKEN	REMARKS
100	PR 3'-0" x 8'-0"	1' - 0 3/4"	TG/ AL	TG/ AL	AL	10/A511	8/A511 (SIM.)	8/A511 (SIM.)	-	Y	KAWNEER MEDIUM STILE

HARDWARE

ITEM	QTY.	MANUFACTURER	NUMBER	FINISH	REMARKS
CLOSER	1	LCN	4040XP SERIES	-	HOLD OPEN FUNCTION
HINGES	1	HAGER	790-900	US32D SATIN	CONTINUOUS HINGE
PANIC HARDWARE	1	VON DUPRIN	5547NL (KEYED LEAF) 5547DT (NON-KEYED LEAF)	CHROMIUM, DULL (US26D)	-
PULL HANDLE	1	VON DUPRIN	555NL (KEYED LEAF) 550DT (NON-KEYED LEAF)	CHROMIUM, DULL (US26D)	CONCEALED VERTICAL ROD
WEATHER STRIP	1	KAWNEER	STANDARD	-	EXTERIOR RATED
REMARKS	ALL HARDWARE TO MATCH STOREFRONT FINISH				

PULL SIDE

PUSH SIDE



DOOR TYPE 2 SCHEDULE

DOOR #	SIZE	THICKNESS	CONSTRUCTION	DOOR FACING / FINISH	FRAME CONSTRUCTION	THRESHOLD	HEAD DETAIL	JAMB DETAIL	U.L. LABEL	THERMALLY BROKEN	REMARKS
108	3'-0" x 8'-0"	1' - 0 3/4"	TG/ AL	TG/ AL	AL		8/A511	8/A511	-	Y	KAWNEER MEDIUM STILE

HARDWARE

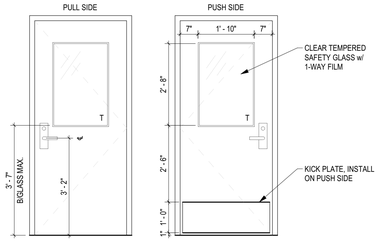
ITEM	QTY.	MANUFACTURER	NUMBER	FINISH	REMARKS
CLOSER	1	LCN	4040XP SERIES	-	REGULAR ACTION
HINGES	1	HAGER	790-900	US32D SATIN	CONTINUOUS HINGE
PUSH BAR	1	KAWNEER	CP-11	#40 DARK BRONZE	-
PULL HANDLE	1	KAWNEER	CO-12	#40 DARK BRONZE	-
REMARKS	ALL HARDWARE TO MATCH STOREFRONT FINISH				

PULL SIDE

PUSH SIDE

CLEAR TEMPERED SAFETY GLASS w/ 1-WAY FILM

KICK PLATE, INSTALL ON PUSH SIDE



DOOR TYPE 5 SCHEDULE

DOOR #	SIZE	THICKNESS	CONSTRUCTION	DOOR FACING / FINISH	FRAME CONSTRUCTION	THRESHOLD	HEAD DETAIL	JAMB DETAIL	U.L. LABEL	THERMALLY BROKEN	REMARKS
115	3'-0" x 7'-0" OFFICE	1' - 0 3/4"	HM	P-2	HM, P-2 SEMI-GLOSS	-	8/A511	8/A511	-	N	DOOR FRAME TO HAVE SEMI-GLOSS

HARDWARE

ITEM	QTY.	MANUFACTURER	NUMBER	FINISH	REMARKS
CLOSER	1	LCN	4040XP SERIES	-	REGULAR ACTION
LOCKSET	1	SCHLAGE	L9080P, 06L HANDLE	US26D	STOREROOM LOCK FUNCTION
HINGES	1-1/2 PR	HAGER	-	-	-
WALL STOP	1	HAGER	255S	US26D	-
SILENCER	1	HAGER	307D	GRAY	-
KICK PLATE	1	ROCKWOOD	12" H x 2" LDW	STAINLESS STEEL	PUSH SIDE ONLY
FILM	1	-	-	-	1-WAY MIRROR FILM
REMARKS	-				

PULL SIDE

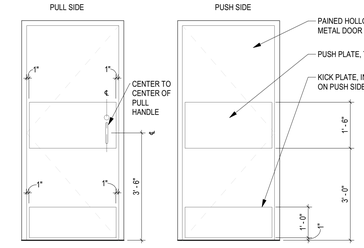
PUSH SIDE

PAINED HOLLOW METAL DOOR

PUSH PLATE, TYP.

KICK PLATE, INSTALL ON PUSH SIDE

CENTER TO CENTER OF PULL HANDLE



DOOR TYPE 1 SCHEDULE

DOOR #	SIZE	THICKNESS	CONSTRUCTION	DOOR FACING / FINISH	FRAME CONSTRUCTION	THRESHOLD	HEAD DETAIL	JAMB DETAIL	U.L. LABEL	THERMALLY BROKEN	REMARKS
106	3'-0" x 7'-0" RESTROOM	1' - 0 3/4"	HM	P-4	HM, P-2 SEMI-GLOSS	6/A511	8/A511	8/A511	-	N	DOOR FRAME TO HAVE SEMI-GLOSS
107	3'-0" x 7'-0" RESTROOM	1' - 0 3/4"	HM	P-4	HM, P-2 SEMI-GLOSS	6/A511	8/A511	8/A511	-	N	DOOR FRAME TO HAVE SEMI-GLOSS

HARDWARE

ITEM	QTY.	MANUFACTURER	NUMBER	FINISH	REMARKS
CLOSER	1	LCN	4040XP SERIES	-	REGULAR ACTION
HINGES	1-1/2 PR	HAGER	-	-	3-HINGE SYSTEM
WALL STOP	1	HAGER	255S	US26D	-
SILENCER	1 SET	HAGER	307D	GRAY	-
PUSH PLATE	1	ROCKWOOD	18" H x 2" LDW	STAINLESS STEEL	BOTH SIDES
KICK PLATE	1	ROCKWOOD	12" H x 2" LDW	STAINLESS STEEL	BOTH SIDES
PULL HANDLE	1	ROCKWOOD	RM301	STAINLESS STEEL	TYPE 6HD CONCEALED HEAVY DUTY MOUNT
REMARKS	--				

aria GROUP

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ARIA GROUP ARCHITECTS, INC.

SHAKE SHACK

4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

FIELD VERIFICATION
Contractor shall verify all figured dimensions and conditions at the job site and notify Aria Group Architects, Inc. of any dimensional errors, omissions or discrepancies before beginning or fabricating any work. Do not scale these drawings.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED ARCHITECT
JAMES R. LUCIANI
001-020345
STATE OF ILLINOIS
EXPIRES NOVEMBER 30, 22
11/24/20

Drawing Title
DOOR/ HARDWARE SCHEDULE

Job No.	Drawn
204461	Author
Scale	Date
1/2" = 1'-0"	11/24/20

Sheet No.
A602

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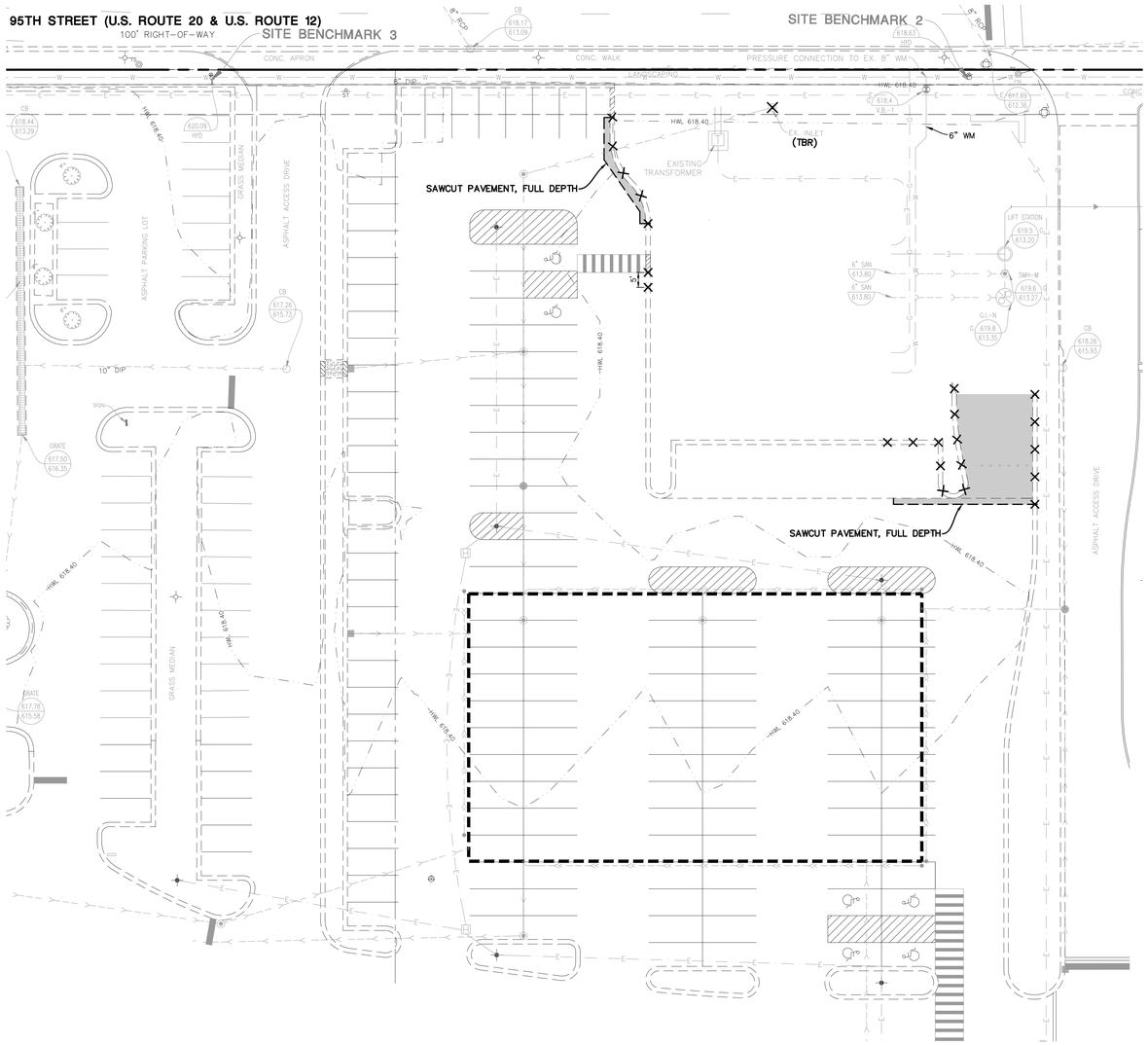

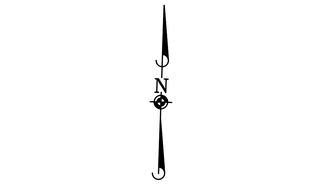

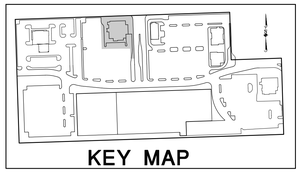

DEMOLITION LEGEND

- BITUMINOUS PAVEMENT AND BASE TO BE REMOVED
- SAWCUT LINE
- CURB AND GUTTER TO BE REMOVED

06-01-16

EXISTING CONDITIONS AND DEMOLITION NOTES:

1. CONTRACTOR SHALL INSPECT SITE PRIOR TO BIDDING WORK TO VERIFY ACTUAL FIELD CONDITIONS AS PORTIONS OF THE DEMOLITION WORK MAY HAVE SINCE BEEN COMPLETED. CONTRACTOR SHALL BE RESPONSIBLE TO COMPLETE ALL DEMOLITION WORK AS PER PLANS TO PREPARE THE SITE FOR CONSTRUCTION OF PROPOSED IMPROVEMENTS.
2. THE UNDERGROUND UTILITY INFORMATION AS SHOWN HEREON IS BASED, IN PART, UPON INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED NOR CERTIFIED TO.
3. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION, REMOVAL AND DISPOSAL (IN A LOCATION APPROVED BY ALL JURISDICTIONAL GOVERNING ENTITIES) OF ALL STRUCTURES, PADS, WALLS, FLUMES, FOUNDATIONS, ROAD, PARKING LOTS, DRIVES, DRAINAGE STRUCTURES, UTILITIES, ETC., SUCH THAT THE IMPROVEMENTS SHOWN ON THESE PLANS CAN BE CONSTRUCTED. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE SPECIFICATIONS.
4. REFER TO SPECIFICATIONS SHEET FOR DEMOLITION NOTES.

FRANCES E. MAZO
062-046202
REGISTERED PROFESSIONAL ENGINEER OF
STATE OF ILLINOIS

SEAL

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Construction Managers • Environmental Scientists • Landscape Architects • Planners

OAK LAWN SHOPPING CENTER - SHAKE SHACK
VILLAGE OF OAK LAWN, ILLINOIS
DEMOLITION PLAN

PROJ. MGR.: F.F.
PROJ. ASSOC.: T.E.C.
DRAWN BY: MH
DATE: 11-24-20
SCALE: 1"=20'

SHEET
C1 OF C6
CEIOLIL01.07

NO.	DATE	REMARKS
1	11/24/20	ISSUE FOR PERMIT / BID

REVISIONS

SHAKE SHACK

4071 W. 95th St., OAK LAWN, IL 60453

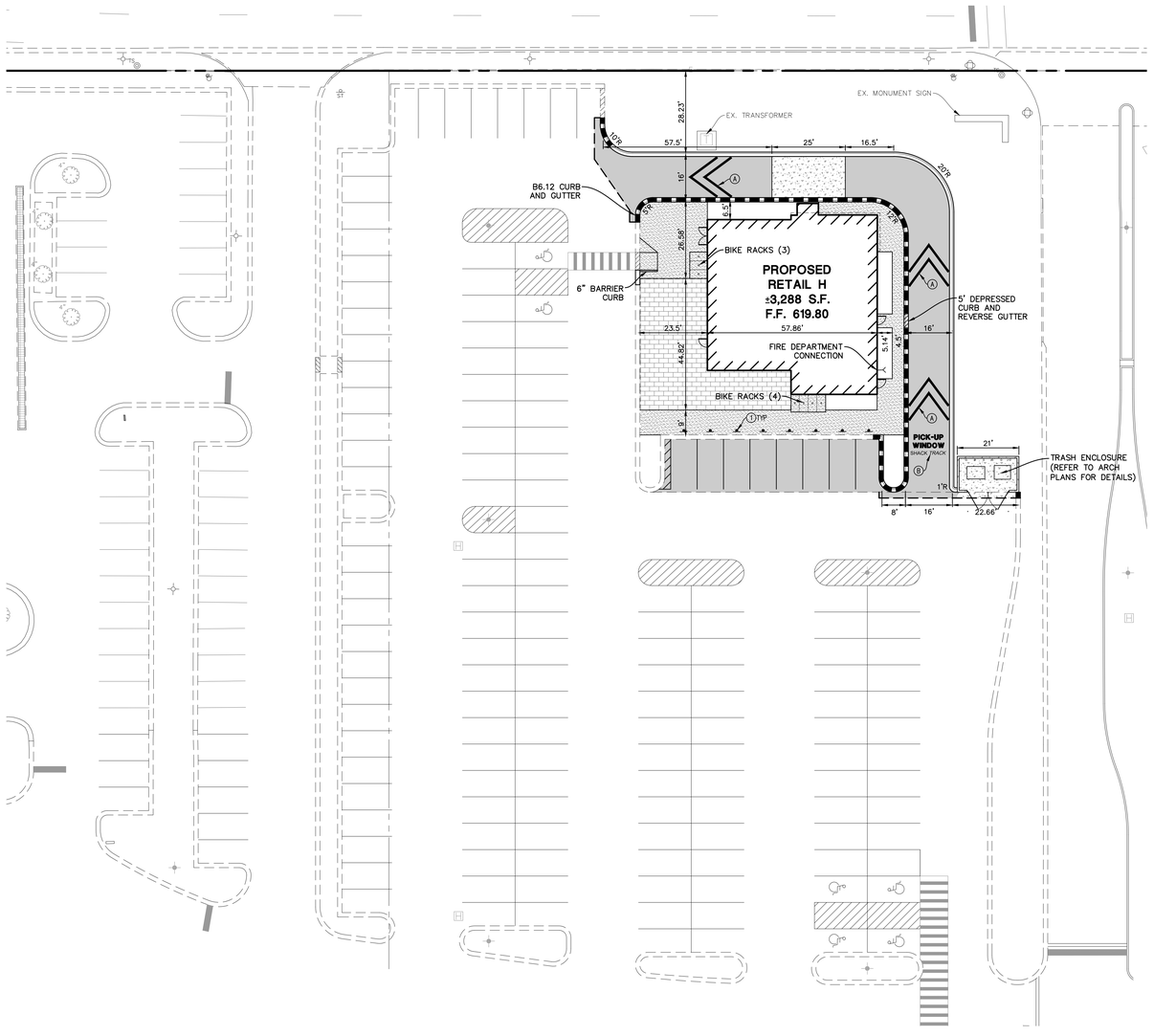
SHAKE #1345

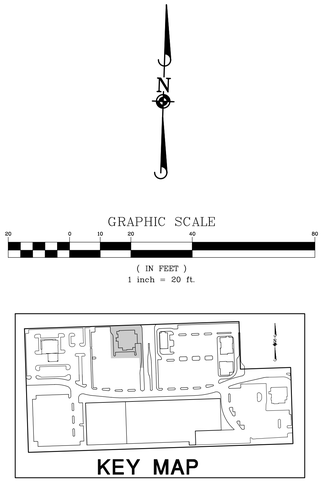
Drawing Title: Demolition Plan

Job No.: CEIOLIL01
Drawn: MH
Scale: 1"=20'
Date: 11/23/20

Sheet No.: C1

November 24, 2020 - 12:58 Dwg Name: P:\Civil\01\Ules\Final Drawings\Plan Set (Shake Shack)\C1-DEMO.dwg Updated By: mhamilton





PAVEMENT MARKING LEGEND

- (A) SOLID WHITE
- (B) WHITE LETTERS PAVEMENT MARKING (REFER TO SHAKE SHACK STANDARD SPECIFICATIONS)

SIGN LEGEND

- (1) APP AND WEB PICK UP PARKING SIGN

SITE DIMENSIONAL AND PAVING NOTES:

1. ALL DIMENSIONS ARE FACE OF CURB TO FACE OF CURB OR BUILDING FOUNDATION UNLESS NOTED OTHERWISE.
2. ALL PROPOSED CURB AND GUTTER SHALL BE B6.12 UNLESS OTHERWISE NOTED.
3. ALL CURB RADII SHALL BE 3' MEASURED TO FACE OF CURB UNLESS NOTED OTHERWISE.
4. TIE ALL PROPOSED CURB AND GUTTER TO EXISTING CURB AND GUTTER WITH 2-#6 BARS x 18" LONG DOWELED INTO EXISTING CURB.
5. BUILDING DIMENSIONS AND ADJACENT PARKING HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION CURRENT AT THE DATE OF THIS DRAWING. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST. THEREFORE CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR PRECISE BUILDING DIMENSIONS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. BUILDING DIMENSIONS SHOWN SHOULD NOT BE USED FOR CONSTRUCTION LAYOUT OF BUILDING.
6. IMPROVEMENTS ADJACENT TO BUILDING, IF SHOWN, SUCH AS SIDEWALKS, CURBING, FENCES, CANOPIES, RAMPS, HANDICAP ACCESS, PLANTERS, DUMPSTERS ETC. HAVE BEEN SHOWN FOR APPROXIMATE LOCATION ONLY. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS, SPECIFICATIONS AND DETAILS.
7. LOCATION OF PRIVATE SIDEWALKS SHALL BE COORDINATED WITH PROPOSED DOORWAY. CONTRACTOR TO VERIFY ACTUAL BUILDING PLAN LOCATIONS WITH ARCHITECT/DEVELOPER PRIOR TO CONSTRUCTING THE SIDEWALKS.
8. ALL ROADWAY AND PARKING LOT SIGNAGE, STRIPING, SYMBOLS, ETC. SHALL BE IN ACCORDANCE WITH LATEST JURISDICTIONAL GOVERNMENTAL ENTITY DETAILS.
9. SOME EXISTING ITEMS TO BE REMOVED HAVE BEEN DELETED FROM THIS PLAN FOR CLARITY. SEE DEMOLITION PLAN FOR ITEMS DELETED.
10. PROVIDE DEPRESSED CURB AND RAMP AT ALL HANDICAP ACCESSIBLE SIDEWALK AND PATH LOCATIONS PER FEDERAL AND STATE STANDARDS.
11. THE CONTRACTOR SHALL CONTACT J.U.L.I.E. (1-800-892-0123) PRIOR TO ANY WORK TO LOCATE UTILITIES AND SHALL CONTACT THE OWNER SHOULD UTILITIES APPEAR TO BE IN CONFLICT WITH THE PROPOSED IMPROVEMENT.

PAVEMENT LEGEND

STANDARD DUTY PAVEMENT
1 1/2" BITUMINOUS SURFACE COURSE, HOT-MIX ASPHALT, MIX D, N50
2 1/4" BITUMINOUS BINDER COURSE, HOT-MIX ASPHALT, IL-19, N50
8" AGGREGATE BASE COURSE, TYPE B

SIDEWALK PAVERS
3 7/8" PAVER (UNILOCK HOLLAND PREMIER-GRANITE)
1" CA-16 SETTING BED AND CHOKE LAYER
6" CA-7 AGGREGATE

CONCRETE PAVEMENT
8" PORTLAND CEMENT CONCRETE PAVEMENT W/ 6 X 6 W1.4/1.4
4" COMPACTED AGGREGATE BASE, TYPE B

CONCRETE SIDEWALK
5" PORTLAND CEMENT CONCRETE
4" COMPACTED AGGREGATE BASE COURSE, TYPE B

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OAK LAWN SHOPPING CENTER - SHAKE SHACK
VILLAGE OF OAK LAWN, ILLINOIS
SITE DIMENSIONAL AND PAVING PLAN

NO.	DATE	REMARKS
1	11/24/20	ISSUE FOR PERMIT / BID

REVISIONS

PROJ. MGR.: F.F.
PROJ. ASSOC: T.E.C.
DRAWN BY: MH
DATE: 11-24-20
SCALE: 1"=20'

SHEET
C2 OF C6
CEIOLIL01.07

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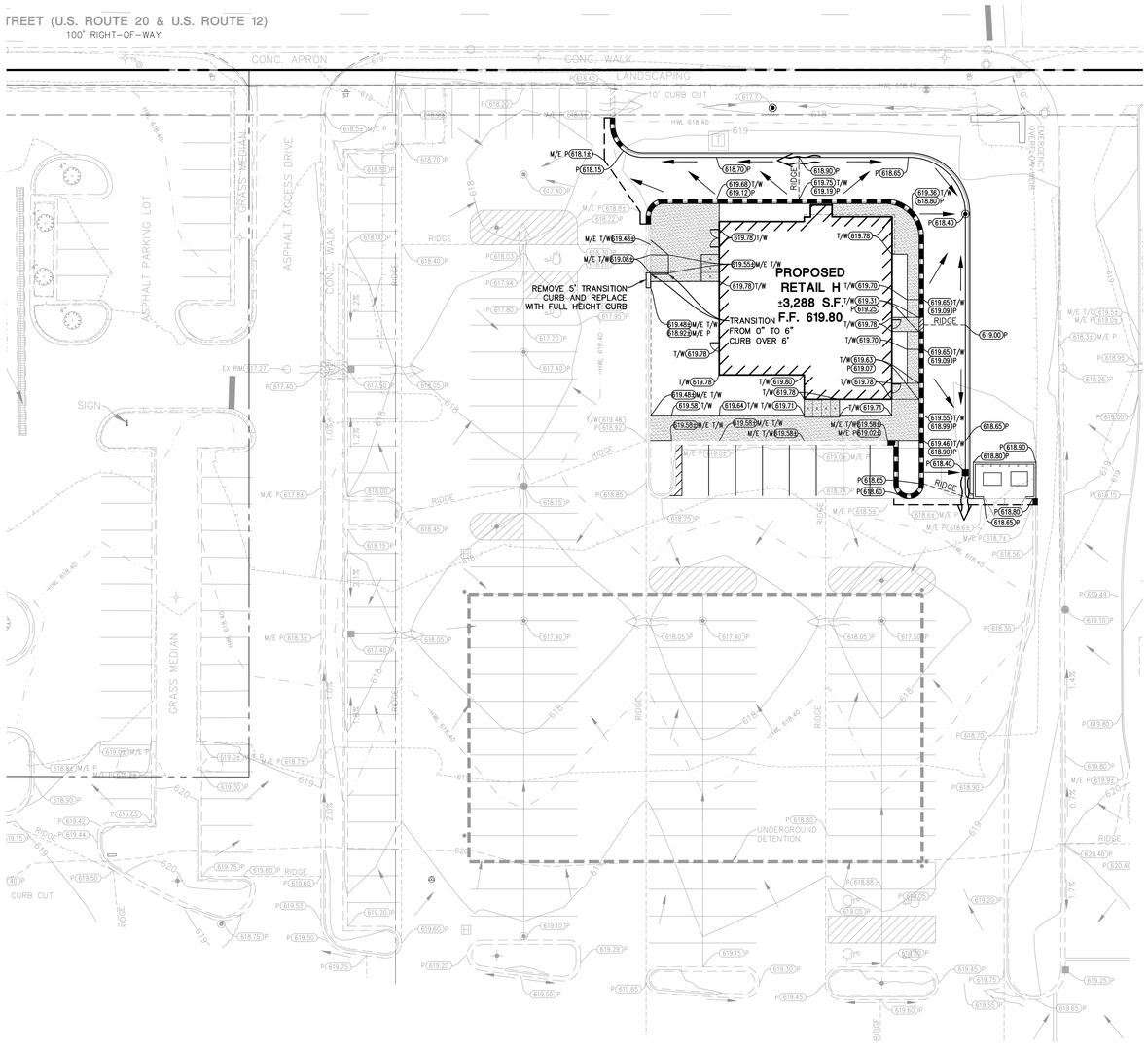
November 24, 2020 - 13:04 Dwg Name: P:\Ceiol01\Views\Dwg\Final Drawings\Plan Set (Shake Shack)\C02-SITE.dwg Updated By: mhamilton

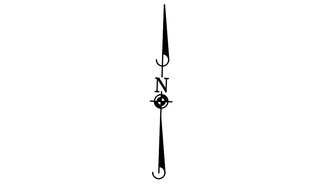
SHAKE SHACK
4071 W. 95th St., OAK LAWN, IL 60453
SHAKE #1345

Drawing Title
Site Dimensional and Paving Plan Plan

Job No.	Drawn
CEIOLIL01	MH
Scale	Date
1"=20'	11/23/20

Sheet No.
C2





GRAPHIC SCALE

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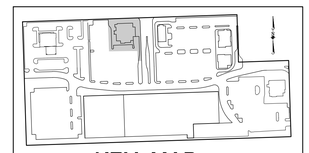
(IN FEET)
1 inch = 20 ft.



KEY MAP

GRADING PLAN LEGEND

764	PROPOSED 1 FOOT CONTOURS
792.8 C	PROPOSED SPOT ELEVATION
F.F.	PROPOSED FINISHED FLOOR ELEVATION
G/F	PROPOSED GRADE AT FOUNDATION
P	PROPOSED PAVEMENT ELEVATION
T/C	PROPOSED TOP OF CURB
T/W	PROPOSED TOP OF WALK
M/E	MEET EXISTING
G	PROPOSED GROUND GRADE OR GROUND AT BASE OF RETAINING WALL
	PROPOSED DITCH OR SWALE
	PROPOSED DIRECTION OF FLOW
	OVERFLOW RELIEF SWALE
RIDGE	PROPOSED RIDGE LINE

GRADING NOTES:

1. PAVEMENT SLOPES THROUGH HANDICAP ACCESSIBLE PARKING AREAS SHALL BE 2.00% MAXIMUM IN ANY DIRECTION.
2. ALL HANDICAP RAMPS SHALL BE CONSTRUCTED WITH A MAXIMUM CROSS SLOPE OF 2.00% OR LESS.
3. MEET EXISTING GRADE AT PROPERTY LIMITS UNLESS NOTED OTHERWISE.
4. CONTRACTOR SHALL REFER TO THE SOIL EROSION AND SEDIMENT CONTROL PLAN AND DETAILS FOR CONSTRUCTION SCHEDULING AND EROSION CONTROL MEASURES TO BE INSTALLED PRIOR TO BEGINNING GRADING OPERATIONS.
5. THE CONTRACTOR SHALL CONTACT J.U.L.I.E. (1-800-892-0123) PRIOR TO ANY WORK TO LOCATE UTILITIES AND SHALL CONTACT THE OWNER SHOULD UTILITIES APPEAR TO BE IN CONFLICT WITH THE PROPOSED IMPROVEMENT.
6. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
7. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITION OR BETTER.
8. ALL UNPAVED AREAS DISTURBED BY GRADING OPERATIONS SHALL RECEIVE 6 INCHES OF TOPSOIL. CONTRACTOR SHALL APPLY STABILIZATION FABRIC TO ALL SLOPES 3H:1V OR STEEPER. CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH GOVERNING SPECIFICATIONS UNTIL A HEALTHY STAND OF VEGETATION IS OBTAINED.
10. EXISTING TOPOGRAPHY SHOWN REPRESENTS SITE CONDITIONS AS PREPARED BY MANHARD CONSULTING, LTD. ON MAY 25, 2018. CONTRACTOR SHALL FIELD CHECK EXISTING ELEVATIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND NOTIFY ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING CONSTRUCTION. IF THE CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS, WITHOUT EXCEPTION, THEN THE CONTRACTOR SHALL SUPPLY, AT THEIR EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR TO THE OWNER FOR REVIEW.
11. TRANSITIONS FROM DEPRESSED CURB TO FULL HEIGHT CURB SHALL BE TAPERED AT 2H:1V UNLESS OTHERWISE NOTED.

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Construction Managers • Environmental Scientists • Landscape Architects • Planners

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1	11/24/20	ISSUE FOR PERMIT / BID

REVISIONS

OAK LAWN SHOPPING CENTER - SHAKE SHACK
VILLAGE OF OAK LAWN, ILLINOIS
GRADING PLAN

PROJ. MGR.: F.F.
PROJ. ASSOC.: T.E.C.
DRAWN BY: MH
DATE: 11-24-20
SCALE: 1"=20'

SHEET
C3 OF C6
CEIOLIL01.07

SHAKE SHACK

4071 W. 95th St., OAK LAWN, IL 60453

SHAKE #1345

Drawing Title
Grading Plan

Job No.	Drawn
CEIOLIL01	MH

Scale	Date
1"=20'	11/23/20

Sheet No.
C3

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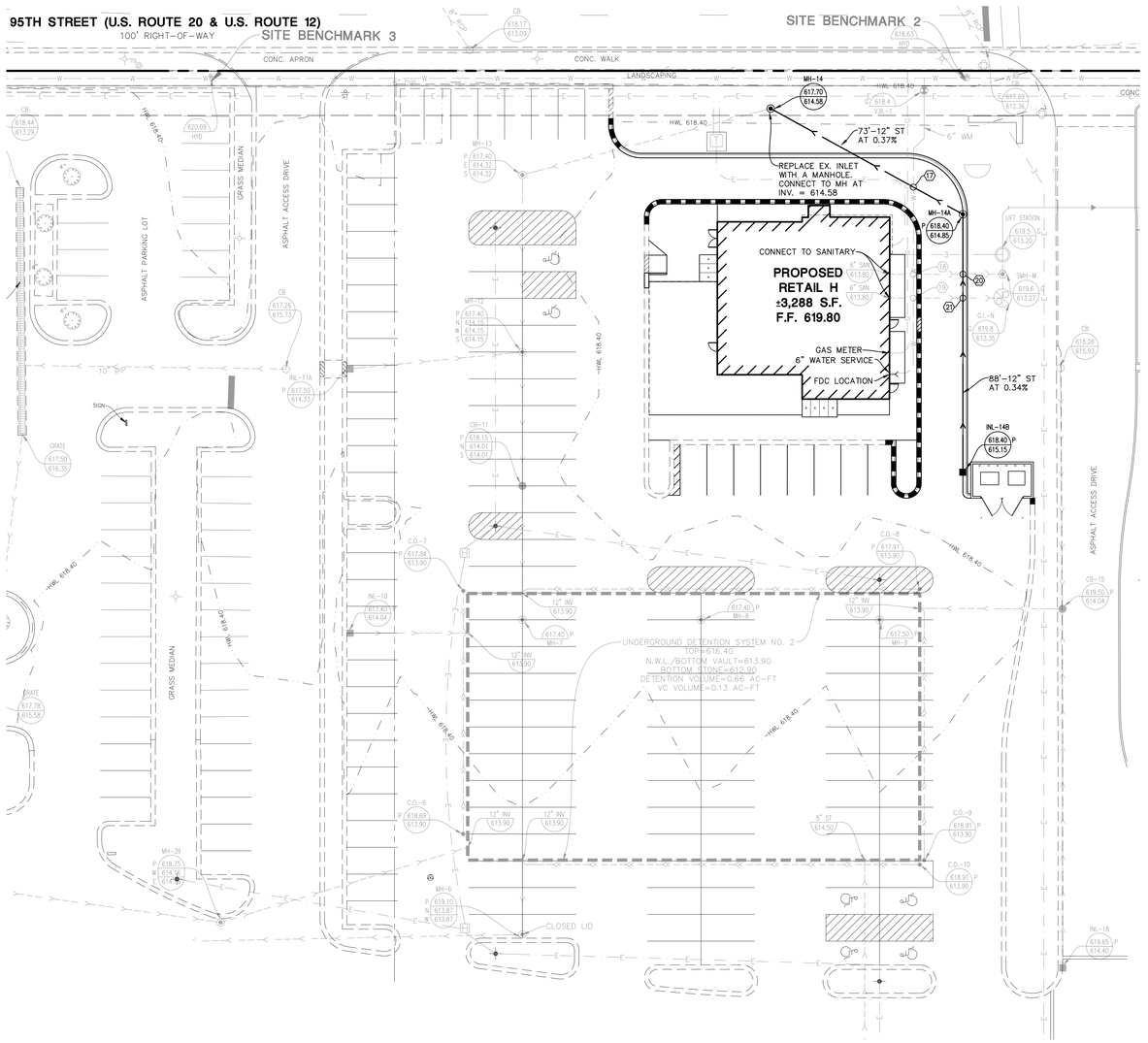

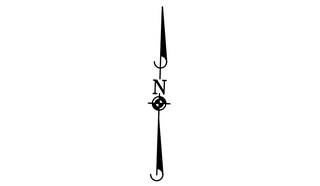

KEY MAP

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

UTILITY NOTES:

1. ALL UTILITY DIMENSIONS ARE TO CENTER OF PIPE OR CENTER OF STRUCTURE UNLESS NOTHERWISE NOTED.
2. BUILDING DIMENSIONS AND ADJACENT UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION CURRENT AT THE DATE OF THIS DRAWING. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST. THEREFORE CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR PRECISE BUILDING DIMENSIONS AND EXACT UTILITY ENTRANCE LOCATIONS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL CONTACT J.U.L.I.E. (1-800-892-0123) PRIOR TO ANY WORK TO LOCATE UTILITIES AND SHALL CONTACT THE OWNER SHOULD UTILITIES APPEAR TO BE IN CONFLICT WITH THE PROPOSED IMPROVEMENT.
4. ROUTING OF GAS, ELECTRIC AND TELEPHONE SERVICES IF SHOWN ARE APPROXIMATE ONLY AND SUBJECT TO CHANGE BASED UPON FINAL REVIEW AND APPROVAL BY RESPECTIVE UTILITY COMPANIES AND OWNER. CONTRACTOR SHALL CONTACT EACH UTILITY COMPANY AND COORDINATE FINAL LOCATIONS FOR ALL UTILITY SERVICES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL EXCAVATE AND VERIFY ALL EXISTING SEWER, WATER MAIN AND DRY UTILITY LOCATIONS, SIZES, CONDITIONS & ELEVATIONS AT PROPOSED POINTS OF CONNECTION AND CROSSINGS PRIOR TO ANY UNDERGROUND CONSTRUCTION AND NOTIFY THE OWNER OF ANY DISCREPANCIES OR CONFLICTS.
6. LIGHTING AND UNDERGROUND CABLE IF SHOWN ON PLANS ARE FOR APPROXIMATE LOCATION ONLY. REFER TO ARCHITECTURAL PLANS FOR SPECIFICATIONS AND DETAILS.
7. THE CONTRACTOR SHALL ADJUST RIM ELEVATIONS OF ALL EXISTING STRUCTURES TO PROPOSED FINISH GRADES.
8. CONTRACTOR TO VERIFY LOCATION, SIZES, AND ELEVATION OF ALL BUILDING SERVICE LOCATIONS WITH ARCHITECTURAL PLANS.
9. AT LOCATIONS WHERE WATER MAIN CROSSES BENEATH OR LESS THAN 18" ABOVE A SEWER, PROVIDE WATER MAIN PROTECTION PER STANDARD SPECIFICATIONS FOR SEWER AND WATER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION.
10. ELEVATIONS GIVEN FOR STORM SEWER STRUCTURES LOCATED IN CURB LINE ARE PAVEMENT ELEVATIONS.
11. ALL WATER MAIN SHALL BE 5'-6" BELOW FINISHED GRADE TO TOP OF MAINS UNLESS NOTED OTHERWISE.
12. ALL EXISTING UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT ELEVATION OR LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES.
13. THE UNDERGROUND UTILITY INFORMATION AS SHOWN HERE ON IS BASED, IN PART, UPON INFORMATION FURNISHED BY UTILITY COMPANIES AND THE LOCAL MUNICIPALITY. WHILE THIS INFORMATION IS BELIEVED TO BE RELIABLE, ITS ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED NOR CERTIFIED.
14. ALL SANITARY AND STORM SEWER LENGTHS SHOWN ARE CENTER OF MANHOLE TO CENTER OF MANHOLE OR STORM MANHOLE TO FES.
15. PROVIDE CONCRETE COLLAR FOR ALL MANHOLES & VALVE VAULTS IN PAVEMENT, NOT ADJACENT TO CURB. SEE CONCRETE COLLAR DETAIL ON DETAIL SHEET.
16. CONTRACTOR SHALL CORE AND BOOT ALL PIPE ENTRANCES TO EXISTING SANITARY MANHOLES. RUBBER BOOT SHALL BE WATERTIGHT, PER ASTM C-923.
17. EXTERNAL CHIMNEY SEALS ARE REQUIRED ON PROPOSED AND ADJUSTED EXISTING SANITARY MANHOLES.
18. SOME EXISTING ITEMS TO BE REMOVED HAVE BEEN DELETED FROM THIS PLAN FOR CLARITY. SEE DEMOLITION PLAN FOR ITEMS DELETED.
19. ALL D.I. WATERMAIN FITTINGS SHALL BE WRAPPED.
20. CONTRACTOR TO INSTALL PERFORATED UNDERDRAINS BELOW PERMEABLE PAVERS ONLY. SOLID 4" SEWER TO BE INSTALLED UNDER ALL IMPERVIOUS PAVEMENT AREAS.
21. ALL WASTE CONTAINING GREASE SHALL BE DISCHARGED TO A GREASE SEPARATOR BEFORE DISCHARGING INTO THE SANITARY SEWER, WITH THE EXCEPTION OF RESTAURANT DISHWASHERS, WHICH SHALL HAVE THEIR DISCHARGE BYPASS THE GREASE SEPARATOR AND DISCHARGE DIRECTLY OR INDIRECTLY INTO THE SANITARY SEWER.
22. CONTACT OAK LAWN PUBLIC WORKS (708-499-7748) 48 HOURS PRIOR TO INSTALLATION OF SANITARY SEWER AND WATERMAIN TO SCHEDULE AN INSPECTION.

UTILITY CROSSINGS

(17) ST OVER WM
B/P ST = 614.5
T/P WM = 613.0

(20) ST OVER SAN
B/P ST = 614.7
T/P SAN = 614.1

(21) ST OVER SAN
B/P ST = 614.7
T/P SAN = 614.1

NOTE: WATER AND SEWER CROSSINGS SHALL MEET STATE EPA SEPARATION AND PIPE MATERIAL REQUIREMENTS. (SEE DETAIL SHEET)

NO.	DATE	REVISIONS	DRAWN BY

Manhard CONSULTING LTD
Civil Engineers • Structural Engineers • Water Resource Engineers • Water & Wastewater Engineers
Construction Managers • Environmental Scientists • Landscape Architects • Planners

OAK LAWN SHOPPING CENTER - SHAKE SHACK
VILLAGE OF OAK LAWN, ILLINOIS
UTILITY PLAN

PROJ. MGR.: F.F.
PROJ. ASSOC.: T.E.C.
DRAWN BY: MH
DATE: 11-24-20
SCALE: 1"=20'

SHEET
C4 OF C6
CEIOLIL01.07

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November 24, 2020 - 14:09 Dwg. Name: P:\Ceiol\01\dwg\Eng\Engr Drawings\Plan Set (Shake Shack)\C4-UTILITY.dwg Updated By: mhamilton

SHAKE SHACK

4071 W. 95th St., OAK LAWN, IL 60453

SHAKE #1345

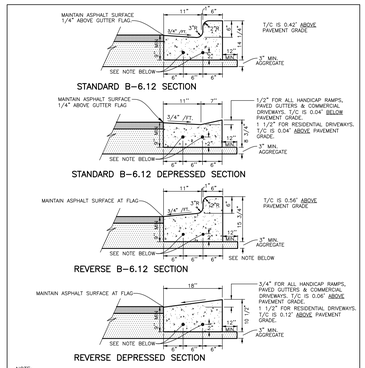
NO.	DATE	ISSUE FOR PERMIT / BID
1	11/24/20	

REVISIONS

Drawing Title
Utility Plan

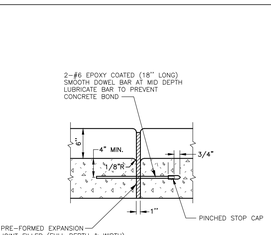
Job No. CEIOLIL01
Drawn MH
Scale 1"=20'
Date 11/23/20

Sheet No.
C4



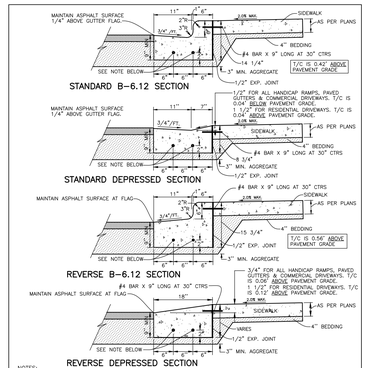
NOTE:
1. EXPANSION JOINTS TO BE LOCATED AT HIGH POINTS, UTILITY STRUCTURES, CURB RETURNS, COLD JOINTS OR 60' MAX. (SEE DETAIL)
2. CONTRACTION JOINTS ARE TO BE SAW CUT 2" DEEP AT 20' INTERVALS MAX.
3. INSTALL 2-#4 DEFORMED BARS X 10'-0" LONG OVER ALL TRENCHES.
4. TRANSITION CURB AND GUTTER AS NECESSARY TO MEET DRAINAGE STRUCTURE FRAME AND GRATE

06-01-17
MODIFIED B-6.12 CURB & GUTTER DETAIL
S:\RD\B612-CURB
SHEET 1 OF 2



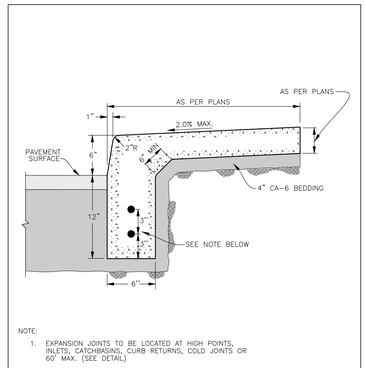
TYPICAL
EXPANSION JOINT DETAIL
CROSS SECTION

06-01-17
CURB EXPANSION JOINT
S:\RD\EXPANSION-JOINT



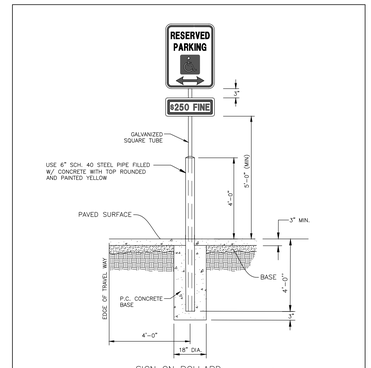
NOTES:
1. EXPANSION JOINTS TO BE LOCATED AT HIGH POINTS, UTILITY STRUCTURES, CURB RETURNS, COLD JOINTS OR 50' MAX. (SEE DETAIL)
2. CONTRACTION JOINTS ARE TO BE SAW CUT 2" DEEP AT 20' INTERVALS MAX.
3. INSTALL 2-#4 DEFORMED BARS X 10'-0" LONG OVER ALL TRENCHES.
4. TRANSITION CURB AND GUTTER AS NECESSARY TO MEET DRAINAGE STRUCTURE FRAME AND GRATE
5. IF CURB & GUTTER & SIDEWALK ARE POURED MONOLITHICALLY, NO #4x9" LONG REINFORCING BARS ARE REQUIRED.

06-01-17
MODIFIED B-6.12 CURB & GUTTER W/ADJACENT SIDEWALK DETAIL
S:\RD\B612-CURB-SW



NOTE:
1. EXPANSION JOINTS TO BE LOCATED AT HIGH POINTS, INLETS, CATCHBASINS, CURB RETURNS, COLD JOINTS OR 60' MAX. (SEE DETAIL)
2. CONTRACTION JOINTS ARE TO BE SAW CUT 2" DEEP AT 20' INTERVALS MAX.
3. INSTALL 2-#4 DEFORMED BARS X 10'-0" LONG OVER ALL TRENCHES.

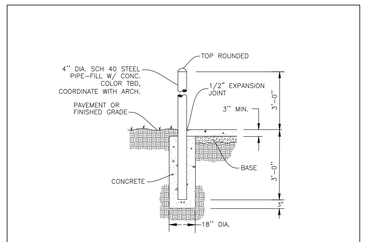
10-01-08
COMBINATION BARRIER CURB & SIDEWALK DETAIL
S:\RD\BARRIERCURB-SW



SIGN ON BOLLARD
N.T.S.

NOTES:
1. ALL SIGNS SHALL COMPLY WITH U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES", LOCAL CODES AND AS SPECIFIED. MOUNT SIGNS TO POST IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

11-23-20
SIGN ON BOLLARD AND BASE
CEOLIL01



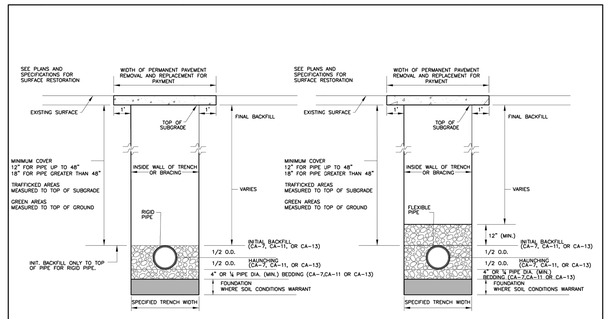
02-18-19
BOLLARD PIPE DETAIL 4"
CEI.OLI.01

MATERIAL STANDARDS

ITEM	BRAND	PRODUCT
MANHOLES/CATCHBASINS/INLETS IN OPEN AREAS AND PAVEMENT (SELF-SEALING LID WITH PROPER UTILITY MARKINGS)	NEENAH	R-4340 B
	SWALES AND DITCHES	
MANHOLES/CATCH BASINS/INLETS IN COMBINATION CURB & GUTTER (BICYCLE SAFE)	NEENAH	R-3281A *-3281-AL
	B6.12 CURB	

*1 WHEREVER STORMWATER COULD POSSIBLY ENTER STORM STRUCTURE

11-23-20
MATERIAL STANDARDS
CEOLIL01



RIGID PIPE INSTALLATION DETAIL

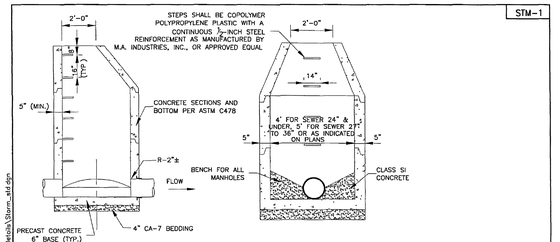
FLEXIBLE PIPE INSTALLATION DETAIL

NOTES:
1. FOR QUALIFIED SEWER CONSTRUCTION ONLY.
2. SHORING, OR EQUIVALENT PROTECTIVE SYSTEM, REQUIRED FOR TRENCHES OF 5' DEPTH OR GREATER, OR AS REQUIRED BY MUNICIPALITY.

NOT TO SCALE

TECHNICAL GUIDANCE MANUAL	7/1/15
RIGID AND FLEXIBLE PIPE INSTALLATION DETAIL	STD. DWG. NO. 34
	PAGE NO. 35

STM-1



NO SCALE

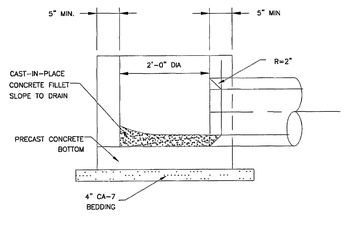
NOTE:
1. MANHOLE BARREL JOINTS SHALL BE TONGUE AND GROOVE TYPE WITH TWO ROWS OF EXTRUDIBLE PREFORMED PLASTIC GASKET MATERIAL (BUTYL ROPE).
2. INTERIOR JOINTS SHALL BE "BUTTERED" WITH NON-SHRINK GROUT
3. STORM MANHOLES SHALL HAVE A WALL THICKNESS OF 6" FOR 5' DIAMETER STRUCTURES AND 7" FOR 6' DIAMETER STRUCTURES
4. SEE CASTING INSTALLATION AND ADJUSTING DETAIL FOR CASTING REQUIREMENTS.

VILLAGE OF OAK LAWN
STANDARD DETAIL

STORM MANHOLE TYPE A
DATE: DEC 2009

THE VILLAGE OF OAK LAWN

STM-3



NO SCALE

NOTES:
1. SEE CASTING INSTALLATION AND ADJUSTMENT DETAIL FOR CASTING REQUIREMENTS.
2. INTERIOR JOINTS SHALL BE "BUTTERED" WITH NON-SHRINK GROUT.
3. STRUCTURE SHALL COMPLY WITH ASTM C478.

VILLAGE OF OAK LAWN
STANDARD DETAIL

INLET

DATE: DEC 2009

THE VILLAGE OF OAK LAWN

SHOULD A CONFLICT ARISE BETWEEN MANHARD DETAILS AND THE VILLAGE DETAILS, THE VILLAGE DETAILS SHALL TAKE PRECEDENCE.

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Manhard CONSULTING LTD
Professional Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
Civil Engineers • Structural Engineers • Water Resource Engineers • Water & Wastewater Engineers
Construction Managers • Environmental Scientists • Landscape Architects • Planners

DRAWN BY | REVISIONS | DATE

OAK LAWN SHOPPING CENTER - SHAKE SHACK
VILLAGE OF OAK LAWN, ILLINOIS
CONSTRUCTION DETAILS

PROJ. MGR.: F.F.
PROJ. ASSOC.: T.F.C.
DRAWN BY: MH
DATE: 11-24-20
SCALE: N.T.S.

SHEET
C5 OF C6
CEIOLIL01.07

SHAKE SHACK
4071 W. 95th St., OAK LAWN, IL 60453
SHAKE #1345

NO.	DATE	REMARKS
1	11/24/20	ISSUE FOR PERMIT / BID

REVISIONS

Drawing Title
Construction Details

Job No. CEIOLIL01
Drawn MH
Scale N.T.S.
Date 11/23/20
Sheet No. C5

November 23, 2020 - 09:24 Dwg Name: P:\Civil\01\Lwy\Final Drawings\Pre Set (Shake Shack)\C5-DETAILS.dwg Updated By: mhamilton
N:\OakLawn\090021\800CA\StandardsDetails\Storm_std.dgn

06-01-16

MANHARD CONSULTING, LTD.
STANDARD SPECIFICATIONS

GENERAL CONDITIONS

CONTRACTOR acknowledges and agrees that the use and reliance of these Plans and Specifications is sufficient consideration for CONTRACTOR'S covenants stated herein.

DEFINITION OF TERMS

a. "CLIENT" shall mean HUBBARD STREET GROUP, which is the person or entity with whom Manhard Consulting, Ltd. has contracted with to prepare Civil Engineering PLANS and SPECIFICATIONS.

b. "ENGINEER" shall mean Manhard Consulting, Ltd., a Civil Engineering consultant on the subject project.

c. "PLANS and SPECIFICATIONS" shall mean the Civil Engineering PLANS and SPECIFICATIONS prepared by the ENGINEER, which may be a part of the contract documents for the subject project.

d. "CONTRACTOR" shall mean any person or entity performing any work described in the PLANS and SPECIFICATIONS.

e. "JURISDICTIONAL GOVERNMENTAL ENTITY" shall mean any municipal, county, state or federal unit of government from whom an approval, permit and/or review is required for any aspect of the subject project.

INTENT OF THE PLANS AND SPECIFICATIONS

The intent of the PLANS and SPECIFICATIONS is to set forth certain requirements of performance, type of equipment and structures, and standards of materials and construction. They may also identify labor and materials, equipment and transportation necessary for the proper execution of the work but are not intended to be infinitely determined so as to include minor items obviously required as part of the work. The PLANS and SPECIFICATIONS require new material and equipment unless otherwise indicated, and to require complete performance of the work in spite of omissions of specific references to any minor component part. It is not intended, however, that materials or work not covered by or properly inferred from any heading, branch, class or trade of the SPECIFICATIONS shall be supplied unless distinctly so noted. Materials or work described in words, which so applied have a well-known technical or trade meaning, shall be held to refer to such recognized standards.

INTERPRETATION OF PLANS AND SPECIFICATIONS

a. The CLIENT and/or CONTRACTOR shall promptly report any errors or ambiguities in the PLANS and SPECIFICATIONS to the ENGINEER. Questions as to meaning of PLANS and SPECIFICATIONS shall be interpreted by the ENGINEER, whose decision shall be final and binding on all parties concerned.

b. The ENGINEER will provide the CLIENT with such information as may be required to show revised or additional details of construction.

c. Should any discrepancies or conflicts on the PLANS or SPECIFICATIONS be discovered either prior to or after award of the contract, the ENGINEER's attention shall be called to the same before the work is begun thereon and the proper corrections made. Neither the CLIENT nor the CONTRACTOR may take advantage of any error or omissions in the PLANS and SPECIFICATIONS. The ENGINEER will provide information when errors or omissions are discovered.

GOVERNING BODIES

All works herein proposed shall be completed in accordance with all requirements of any JURISDICTIONAL GOVERNMENTAL ENTITY, and all such pertinent laws, directives, ordinances and the like shall be considered to be a part of these SPECIFICATIONS. If a discrepancy is noted between the PLANS and SPECIFICATIONS and requirements of any JURISDICTIONAL GOVERNMENTAL ENTITY, the CLIENT and/or the CONTRACTOR shall immediately notify the ENGINEER in writing.

LOCATION OF UNDERGROUND FACILITIES AND UTILITIES

When the PLANS and SPECIFICATIONS include information pertaining to the location of existing underground facilities and utilities (including but not limited to water mains, sanitary sewers, storm sewers, electric, telephone, gas and cable TV lines), such information represents only the opinion of the ENGINEER as to the approximate location and elevation of such facilities and utilities. At the locations wherein detailed positions of these facilities and utilities become necessary to the new construction, including all points of connection, the CONTRACTOR shall furnish all labor and tools to verify or definitely establish the horizontal location, elevation, size and material (if appropriate) of the facilities and utilities. The CONTRACTOR shall notify the ENGINEER at least 48 hours prior to construction if any discrepancies in existing utility information or conflicts with existing utilities exist. The ENGINEER assumes no responsibility whatever with respect to the sufficiency or accuracy of the information shown on the PLANS and SPECIFICATIONS relative to the location of underground facilities and utilities, nor the manner in which they are removed or adjusted.

It shall be the CONTRACTOR'S responsibility prior to construction, to notify all Utility Companies of the intent to begin construction and to verify the actual location of all such facilities and utilities. The CONTRACTOR shall also obtain from the respective Utility Companies the working schedules for removing or adjusting these facilities.

UNSUITABLE SOILS

The PLANS have been prepared by the ENGINEER based on the assumption that all soils on the project are suitable to support the proposed improvements shown. The CLIENT or CONTRACTOR shall immediately notify the ENGINEER if he discovers or encounters an obstruction that prevents the installation of the improvement according to the line and grades shown on the PLANS.

PROTECTION OF TREES

All trees that are not to be removed shall be protected from damage. Trees shall not be removed unless requested to do so in writing by the CLIENT.

NOTIFICATION OF OWNERS OF FACILITIES AND UTILITIES

The CONTRACTOR shall notify all applicable Jurisdictional Governmental Entities or utility companies, i.e., water, sewer, electric, telephone, gas and cable TV prior to beginning any construction so that said entity or company can establish the location and elevation of underground pipes, conduits or cables adjoining or crossing proposed construction.

TRAFFIC CONTROL

The CONTRACTOR shall provide when required by any JURISDICTIONAL GOVERNMENTAL ENTITY, all signs, equipment, and personnel necessary to provide for safe and efficient traffic flow in all areas where the work will interrupt, interfere or cause to change in any form, the conditions of traffic flow that existed prior to the commencement of any portions of the work. The CLIENT may, at his discretion, require the CONTRACTOR to furnish traffic control under these or other circumstances where in his opinion it is necessary for the protection of life and property. Emergency vehicle access shall be maintained at all times. Unless authorized by the CLIENT or CLIENT's construction representative, all existing access points shall be maintained at all times by the CONTRACTOR. The need for traffic control shall be anticipated by the CLIENT.

WORK AREA

The CONTRACTOR, his agents and employees and their employees and all equipment, machinery and vehicles shall confine their work within the boundaries of the project or work area specified by the Client. The CONTRACTOR shall be solely liable for damage caused by him or his agents and employees and their equipment, machinery and vehicles on adjacent property or areas outside designated work areas.

UTILITY POLES

It shall be the responsibility of the CONTRACTOR to arrange for the relocation or bracing of existing utility poles that may be within the working limits of this contract. It is expressly understood that all work and costs connected with the maintenance of these utility poles, their temporary relocations, etc., shall be the responsibility of the CLIENT or the CONTRACTOR.

RESTORATION

It is the intent of these SPECIFICATIONS that clean-up and final restoration shall be performed immediately upon completion of each phase of the work, both inside and outside the Project, or when so directed by the CLIENT so that these areas will be restored as nearly as possible to their original condition or better, and shall include but not be limited to, restoration of maintained lawns and rights-of-way, roadways, driveways, sidewalks, ditches, bushes, hedges, trees, shrubs, fences, mailboxes, sewers, drain tiles, water mains, etc.

CLEANING UP

The CONTRACTOR shall at all times keep the premises free from accumulations of waste material or rubbish caused by his employees or work, and at the completion of the work he shall remove all his rubbish, tools, scaffolding and surplus materials and shall leave his work "broom clean" or its equivalent, unless more exactly specified.

ROAD CLEANING

The CONTRACTOR shall maintain roadways adjoining the project site free from mud and debris at all times. If mud and/or debris is carried onto the roadways from vehicles entering onto the highway from either the CONTRACTOR's trucks, his employees' vehicles, or his material suppliers, the CONTRACTOR shall immediately remove said mud and/or debris.

SAFETY AND PROTECTION

The CONTRACTOR shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. The CONTRACTOR shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR's duties and responsibilities for safety and for protection of the work shall continue until such time as all work is completed and the CLIENT has notified CONTRACTOR that the work is acceptable. The duties of the ENGINEER do not include review of the adequacy of either the CONTRACTOR's or the general public's safety in, on, or near the construction site.

HOLD HARMLESS

To the fullest extent permitted by law, any CONTRACTOR; material supplier or other entity by use of these plans and specifications hereby waives any right of contribution and agrees to indemnify, defend, save and hold harmless the CLIENT and ENGINEER and its agents, employees and consultants from and against all manner of claims, causes, causes of action, damages, losses and expenses, including but not limited to, attorneys' fees arising out of, resulting from or in connection with the performance of any work, pursuant to or with respect to these plans and specifications. However, this indemnity shall not be construed to indemnify ENGINEER, its consultants, agents or employees against its own negligence.

Claims, damages, losses and expenses as these words are used in the Agreement shall mean and include, but not be limited to (1) injury or damage occurring by reason of the failure of or use or misuse of any hoist, riggings, blocking, scaffolding or any and all other kinds of items of equipment, whether or not the same be owned, furnished or loaned by any part or entity, including any contractor; (2) all attorneys' fees and costs incurred in bringing an action to enforce the provisions of this indemnity; (3) costs for time expended by the indemnified party and its employees, at its usual rates plus costs or travel, long distance telephone and reproduction of documents and (4) consequential damages.

In any and all claims against the CLIENT or ENGINEER or any of their agents or employees and consultants by any party, including any employee of the CONTRACTOR or any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount of type of damages, compensation or benefits payable by or for the CONTRACTOR or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts or any insurance maintained by CONTRACTOR or any Subcontractor or any other party.

INSURANCE

Any party using or relying on these plans, including any contractor, material supplier, or other entity shall obtain, (prior to commencing any work) general public liability insurance insuring against all damages and claims for any bodily injuries, death or property damage arising out of any work, including the construction work provided for in these plans, and shall name the CLIENT and ENGINEER and its consultants, agents and representatives as additional insureds under such insurance policy; provided that any party using or relying on these plans having obligations to maintain specific insurance by reason of any agreement with CLIENT or any CONTRACTOR or ENGINEER shall provide evidence and certificates of insurance as required by such contract or agreement. Such insurance must contain a clause stating that the insurance is primary coverage for ENGINEER and ENGINEER's other applicable coverage is considered secondary. Such insurance shall not limit any liability of any party providing work or services or providing materials.

THIRD PARTY BENEFICIARY

Manhard Consulting, Ltd., the ENGINEER, is intended to be a third party beneficiary of this willing agreement and requirement.

Note: These Specifications are for Northern Illinois.

DETAILED SPECIFICATIONS

I. DEMOLITION

The CONTRACTOR shall coordinate with respective utility companies prior to the removal and/or relocation of utilities. The CONTRACTOR shall coordinate with the utility company concerning portions of work which may be performed by the Utility Company's forces and any fees which are to be paid to the utility company for their services. The CONTRACTOR is responsible for paying for all fees and charges.

Should removal and/or relocation activities damage features indicated to remain, the CONTRACTOR shall provide new materials/structures in accordance with the contract documents. Except for materials designed to be relocated on this plan, all other construction materials shall be new.

Prior to demolition occurring, all erosion control devices are to be installed.

All existing utility lines and conduits located under proposed buildings shall be removed and properly backfilled. All utility lines and conduits located under drives, on-site roads, parking lots or sidewalks shall be filled with a flowable backfill and end plugged. All existing structures shall be removed. All existing utility lines located under landscape areas shall be left in place and plugged at all structures.

The CONTRACTOR is responsible for demolition, removal and disposal (in a location approved by all JURISDICTIONAL GOVERNING ENTITIES) of all structures, pads, walls, flumes, foundations, road, parking lots, drives, drainage structures, utilities, etc., such that the improvements shown on these plans can be constructed. All demolition work shall be in accordance with all applicable federal, state and local requirements. All facilities to be removed shall be undercut to suitable material and brought to grade with suitable compacted fill material per the specifications.

The CONTRACTOR is responsible for obtaining all permits required for demolition and disposal.

Electrical, telephone, cable, water, fiber optic cable and/or gas lines needing to be removed shall be coordinated by the CONTRACTOR with the affected utility company.

CONTRACTOR must protect the public at all times with fencing, barricades, enclosures, and other appropriate best management practices.

Continuous access shall be maintained for surrounding properties at all times during demolition.

All fire access lanes within the project area shall remain in service, clean of debris, and accessible for use by emergency vehicles.

The CONTRACTOR shall coordinate water main work with the Fire Department and the JURISDICTIONAL GOVERNING ENTITY to plan the proposed improvements and to ensure adequate fire protection is available to the facility and site throughout this specific work and through all phases of construction. CONTRACTOR shall be responsible for any required water main shut offs with the JURISDICTIONAL GOVERNING ENTITY during construction. Any costs associated with water main shut offs will be the responsibility of the CONTRACTOR and no extra compensation will be provided.

CONTRACTOR shall maintain all existing parking areas, sidewalks, drives, etc. clear and free from any construction activity and/or material to ensure easy and safe pedestrian and vehicular traffic to and from the site. CONTRACTOR shall coordinate/phase all construction activity within proximity of the building and utility interruptions with the facility manager to minimize disturbance and inconvenience to facility operations.

CONTRACTOR may limit saw-cut and pavement removal to only those areas where it is required as shown on these construction plans, however if any damage is incurred on any of the surrounding pavement, etc. the CONTRACTOR shall be responsible for ITS removal and repair.

Any existing wells encountered shall be exposed and sealed 3' below proposed finish grade by the CONTRACTOR in accordance with Section 920.120 (latest edition) of the Illinois Water Well Construction Code, Department of Public Health, and all applicable local rules and regulations. CONTRACTOR is responsible for obtaining all permits required by JURISDICTIONAL GOVERNMENTAL ENTITIES for abandoning existing wells.

Any existing septic tanks and grease traps encountered shall have all liquids and solids removed and disposed of by a licensed commercial hauler in accordance with JURISDICTIONAL GOVERNING ENTITY regulations, and the tank and grease traps shall then be filled with suitable materials or removed from the site and disposed of by the CONTRACTOR.

Voids left by any item removed under any proposed building, pavement, walk, etc. or within 24" thereof shall be filled and compacted with suitable materials by the CONTRACTOR.

The CONTRACTOR shall be responsible for the disconnection of utility services to the existing buildings prior to demolition of the buildings.

Any material containing asbestos found within existing structures shall be removed from the site and disposed of off-site by the CONTRACTOR in accordance with County, State and Federal regulations.

CONTRACTOR shall develop and implement a daily program of dust control and shall submit and obtain JURISDICTIONAL GOVERNING ENTITY approval of dust control procedures prior to demolition of any structures. Modification of dust control procedures shall be performed by the CONTRACTOR to the satisfaction of the JURISDICTIONAL GOVERNING ENTITY as requested.

The CONTRACTOR shall coordinate all demolition with the JURISDICTIONAL GOVERNING ENTITY and CLIENT to ensure protection and maintenance of sanitary sewer and water utilities as necessary and to provide stormwater conveyance until new facilities are constructed, tested and placed into operation.

The locations of all existing utilities shown on this plan have been determined from the best information available and are given for the convenience of the CONTRACTOR and are not to be interpreted as the exact location, or as the only obstacles that may occur on the site. The ENGINEER assumes no responsibility for their accuracy. Prior to the start of any demolition activity, the CONTRACTOR shall notify the utility companies for location of existing utilities and shall verify existing conditions and proceed with caution around any anticipated features.

The CONTRACTOR is responsible for removing the existing irrigation system in the areas of proposed improvements. The contractor shall cap the existing irrigation system to remain such that the remaining system shall continue to function properly.

The parking lot shall be completed in sections such that it does not interrupt the facility operations. The CONTRACTOR shall coordinate with the construction manager for work to be performed.

II.EARTHWORK

STANDARDS

This work shall be completed in conformance with the applicable sections of the Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition except as modified below.

SOIL BORING DATA

Copies of results of soil boring and reports, if such borings were taken by the CLIENT in the vicinity of the proposed construction site, should be made available by the CLIENT to the CONTRACTOR. These borings are presented for whatever purpose the CONTRACTOR chooses to make of them. The ENGINEER makes no representation or warranty regarding the number, location, spacing or depth of borings taken, nor of the accuracy or reliability of the information given in the results thereof.

Further, the ENGINEER does not assume responsibility for the possibility that during construction, the soil and groundwater condition may be different than indicated. Neither does the ENGINEER assume responsibility for variations of soil and groundwater at location between borings. The CONTRACTOR is required to make its own borings, explorations and observations to determine soil and groundwater conditions.

EARTHWORK CALCULATIONS AND CROSS SECTIONS

The CONTRACTOR understands that any earthwork calculations, quantities or cross sections that have been furnished by the ENGINEER are for information only and are provided without any guarantee by the CLIENT or ENGINEER whatsoever as to their sufficiency or accuracy. CONTRACTOR warrants that he has performed his own subsurface investigations as necessary and his own calculations and cross sections to determine site soil conditions and earthwork volumes. The ENGINEER makes no representation or guarantee regarding earthwork quantities or that the earthwork for this project will balance due to the varying field conditions, changing soil types, allowable construction to tolerances and construction methods that are beyond the control of the ENGINEER.

CLEARING, GRUBBING AND TREE REMOVAL

The site shall be cleared, grubbed, and trees and stumps removed where designated on the PLANS. Trees designated to remain shall be protected from damage.

TOPSOIL STRIPPING

Upon completion of demolition, clearing, grubbing and tree removal, all topsoil shall be stripped from under all buildings and pavements areas, and other areas necessary to complete the work. Topsoil stripped shall be placed in stockpiles in locations as designated by the CLIENT.

TOPSOIL RESPREAD

Upon completion of roadway and/or parking lot improvements and installation of underground utilities a minimum of six inches (6") of topsoil shall be respread over all unpaved areas which have been disturbed by earthwork construction, except building pads and other designated areas, which shall be kept free from topsoil.

SEEDING

Upon completion of topsoil respread, the CONTRACTOR shall apply seed and fertilizer to all respread areas in accordance with IDOT standards or as designated on landscape drawings and specifications provided by the CLIENT.

SODDING

Upon completion of topsoil respread, the CONTRACTOR shall install sod to all areas designated on the plans or as designated on the landscape drawings and specifications provided by the CLIENT.

EXCAVATION AND EMBANKMENT

Upon completion of topsoil stripping, all excavation and embankments shall be completed as shown on the PLANS. All suitable excavated materials shall be hauled, placed (moisture conditioned if necessary) and compacted in the embankment areas. The CONTRACTOR shall include all dewatering, temporary ditching and culverts necessary to complete the excavation and embankment.

Specifically included in the scope of Excavation and Embankments is grading and shaping of all cut or fill areas including swales and ditches; handling of sewer spoil, etc., and all work required to provide positive drainage at the end of each working day and upon completion of a section.

The CONTRACTOR shall be responsible for the excavation of all swales and ditches and for the excavation or filling of the roads, building pads and parking lots within the work limits to lines & grades shown on the plans. He shall be responsible for obtaining compaction in accordance with the minimum values listed in the table below for all embankments unless more stringent values are listed in the soils report or are approved by the CLIENT, and to use any method approved by the CLIENT necessary to obtain this compaction (i.e., soil fabric or any undercutting that may be required).

Type Material	Percent Compaction Standard	Pavement & Floor Slabs	Grass Areas
Sandy Soils	Modified Proctor	95%	90%
Clayey Soils	Standard Proctor	95%	90%

The CONTRACTOR shall notify the CLIENT if proper compaction cannot be obtained so that the CLIENT may determine what remedial measures may be needed.

A soils testing firm employed by the CLIENT shall determine which soils are unsuitable. Materials in their natural state being defined as unsuitable that would be suitable material if moisture conditioned, shall be conditioned by the CONTRACTOR and used as suitable embankment material or hauled from the site.

For purposes of definition, unsuitable material shall be as follows unless determined otherwise by the Soils Engineer:

1. Any soil whose optimum moisture content exceeds 25%.
2. Any cohesive soil with an unconfined compressive strength of 1.5 tons per square foot or less.
3. Any soil whose silt content exceeds 60% by weight.
4. Any soil whose maximum density is less than 100 pounds per cubic foot.
5. Any soil containing organic, deleterious, or hazardous material.

Upon completion of excavation and shaping of the water retention areas intended to maintain a permanent pool of water, all silt seams and granular or sandy soils shall be removed to a minimum depth of three feet below the subgrade and replaced with an impermeable clay liner, including adjacent to and under storm sewer inlets and outlets. It is the intent of these PLANS and SPECIFICATIONS that the CONTRACTOR shall prepare the lake bottoms, side slopes, and compaction thereof such that the lakes will maintain the proposed normal water level and that leakage does not exceed ½ inch per week.

Ditches and swales are to be excavated to the lines and grades indicated on the PLANS. All suitable materials excavated from the ditches shall be used in construction of the embankments.

The CONTRACTOR shall notify the CLIENT immediately upon encountering groundwater during excavation. If in the opinion of the CLIENT or the JURISDICTIONAL GOVERNING ENTITY this condition necessitates the installation of perforated drain tile bedded in washed gravel or open storm sewer joints wrapped with fabric, the CONTRACTOR shall install the same.

During excavation and embankment, grades may be adjusted to achieve an overall site earthwork balance. The CONTRACTOR shall cooperate fully with the CLIENT in adjustment of grades, construction methods and placement of material to meet the above goals and shall immediately advise CLIENT if he believes that the earthwork will not balance.

It is the intent of these PLANS that storm waters falling on the site be diverted into sedimentation / lake / detention basins during construction. The CONTRACTOR shall construct and maintain any temporary ditches or swales that are necessary to accomplish this prior to beginning mass excavation.

EROSION CONTROL

Suitable erosion control practices shall be maintained by the CONTRACTOR in accordance with Illinois Urban Manual and all applicable Soil Erosion and Sedimentation Control ordinances and the PLANS.

UNDERCUTTING DURING EARTHWORK

If the subgrade cannot be dried adequately by discing as outlined above for placement of material to planned grades and if the CLIENT determines that the subgrade does not meet the standards set forth above, the CLIENT may require undercutting.

MISCELLANEOUS CONTRACT ITEMS

The following items may be required at the CLIENT's option, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY:

(1) **GEOTEXTILE FABRIC**

Geotextile fabric or approved equal shall be provided in areas as designated by the CLIENT, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY where proper compaction of embankments over existing soft soils is not possible. Geotextile fabric shall meet the material specifications of and shall be installed in accordance with the above standards.

(2) **EROSION CONTROL BLANKET**

Erosion control blanket or approved equal shall be provided in areas as designated by the CLIENT, as indicated on the PLANS or as required by the JURISDICTIONAL GOVERNING ENTITY for the stabilization of disturbed areas. Erosion control blanket shall meet the material specifications of and shall be installed in accordance with the above standards, the Illinois Urban Manual and/or the details shown on the PLANS.

III.UNDERGROUND IMPROVEMENTS

A. GENERAL

VILLAGE INSPECTIONS

The following inspections and testing shall occur for the underground piping. The local official shall have a minimum of forty-eight (48) hour notice of the test. They shall include but are not limited to:

a. Underground piping, thrust blocks, and restraints shall be visual inspected prior to being covered. The local authority having jurisdiction shall be consulted on what relevant department shall complete the inspection. A copy of the inspection shall be provided to the local fire official prior to the flushing and hydrostatic test;

b. Underground flushing to be completed prior to the fire service main before the backflow assembly is installed and put into service. The underground piping flushing flow rate shall be not less than one of the options listed in NFPA 24. A copy of the testing documents is to be presented to the local fire official at the completion of the test; and

c. Underground hydrostatic to be completed prior to the fire service main from being covered. The piping shall be hydrostatically tested at two hundred (200) psi and will maintain that pressure without loss for two (2) hours.

STANDARDS

All underground improvements shall be constructed and tested in accordance with the Standard Specifications for Water and Sewer Construction in Illinois and Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition. In the event of conflicting guidelines, the more restrictive shall govern.

SELECTED GRANULAR BACKFILL

Selected Granular Backfill shall be required for all sewer and water main trenches lying under existing or proposed streets, driveways, parking lots and within 24" thereof, and where noted on PLANS. All material placed in such trenches shall be in accordance with the above standards.

MANHOLES, CATCH BASIN, INLETS & VALVE VAULTS

All Manholes, Catch Basins, Inlets, and Valve Vaults shall be constructed of reinforced precast concrete ring construction with tongue and groove joints in conformance with the latest revision of ASTM designation C-478. All joints between sections and frames (except sanitary manholes, see Section IIIB Manholes, below) shall be sealed with mastic type bituminous jointing compound. CONTRACTOR shall remove all excess mastic on inside of structure and butter joints with mortar. Manholes are to have offset cones except that no cone shall be used on storm manholes 6'-0" deep or less in which case a reinforced concrete flat top section shall be used, and Valve Vaults shall have concentric cones. Only concrete adjustment rings will be permitted where necessary and shall be limited to two adjustment rings totaling not more than 8" in height. All manholes and catch basin steps shall be copolymer polypropylene with continuous ½" steel reinforcement as manufactured by MA Industries, or approved equal.

***AUGER/BORING AND CASING - INTENTIONALLY OMITTED**

***AUGER (OPEN BORE) - INTENTIONALLY OMITTED**

HORIZONTAL AND VERTICAL SEPARATION OF WATER AND SEWER MAINS

Horizontal and vertical separation of water and sewer mains shall be in accordance with Standard Specifications for Water and Sewer Construction in Illinois Section 41-2.01A and 41-2.01B and Standard Drawing 18, 19, 20, 21, 22, 23 and 24.

STRUCTURE ADJUSTMENTS

Structures shall be adjusted to the finished grade as shown on PLANS.

*B. SANITARY SEWERS AND APPURTENANCES - INTENTIONALLY OMITTED

*C. WATER MAINS AND APPURTENANCES - INTENTIONALLY OMITTED

D. STORM SEWERS AND APPURTENANCES

***STORM SEWER PIPE**

Storm sewer pipe shall conform to the following:

(1) Reinforced concrete pipe minimum Class IV in conformance with the latest revision of ASTM designation C76 with C361 or C443 flexible gasket joints.

(2) Polyvinyl Chloride (PVC) Pipe: ASTM D3034 (4-inch thru 15-inch) or ASTM F679 (18-inch thru 36-inch), rated SDR 35, continually marked with manufacturer's name, pipe size, cell classification, SDR rating. Joints shall be flexible elastomeric seals conforming to ASTM D3212.

Precast tees, bends, and manholes may be used if permitted by the JURISDICTIONAL GOVERNMENTAL ENTITY.

Storm sewers may be constructed with reinforced concrete pipe using only flexible gasket joints (ASTM 361 or 443) for water main crossings.

Storm sewer shall include bedding and trench backfill.

MANHOLES, INLETS & CATCH BASINS

Manholes, Inlets and Catch Basins shall be constructed in conformance with Section IIIA Manholes, etc. above. The space between connecting pipes and the wall of the manhole shall be completely filled with non-shrink hydraulic cement mortar. Frames and lids shall be Neenah or approved equal unless specified otherwise on the PLANS. All frames and grates shall be provided such that the flange fully covers the opening plus 2" of the structure as a minimum. * Provide **"Vane"** Type frame & grate for all structures located in curb where gradient exceed 2.0%. Manholes shall include steps, frame & grate, bedding and trench backfill.

***FLARED END SECTION - INTENTIONALLY OMITTED**

***RIP RAP - INTENTIONALLY OMITTED**

FOUNDATION, BEDDING AND HAUNCHING

Foundation, Bedding and Haunching shall be wet coarse aggregate or moist fine aggregate in accordance with the above standards and placed as shown on the detail.

***UNDERDRAINS - INTENTIONALLY OMITTED**

MISCELLANEOUS

(1) All existing field drainage tile or storm sewers encountered or damaged during construction shall either be restored to their original condition, properly rerouted and/or connected to the storm sewer system.

(2) Footing drains shall be connected to sump pumps or discharged directly into storm sewers. Footing drains or drainage tile shall not be connected to the sanitary sewer.

***CONNECTION FOR STORM SERVICE TO STORM MAIN - INTENTIONALLY OMITTED**

IV. ROADWAY AND PARKING LOT IMPROVEMENTS

STANDARDS

Work shall be completed in accordance with the applicable sections of the Standard Specifications for Road and Bridge Construction, Department of Transportation, State of Illinois, latest edition (hereinafter referred to collectively as the "Standard Specifications") except as modified below and except that payment will be defined as detailed in the contract documents between the CLIENT and the CONTRACTOR. Supplementing the Standard Specifications shall be the applicable sections of the latest editions of the "Supplemental Specifications and Recurring Special Provisions", the "Manual on Uniform Traffic Control Devices for Streets and Highways" and the Illinois Supplement thereto, (hereinafter referred to collectively as the "MUTCD"). Any references to "ENGINEER" in the "Standard Specifications" shall be interpreted as the CLIENT or CLIENT's Construction Representative.

SUBGRADE PREPARATION

The CONTRACTOR shall be responsible for all subgrade compaction and preparation to the lines and grades shown on the plans.

AGGREGATE BASE COURSE TYPE 'B'

Aggregate Base Course Type B shall be limited to CA-6 or CA-10 gradation. Aggregate base courses shall be proof rolled as outlined below.

PROOF ROLL

The CONTRACTOR shall proof roll the subgrade with either a 2-axle truck loaded to 27,000 lbs. Or a 3-axle truck loaded to 45,000 lbs. or as specified by the JURISDICTIONAL GOVERNING ENTITY. The CLIENT and JURISDICTIONAL GOVERNING ENTITY shall observe and approve the proof rolling of the subgrade and the base course. Proof rolling tolerances shall be a maximum deflection of 1" for the subgrade and ½" for the base course. The above criteria is intended as a maximum deflection standard and that proof rolling of a majority of the area will have less deflection than specified above. In any case of deficiency, the subgrade and/or base course shall be repaired and retested before proceeding with the pavement construction.

Pavement subgrade material shall not be removed, placed or disturbed after proof roll testing has been completed prior to the pavement construction. Additional testing will be required if the pavement subgrade is disturbed and/or material is removed from or placed on the pavement subgrade after proof rolling approval.

Trucks or heavy equipment shall not travel on any pavement subgrade after final testing prior to pavement construction.

***HOT-MIX ASPHALT BASE COURSE - INTENTIONALLY OMITTED**

HOT-MIX ASPHALT BINDER AND SURFACE COURSE

HMA binder and surface courses, shall be constructed to the compacted thickness as shown on the PLANS. The base course shall be cleaned and primed in accordance with the JURISDICTIONAL GOVERNING ENTITY. The surface course shall be placed after the base and courses have gone through one winter season, or as directed by the CLIENT. Before applying the surface course, the binder course shall be thoroughly cleaned and primed in accordance with the JURISDICTIONAL GOVERNING ENTITY. Prior to the placement of the surface course, the JURISDICTIONAL GOVERNING ENTITY shall examine the completed pavement, including curb and gutter, and all failures shall be corrected by the CONTRACTOR.

CONCRETE PAVEMENTS

Concrete pavements shall be constructed in accordance with American Concrete Institute Standard ACI330R-08 and as shown on the PLANS.

Slabs and driveway aprons shall be constructed with 6" x 6" - W1.4 x W1.4 welded wire fabric positioned on steel chair supports. Placing fabric during the concrete pouring operation will not be allowed.

Sawing of joints shall commence as soon as the concrete has cured and hardened sufficiently to permit sawing without excessive raveling, but no later than eight hours after the concrete has been placed. All joints shall be sawed to a depth equal to 1/3 of the pavement thickness before uncontrolled shrinkage cracking take place. If necessary, the sawing operation shall occur during the day or at night, regardless of weekends, holidays or weather conditions. The CONTRACTOR shall be aware of jurisdictional noise ordinances and holiday restrictions for scheduling purposes.

The CONTRACTOR is responsible to guard fresh concrete until it sets and hardens sufficiently to prevent people from writing, walking, riding bicycles or otherwise permanently marking, defacing or causing depressions of any type in the concrete. Any concrete so marked will be removed and replaced by the CONTRACTOR at the CONTRACTOR's expense.

The CONTRACTOR shall protect the pavement against all traffic, including that of their own employees or other workers, until test specimens have attained the specified strength.

SIDEWALKS

Concrete sidewalks shall be constructed to width and thickness as shown on the PLANS. Sidewalks shall be thickened to a minimum of 6" at all driveways. All sidewalks shall be IDOT Class SI concrete, on aggregate base as shown on the detail. A ½" expansion joint shall be provided when meeting existing sidewalk.

CURB AND GUTTER

Curb and gutter shall be as per the detail shown on the PLANS, which shall include compacted aggregate base course under the curb and gutter. All contraction and expansion joints shall be constructed as per the detail.

CONCRETE CURB AND GUTTER REMOVAL AND REPLACEMENT

The CONTRACTOR shall saw cut and remove the existing concrete curb where shown on the PLANS and install a curb of similar cross section and pavement to that removed (or depressed curb and gutter if shown on the PLANS). Upon completion of the curb and gutter any voids between the existing pavement and the new curb shall be filled flush with concrete to within 2" of the final surface, which is to be filled with bituminous pavement. The area behind the curb shall be filled and compacted with embankment material within 6" of the top of the new curb. The CONTRACTOR shall then restore the remaining 6" to its original condition (i.e., sod, gravel, topsoil). Where proposed curb connects to an existing curb, the existing curb shall be saw cut and then two 18" long x ½" (#6) dowel bars shall be drilled and installed 9" into the existing and proposed curb. Bars shall be installed in a location similar to the expansion joint in the curb.

FRAME ADJUSTMENTS

The road contractor shall be responsible for making final adjustments and the setting on a bituminous mastic jointing compound all castings located in the roadway, sidewalks, and parking areas prior to construction of any curbing, sidewalk, or final surface. Any structures that need to be lowered, or raised in excess of 4" shall be completed and the work backcharged against the underground contractor. This Contractor shall also be responsible for cleaning all of the above structures immediately upon completion of his phase of work. This work shall be incidental to the cost of the pavement.

PAVEMENT MARKING - PAINT

The CONTRACTOR shall furnish and apply painted marking lines, letters & symbols of the patterns, sizes and colors where shown on the PLANS. Paint pavement marking shall be applied in accordance with the IDOT Standard Specifications.

***PAVEMENT MARKING - THERMOPLASTIC - INTENTIONALLY OMITTED**

QUALITY CONTROL

The CONTRACTOR shall provide all testing necessary to ensure improvements are in accordance with the project specifications and provide testing documentation that specifications were met.

SHOULD A CONFLICT ARISE BETWEEN THE MANHARD SPECIFICATIONS AND THE VILLAGE SPECIFICATIONS, THE VILLAGE SPECIFICATIONS TAKE PRECEDENCE.

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Manhard CONSULTING LTD
Civil Engineers • Surveyors • Water Resource Engineers • Water & Wastewater Engineers
Construction Managers • Environmental Scientists • Landscape Architects • Planners

NO.	DATE	REVISIONS	DRAWN BY

OAK LAWN SHOPPING CENTER - SHAKE SHACK
VILLAGE OF OAK LAWN, ILLINOIS
CONSTRUCTION SPECIFICATIONS

PROJ. MGR.: F.F.
PROJ. ASSOC.: T.E.C.
DRAWN BY: ---
DATE: 11-24-20
SCALE: 1"=XX'

SHEET
C6 OF C6
CEIOILIL01.07

NO.	DATE	ISSUE FOR PERMIT / BID
1	11/24/20	REMARKS

REVISIONS

Drawing Title
Construction Specifications

Job No. CEIOILIL01
Drawn MH
Scale N.T.S.
Date 11/23/20

Sheet No.
C6

SHAKE #1345

SHAKE SHACK
4071 W. 95th St., OAK LAWN, IL 60453

November 23, 2020 — 09:24 Dwg Name: P:\Civil\01\Lwg\Final Drawings\Proj Set (Shake Shack)\06-SPECS.dwg Updated By: mhamilton

TREE NOTES

1. **Tree Protection During Construction -** A three- to six-foot high temporary fence shall be placed at dripline of tree to be saved, or a distance of 15' from the trunk, whichever is greater. The fence shall completely encircle the tree(s) or as shown on plans. Install fence posts using pier blocks if appropriate. Avoid driving posts or stakes into major roots. Fencing may extend beyond dripline or 15' if plan design allows. Owner may permit alternative fencing methods if site prohibits installation of pier blocks (steep slopes, soft soils, etc.).
2. **Treatment of Roots Exposed During Construction -** For roots over 1" in diameter damaged during construction: make a clean, straight cut to remove damaged portion of root. all exposed roots shall be temporarily covered with damp burlap to prevent drying, and covered with soil as soon as possible. Work within protection fence shall be done manually. No excavation, stockpiling of materials, vehicular traffic, or storage of equipment or machinery shall be allowed within the limit of the fencing.
3. Critical Root Zone is the minimum area of a tree's root zone that should be protected. It is calculated by multiplying the tree's diameter (in inches) by 12.5 to determine the radius of the protected area. (i.e. Tree Protection fencing should be located in a circle around the tree at the radius shown.)
4. Structural Critical Root Distance is the minimum distance that any root severance can occur. It is calculated by multiplying the tree's diameter (in inches) by 4.5 to determine the radius of the protected area. Severing roots any closer will greatly increase the chance of catastrophic tree failure due to loss of supporting roots. The distance is based on Coder, K, 1996. Construction Damage Assessments: Trees and Sites. University of Georgia, October, 1996. (Tool #8).
5. Acton Item includes any required tree protection action to be taken including the following:

5.1. **OK -** Tree is adequate distance away from construction activity that no protection measures are required.

5.2. **BR -** To Be Removed

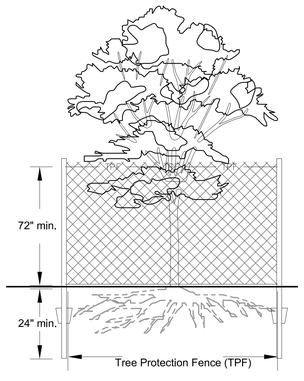
5.3. **Fence -** Construction fencing will be installed prior to any grading or construction activity. See the map version of the Tree Protection Plan for specific location. The xx refers to radius minimum and maximum distance from tree to fence, The fence will delineate an area that is considered the "Tree Protection Zone". While fence is in place there should be no grading, equipment access, material storage, or root disturbance of any kind within the "Tree Protection Zone" delineated by the fencing. Fencing will be 72" tall chain-link fence that is adequately supported without sagging. Fencing will remain in place for the duration of the grading associated with the installation of new stormwater pipe. It can only be moved to permit the installation of new soil near and around trees as indicated and only with permission of University Arborist.

5.4. **Mulch -** Apply an 8-10 inch deep layer of wood chips around the tree at a radius equal to the "Critical Root Zone Radius". Do not pile up wood chips at the tree's base. Mulch only needs to be applied where equipment traffic is required that will impact the the tree's critical root zone. Mulch layer will reduce soil compaction and rutting. An additional layer of 3/4" plywood, plastic, or rubberized material may be needed on top of mulch to reduce compaction. Remove chips after project completion without damaging the original grade and without damaging roots that may be present underneath.

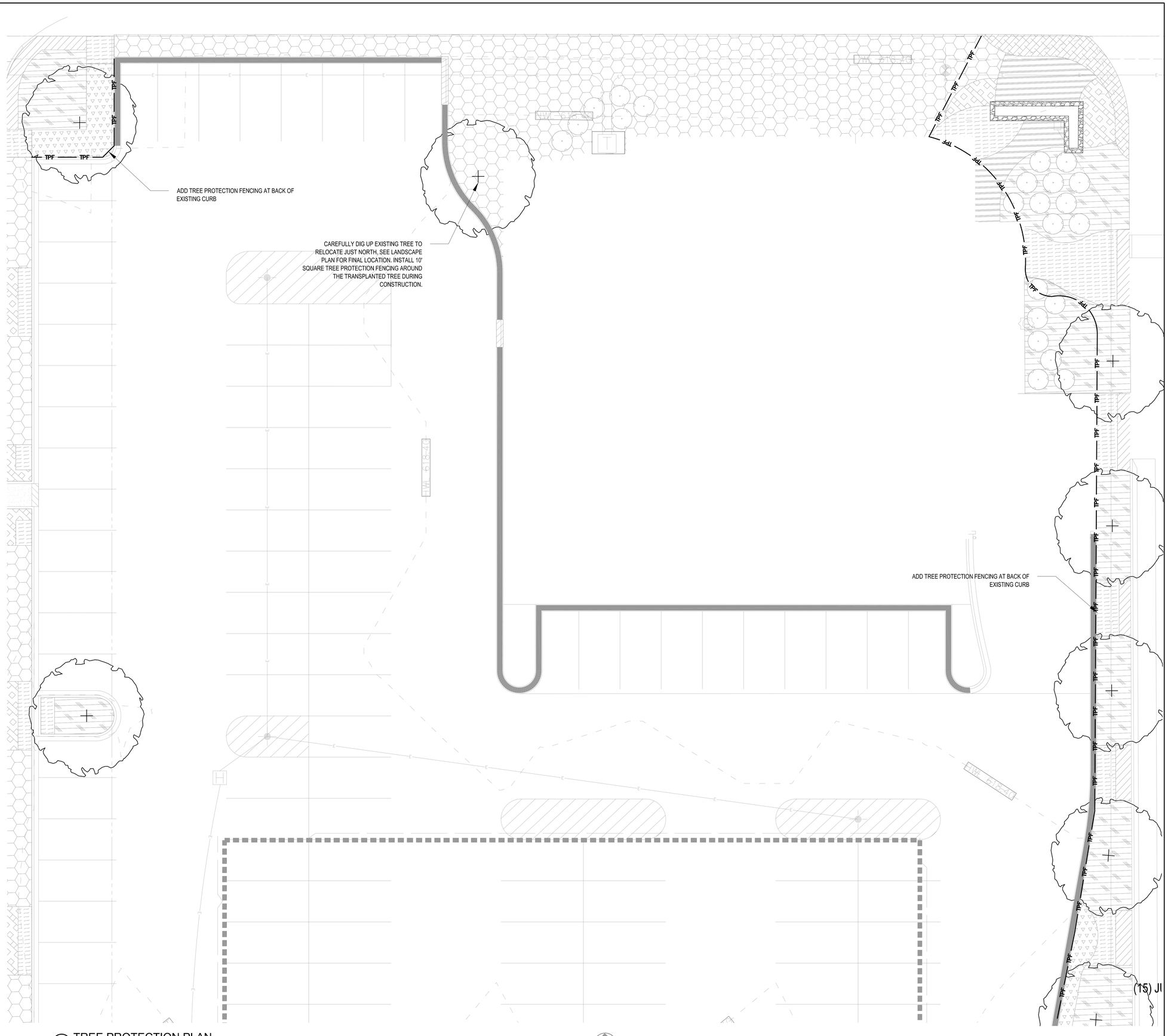
5.5. See Civil plans for tree removals. Trees shown on this plan are to remain.

LEGEND

SYMBOL	DESCRIPTION
	EXISTING DECIDUOUS TREE TO REMAIN
— TPF —	TREE PROTECTION FENCING



2 L00-01 TREE PROTECTION FENCE DETAIL
N.T.S.



1 TREE PROTECTION PLAN
1/8" = 1'-0"

SHAKE SHACK
4071 W. 95TH ST., OAKLAWN, IL 60453
Shack # 1345

REGISTERED LANDSCAPE ARCHITECT
NEIL EDWARD EISENBERGER
156.001471
STATE OF ILLINOIS
11/24/2020

NO.	DATE	REMARKS
2	11/24/20	ISSUE FOR PERMIT / BID
1	11/09/2020	ISSUE FOR LL REVIEW

REVISIONS

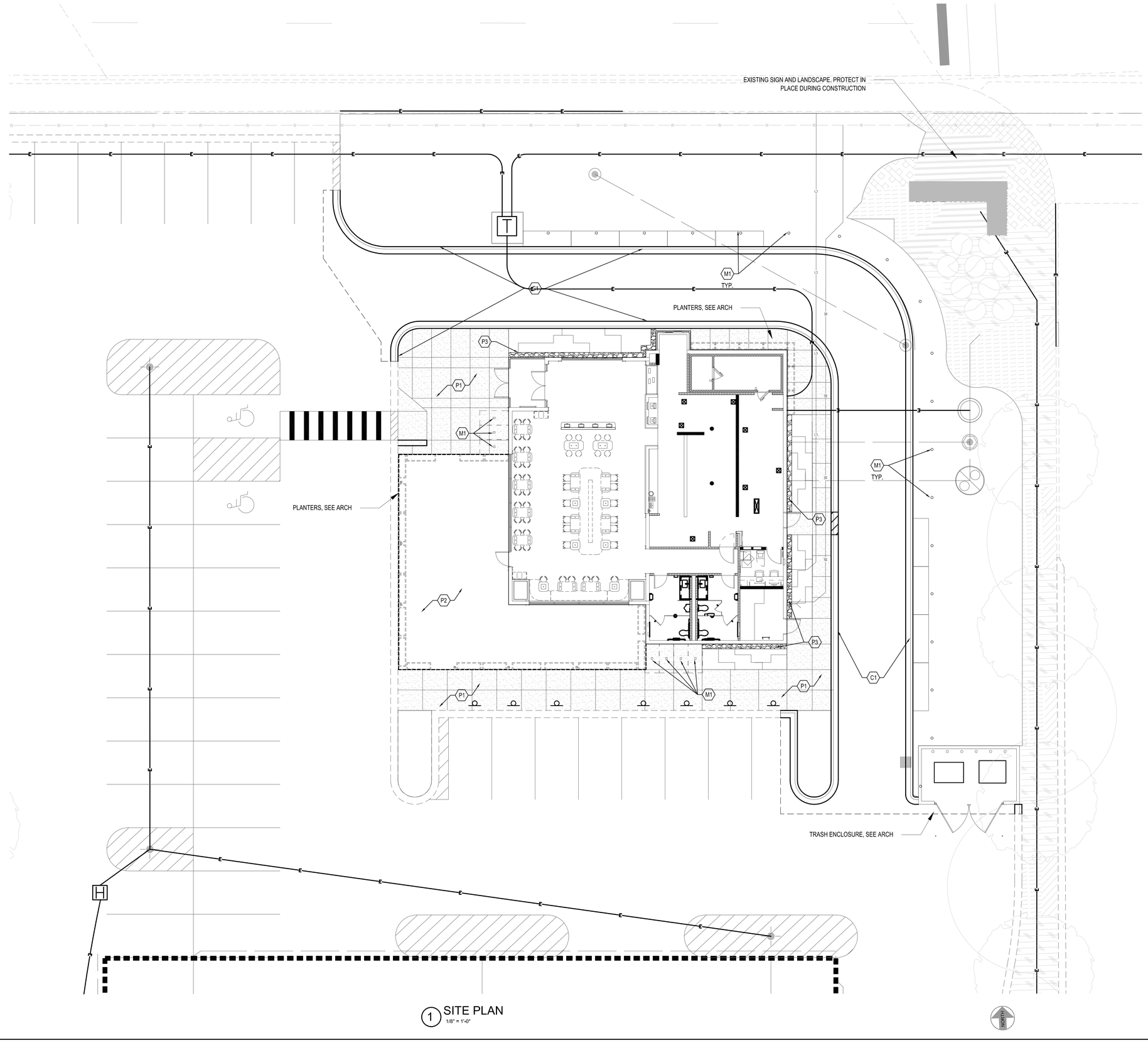
Drawing Title: TREE PROTECTION PLAN

Job No.	Drawn
204461	JS
Scale	**Date**
1/8" = 1'-0"	11/24/20

Sheet No.: L00-01

GENERAL NOTES

1. THE CONTRACTOR SHALL PERFORM THE WORK IN ACCORDANCE WITH ALL LAWS, CODE, ORDINANCES, RULES AND REGULATIONS OF ALL GOVERNING AGENCIES. OCCUPANTS ADJACENT TO TH E PROJECT AREA BOUNDARIES SHALL CONTINUE UNINTERRUPTED OCCUPANCY DURING CONSTRUCTION OF THE PROJECT.
2. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE LANDSCAPE ARCHITECT OF ANY AND ALL CONFLICTS WITH WORK RELATED TO THE HARDSCAPE AND LANDSCAPE FEATURES PRIOR TO INSTALLATION OF THE UTILITIES IN ORDER TO MAINTAIN THE HIGHEST LEVEL OF DESIGN INTENT OF THE HARDSCAPE AND LANDSCAPE FEATURES.
3. THE CONTRACTOR SHALL PERFORM NO PORTION OF THE WORK AT ANY TIME WITHOUT CONTRACT DOCUMENTS OR, WHERE REQUIRED, APPROVED SHOP DRAWINGS, PRODUCT DATA, OR SAMPLES FOR SUCH PORTIONS OF THE WORK.
4. COORDINATE THE WORK WITH ALL REQUIREMENTS INDICATED IN THE PROJECT DOCUMENTS.
5. THE CONTRACTOR SHALL PROVIDE COMPLETE PROJECT SYSTEMS AND COMPONENTS AND COMPLY WITH ALL REQUIREMENTS INDICATED ON THE PROJECT DOCUMENTS.
6. THE CONTRACTOR SHALL COORDINATE THE WORK WITH EQUIPMENT, FURNISHINGS AND SYSTEMS PRESENT OR PROVIDED BY THE OWNER.
7. VERIFY LOCATIONS OF ALL BUILDINGS, WALLS, EXISTING STRUCTURES, PIPES, ELECTRICAL AND ALL ELEMENTS AFFECTING LANDSCAPE SCOPE OF WORK WITH ARCHITECTURAL AND ENGINEERING DRAWINGS. INFORMATION IN LANDSCAPE ARCHITECTURE PACKAGE IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL AND ENGINEERING INFORMATION. ADDITIONAL UTILITIES AND SITE ELEMENTS MAY EXIST WHICH ARE NOT SHOWN HEREIN.
8. VERIFY LOCATION OF ALL ADJACENT AND BELOW-GRADE ELECTRICAL, PLUMBING, DATA, CONDUIT, PIPING, DRAINAGE STRUCTURES AND OTHER UTILITY CONNECTIONS WITH THE APPROPRIATE AS-BUILT OR ENGINEERING DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR THIS VERIFICATION AND THE PROTECTION OF THESE ELEMENTS. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OF ANY DAMAGE INCURRED DURING THE EXECUTION OF THE WORK.
9. THE CONTRACTOR SHALL HAVE ALL BELOW-GRADE UTILITY AND SLEEVING WORK INSPECTED AND APPROVED PRIOR TO BEGINNING HARDSCAPE LAYOUT/MARKING/STAKING AND CONSTRUCTION.
10. IT IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND ANY SUBCONTRACTORS TO COORDINATE SERVICE ROUTING OF ALL UTILITIES INCLUDING BUT NOT LIMITED TO WATER, GAS, TELEPHONE, ELECTRICAL, STORM, SEWER, AND IRRIGATION WITH THE OWNER AND TO AVOID CONFLICTS WITH HARDSCAPE AND LANDSCAPE FEATURES. ALL CONSTRUCTION MUST COMPLY WITH THE PROJECT SPECIFICATIONS AND NOT INTERFERE WITH BUILDING ELEMENTS TO BE PRESERVED.
11. ALL MATERIAL SHALL BE NEW, UNUSED AND TO THE HIGHEST QUALITY IN EVERY RESPECT UNLESS OTHERWISE NOTED.
12. PERFORM THE WORK AT THE PROJECT SITE DURING HOURS SPECIFIED BY THE OWNER.
13. ANY DAMAGE INCURRED DURING THE EXECUTION OF CONSTRUCTION AND PLANTING TO EXISTING TREES OR STRUCTURES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
14. THE CONTRACTOR WILL BE RESPONSIBLE FOR CLEANING ALL WALLS, PAVEMENTS, AND OTHER SURFACES PRIOR TO FINAL INSPECTION.
15. REFERENCE TO SCALE IS FOR FULL-SIZE DRAWINGS. DIMENSIONS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER SCALED DIMENSIONS. DO NOT SCALE FROM DRAWINGS.
16. THE CONTRACTOR IS RESPONSIBLE FOR ACCURATE HORIZONTAL AND VERTICAL ALIGNMENT AND PREPARATION OF LAYOUT/MARKING/STAKING. THE CONTRACTOR IS REQUIRED TO PERFORM CONSTRUCTION LAYOUT/MARKING/STAKING AND SET ELEVATIONS FOR THE FORM WORK PRIOR TO INSPECTION BY THE ARCHITECT FOR APPROVAL.
17. ALL BUILDINGS, WALLS, COLUMNS, STRUCTURES, AND ANY VERTICAL ELEMENTS THAT ABUT CONCRETE PAVING ARE TO HAVE EXPANSION JOINT AS DETAILED HEREWITH.
18. ALL FORM WORK SHALL BE APPROVED FOR GEOMETRY AND GRADES BY THE ARCHITECT PRIOR TO INSTALLATION OF PAVEMENT, PLANTERS OR WALLS.
19. ALL ANGLES TO BE 90 DEGREES AND ALL LINES OF PAVING TO BE PARALLEL UNLESS OTHERWISE NOTED. MAINTAIN HORIZONTAL ALIGNMENT OF ADJACENT ELEMENTS AS NOTED ON THE DRAWINGS.
20. "TYPICAL" OR "TYP" INDICATES IDENTICAL COMPLETE SYSTEM SHALL BE PROVIDED FOR EACH OCCURRENCE OF THE CONDITION NOTES.
21. "SIMILAR" OR "SIM" INDICATES COMPLETE SYSTEM AND COMPONENTS SHALL BE PROVIDED COMPARABLE TO THE CHARACTERISTICS FOR THE CONDITION NOTED.
22. "AS REQUIRED" INDICATES COMPONENTS REQUIRED TO COMPLETE TH E NOTED SYSTEM AS INDICATED IN THE PROJECT DOCUMENTS SHALL BE PROVIDED.
23. "ALIGN" INDICATES ACCURATELY PROVIDE FINISH OF FACES OF MATERIALS IN STRAIGHT, TRUE, AND PLUMB RELATION TO ADJACENT MATERIALS.
24. TAKE ALL DIMENSIONS FROM FACE OF FIXED OBJECTS, WALL, OR BUILDING OR TO CENTERLINE OF COLUMNS UNLESS OTHERWISE NOTED. ALL DIMENSIONS CALLED OUT AS "EQUAL" ARE EQUIDISTANT MEASUREMENTS TO DESIGNATED CENTERLINE(S).
25. ALL LANDSCAPE DIMENSIONS TAKEN TO CENTERLINE OF BUILDING COLUMN SHALL MEAN THE FIRST ROW OF COLUMNS CLOSEST TO THE FACE OF THE BUILDING. SEE ARCHITECTURAL AND AS-BUILT DRAWINGS FOR CORRESPONDING COLUMN LINES.
26. TAKE ALL DIMENSIONS PERPENDICULAR TO ANY REFERENCE LINE, WORK LIKE, FACE OF BUILDING, FACE OF WALL, OR CENTERLINE.
27. WHERE NOT SHOWN ON LANDSCAPE DRAWINGS, SEE ENGINEERING AND AS-BUILT DRAWINGS FOR COLUMN GRID, CENTERLINES, BUILDING FACES, AND BENCHMARKS.
28. SEE DRAWINGS FOR DIMENSION OF SITE ELEMENTS. NOTES AND DETAILS ON SPECIFIC DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
29. IF DIMENSIONS VARY BY 1" OR MORE, CONTACT THE ARCHITECT FOR REVIEW AND CONFIRMATION PRIOR TO PROCEEDING WITH CONSTRUCTION.
30. FINISH ELEVATIONS ARE INDICATED TO THE FACE OF PAVEMENT OR FINISHED GRADE OF SOIL AS APPLICABLE, UNLESS OTHERWISE NOTED.
31. ALL NEW WORK TO MEET FLUSH WITH ALL EXISTING GRADES AND FINISH FLOOR ELEVATIONS AT DOORS, THRESHOLDS, STAIRWELLS, PAVEMENTS TO REMAIN, COLUMNS, AND BUILDING ELEMENTS EXCEPT AS NOTED HEREIN .
32. GRADES BETWEEN SPOT ELEVATIONS ARE INTENDED TO BE CONSTANT SLOPES.
33. NO FINISHED SLOPES SHALL BE LESS THAN ½ (HALF) PERCENT AND ALL SHALL HAVE A POSITIVE FLOW
34. THE CONTRACTOR SHALL PROVIDE PLANT MATERIAL QUANTITIES TO MATCH THE DRAWINGS AND TO PROVIDE TOTAL COVERAGE AT THE SPECIFIED SPACING.
35. THERE SHALL BE NO SUBSTITUTIONS OF PLANT MATERIAL WITHOUT APPROVAL OF THE OWNER/ARCHITECT. THE OWNER/ARCHITECT ALONE SHALL DETERMINE EQUALITY BASED UPON COMPLETE INFORMATION SUBMITTED BY THE CONTRACTOR. SUBSTITUTIONS SHALL NOT BE MADE UNLESS DRAWINGS AND/OR WRITTEN REQUESTS ARE SUBMITTED TO THE OWNER/ARCHITECT FOR APPROVAL.



1 SITE PLAN
1/8" = 1'-0"

NORTH

HARDSCAPE LEGEND

C1: VEHICULAR CURB + GUTTER - REFER TO CIVIL

P1: PEDESTRIAN CONCRETE SIDEWALK (CAST-IN-PLACE CONCRETE TO MATCH EXISTING) - REFER TO CIVIL

P2: PEDESTRIAN PAVERS - REFER TO ARCH

P3: MAINTENANCE STRIP (12" W)
DETAIL: 3/L02-00

M1: BIKE RACK -
SEE ARCH FOR SPECIFICATION
DETAIL: 2/L02-00

M2: PEDESTRIAN LIGHT BOLLARD
SEE ARCH FOR SPECIFICATION
DETAIL: 4/L02-00

SHAKE SHACK
4071 W. 95TH ST., OAKLAWN, IL 60453

Shack # 1345

REGISTERED LANDSCAPE ARCHITECT
NEIL EDWARD EISENBERGER
157.001471
REGISTERED ILLINOIS
11/24/2020

NO.	DATE	REMARKS
2	11/24/20	ISSUE FOR PERMIT / BID
1	11/09/2020	ISSUE FOR LL REVIEW

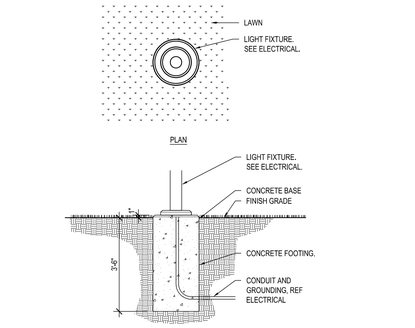
REVISIONS

Drawing Title
SITE PLAN

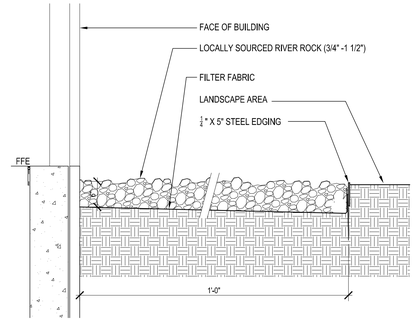
Job No.	Drawn
204461	JS

Scale	Date
1/8" = 1'-0"	11/24/20

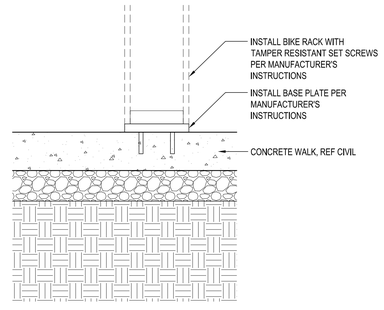
Sheet No.
L01-01



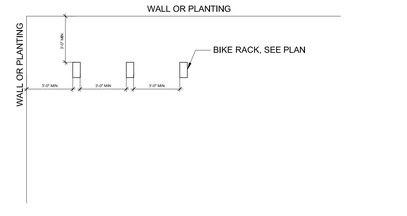
4 PEDESTRIAN POLE MOUNT IN LAWN
1/2" = 1'-0"



3 GRAVEL MOW STRIP
3/4" = 1'-0"



2 BIKE RACK INSTALL
1-1/2" = 1'-0"



1 BIKE RACK SPACING
1/2" = 1'-0"

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
Shack # 1345

NEIL EDWARD EISENBERGER
157.001471
REGISTERED LANDSCAPE ARCHITECT
STATE OF ILLINOIS
11/24/2020

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Drawing Title
HARDSCAPE DETAILS

Job No. 204461
Drawn JS
Scale
Date 11/24/20

Sheet No.
L02-00

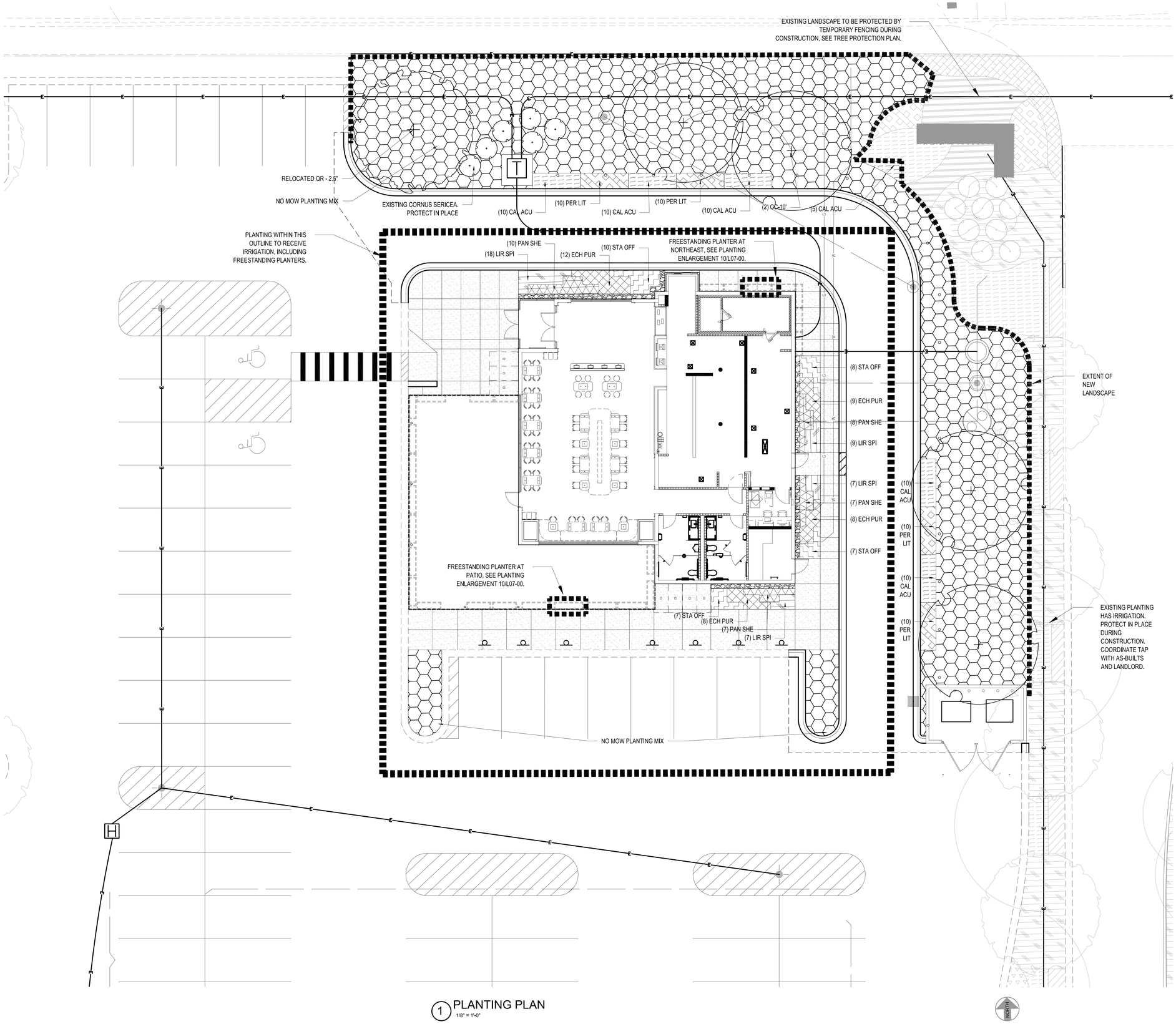
LANDSCAPE LEGEND

- TREE - DECIDUOUS, SINGLE STEM
- TREE - ORNAMENTAL, SINGLE STEM
- SHRUB - DECIDUOUS
- 100% NO-MOW LAWN - SEED

PLANTING KEY

- CAL ACU
- ECH PUR
- LIR SPI
- PAN SHE
- PER LIT
- STA OFF

- ALL PLANTING AREAS TO RECEIVE MULCH.
- ASSUME IRRIGATION TO BE SUPPLIED AS NOTED
- WHERE PROVIDED, AREA TAKEOFFS AND PLANT QUANTITY ESTIMATES IN PLANTING SCHEDULE ARE FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE TO DO THEIR OWN AREA TAKEOFFS AND PLANT QUANTITY FOR ALL PLANT MATERIAL AND SIZES SHOWN ON THE DRAWINGS. IN CASE OF DISCREPANCIES, CONTRACTOR MUST BRING TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
- SEE SHEET L04-00 FOR PLANTING DETAILS.
- SEE SHEET L04-00 FOR SOIL DEPTHS AND PROFILES.
- REFERENCE IRRIGATION SUBMITTAL TO IDENTIFY LOCATIONS OF IRRIGATION LINES AND SLEEVING TO AVOID ANY CONFLICTS.



1 PLANTING PLAN
1/8" = 1'-0"

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
Shack # 1345

REGISTERED LANDSCAPE ARCHITECT
NEIL EDWARD EISENBERGER
No. 001471
STATE OF ILLINOIS
11/24/2020

NO.	DATE	REMARKS
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REVISIONS

Drawing Title
PLANTING PLAN

Job No. 204461
Drawn JS
Scale 1/8" = 1'-0"
Date 11/24/20

Sheet No.
L03-01

PLANTING SCHEDULE

TREES - ORNAMENTAL

KEY	SCIENTIFIC NAME	COMMON NAME	QUANTITY	SIZE
CC-10'	Cercis canadensis	Eastern Redbud	XX	10'-0" Height Min., B&B, Single Stem

ORNAMENTAL GRASSES

KEY	SCIENTIFIC NAME	COMMON NAME	QUANTITY	SIZE & SPACING
CAL ACU	Calamagrostis x acutiflora 'Karl Foerster'	Feather Reed Grass 'Karl Foerster'	XX	1 gal., 24" O.C.
PAN SHE	Panicum virgatum 'Shenandoah'	'Shenandoah' Switch Grass	XX	1 gal., 24" O.C.

PERENNIALS

KEY	SCIENTIFIC NAME	COMMON NAME	QUANTITY	SIZE & SPACING
ECH PUR	Echinacea purpurea 'Magnus'	Coneflower 'Purple Magnus'	XX	1 gal., 24" O.C.
LIR SPI	Liriope spicata	Creeping Liriope	XX	Quart, 18" O.C.
PER LIT	Perovskia atriplicifolia 'Little Spire'	Russian Sage	XX	1 gal., 24" O.C.
STA OFF	Stachys officinalis 'Hummelo'	Betony	XX	1 gal., 24" O.C.

GROUNDCOVER

KEY	NOTES
NO MOW MIX	LOW-MAINTENANCE MIX 100% NO-MOW LAWN - SEED

Note: Quantities are shown for approximate reference only. All quantities to be confirmed by contractor.

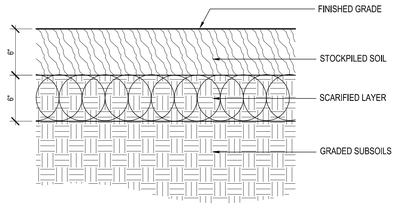
FREESTANDING PLANTERS - PATIO

KEY	SCIENTIFIC NAME	COMMON NAME	QUANTITY	SIZE & SPACING
P1	Thuja occidentalis 'Pancake'	American Arborvitae	XX	1 gal.
P2	Penstemon barbatus coccineus 'Fireworks'	Beardtongue	XX	1 gal.
P3	Amphora canescens	Lead Plant	XX	1 gal.

FREESTANDING PLANTERS - NORTHEAST

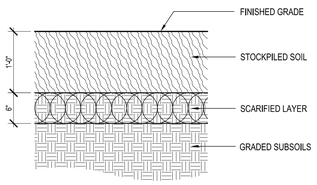
KEY	SCIENTIFIC NAME	COMMON NAME	QUANTITY	SIZE & SPACING
N1	Dryopteris erythrosora	Autumn Fern	XX	1 gal.
N2	Dicentra 'Burning Hearts'	Fern-Leafed Bleeding Heart	XX	1 gal.
N3	Helleborus Onyx Odyssey	Lenten Rose	XX	1 gal.

Note: Quantities are shown for approximate reference only. All quantities to be confirmed by contractor.



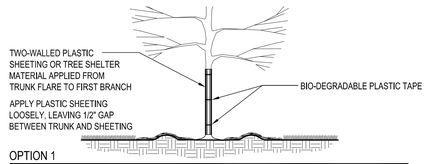
NOTES:
1. SCARIFY SURFACE OF EACH SOIL LAYER AND BETWEEN EACH LIFT OF SOIL PLACED.
2. SCARIFICATION SHALL BE 2" IN DEPTH BETWEEN LIFTS OF SOIL PLACED.
3. SCARIFICATION SHALL BE 6" IN DEPTH WHERE SOIL MEETS TRANSITION LAYER.

9 SOIL PROFILE - TURFGRASS
1-1/2" = 1'-0"

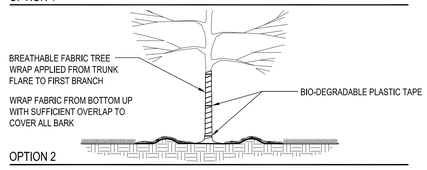


NOTES:
1. SCARIFY SURFACE OF EACH SOIL LAYER AND BETWEEN EACH LIFT OF SOIL PLACED.
2. SCARIFICATION SHALL BE 2" IN DEPTH BETWEEN LIFTS OF SOIL PLACED.
3. SCARIFICATION SHALL BE 6" IN DEPTH WHERE SOIL MEETS TRANSITION LAYER.

8 SOIL PROFILE - MIXED PLANTING BEDS
1" = 1'-0"



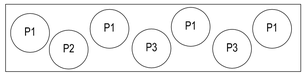
OPTION 1



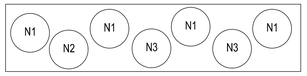
OPTION 2

GENERAL NOTES:
1. TREES TO BE WRAPPED ONLY AS SPECIFIED, SEE PLANT SCHEDULE.
2. TREE WRAP SHALL BE REMOVED NO LATER THAN THE END OF FIRST GROWING SEASON AFTER PLANTING.

4 TREE WRAPPING
1/4" = 1'-0"

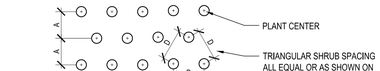


FREESTANDING PLANTERS - PATIO



FREESTANDING PLANTERS - NORTHEAST

10 FREESTANDING PLANTER LAYOUTS
N.T.S.

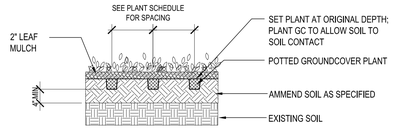


PLANT SPACING (NTS)

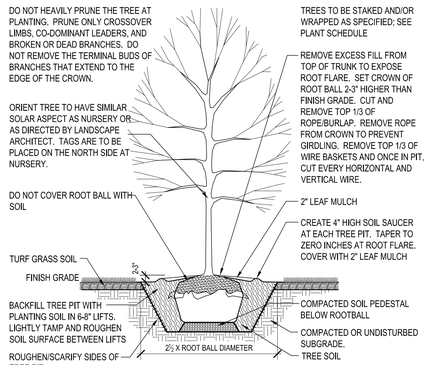
SPACING "D"	ROW "A"	PLANTS PER SQ. FT.
12" O.C.	10.4"	1.15
10" O.C.	8.7"	1.66
8" O.C.	6.9"	2.60
6" O.C.	5.2"	4.00

NOTES:
PLANT QUANTITIES WERE DETERMINED BY MULTIPLYING AREA (SQ. FT.) BY NUMBER OF PLANTS PER SQ. FT. FOR REQUIRED SPACING

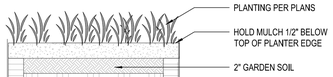
QUANTITY OF GROUNDCOVER AND SPACING AS NOTED IN PLANTING SCHEDULE



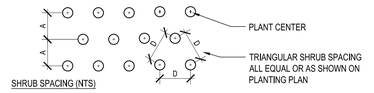
7 GROUND COVER PLANTING
1/2" = 1'-0"



3 DECIDUOUS TREE PLANTING IN LAWN
1/4" = 1'-0"



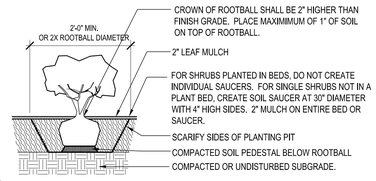
11 FREESTANDING PLANTER
1-1/2" = 1'-0"



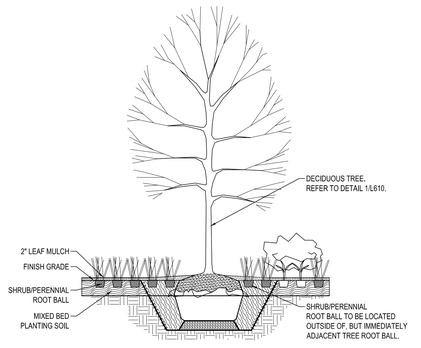
SHRUB SPACING (NTS)

SPACING "D"	ROW "A"	PLANTS PER SQ. FT.
24"	20.8"	.290
30"	26"	.185
36"	30"	.120
4'	41.5"	.073
5'	52"	.046

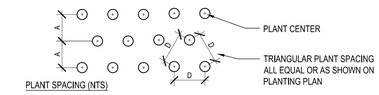
QUANTITY OF SHRUBS AND SPACING AS NOTED IN PLANTING SCHEDULE



6 SHRUB PLANTING
1/4" = 1'-0"



2 MIXED PLANTING ADJACENT NEW TREE
1/4" = 1'-0"

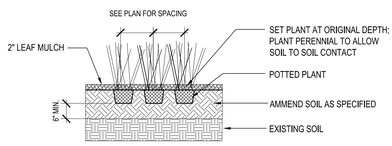


PLANT SPACING (NTS)

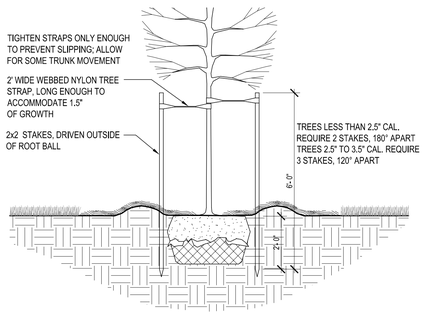
SPACING "D"	ROW "A"	PLANTS PER SQ. FT.
24" O.C.	20.8"	0.29
18" O.C.	15.6"	0.50
12" O.C.	10.4"	1.15
10" O.C.	8.7"	1.66
8" O.C.	6.9"	2.60
6" O.C.	5.2"	4.00

NOTES:
PLANT QUANTITIES WERE DETERMINED BY MULTIPLYING AREA (SQ. FT.) BY NUMBER OF PLANTS PER SQ. FT. FOR REQUIRED SPACING

QUANTITY OF PLANTS AND SPACING AS NOTED IN PLANTING SCHEDULE



5 PERENNIAL AND GRASS PLANTING
1/2" = 1'-0"



GENERAL NOTES:
1. ALL TREES TO BE STAKED. SEE PLANT SCHEDULE FOR ANY EXCLUSIONS.
2. STAKES SHALL BE REMOVED NO LATER THAN THE END OF FIRST GROWING SEASON AFTER PLANTING.

1 TREE STAKING
1/4" = 1'-0"

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
Shack # 1345
REGISTERED LANDSCAPE ARCHITECT
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Drawing Title
PLANTING DETAILS AND SCHEDULE

Job No.	Drawn
204461	JS

Scale	Date
	11/24/20

Sheet No.
L04-00

SECTION 32 1540 - AGGREGATE PAVING FOR LANDSCAPE

APPLICATIONS PART 1 - GENERAL

1.01 SUMMARY

A. THIS SECTION INCLUDES: REQUIREMENTS FOR AGGREGATE PAVING FOR LANDSCAPE APPLICATIONS.

1.02 RELATED SECTIONS

A. SECTION 321550 METAL EDGING

1.03 SUBMITTALS

A. PRODUCT DATA: FOR TYPE OF ACCESSORY INDICATED.

B. SAMPLES:

1. PROVIDE SAMPLES OF EACH AGGREGATE TYPE AND COLOR FROM (3) DIFFERENT SOURCES FOR CLIENT AND LANDSCAPE ARCHITECT APPROVAL FOR EACH AGGREGATE TYPE. SUBMIT MINIMUM OF 1-LB OF AGGREGATE IN A CLEAR HEAVY-DUTY ZIP-SEAL BAG. REWORK MIX AS REQUIRED AT THE DIRECTION OF THE LANDSCAPE ARCHITECT TO ACHIEVE AN ACCEPTABLE TEXTURE, COLOR AND FINISH. SAMPLES SHALL BE REWORKED AND RECONSTRUCTED AS NECESSARY UNTIL THE REQUIRED STANDARD OF WORK HAS BEEN ACHIEVED AT NO COST TO THE OWNER.

C. MOCKUPS:

1. MOCKUPS: CONSTRUCT MOCKUPS FOR EACH PHASE OF WORK FOR DEMONSTRATION AND VERIFICATION OF CONSTRUCTION METHOD, DIMENSION, FINISH AND COLOR.
2. MOCKUPS SHALL BE REWORKED AND RECONSTRUCTED AS NECESSARY UNTIL THE REQUIRED STANDARD OF WORK HAS BEEN ACHIEVED AT NO COST TO THE OWNER.
3. MOCKUPS SHALL REMAIN IN PLACE UNTIL COMPLETION OF THE WORK AND SHALL BE DEMOLISHED AFTERWARD UNLESS INCORPORATED INTO THE WORK AT THE DIRECTION OF THE OWNER AND LANDSCAPE ARCHITECT.
4. APPROVED MOCKUPS SHALL BE USED AS A STANDARD FOR CONSTRUCTION OF THE SAME TYPE OF MATERIAL THROUGHOUT THE PROJECT. COMPLETED WORK SHALL BE REVIEWED IN COMPARISON TO THE APPROVED MOCKUP.
5. THE FOLLOWING MOCKUPS SHALL BE CONSTRUCTED.
6. CONSTRUCT MINIMUM 10 LINEAR FOOT PROFILE OF MAINTENANCE STRIP FOR VERIFICATION OF FORM, FINISH, MIX QUALITY, COLOR, ETC. MOCKUP TO INCLUDE EVERY EXAMPLE OF TRANSITION CONDITION. MOCKUP MAY BE INCORPORATED INTO THE WORK.

1.04 QUALITY ASSURANCE

A. ILLINOIS ACCESSIBILITY CODE: DO NOT EXCEED LONGITUDINAL SLOPE OF 1:20 (5%) OR CROSS-SLOPE OF 1:50 (2%) FOR NEW WALKWAY. NEW WALKWAY SHALL BE SLOPED TO MEET EXISTING WALKWAY.

B. AMERICANS WITH DISABILITIES ACT: COMPLY WITH ALL CURRENT RULES AND REGULATIONS AS SET FORTH IN THE AMERICANS WITH DISABILITIES ACT.

C. MOCKUPS: BUILD MOCKUPS FOR AGGREGATE PAVING TO VERIFY SPECIFIED REQUIREMENTS, SELECTED COLORS AND FINISHES, TO DEMONSTRATE AESTHETIC EFFECTS, AND SET QUALITY STANDARDS FOR INSTALLATION.

1. BUILD MOCKUPS IN LOCATIONS INDICATED IN SPECIFICATIONS OR ON DRAWINGS; OR IF NOT INDICATED, THEN AS DIRECTED BY LANDSCAPE ARCHITECT.
2. COORDINATE MOCKUP FOR AGGREGATE PAVING WITH PAVING MOCKUPS SPECIFIED IN OTHER SECTIONS.
3. APPROVED MOCKUPS MAY BECOME PART OF THE COMPLETED WORK IF UNDISTURBED AT TIME OF SUBSTANTIAL COMPLETION.

1.05 DELIVERY STORAGE AND HANDLING

A. DELIVER PACKAGED PRODUCTS IN AN UNDAMAGED CONDITION IN ORIGINAL CONTAINERS, DISPLAYING MANUFACTURER'S LABELS, ALONG WITH INSTRUCTIONS FOR HANDLING, STORING, UNPACKING, PROTECTING, AND INSTALLING.

B. DELIVER PRODUCTS TO ACHIEVE THE SHORTEST DURATION OF STORAGE TIME AS PRACTICABLE.

C. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR DELIVERY, STORAGE, AND HANDLING, AND AS REQUIRED TO PREVENT DAMAGE TO PRODUCTS AND WORK DURING CONSTRUCTION.

D. STORE PRODUCTS AND MATERIALS IN A NEAT AND ORDERLY MANNER. MAINTAIN CLEAR AISLES AND ACCESS TO WORK AREAS. PROTECT STORED PRODUCTS FROM THEFT AND DAMAGE. STORE PRODUCTS ABOVE GROUND IN WEATHERTIGHT, VENTILATED PACKAGING OR ENCLOSURES.

PART 2 - PRODUCTS

2.01 MATERIALS

A. AGGREGATE PAVING TYPE 1: MAINTENANCE STRIPS, BY THELEN, 3/8" CHIPS CA-16. 847.395.3313

B. GRADED AGGREGATE FOR BASE: SOUND CRUSHED STONE OR GRAVEL COMPLYING WITH ASTM D 448; OR IDOT GRADE CA-9.

C. FILTER FABRIC: 60 MIL NON-WOVEN GEOTEXTILE FABRIC

PART 3 - EXECUTION

3.01 EXAMINATION

A. EXAMINE SITE AND PROJECT CONDITIONS AND VERIFY THAT CONDITIONS ARE SATISFACTORY FOR INSTALLATION. MAKE CORRECTIONS TO UNSATISFACTORY CONDITIONS PRIOR TO COMMENCING WITH INSTALLATION.

B. VERIFY THAT SUBGRADES AND BASE AGGREGATE COURSES HAVE BEEN PROPERLY INSTALLED.

3.02 AGGREGATE PAVING INSTALLATION

A. PRIOR TO SPREADING AGGREGATE PAVING MATERIAL, ROLL AND BLEND STOCKPILED MATERIAL TO BALANCE GRADATIONS OF STONE THAT MAY HAVE SETTLED.

B. PLACE AGGREGATE PAVING TO REQUIRED DEPTH IN LOCATIONS AND CONFIGURATIONS INDICATED ON DRAWINGS. RAKE AGGREGATE PAVING DURING INSTALLATION TO MIX GRADATIONS EVENLY AND SETTLE FINES.

C. COMPACT AGGREGATE PAVING USING HEAVY ROLLING EQUIPMENT. LOCATE AREAS THAT ARE UNSTABLE OR THAT REQUIRE FURTHER COMPACTION, AND PROVIDE FURTHER COMPACTION IF REQUIRED.

D. ENSURE FINISHED SURFACE IS 1/8"-3/16" ABOVE ADJACENT PAVED SURFACE, CURB AND METAL EDGING.

E. PROVIDE A FINE MIST OF WATER TO FINAL PAVING.

3.03 PROTECTION, MAINTENANCE AND REPAIRS

A. PROTECT INSTALLED WORK FROM DISTURBANCE OR DAMAGE FROM CONSTRUCTION OPERATIONS. MAINTAIN AGGREGATE PAVING THROUGHOUT CONSTRUCTION PERIOD UNTIL SUBSTANTIAL COMPLETION.

B. MAKE REPAIRS TO INSTALLED WORK IF DISTURBED OR DAMAGE, AND RESTORE AREAS TO NEW CONDITIONS.

END OF SECTION

SECTION 32 1550 - METAL EDGING FOR LANDSCAPE

APPLICATIONS PART 1 GENERAL

1.01 SECTION INCLUDES

A. PROPRIETARY LANDSCAPE EDGING FOR STRAIGHT-LINE AND CURVILINEAR BORDERS BETWEEN PLANTING BEDS AND TURF AS INDICATED ON DRAWINGS.

1.02 REFERENCES

A. ASTM B 221 (ASTM B 221M): STANDARD SPECIFICATION FOR ALUMINUM AND ALUMINUM - ALLOY EXTRUDED BARS, RODS, WIRE, SHAPES, AND TUBES.

B. ASTM B 209-01 (ASTM B 221M): STANDARD SPECIFICATION FOR ALUMINUM AND ALUMINUM - ALLOY SHEET AND PLATE.

C. AAMA: AMERICAN ARCHITECTURAL MANUFACTURER'S ASSOCIATION FOR ALUMINUM FINISHES.

1.03 RELATED SECTIONS

A. SECTION 321400 - UNIT PAVING FOR LANDSCAPE APPLICATIONS

B. SECTION 321540 - AGGREGATE PAVING FOR LANDSCAPE APPLICATIONS

C. SECTION 329300 - PLANTING

1.04 SUBMITTALS

A. SUBMIT MANUFACTURER'S PRODUCT DATA.

B. SUBMIT 5 FOOT LONG EDGING SAMPLES OF SPECIFIED SIZE AND COLORS.

1.05 DELIVERY, STORAGE, AND HANDLING

A. DELIVER TO LOCATION AS INSTRUCTED BY CONTRACTOR IN MANUFACTURER'S PACKAGE SHOWING NO SIGNS OF DAMAGE TO PRODUCT.

B. INVESTIGATE DELIVERED DAMAGED PACKAGES AND IF PRODUCT IS DAMAGED, CONTRACTOR TO NOT ACCEPT AND HAVE PRODUCT RETURNED AND REPLACED. STORE BOXED PRODUCTS ON FLAT SURFACE AND PROTECT FROM WATER EXPOSURE.

1.06 WARRANTY

A. 15-YEAR LIMITED MATERIAL WARRANTY FOR MANUFACTURING DEFECTS IN WORKMANSHIP OR MATERIAL.

1.07 PRODUCTS

1.08 MANUFACTURED UNITS

A. METAL EDGING FOR LANDSCAPE

1. MANUFACTURERS: PERMALOC CORPORATION, HOLLAND, MICHIGAN, (800) 356-9660, WWW.PERMALOC.COM
2. PRODUCT: GEOEDGE ALUMINUM EDGING
3. SIZE: 3.5" TALL X 4.5" BASE X 8' LENGTH SECTIONS, TYPICAL
4. FINISH: BLACK DURAFLEX - ELECTROSTATICALLY APPLIED BAKED ON PAINT
5. CONNECTOR: 2-3/4", FINISH AND OTHER SPECIFICATIONS SHALL MATCH THE GEOEDGE ALUMINUM EDGING

1.09 EXECUTION

1.10 PREPARATION, LANDSCAPE EDGING

A. ENSURE THAT ALL UNDERGROUND UTILITY LINES ARE LOCATED AND WILL NOT INTERFERE WITH THE PROPOSED EDGING INSTALLATION BEFORE BEGINNING WORK.

B. LOCATE BORDER LINE OF EDGING WITH STRING OR OTHER MEANS TO ASSURE BORDER STRAIGHTNESS AND CURVES AS DESIGNED. LANDSCAPE ARCHITECT TO APPROVE LAYOUT PRIOR TO INSTALLATION OF EDGING. NOTIFY LANDSCAPE ARCHITECT A MINIMUM OF 5 BUSINESS DAYS PRIOR TO LAYOUT.

1.11 INSTALLATION , LANDSCAPE EDGING

A. INSTALLATION PER MANUFACTURER'S RECOMMENDED INSTALLATION GUIDELINES FOR THE INSTALLATION OF "EDGING FOR GREENROOF WITH AGGREGATE" WHERE THE GEOEDGE BASE IS INSTALLED UNDER THE AGGREGATE.

1.12 BACKFILLING AND CLEANUP

A. BACKFILL BOTH SIDES OF EDGING WITH THE PROPER MATERIALS (AGGREGATE PAVING AND PLANTING SOIL), CONFIRM AND ADJUST IF NECESSARY THAT SECTIONS ARE SECURELY HELD TOGETHER, AND COMPACT BACKFILL MATERIAL ALONG EDGING TO PROVIDE TOP OF EDGING FLUSH WITH FINISHED GRADE.

B. CLEANUP AND REMOVE EXCESS MATERIAL FROM SITE.

END OF SECTION

SECTION 32 9000 - PLANTING

PART 1 GENERAL

1.01 SUMMARY

A. THIS SECTION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:

1. LOCATE AND PROVIDE ALL SPECIFIED TREES, PERENNIALS AND BULBS FOR THE PROJECT.
2. VERIFY THAT THE CONDITIONS WHICH THE PLANT MATERIALS WILL BE INSTALLED INTO ARE SUITABLE FOR PLANT GROWTH.
3. DELIVER AND INSTALL ALL SPECIFIED TREES, SHRUBS PERENNIALS, GRASSES, BARE ROOT PLANTS, RHIZOMES AND BULBS.
4. MULCH, FERTILIZE, AND PRUNE ALL TREES, SHRUBS PERENNIALS, GRASSES, BARE ROOT PLANTS, RHIZOMES AND BULBS.
5. PROVIDE AND INSTALL OR APPLY SUPPLEMENTAL PLANTING AIDS FOR TREES AND SHRUBS, WHEN NECESSARY.
6. PROVIDE PROTECTION FOR STOCKPILED MATERIALS AND COMPLETED WORK.
7. PROVIDE TEMPORARY WATERING AND MAINTENANCE OF MATERIAL.
8. PROVIDE AND INSTALL TREE GRATES AND FRAMES.
   a. PLANT TYPES ARE INDICATED ON DRAWINGS.
   b. RELATED DOCUMENTS: CONTRACT AGREEMENT, DRAWINGS, AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS APPLY TO THIS SECTION.
   c. RELATED SECTIONS:
      1) DIVISION 1 SECTIONS.
      2) DIVISION 2 SECTION "EARTHWORK" AND "FINISH GRADING" FOR EXCAVATION, FILLING, AND ROUGH GRADING AND FOR SUBSURFACE AGGREGATE DRAINAGE AND DRAINAGE BACKFILL MATERIALS.
   d. REFERENCES:
      1) ANSI Z60.1 - 1996 AMERICAN STANDARD FOR NURSERY STOCK
      2) ANSI A 300 - STANDARD PRACTICES FOR TREE, SHRUB, AND OTHER WOODY PLANT MAINTENANCE
      3) INTERNATIONAL SOCIETY OF ARBORICULTURE - TREE PRUNING GUIDELINES
      4) HORTUS THIRD - A CONCISE DICTIONARY OF PLANTS CULTIVATED IN THE UNITED STATES AND CANADA, CORNELL UNIVERSITY, L.H. BAILEY HORITORIUM, MACMILLIAN PUBLISHING CO., NEW YORK, NY.

1.02 DEFINITIONS

A. NATURAL DISASTER: THE TERM "NATURAL DISASTER" SHALL BE DEFINED AS ANY EVENT THAT IS UNPREDICTABLE AND UNCONTROLLABLE BY THE LANDSCAPE ARCHITECT, OWNER, OR CONTRACTOR. ANY PREDICTABLE AND PREVENTABLE EVENT MADE KNOWN TO THE CONTRACTOR PRIOR TO INSTALLATION SHALL NOT BE DEFINED AS A NATURAL DISASTER.

B. BALLED AND BURLAPPED STOCK: EXTERIOR PLANTS DUG WITH FIRM, NATURAL BALLS OF EARTH IN WHICH THEY ARE GROWN, WITH BALL SIZE NOT LESS THAN DIAMETER AND DEPTH RECOMMENDED BY ANSI Z60.1 FOR TYPE AND SIZE OF TREE OR SHRUB REQUIRED; WRAPPED, TIED, RIGIDLY SUPPORTED, AND DRUM-LACED AS RECOMMENDED BY ANSI Z60.1.

C. CONTAINER-GROWN STOCK: HEALTHY, VIGOROUS, WELL-ROOTED EXTERIOR PLANTS GROWN IN A CONTAINER WITH WELL-ESTABLISHED ROOT SYSTEM REACHING SIDES OF CONTAINER AND MAINTAINING A FIRM BALL WHEN REMOVED FROM CONTAINER. CONTAINER SHALL BE RIGID ENOUGH TO HOLD BALL SHAPE AND PROTECT ROOT MASS DURING SHIPPING AND BE SIZED ACCORDING TO ANSI Z60.1 FOR KIND, TYPE, AND SIZE OF EXTERIOR PLANT REQUIRED.

D. SUPPLEMENTAL PLANTING AIDS: ANY AND ALL SUPPORTIVE MEASURES EMPLOYED TO ENSURE THAT INSTALLED PLANT MATERIAL MEETS THE REQUIREMENTS OUTLINED IN THIS SPECIFICATION AT THE END OF THE GUARANTEE PERIOD.

E. FINISH GRADE: ELEVATION OF FINISHED SURFACE OF PLANTING SOIL.

F. SUBGRADE: SURFACE OR ELEVATION OF SUBSOIL REMAINING AFTER COMPLETING EXCAVATION, OR TOP SURFACE OF A FILL OR BACKFILL, BEFORE PLACING PLANTING SOIL.

1.03 SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED (AND SUBSTITUTE IF NECESSARY) THAT REQUIRES APPROVAL BY THE LANDSCAPE ARCHITECT. PROVIDE SUBMITTAL BEFORE BEGINNING CONSTRUCTION.

B. MATERIAL CERTIFICATES: SUBMIT MATERIAL CERTIFICATES FOR ALL PRODUCTS. PROVIDE SUBMITTAL BEFORE BEGINNING INSTALLATION.

C. PLANT MATERIAL SAMPLES: LANDSCAPE CONTRACTOR TO PROVIDE PHOTOGRAPHS SHOWING FULL RANGE OF PERENNIALS AND GROUNDCOVERS AVAILABLE TO DEMONSTRATE QUALITY OF PLANTS. PHOTOGRAPHS SHALL REPRESENT TYPICAL SAMPLING OF PLANTS TO BE INSTALLED. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT SPECIFIC PLANTS FROM SAMPLE GROUPS ON SITE. PROVIDE SUBMITTAL BEFORE BEGINNING CONSTRUCTION.

D. PERCOLATION TEST: AFTER THE CONTRACTOR HAS PERFORMED PERCOLATION TESTS (AS OUTLINED IN PART 3 - EXECUTION, 3.1 SITE EXAMINATION, C. PERCOLATION TEST), THE CONTRACTOR SHALL SUBMIT A LOG OF THE PERCOLATION RATES, WITH A PLAN OUTLINING THE LOCATIONS OF EACH TEST PIT BEFORE PLANTING TREES. PROVIDE SUBMITTAL BEFORE BEGINNING CONSTRUCTION.

E. TREE TAGGING: CONTRACTOR OR NURSERY SHALL LOCATE ALL TREES AND TAG THEM WITH UNIQUE SEAL NUMBERS. CONTRACTOR IS TO PHOTOGRAPH EACH INDIVIDUAL TREE AND PROVIDE EACH IMAGE WITH THE SEAL NUMBER, VARIETY, SIZE, AND NURSERY LOCATION LABELED ON THE IMAGE. LANDSCAPE ARCHITECT SHALL REVIEW THE IMAGES AND APPROVE PRIOR TO VISITING THE NURSERY TO APPROVE THE TREES (IF DEEMED NECESSARY BY THE LANDSCAPE ARCHITECT). NO TREES SHALL BE ACCEPTED UNLESS THEY HAVE A UNIQUE SEAL FROM THE CONTRACTOR. THE CONTRACTOR IS TO SCHEDULE TAGGING TRIPS TO THE VARIOUS NURSERIES IN COORDINATION WITH THE LANDSCAPE ARCHITECT.

F. SHRUB AND PERENNIAL IMAGES: IMAGES OF ALL SHRUB AND PERENNIAL MATERIAL ARE TO BE PROVIDED BY THE CONTRACTOR FOR REVIEW BY THE LANDSCAPE ARCHITECT. IMAGES ARE TO SHOW AN INDIVIDUAL PLANT WITH SOMETHING IN THE IMAGE FOR SCALE SUCH AS A YARDSTICK. THE SECOND IMAGE SHALL SHOW THE BLOCK OF SHRUBS OR PERENNIALS IN THE NURSERY. NO SHRUBS SHALL BE ACCEPTED ON SITE UNTIL THEY HAVE BEEN APPROVED BY THE LANDSCAPE ARCHITECT.

G. TAGGING LOG: CONTRACTOR SHALL KEEP A LOG DETAILING INFORMATION FOR EACH TAGGED TREE. SUCH INFORMATION SHALL INCLUDE THE SOURCE NURSERY WHERE THE MATERIAL IS TAGGED, LOCATION WITHIN NURSERY, SIZE OF TREES, TAG OR SEAL NUMBERS, COLORS OF FLAGGING TAPE (IF APPLICABLE), CANOPY HEIGHT, SPREAD, AND BRANCHING HEIGHT. PROVIDE SUBMITTAL BEFORE BEGINNING CONSTRUCTION.

H. SITE VISIT RECORD: AFTER EACH SITE VISIT DURING THE GUARANTEE PERIOD, THE CONTRACTOR SHALL SUBMIT A WRITTEN RECORD OF THE VISIT, INCLUDING ANY PROBLEMS, POTENTIAL PROBLEMS, AND ANY RECOMMENDED CORRECTIVE ACTION.

1.04 QUALITY ASSURANCE

A. GUARANTEE:

1. PLANTS SHALL BE HEALTHY, FREE OF PESTS AND DISEASE, AND IN FLOURISHING CONDITIONS AT THE END OF THE GUARANTEE PERIOD. PLANTS SHALL BE FREE OF DEAD AND DYING BRANCHES AND BRANCH TIPS, AND SHALL BEAR FOLIAGE OF NORMAL DENSITY, SIZE, AND COLOR FOR THE SPECIES.
2. PLANTS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF ACCEPTANCE AS DESCRIBED IN THE GENERAL CONDITIONS. WHEN THE WORK IS ACCEPTED IN PARTS, THE GUARANTEE PERIODS SHALL EXTEND FROM EACH OF THE PARTIAL ACCEPTANCES TO THE TERMINAL DATE OF THE LAST GUARANTEE PERIOD. THUS, ALL GUARANTEE PERIODS TERMINATE AT ONE TIME.
3. PLANTS THAT ARE DEAD OR NOT IN A VIGOROUS, THRIVING CONDITION, AS DETERMINED BY THE LANDSCAPE ARCHITECT DURING AND AT THE END OF THE GUARANTEE PERIOD, SHALL BE DEEMED UNACCEPTABLE. THE CONTRACTOR IS TO REPLACE UNACCEPTABLE MATERIAL WITHOUT COST TO THE OWNER, AS SOON AS WEATHER CONDITIONS PERMIT AND WITHIN THE SPECIFIED PLANTING PERIOD, ALL PLANTS DETERMINED BY THE LANDSCAPE ARCHITECT TO BE DEAD OR IN AN UNACCEPTABLE CONDITION DURING AND AT THE END OF THE GUARANTEE PERIOD. TO BE CONSIDERED ACCEPTABLE, PLANTS SHALL BE FREE OF DEAD OR DYING BRANCHES AND BRANCH TIPS AND SHALL BEAR FOLIAGE OF NORMAL DENSITY, SIZE AND COLOR. REPLACEMENTS SHALL CLOSELY MATCH ADJACENT SPECIMENS OF THE SAME SPECIES. REPLACEMENTS SHALL BE SUBJECT TO ALL REQUIREMENTS STATED IN THIS SPECIFICATION.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE CONDITION AND QUALITY OF WORK AND MATERIALS DURING CONSTRUCTION, AND UNTIL ACCEPTANCE. CONTRACTOR SHALL BEAR THE TOTAL COST OF REPLACING ANY AND ALL PLANT MATERIAL UNTIL THIS TIME. SUPPLEMENTAL PLANTING AIDS SHALL BE USED AT THE DISCRETION OF THE CONTRACTOR TO ENSURE THE PERFORMANCE OF THIS SPECIFICATION. THE CONTRACTOR IS RESPONSIBLE FOR THE WORK WHETHER PLANTING AIDS WERE USED OR NOT.
5. THE CONTRACTOR IS EXEMPT FROM REPLACING PLANTS, AFTER ACCEPTANCE AND DURING THE GUARANTEE PERIOD, THAT ARE REMOVED BY OTHERS, LOST OR DAMAGED DUE TO OCCUPANCY OF THE PROJECT IN ANY PART, LOST OR DAMAGED BY A THIRD PARTY, VANDALISM, OR ANY NATURAL DISASTER.
6. REPLACEMENTS SHALL CLOSELY MATCH ADJACENT SPECIMENS OF THE SAME SPECIES. REPLACEMENTS SHALL BE SUBJECT TO ALL REQUIREMENTS STATED IN THIS SPECIFICATION. MAKE ALL NECESSARY REPAIRS DUE TO PLANT REPLACEMENTS. SUCH REPAIRS SHALL BE DONE AT NO EXTRA COST TO THE OWNER.
7. THE GUARANTEE OF ALL REPLACEMENT PLANTS SHALL EXTEND FOR AN ADDITIONAL ONE-YEAR PERIOD FROM THE DATE OF THEIR ACCEPTANCE AFTER REPLACEMENT. IN THE EVENT THAT A REPLACEMENT PLANT IS NOT ACCEPTABLE DURING OR AT THE END OF THE SAID EXTENDED GUARANTEE PERIOD, THE OWNER MAY ELECT ONE MORE REPLACEMENT ITEM OR A CREDIT FOR EACH ITEM. THESE REPLACEMENT ITEMS ARE NOT PROTECTED UNDER A GUARANTEE PERIOD.
8. AT THE END OF THE GUARANTEE PERIOD, AND NO LESS THAN FIVE DAYS PRIOR TO THE FINAL INSPECTION, TREE WRAP, TIES, AND GUYING SHALL BE REMOVED FROM THE SITE. TREE WRAPS SHOULD NOT BE ON TRUNKS DURING ACTIVE GROWING SEASONS. ALL TREES THAT HAVE LEANED OR FALLEN OVER SHALL BE STRAIGHTENED. THE GUARANTEE PERIOD FOR ANY LEANED OR FALLEN TREES WILL BE EXTENDED BY ONE YEAR AFTER BEING STRAIGHTENED. FINAL ACCEPTANCE WILL BE GIVEN ONLY WHEN ALL THE REQUIREMENTS OF THE SECTION HAVE BEEN MET.
   a. SELECTION OF PLANT MATERIALS:
      1) SUBMIT TO THE LANDSCAPE ARCHITECT THE NAMES AND LOCATIONS OF NURSERIES PROPOSED AS SOURCES OF ACCEPTABLE PLANT MATERIAL. INSPECT ALL NURSERY MATERIALS TO DETERMINE THAT THE MATERIALS MEET THE REQUIREMENTS OF THIS SECTION. PRIOR TO VIEWING BY THE LANDSCAPE ARCHITECT, THE LANDSCAPE CONTRACTOR SHALL PRE-TAG PROPOSED MATERIALS AT THE NURSERIES, PHOTOGRAPH THE MATERIAL (FULL TREE IN EACH IMAGE WITH A PERSON AND/OR MEASURING STICK FOR SCALE), AND SUBMIT PHOTOGRAPHS TO LANDSCAPE ARCHITECT FOR INITIAL REVIEW.
      2) BASED ON LANDSCAPE ARCHITECT DISCRETION, CONTRACTOR SHALL SCHEDULE WITH THE LANDSCAPE ARCHITECT TRIPS FOR VIEWING PLANT MATERIALS AT NURSERIES. THESE TRIPS TO THE NURSERIES SHALL BE EFFICIENTLY ARRANGED TO ALLOW THE LANDSCAPE ARCHITECT TO MAXIMIZE VIEWING TIME. A MINIMUM OF SIX WEEKS SHALL BE ALLOWED FOR THIS VIEWING PRIOR TO THE TIME THAT THE PLANTS ARE TO BE DUG.
      3) LABEL EACH TREE WITH A SECURELY ATTACHED WATERPROOF TAG BEARING LEGIBLE DESIGNATION OF BOTANICAL AND COMMON NAME. IDENTIFICATION OF PLANT NAME SHALL BE LISTED IN "HORTUS THIRD". PLACE THE LABEL IN THE NORTH SIDE OF EACH TREE IN THE NURSERY PRIOR TO DIGGING.
      4) WHEN PLANT MATERIAL IS SOURCED FROM WHOLESALE DISTRIBUTION NURSERIES, IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO MAKE THE MATERIAL AVAILABLE FOR VIEWING BY THE LANDSCAPE ARCHITECT. THE LANDSCAPE CONTRACTOR SHALL PROVIDE ALTERNATE NURSERY OPTIONS IF SUCH MATERIAL IS DEEMED UNACCEPTABLE. PHOTOGRAPHS ARE AN ACCEPTABLE MEANS OF VIEWING PLANT MATERIAL IN THIS INSTANCE.
      5) WHERE REQUESTED BY THE LANDSCAPE ARCHITECT, PHOTOGRAPHS OF PLANT MATERIALS OR REPRESENTATIVE SAMPLES OF PLANTS SHALL BE SUBMITTED. PHOTOGRAPHS SHALL BE LEGIBLE AND CLEARLY DEPICT THE PLANT SPECIMEN. EACH SUBMITTED IMAGE SHALL CONTAIN A HEIGHT REFERENCE, SUCH AS A MEASURING STICK. THE APPROVAL OF PLANT MATERIALS BY THE LANDSCAPE ARCHITECT VIA PHOTOGRAPH DOES NOT PRECLUDE THE LANDSCAPE ARCHITECT'S RIGHT TO REJECT MATERIAL WHILE ON SITE.
      6) BASED ON PHOTOGRAPHS, TAGGING BY THE LANDSCAPE ARCHITECT MAY NOT BE NEEDED **AT LANDSCAPE ARCHITECT'S DISCRETION.**
      7) THE LANDSCAPE ARCHITECT EXPECTS THAT OUT-OF-STATE NURSERIES MAY BE INCLUDED IN THE BID. THE NURSERIES MUST BE LOCATED IN THE FOLLOWING STATES/PROVINCES: MINNESOTA, IOWA, WISCONSIN, ILLINOIS, MICHIGAN, INDIANA, OHIO, PENNSYLVANIA, MARYLAND, NEW JERSEY, NEW YORK, MASSACHUSETTS, VERMONT, NEW HAMPSHIRE, MAINE, ONTAIRO, AND QUEBEC. NURSERIES MUST ALSO BE LOCATED WITHIN USDA HARDINESS ZONES 3B-6A. IF NECESSARY, MORE NURSERIES MAY BE INCLUDED LATER WITH THE LANDSCAPE ARCHITECT'S APPROVAL.

9. PRODUCT SUBSTITUTIONS:
   a. PRODUCTS PROPOSED FOR SUBSTITUTION SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT FOR APPROVAL. ONLY APPROVED SUBSTITUTIONS FOR SPECIFIED PRODUCTS SHALL BE ACCEPTABLE.
   b. CONTRACTOR AND MANUFACTURER OF SUBSTITUTE PRODUCE SHALL SUBMIT WRITTEN GUARANTEE THAT SUBSTITUTE PRODUCT(S) MATCHES SPECIFIED PRODUCT IN EVERY WAY.
   c. THE CONTRACTOR SHALL BE HELD SOLELY AND COMPLETELY LIABLE FOR ANY CONSTRUCTION FAILURE RESULTING FROM THE USE OF MATERIALS UNSPECIFIED OR UNAPPROVED BY THE ARCHITECT AND/OR LANDSCAPE ARCHITECT.
   d. THE CONTRACTOR SHALL BE HELD SOLELY AND COMPLETELY LIABLE FOR ANY CONSTRUCTION FAILURE RESULTING FROM THE USE OF MATERIALS APPROVED BY THE CLIENT OR OWNER, WITHOUT THE KNOWLEDGE OF THE ARCHITECT AND/OR LANDSCAPE ARCHITECT.
   e. FOR PLANT-RELATED SUBSTITUTIONS, SEE PART 1 - GENERAL, 1.5 UNAVAILABILITY OF PLANT MATERIALS.
   f. SITE CONDITIONS:
      1) IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF ALL SURFACE AND SUB-SURFACE CONDITIONS, AND TO REPORT ANY CIRCUMSTANCES THAT WOULD NEGATIVELY IMPACT THE HEALTH OF PLANTINGS. EXAMINE THE SUB-GRADE PER 3.1 SITE EXAMINATION. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. PROCEEDING WITH WORK CONSTITUTES ACCEPTANCE OF EXISTING OR CORRECTED CONDITIONS.
      2) IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO BE FAMILIAR WITH THE LOCAL GROWING CONDITIONS, AND IF ANY SPECIFIED PLANT MATERIAL WILL BE IN CONFLICT WITH THESE CONDITIONS. LANDSCAPE CONTRACTOR TO REPORT ANY POTENTIAL CONFLICTS TO THE LANDSCAPE ARCHITECT.
      3) DO NOT INSTALL PLANT MATERIALS INTO SATURATED OR FROZEN SOILS. DO NOT INSTALL PLANT MATERIALS DURING INCLEMENT WEATHER, SUCH AS RAIN OR SNOW OR DURING WINDY CONDITIONS.

1.05 UNAVAILABILITY OF PLANT MATERIALS

A. SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.

B. IN THE EVENT THAT THE LANDSCAPE CONTRACTOR CANNOT FIND THE SPECIFIED PLANT MATERIAL, THE LANDSCAPE ARCHITECT MAY REQUIRE THAT THE LANDSCAPE CONTRACTOR FIND THE PLANT MATERIAL USING A PLANT BROKER.

C. THE CONTRACTOR SHALL BE HELD SOLELY AND COMPLETELY LIABLE FOR ANY FAILURE RESULTING FROM THE USE OF PLANT MATERIALS UNSPECIFIED OR UNAPPROVED BY THE LANDSCAPE ARCHITECT. AT THE LANDSCAPE ARCHITECT'S DISCRETION, THE CONTRACTOR MAY BE ASKED TO REMOVE UNSPECIFIED OR UNAPPROVED PLANT MATERIAL AND REPLACE WITH LANDSCAPE ARCHITECT APPROVED PLANT MATERIAL.

1.06 REJECTION OF PLANT MATERIALS

A. THE LANDSCAPE ARCHITECT HAS THE RIGHT TO REJECT ANY AND ALL PLANT MATERIAL THAT DOES NOT CONFORM TO THE REQUIREMENTS OF THIS SPECIFICATION.

B. EVIDENCE OF DAMAGE TO PLANT MATERIAL, WHICH DESTROYS THE NATURAL CHARACTER OF THE PLANT, SHALL BE CAUSE FOR REJECTION.

C. WHEN A PLANT HAS BEEN REJECTED, REMOVE IT FROM THE AREA OF THE WORK AND REPLACE IT WITH ONE OF THE REQUIRED SIZE AND QUALITY. REPLACEMENT PLANT MATERIAL SHALL BE APPROVED BY LANDSCAPE ARCHITECT, AS DOCUMENTED IN PART 1-GENERAL, 1.4 QUALITY ASSURANCE, B. SELECTION OF PLANT MATERIAL. THE CONTRACTOR SHALL BEAR THE TOTAL COST OF REPLACING REJECTED PLANT MATERIAL.

D. ANY PLANT THAT HAS THE FOLLOWING CHARACTERISTICS SHALL BE CAUSE FOR REJECTION:

1. ANY TREE THAT HAS A CANOPY WITH 40% OR MORE DEAD LIMBS.
2. ANY TREE THAT HAS DEAD LIMBS THAT, WHEN REMOVED, WILL RESULT IN THE LOSS OF 30% OR MORE OF THE STRUCTURE AND FORM OF THE CANOPY OF THE TREE.
3. ANY TREE THAT IS OF A SPECIES THAT CHARACTERISTICALLY HAS A DOMINANT CENTRAL LEADER, AND IF THE LEADER IS DEAD, WHEN REMOVED THE TREE WILL NOT HAVE A FORM CONSISTENT WITH THE SPECIES.
4. ANY TREE THAT HAS OPEN WOUNDS (NOT COMPLETELY HEALED OVER) THAT PENETRATES THE BARK TO THE WOOD ON TRUNKS OR MAJOR LIMBS THE REMOVAL OF WHICH WOULD RESULT IN THE LOSS OF 30% OR MORE OF THE STRUCTURE AND FORM OF THE TREE.

1.07 SUPPLEMENTAL PLANTING AIDS

A. GENERAL: SUPPLEMENTAL PLANTING AIDS, AS APPROVED BY THE LANDSCAPE ARCHITECT, SHALL BE USED AT THE DISCRETION OF THE CONTRACTOR TO ENSURE THAT PLANTINGS MEET THE REQUIREMENTS AT THE END OF THE GUARANTEE PERIOD. THE CONTRACTOR IS RESPONSIBLE FOR THE CONDITION OF THE PLANT MATERIAL, WHETHER PLANTING AIDS ARE USED OR NOT. USE OF SUPPLEMENTAL PLANTING AIDS WILL BE INCORPORATED AS PART OF THE CONTRACTORS BID, AND THEIR USE WILL NOT INCUR AN ADDITIONAL COST TO THE OWNER.

B. ANTI-DESICCANT: ANTI-DESICCANT SHALL BE APPLIED TO ENSURE TRANSPORTED TREES AND SHRUBS ARE NOT AFFECTED BY DAMAGING WINDS DURING TRANSIT. ANTI-DESICCANT MAY ALSO BE APPLIED TO ENSURE THE SURVIVAL OF NEWLY PLANTED TREES AND SHRUBS THROUGH THE WINTER.

C. TREE STAKING AND GUYING: TREE GUYING SHALL BE PROVIDED WHEREVER SHOWN ON THE LANDSCAPE PLANS. IN ADDITION TO THE TREES SHOWN ON THE PLAN, ADDITIONAL TREES MAY BE GUYED AS DEEMED NECESSARY BY THE LANDSCAPE CONTRACTOR AND APPROVED BY THE LANDSCAPE ARCHITECT. ADDITIONAL TREES TO BE GUYED SHALL NOT BE AN ADDITIONAL COST TO THE OWNER BUT SHALL BE INCLUDED WITHIN THE LANDSCAPE CONTRACTOR'S ORIGINAL PROPOSAL. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE TREE'S CONDITION UNDER THE WARRANTY REGARDLESS OF WHETHER THE TREE WAS GUYED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REPLACE OR REPAIR TREES WHICH SETTLE OR BLOW OVER.

D. FERTILIZER: FERTILIZER AND MICRORHYZOME STIMULANT SHALL BE PROVIDED AT THE DISCRETION OF THE CONTRACTOR TO ENSURE THE PLANT MATERIAL IS HEALTHY AND VIGOROUS AT THE END OF THE GUARANTEE PERIOD.

PART 2 PRODUCTS

2.01 PLANT MATERIAL : GENERAL

A. PROVIDE TREES AND PLANTS OF QUANTITY, SIZE, GENUS, SPECIES, AND VARIETY OR CULTIVARS AS SHOWN AND SCHEDULED IN CONTRACT DOCUMENTS. ALL PLANT MATERIAL SHALL CONFORM TO ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK", UNLESS SPECIFIED OTHERWISE BY THE LANDSCAPE ARCHITECT. IN NO CASE SHALL BALL SIZE BE LESS THAN 11 INCH IN DIAMETER FOR EACH INCH OF CALIPER.

B. PLANTS SHALL HAVE OUTSTANDING FORM; SYMMETRICAL, HEAVILY-BRANCHES WITH AN EVEN BRANCH DISTRIBUTION, DENSELY FOLIATED AND/OR BUDDED, AND A STRONG, STRAIGHT DISTINCT LEADER WHERE THIS IS CHARACTERISTIC OF THE SPECIES. PLANTS SHALL POSSESS A NORMAL BALANCE FOR THE SPECIES BETWEEN HEIGHT AND SPREAD. THE LANDSCAPE ARCHITECT SHALL BE THE FINAL ARBITER OF ACCEPTABILITY OF PLANT FORM.

C. PROVIDE HEALTHY, VIGOROUS STOCK, GROWN IN A RECOGNIZED NURSERY IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICE AND FREE OF DISEASE, INSECTS, EGGS, LARVAE, AND DEFECTS SUCH AS KNOTS, SCRAPES, BROKEN OR SPLIT BRANCHES, FRESH LIMB CUTS, SUNSCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT. ALL GRAFT UNIONS SHALL BE COMPLETELY HEALED, FREE OF EXTREME SUCCULENCE.

D. ALL TREES AND SHRUBS SHALL BE DUG PRIOR TO LEAFING OUT (BUD BREAK) IN THE SPRING OR WHEN PLANTS HAVE GONE DORMANT IN THE FALL EXCEPT FOR THE FOLLOWING SPECIES, WHICH ARE ONLY TO BE DUG PRIOR TO LEAFING OUT IN THE SPRING:

1. ALNUS VARIETIES 15. MALUS - IN LEAF
2. BETULA VARIETIES 16. NYSSA SYLVATICA
3. CARPINUS VARIETIES 17. OSTRYA VIRGINIANA
4. CELTIS VARIETIES 18. POPULUS VARIETIES
5. CERCIDIPHYLLUM VARIETIES 19. PRUNUS - ALL STONE FRUITS
6. CORNUS VARIETIES 20. PYRUS VARIETIES
7. CRATAEGUS VARIETIES 21. QUERCUS-ALL OAKS EXCEPT Q. PALUSTRIS
8. FAGUS VARIETIES 22. SALIX - WEEPING VARIETIES
9. HALESIA VARIETIES 23. SYRINGA RETICULATA
10. ILEX OPACA VARIETIES 24. TAXODIUM DISTICHUM
11. KOELREUTERIA PANICULATA 25. TILIA TOMENTOSA VARIETIES
12. LARIX VARIETIES 26. ULMUS SPECIES
13. LIQUIDAMBAR VARIETIES 27. VIBURNUM LENTAGO
14. LIRIODENDRON VARIETIES 28. ZELKOVA SPECIES

E. WHERE PROJECT SCHEDULE DOES NOT PERMIT DIGGING AT THE APPROPRIATE TIME THE CONTRACTOR SHALL BE RESPONSIBLE FOR SOURCING ABOVE-GROUND MATERIAL. ABOVE-GROUND MATERIAL SHALL BE SUBJECT TO THE SAME STANDARDS FOR QUALITY AND WARRANTY.

2.02 NURSERY SOURCES

A. PROVIDE PLANTS FROM NURSERIES LISTED BELOW. LANDSCAPE ARCHITECT WILL REVIEW AND APPROVE AND/OR REJECT ADDITIONAL SAMPLES OF PLANT MATERIAL SUGGESTED BY THE LANDSCAPE CONTRACTOR.

1. NORTHWIND PERENNIAL FARM, BURLINGTON, WI, 262-248-8229
2. WILLIAM LORR NURSERY, WOODSTOCK, IL, 815-338-7023
3. BEAVER CREEK NURSERY, POPLAR GROVE, IL, 815-737-8758.
4. CLAVEY'S NURSERY, HARVARD, IL, 815-943-7778.
5. KANEVILLE TREE FARM, KANEVILLE, IL, 815-557-2793.
6. KLEHM'S NURSERY, SOUTH BARRINGTON, IL, 847-551-3710.
7. MARIANI NURSERY, KENOSHA, WI, 262-857-6529.
8. RICH'S FOX WILLOW PINES, WOODSTOCK, IL, 815-338-7442.
9. STONEGATE NURSERY, POPLAR GROVE, IL , 815-765-2771.
10. WILSON NURSERIES, HAMPSHIRE, IL, 847-683-3700.

B. ALTERNATIVE NURSERY SOURCES SHALL BE PRESENTED FOR APPROVAL BY THE LANDSCAPE ARCHITECT.

2.03 BALLED AND BURLAPPED PLANT MATERIAL

A. PROVIDE QUALITY PLANT MATERIAL OF HEIGHT OR CALIPER SCHEDULED OR SHOWN AND WITH BRANCHING CONFIGURATIONS AND SPREAD CHARACTERISTICS AS RECOMMENDED BY ANSI Z60.1. ALL ROOT BALL DIMENSIONS SHALL CONFORM TO THE RECOMMENDATIONS IN ANSI Z60.1.

B. TREES: PROVIDE QUALITY SINGLE-STEM BALLED AND BURLAPPED (B&B) DECIDUOUS TREES, EXCEPT WHERE SPECIAL FORMS ARE SHOWN OR LISTED.

C. SHRUBS: PROVIDE QUALITY SINGLE-STEM OR CANED BALLED AND BURLAPPED (B&B) DECIDUOUS SHRUB, EXCEPT WHERE SPECIAL FORMS ARE SHOWN OR LISTED.

D. PERENNIALS, FORBS, GROUND COVERS, NATIVE AND ORNAMENTAL GRASSES: PROVIDE HEALTHY, VIGOROUS PLANTS WITH NO UNHEALED WOUNDS IN PLANT STEMS, NO MAJOR DAMAGED FEATURES; MATURE AND WELL-ESTABLISHED IN CONTAINERS, WITH ROOTS REACHING SIDES OF CONTAINER, IN PROPORTION TO MEET OR EXCEED SCHEDULED SIZES, AND WITHOUT BOUNDED OR DAMAGED ROOTS.

E. BULBS, RHIZOMES, CORMS AND TUBERS: BULBS, RHIZOMES, CORMS AND TUBERS SHALL BE SUPPLIED WITHOUT SIGNS OF ROT, FUNGUS OR INSECT DAMAGE. ANY PRODUCT EXHIBITING SIGNS OF SUCH DAMAGE SHALL BE REJECTED.

F. BARE ROOT PLANTS: SHALL BE SUPPLIED MOIST BUT NOT SATURATED WITH WATER AND WITH NO VISIBLE SIGNS OF DAMAGE, MOLD FUNGUS ETC.

2.04 CONTAINER GROWN PLANT MATERIAL

A. CONTAINER GROWN PLANTS SHALL CONSIST OF SHRUBS, PERENNIALS AND GRASSES WHEN LISTED. SIZES SHALL BE AS INDICATED ON THE DRAWINGS.

B. PROVIDE PLANTS ESTABLISHED AND WELL ROOTED IN REMOVABLE CONTAINERS OR INTEGRAL PEAT POTS AND WITH NOT LESS THAN THE MINIMUM NUMBER AND LENGTH OF RUNNERS REQUIRED BY ANSI Z60.1 FOR THE POT SIZE SHOWN OR LISTED.

C. COMPLY WITH REQUIREMENTS OF THE WASTE MANAGEMENT PLAN AND SUSTAINABLE DESIGN REQUIREMENTS FOR HANDLING OF EMPTY CONTAINERS.

2.05 MULCH

A. PROVIDE 50% PINE BARK FINES, 50% AGED, DOUBLE PROCESSED FINE-SHREDDED HARDWOOD BARK MULCH, OF UNIFORM SIZE AND FREE FROM ROT, LEAVES, TWIGS, DEBRIS, STONES, FUNGUS, CRABGRASS RHIZOMES, OR ANY MATERIAL DETRIMENTAL TO PLANT GROWTH. MULCH SHALL HAVE BEEN SHREDDED AND STOCKPILED NO LESS THAN TWO YEARS BEFORE USE, HAVING GONE THROUGH THE DEHUMIDIFICATION PROCESS.

2.06 SUPPLEMENTAL PLANTING AIDS

A. ANTI-DESICCANT: EMULSION TYPE, FILM-FORMING AGENT SIMILAR TO DOWAX BY DOW CHEMICAL COMPANY, OR WILT-PRUF BY NURSERY SPECIALTY PRODUCTS, INC., CROTON FALLS, NEW YORK, DESIGNED TO PERMIT TRANSPIRATION BUT RETARD EXCESSIVE LOSS OF MOISTURE FROM PLANTS. DELIVER IN MANUFACTURER'S FULLY IDENTIFIED CONTAINERS AND USE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. TREE STAKING AND GUYING:

1. TREE GUYING TO BE FLAT WOVEN POLYPROPYLENE MATERIAL, 3/4 " WIDE, 900 16 BREAK STRENGTH. COLOR TO BE BROWN.
2. PRODUCT TO BE ARBORTIE, MANUFACTURED BY DEEPROOT PARTNERS, L.P. (800) 458-7668, OR APPROVED EQUAL.

C. TREE WRAPPING:

1. TREE WRAPPING TO BE OSNABURG CLOTH, 4-7/8 IN. WIDE, UNBLEACHED, PINKED ON BOTH EDGES, MANUFACTURED BY CARNEGIE TEXTILE CO., 6501 HOUGH AVENUE, CLEVELAND, OH 44103 SECURED WITH A 3-PLY JUTE TWINE OR APPROVED EQUAL.
2. PHONE: 800-342-6173

PART 3 EXECUTION

3.01 SITE EXAMINATION

A. EXAMINE THE SURFACE GRADE FOR ANY CIRCUMSTANCES THAT MIGHT BE DETRIMENTAL TO PLANT GROWTH, SUCH AS DEPOSITS OF CONSTRUCTION-RELATED WASTE. EXAMINE THE GRADING, VERIFY ALL ELEVATIONS, AND NOTIFY LANDSCAPE ARCHITECT IN WRITING OF ANY UNSATISFACTORY CONDITIONS.

B. EXAMINE THE SUB-GRADE FOR EVIDENCE OF COMPACTION. EXAMINE RUBBLE CONDITIONS AS TO EXTENT SHOWN ON SOIL BORINGS, OBSERVE THE CONDITIONS UNDER WHICH WORK IS TO BE PERFORMED, AND NOTIFY LANDSCAPE ARCHITECT IN WRITING OF ANY UNSATISFACTORY CONDITIONS.

C. PERCOLATION TEST: CONTRACTOR IS MANDATED TO PERFORM PERCOLATION TESTS TO DETERMINE THE PERMEABILITY OF THE SUB-GRADE. FOR EVERY 5-15 TREES AND SHRUBS IN A GENERAL AREA, EXCAVATE A 12" DIAMETER X 12" DEEP TEST PIT. FILL EACH PIT WITH WATER AND ALLOW WATER TO PERCOLATE OUT. TEST PITS SHALL BE ROPED OFF AT

ALL TIMES, AND FILLED IN WHEN TEST IS COMPLETE. IF WATER DOES NOT PERCOLATE OUT OVER A 12 HOUR PERIOD, CONTACT LANDSCAPE ARCHITECT. ALTHOUGH ONLY ONE TREE PERCOLATION TEST IS REQUIRED FOR EVERY 15 TREES, THE LANDSCAPE CONTRACTOR IS STILL RESPONSIBLE FOR ENSURING THAT EVERY TREE DRAINS PROPERLY.

D. PRE-INSTALLATION MEETING AND MOCKUP: CONDUCT A MEETING AT THE PROJECT SITE WITH THE LANDSCAPE ARCHITECT, PLANT INSTALLER, VILLAGE LANDSCAPE ARCHITECT AND OWNER'S REPRESENTATIVE TO VERIFY PLANT MATERIAL QUALITY AND REVIEW PLANTING LAYOUT. COMPLY WITH THE FOLLOWING:

1. CONTRACTOR SHALL INITIALLY INSPECT PLANT MATERIAL UPON DELIVERY PRIOR TO LANDSCAPE ARCHITECT'S REVIEW. VERIFY THAT MATERIALS COMPLY WITH CONTRACT REQUIREMENTS. REPLACE DEFECTIVE OR DAMAGED PLANT MATERIALS THAT MAY HAVE OCCURRED BETWEEN TIME OF TAGGING AND DELIVERY.
2. CONTRACTOR SHALL SUBMIT PLANS AND SCHEDULES FOR LAYOUT AND INSTALLATION OF MULTIPLE AREAS TO ALLOW FOR MULTIPLE VISITS BY THE LANDSCAPE ARCHITECT.
   a. SCHEDULE REVIEW MEETING AND NOTIFY LANDSCAPE ARCHITECT AND OTHER PARTICIPANTS A MINIMUM OF 72 HOURS IN ADVANCE OF MEETING DATE AND TIME.
   b. SEVERAL MEETINGS MAY BE PRE-SCHEDULED IF LAYOUT CANNOT BE COMPLETED IN ONE DAY. ALL PLANTS FOR THE DESIGNATED AREA TO BE REVIEWED SHALL BE AVAILABLE ON SITE. LANDSCAPE ARCHITECT WILL REVIEW STAKED TREE LOCATIONS AND FACING OF TREES.
      1) LANDSCAPE ARCHITECT WILL REVIEW PLANT MATERIAL QUALITY AND PLANTING LAYOUT TO VERIFY COMPLIANCE WITH SPECIFIED REQUIREMENTS AND DESIGN INTENT.
         (a) LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REVIEW ALL PLANT MATERIALS PRIOR TO INSTALLATION. SCHEDULE ADDITIONAL REVIEW MEETINGS AS NECESSARY.
         (b) LANDSCAPE ARCHITECT RETAINS THE AUTHORITY TO REJECT PLANT MATERIAL NOT IN COMPLIANCE WITH CONTRACT REQUIREMENTS. REJECTION OF PLANT MATERIAL BY LANDSCAPE ARCHITECT SHALL NOT RELIEVE THE CONTRACTOR OF OBLIGATIONS TO CORRECT NON-CONFORMING WORK.
      2) **TEMPORARILY LAY OUT PLANT MATERIALS, STAKE LOCATIONS, AND OUTLINE PLANTING AREAS AS DIRECTED BY LANDSCAPE ARCHITECT, AND PER PLANTING PLANS.**
         (a) CONTRACTOR SHALL MAKE AVAILABLE ALL PLANTS FOR DESIGNATED AREAS TO BE REVIEWED BY THE LANDSCAPE ARCHITECT.
         (b) MAKE MINOR ADJUSTMENTS TO PLANT LAYOUT AS DIRECTED BY LANDSCAPE ARCHITECT.
      3) **ALL PLANTING MATERIAL (SUCH AS TREES, SHRUBS, GROUNDCOVER, ETC.) SHALL NOT BE PLANTED PRIOR TO LANDSCAPE ARCHITECTS' APPROVAL OF THEIR LOCATION AND FACING DIRECTION ON SITE**.
      4) REPLACE ANY DEFECTIVE OR DAMAGED PLANT MATERIALS, OR AS REJECTED BY LANDSCAPE ARCHITECT. REMOVE REJECTED MATERIALS FROM THE PROJECT SITE.
      5) PROVIDE CORRECTIVE PRUNING AS DIRECTED BY LANDSCAPE ARCHITECT.
      6) PROVIDE MAINTENANCE AND PROTECTION OF REVIEWED PLANTS DURING THE CONSTRUCTION PERIOD, AS SPECIFIED IN THIS SECTION.

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453

Shack # 1345

REGISTERED LANDSCAPE ARCHITECT
NEIL EDWARD EISENBERGER
157.001471
STATE OF ILLINOIS
11/24/2020

NO.	DATE	REMARKS
2	11/24/20	ISSUE FOR PERMIT / BID
1	11/09/2020	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
SPECIFICATIONS

Job No. 204461
Drawn JS
Scale
Date 11/24/20

Sheet No.
L05-90

3.02 DELIVERY, STORAGE, AND HANDLING

A. DO NOT PRUNE PRIOR TO DELIVERY UNLESS OTHERWISE APPROVED BY LANDSCAPE ARCHITECT. DO NOT BEND OR BIND-TIE TREES OR PLANTS IN A WAY THAT DAMAGES BARK, BREAKS BRANCHES, OR DESTROYS NATURAL SHAPE. PROVIDE PROTECTIVE COVERING DURING DELIVERY.

B. IF DECIDUOUS TREES ARE MOVED WHEN IN FULL-LEAF, SPRAY WITH AN APPROVED ANTI-DESICCANT PER MANUFACTURER'S RECOMMENDATIONS AT NURSERY NO GREATER THAN 48 HOURS PRIOR TO DIGGING, ANDAGAIN 2

WEEKS AFTER TRANSPLANTING. SPRAYING SHOULD TAKE PLACE IN EARLY MORNING HOURS WITH FOLIAGE AT MAXIMUM TURGIDITY. IT IS THE RESPONSIBILITY AND OPTION OF THE CONTRACTOR TO DECIDE IF ANTI-DESICCANT SHALL BE APPLIED TO THE TREE BEFORE DELIVERY.

C. EVIDENCE OF IMPROPER DIGGING, INADEQUATE PROTECTION FOLLOWING DIGGING, CARELESSNESS WHILE IN TRANSIT, EVIDENCE OF DESICCATION OR WIND-RELATED DAMAGE, OR IMPROPER HANDING OR STORAGE, SHALL BE CAUSE OF REJECTION.

D. DO NOT DROP BALLED AND BURLAPPED STOCK DURING DELIVERY OR HANDLING. EVIDENCE OF CRACKED OR DAMAGED ROOTBALL SHALL BE CAUSE FOR REJECTION. SHOULD THE ROOTS BE DRIED OUT, LARGE BRANCHES BE BROKEN, BALL OF EARTH BROKEN, LOOSENED, OR UNDERSIZED, OR AREAS OF BARK BE TORN, THE LANDSCAPE ARCHITECT WILL REJECT THE INJURED PLANT.

E. DELIVER TREES AND PLANTS AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND PLANT IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN 6 HOURS AFTER DELIVERY:
1. SET TREES AND PLANTS IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST BY COVERING WITH MULCH, BURLAP OR OTHER MEANS ACCEPTABLE TO THE
LANDSCAPE ARCHITECT FOR RETAINING MOISTURE.
2. THE DURATION, METHOD AND LOCATION OF STORAGE OF PLANT MATERIALS SHALL BE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT.
3. PROVIDE PROPER SPACING FOR TREES, SUCH THAT THE STOCKPILED PLANT MATERIAL HAS FULL ACCESS TO LIGHT AND AIR. TAKE ALL PRECAUTIONS TO PREVENT DEFOLIATION OF STOCKPILED MATERIAL.
4. PLANT MATERIAL SUBJECT TO IMPROPER STORAGE PROCEDURES SHALL BE REJECTED, AS PER 3.2 - DELIVERY, STORAGE, HANDLING, D.
5. CONTRACTOR SHALL DETERMINE IF THERE IS SUFFICIENT SPACE AVAILABLE TO PROPERLY STOCKPILE PLANT MATERIAL AT THE TIME OF BIDDING.

F. DO NOT REMOVE CONTAINER-GROWN STOCK FROM CONTAINERS UNTIL PLANTING TIME. PLANT CONTAINER-GROWN STOCK IMMEDIATELY ONCE REMOVED FROM CONTAINER.

3.03 PLANTING AROUND UTILITIES

A. CONTRACTOR SHALL CAREFULLY EXAMINE THE CIVIL, RECORD, AND SURVEY DRAWINGS TO BECOME FAMILIAR WITH THE EXISTING UNDERGROUND CONDITIONS BEFORE DIGGING.

B. DETERMINE LOCATION OF UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNER THAT WILL AVOID POSSIBLE DAMAGE. HAND EXCAVATE, AS REQUIRED. MAINTAIN GRADE STAKES SET BY OTHERS UNTIL REMOVAL IS MUTUALLY AGREED UPON BY PARTIES CONCERNED. NOTIFICATION OF CITY OF CHICAGO UTILITIES ALERT NETWORK (DIGGER) AT (312) 744-7000 OR JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS (JULIE) IS REQUIRED FOR ALL PLANTING AROUND UTILITIES (800) 892-0123. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR KNOWING THE LOCATION AND AVOIDING UTILITIES THAT ARE NOT COVERED BY THE ABOVE GROUPS.

3.04 PLANTING SEASON

A. PLANTING SHALL ONLY BE PERFORMED WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE FOR PLANTING THE MATERIALS SPECIFIED IN ACCORDANCE WITH LOCALLY ACCEPTED PRACTICE. INSTALL PLANT MATERIALS DURING THE PLANTING TIME AS DESCRIBED BELOW UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT. NOTE EXCEPTIONS IN PART 2.1.A WITHIN THIS SECTION.
1. TREES: MARCH 15 - JUNE 30 AND SEPTEMBER 1 - NOVEMBER 15
2. SHRUBS: APRIL 1 - JUNE 30 AND SEPTEMBER 1 - NOVEMBER 15

3.05 COORDINATION WITH PROJECT WORK

A. THE CONTRACTOR IS RESPONSIBLE FOR INVESTIGATING, AND BEING AWARE OF, THE WORK REQUIREMENTS OF THEIR SUB-CONSULTANTS AND OTHER CONSULTANTS. THE CONTRACTOR SHALL COORDINATE WITH ALL OTHER WORK THAT MAY IMPACT THE COMPLETION OF THE WORK.

B. COORDINATE PLANTING WITH HERBICIDE APPLICATION FOR NATIVE SEEDED AREAS. ENSURE HERBICIDE IS INACTIVE PRIOR TO INSTALLATION. PROVIDE A SCHEDULE AND ADJUST BY RFP (REQUEST FOR PROPOSAL) AS REQUIRED. 2 WEEKS SHOULD BE THE AMOUNT OF TIME NEEDED FOR HERBICIDE TO BECOME INACTIVE.

3.06 PLANTING INSTALLATION

A. GENERAL: COMPLY WITH THE FOLLOWING:
1. INSTALL PLANTS IN DESIGNED LOCATIONS ACCORDING TO PLANTING PLAN.
2. INSTALL OR APPLY MANUFACTURED PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. BACKFILLING: BACKFILL PLANTING HOLES WITH SAME SOIL THAT WAS REMOVED. THOROUGHLY WATER FILL MATERIAL AS BACKFILLING PROCEEDS.
   a. PROVIDE WELL-AERATED SOIL THAT IS FIRM ENOUGH TO SUPPORT ROOT BALLS, BUT NOT OVERPACKED.

3.07 INSTALLATION OF BALLED AND BURLAPPED TREES AND SHRUBS

A. WHEN APPLICABLE, PLANT TREES BEFORE ADJACENT SHRUBS, GROUNDCOVERS, VINES AND OTHER PLANTS ARE IN PLACE. WHERE SPACING DIMENSIONS OR LOCATIONS ARE NOT CLEAR, NOTIFY THE LANDSCAPE ARCHITECT BEFORE INSTALLATION.

B. NOTIFY LANDSCAPE ARCHITECT ONE (1) WEEK PRIOR TO LAYOUT FOR APPROVAL. LAYOUT TRIPS SHALL BE ARRANGED TO MAXIMIZE LANDSCAPE ARCHITECTS VIEWING TIME. LAY OUT ALL INDIVIDUAL TREE AND SHRUB LOCATIONS. **SECURE LANDSCAPE ARCHITECT'S ACCEPTANCE BEFORE DIGGING AND START OF PLANTING WORK.** MAKE ADJUSTMENTS AS REQUIRED BY LANDSCAPE ARCHITECT.

C. EXCAVATE PITS, BEDS, AND TRENCHES WITH VERTICAL SIDES AND WITH BOTTOM OF EXCAVATION SLIGHTLY RAISED AT CENTER TO PROVIDE PROPER DRAINAGE. WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR OBSTRUCTIONS, NOTIFY LANDSCAPE ARCHITECT BEFORE PLANTING. DISPOSE OF SUBSOIL REMOVED FROM PLANTING EXCAVATIONS. DO NOT MIX WITH PLANTING SOIL OR USE AS BACKFILL.

D. SCARIFY HARD SUBSOIL AROUND PERIMETER OF UNDISTURBED TREE BALL PEDESTAL AND ON TOP 12" OF UNDISTURBED SOIL TO CREATE A TRANSITION LAYER. DO NOT SCARIFY TOP OF UNDISTURBED SOIL.

E. SET BALLED AND BURLAPPED (B&B) AND CONTAINER STOCK ON LAYER OF UNDISTURBED SUBGRADE, AS INDICATED ON THE DRAWINGS, PLUMB AND IN CENTER OF PIT OR TRENCH WITH TOP OF BALL THREE (3) INCHES ABOVE ADJACENT FINISHED LANDSCAPE GRADES.

F. WHEN SET, BRACE ROOTBALL BY TAMPING BACKFILLED SOIL AROUND THE LOWER PORTION OF THE ROOTBALL. PLACE ADDITIONAL BACKFILL AROUND BASE AND SIDES OF BALL IN SIX-INCH (6") LIFTS. WORK EACH LIFT TO SETTLE BACKFILL AND ELIMINATE VOIDS AND AIR POCKETS. WHEN EXCAVATION IS APPROXIMATELY TWO-THIRDS FULL, WATER THOROUGHLY BEFORE PLACING REMAINDER OF BACKFILL. ROPES OR STRINGS ON TOP OF BALL SHALL BE CUT AND SHALL BE PULLED BACK. BURLAP OR CLOTH WRAPPING SHALL BE CUT AND REMOVED. PLASTIC, WOOD CONTAINERS AND ROOT-BAGS SHALL BE TOTALLY REMOVED FROM BALL AND PLANTING PIT. REMOVE TOP THIRD OF WIRE BASKETS PRIOR TO PLANTING.

G. REPEAT WATERING UNTIL NO MORE IS ABSORBED. WATER AGAIN AFTER PLACING FINAL LAYER OF BACKFILL.

H. REMOVE ALL NURSERY PLANT IDENTIFICATION TAGS AND RIBBONS.

3.08 INSTALLATION OF CONTAINER GROWN PLANTS

A. CONTRACTOR SHALL LAYOUT ALL INDIVIDUAL CONTAINERIZED PLANTS IN-FIELD FOR LANDSCAPE ARCHITECT APPROVAL. LANDSCAPE ARCHITECT TO LAYOUT SCHEDULED PROTOTYPE AREA OF EACH TYPE OF PLANTING AREA. JOB FOREMAN IS TO BE INVOLVED FOR LAYOUT VERIFICATION.

B. DIG HOLES LARGE ENOUGH TO ALLOW FOR SPREADING OF ROOTS AND BACKFILL WITH PLANTING SOIL. WORK SOIL AROUND ROOTS TO ELIMINATE AIR POCKETS AND LEAVE A SLIGHT SAUCER INDENTATION AROUND PLANTS TO HOLD WATER. WATER THOROUGHLY AFTER PLANTING, TAKING CARE NOT TO COVER CROWNS OF PLANTS WITH WET SOIL.

C. ALLOW THE FINISHED GRADES TO REMAIN 2"-3" HIGHER THAN THE GRADES ON THE GRADING PLAN TO ANTICIPATE SETTLEMENT OVER THE FIRST YEAR. AT THE END OF THE PLANTING GUARANTEE PERIOD, RESET THE GRADES IN THIS AREA, IF REQUIRED, TO THE FINAL GRADES SHOWN ON THE GRADING PLAN.

3.09 PLANTING PERENNIALS AND GROUND COVERS:

A. PREPARE PLANTING BEDS FOR MASS PLANT AREAS TO ACHIEVE A SLIGHT CROWN. LOOSEN PLANTING BED SOIL TO A DEPTH OF 4- TO 6-INCHES (101.6- TO 152.5-MM).

B. REMOVE PLANTS FROM CONTAINERS BY INVERTING CONTAINER, TAKING CARE NOT TO DAMAGE PLANT MATERIAL. SPLIT BIODEGRADABLE CONTAINERS. LOOSEN UP ROOT SYSTEMS OF CONTAINER-GROWN PLANTS.

C. DO NOT ALLOW ROOT TIPS TO BECOME DAMAGED FROM EXPOSURE TO AIR; KEEP GROWING ROOT TIPS MOIST AND COVERED. PLANT AS QUICKLY AS POSSIBLE UPON REMOVAL FROM CONTAINERS.

D. SET PLANTS IN PREPARED BEDS SO THAT PLANT CROWNS ARE JUST SLIGHTLY ABOVE PLANTING SOIL LEVEL. THOROUGHLY WATER PLANTS UPON PLANTING, AND MAINTAIN THROUGH SUBSTANTIAL COMPLETION.

3.10 PLANTING ORNAMENTAL AND NATIVE GRASSES:

A. REMOVE PLANTS FROM CONTAINERS BY INVERTING CONTAINER, TAKING CARE NOT TO DAMAGE PLANT MATERIAL; OR BY CUTTING ROOT MASS WITH A KNIFE ON 4-SIDES TO A DEPTH OF 1/2-INCH (12.7-MM) AND CUT THE BOTTOM OF ROOT MASS IN SAME MANNER IN AN 'X' PATTERN. LOOSEN UP ROOT SYSTEMS OF CONTAINER-GROWN PLANTS.

B. DO NOT ALLOW ROOT TIPS TO BECOME DAMAGED FROM EXPOSURE TO AIR; KEEP GROWING ROOT TIPS MOIST AND COVERED. PLANT AS QUICKLY AS POSSIBLE UPON REMOVAL FROM CONTAINERS.

C. DO NOT SET PLANTS TOO HIGH OR TOO LOW; PLANT SO THAT PLANT CROWNS ARE JUST SLIGHTLY ABOVE SOIL LEVEL. THOROUGHLY WATER PLANTS UPON PLANTING, AND MAINTAIN THROUGH SUBSTANTIAL COMPLETION.

3.11 INSTALLATION OF SUPPLEMENTAL PLANTING AIDS

A. TREE GUYING: TREE GUYING STRAPS TO BE TIED IN SUCH A MANNER AS TO CREATE A MINIMUM 12" LOOP TO PREVENT GIRDLING. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION. PLANTS SHALL STAND PLUMB AFTER STAKING OR GUYING. THE CONTRACTOR SHALL REMOVE TREE GUYS AT THE END OF THE GUARANTEE PERIOD, OR AS DIRECTED BY THE LANDSCAPE ARCHITECT.

B. TREE WRAP: TRUNKS OF DECIDUOUS TREES SHALL BE SPIRAL WRAPPED TO A MINIMUM HEIGHT OF THE THIRD BRANCH OR TWO- THIRDS THE HEIGHT OF TREE, WHICHEVER IS HIGHER. WRAP SHALL BE APPLIED FROM BASE UP AND SECURELY TIED.

C. FERTILIZER: FERTILIZERS SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. APPLY M-ROOTS AS PER LABEL RATES AND APPLICATION METHODS. DO NOT APPLY ANY FERTILIZER TO LARGE-CALIPER TREE PLANTINGS DURING THE FIRST YEAR AFTER TRANSPLANTING. DO NOT APPLY FERTILIZER TO NATIVE SEEDED AREAS.

D. ANTI-DESICCANT: ANTI-DESSICANT SHALL BE APPLIED TO PLANTINGS PER MANUFACTURERS INSTRUCTIONS.

3.12 PRUNING OF TREES AND SHRUBS

A. EACH TREE AND SHRUB SHALL BE PRUNED TO PRESERVE THE NATURAL CHARACTER OF THE PLANTING. REMOVE AND REPLACE EXCESSIVELY PRUNED OR MISFORMED STOCK RESULTING FROM IMPROPER PRUNING.

B. PRUNING SHALL BE DONE WITH CLEAN, SHARP, RUST-FREE TOOLS. CUTS SHALL BE MADE FLUSH, LEAVING NO STUBS AS PER ANSI A 300 - 1995. NO TREE PAINT OR SEALANTS SHALL BE USED.

C. DEAD WOOD, SUCKERS, AND BROKEN AND BADLY BRUISED BRANCHES SHALL BE REMOVED. DO NOT PRUNE PLANT MATERIAL THAT HAS BEEN SEVERELY DAMAGED DUE TO TRANSIT OR HANDLING.

D. PRUNING OF BROKEN OR DEAD BRANCHES SHALL BE DONE AFTER PLANTING, AND BEFORE PUNCHLISTING. **PRUNING PROCEDURES SHALL BE REVIEWED WITH LANDSCAPE ARCHITECT BEFORE PROCEEDING**. LANDSCAPE CONTRACTOR SHALL ONLY PROCEED WITH PRUNING IN THE MANNER APPROVED BY THE LANDSCAPE ARCHITECT.

E. FORM-CORRECTIVE PRUNING MAY OCCUR WHEN TREE HAS HARDENED UNTIL BUD-BREAK IN THE SPRING. IF CORRECTIVE PRUNING DATES FALL OUTSIDE THE CONSTRUCTION SCHEDULE, IT SHALL REMAIN A PUNCHLIST ITEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING THIS OFF-SEASON PUNCHLIST ITEM.

3.13 MULCHING OF PLANT MATERIAL

A. MULCH TOP OF ROOTBALLS AND GROUND COVER BEDS, COVERING THE ENTIRE PLANTING AREA. PROVIDE THE FOLLOWING THICKNESS OF MULCH. TOP OF MULCH SHALL BE LEVEL IN ALL DIRECTIONS. MULCH RINGS FOR TREES SHALL BE CIRCULAR. NO MULCH IS NEEDED FOR TREES LOCATED IN SEEDED AREAS.
1. TREE AND SHRUB PLANTING AREAS: 3-INCH THICKNESS
2. PERENNIAL AREAS: 2-INCH THICKNESS, AFTER SETTLING
3. -50% PINE BARK FINES ¾" MINUS
4. -50% SHREDDED HARDWOOD BARK FINES ¾" MINUS
   a. IN NO CASE SHALL MULCH COME IN CONTACT WITH ANY PART OF TRUNK OR ROOT FLARE.
   b. EXCESS MULCH SHALL BE REMOVED AND DISPOSED OF OFF-SITE. CONTRACTOR SHALL NOT OVER-MULCH PLANTING BEDS WITH EXCESS MULCH.

3.14 CLEAN-UP

A. DURING INSTALLATION, KEEP PAVEMENTS CLEAN AND WORK AREA IN AN ORDERLY CONDITION.

B. KEEP THE SITE FREE OF GARBAGE AT ALL TIMES. IMMEDIATELY DISPOSE OF WRAPPINGS OR WASTE MATERIALS ASSOCIATED WITH PRODUCTS NECESSARY FOR THE COMPLETION OF THE WORK.

C. ALL GARBAGE SHALL BE COORDINATED WITH THE WASTE MANAGEMENT PLAN. DO NOT BURY GARBAGE IN BACK-FILL.

D. ONCE INSTALLATION IS COMPLETE, REMOVE ANY EXCESS SOIL FROM PAVEMENTS OR EMBEDDED FIXTURES. ENSURE THAT MULCH IS CONFINED TO PLANTING BEDS AND THAT ALL TAGS AND FLAGGING TAPE ARE REMOVED FROM THE SITE. LANDSCAPE ARCHITECT SEALS ARE TO REMAIN, AS PER 3.7 - INSTALLATION OF BALLED AND BURLAPPED TREES AND SHRUBS, H.

3.15 PROTECTION DURING CONSTRUCTION

A. THE CONTRACTOR SHALL PROTECT LANDSCAPE WORK AND MATERIALS FROM DAMAGE DUE TO LANDSCAPE OPERATION, OPERATIONS BY OTHER CONTRACTORS OR TRESPASSERS. MAINTAIN PROTECTION DURING INSTALLATION UNTIL ACCEPTANCE. TREAT, REPAIR OR REPLACE DAMAGED LANDSCAPE WORK IMMEDIATELY. CONTRACTOR RESPONSIBLE FOR REPLACEMENT DUE TO DAMAGE DURING CONSTRUCTION CONTRACTOR IS NOT RESPONSIBLE FOR AFTER CONSTRUCTION DAMAGE BY OTHERS, EXCEPT RODENT DAMAGE WHERE PROTECTION IS REQUIRED.

B. DAMAGE DONE TO PLANT MATERIALS, OR ANY OF THE WORK, BY THE CONTRACTOR, OR ANY OF THEIR SUB-CONSULTANTS, SHALL BE REPLACED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.

3.16 PLANT MAINTENANCE

A. DURING THE PROJECT, THE CONTRACTOR SHALL MAINTAIN THE SITE, INCLUDING COMPLETED WORK AND EXISTING CONDITIONS. ONCE THE PROJECT IS COMPLETE, THE CONTRACTOR SHALL MAKE PERIODIC SITE VISITS TO INSPECT THE SITE. A WRITTEN RECORD OF EACH VISIT SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT.

B. MAINTENANCE SHALL CONSIST OF PRUNING, WATERING, CULTIVATING, WEEDING, MULCHING, REMOVAL OF DEAD MATERIAL, REPAIRING AND REPLACING OF TREE STAKES, TIGHTENING AND REPAIRING OF GUYS, REPAIRING AND REPLACING OF DAMAGED TREE WRAP MATERIAL, RESETTING PLANTS TO PROPER GRADES AND UPRIGHT POSITION, AND FURNISHING AND APPLYING SUCH SPRAYS AS ARE NECESSARY TO KEEP PLANTINGS FREE OF INSECTS AND DISEASE, AND IN HEALTHY GROWING CONDITION. PLANTING AREAS SHALL BE KEPT FREE OF WEEDS, GRASS, AND OTHER UNDESIRABLE VEGETATIVE GROWTH. CONTRACTOR SHALL MAKE PERIODIC SITE VISITS FOR THE DURATION OF THE GUARANTEE PERIOD.

C. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING MAINTENANCE REGIMEN FOR THE PROJECT:
1. CONTRACTOR SHALL PERFORM THE STANDARD 90-DAY MAINTENANCE REGIMEN, TO BEGIN UPON ACCEPTANCE OF THE WORK. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH A DETAILED DESCRIPTION OF THE NECESSARY REQUIREMENTS TO SUSTAIN THE WORK UNTIL THE END OF THE GUARANTEE PERIOD.
2. CONTRACTOR SHALL PROVIDE THE OWNER WITH A PROPOSAL FOR MAINTENANCE EXTENDING BEYOND THE 90 DAY PERIOD.

END OF SECTION

SECTION 32 8400 - IRRIGATION PERFORMANCE

PART 1 - GENERAL1.01 RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS ON CONTRACT, INCLUDING BIDDING REQUIREMENTS, GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION I SPECIFICATIONS, APPLY TO WORK IN THIS SECTION.

1.02 DESCRIPTION OF WORK
A. THE FOLLOWING IRRIGATION SYSTEM WHEN FULLY COMPLETED SHALL WATER ALL NOTED LANDSCAPED AREAS. IT IS THE INTENT OF THE DIAGRAMMATIC IRRIGATION PLAN TO INSTALL ALL PRODUCTS WITHIN THE OWNER'S PROPERTY LIMITS AND WITHIN LANDSCAPED AREAS.
B. PROVIDE ALL DESIGN, LABOR, MATERIALS, EQUIPMENT, AND SUPERVISION REQUIRED TO CONSTRUCT THE IRRIGATION SYSTEM INCLUDING:
1. VALVES, MECHANICAL AND ELECTRICAL;
2. CONTROLLERS AND WIRING;
3. PIPING; AND THRUST BLOCKS
4. AUTOMATIC IRRIGATION VALVES, FILTER AND PRESSURE REGULATORS WITH;
5. SUBSURFACE IRRIGATION EQUIPMENT COMPLETE.
6. IRRIGATION SPRAY HEADS, ROTORS, DRIP LINES AND EMITTERS.

C. IRRIGATION SYSTEM SHALL BE INSTALLED AS A COMPLETE COORDINATED SYSTEM. ALL EQUIPMENT WHETHER MENTIONED OR NOT SHALL BE PROVIDED FOR THE PROPER OPERATION OF IRRIGATION SYSTEM. OPERATION SHALL BE AS PER MANUFACTURE RECOMMENDATIONS AND TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. IT MAY BE PRODUCED BY MANUFACTURER'S AS SPECIFIED. ALL SYSTEM COMPONENTS SHALL BE COORDINATED TO PROVIDE A FULLY COMPATIBLE FUNCTIONING SYSTEM.
D. PROVIDE AND INSTALL SLEEVES UNDER WALKS AND DRIVES. BOTH PIPING AND 24 VAC WIRING SLEEVES SHALL BE INSTALLED AS PER LOCAL CODES. SIZE, DEPTH, AND LOCATION AS REQUIRED. COORDINATE WITH GENERAL CONTRACTOR AND ALL TRADES - SEE PLANS.

1.03 RELATED WORK SPECIFIED ELSEWHERE
A. MECHANICAL.
B. ELECTRICAL.
C. THE IRRIGATION CONTRACTOR SHALL COORDINATE WITH ALL LANDSCAPE CONTRACTORS TO ENSURE ADEQUATE AND TIMELY IRRIGATION OF ALL PLANT MATERIALS AND TO ESTABLISH THE CORRECT LOCATION OF IRRIGATION COMPONENTS RELATIVE TO LANDSCAPE MATERIAL.

1.04 DELIVERY, HANDLING, AND STORAGE
A. MATERIALS SHALL BE DELIVERED TO THE SITE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR SHIPMENT AND PROTECTION OF MATERIALS.
B. HANDLING OF MATERIALS AS RECOMMENDED BY MANUFACTURER.
C. STORAGE OF ALL MATERIALS IN LOCATIONS DESIGNATED AND APPROVED BY OWNER.

1.05 CODES, INSPECTIONS, AND PERMITS
A. THE ENTIRE INSTALLATION SHALL FULLY COMPLY WITH ALL LOCAL AND STATE LAWS AND ORDINANCES, AND WITH ALL THE ESTABLISHED CODES APPLICABLE THERETO.
B. THE CONTRACTOR SHALL TAKE OUT ALL REQUIRED PERMITS, ARRANGE FOR ALL NECESSARY INSPECTIONS AND SHALL PAY ANY FEES AND EXPENSES IN CONJUNCTION WITH THE SAME AS A PART OF THE WORK UNDER THIS SECTION.
C. IF REQUIRED, THE OWNER WILL PROVIDE THE CITY AND UTILITY COMPANIES WITH A "HOLD-HARMLESS" AGREEMENT FOR SPRINKLERS ON PUBLIC LANDS AND EASEMENTS.

1.06 SITE DISTURBANCES
A. TAKE PRECAUTIONS TO ENSURE THAT EQUIPMENT AND VEHICLES DO NOT DISTURB OR DAMAGE EXISTING SITE GRADING, WALKS, CURBS, PAVEMENTS, UTILITIES, PLANTS, AND OTHER EXISTING ITEMS AND ELEMENTS ON PUBLIC AND PRIVATE PROPERTY.
B. VERIFY LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES PRIOR TO COMMENCING EXCAVATION.
C. REPAIR AND/OR RETURN TO ORIGINAL CONDITION ANY DAMAGE CAUSED BY CONTRACTOR'S NEGLIGENCE AT NO COST TO THE OWNER.

1.07 JOB CONDITIONS
A. EXISTING UTILITIES:
1. LOCATE EXISTING UNDERGROUND UTILITIES IN AREAS OF WORK. IF UTILITIES ARE TO REMAIN IN PLACE, PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING THIS WORK.
2. SHOULD UNCHARTED, OR INCORRECTLY CHARTED, PIPING OR OTHER UTILITIES BE ENCOUNTERED DURING EXCAVATION, CONSULT UTILITY OWNER IMMEDIATELY FOR DIRECTIONS. COOPERATE WITH OWNER AND UTILITY COMPANIES IN KEEPING RESPECTIVE SERVICES AND FACILITIES IN FULL OPERATION. REPAIR DAMAGED UTILITIES TO SATISFACTION OF UTILITY OWNER.
3. DO NOT INTERRUPT EXISTING UTILITIES SERVING FACILITIES OCCUPIED AND USED BY OWNER OR OTHERS DURING OCCUPIED HOURS, EXCEPT WHEN PERMITTED IN WRITING BY OWNER AND THEN ONLY AFTER ACCEPTABLE TEMPORARY UTILITY SERVICES HAVE BEEN PROVIDED.
4. PROVIDE MINIMUM OF 7 DAYS NOTICE TO OWNER AND OWNER'S REPRESENTATIVE AND RECEIVE WRITTEN NOTICE TO PROCEED BEFORE INTERRUPTING ANY UTILITY.
5. DEMOLISH AND COMPLETE REMOVE FROM SITE EXISTING UNDERGROUND UTILITIES INDICATED TO BE REMOVED AFTER COMPLETE DEACTIVATION. COORDINATE WITH UTILITY COMPANIES FOR SHUT-OFF OF SERVICES IF LINES ARE ACTIVE.

B. PROTECTION OF PERSONS AND PROPERTY:
C. BARRICADE OPEN EXCAVATIONS OCCURRING AS PART OF THIS WORK AND POST WARNING LIGHTS.
D. OPERATE WARNING LIGHTS AS RECOMMENDED BY AUTHORITIES HAVING JURISDICTION.
1. PROTECT STRUCTURES, UTILITIES, SIDEWALKS, PAVEMENTS, CURBS, AND OTHER FACILITIES FROM DAMAGE CAUSED BY SETTLEMENT, LATERAL MOVEMENT, UNDERMINING, WASHOUT, AND OTHER HAZARDS CREATED BY THIS WORK.

1.08 GUARANTEE
A. FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE OF WORK PERFORMED UNDER THIS SECTION, THE CONTRACTOR SHALL PROMPTLY FURNISH AND INSTALL ANY AND ALL PARTS AND EQUIPMENT WHICH PROVE DEFECTIVE IN MATERIALS, WORKMANSHIP, OR INSTALLATION AT NO ADDITIONAL COST TO OWNER.
B. DURING THE ONE (1) YEAR GUARANTEE PERIOD, THE CONTRACTOR SHALL DRAIN THE IRRIGATION SYSTEM AND WINTERIZED EACH FALL FOR THE WINTER AND SHALL PUT THE IRRIGATION SYSTEM BACK INTO OPERATION EACH SPRING AT NO ADDITIONAL COST TO OWNER.

1.09 SUBMITTALS
A. SUBMIT WITH BID THREE (3) COPIES OF MANUFACTURER'S TECHNICAL DATA AND SPECIFICATIONS FOR ALL COMPONENT PARTS OF THE UNDERGROUND SPRINKLER SYSTEM.
B. SUBMIT TO OWNER THREE (3) COPIES OF DESIGN AND INSTALLATION DRAWINGS (SHOP DRAWINGS) FOR UNDERGROUND IRRIGATION SYSTEM INCLUDING PLAN LAYOUT AND DETAILS ILLUSTRATING LOCATION AND TYPE OF HEADS, VALVES, PIPING CIRCUITS, CONTROLS, AND ACCESSORIES IF MODIFIED FROM PLAN.
C. DESCRIBE IN DETAIL, IN THE BID FOR THIS WORK, ANY PROPOSED DEVIATION OR VARIANCE FROM THE EQUIPMENT OR INSTALLATION DESCRIBED HEREIN AND ON PLAN.

PART 2 - PRODUCTS

2.01 GENERAL
A. ALL SPRINKLERS, ELECTRIC VALVES AND CONTROLLERS SHALL BE AS SPECIFIED HEREIN AND ON PLAN. SAID EQUIPMENT AND OTHER PRODUCTS ARE CALLED OUT ON THE IRRIGATION PLANS AND OR LISTED IN THE SPECIFICATIONS BELOW.
B. ALL SPRINKLER EQUIPMENT MUST BE PURCHASED BY THE LOCAL AUTHORIZED SERVICED REGIONAL DISTRIBUTOR.

2.02 COPPER PIPING
A. PIPING AS PER LOCAL CODES (BY LICENSED CONTRACTOR AND INCLUDED IN IRRIGATION CONTRACTOR'S BID).

2.03 P.V.C.
A. SIZES 1" DIAMETER AND LARGER.
B. VIRGIN, HIGH IMPACT, POLY-VINYL CHLORIDE (P.V.C.) PIPE, SCHEDULE 1120-1220. MAINLINE PIPING: CLASS 200, HAVING A MINIMUM OF 200 PSI WORKING PRESSURE RATING. LATERAL PIPING: CLASS 200, HAVING A MINIMUM OF 200 PSI WORKING PRESSURE RATING.
C. CONTINUOUSLY AND PERMANENTLY MARKED WITH MANUFACTURER'S NAME, MATERIAL, SIZE, AND SCHEDULE OR TYPE.
D. PIPE: CONFORM TO CS 207-60 OR LATEST REVISION.
E. MATERIAL: CONFORM TO CS 256-63 OR LATEST REVISION.

2.04 P.V.C. PIPE FITTINGS
A. SCH. 40 P.V.C. SOLVENT WELD OR BELLED FITTINGS; SADDLES PROHIBITED.
B. CONFORM TO ASTM D1784, ASTM D2466 OR LATEST REVISION.

2.05 POLYETHYLENE PIPE
A. FLEXIBLE POLYETHYLENE PIPE RATED AT 100-PSI MINIMUM WORKING PRESSURE.
B. 1" THROUGH 1 1/2" DIAMETER.
C. PRODUCT STANDARD PS11-69 OR ASTM D2239-73 FOR PE 2306, SDR-15 OR LATEST REVISION.

2.06 POLYETHYLENE FITTINGS
A. SCHEDULE 100 P.V.C.
B. ALL FITTINGS LARGER THAN1" SHALL BE SECURED WITH DOUBLE STAINLESS STEEL CLAMPS.

2.07 SADDLE TEES
A. BLAZING SADDLE SELF-TAPPING FITTING AS MANUFACTURED BY BLAZING PRODUCTS INC., ST. LOUIS, MO, OR PRE-APPROVED EQUAL.

2.08 SPRINKLER RISER OFF POLYETHLENE PIPE
A. CUT-OFF POLYETHYLENE RISERS MOUNTED ON SADDLE TEES.
B. RISER HEIGHT AS REQUIRED.

2.09 ELECTRICAL CONTROL VALVES
A. MANUFACTURER'S STANDARD, OF TYPE AS FOLLOWS:-SEE PLAN
1. GLOBE VALVES OPERATED BY LOW-POWER SOLENOID, NORMALLY CLOSED, MANUAL FLOW ADJUSTMENT.

2.10 CONTROL CABLE
A. ALL ELECTRICAL CONTROL AND GROUND WIRE SHALL BE "UF/PE" DIRECT BURIAL.
B. 12 GA. "UF/PE" WHITE COMMON NEUTRAL 14 GA. "PE" RED CONTROL WIRE.
C. A SEPARATE COMMON NEUTRAL WIRE IS REQUIRED FROM CONTROLLER ALONG ENTIRE MAIN LINE AND DROPPED IN MARKED VALVE BOX.
D. PROVIDE ONE SPARE CONTROL WIRE FROM CONTROLLER ALONG ENTIRE MAIN LINE.
E. NO ALUMINUM WIRE ALLOWED.
F. WIRING USED FOR CONNECTING AUTOMATIC REMOTE CONTROL VALVE TO AUTOMATIC CONTROLLERS SHALL BE TYPE "UF/PE", 600 VOLT, SOLID COPPER, SINGLE CONDUCTOR WIRE WITH DIRECT BURIAL INSULATION AND BEAR "UL" APPROVAL FOR DIRECT UNDERGROUND BURIAL FEEDER CABLE.
G. DIRECT BURY SPLICE KIT: 3M DBY.

2.11 SUBSURFACE IRRIGATION - SEE PLAN(S) FOR EXTENT OF COVERAGE.

2.12 MANUFACTURERS: PROVIDE UNDERGROUND IRRIGATION SYSTEM AS A COMPLETE UNIT PRODUCED BY HUNTER INDUSTRIES OR APPROVED EQUAL (PER OWNER'S APPROVAL), INCLUDING HEADS, DRIPLINES, VALVES, CONTROLS, AND ACCESSORIES.
A. SUBSURFACE IRRIGATION - SEE PLAN(S)

2.13 CONTROL EQUIPMENT - COORDINATE WITH LANDSCAPE ARCHITECT / ARCHITECT FOR LOCATION. PROVIDE PRODUCT DATA AND WIRING DIAGRAMS FOR CONTROLLERS AND DEVICES DETECTING ON-SITE WEATHER DATA COLLECTION AND DETERMINING NEED FOR IRRIGATION. WEATHERMATIC CONTROLLER OR APPROVED EQUAL.
A. FURNISH LOW VOLTAGE SYSTEM MANUFACTURERED EXPRESSLY FOR CONTROL OF AUTOMATIC CIRCUIT VALVES OF UNDERGROUND IRRIGATION SYSTEMS. PROVIDE UNIT(S) OF CAPACITY TO SUIT NUMBER OF CIRCUITS.
B. EXTERIOR CONTROL ENCLOSURE: MANUFACTURER'S STANDARD WITH LOCKING COVER, COMPLYING WITH NFPA 70.
C. TRANSFORMER: TO CONVERT BUILDING SERVICE VOLTAGE TO CONTROL VOLTAGE OF 24 VOLTS.
D. CIRCUIT CONTROL: EACH CIRCUIT VARIABLE FROM APPROXIMATELY 5 TO 60 MINUTES. INCLUDE SWITCH FOR MANUAL OR AUTOMATIC OPERATION OF EACH CIRCUIT.
E. TIMING DEVICE: ADJUSTABLE, 24-HOUR AND 7 OR 14 DAY CLOCKS TO OPERATE ANY TIME OF DAY AND SKIP ANY DAY IN A 7 OR 14 DAY PERIOD.
F. SETTINGS: SOLID STATE.
G. COORDINATE LOCATION OF CONTROLLER WITH ELECTRICAL CONTRACTOR.
H. NO TIME LAG BETWEEN SECTIONS OR STATIONS

2.14 REDUCED PRESSURE BACKFLOW DEVICE
A. MANUFACTURER'S STANDARD, TO SUIT SPRINKLER SYSTEM. ALL BACKFLOW PREVENTION DEVICES MUST COMPLY WITH REQUIREMENTS SET FORTH BY THE STATE DEPARTMENT OF NATURAL RESOURCES, THE LOCAL HEALTH DEPARTMENT, AND CITY WATER DEPARTMENTS. PREVENT ANY BACK SIPHONAGE AFTER SECTIONAL VALVES ARE
B. CLOSED.

2.15 IRRIGATION METER
A. AS REQUIRED BY CITY OF ST. LOUIS WATER DEPARTMENT. INSTALLED BY CONTRACTOR.

2.16 QUICK COUPLING VALVES - SEE DETAIL
A. LOCATED IN INTERVALS ALONG ALL MAINLINE PIPE WITH SWINTG JOINTS AND STABILIZERS. VERIFY FINAL LOCATIONS WITH OWNER.
B. INSTALL QUICK COUPLING VALVE IN AMETEK'S STANDARD CIRCULAR VALVE BOX.
C. PROVIDE MATCHING QUICK COUPLER KEYS. ONE KEY FOR EACH 3 COUPLING VALVES.

2.17 ISOLATION VALVES
A. COORDINATE AND VERIFY FINAL LOCATIONS WITH THE OWNER.
B. SIZE VALVE TO MATCH LINE SIZE.
C. INSTALL ISOLATION VALVES IN 12" STANDARD VALVE BOX ACCORDING TO THE PLANS.

2.18 VALVE BOX FOR ELECTRICAL CONTROL VALVES, QUICK COUPLING VALVES, AND ISOLATION VALVES - SEE DETAIL
A. SINGLE VALVE SETUP: AMETEK 12" STANDARD BOX.
B. MULTI-VALVE SETUP: AMETEK'S JUMBO BOX. USE MANUFACTURER'S RECOMMENDED EXTENSION KITS IF REQUIRED.
C. QUICK COUPLING VALVES: AMETEK'S 10" CIRCULAR BOX.

2.19 SLEEVES - SEE PLAN FOR LOCATIONS.
A. PIPE: HDPE CLASS 150 SDR 11 EXTRA MOLECULAR STRENGTH. COORDINATE WITH GENERAL CONTRACTOR.

2.20 THRUST BLOCK - SEE DETAIL
A. POUR CONCRETE THRUST BLOCKS AT ALL CHANGE OF DIRECTIONS TO ENSURE AGAINST PIPE SEPARATION.
B. AS SHOWN ON CONSTRUCTION DETAILS.

2.21 SWING JOINTS
A. LASCO 360 DEG. SWING JOINT ASSEMBLY WITH STABILIZER FOR QCV'S AS MANUFACTURED BY PHILIPS INDUSTRIES OR APPROVED SUBSTITUTE.

PART 3 - EXECUTION

3.01 SYSTEM DESIGN
A. CONTRACTOR SHALL COORDINATE ANY ADDITIONAL PUMP STARTS AS REQUIRED FOR OPERATION OF BOTH SYSTEMS.
B. LOCATION OF HEADS: LOCATE HEADS AS PER MANUFACTURER'S RECOMMENDATIONS. MAKE MINOR ADJUSTMENTS AS NECESSARY TO AVOID PLANTINGS AND OTHER OBSTRUCTIONS AND TO PROVIDE PROPER LOCATION RELATIVE TO FINISHED LAWNS AND PLANT BEDS, AT NO ADDITIONAL COST TO THE OWNER. IRRIGATION SYSTEM LAYOUT IS DIAGRAMMATIC. EXACT LOCATIONS OF PIPING, SPRINKLER HEADS, VALVES, AND OTHER COMPONENTS SHALL BE ESTABLISHED BY THE CONTRACTOR IN THE FIELD AT TIME OF INSTALLATION AND ON THE APPROVED SHOP DRAWINGS.
C. MINIMUM WATER COVERAGE: DESIGN TO DELIVER THE EQUIVALENT OF 1.5" OF RAINFALL PER WEEK. SYSTEM TOTAL OPERATING TIME NOT TO EXCEED 12 HOURS PER 24-HOUR DAY.
1. MINOR ADJUSTMENTS TO SYSTEM FIELD LAYOUT WILL BE PERMITTED TO CLEAR EXISTING FIXED OBSTRUCTIONS; FINAL FIELD LAYOUT SHALL BE ACCEPTABLE TO THE OWNER BASED ON THE APPROVED SHOP DRAWINGS.
2. ALL MSD BMP AREAS SHALL BE ZONED SEPARATELY.

3.02 TIMING
A. COORDINATE TIME SCHEDULE WITH OWNER'S REPRESENTATIVE.

3.03 INSTALLATION
A. EXCAVATING AND BACKFILLING:
1. EXCAVATION SHALL INCLUDE ALL MATERIALS ENCOUNTERED, EXCEPT MATERIALS THAT CANNOT BE EXCAVATED BY NORMAL MECHANICAL MEANS.
   a. ROCK EXCAVATION: SUBMIT A UNIT COST PER FOOT OF TRENCH FOR ROCK EXCAVATION. INCLUDE IN PRICE ADDITIONAL BACKFILL MATERIALS REQUIRED TO REPLACE EXCAVATED ROCK.
   b. EXCAVATE TRENCHES OF SUFFICIENT DEPTH AND WIDTH TO PERMIT PROPER HANDLING AND INSTALLATION OF PIPE AND FITTINGS.
   c. IF THE PULLING METHOD IS USED, THE PIPE "PLOW" SHALL BE A VIBRATORY TYPE. STARTING AND FINISHING HOLES FOR PIPE PULLING SHALL NOT EXCEED A 1'-0" BY 3'-0" OPENING.
   d. EXCAVATE TO DEPTHS REQUIRED TO PROVIDE 2" DEPTH OF EARTH FILL OR SAND BEDDING FOR PIPING WHEN ROCK OR OTHER UNSUITABLE BEARING MATERIAL IS ENCOUNTERED.
   e. FILL TO MATCH ADJACENT GRADE ELEVATIONS WITH APPROVED EARTH FILL MATERIAL. PLACE AND COMPACT FILL IN LAYERS NOT GREATER THAN 8" DEPTH.
      1) PROVIDE APPROVED EARTH FILL OR SAND TO A POINT 4" ABOVE THE TOP OF PIPE.
      2) OVERFILL WITH APPROVED EXCAVATED OR BORROW FILL MATERIALS FREE OF LUMPS OR ROCKS LARGER THAN 3" IN ANY DIMENSION. LEVEL, COMPACT AND WATER SETTLE. SHOULD SETTLEMENT OCCUR, REFILL AND RE-SOD AS REQUIRED.
   f. EXCEPT AS INDICATED, INSTALL IRRIGATION MAINS WITH A MINIMUM COVER OF 18" BASED ON FINISHED GRADES. INSTALL IRRIGATION LATERALS WITH A MINIMUM COVER OF 12" BASED ON FINISHED GRADES.
   g. EXCAVATE TRENCHES AND INSTALL PIPING AND FILL DURING THE SAME WORKING DAY. DO NOT LEAVE OPEN TRENCHES OR PARTIALLY FILLED TRENCHES OPEN OVERNIGHT.

B. PLASTIC PIPE:
1. INSTALL PLASTIC PIPE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE FOR THERMAL EXPANSION AND CONTRACTION.
2. SAW CUT PLASTIC PIPE. USE A SQUARE-IN-SAWING VICE TO ENSURE A SQUARE CUT. REMOVE BURRS AND SHAVINGS AT CUT ENDS PRIOR TO INSTALLATION.
3. MAKE PLASTIC TO PLASTIC JOINTS WITH SOLVENT WELDED JOINTS OR SLIP SEAL JOINTS. USE ONLY SOLVENT RECOMMENDED BY THE PIPE MANUFACTURER. INSTALL PLASTIC PIPE FITTINGS IN ACCORDANCE WITH PIPE MANUFACTURER'S INSTRUCTIONS. CONTRACTOR SHALL MAKE ARRANGEMENTS WITH PIPE MANUFACTURER FOR ALL NECESSARY FIELD ASSISTANCE.
4. MAKE PLASTIC TO METAL JOINTS WITH TOE NIPPLES, NO MALE ADAPTORS.
5. MAKE SOLVENT WELD JOINTS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
6. ALLOW JOINTS TO SET AT LEAST 24 HOURS BEFORE PULLING OR PRESSURE IS APPLIED TO THE SYSTEM.
7. UNCOIL POLY-PIPE AND INSERT FITTING FULL DEPTH. SECURE POLY-PIPE TO INSERT FITTINGS WITH STAINLESS STEEL CLAMPS. DOUBLE CLAMP PIPE OVER 1" DIAMETER.
8. MAINTAIN PIPE INTERIORS FREE OF DIRT AND DEBRIS. CLOSE OPEN ENDS OF PIPE BY ACCEPTABLE METHODS WHEN PIPE INSTALLATION IS NOT IN PROGRESS AND OVER ALL NON-WORKING HOURS.

C. SUB-SURFACE IRRIGATION, FITTINGS, VALVES, AND ACCESSORIES:
1. INSTALL FITTINGS, VALVES, SUB-SURFACE IRRIGATION AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, EXCEPT AS OTHERWISE INDICATED.
   a. PROVIDE CONCRETE THRUST BLOCKS WHERE REQUIRED AT FITTINGS VALVES AND ALL CHANGE OF DIRECTIONS.
   b. OBTAIN OWNER'S REPRESENTATIVE'S REVIEW AND ACCEPTANCE OF HEIGHT FOR PROPOSED SPRINKLER HEADS AND VALVES PRIOR TO INSTALLATION.
   c. LOCATE SUB-SURFACE IRRIGATION TO ASSURE PROPER COVERAGE OF INDICATED AREAS. DO NOT EXCEED DISTANCES RECOMMENDED BY MANUFACTURER OR AS INDICATED ON PLANS.
   d. INSTALL QUICK-COUPLING VALVES IN 10" VALVE BOX ON 360-DEGREE SWING JOINT ASSEMBLY AS PER MANUFACTURER'S RECOMMENDATION WITH STABILIZER (PER LOCATION ON DWGS)
   e. INSTALL FITTINGS AND ACCESSORIES AS SHOWN OR REQUIRED TO COMPLETE THE SYSTEM.
   f. INSTALL CONTROLLER AS DETAILED:
      1) COORDINATE LOCATION WITH OWNER.
      2) WATERPROOF WIRE CONDUIT TO PROVIDE A COMPLETE, WATERPROOF, PERMANENT AND NEAT JOB.
      3) GROUND CONTROLLER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
   g. INSTALL IN-GROUND CONTROL VALVES IN A VALVE ACCESS BOX AS INDICATED.
   h. INSTALL VALVE ACCESS BOXES ON A SUITABLE BASE OF GRAVEL TO PROVIDE A LEVEL FOUNDATION AT PROPER GRADE TO PROVIDE DRAINAGE OF THE ACCESS BOX.
   i. SEAL THREADED CONNECTIONS ON PRESSURE SIDE OF CONTROL VALVES AS PER MANUFACTURER'S RECOMMENDATIONS.

D. CONTROL WIRING:
1. INSTALL ELECTRIC CONTROL CABLE IN THE PIPING TRENCHES WHEREVER POSSIBLE. PLACE WIRE IN TRENCH ADJACENT TO PIPE. INSTALL WIRE WITH SLACK TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION. EXPANSION JOINTS IN WIRE SHALL BE PROVIDED AT 200-FOOT INTERVALS BY MAKING 5-6 TURNS OF THE WIRE AROUND A PIECE OF 1/2" PIPE INSTEAD OF SLACK. WHERE NECESSARY TO RUN WIRE IN A SEPARATE TRENCH, PROVIDE A MINIMUM COVER OF 12".
2. PROVIDE SUFFICIENT SLACK AT SITE CONNECTIONS AT REMOTE CONTROL VALVES IN CONTROL BOXES, AND AT ALL WIRE SPLICES TO ALLOW RAISING THE VALVE BONNET OR SPLICE TOT HE SURFACE WITHOUT DISCONNECTING THE WIRES WHEN REPAIR IS REQUIRED.
3. CONNECT EACH REMOTE CONTROL VALVE TO ONE STATION OF A CONTROLLER EXCEPT AS OTHERWISE INDICATED.
4. CONNECT REMOTE CONTROL VALVES TO A COMMON GROUND WIRE SYSTEM INDEPENDENT OF ALL OTHER CONTROLLERS. A SEPARATE COMMON NEUTRAL WIRE IS REQUIRED FOR EACH CONTROLLER.
5. MAKE WIRE CONNECTIONS TO REMOTE CONTROL ELECTRIC VALVES AND SPLICES OF WIRE IN THE FIELD, USING 3M DBY OR 3M DBR DIRECT BURY SPLICE KIT (OR APPROVED EQUAL).
6. PROVIDE TIGHT JOINTS TO PREVENT LEAKAGE OR WATER AND CORROSION BUILD-UP ON THE JOINT.

E. INTERIOR PLUMBING:
1. INSTALL PIPING TO PROVIDE COMPLETE DRAINAGE OF THE SYSTEM, TOWARD THE SOURCE WHEREVER POSSIBLE. PROVIDE DRAIN VALVES AT ALL DRAINAGE POINTS ON PIPES. CUT A PIPE ACCURATELY TO
MEASUREMENTS ESTABLISHED AT THE BUILDING AND INSTALLED WITHOUT SPRINGING OR FORCING. AFTER CUTTING AND REAMING, AND BEFORE ASSEMBLING, REMOVE INTERIOR SCALE, DUST, AND FOREIGN MATTER. INSTALLED PIPE SHALL FOLLOW BUILDING LINES, CLEARING ALL DOORS AND OTHER OPENINGS. NO DIAGONAL PIPING WILL BE ACCEPTED. INSTALL PIPING TO ALLOW INSTALLATION OF 1" THICKNESS PIPE INSTALLATION COVERING. PROVIDE FOR THERMAL EXPANSION AND CONTRACTION OF PIPE.
2. INSULATE PIPING WITH 1" THICKNESS OF FIBROUS GLASS INSULATION, 35 DEGREE SERVICE, WITH WHITE KRAFT PAPER JACKET AND .001" ALUMINUM FOIL VAPOR BARRIER.
3. ALL PLUMBING SHALL CONFORM TO ALL LOCAL CODES AND REGULATIONS.

F. SLEEVES: COORDINATE WITH GENERAL CONTRACTOR AND ALL TRADES - SEE PLAN.
G. BACKFLOW PREVENTER:
1. COORDINATE LOCATION WITH OWNER.
2. INSTALL BACKFLOW PREVENTER IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND IN COMPLIANCE WITH REQUIREMENTS SET FORTH BY THE STATE DEPARTMENT OF NATURAL RESOURCES, THE LOCAL HEALTH DEPARTMENT, AND CITY WATER DEPARTMENTS.
3. INSTALL BACKFLOW PREVENTER LOCKED ENCLOSURE.

H. FLUSHING, TESTING, AND ADJUSTMENT:
1. PERFORM SYSTEM TESTING UPON COMPLETION OF EACH SECTION. MAKE NECESSARY REPAIRS AND RE-TEST REPAIRED SECTIONS AS REQUIRED.
2. ADJUST SUB-SURFACE IRRIGATION AFTER INSTALLATION FOR PROPER AND ADEQUATE DISTRIBUTION OF THE WATER OVER THE COVERAGE PATTERN.
3. ADJUST ALL ELECTRIC REMOTE CONTROL VALVE FLOW CONTROL STEMS FOR SYSTEM BALANCE.
4. TEST AND DEMONSTRATE THE CONTROLLER BY OPERATING APPROPRIATE DAY, HOUR, AND STATION SELECTION FEATURES AS REQUIRED TO AUTOMATICALLY START AND SHUT DOWN IRRIGATION CYCLES TO ACCOMMODATE PLANT REQUIREMENTS AND WEATHER CONDITIONS.

3.04 AS-BUILT DRAWING
A. FURNISH ACCURATE REPRODUCIBLE MYLAR "AS-BUILT" DRAWINGS OF ALL COMPONENTS. STATE THE SIZE, MANUFACTURER, MODEL NUMBER, PART NUMBER, SIZE, AND EXACT LOCATION OF EACH AND EVERY ITEM FURNISHED AND INSTALLED BY THIS CONTRACTOR. FINAL PAYMENT CAN BE WITHHELD UNTIL "AS-BUILT" HAS BEEN PROVIDED TO THE OWNER AND APPROVED BY OWNER OR OWNER'S REPRESENTATIVE.
B. CONTRACTOR WILL FURNISH OWNER WITH 2 BOUND COPIES OF INSTRUCTION SHEETS AND PARTS LISTS COVERING ALL OPERATING EQUIPMENT.

3.05 DISPOSAL OF WASTE MATERIAL
A. STOCKPILE, HAUL FROM SITE, AND LEGALLY DISPOSE OF WASTE MATERIALS, INCLUDING UNSUITABLE EXCAVATED MATERIALS, ROCK, TRASH, AND DEBRIS.
B. MAINTAIN DISPOSAL ROUTE CLEAR, CLEAN AND FREE OF DEBRIS.
C. REPAIR ANY DAMAGE RESULTING FROM IRRIGATION SYSTEM INSTALLATION.

3.06 TESTING
A. GENERAL: NOTIFY OWNER'S REPRESENTATIVE IN WRITING WHEN TESTING WILL BE CONDUCTED. CONDUCT TESTS IN PRESENCE OF OWNER'S REPRESENTATIVE.
B. HYDROSTATIC TEST: TEST WATER PIPING AND VALVES, BEFORE BACKFILLING TRENCHES, TO A HYDROSTATIC PRESSURE OF NOT LESS THAN 100 PSI. PIPING MAY BE TESTED IN SECTIONS TO EXPEDITE WORK. REMOVE AND REPAIR PIPING, CONNECTIONS, VALVES WHICH DO NOT PASS HYDROSTATIC TESTING.
C. OPERATIONAL TESTING: PERFORM OPERATIONAL TESTING AFTER HYDROSTATIC TESTING IS COMPLETED, BACKFILL IS IN PLACE, AND SPRINKLER HEADS ARE ADJUSTED TO FINAL POSITION. PERFORM TEST PRIOR TO ANY PLANTING OPERATIONS.
1. DEMONSTRATE TO OWNER'S REPRESENTATIVE THAT THE SYSTEM MEETS THE COVERAGE REQUIREMENTS AND THAT AUTOMATIC CONTROLS FUNCTION PROPERLY.
2. COVERAGE REQUIREMENTS ARE BASED ON OPERATION OF ONE CIRCUIT AT A TIME.
3. SHOULD SYSTEM FAIL TO MEET SPECIFIED COVERAGES OR THE AUTOMATIC CONTROLS NOT FUNCTION PROPERLY IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO CORRECT THE INSTALLATION AS NECESSARY TO GAIN APPROVAL.

D. AFTER COMPLETION OF TESTING, CAREFULLY READJUST LAWN SPRINKLER HEADS SO THEY WILL BE FLUSH WITH FINISH GRADE.

3.07 ACCEPTANCE
A. TEST AND DEMONSTRATE TO THE OWNER THE SATISFACTORY OPERATION OF THE SYSTEM FREE OF LEAKS.
B. INSTRUCT THE OWNER IN THE OPERATION OF THE SYSTEM, INCLUDING ADJUSTMENT OF SUB-SURFACE IRRIGATION, CONTROLLER(S), VALVES, AND PUMP CONTROLS.
C. UPON ACCEPTANCE, THE OWNER WILL ASSUME OPERATION OF THE SYSTEM.

3.08 SPECIAL INSTRUCTIONS
A. THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE GENERAL CONTRACTOR, MECHANICAL/ ELECTRICAL CONTRACTORS, AND ALL SUBCONTRACTORS, DURING THE INSTALLATION OF THIS SYSTEM.
B. DURING THE BIDDING PERIOD, THE IRRIGATION CONTRACTOR SHALL INFORM THE BIDDING GENERAL CONTRACTORS OF ANY SYSTEM ITEMS OR ELEMENTS THAT ARE REQUIRED FOR OPERATION OF THE SYSTEM SPECIFIED HEREIN, THAT ARE NOT BEING FURNISHED AND INSTALLED BY THE IRRIGATION CONTRACTOR.
C. THE SUB-SURFACE IRRIGATION SYSTEM MUST BE IN FULL OPERATION BY THE TIME THE LANDSCAPE MATERIALS ARE IN PLACE. IT IS THE INTENT AND MANDATORY REQUIREMENT THAT THE SUB-SURFACE IRRIGATION BE INSTALLED BEFORE THE PLANT MATERIAL AND PROVIDE THE WATER FOR THE NEWLY PLACED LANDSCAPE.

END OF SECTION

SECTION 32 9100 - SOIL PREPARATION FOR LANDSCAPE

APPLICATIONS PART 1 - GENERAL

1.01 GENERAL REFERENCE

A. THE WORK OF THIS SECTION IS INTEGRAL WITH THE WHOLE OF THE CONTRACT DOCUMENTS AND IS NOT INTENDED TO BE INTERPRETED OUTSIDE THAT CONTEXT.

1.02 DESCRIPTION OF WORK

A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES AND ACCESSORIES NECESSARY TO FURNISH AND INSTALL THE WORK OF THIS SECTION, COMPLETE AND FUNCTIONAL, AS INDICATED IN THE CONTRACT DOCUMENTS AND AS SPECIFIED HEREIN.

B. THE PRINCIPAL WORK OF THIS SECTION INCLUDES, BUT MAY NOT BE LIMITED TO, THE FOLLOWING:
1. PREPARATION AND PLACEMENT OF PLANTING BED SOIL
2. PREPARATION AND PLACEMENT OF POTTING SOIL IN FREESTANDING PLANTERS.

1.03 RELATED SECTIONS:

A. SECTION 329000 - PLANTING

1.04 REFERENCES AND STANDARDS

A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS, METHODS:
1. C 136-01: "STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES" (DRY SIEVING).
2. D 422-63 (2002): "STANDARD TEST METHOD FOR PARTICLE-SIZE ANALYSIS OF SOILS" (HYDROMETER).
3. D 698: "STANDARD TEST METHODS FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT" (STANDARD PROCTOR).
4. ASTM D3385 – 09 STANDARD TEST METHOD FOR INFILTRATION RATE OF SOILS IN FIELD USING DOUBLE-RING INFILTROMETER.
5. D 1556-00: STANDARD TEST METHOD FOR DENSITY AND UNIT WEIGHT OF SOIL IN PLACE BY THE SAND-CONE METHOD.
6. D 2167-94: STANDARD TEST METHOD FOR DENSITY AND UNIT WEIGHT OF SOIL IN PLACE BY THE RUBBER BALLOON METHOD.
7. D 2922-01: STANDARD TEST METHOD FOR DENSITY OF SOIL AND SOIL-AGGREGATE IN PLACE BY NUCLEAR METHODS (SHALLOW DEPTH).
8. F 1647-02A: "STANDARD TEST METHOD FOR ORGANIC MATTER CONTENT OF PUTTING GREEN AND SPORTS TURF ZONE MIXES.
9. E 2399 - 05, STANDARD TEST METHOD FOR MAXIMUM MEDIA DENSITY FOR DEAD LOAD ANALYSIS OF GREEN ROOF SYSTEMS

B. WOODS END RESEARCH LABORATORY, MT. VERNON, MAINE:
1. SOLVITA MANUAL, VERSION 4.0.

C. CODE OF FEDERAL REGULATIONS TITLE 40, CHAPTER I-ENVIRONMENTAL PROTECTION AGENCY:
1. 40 CFR PART 503 RULE, TABLE 3, PAGE 9392, VOL. 58 NO. 32.

D. AMERICAN SOCIETY OF AGRONOMY

E. STATE OF ILLINOIS, DEPARTMENT OF TRANSPORTATION, LATEST EDITION.

F. AMERICAN ASSOCIATION OF NURSERYMEN, AMERICAN STANDARDS FOR NURSERY STOCK, (ANSI Z60.1), LATEST EDITION, PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, 1250 I STREET, N.W., SUITE 500 WASHINGTON, D.C. 20005.

G. ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE.

1.05 DEFINITIONS

A. SUBGRADE: OFF-STRUCTURE SOIL MATERIAL AND LEVELS RESULTING FROM THE APPROVED ROUGH GRADING WORK. SUBGRADE SOIL SHALL BE EXISTING SOIL OR OTHER MATERIALS WHICH ARE EITHER UNDISTURBED OR HAVE BEEN PLACED RESULTING FROM THE APPROVED ROUGH GRADING WORK. LOOSENING OF ALL SUBGRADE AREAS PRIOR TO PLACEMENT OF PLANTING SOILS IS INCLUDED IN THIS SECTION.

B. PLANTING SOILS: PLANTING SOILS ARE COMPOSED OF A BLEND OF THREE OR MORE BASE COMPONENTS: BASE LOAM, ORGANIC MATERIAL AND SAND OR ADDITIONAL COMPONENTS AS SPECIFIED. THE QUALITY OF THE BLEND DEPENDS ON THE QUALITY OF THE ORIGINAL COMPONENTS. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND OBTAINING APPROVAL OF SOURCES FOR BASE LOAM, ORGANIC MATERIAL AND SAND THAT MEET THE SPECIFICATION REQUIREMENTS. CONTRACTOR IS THEN RESPONSIBLE FOR MIXING THE COMPONENTS. APPROXIMATE MIXING RATIOS ARE PROVIDED, BUT MAY REQUIRE ADJUSTMENT, DEPENDING ON THE FINAL MATERIALS AND WITH THE APPROVAL OF THE LANDSCAPE ARCHITECT OR THEIR REPRESENTATIVE, IN ORDER TO MEET SPECIFICATION REQUIREMENTS FOR EACH BLEND.

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453

Shack # 1345

REGISTERED LANDSCAPE ARCHITECT
NEIL EDWARD EISENBERGER
157.001471
STATE OF ILLINOIS
11/24/2020

NO.	DATE	REMARKS
2	11/24/20	ISSUE FOR PERMIT / BID
1	11/09/2020	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
SPECIFICATIONS

Job No. 204461
Drawn JS
Scale
Date 11/24/20

Sheet No.
L05-91

1.06 SUBMITTALS

A. SUBMITTALS: IN ACCORDANCE WITH SUBMITTAL PROCEDURES

B. AT LEAST 30 DAYS PRIOR TO ORDERING MATERIALS, SUBMIT TO THE LANDSCAPE ARCHITECT SAMPLES, CERTIFICATIONS, MANUFACTURER'S PRODUCT DATA AND CERTIFIED TEST RESULTS FOR MATERIALS AS SPECIFIED BELOW FOR APPROVAL IN CONFORMANCE WITH THE REQUIREMENTS OF THIS SPECIFICATION. NO MATERIALS SHALL BE ORDERED OR DELIVERED UNTIL THE REQUIRED SUBMITTALS HAVE BEEN REVIEWED AND APPROVED BY THE LANDSCAPE ARCHITECT. DELIVERED MATERIALS SHALL CLOSELY MATCH THE APPROVED SAMPLES. APPROVAL SHALL NOT CONSTITUTE FINAL ACCEPTANCE. LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT, ON OR AFTER DELIVERY, MATERIAL THAT DOES NOT MEET THESE SPECIFICATIONS. THE CONTRACTOR IS RESPONSIBLE FOR RECOGNIZING THAT THESE CRITICAL PROJECT MATERIALS WARRANT TIMELY AND SERIOUS ATTENTION, THAT TESTING PROCESS TO ACHIEVE APPROVED MATERIALS SHOULD BE CONSIDERED A LEAD TIME ITEM, AND UNDER NO CIRCUMSTANCE SHALL FAILURE TO COMPLY WITH SPECIFICATION REQUIREMENTS BE AN EXCUSE FOR "STAYING ON PROJECT CONSTRUCTION SCHEDULE."

C. PRODUCT DATA: SUBMIT MOST RECENT PRINTED INFORMATION FROM MANUFACTURER.
   1. ORGANIC MATERIAL: IDENTIFY THE MATERIAL(S) FROM OF WHICH IS IT COMPOSED AND IDENTIFY THE LOCATION WHERE MATERIAL WAS COMPOSTED.
   2. FERTILIZERS
   3. GROUND LIMESTONE
   4. SUPERPHOSPHATE
   5. SULFUR
   6. AERATION PIPING, COUPLINGS, CONNECTIONS, AND PERFORATED END CAPS.

D. SAMPLES: SUBMIT 1 GALLON PLANTING SOIL SAMPLES IN TWO PHASES. SUBMIT SAMPLES CONCURRENT WITH HORTICULTURAL SOIL TEST REPORTS IN BOTH PHASES. SUBMIT AS PHASE ONE, PLANTING SOIL BASE COMPONENTS FOR APPROVAL. ONLY AFTER APPROVAL OF PHASE ONE COMPONENTS, SUBMIT AS PHASE TWO, SOIL BLEND MIXES / MEDIUMS FOR APPROVAL. EACH SAMPLE SHALL BE A COMPOSITE OF A MINIMUM OF TEN (10) INDIVIDUAL SAMPLES TAKEN FROM REPRESENTATIVE PORTIONS OF A PILE OR SOURCE COMBINED, THOROUGHLY MIXED AND BAGGED. IN ADDITION TO PROVIDING SAMPLES IN QUANTITIES AS REQUIRED BY TESTING AGENCIES, SUBMIT ONE GALLON SAMPLES OF THE PLANTING SOILS TO THE LANDSCAPE ARCHITECT FOR REVIEW. DO NOT ORDER MATERIALS UNTIL LANDSCAPE ARCHITECT'S APPROVAL HAS BEEN OBTAINED. DELIVERED MATERIALS SHALL CLOSELY MATCH THE APPROVED SAMPLES.
   1. PHASE ONE SUBMITTALS OF PLANTING MEDIUMS: MIXING AND BATCHING OF MEDIUMS TO BE PREPARED IN THE SAME MANNER AS BULK SOILS WILL BE PREPARED PRIOR TO DELIVERY TO SITE.
      a. PLANTING BED SOIL
   2. PHASE TWO SUBMITTALS OF PLANTING MEDIUMS: AFTER PLANTING SOIL TEST BATCHES HAVE BEEN ACCEPTED, MIX AND AMEND AS NECESSARY IN PRODUCTION, BATCHES OF UP TO 500 CUBIC YARDS FOR EACH SOIL TYPE LISTED IN 1.06. D.1. EACH BATCH MUST BE SAMPLED, TESTED FOR GRADATION AND ORGANIC CONTENT, AND APPROVED PRIOR TO DELIVERY TO THE JOB SITE.

E. SOURCES FOR SOIL COMPONENTS AND SOIL MIXES: SUBMIT INFORMATION IDENTIFYING SOURCES FOR ALL SOIL COMPONENTS AND THE FIRM RESPONSIBLE FOR MIXING OF SOIL MIXES.
   1. LANDSCAPE ARCHITECT, SOIL SCIENTIST AND OWNER'S REPRESENTATIVE SHALL HAVE THE RIGHT TO REJECT ANY SOIL SUPPLIER.
   2. SOIL MIX SUPPLIER SHALL HAVE A MINIMUM OF FIVE YEARS EXPERIENCE AT SUPPLYING CUSTOM PLANTING SOIL MIXES.
   3. SUBMIT SUPPLIER NAME, ADDRESS, TELEPHONE AND FAX NUMBERS AND CONTACT NAME.
   4. SUBMIT CERTIFICATION THAT ACCEPTED SUPPLIER IS ABLE TO PROVIDE SUFFICIENT QUANTITIES OF MATERIALS AND MIXES FOR THE ENTIRE PROJECT.

F. SUBMIT REPORTS FOR EACH OF THE ABOVE SAMPLES: SUBMIT SAMPLE FROM EACH PROPOSED SOURCE FOR TESTING AND APPROVAL. DELIVER SAMPLES TO THE TESTING LABORATORY AND PAY COSTS. SEND REPORT DIRECTLY TO LANDSCAPE ARCHITECT.
   1. INFORM TESTING AGENCY SOIL TEST IS FOR BOTH TREE AND SHRUB PLANTING.
   2. MECHANICAL AND CHEMICAL ANALYSIS SHALL BE CONDUCTED BY A PUBLIC EXTENSION SERVICE AGENCY OR A CERTIFIED PRIVATE TESTING LABORATORY IN ACCORDANCE WITH THE CURRENT "STANDARDS" OF THE AMERICAN SOCIETY OF AGRONOMY.
   3. GRADATION TESTS SHALL BE BY COMBINED HYDROMETER AND WET SIEVING IN COMPLIANCE WITH ASTM D422 AFTER DESTRUCTION OF ORGANIC MATTER BY IGNITION.
   4. TEST FOR AGRICULTURAL SUITABILITY ANALYSIS INCLUDING:
      a. PARTICLE SIZE AND CHARACTERISTICS
      b. SOIL PH BY WATER PH AND BUFFER (SMP) PH TESTS.
      c. PERCENTAGE OF ORGANIC CONTENT
      d. NITRATE NITROGEN
      e. AMMONIUM NITROGEN
      f. PHOSPHORUS
      g. POTASSIUM
      h. CALCIUM
      i. ALUMINUM
      j. MAGNESIUM
      k. MANGANESE
      l. MICRONUTRIENTS
      m. TOXINS INCLUDING BUT NOT LIMITED TO LEAD, CADMIUM, ARSENIC AND MERCURY.
   5. TEST RESULTS: TEST DATA AND RECOMMENDATIONS FOR SOIL AMENDMENTS INCLUDING BUT NOT LIMITED TO: NITROGEN, PHOSPHORUS, POTASSIUM AND LIMESTONE.
   6. TESTING FOR ORGANIC AMENDMENT MATERIALS
      a. TESTS SHALL BE BY COMBINED HYDROMETER AND WET SIEVING IN COMPLIANCE WITH ASTM D422 AFTER DESTRUCTION OF ORGANIC MATTER BY IGNITION.
      b. TEST FOR AGRICULTURAL SUITABILITY ANALYSIS AS DEFINED IN ARTICLE 2.02 - ORGANIC AMENDMENT MATERIALS (COMPOST).
   7. TESTING FOR SAND AND ¾ INCH CRUSHED STONE
      a. TEST FOR PARTICLE SIZE GRADATION AND PH

1.07 QUALITY ASSURANCE

A. QUALIFICATIONS FOR HORTICULTURAL SOIL INSTALLATIONS:
   1. WORK OF HORTICULTURAL PLANTING SOIL INSTALLATION SHALL BE PERFORMED WITH PERSONNEL FAMILIAR AND EXPERIENCED WITH HORTICULTURAL SOIL PREPARATION AND RELATED REQUIREMENTS ASSOCIATED WITH LAWN AND PLANTING INSTALLATIONS UNDER THE SUPERVISION OF A FOREMAN EXPERIENCED IN LANDSCAPE WORK.
   2. FOREMAN ON THE JOB SHALL SPEAK ENGLISH AND BE ABLE TO EXHIBIT AT LEAST FIVE (5) YEARS EXPERIENCE IN THE INSTALLATION OF HORTICULTURAL SOILS AND SOIL MIXES.

B. QUALIFICATIONS FOR INSPECTING AND TESTING HORTICULTURAL MATERIALS: QUALIFICATIONS OF CONTRACTOR'S AGRICULTURAL CHEMIST / TESTING LABORATORY / AGENCY SHALL BE SUBMITTED TO AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO START OF PROCUREMENT OF SOIL MATERIALS, PLACING OR AMENDING PLANTING SOIL MATERIALS, AND PLANTING OPERATIONS ON PROJECT.
   1. RECOMMENDED PLANTING SOIL TESTING:
      a. DIRT-N-TURF: DAVID MARQUARDT, 542 CLARK STREET, HINCKLEY, ILLINOIS 60520 (630) 251-1511
      b. APPROVED EQUAL.

C. PRE-INSTALLATION CONFERENCE: A PRE-INSTALLATION CONFERENCE SHALL BE HELD PRIOR TO COMMENCEMENT OF FIELD OPERATIONS TO ESTABLISH PROCEDURES TO MAINTAIN OPTIMUM WORKING CONDITIONS, TO COORDINATE REQUIREMENTS FOR TESTING, AND TO COORDINATE THIS WORK WITH RELATED AND ADJACENT WORK.

D. INSPECTIONS AND TESTING OF HORTICULTURAL SOIL MATERIALS: THE FOLLOWING CONDITIONS AND REQUIREMENTS SHALL APPLY:
   1. ON-SITE QUALITY CONTROL TESTING AND INSPECTIONS: SOIL PLACEMENT AND OTHER EARTHWORK WILL BE SUBJECT TO QUALITY CONTROL INSPECTIONS AND TESTING BY OWNER'S TESTING LABORATORY / AGENCY AS SPECIFIED OR, IF ANY QUESTIONABLE CONDITIONS, ADDITIONALLY AS DIRECTED BY THE LANDSCAPE ARCHITECT.
      a. CONTRACTOR SHALL COOPERATE IN OBTAINING SAMPLES AND PERFORMING TESTS OF IN-PLACE MATERIALS AND SHALL FURNISH INCIDENTAL FIELD LABOR IN CONNECTION WITH ANY TESTS TO BE PERFORMED BY OWNER'S TESTING LABORATORY / AGENCY.
   2. CONSTRUCTION MONITORING:
      a. DURING LANDSCAPE CONSTRUCTION OPERATIONS, IN ADDITION TO OWNER'S TESTING LABORATORY / AGENCY, LANDSCAPE ARCHITECT, CONSTRUCTION MANAGER OR OWNER MAY BE PRESENT AT THE SITE TO OBSERVE AND MONITOR PLACING AND AMENDING SOIL MATERIAL OPERATIONS AND SHALL BE PERMITTED FREE AND UNRESTRICTED ACCESS TO THE SITE AND WORK.
      b. LANDSCAPE ARCHITECT, CONSTRUCTION MANAGER OR OWNER RESERVE THE RIGHT TO TAKE AND ANALYZE AT ANY TIME SUCH ADDITIONAL SAMPLES OF HORTICULTURAL SOIL AND SOIL AMENDMENT MATERIALS AS DEEMED NECESSARY FOR VERIFICATION OF CONFORMANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL FURNISH SAMPLES FOR THIS PURPOSE UPON REQUEST AND SHALL PERFORM MATERIAL TESTING AS REQUESTED. THE LANDSCAPE ARCHITECT OR CONSTRUCTION MANAGER MAY, AT THEIR DISCRETION, TAKE ADDITIONAL TESTS OR ORDER ADDITIONAL TESTS MADE BY EITHER THE CONTRACTOR'S OR OWNER'S TESTING LABORATORY/AGENCY RESPECTIVE TO CONDITIONS.
      c. BASED ON OBSERVATIONS AND EVALUATION OF QUALITY CONTROL TESTS, THE CONTRACTOR'S OR OWNER'S TESTING LABORATORY/AGENCY SHALL MAKE RECOMMENDATIONS TO THE LANDSCAPE ARCHITECT AND CONSTRUCTION MANAGER REGARDING CONFORMANCE OF THE SOIL MATERIAL AND PLACING OPERATIONS TO CONTRACT DOCUMENTS AND COMPATIBILITY OF ACTUAL SUBSURFACE CONDITIONS TO REQUIRED SUBSURFACE CONDITIONS.
      d. LANDSCAPE ARCHITECT OR DESIGNATED REPRESENTATIVE WILL EVALUATE THE RECOMMENDATIONS OF RESPECTIVE TESTING LABORATORY/AGENCY AND, TOGETHER WITH CONSTRUCTION MANAGER AND OWNER, WILL JUDGE THE COMPLIANCE OF THE WORK WITH CONTRACT DOCUMENTS, ISSUE ANY CHANGES OR REVISIONS REQUIRED TO CONTRACT DOCUMENTS TO ACCOMMODATE SUBSURFACE CONDITIONS WHICH DIFFER FROM DESIGN ASSUMPTIONS, OR ADVISE THE CONSTRUCTION MANAGER TO DIRECT REMEDIAL WORK WHERE THE COMPLETED WORK DOES NOT COMPLY WITH CONTRACT DOCUMENTS.
      e. PLANTING SOILS AND/OR OTHER COMPONENTS DELIVERED TO THE SITE MAY BE PERIODICALLY SAMPLED AND TESTED FOR COMPLIANCE. MATERIALS NOT MATCHING THE APPROVED PREVIOUSLY SUBMITTED SAMPLES SHALL BE REMOVED FROM SITE AT NO ADDITIONAL COST TO OWNER.
      f. MATERIALS IN QUESTION SHALL NOT BE USED, PENDING TEST RESULTS OF CONFORMANCE TO SPECIFIED REQUIREMENTS.

1.08 DELIVERY, STORAGE AND HANDLING

A. PACKING AND SHIPPING: DELIVER MATERIALS IN UNOPENED CONTAINERS BEARING MANUFACTURER'S NAME AND GUARANTEED STATEMENT OF ANALYSIS. TRANSPORT MATERIALS WITHOUT DAMAGE. PROTECT FINISHES FROM ABRASION, DIRT, OILS, GREASE, AND CHEMICALS. PACK MATERIALS TO PROTECT FROM WEATHER.

B. BASE COMPONENTS AND PLANTING SOILS SHALL NOT BE HANDLED, HAULED, OR PLACED WHEN WET, DURING OR IMMEDIATELY AFTER A HEAVY RAINFALL, OR FROZEN. SOIL SHALL BE HANDLED ONLY WHEN THE MOISTURE CONTENT IS LESS THAN OR EQUAL TO THE OPTIMUM WATER CONTENT AS DETERMINED FOR THE STANDARD PROCTOR TEST.

C. STORE AND HANDLE PACKAGED MATERIALS IN STRICT COMPLIANCE WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS. PROTECT ALL MATERIALS FROM WEATHER, DAMAGE, INJURY AND THEFT.

D. SEQUENCE DELIVERIES TO AVOID DELAY. ON-SITE STORAGE SPACE IS PERMISSIBLE ONLY WITH WRITTEN NOTICE FROM CONSTRUCTION MANAGER. DELIVER MATERIALS ONLY AFTER PREPARATIONS FOR PLACEMENT OF PLANTING SOIL HAVE BEEN COMPLETED.

E. PROHIBIT VEHICULAR AND PEDESTRIAN TRAFFIC ON OR AROUND STOCKPILED PLANTING SOIL.

F. SOIL THAT IS TO BE STOCKPILED LONGER THAN TWO WEEKS, WHETHER ON- OR OFF-SITE, **SHALL NOT BE PLACED IN MOUNDS GREATER THAN SIX FEET HIGH**. PROVIDE ALL MEANS AND METHODS REQUIRED TO PREVENT ANAEROBIC CONDITIONS AT NO ADDITIONAL COST TO THE OWNER.

G. BEFORE CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A PLAN SHOWING PROPOSED ROUTING FOR DELIVERIES AND SITE ACCESS.

H. WORK AND PROTECTION PLANS:
   1. ON-SITE SOIL STORAGE: SUBMIT PROPOSED LOCATIONS AND MEANS AND METHODS FOR STORAGE/STOCKPILING OF SOIL MATERIALS ON-SITE.
   2. SOIL PLACEMENT, AND SETTLEMENT PLANS: SUBMIT A PLAN OF IMPLEMENTATION WITH A SCHEDULE DESCRIBING THE PROPOSED METHODS INTENDED FOR PLACING HORTICULTURAL PLANTING SOILS AND FOR ALLOWING NATURAL SETTLING OF INSTALLED SOILS.

I. DATA SUBMITTED FOR INFORMATION AND REFERENCE:
   1. COPIES OF PERMITS NECESSARY TO TRANSPORT MATERIALS OFF SITE.
   2. LOCATION OF LEGAL DISPOSAL SITES FOR WASTE MATERIALS FROM THIS WORK OF PROJECT, IF ANY.

1.09 PROJECT/SITE CONDITIONS

A. ENVIRONMENTAL REQUIREMENTS: DO NOT DELIVER OR HANDLE SOILS WHEN DRY, WET, OR FROZEN.
   1. NO PLANTING SOIL SHALL BE TRUCKED, PLACED, COMPACTED OR OTHERWISE HANDLED WHEN ITS MOISTURE CONTENT IS GREATER THAN OPTIMUM AS DETERMINED BY ASTM 698. IN ADDITION, NO SOIL SHALL BE COMPACTED IF ITS MOISTURE CONTENT IS SUFFICIENTLY HIGH THAT ITS SATURATED HYDRAULIC CONDUCTIVITY FALLS BELOW ITS MINIMUM RATE AS SPECIFIED BELOW. NORMALLY, BUT NOT ALWAYS, THIS REQUIREMENT WILL BE MET WHEN THE MOISTURE CONTENT IS AT OR BELOW OPTIMUM. THE CONTRACTOR SHALL CONDUCT MOISTURE CONTENT TESTS USING THE SPEEDY MOISTURE TEST OR OTHER APPROVED EQUIPMENT AS NECESSARY TO ENSURE CONFORMATION WITH MAXIMUM ALLOWABLE MOISTURE CONTENTS. THE CONTRACTOR SHALL COORDINATE HIS PROCEDURES TO ALLOW FOR DRYING OF PLANTING SOILS THAT EXCEED MAXIMUM ALLOWABLE MOISTURE CONTENTS.
   2. THE CONTRACTOR SHALL ENSURE THAT ALL SOILS SHIPPED FROM A SOIL SUPPLIER MEET MOISTURE REQUIREMENTS WHEN THEY ARE SHIPPED. MOISTURE TESTING SHALL BE CARRIED OUT AT THE SOIL SUPPLIER'S FACILITY PRIOR TO SHIPPING. SOIL STOCKPILES SHALL BE PROTECTED BY TARPS OR OTHER MEASURES AS NECESSARY TO PREVENT BASE SOILS AND MIXED SOILS FROM BECOMING WET.
   3. ADDITIONAL FIELD TESTS
      a. FORM SOIL IN PALM OF HAND, IF SOIL RETAINS SHAPE AND CRUMBLES UPON TOUCHING, THE SOIL MAY BE WORKED.
      b. IF THE SOIL WILL NOT RETAIN SHAPE IT IS TOO DRY AND SHOULD NOT BE WORKED.
      c. IF THE SOIL RETAINS SHAPE AND WILL NOT CRUMBLE, IT IS TOO WET AND SHOULD NOT BE WORKED.
      d. IF THE SOIL GLISTENS OR FREE WATER IS PRESENT AFTER LIGHTLY PATTING THE SAMPLE, THE SOIL IS TOO WET AND SHOULD NOT BE WORKED

PART 2 - PRODUCTS

2.01 POTTING SOIL
A. WELL DRAINED, COMPOST/PERLITE/VERMICULITE/PEAT BLENDS, ORGANIC FERTILIZER
B. BASIS OF DESIGN: MIRACLE - GRO POTTING SOIL OR APPROVED EQUAL

2.02 GARDEN SOIL
A. ALL PURPOSE, NO MOISTURE CONTROL, NO TOP SOIL
B. BASIS OF DESIGN: MIRACLE - GRO GARDEN SOIL ALL PURPOSE

2.03 BASE LOAM

A. BASE LOAM SHALL BE IMPORTED A-HORIZON TOPSOIL AND SHALL BE FREE OF SUBSOIL, LARGE STONES, EARTH CLODS, STICKS, STUMPS, CLAY LUMPS, ROOTS OR OTHER OBJECTIONABLE, EXTRANEOUS MATTER OR DEBRIS. BASE LOAM SHALL BE FROM A NATURAL SOURCE WITHOUT ADMIXTURE OF COMPOST, SAND OR ANY OTHER EXTRANEOUS MATERIAL. BASE LOAM SHALL ALSO BE FREE OF QUACK-GRASS RHIZOMES, AGROPYRON REPENS, AND THE NUT-LIKE TUBERS OF NUTGRASS, CYPERUS ESCULENTUS, AND ALL OTHER PRIMARY NOXIOUS WEEDS. BASE LOAM SHALL NOT BE DELIVERED OR MIXED WHILE IN A FROZEN OR MUDDY CONDITION.

B. MAXIMUM SIZE SHALL BE ONE INCH LARGEST DIMENSION. THE MAXIMUM RETAINED ON THE #10 SIEVE SHALL BE 20% BY WEIGHT OF THE TOTAL SAMPLE.

C. THE ORGANIC CONTENT SHALL BE BETWEEN 3.0 AND 8.0 PERCENT.

D. BASE LOAM SHALL HAVE A WELL DEVELOPED AND STABLE CRUMB (PED) STRUCTURE AS CERTIFIED BY AN AGRICULTURAL CHEMIST.

E. PH SHALL BE 7.5 OR LESS.

2.04 ORGANIC MATERIAL (COMPOST):

A. ORGANIC MATERIAL (COMPOST) AS AMENDMENT FOR SOIL MEDIUMS:
   1. ORGANIC MATERIAL (COMPOST) FOR AMENDING PLANTING MEDIUM: STABLE, HUMUS-LIKE MATERIAL PRODUCED FROM THE AEROBIC DECOMPOSITION OF ORGANIC RESIDUES CONSISTING OF LEAF OR YARD WASTE COMPOST WHICH SHALL HAVE BEEN COMPOSTED FOR A MINIMUM OF ONE YEAR (12 MONTHS). BIOSOLIDS COMPOST IS NOT ACCEPTABLE. COMPOST SHALL BE FREE OF DEBRIS SUCH AS PLASTICS, METAL, CONCRETE OR OTHER DEBRIS AND STONES LARGER THAN 1/2", LARGER BRANCHES AND ROOTS AND WOOD CHIPS OVER 1/2" IN LENGTH OR DIAMETER. COMPOST SHALL BE A DARK BROWN TO BLACK COLOR AND BE CAPABLE OF SUPPORTING PLANT GROWTH WITH APPROPRIATE MANAGEMENT APPLICABLE, WITH NO VISIBLE FREE WATER OR DUST, WITH NO UNPLEASANT ODOR, AND MEETING THE FOLLOWING CRITERIA AS REPORTED BY LABORATORY TESTS.
      a. THE RATIO OF CARBON TO NITROGEN SHALL BE IN THE RANGE OF 12:1 TO 25:1.
      b. PATHOGENS/METALS/VECTOR ATTRACTION REDUCTION SHALL MEET ALL STATE OF ILLINOIS REQUIREMENTS FOR APPLICATIONS TO SOILS WITH HUMAN ACTIVITY.
      c. ORGANIC CONTENT: AT LEAST 20 PERCENT (DRY WEIGHT). ONE HUNDRED PERCENT OF THE MATERIAL SHALL PASS A 1/2-INCH (OR SMALLER) SCREEN. DEBRIS SUCH AS METAL, GLASS, PLASTIC, WOOD (OTHER THAN RESIDUAL CHIPS), ASPHALT OR MASONRY SHALL NOT BE VISIBLE AND SHALL NOT EXCEED ONE PERCENT DRY WEIGHT. ORGANIC CONTENT SHALL BE DETERMINED BY WEIGHT LOSS ON IGNITION OR H2O2 FOR PARTICLES PASSING A NUMBER 10 SIEVE.
      d. PH: BETWEEN 6.5 TO 7.5 AS DETERMINED FROM A 1:1 SOIL-DISTILLED WATER SUSPENSION USING A GLASS ELECTRODE PH METER AMERICAN SOCIETY OF AGRONOMY METHODS OF SOIL ANALYSIS, PART 2, 1986.
      e. SALINITY: ELECTRICAL CONDUCTIVITY OF A ONE TO FIVE SOIL TO WATER RATIO EXTRACT SHALL NOT EXCEED
         2.0 MMHOS/CM (DS/M).
      f. COMPOST: SCREENED TO 1/2 INCH MAXIMUM PARTICLE SIZE AND SHALL CONTAIN NOT MORE THAT 3 PERCENT MATERIAL FINER THAT 0.002MM AS DETERMINED BY HYDROMETER TEST ON ASHED MATERIAL.
      g. NUTRIENT CONTENT: DETERMINED BY CERTIFIED LABORATORY AND UTILIZED TO EVALUATE SOIL REQUIRED AMENDMENTS FOR THE MIXED SOILS. CHEMICAL ANALYSIS SHALL BE UNDERTAKEN FOR NITRATE NITROGEN, AMMONIUM NITROGEN, PHOSPHORUS, POTASSIUM, CALCIUM, ALUMINUM, MAGNESIUM, CHROMIUM, IRON, MANGANESE, LEAD, SOLUBLE SALTS, CATION EXCHANGE CAPACITY, SOIL REACTION (PH), BUFFER PH, AND MICRONUTRIENTS.

2.05 DECOMPOSED PINE FINES

A. DECOMPOSED PINE FINES AS AMENDMENT FOR SOIL MEDIUMS SHALL BE AGED FOR A MINIMUM OF ONE YEAR, SHALL BE SCREENED TO 1/2 INCH MAXIMUM SIZE AND SHALL CONTAIN A MINIMUM OF 60% PASSING 1/4 INCH.

2.06 SAND

A. SAND AS AMENDMENT FOR SOIL MEDIUMS AND FOR A FILTER LAYER OVER DRAINBOARDS SHALL CONFORM TO THE FOLLOWING:
   1. SAND SHALL BE UNIFORMLY GRADED MEDIUM TO COARSE SAND CONSISTING OF CLEAN, INERT, ROUNDED GRAINS OF QUARTZ OR OTHER DURABLE ROCK AND FREE FROM LOAM OR CLAY, SURFACE COATINGS, MICA, OTHER DELETERIOUS MATERIALS WITH THE FOLLOWING GRADATION. CALCITIC SAND IS NOT PERMITTED.

U.S.SIEVE SIZE NUMBER	PERCENT PASSING MIN.	PERCENT PASSING MAX.
10	100	–
18	65	90
35	35	65
60	15	30
140	0	8
270	0	3
0.002MM	0	1

   2. MAXIMUM SIZE SHALL BE ONE INCH LARGEST DIMENSION. THE MAXIMUM RETAINED ON THE #10 SIEVE SHALL BE 15% BY WEIGHT OF THE TOTAL SAMPLE.
   3. THE RATIO OF THE PARTICLE SIZE FOR 70% PASSING (D70) TO THE PARTICLE SIZE FOR 20% PASSING (D20) SHALL BE 3.0 OR LESS. (D70/D20 <3.0)
   4. SATURATED HYDRAULIC CONDUCTIVITY OF THE SAND SHALL BE NOT LESS THAN 20 INCHES PER HOUR, ACCORDING TO ASTM D5856-95 (2000), WHEN COMPACTED TO A MINIMUM OF 90% STANDARD PROCTOR, ASTM 698.
   5. THE PH SHALL BE 7.5 OR LESS.

2.07 PERLITE

A. PERLITE, AS REQUIRED FOR LIGHTWEIGHT SOIL MIXES SHALL CONSIST OF HORTICULTURAL GRADE PERLITE WITH THE FOLLOWING PROPERTIES MANUFACTURED BY SUPREME PERLITE COMPANY, 4600 NORTH SUTTLE ROAD, PORTLAND, OREGON 97217, SUN GROW HORTICULTURE, 15831 N.E. 8TH STREET, SUITE 100, BELLEVUE, WA 98008, OR APPROVED EQUIVALENT:

B. MAXIMUM BULK DENSITY: 8 POUNDS PER CUBIC FOOT

C. THE GRADATION BY VOLUME SHALL BE WITHIN THE FOLLOWING LIMITS:

2.08 PLANTING BED SOIL

A. BASE LOAM, SAND, COMPOST, AND PINE FINES, EACH AS SPECIFIED ABOVE, SHALL BE COMBINED IN AN APPROXIMATE MIX RATIO OF ONE AND ONE HALF PARTS BY VOLUME SAND TO TWO PARTS BY VOLUME BASE LOAM TO ONE PART BY VOLUME COMPOST TO ONE PART BY VOLUME PINE FINES (1.5S: 2.0L: 1.0C: 1.0PF) TO CREATE A UNIFORM BLEND WHICH MEETS THE FOLLOWING REQUIREMENTS. PLANTING BED SOIL SHALL BE USED FOR THE UPPER ONE FOOT OF SOIL IN GROUND LEVEL OPEN PLANTERS.

B. GRADATION FOR MATERIAL PASSING THE NUMBER 10 SIEVE:

U.S.SIEVE SIZE NUMBER	PERCENT PASSING MIN.	PERCENT PASSING MAX.
10	100	–
18	80	95
35	58	88
60	36	60
140	24	40
270	20	30
0.002MM	2.5	6

V. MAXIMUM SIZE SHALL BE ONE (1) INCH LARGEST DIMENSION. THE MAXIMUM RETAINED ON THE #10 SIEVE SHALL BE 20% BY WEIGHT OF THE TOTAL SAMPLE.

W. SATURATED HYDRAULIC CONDUCTIVITY OF THE MIX: NOT LESS THAN TWO (2) INCHES PER HOUR ACCOURDING TO ASTM D5856-95 (2000) WHEN COMPACTED TO A MINIMUM OF 82% STANDARD PROCTOR, ASTM 698.

X. ORGANIC CONTENT: BETWEEN 6.0 AND 8.0 PERCENT BY WEIGHT.

Y. THE PH OF THE MIX SHALL BE BETWEEN 6.5 AND 7.2.

2.09 SUBSURFACE DRAIN PIPE

A. REFER TO SECTION 334600 DRAINAGE FOR LANDSCAPE APPLICATIONS.

B. PLACE A MINIMUM OF TWO INCHES OF SAND OVER PIPES AS SHOWN ON THE DRAWINGS.

2.10 SOIL AMENDMENTS

A. SUPERPHOSPHATE: FINELY GROUND PHOSPHATE ROCK, COMMONLY USED FOR AGRICULTURAL PURPOSES AND SHALL CONTAIN NOT LESS THAN 20 PERCENT AVAILABLE PHOSPHORIC ACID.

B. GROUND LIMESTONE: DOLOMITIC LIMESTONE AND CONTAIN NOT LESS THAN 50 PERCENT OF TOTAL CARBONATES AND 25 PERCENT TOTAL MAGNESIUM WITH A NEUTRALIZING VALUE OF AT LEAST 100 PERCENT. MATERIAL SHALL BE GROUND TO SUCH FINENESS THAT 40 PERCENT WILL PASS 100 MESH U.S. STANDARD SIEVE AND 98 PERCENT WILL PASS THROUGH 20 MESH U.S. STANDARD SIEVE.

C. SULFUR

2.11 WATER

A. WATER: FURNISHED BY CONTRACTOR, UNLESS OTHERWISE SPECIFIED, AND SUITABLE FOR IRRIGATION AND FREE FROM INGREDIENTS HARMFUL TO PLANT LIFE. HOSE AND OTHER WATERING EQUIPMENT FURNISHED BY CONTRACTOR.

2.12 SOIL REVIEW BY AGRICULTURAL CHEMIST

A. NUTRIENT AND CHEMICAL ANALYSES OF EACH SOIL BLEND (SOIL MIXES A-D) SHALL BE REVIEWED BY AN AGRICULTURAL CHEMIST TO DETERMINE WHETHER SOILS MEET THE REQUIREMENTS, INCLUDING BUT NOT LIMITED TO SALT LEVELS AND PH, OF THE PLANT MATERIALS THAT WILL BE USED IN SUCH SOILS, REQUIRED AMENDMENTS, AND REQUIRED ONGOING MANAGEMENT.

PART 3 - EXECUTION

3.01 EXAMINATION

A. VERIFICATION OF CONDITIONS: IN THE EVENT FIELD CONDITIONS ARE NOT AS SHOWN ON DRAWINGS AND OUTLINED IN THE SPECIFICATIONS, NOTIFY LANDSCAPE ARCHITECT IN WRITING.
   1. SPOT AND INVERT ELEVATIONS: VERIFY FIELD ELEVATIONS OF SITE IMPROVEMENTS SUCH AS DRAINAGE AND UTILITY FIXTURES, PAVEMENTS, EXISTING PLANTINGS, AND SUBSURFACE PIPING CONFORM TO DRAWINGS.
   2. ROUGH GRADE: VERIFY SPECIFIED ELEVATIONS AND PRIOR EARTHWORK OPERATIONS HAVE SHAPED, TRIMMED, AND FINISHED ROUGH GRADE.

3.02 PREPARATION

A. PROTECTION:
   1. CONTRACTOR TO CLEAR WORKING AREAS PRIOR TO DOING EXCAVATION ON SITE. IF WORK IS TO BE DONE AROUND UNDERGROUND UTILITIES, APPROPRIATE AUTHORITY OF UTILITY MUST BE NOTIFIED OF IMPENDING WORK. HAND EXCAVATE AREAS ADJACENT TO UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES DONE BY HIMSELF OR HIS PERSONNEL TO EXISTING UTILITIES, WHICH SHALL BE REPAIRED OR PAID FOR BY CONTRACTOR.
   2. PRIOR TO INSTALLATION FIELD LOCATE AND PROTECT FROM DAMAGE SITE IMPROVEMENTS SUCH AS DRAINAGE AND UTILITY FIXTURES, PAVEMENTS, AND EXISTING PLANTINGS.
   3. DUST CONTROL: UPON ACCEPTANCE OF FINISH GRADE PROVIDE DUST CONTROL.
   4. EROSION CONTROL: UPON ACCEPTANCE OF FINISH GRADE PROVIDE EROSION CONTROL.
   5. AGRICULTURAL CHEMICALS: PROTECT SITE IMPROVEMENTS FROM CONTACT WITH AGRICULTURAL CHEMICALS, SOIL AMENDMENTS, AND FERTILIZERS.

3.03 PREPARATION OF PLANTING MEDIUM FOR PLANTING BEDS

A. CORRECT DEFICIENCIES IN SOIL AS DIRECTED BY SOIL TEST RESULTS. THOROUGHLY INCORPORATE AMENDMENTS INTO PLANTING MIXTURE TO ENSURE EVEN DISTRIBUTION.

B. INCORPORATE PRE-PLANT FERTILIZER AS RECOMMEND BY AN AGRICULTURAL CHEMIST.

3.04 OFF-STRUCTURE SHALLOW DECOMPACTION OF PLANTING AREAS

A. IMMEDIATELY PRIOR TO PLACING PLANTING SOILS, LOOSEN THE ENTIRE SUBGRADE AREA TO A MINIMUM DEPTH OF TWO INCHES UTILIZING THE BUCKET OF A BACKHOE OR EQUIVALENT EQUIPMENT.

B. HAND GRUB SOIL IN AREAS IN AND AROUND EXISTING TREE ROOTS OF TREES TO REMAIN IN PLACE.

3.05 PLACEMENT OF PLANT BED SOIL

A. OVER HORTICULTURAL SUBSOIL LAYER, PLACE AND SPREAD ONE FOOT OF PLANTING BED MEDIUM AND COMPACT TO A DENSITY BETWEEN 76 AND 80 PERCENT STANDARD PROCTOR MAXIMUM DRY DENSITY. THE SURFACE AREA OF EACH LIFT, INCLUDING THE SUBGRADE AFTER IT HAS BEEN COMPACTED, SHALL BE SCARIFIED BY RAKING PRIOR TO PLACING THE NEXT LIFT.

B. PLACE AND SPREAD PLANTING MEDIUM TO A DEPTH GREATER THAN REQUIRED SUCH THAT AFTER SETTLEMENT, FINISHED GRADE CONFORMING TO THE LINES, GRADES AND ELEVATIONS SHOWN ON THE DRAWINGS. ENSURE PROPER DRAINAGE IN AN UNINTERRUPTED PATTERN FREE OF HOLLOWS AND POCKETS. MOUND THE PLANTING BED SOIL TO ENSURE DRAINAGE AND ACHIEVE THE REQUIRED DEPTHS.

C. REMOVE STIFF CLODS, LUMPS, BRUSH, ROOTS, STUMPS, LITTER AND OTHER FOREIGN MATERIAL AND STONES OVER ONE INCH IN DIAMETER AND DISPOSE OF LEGALLY OFF SITE.

3.06 FIELD QUALITY CONTROL

A. TESTS: AFTER SOIL PREPARATION OPERATIONS ARE COMPLETE AND PRIOR TO PLANTING, TAKE SOIL SAMPLE FOR TESTING AND RECOMMENDATIONS AS ESTABLISHED IN ARTICLE 1.06 - SUBMITTALS.

B. CONFIRM THAT THE SUBGRADE IS AT THE PROPER ELEVATION AND THAT NO FURTHER EARTHWORK IS REQUIRED TO BRING THE SUBGRADE TO PROPER ELEVATIONS. SUBGRADE LAYER ELEVATIONS SHALL SLOPE PARALLEL TO THE FINISHED GRADE AS SHOWN ON THE CONTRACT DOCUMENTS. PROVIDE A WRITTEN REPORT TO THE LANDSCAPE ARCHITECT THAT THE SUBGRADE HAS BEEN ADJUSTED TO THE REQUIRED ELEVATIONS TO PROVIDE A UNIFORM THICKNESS OF PLANTING MEDIA ACROSS THE AREA. PERFORM NO WORK OF PLACING AND SPREADING SOIL UNTIL ELEVATIONS HAVE BEEN CONFIRMED AND WRITTEN REPORT HAS BEEN ACCEPTED BY THE LANDSCAPE ARCHITECT.

C. AS PROVIDED IN ARTICLE 1.09 - PROJECT / SITE CONDITIONS, NO BASE MATERIALS OR SOIL MEDIUM AND NOT SUBGRADE MATERIALS SHALL BE HANDLED, PLANTED, OR SEEDED IN ANY WAY IF IT IS IN A WET OR FROZEN CONDITION. A MOIST SOIL MEDIUM IS DESIRABLE FOR PLANTING.

D. OBSERVATION: LANDSCAPE ARCHITECT TO REVIEW IN THE FIELD SOIL PREPARATION OPERATIONS:
   1. PREPARATION OF PLANTING MIXTURES
   2. DECOMPACTION OF SUBGRADE
   3. PLACEMENT AND COMPACTION OF PLANTING SOILS

3.07 CLEANING

A. CLEAN UP DEBRIS GENERATED UNDER WORK OF THIS SECTION.

B. SITE IMPROVEMENTS
   1. WASH AND SWEEP CLEAN SITE IMPROVEMENTS SUCH AS DRAINAGE AND UTILITY FIXTURES, PAVEMENTS, EXISTING PLANTINGS, AND SITE FURNISHINGS.
   2. CLEAN SITE FURNISHINGS OF GROUT, ADHESIVES, CONCRETE, AND OTHER DEBRIS.
   3. WASTE DISPOSAL: ALL REMOVALS AND DISPOSAL OF WASTE RELATED TO WORK OF THIS SECTION SHALL BE PERFORMED IN ACCORDANCE WITH DIVISION 01 SECTION - CONSTRUCTION WASTE MANAGEMENT.

3.08 PROTECTION

A. PROTECT WORK OF THIS SECTION UNTIL FINAL ACCEPTANCE.

B. SELECT EQUIPMENT AND OTHERWISE PHASE THE INSTALLATION OF THE SOIL MEDIUM TO ENSURE THAT WHEELED EQUIPMENT DOES NOT TRAVEL OVER PREPARED SUBSOIL, PLACED FILLS OR ORDINARY BORROW OR ALREADY INSTALLED SOIL. MOVEMENT OF TRACKED EQUIPMENT OVER SAID SOILS WILL BE REVIEWED AND CONSIDERED FOR APPROVAL BY THE LANDSCAPE ARCHITECT. IF IT IS DETERMINED BY THE LANDSCAPE ARCHITECT THAT WHEELED EQUIPMENT MUST TRAVEL OVER ALREADY INSTALLED SOIL, PROVIDE A WRITTEN DESCRIPTION OF SEQUENCING OF WORK THAT ENSURES THAT COMPACTED SOIL IS LOOSENED AND UNCOMPACTED AS THE WORK PROGRESSES OR PLACE ONE-INCH (25 MM) THICK STEEL PLATE BALLAST (OR EQUIVALENT BALLAST APPROVED BY THE LANDSCAPE ARCHITECT) OVER THE LENGTH AND WIDTH OF ANY TRAVEL WAY TO COVER SOIL MEDIUM TO PROTECT IT FROM COMPACTION.

C. DISTURBED AREAS OUTSIDE THE LIMIT OF WORK SHALL BE PROTECTED AND AS REQUIRED, GRADED SMOOTH AND SPREAD WITH SOIL MEDIUM TO MEET FINISHED GRADES.

D. SOIL MEDIUMS DELIVERED TO THE SITE SHALL BE PROTECTED FROM EROSION. MATERIALS SHALL BE SPREAD IMMEDIATELY. OTHERWISE, MATERIALS THAT SET ON SITE FOR MORE THAN 24 HOURS SHALL BE COVERED WITH TARPAULIN OR OTHER SOIL EROSION SYSTEM ACCEPTABLE TO LANDSCAPE ARCHITECT AND SURROUNDED BY SILT FENCE

3.09 ACCEPTANCE

A. CONFIRM THAT THE FINAL GRADE OF THE SOIL MEDIUMS IS AT THE PROPER FINISH GRADE ELEVATIONS. ADJUST GRADE AS REQUIRED TO MEET THE CONTOURS AND SPOT ELEVATIONS NOTED ON THE PLANS. REQUEST THE PRESENCE OF THE LANDSCAPE ARCHITECT TO INSPECT FINAL GRADE. DO NOT PROCEED WITH THE REMAINING WORK OF THIS CONTRACT UNTIL THE LANDSCAPE ARCHITECT HAS GIVEN HIS/HER WRITTEN APPROVAL OF THE FINAL GRADE.

END OF SECTION

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453

Shack # 1345

REGISTERED LANDSCAPE ARCHITECT
NEIL EDWARD EISENBERGER
157.001471
STATE OF ILLINOIS
11/24/2020

NO.	DATE	REMARKS
2	11/24/20	ISSUE FOR PERMIT / BID
1	11/09/2020	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
SPECIFICATIONS

Job No. 204461
Drawn JS
Scale
Date 11/24/20

Sheet No.
L05-92

FIRE PROTECTION GENERAL NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. SYSTEM DESIGN, INSTALLATION AND MATERIALS SHALL BE IN ACCORDANCE WITH APPLICABLE NFPA STANDARDS. SYSTEM SHALL ALSO MEET ALL APPLICABLE BUILDING CODES, FIRE CODES AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER. VERIFY REQUIREMENTS PRIOR TO BID SUBMITTAL.
3. INFORMATION ON CONTRACT DOCUMENTS IS GENERAL INFORMATION AND FOR BID PURPOSES ONLY. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE FINAL SYSTEM DESIGN AND LAYOUT OF ALL COMPONENTS, COORDINATION WITH ALL OTHER TRADES, AND SYSTEM CALCULATIONS REQUIRED FOR APPROVAL BY THE AUTHORITY HAVING JURISDICTION, ENGINEER, AND OWNER'S INSURER.
4. THE CONTRACTOR SHALL FOLLOW THE ENGINEER OF RECORD'S SYSTEM DESIGN AND LAYOUT OF ALL COMPONENTS EXCEPT WHERE MODIFICATION TO THE DESIGN IS NECESSARY. MODIFICATIONS SHALL BE REFLECTED IN THE CONTRACTOR'S SHOP DRAWINGS AND CALCULATIONS.
5. DEVIATIONS FROM ENGINEER'S DESIGN WILL NOT BE CONSIDERED UNLESS A FORMALLY SUBMITTED RFI IS RECEIVED AND APPROVED.
6. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT AND LABOR REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS.
7. PROVIDE ADDITIONAL MATERIALS AND LABOR REQUIRED DUE TO LACK OF COORDINATION OR TO MEET AUTHORITY HAVING JURISDICTION AND INSURANCE CARRIER REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.
8. FORWARD COMPLETED CERTIFICATE OF COMPLETION AND CONTRACTOR MATERIAL TEST CERTIFICATES TO THE OWNER.
9. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

WATER SUPPLY INFORMATION
WATER SUPPLY INFORMATION IS NOT AVAILABLE AT THIS TIME. PLEASE REFER TO HYDRAULIC INFORMATION BOXES ON F101 FOR ASSUMED WATER SUPPLY. CONTRACTOR SHALL OBTAIN CURRENT WATER SUPPLY INFORMATION PRIOR TO BID SUBMITTAL.

FIRE PROTECTION SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V2.02

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AFG	ABOVE FINISHED GRADE	OC	ON CENTER
CD	CANDELA	PIV	POST INDICATOR VALVE
DI	DUCTILE IRON	PROVIDE	FURNISH AND INSTALL
ESFR	EARLY SUPPRESSION FAST RESPONSE	PRV	PRESSURE REDUCING VALVE
ETR	EXISTING TO REMAIN	RD	RETURN DUCT
FHC	FIRE HOSE CABINET	REV	REVISION
FP	FIRE PROTECTION	SD	SUPPLY DUCT
GC	CONTRACTOR	SF	SQUARE FEET
GPM	GALLONS PER MINUTE	TYP	TYPICAL
JBU-BOX	JUNCTION BOX	UNO	UNLESS NOTES OTHERWISE
MAX	MAXIMUM	V	VOLT(S)
MIN	MINIMUM	W	WATTS
N/A	NOT APPLICABLE	WP	WEATHERPROOF

ANNOTATION

- 1 — FIRE PROTECTION PLAN NOTE CALLOUT
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / F1 — DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- 1 / F1 — SECTION CUT DESIGNATION

FIRE SPRINKLERS

- UPRIGHT SPRINKLER
- PENDENT SPRINKLER
- CONCEALED SPRINKLER
- DRY PENDENT SPRINKLER
- DRY SIDEWALL SPRINKLER
- SIDEWALL SPRINKLER

FIRE SPRINKLER PIPING

- FP — FIRE PROTECTION (FP)
- SHUTOFF VALVE
- CHECK VALVE
- BACKFLOW PREVENTER
- CAP
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- FIRE DEPARTMENT CONNECTION
- FIRE PUMP TEST HEADER
- INSPECTOR'S TEST CONNECTION / AUXILIARY DRAIN
- SPRINKLER RISER
- TOP BEAM CLAMP
- TRAPEZE HANGER

STANDARD MOUNTING HEIGHTS

AUDIBLE APPLIANCE (TOP OF APPLIANCE)	90"
FIRE ALARM ANNUNCIATOR PANEL (TOP OF DISPLAY)	60"
FIRE ALARM BELL (EXTERIOR) (CENTERLINE)	120"
FIRE ALARM CONTROL PANEL/UNIT (TOP OF DISPLAY)	60"
PULL STATION (TOP OF DEVICE)	48"
VISIBLE APPLIANCE (CENTERLINE)	84"

INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF OR AFG, UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

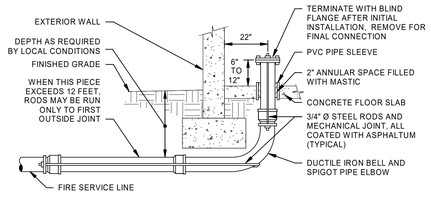
FIRE ALARM

- FSMP — FIRE ALARM CONTROL PANEL/UNIT
- FS — WATERFLOW ALARM SWITCH
- VT — CONTROL VALVE TAMPER SWITCH
- WALL MOUNTED AUDIBLE/VISIBLE NOTIFICATION APPLIANCE

LINETYPE LEGEND

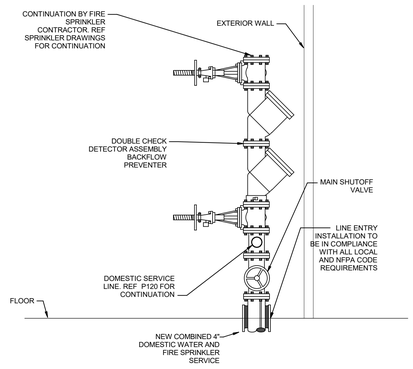
THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
DEMOLISH	FUTURE



ARRANGEMENT SHOWN IS SCHEMATIC. MODIFY TO SUIT FIELD CONDITIONS AND MEET APPLICABLE CODE REQUIREMENTS. VERIFY FOUNDATION WITH ARCHITECTURAL DRAWINGS. COORDINATE WHO IS TO PROVIDE THE FIRE SERVICE ENTRY WITH THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER PRIOR TO SUBMITTING BID.

2 FIRE SERVICE ENTRY
NTS

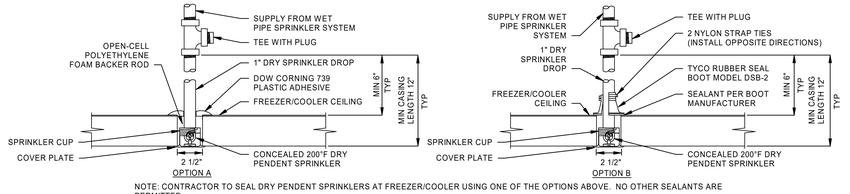


ARRANGEMENT SHOWN IS SCHEMATIC. MODIFY TO SUIT CONDITIONS AND MEET APPLICABLE CODE REQUIREMENTS. COORDINATE INSTALLATION OF ALARM DEVICES WITH OTHER TRADES.

3 FIRE PROTECTION RISER
NTS

OPTION "A" INSTALLATION PROCEDURE
1. CORE DRILL 2 1/2" DIAMETER HOLE IN THE FREEZER/COOLER INSULATED CEILING PANEL. LOCATE HOLE AND REQUIRED SPRINKLER PROTECTION IN ACCORDANCE WITH NFPA 13 OBSTRUCTION CRITERIA (SSP TYPE SPRINKLERS). MAINTAIN 6" CLEARANCE FROM COOLER SEAMS.
2. INSTALL DRY PENDENT SPRINKLER PER MANUFACTURERS INSTALLATION REQUIREMENTS.
3. COMPLETELY FILL ANNULAR CEILING OPENING BETWEEN THE ESCUTCHEON AND TOP OF CEILING PANEL WITH OPEN-CELL POLYETHYLENE FOAM BACKER ROD. EXPANDED FOAM IS NOT PERMITTED.
4. INJECT DOW CORNING 739 PLASTIC ADHESIVE SEALANT INTO AND AROUND THE TOP OF THE FREEZER/COOLER CEILING CORE OPENING IN ACCORDANCE WITH SEALANT MANUFACTURERS INSTRUCTIONS

OPTION "B" INSTALLATION PROCEDURE
1. CORE DRILL 2 1/2" DIAMETER HOLE IN THE FREEZER/COOLER INSULATED CEILING PANEL FROM BELOW. LOCATE HOLE AND REQUIRED SPRINKLER PROTECTION IN ACCORDANCE WITH NFPA 13 OBSTRUCTION CRITERIA (SSP TYPE SPRINKLERS). MAINTAIN 6" CLEARANCE FROM COOLER SEAMS.
2. INSTALL TYCO DRY PENDENT SPRINKLER PER MANUFACTURERS INSTALLATION REQUIREMENTS. INSERT BOOT PRIOR TO MAKE-UP WITH PIPING.
3. COMPLETELY SEAL INTERFACE BETWEEN BOOT FLANGE AND TOP OF FREEZER/COOLER PANEL WITH ADHESIVE PROVIDED WITH BOOT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
4. APPLY STRAP TIES ON BOOT AROUND DRY SPRINKLER BARREL PER MANUFACTURERS INSTRUCTIONS.



NOTE: CONTRACTOR TO SEAL DRY PENDENT SPRINKLERS AT FREEZER/COOLER USING ONE OF THE OPTIONS ABOVE. NO OTHER SEALANTS ARE PERMITTED.

1 FREEZER-COOLER DRY PENDENT SPRINKLER
NTS

HENDERSON ENGINEERS
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EXPIRES ON 11/30/2021

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STATE OF ILLINOIS
Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title: FIRE PROTECTION GENERAL NOTES

Job No.	Drawn
204461	ELT
Scale	Date
N.T.S.	11/09/20

Sheet No. F001

CHRISTOPHER J. CULP
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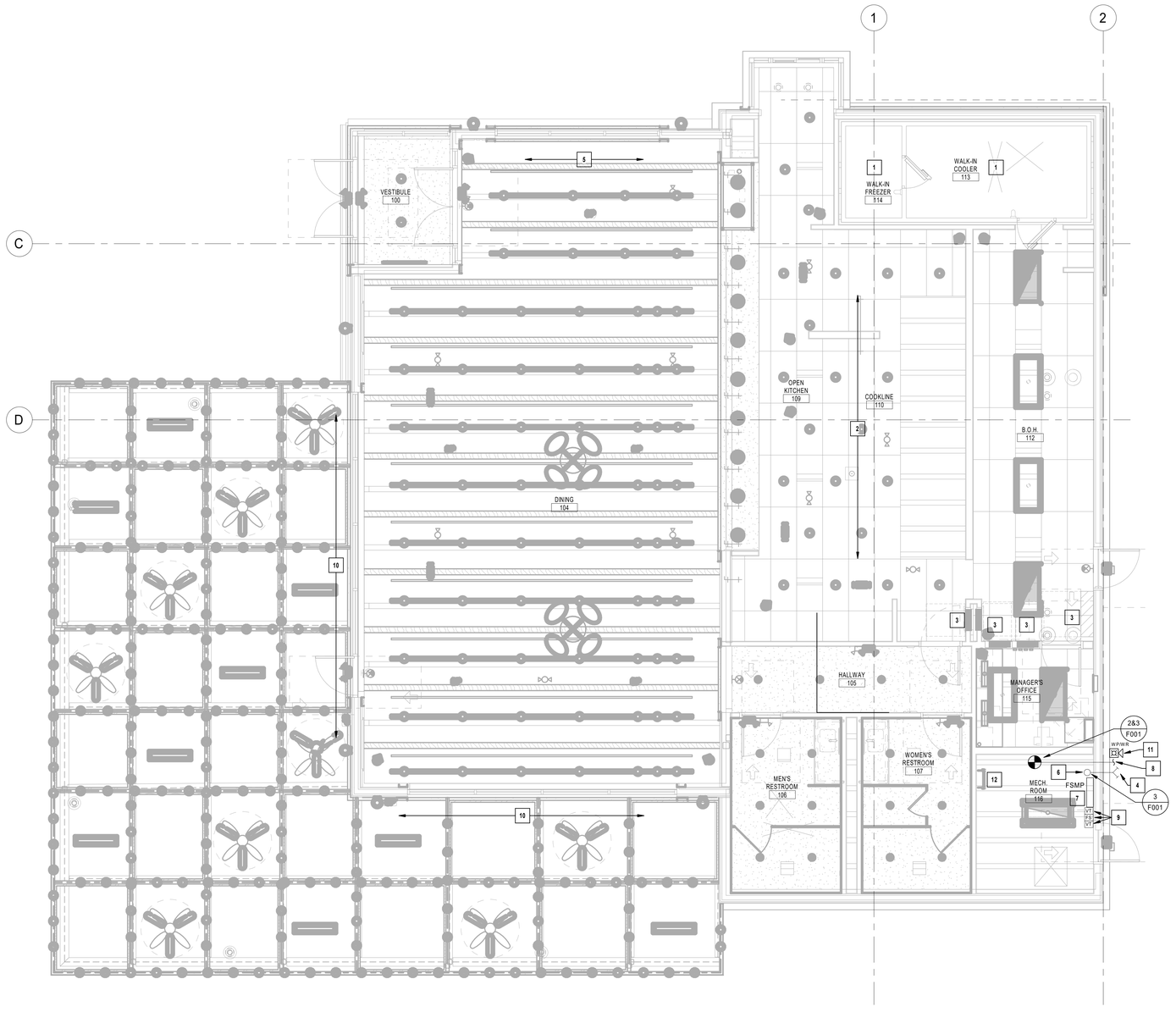
FIRE SPRINKLER PLAN NOTES:

1. PROVIDE DRY CONCEALED PENDENT TYPE SPRINKLERS WITHIN COOLER/FREEZERS. REFER TO SPECIFICATIONS AND DETAILS FOR ADDITIONAL INFORMATION. COORDINATE EXACT LOCATION OF SPRINKLER AT COOLERS/FREEZERS WITH LIGHTS, EVAPORATORS AND OTHER OBSTRUCTIONS. NOTE THAT FINAL LIGHT AND EVAPORATOR LOCATIONS MAY DIFFER FROM THOSE SHOWN ON PLANS.
2. COORDINATE TEMPERATURE RATING OF SPRINKLERS NEAR HEAT PRODUCING SOURCES IN ACCORDANCE WITH NFPA 13 FOR ANTICIPATED AMBIENT CEILING TEMPERATURES.
3. DO NOT ROUTE SPRINKLER PIPING ABOVE ELECTRICAL PANELS.
4. FIRE DEPARTMENT CONNECTION. CHECK VALVE, AND BALL DRIP VALVE ROUTED TO EXTERIOR. COORDINATE LOCATION WITH AHJ.
5. ROUTE SPRINKLER PIPING AROUND MENUBOARD WALLS. DO NOT DRILL OR DAMAGE MENUBORAD WALLS.
6. FIRE SPRINKLER RISER.
7. FIELD COORDINATE MOUNTING LOCATION OF SPRINKLER MONITORING CONTROL PANEL. OBTAIN APPROVAL FROM ARCHITECT AND OWNER PRIOR TO MOUNTING THE CONTROL PANEL.
8. FIRE SERVICE ENTRY. REFERENCE CIVIL FOR CONTINUATION.
9. CONNECT FIRE SPRINKLER MONITORING DEVICES TO FIRE MONITORING SYSTEM. COORDINATE QUANTITY AND LOCATION OF DEVICES WITH FIRE PROTECTION SYSTEMS.
10. PROVIDE DRY EXTENDED COVERAGE SIDEWALL SPRINKLER COVERAGE FOR CANOPY.
11. PROVIDE EXTERIOR NOTIFICATION APPLIANCE. COORDINATE FINAL LOCATION WITH AHJ PRIOR TO INSTALLATION.
12. ROUTE SPRINKLER PIPING AROUND ROOF ACCESS HATCH.

CONTRACTOR SHALL PROVIDE SPRINKLER COVERAGE IN COMBUSTIBLE CONCEALED SPACES IN ACCORDANCE WITH NFPA 13. WHERE REQUIRED CONTRACTOR SHALL PROVIDE DRY SPRINKLER SYSTEM AND EQUIPMENT.



1 FIRE PROTECTION PLAN
1/4" = 1'-0"

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0 2' 4' 6'
SCALE: 1/4"=1'-0"

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Drawing Title
FIRE PROTECTION PLAN

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204461	ELT
Scale	**Date**
1/4" = 1'-0"	11/09/20

Sheet No.
F101

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Division 21: AUTOMATIC SPRINKLER SYSTEM

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

Requirements under Division 01 and the general and supplementary conditions of these specifications shall apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

Refer to Division 22 for additional requirements that apply to this installation that are not written herein.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

2004 Edition	1995 Edition
1. Division 21 – Fire Suppression	Division 15
2. Division 22 – Plumbing	Division 15
3. Division 23 – HVAC	Division 15
4. Division 26 – Electrical	Division 16
5. Division 27 – Communications	Division 16
6. Division 28 – Electronic Safety and Security	Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations."

Install: "to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install, complete and ready for the intended use."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division."

Engineer: Where referenced in this division, "Engineer" is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the work.

NRTL: Nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, or both, by an NRTL, and acceptable to the AHJ over this project.

C. PREBID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

E. COORDINATION

Coordinate the connection of the fire sprinkler alarm devices to the fire alarm system or fire sprinkler monitoring panel as required.

Coordinate work with that of other trades so that the various components of the systems are installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. Components installed without regard to the above shall be relocated at no additional cost to the Owner.

F. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request From for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

1. Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
2. Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.
3. Proposed substitution has received necessary approvals of authorities having jurisdiction.
4. Same warranty will be furnished for proposed substitution as for specified Work.
5. If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.
6. Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

G. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these Contract Documents and the design concept. Prior to transmitting submittal, verify that the equipment submitted is mutually compatible and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow for two weeks Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittal if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal date, equipment identification acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Shop drawings shall meet the requirements of NFPA 13 for working level drawings and shall include the following:

1. Working plans per NFPA 13, including layout drawings of the complete overhead sprinkler system that indicates the relationship of sprinkler piping and sprinklers to all other overhead items, including ceiling grid and tiles, light fixtures, diffusers, registers, grilles, ductwork, structure, soffits, obstructions, etc. Location of risers, piping, etc., shall be as inconspicuous as possible and shall fulfill all functional requirements. System design capabilities and demand shall also be noted on the drawings.
2. Complete details and sections as required to clearly define and clarify the design, including a materials list describing all proposed materials by manufacturer's name and catalog number.
3. Hydraulic calculations.
4. Product data for all fire sprinkler system components. Clearly indicate components to be used where multiple components appear on the same cut sheet.

Where required by the AHJ, Contractor is responsible for obtaining a professional engineer or NICET stamp and signature on their shop drawing submittal. The Engineer is not responsible and will not provide this.

Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Shop drawings shall be produced using Computer Aided Design. Hand drawn documents will not be reviewed or approved. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. For equipment with motor starters or VFDs, include short circuit current ratings. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal.

The checking and subsequent approval of such shop drawings by the Engineer shall not relieve the Contractor from responsibility for errors in dimensions, details, size of members, quantities, omissions of components or fittings; coordination of electrical requirements; or for coordinating items with actual building conditions. Proceed with the procurement and installation of equipment only after receiving approved shop drawings relative to each item.

H. ELECTRONIC DRAWINGS

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive, or direct download, as desired, from the Engineer for a fee of $200 for a drawing set up to 12 sheets and $15 per sheet for each additional sheet. Contact the Architect for written authorization and Engineer for the necessary release agreement form and to specify shipping method and drawing format. In addition to payment, written authorization from the Architect and release agreement from the Engineer must be received before electronic drawing files will be sent.

I. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

J. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Literature shall contain the following items:

1. Identification clearly visible on or through the cover, the name of the project, and description "Fire Sprinkler System Manual".
2. Neatly typed index at front with all emergency information clearly identified.
3. Complete list of all system components with manufacturer's names, catalog numbers, and all data for ordering parts.
4. One copy of the record drawings as described above.
5. All information required to secure emergency repairs or service.
6. Test reports and certificates including "Contractor's Material and Test Certificate(s) for Underground Piping" and "Contractor's Material and Test Certificate(s) for Above Ground Piping" as described in NFPA 13.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph "Submittals" for requirements.

K. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects, occurring within the warranty period(s), as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period, each warranty instrument being addressed to the Owner and stating the commencement date and term.

L. SCOPE

Provide a wet-pipe, automatic fire sprinkler system for the building or area of work as shown on the drawings. Contractor shall be approved and state licensed for design and installation of fire protection systems. The work done under this section shall be performed only by a Contractor whose workmen are experienced and regularly engaged in the installation of fire protection systems. Contractor shall be capable of preparing hydraulic calculations and system layouts.

Provide all fire sprinkler alarm devices including waterflow alarm and valve tamper switches for all system control valves. Provide a notification appliance acceptable to the AHJ on the exterior of the building at 8'-0" above finished grade, adjacent to the fire department connection. Coordinate all wiring and conduit for a complete and functional installation.

System shall, at a minimum, be in accordance with the latest edition of NFPA 13, 24, Underwriters Laboratories (UL), and must be acceptable to the Owner's Insurer, the AHJ, and all applicable local, state and national codes and standards. Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence.

Work shall include, but shall not necessarily be limited to the following:

1. All underground piping (which pertains to the fire sprinkler system) as indicated on the drawings, including all required pipe, valves, etc., as well as the required preparatory and finishing work such as trenching, backfilling, and pavement replacement. Provide thrust blocks, supervised post indicating valve, and valve pit as required or shown on drawings.
2. Connection to city main shall be a wet tap and shall include all required fittings, valves, meter vaults, backflow preventers, backflow preventer vault, etc. Provide backflow prevention equipment as required by local codes.
3. Design and installation of a complete wet-pipe, automatic fire sprinkler system for the area of work shown on the drawings or specified herein.
4. Portions of systems subject to freezing or temperatures below 40 degrees F shall be protected against freezing as required by NFPA 13. The Contractor shall be responsible for repairs and all costs incurred from damage caused by freezing of the fire protection system.
5. Provide overhead sprinkler system for freezers and cooler boxes. Sprinklers within coolers and freezers shall be of the dry pendent type.
6. Install the fire sprinkler monitoring panel adjacent to the sprinkler riser as indicated on the drawings. Coordinate the connection of all installed fire sprinkler alarm devices.

M. SYSTEM DESIGN

Contractor shall verify design criteria and rating hazards with the Owner's Insurer prior to designing the system. Waterflow and pressure test data shall be acquired before system is calculated and be dated not more than 12 months prior to the submittal of sprinkler shop drawings. Arrangements for and cost of flow tests shall be the responsibility of the Contractor.

Submit hydraulic calculations and plan, including a supply and demand graph; all hydraulic reference points and area of application shall appear on the plan. Contractor shall verify with AHJ any minimum safety factor requirements. Demand shall not be less than 10 percent below the supply at the demand point.

Protect entire building with a wet-type sprinkler system designed in accordance with NFPA 13 unless noted otherwise. Design system for Ordinary Hazard Group 2, 0.20 gpm/SF over the hydraulically remote 1500 SF area. Include minimum 250 gpm hose allowance added at the base of riser.

Restaurant seating areas may be designed for Light Hazard density with the approval of the AHJ.

The Contractor shall be fully responsible for the hydraulic calculations, the final system design, and the layout of all components of the system as required for approval by the Owner's Insurer and the AHJ.

The Contractor shall be fully responsible for coordinating system layout with other contractors. Changes to system design due to lack of coordination shall be paid for by the Contractor.

Designs requiring cutting of structural members for passage of sprinkler pipes or hangers shall not be accepted. When design appearance or similar aspects require cutting due to economy, it shall be held to an absolute minimum and done only with the Architect and Structural Engineer's written approval. Any excessive requirements of this type shall be identified during the bid period.

Sprinkler spacing shall conform to NFPA 13. Extended coverage sprinklers shall not be used in unfinished (shell) spaces.

The hydraulic area of operation shall be increased by 30% without revising the density for areas with sloped ceilings with a pitch exceeding 1 in 6 (16.7% slope) in accordance with NFPA 13.

The hydraulic area of operation shall be increased by 30% without revising the density for dry-pipe and double interlock preaction systems in accordance with NFPA 13.

The hydraulic area of operation may not be reduced as allowed by NFPA 13 for areas utilizing quick response sprinklers in unfinished shell spaces. For all other areas, the hydraulic area of operation shall not be reduced as allowed by NFPA 13 for areas utilizing quick response sprinklers unless specifically approved by the Engineer via a formally submitted RFI.

2. MATERIALS AND INSTALLATION

A. PRODUCTS

All fire protection system components shall be Underwriter's Laboratories listed for their intended use.

B. PIPING AND COMPONENTS

Underground piping shall be cement lined ductile iron or other approved or listed material, installed in accordance with NFPA and FM standards; fire main shall include all required fittings and valves.

Sprinkler piping 2-1/2" and larger shall be Schedule 10 or Schedule 40 black steel. Threaded sprinkler piping 2" and smaller shall be Schedule 40 black steel. Roll-grooved sprinkler piping 2" and smaller shall be Schedule 10 or Schedule 40 black steel. Pipes shall have welded, threaded, or mechanically joined fittings, based on the pipe material and size per NFPA 13 requirements.

Acceptable alternatives to Schedule 10 and Schedule 40 pipe shall be manufactured to standards recognized by NFPA 13. Pipe shall have a corrosion resistance rating of 1.0 or greater. Crimp-type couplings are not permitted. Threadable thinwall pipe with corrosion resistance rating less than 1.0 is not permitted.

All piping on the exterior of the building and/or exposed to the elements shall be externally galvanized.

C. SPRINKLERS

Sprinklers in areas with gypsum board ceilings shall be one of the following:

1. Chrome–plated, recessed type with chrome-plated escutcheons.

Sprinklers in areas with suspended acoustical ceilings shall be one of the following:

1. Chrome–plated, recessed type with chrome-plated escutcheons.

Sprinklers in areas with exposed piping may be pendent or upright types with rough brass finish.

Provide quick response sprinklers in all light hazard areas.

Coordinate sprinkler temperature rating near heat-producing sources in accordance with NFPA 13.

D. SERVICE ENTRANCE

Locate fire protection service entrance where indicated on the drawings. Equip the service with a UL listed backflow preventer assembly as required by the AHJ. Service entrance assembly shall include approved outside screw and yoke (OS&Y) valves with tamper switches.

Equip sprinkler system riser with an approved indicating control valve with tamper switch, waterflow alarm switch, notification appliance, check valve, system drain terminating outdoors, gauges, and fire department connection with check valve. Each riser shall meet NFPA 13 standards and requirements for acceptable valve arrangements. Separate control valve and check valve may be omitted if backflow preventer is located at the service entrance and building is protected with a single riser.

Provide a printed sheet giving brief instructions regarding control, emergency procedure and other data as required by NFPA next to the sprinkler riser. Protect sheet with glass or a transparent plastic cover. Permanently attach a placard indicating the location and basis of design (discharge density and system demand) to the riser for hydraulically designed systems.

Provide all control valve supervisory switches, waterflow alarm switches, and sprinkler system equipment panels requiring interconnection to the fire alarm system. Provide a line seizure type automatic dialer (Ademco or equal) and related telephone wiring for remote monitoring of fire sprinkler alarm devices and operation of the notification appliance.

Provide rough brass Siamese fire department connection with two individual type drop clapper valves and drain, located on building wall where indicated on drawings. Fire department connection shall be complete with pin lug type brass hose inlet caps with chains. Hose threads shall be compatible with local fire department specifications. Provide check valve sized per NFPA 13 with 3/4" ball drip drain piped to the exterior of the building. Fire department connection shall be permanently labeled "AUTOMATIC SPRINKLER FIRE DEPARTMENT CONNECTION".

Provide Storz fire department connection, UL listed, 4", 5" or 6" with rough brass connection and drain, located where indicated on Drawings. Fire department connection shall be complete with 30 degree elbow and hose inlet cap with chain. Provide check valve sized per NFPA 13 with 3/4 inch ball drip drain piped to the exterior of the building. Fire department connection shall be permanently labeled "AUTOMATIC SPRINKLER FIRE DEPARTMENT CONNECTION".

Provide a cabinet containing spare sprinklers and appropriate wrench(es) per NFPA 13 at the fire sprinkler system service entrance area.

3. EXECUTION

A. PIPING AND FINISHES

Excavation, trenching and backfilling shall be in accordance with requirements of the excavation and backfill section of the plumbing specifications.

Conceal piping in areas having ceilings, other than the underside of the roof deck. Piping in areas without ceilings may be exposed but kept at a minimum distance from the deck. All piping shall be clean and free of rust. Install system such that all piping is rigidly secured and supported. All ductwork, lights, structural members and main runs of piping shall take precedence over sprinkler piping. Cutting of structural members for passage of sprinkler pipes or hangers shall not be permitted. All horizontal piping in ceiling space shall be at an elevation above the top of light fixtures and air outlets to allow for access to light fixtures and air outlets without removing horizontal piping. Route all sprinkler piping and provide all offsets, bends, and elbows around all mechanical, electrical, and structural members as required.

Where exposed piping passes through finish work, install chrome plated (or other finish acceptable to the architect) split wall plates or escutcheons to fit snugly around the piping. Provide at each penetration to assure effectiveness of construction as a fire stop where piping is concealed or installed in unfinished areas.

All openings for piping shall be anticipated and indicated on the approved shop drawings. Any additional cutting of openings must have the written approval of the Architect.

Route piping parallel to major building lines.

Coordinate pipe routing near electrical equipment in accordance with NFPA 70.

Do not connect more than one sprinkler to a one inch outlet unless hydraulic calculations are included to verify performance.

Installation shall allow for suitable drainage of system to meet with the approval of the AHJ. Provide access panels as required. All drain locations requiring access panels shall be approved by the Architect prior to installation.

Sprinklers in suspended ceilings shall be 1 foot from the grid in both directions or centered in ceiling tiles. Sprinkler locations in finished areas shall be approved by Architect prior to installation.

B. SEISMIC CONTROLS FOR MEPF SYSTEMS

Seismic Protection Criteria:

Risk/Occupancy Category:	I, II or III
Site Soil Category:	Contractor's Seismic Engineer to Determine.
Seismic Design Category:	Contractor's Seismic Engineer to Determine.
Component Importance Factor:	Determined from ASCE 7.

The Contractor shall be responsible for determining the requirements for seismic bracing of mechanical, electrical, and plumbing systems. Seismic protection criteria used to determine seismic bracing requirements of all mechanical, electrical and plumbing systems shall be determined by the applicable code adopted in the project jurisdiction. Where not already determined within the contract documents, the Contractor shall be responsible for contracting a licensed professional engineer to establish building site class, seismic design category, seismic zone or any other criteria necessary to determine the requirements for seismic bracing on mechanical, electrical and/or plumbing systems.

Seismic bracing of fire protection systems shall be installed in strict accordance with the provisions of NFPA 13.

The Contractor shall determine the type and location of seismic bracing required for the mechanical, electrical, and plumbing elements shown on the drawings based on the established seismic criteria, the size and weight of the supported element and the distance from structure of the supported element.

The Contractor shall submit the following shop drawing information to the AHJ and the Engineer for review and approval:

1. Seismic analysis listing all applicable seismic design criteria.
2. Descriptive catalog data of seismic bracing materials.
3. Shop drawings showing bracing type and location.
4. Installation details of all bracing used.
5. Calculations showing that the seismic restraints meet the seismic requirements.

Shop drawings and calculations shall be signed and sealed by a registered professional engineer, licensed in the state of the project and employed by the manufacturer of the seismic bracing products. Calculations shall include dead loads, static seismic loads and capacity of materials utilized for connections.

Seismic bracing, restraints, isolators, and isolation materials shall be of the same manufacturer and shall be certified by the manufacturer. Approved manufacturers are: Amber/Booth Company, Inc., B-Line/Tolco, Kinetics Noise Control, Inc., Loos & Company, Inc., Mason Industries, Inc., Uni-strut, or Vibro-Acoustics. Each device shall have a pre-approval number from California OSHPD or other recognized government agency showing maximum restraint ratings.

Seismic bracing measures to be applied to mechanical, electrical, and plumbing equipment/systems shall be installed in strict accordance with all applicable local, state, and/or federal codes as well as manufacturer's requirements. The most stringent criteria shall apply. All anchor connections to structure for support of mechanical and electrical equipment, regardless of the need for seismic restraints, shall be shown on shop drawings.

C. PENETRATIONS

Seal all fire protection floor, wall and roof penetrations watertight and weathertight. Caulk around fire protection penetrations with 3M CP-25, or approved equal fire barrier caulk (thickness as required and recommended by manufacturer) to maintain fire resistance rating of fire-rated assemblies.

D. TESTING AND ACCEPTANCE

Complete the automatic fire sprinkler system, as soon as possible, when building construction allows. Following system installation, Place the system in service. After the system has been placed in service for continuous use, water charges, if any, will be paid by Owner.

Upon completion of the systems installation, and prior to acceptance by the Engineer and Owner, the Contractor shall make general operating tests to demonstrate that all equipment and systems are in proper working order, and are functioning in conformance with the intent of the drawings and specifications.

Prior to connecting to the overhead sprinkler piping, the underground main shall be thoroughly flushed and tested in accordance with NFPA 24. Secure all required approvals and written documentation of the flushing operation. Test above ground piping in accordance with NFPA 13. Hydrostatically test all sprinkler piping at a minimum pressure of 200 psi for a minimum 2-hour period of time. Correct any faulty or leaking joints and pipe. The use of any substance or material added to the water to correct leaks shall not be permitted. Caulking of defective joints, cracks or holes shall not be permitted. Repeat tests after defects have been eliminated. Perform all tests in the presence of the AHJ and/or the Owner's authorized representative.

Upon completion of each phase of the installation, test each system in conformance with local code requirements. Furnish all labor and equipment required to properly test all sprinkler equipment installed under this contract. Assume all costs involved in making the tests and repair and/or replace all damage resulting therefrom.

Notify the Architect and the AHJ three (3) working days prior to making sprinkler system tests. Concealed work shall remain uncovered until the required tests are complete. Portions of the work may be concealed if approved by the AHJ or if necessary due to construction procedure.

E. INSTRUCTIONS

After completion of all installation, tests, etc., and prior to the final acceptance date, instruct the building Owner and his selected personnel in the operation of the sprinkler system. Include in the training the procedure to conduct quarterly main drain tests as required by NFPA 25. Special care shall be taken to make sure the building personnel will immediately recognize whether the main valve is in an open position, know how to drain the system, and know how to test the system. The building personnel shall also be made familiar with the existence and contents of the System Manual described in the Operation and Maintenance section of this specification.

END OF SECTION 21

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EXPIRES ON: 11/30/2021
LICENSED PROFESSIONAL ENGINEER
CHRISTOPHER J. CULP
062-065882
STATE OF ILLINOIS

Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
FIRE SPRINKLER SPECIFICATIONS

Job No. 204461
Drawn ELT
Scale
Date 11/09/20

Sheet No.
F501

CHRISTOPHER J. CULP
11/23/2020 3:26:35 PM C:\Revit\Projects\2050001105 MEP v21_evan.talbot_20201123132837.rvt

GENERAL NOTES

1. "STRUCTURAL ENGINEER" IN THESE NOTES REFERS TO TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC, THE STRUCTURAL ENGINEER OF RECORD.
2. "SPECIALTY ENGINEER" IN THESE NOTES REFERS TO AN ENGINEER LICENSED OR REGISTERED TO PRACTICE STRUCTURAL ENGINEERING IN THE STATE IN WHICH THE PROJECT IS LOCATED.
3. STRUCTURAL DRAWINGS ARE TO BE COORDINATED AND USED IN CONJUNCTION WITH THE ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS. SEE MECHANICAL DRAWINGS FOR EQUIPMENT PADS, BASES, SUPPORTS, AND DUCT PENETRATIONS.
4. TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC. SHALL NOT BE RESPONSIBLE FOR, NOR HAVE CONTROL OR CHARGE OF CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES FOR THE SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THIS PROJECT, AND SHALL NOT BE RESPONSIBLE FOR CONTRACTOR'S FAILURE TO CARRY OUT HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC. SHALL NOT BE RESPONSIBLE FOR, NOR HAVE CONTROL OVER, THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, ANY OF THEIR AGENTS, OR EMPLOYEES, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR ALL TEMPORARY SHORING AND BRACING REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT. ALL SHORING AND BRACING MEMBERS AND CONNECTIONS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE IMPOSED LOADS. TEMPORARY MEMBERS AND CONNECTIONS SHALL NOT BE REMOVED UNTIL PERMANENT MEMBERS ARE IN PLACE AND FINAL CONNECTIONS ARE MADE.
7. CONTRACTOR SHALL VERIFY IN FIELD ALL DIMENSIONS, ELEVATIONS AND MEMBER SIZES AS SHOWN ON THE CONTRACT DRAWINGS FOR THE EXISTING CONSTRUCTION, PRIOR TO THE DETAILING OR FABRICATION OF ANY NEW STRUCTURAL ELEMENT. CONTRACTOR SHALL DOCUMENT ANY CONSTRUCTION-RELATED DISCREPANCIES. CONTRACTOR SHALL FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER FOR REVIEW (28) CALENDAR DAYS PRIOR TO THE SCHEDULED START OF ANY DETAILING OR FABRICATION.
8. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND SETTLEMENT OF EXISTING OR NEW CONSTRUCTION INSIDE OR OUTSIDE THE PROJECT LIMITS DURING EXCAVATION AND FOUNDATION CONSTRUCTION. ANY DAMAGE TO NEW OR EXISTING CONSTRUCTION INSIDE OR OUTSIDE OF THE PROJECT LIMITS, CAUSED BY CONSTRUCTION TECHNIQUES IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. NO FIELD MODIFICATIONS TO ANY STRUCTURAL COMPONENTS SHALL BE MADE WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER. THIS INCLUDES, BUT IS NOT LIMITED TO REVISIONS DUE TO MISLOCATION, MISFIT, OR ANY OTHER CONSTRUCTION ERRORS.
10. NO OPENING SHALL BE PLACED IN ANY STRUCTURAL MEMBER (OTHER THAN AS INDICATED ON APPROVED SHOP DRAWINGS) UNTIL THE LOCATION HAS BEEN APPROVED BY THE STRUCTURAL ENGINEER.
11. PROVIDE SLEEVE LAYOUTS FOR ALL PENETRATIONS THROUGH STRUCTURAL MEMBERS (ALL TRADES ARE INCLUDED). LAYOUTS ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
12. SUPPORT ALL ROOF MOUNTED EQUIPMENT OR EQUIPMENT SUSPENDED FROM FLOORS OR THE ROOF ONLY ON/FROM BEAMS DESIGNATED FOR SUCH PURPOSE. IF NO SUPPORT HAS BEEN DESIGNATED, OR IF A QUESTION ARISES, NOTIFY STRUCTURAL ENGINEER PRIOR TO ERECTION OF EQUIPMENT.
13. ALL DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS ARE INTENDED TO BE TYPICAL FOR SIMILAR SITUATIONS ELSEWHERE, UNLESS OTHERWISE NOTED. FOR DETAILS AND DIMENSIONS NOT INDICATED ON THE STRUCTURAL DRAWINGS, SEE THE ARCHITECTURAL DRAWINGS.
14. MATERIALS AND EQUIPMENT SHALL BE STORED AND TRANSPORTED IN A MANNER SO AS NOT TO EXCEED THE ALLOWABLE FLOOR OR ROOF LOADING INDICATED IN THE "SCHEDULE OF BUILDING DESIGN LOADS" ON THE CONSTRUCTION DOCUMENTS OR THE ALLOWABLE CAPACITY OF THE CONSTRUCTED MEMBER, WHICHEVER IS SMALLER.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL.
2. ALL SHOP DRAWING SUBMITTALS SHALL BE AS DESCRIBED IN THE PROJECT SPECIFICATIONS OR IN THESE NOTES IF THERE IS NO PROJECT SPECIFICATION.
3. SHOP DRAWINGS AND RELATED MATERIALS PREPARED BY SUPPLIERS AND SUBCONTRACTORS SHALL BE REVIEWED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE ARCHITECT/STRUCTURAL ENGINEER. THE GENERAL CONTRACTOR SHALL REVIEW ALL SUBMISSIONS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATION OF CONSTRUCTION, TECHNICAL CONTENT, COORDINATION OF TRADES, DIMENSIONAL ACCURACY, SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL APPROVE AND SO STAMP EACH SUBMISSION BEFORE SUBMITTING TO THE ARCHITECT/STRUCTURAL ENGINEER.
4. THE STRUCTURAL DRAWINGS SHALL NOT BE USED AS THE BACKGROUNDS FOR THE PRODUCTION OF ANY SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW.
5. ANY DEVIATIONS FROM THE STRUCTURAL DRAWINGS OR SPECIFICATIONS SHALL BE NOTED AND BUBBLED ON THE SHOP DRAWINGS THAT ARE SUBMITTED FOR APPROVAL.
6. FOR SHOP DRAWINGS TO BE RESUBMITTED TO THE STRUCTURAL ENGINEER FOR A SUBSEQUENT REVIEW, ALL CHANGES SHALL BE NOTED AND BUBBLED.

STRUCTURAL SYSTEM

1. THE GRAVITY LOADS RESISTING SYSTEM CONSISTS OF:
   A. BASE BUILDING: ENGINEERNED LUMBER AND PRE-FABRICATED WOOD TRUSSES SPANNING TO WOOD BEARING WALLS BEARING ON SHALLOW FOUNDATIONS
   B. PATIO: STEEL BEAMS AND GIRDERS SPANNING TO STEEL COLUMNS BEARING ON SHALLOW FOUNDATIONS
2. THE LATERAL LOAD RESISTING SYSTEM CONSIST OF WOOD SHEAR WALLS

FOUNDATIONS

1. FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT PERFORMED BY ECS MIDWEST, LLC DATED 06/19/2018. CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS SPECIFIED IN THIS REPORT.
2. FOUNDATION STRUCTURE IS BASED ON THE USE OF CONTINUOUS STRIP FOOTINGS AND/OR SPREAD FOOTINGS APPLYING A MAXIMUM PRESSURE OF 3000 POUNDS PER SQUARE FOOT TO THE SOIL.
3. ALL ENGINEERED FILL IS TO BE COMPACTED TO ACHIEVE THIS BEARING PRESSURE AS VERIFIED BY FIELD TESTING BY THE OWNER'S TESTING AGENCY. IF FIELD CONDITIONS DO NOT PROVIDE THIS MINIMUM VALUE, THE STRUCTURAL ENGINEER AND ARCHITECT SHOULD BE NOTIFIED IMMEDIATELY.
4. PER THE ABOVE REFERENCED REPORT, SLABS-ON-GRADE PREPARED PER THE GEOTECHNICAL RECOMMENDATIONS ARE DESIGNED USING A MODULUS OF SUBGRADE REACTION VALUE (k) OF 150 PCI.
5. FOOTINGS EXPOSED TO FROST SHALL BE PLACED SUCH THAT THE BOTTOM OF FOOTING IS AT LEAST AT THE FROST ELEVATION OF 42" BELOW GRADE.
6. PER THE ABOVE REFERENCED REPORT, THE LATERAL EARTH PRESSURE IS AS FOLLOWS:
   A. ACTIVE EARTH PRESSURE - 38 PSF/FOOT
   B. STATIC EARTH PRESSURE - 57 PSF/FOOT
7. SHOULD UNSUITABLE BEARING CONDITIONS BE ENCOUNTERED DURING EXCAVATION, NOTIFY THE STRUCTURAL ENGINEER AND ARCHITECT BEFORE CONTINUING WITH CONSTRUCTION.
8. THE CONCRETE FOR EACH ISOLATED FOOTING SHALL BE PLACED IN ONE (1) CONTINUOUS POUR.
9. ALL INTERIOR SLABS-ON-GRADE SHALL BE PLACED OVER AN EXTREME LOW PERMEANCE VAPOR BARRIER, 15 MIL MINIMUM THICKNESS, OVER A BASE/SUBBASE AS SPECIFIED BY THE GEOTECHNICAL ENGINEER FOR THE PROJECT. EXISTING SUBBASE WILL BE COMPACTED IN PLACE OR WILL BE CUT OUT AND REPLACED WITH AN ENGINEERED FILL AS SPECIFIED BY THE OWNER'S GEOTECHNICAL ENGINEER.
10. DO NOT BACKFILL AGAINST BASEMENT WALLS UNTIL THE PERMANENT BELOW GRADE LATERAL BRACING SYSTEM AND THE FIRST FLOOR FRAMING AND SLAB ABOVE THE BASEMENT IS IN PLACE AND THE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH.
11. THE CONTRACTOR MUST PROVIDE SURFACE DRAINAGE AND PUMPS TO PROTECT ALL EXCAVATION FROM FLOODING. FLOODING OF ANY EXCAVATION AFTER APPROVAL OF THE SUBGRADE WILL BE CAUSE FOR CONCRETE RE-PREPARATION AND RE-APPROVAL OF THE SUBGRADE.
12. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY WATER, FROST OR ICE FROM PENETRATING ANY FOOTING OR SLAB SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE.
13. THE CONTRACTOR SHALL REVIEW ALL EXISTING SITE CONDITIONS AND THE SUBSURFACE SOILS EXPLORATION REPORT AND ESTABLISH SPECIFIC "CONSTRUCTION PROCEDURES AND SEQUENCES" FOR THE EXCAVATION, COMPACTION, FILL AND INSTALLATION OF THE NEW BUILDING FOUNDATION. SUBMIT THESE FOR REVIEW TO THE OWNER'S GEOTECHNICAL ENGINEER, STRUCTURAL ENGINEER AND ARCHITECT.
14. THE CONTRACTOR'S PROCEDURES AND SEQUENCING FOR FOUNDATION INSTALLATION SHALL PREVENT SETTLEMENT OF ADJACENT CONSTRUCTION. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ALL REMEDIAL WORK RESULTING FROM SUCH SETTLEMENT.
15. RECORDS OF ANY EXISTING SUBGRADE INTERFERENCES OTHER THAN THOSE INTERFERENCES SHOWN OR INDICATED ON THE CONSTRUCTION DOCUMENTS, ARE NOT CURRENTLY AVAILABLE. DURING EXCAVATION WORK, INTERFERENCES MAY BE DISCOVERED. CONTRACTOR SHALL DOCUMENT CONSTRUCTION - RELATED DIMENSIONS OF ALL INTERFERENCES. CONTRACTOR TO FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER AND ARCHITECT FOR REVIEW.
16. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE FOUNDATION TESTING AND INSPECTION REQUIREMENTS.

STRUCTURAL CONCRETE

1. CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE PUBLICATIONS:
   A. ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
   B. ACI 302 - "RECOMMENDED PRACTICE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION"
   C. ACI 304 - "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE"
   D. ACI 311 - "ACI MANUAL OF CONCRETE INSPECTION"
   E. ACI 315 - "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"
   F. ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
   G. ACI 347 - "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK"
2. PROVIDE CONCRETE TO OBTAIN THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS:

MINIMUM COMPRESSIVE STRENGTH AT (28) DAYS		
CONCRETE MEMBER	STRENGTH (f'c)	NORMAL WEIGHT / LIGHTWEIGHT
PIERS	4000 PSI	NORMAL WEIGHT
WALLS	4000 PSI	NORMAL WEIGHT
WALL FOOTINGS	4000 PSI	NORMAL WEIGHT
INTERIOR SLABS-ON-GRADE	4000 PSI	NORMAL WEIGHT
EXTERIOR SLABS-ON-GRADE	4000 PSI	NORMAL WEIGHT

3. EXTERIOR FLATWORK, STAIRS, RAMPS, ETC. SHALL HAVE A WATER/CEMENT RATIO < 0.45.
4. LABORATORY TEST REPORTS OR MATERIAL CERTIFICATES FOR CONCRETE MATERIALS AND MIX DESIGN TEST DATA, IN CONFORMANCE WITH ACI STANDARDS, SHALL BE SUBMITTED FOR REVIEW FOR EACH TYPE OF CONCRETE TO BE USED. EACH SUBMITTED MIX DESIGN SHALL IDENTIFY THE APPLICATION FOR WHICH THE MIX WILL BE USED.
5. ALL CONCRETE SHALL BE NORMAL WEIGHT UNLESS NOTED OTHERWISE.
6. ALL LIGHTWEIGHT CONCRETE SHALL HAVE A DENSITY OF 115 PCF +/- 3 PCF UNLESS NOTED OTHERWISE.
7. ALL CONCRETE ELEMENTS SUBJECT TO FREEZING AND THAWING DURING CONSTRUCTION OR OVER THE SERVICE LIFE OF THE STRUCTURE SHALL CONTAIN AN AIR ENTRAINMENT ADMIXTURE AS SPECIFIED IN ACI-318, LATEST EDITION.
8. NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
9. THE CONTRACTOR SHALL SUBMIT CHECKED, DETAILED REINFORCEMENT SHOP DRAWINGS SHOWING THE LOCATIONS AND DETAILING OF ALL FOOTINGS, WALLS, PIERS, BEAMS, COLUMNS, SLABS, CONSTRUCTION JOINTS, CONTROL JOINTS, ETC. PRIOR TO FABRICATION. DETAILS SHALL INCLUDE STEEL SIZES, LAPS, SPACING AND PLACEMENT.
10. THE MINIMUM CONCRETE COVER FOR CAST-IN-PLACE (NON-PRESTRESSED) CONCRETE SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
    A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH...... 3"
    B. CONCRETE EXPOSED TO EARTH OR WEATHER:
       1. NO. 6 THROUGH NO. 18 BARS.............. 2"
       2. NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER.............. 1 1/2"
    C. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
       1. SLABS, WALLS, JOISTS:
          NO. 14 AND NO. 18 BARS.............. 1 1/2"
          NO. 11 BAR AND SMALLER.............. 3/4"
       2. BEAMS, COLUMNS:
          PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS.............. 1 1/2"
       3. SHELLS, FOLDED PLATE MEMBERS:
          NO. 6 THROUGH NO. 18 BARS.............. 2"
          NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER.............. 1 1/2"
11. PROVIDE ADEQUATE BOLSTERS, HI-CHAIRS, SUPPORT BARS, ETC., TO MAINTAIN SPECIFIED CLEARANCES FOR THE ENTIRE LENGTH OF ALL REINFORCING BARS. PROVIDE CONTINUOUS #4 SPACER BARS IN WALLS AND SLABS TO SUPPORT DOWELS.
12. PROVIDE PLASTIC TIPPED ACCESSORIES FOR REINFORCEMENT AT ALL FACES OF EXPOSED CONCRETE, INTERIOR OR EXTERIOR.
13. ALL FIELD BENDING OF REINFORCEMENT SHALL BE DONE COLD. HEATING OF BARS WILL NOT BE PERMITTED.
14. ALL CONSTRUCTION JOINTS, EXCLUDING SLAB-ON-GRADE CONSTRUCTION JOINTS, SHALL BE WIRE BRUSHED, CLEANED, MOISTENED AND A CONCRETE SLURRY APPLIED IMMEDIATELY PRIOR TO PLACING NEW CONCRETE.
15. CONTROL AND CONSTRUCTION JOINTS IN NON-STRUCTURAL SLABS-ON-GRADE SHALL BE PROVIDED AS SHOWN ON DRAWINGS AND DETAILS. CONTROL JOINTS SHALL BE SPACED AT A MAXIMUM OF 15'-0" ON CENTER IN ANY DIRECTION. SAWED CONTROL JOINTS SHALL BE OF THE SOFT-CUT TYPE, 0.25 TIMES THE SLAB THICKNESS DEEP, AND CUT AS SOON AS POSSIBLE WITHOUT DISLODGING THE COARSE AGGREGATE AS PART OF THE FINISHING OPERATION. CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS INDICATING ALL CONTROL JOINTS FOR ALL SLAB-ON-GRADE CONSTRUCTION FOR REVIEW PRIOR TO CONSTRUCTING ALL SLABS-ON-GRADE.
16. CONCRETE FOR SLAB-ON-GRADE CONSTRUCTION SHALL USE A DESIGN MIX THAT INCORPORATES 1-1/2" MAXIMUM SIZE AGGREGATE, WELL GRADED AND TYPE 1 CEMENT. THE MIX SHALL CONTAIN NO ADMIXTURES THAT EXACERBATE SHRINKAGE.
17. AT EXPOSED CONCRETE ELEMENTS, SEE ARCHITECTURAL DRAWINGS AND/OR PROJECT SPECIFICATIONS FOR TYPE OF CONCRETE FINISHING REQUIRED.
18. AT ALL EXPOSED TO VIEW CONCRETE ELEMENTS (I.E. BEAMS, GIRDERS, COLUMNS, TOP OF RETAINING WALLS. ETC.), PROVIDE 3/4" CHAMFER AT EDGES.
19. IF STRUCTURAL CONCRETE MEMBERS (STRUCTURED SLABS, BEAMS AND GIRDERS) ARE NOT CONSTRUCTED IN ONE CONTINUOUS POUR THE VERTICAL CONSTRUCTION JOINT BETWEEN POURS SHALL BE PLACED WITHIN THE MIDDLE FIFTH OF THE MEMBER SPAN AND CONTINUOUSLY KEYED. THE MEMBER SHALL BE SHORED UNTIL THE CONCRETE HAS ATTAINED THE MINIMUM 28-DAY STRENGTH. SEE TYPICAL CONSTRUCTION JOINT DETAILS. ALTERNATE CONSTRUCTION JOINT LOCATIONS MUST BE REVIEWED BY THE STRUCTURAL ENGINEER. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE PERMITTED IN SLABS AND BEAMS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
20. PITCH ALL SLABS TO DRAINS WHERE DRAINS ARE INDICATED ON CONTRACT DRAWINGS.
21. ADDITIONAL BARS SHALL BE PROVIDED AT ALL OPENINGS IN SLABS-ON-GRADE AND CONCRETE WALLS. AT ALL OPENINGS, PROVIDE MINIMUM OF (2) - #4 BARS AT EACH SIDE EXTENDING 2'-0" BEYOND EACH SIDE OF OPENING.
22. PROVIDE ADDITIONAL CORNER BARS TO MATCH HORIZONTAL BARS AT ALL WALL CORNERS AND INTERSECTIONS.
23. AT SLABS-ON-GRADE PROVIDE ADDITIONAL REINFORCING AT RE-ENTRANT CORNERS. PROVIDE MINIMUM OF (2) - #4 BARS, 4'-0" LONG CENTERED ABOUT CORNER.
24. NO ALUMINUM OF ANY TYPE SHALL BE ALLOWED IN THE CONCRETE WORK, UNLESS COATED TO PREVENT ALUMINUM CONCRETE REACTION.
25. IN NO CASE SHALL EMBEDDED CONDUIT BE PLACED ABOVE REINFORCING IN SLAB-ON-GRADE CONSTRUCTION. MINIMUM SPACING OF ADJACENT CONDUITS SHALL BE 3 TIMES THE DIAMETER OR WIDTH OF THE LARGEST CONDUIT. MAXIMUM OUTSIDE DIAMETER OF EMBEDDED CONDUIT SHALL BE NO LARGER THAN ONE-THIRD OF THE SLAB THICKNESS.
26. IN ELEVATED STRUCTURAL SLABS, NO CONDUITS SHALL BE PLACED CLOSER TO A COLUMN FACE THAN TWELVE INCHES.
27. ELECTRICAL CONDUITS AND PLUMBING PIPES IN ELEVATED STRUCTURAL SLABS SHALL BE PLACED BETWEEN THE TOP AND BOTTOM LAYERS OF REINFORCEMENT AND SHALL NOT HAVE AN OUTSIDE DIAMETER GREATER THAN ONE-THIRD THE SLAB THICKNESS. CROSSOVERS OF CONDUITS AND/OR PIPES SHALL NOT BE PERMITTED. THE CENTER-TO-CENTER DISTANCE BETWEEN CONDUITS AND/OR PLUMBING PIPES SHALL NOT BE LESS THAN 3 TIMES THE LARGEST CONDUIT OR PIPE DIAMETER OR WIDTH.
28. UNLESS OTHERWISE NOTED ON THE DRAWINGS, SLEEVES FOR PIPES AND CONDUITS PENETRATING GRADE BEAMS AND CONCRETE WALLS SHALL BE STEEL PIPE SLEEVES OF NOMINAL DIAMETER 2 INCHES LARGER THAN THE NOMINAL SIZE OF THE PIPE PENETRATING THE STRUCTURAL MEMBER. THE THICKNESS OF THE SLEEVE SHALL CONFORM TO SCHEDULE 40 BUT NEED NOT BE MORE THAN 3/8 INCH. ALL SUCH SLEEVE LOCATIONS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER AND ARCHITECT PRIOR TO INSTALLATION.
29. CONCRETE SLAB OPENINGS SHOWN ON STRUCTURAL DRAWINGS ARE TO BE CONFIRMED WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS PRIOR TO CONSTRUCTION. ALL SLAB OPENINGS ARE TO SIZED AND LOCATED ON REBAR SHOP DRAWING SUBMITTALS FOR CONFIRMATION WITH STRUCTURAL DRAWINGS. SHOULD ANY OPENING LOCATION OR DIMENSION CHANGE FROM LOCATIONS AND DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER AND ARCHITECT PRIOR TO PROCEEDING. ANY NECESSARY DESIGN REVISIONS WILL BE ISSUED BY THE STRUCTURAL ENGINEER.
30. SLABS AND BEAMS SHALL BE CAMBERED TO COMPENSATE FOR CONSTRUCTION LOADS AND ANY DEFLECTION OF THE SHORING/FORMWORK SYSTEM. THIS CAMBER SHALL BE IN ADDITION TO ANY CAMBER SHOWN ON THE STRUCTURAL DRAWINGS.
31. WHERE SLABS ARE TO BE CAMBERED, THE CONSTRUCTED THICKNESS SHALL BE CONSTANT THROUGHOUT THE SPAN AS SHOWN ON THE STRUCTURAL DRAWINGS.
32. REFER TO THE SPECIFICATION FOR FLOOR FLATNESS AND FLOOR LEVELNESS REQUIREMENTS.
34. NO CONSTRUCTION SHALL BE MADE WITHOUT REINFORCEMENT. UNLESS OTHERWISE NOTED, THE FOLLOWING PERCENTAGE OF THE GROSS CROSS SECTIONAL AREA SHALL BE PROVIDED AS MINIMUM REINFORCEMENT:
    A. SLABS: TOP & BOTTOM.............. 0.20%
    B. BEAMS: TOP & BOTTOM.............. 0.33%
       STIRRUPS.............. #3@D" (D=MEMBER DEPTH)
    C. COLUMNS: VERTICAL.............. 1.00%
       TIES.............. #3@10"
    D. WALLS: VERTICAL.............. 0.12% (#5's)
       HORIZONTAL.............. 0.20% (#5's)
    E. FOOTINGS: HORIZONTAL.............. 0.18% (#5's)
35. ALL REINFORCING STEEL SHALL BE HIGH STRENGTH NEW BILLET STEEL, CONFORMING TO ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE.
36. ALL BAR DETAILING AND ACCESSORIES TO BE FURNISHED SHALL CONFORM TO TYPICAL DETAILS IN THE ACI STANDARD 315 DETAILING MANUAL LATEST EDITION, EXCEPT AS OTHERWISE SHOWN, NOTED, OR SPECIFIED.
37. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. ALL WELDED WIRE FABRIC SHALL BE LAPPED TWO PANELS AT EDGES AND ENDS, AND TIED SECURELY. AT EXTERIOR SLABS PROVIDE EPOXY COATED WELDED WIRE FABRIC CONFORMING TO ASTM A884, CLASS A.
38. DETAILING AND ACCESSORIES SHALL CONFORM TO THE ACI DETAILING MANUAL AND TO THE CRSI MANUAL OF STANDARD PRACTICE. LATEST EDITIONS, UNLESS OTHERWISE NOTED BELOW, ON THE DRAWINGS, OR IN THE SPECIFICATIONS.
39. ALL HOOKS SHALL BE "STANDARD" HOOKS AS PER ACI 318, UNLESS NOTED OTHERWISE.
40. THE MINIMUM LENGTH OF ALL LAP SPLICES NOT DIMENSIONED ON THE DRAWINGS SHALL BE AS FOLLOWS:

BAR SIZE	f'c	SLAB/BEAM TOP	SLAB/BEAM OTHER	WALL VERT	WALL HORIZ	COLUMN VERTICAL
#3	4000	25"	19"	19"	25"	-
	5000	22"	17"	17"	22"	
	6000	20"	16"	16"	20"	
#4	4000	33"	25"	25"	33"	-
	5000	29"	23"	23"	29"	
	6000	27"	21"	21"	27"	
#5	4000	41"	31"	31"	41"	19"
	5000	36"	28"	28"	36"	
	6000	33"	26"	26"	33"	
#6	4000	49"	37"	37"	49"	23"
	5000	44"	34"	34"	44"	
	6000	40"	31"	31"	40"	
#7	4000	71"	54"	54"	71"	27"
	5000	63"	49"	49"	63"	
	6000	58"	45"	45"	58"	
#8	4000	81"	62"	62"	81"	30"
	5000	72"	56"	56"	72"	
	6000	66"	51"	51"	66"	
#9	4000	91"	70"	70"	91"	34"
	5000	81"	63"	63"	81"	
	6000	74"	57"	57"	74"	
#10	4000	102"	79"	79"	102"	39"
	5000	92"	71"	71"	92"	
	6000	84"	64"	64"	84"	
#11	4000	114"	87"	87"	114"	43"
	5000	102"	78"	78"	102"	
	6000	93"	71"	71"	93"	

NOTES:
A. THE ABOVE TABLE IS BASED ON THE CLEAR SPACING OF BARS BEING NOT LESS THAN 2x THE MAXIMUM BAR DIAMETER AND THE CLEAR COVER OF BARS BEING NOT LESS THAN ONE BAR DIAMETER. MULTIPLY THE LENGTH BY 1.5 FOR ALL OTHER CASES.
B. TOP BARS ARE HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE SPLICE.
C. FOR EPOXY COATED BARS, MULTIPLY THE LENGTHS SHOWN IN THE TABLE ABOVE BY 1.5.
D. LENGTHS ARE BASED ON NORMAL WEIGHT CONCRETE. FOR LIGHTWEIGHT CONCRETE, MULTIPLY THE LENGTHS SHOWN IN THE TABLE ABOVE BY 1.3.
E. WHERE BARS OF DIFFERENT SIZE ARE TO BE SPLICED, THE LENGTH SHALL BE THAT REQUIRED FOR THE LARGER BAR.
F. LENGTHS SHALL BE SPECIFICALLY DIMENSIONED AT ALL LOCATIONS ON THE SHOP DRAWINGS.
G. FOR CONCRETE STRENGTH BETWEEN LISTED VALUES, USE LENGTH OF THE NEXT LOWER CONCRETE STRENGTH LISTED VALUE.
H. FOR CONCRETE STRENGTHS EXCEEDING 6000 PSI, USE THE LENGTH FOR 6000 PSI CONCRETE STRENGTH.
I. THE ABOVE TABLE UTILIZES "CLASS B" SPLICES.

41. MECHANICAL COUPLERS MAY BE USED IN LIEU OF LAP SPLICES. MECHANICAL COUPLERS MUST BE CAPABLE OF SUSTAINING 125% OF THE BAR CAPACITY.
42. CONTINUOUS TOP AND BOTTOM BARS, OTHER THAN IN FOOTINGS, WHEN SHOWN IN CROSS SECTION ONLY, SHALL BE LAPPED AS FOLLOWS:
    A. TOP BARS AT MID SPANS.
    B. BOTTOM BARS CENTERED OVER SUPPORTS.
43. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE CONCRETE TESTING AND INSPECTION REQUIREMENTS.

POST-INSTALLED ANCHORS

1. WHERE EPOXY SYSTEM IS INDICATED ON THE PLANS OR DETAILS, USE HILTI HY-200 ADHESIVE IN CONCRETE AND SOLID GROUTED MASONRY UNLESS NOTED OTHERWISE. THE CONTRACTOR MAY SUBMIT SUBSTITUTE EPOXY SYSTEMS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF HILTI HY-200 ADHESIVE.
2. DRILL HOLES TO EPOXY MANUFACTURER'S RECOMMENDED SIZE. CLEAN HOLES WITH A CIRCULAR WIRE OR NYLON BRUSH AND BLOW OUT WITH COMPRESSED AIR.
3. WHERE MECHANICAL EXPANSION ANCHORS ARE INDICATED ON THE PLANS OR DETAILS, USE HILTI KWIK BOLT 3 ANCHORS IN CONCRETE UNLESS NOTED OTHERWISE. THE CONTRACTOR MAY SUBMIT SUBSTITUTE EXPANSION ANCHOR SYSTEMS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF HILTI KWIK BOLT 3 ANCHORS.
4. POST-INSTALLED ANCHORS MUST BE INSTALLED USING THE SPACING AND EDGE DISTANCES GIVEN ON THE PLANS OR DETAILS. IF FIELD CONDITIONS DICTATE THAT THE ANCHOR SPACING OR EDGE DISTANCES BE MODIFIED, THE CONTRACTOR SHALL SUBMIT A FIELD SKETCH TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO MAKING ANY MODIFICATIONS.
5. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE POST-INSTALLED ANCHORS TESTING AND INSPECTION REQUIREMENTS.

STRUCTURAL STEEL

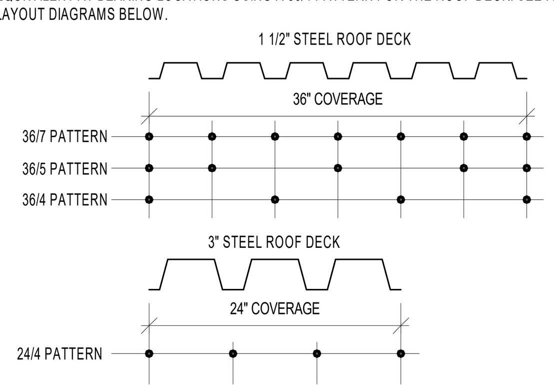
1. FURNISH STRUCTURAL STEEL IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS AND AISC CODE OF STANDARD PRACTICE, LATEST EDITIONS.
2. THE STEEL FABRICATOR/ERECTOR SHALL VERIFY IN FIELD ALL DIMENSIONS, ELEVATIONS AND MEMBER SIZES AS SHOWN ON THE CONTRACT DRAWINGS FOR THE EXISTING CONSTRUCTION, PRIOR TO THE DETAILING OR FABRICATION OF ANY NEW STRUCTURAL ELEMENT. THE STEEL FABRICATOR/ERECTOR SHALL DOCUMENT ANY CONSTRUCTION RELATED DISCREPANCIES. THE STEEL FABRICATOR/ERECTOR SHALL FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER FOR REVIEW. THERE SHALL BE RESOLUTION TO THE NOTED DISCREPANCIES PRIOR TO FABRICATION OF ANY NEW STRUCTURAL ELEMENTS.
3. STRUCTURAL STEEL MATERIAL SHALL BE AS INDICATED BELOW UNO:

STRUCTURAL SHAPES	ASTM SPECIFICATION
WIDE FLANGES	A992
CHANNELS	A36
ANGLES	A36
STEEL PIPE	A53, GRADE B
ROUND HSS	A500, GRADE C
SQUARE & RECTANGULAR HSS	A500, GRADE C
PLATES	A36
THREADED RODS	A36
ANCHOR BOLT ASSEMBLIES	F1554, GRADE 36

4. ALL STRUCTURAL STEEL FRAMEWORK INCLUDED IN THESE DOCUMENTS ARE CLASSIFIED AS NON-SELF-SUPPORTING. ALL CONNECTIONS SPECIFIED HEREIN ARE BASED ON LOADING CONDITIONS OF THE FULLY COMPLETED STRUCTURE IN ITS ENTIRETY INCLUDING THE FUNCTIONS OF THE COLUMN BASE PLATES AND ANCHOR BOLTS. INSTABILITIES CAN BE EXPECTED DURING THE ERECTION PROCESS DUE TO LACK OF INSTALLED ROOF, FLOOR, WALL AND SLAB DIAPHRAGMS AS WELL AS STEEL BRACING, CONNECTION RIGIDITIES AND OTHER SUCH STABILIZING ELEMENTS. THE GENERAL CONTRACTOR SHALL IDENTIFY THE SEQUENCE AND SCHEDULING OF CONSTRUCTION ITEMS AND COORDINATE THE ACTIVITIES OF ALL TRADES INCLUDING THE STEEL FABRICATOR AND ERECTOR. THE ERECTOR SHALL SUBMIT AN ERECTION PLAN AND A TEMPORARY BRACING SCHEME TO THE CONTRACTOR AND OWNER WHICH IS FOR RECORD PURPOSES ONLY. THIS SUBMITTAL WILL NOT BE REVIEWED AND IS NOT A DESIGN FUNCTION OF THE STRUCTURAL ENGINEER.
5. THE FABRICATOR/ERECTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER AND ARCHITECT FOR REVIEW, ENGINEERED AND CHECKED DRAWINGS SHOWING FABRICATION DETAILS, FIELD ASSEMBLY DETAILS AND ERECTION DIAGRAMS FOR ALL STRUCTURAL STEEL ELEMENTS.
6. ALL BEAMS AND JOISTS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE FABRICATED CAMBERS AS INDICATED ON THE DRAWINGS.
7. AFTER FABRICATION, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE, AND OTHER FOREIGN MATERIALS. STEEL SHALL BE PRIMED AND PAINTED AS OUTLINED IN THE ARCHITECTURAL DRAWINGS AND/OR PROJECT SPECIFICATIONS. STEEL TO RECEIVE SPRAY-ON FIREPROOFING SHALL NOT BE PRIMED OR PAINTED.
8. WELDING SHALL BE PERFORMED WITH E70XX LOW HYDROGEN ELECTRODES. ALL WELDING SHALL BE PERFORMED BY CERTIFIED/QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.1, "STRUCTURAL WELDING CODE - STEEL," LATEST EDITION.
9. MINIMUM FILLET WELD SIZE SHALL COMPLY WITH THE AISC SPECIFICATION REQUIREMENTS, BUT SHALL NOT BE LESS THAN 3/16 INCH UNLESS NOTED OTHERWISE.
10. ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF "AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," LATEST EDITION. ALL BOLT HOLES SHALL BE "SHORT SLOTTED", UNLESS NOTED OTHERWISE.
11. ALL STEEL BEAM AND GIRDER CONNECTIONS SHALL BE SIMPLE SHEAR CONNECTIONS UTILIZING HIGH STRENGTH BOLTS IN BEARING-TYPE CONNECTIONS WITH THREADS EXCLUDED FROM THE SHEAR PLANE UNLESS NOTED OTHERWISE. BOLTS ARE TO BE TIGHTENED TO THE "SNUG TIGHT" CONDITION UNLESS NOTED AS "SLIP CRITICAL". BOLTS DESIGNATED AS "SLIP CRITICAL" ARE TO BE TIGHTENED PER THE ABOVE MENTIONED BOLT SPECIFICATION.
12. BOLTED CONNECTIONS SHALL USE A MINIMUM OF (2) 3/4"Ø BOLTS UNLESS NOTED OTHERWISE.
13. PROVIDE CONNECTIONS AS DETAILED ON THE DESIGN DRAWINGS. ALTERNATE CONNECTION DESIGNS MAY BE SUBMITTED BY THE CONTRACTOR. THE ALTERNATE DESIGNS MUST BE PROPERLY ENGINEERED AND SUBMITTED WITH CALCULATIONS SIGNED AND SEALED BY A SPECIALTY ENGINEER. THE DESIGN BY THE SPECIALTY ENGINEER AND THE REVIEW BY THE STRUCTURAL ENGINEER OF ANY ALTERNATE CONNECTIONS WILL BE AT THE CONTRACTOR'S EXPENSE.
14. AT COMPOSITE BEAM CONSTRUCTION PROVIDE 3/4" Ø HEADED SHEAR STUDS UNIFORMLY SPACED AT 1'-0" ON CENTER MAXIMUM ON ALL BEAMS UNLESS NOTED OTHERWISE.
15. THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
16. STEEL WORK SHALL SLOPE IN ACCORDANCE WITH ELEVATIONS GIVEN ON STRUCTURAL DRAWINGS.
17. REFER TO ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS STEEL NOT SHOWN ON STRUCTURAL DRAWINGS.
18. PAINT SYSTEM FOR "EXPOSED TO OUTSIDE ATMOSPHERE" STRUCTURAL STEEL COMPONENTS:
    A. SURFACE PREPARATION: CLEAN SURFACES PER SSPC SP NO. 6 BLAST CLEANING.
    B. PRIME COAT: MINIMUM DRY FILM THICKNESS = 1.75 MILS. SHOP PRIME SURFACES OF STEEL AS REQUIRED BY PROJECT SPECIFICATIONS. USE PRIME COAT COMPATIBLE WITH FIREPROOFING SYSTEM WHERE APPLICABLE.
    C. FINISH COAT: SEE PROJECT SPECIFICATIONS.
19. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE STRUCTURAL STEEL TESTING AND INSPECTION REQUIREMENTS.

STEEL ROOF DECK

1. FURNISH STEEL ROOF DECK IN ACCORDANCE WITH THE STEEL DECK INSTITUTE STANDARD FOR STEEL ROOF DECK, LATEST EDITION.
2. ROOF DECK SECTION PROPERTIES SHALL BE COMPUTED IN ACCORDANCE WITH AISI "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS."
3. STEEL ROOF DECK SHALL HAVE A MINIMUM YIELD STRENGTH OF 33 KSI.
4. ALL STEEL ROOF DECK SHALL BE FORMED FROM SHEET STEEL CORRESPONDING TO THE REQUIREMENTS OF ASTM A653, WITH A MINIMUM G90 ZINC COATING.
5. ROOF DECKING SHALL TYPICALLY BE CONTINUOUS OVER A MINIMUM OF THREE (3) SPANS. WHERE A THREE (3) SPAN CONDITION IS NOT POSSIBLE, THE ROOF DECK SUPPLIER'S SPECIALTY ENGINEER SHALL VERIFY THE ADEQUACY OF THE ROOF DECK TO ACCOMMODATE THE SPAN CONDITIONS OR THE ROOF DECK SUPPLIER'S SPECIALTY ENGINEER SHALL RESIZE THE ROOF DECK TO ACCOMMODATE THE SPAN CONDITIONS.
6. GENERAL CONTRACTOR SHALL SUBMIT ROOF DECK ALLOWABLE LOAD DATA AND ROOF DECK SHOP DRAWINGS SHOWING DECK LAYOUT AND ALL EDGE CONDITION DIMENSIONS PRIOR TO CONSTRUCTION.
7. WELD ROOF DECK TO SUPPORTING MEMBERS WITH NOMINAL 5/8" ARC PUDDLE WELDS OR EQUIVALENT AT BEARING LOCATIONS USING A 36/4 PATTERN FOR THE ROOF DECK. SEE FASTENER LAYOUT DIAGRAMS BELOW.



8. WELD DECK TO SUPPORTING MEMBERS ALONG EDGES PARALLEL TO DECK SPAN AT 12" ON CENTER.
9. SCREW SIDE LAPS OF ROOF DECK WITH NO. 10 TEK SCREWS AT 12" ON CENTER.
10. WELDING OF ROOF DECK SHALL BE PERFORMED BY CERTIFIED/QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL," LATEST EDITION.
11. NO ATTACHMENTS MAY BE MADE TO THE ROOF DECK.
12. PROVIDE AS REQUIRED BENT EDGE PLATES, RIDGE PLATES, VALLEY PLATES, FLAT PLATES AT CHANGE OF DECK DIRECTION AND SUMP PANS.
13. CONTRACTOR TO PROVIDE SUPPLEMENTAL FRAMING AT OPENINGS AS REQUIRED FOR SUPPORT OF THE ROOF DECK. ALL OPENINGS SHALL BE COORDINATED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
14. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE STEEL ROOF DECK TESTING AND INSPECTION REQUIREMENTS.

CONCRETE MASONRY UNIT CONSTRUCTION

1. MASONRY CONSTRUCTION AND MATERIALS SHALL CONFORM TO ALL REQUIREMENTS OF "SPECIFICATION FOR MASONRY STRUCTURES (ACI 530.1/ASCE 6/TMS 602)", LATEST EDITION, EXCEPT AS MODIFIED BY THE REQUIREMENTS OF THESE CONTRACT DOCUMENTS.
2. SPECIFIED COMPRESSIVE STRENGTH OF MASONRY (f'm) = 2,000 PSI, UNLESS NOTED OTHERWISE
3. THE CONTRACTOR SHALL SELECT THE SOURCE OF MATERIALS INCLUDING MASONRY UNITS, MORTAR AND GROUT INGREDIENTS WITHIN THE LIMITATIONS OF THE PRODUCT SPECIFICATIONS TO ACHIEVE AND CONSISTENTLY MAINTAIN THE REQUIRED UNIT STRENGTHS AND PROPERTIES THROUGHOUT THE CONSTRUCTION.
4. MORTAR
   A. SPECIFICATION: ASTM C270: PROPORTION SPECIFICATIONS
   B. TYPE: TYPE S
   C. ADMIXTURES: DO NOT USE ADMIXTURES CONTAINING MORE THAN 0.2 PERCENT CHLORIDE IONS, NOR ANY ALCOHOL, NOR ANY OTHER SUBSTANCES WHICH WILL ADVERSELY AFFECT THE STRENGTH OR BOND CHARACTERISTICS OF THE MORTAR.
5. GROUT
   A. SPECIFICATION: ASTM C476: PROPORTION SPECIFICATIONS
   B. COMPRESSIVE STRENGTH: AS NEEDED TO ACHIEVE SPECIFIED f'm, 2,000 PSI (MINIMUM)
   C. SLUMP: BETWEEN 8 AND 11 INCHES
   D. ADMIXTURES: NONE
6. CONCRETE MASONRY UNITS
   A. SPECIFICATION: ASTM C90
   B. WEIGHT: MEDIUM WEIGHT
   C. COMPRESSIVE STRENGTH: AS NEEDED TO ACHIEVE SPECIFIED f'm
   D. GROUTING APPLICATIONS: COMPLY WITH TABLE 7 OF ACI 530.1/ASCE 6-16. PROVIDE UNITS WHICH WILL FACILITATE ALIGNMENT OF VERTICAL CORES AND MORTARING OF SURROUNDING WEBS.
7. REINFORCEMENT AND METAL ACCESSORIES
   A. REINFORCING STEEL:
      1. SPECIFICATION: ASTM A615
      2. GRADE: 60
   B. JOINT REINFORCEMENT:
      1. SPECIFICATION: ASTM A82
      2. TYPE: LADUR
      3. WEIGHT CLASS: EXTRA HEAVY
      4. SIDE RODS: 3/16" (W2.8) DIAMETER
      5. CROSS RODS: 9 GA. (W1.7) DIAMETER AT 16" SPACING
      6. COATING: HOT DIPPED GALVANIZED PER ASTM A153 (1.5 OZ/FT²), AT WALLS EXPOSED TO OUTSIDE ATMOSPHERIC CONDITIONS
   C. NO INTERIOR WALLS NEED BE CLASSIFIED FOR MEAN RELATIVE HUMIDITY EXCEEDING 75 PERCENT.
8. ACCESSORIES: SEE ARCHITECTURAL DRAWINGS AND/OR PROJECT SPECIFICATIONS FOR THE FOLLOWING:
   A. CONTRACTION JOINT MATERIAL
   B. SEALANT TYPE
9. ALL MASONRY WALLS NOT SUPPORTED LATERALLY AT INTERSECTING WALLS, FLOORS OR OTHER STRUCTURAL MEMBERS THROUGH INTERLOCKING CONSTRUCTION SHALL BE ANCHORED TO THESE MEMBERS WITH HOOKED WIRE DOVETAIL ANCHORS INTO THE GROUTED CELL OR BOND BEAM.
10. WHERE PENETRATIONS ARE REQUIRED TO PASS HORIZONTALLY THROUGH MASONRY BEAMS OR WALLS, FOR WHICH NO SLEEVES OR CORED HOLES ARE INDICATED, NOTIFY ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO MAKING ANY CUTS.
11. DOVETAIL ANCHORS, WALL PLUGS, ACCESSORIES AND OTHER MISCELLANEOUS ITEMS TO ACCOMMODATE ALL TRADES SHALL BE INSTALLED AS THE MASONRY WORK PROGRESSES.
12. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, GROUT FILL ALL CELLS IN MASONRY WALLS AS FOLLOWS:
    A. ALL COURSES BELOW GRADE
    B. BASE COURSE AND DAMP COURSE
    C. THREE (3) COURSES BELOW ALL FRAMING MEMBERS UNLESS NOTED OTHERWISE
    D. ALL MASONRY ABOVE ROOF STRUCTURE UNLESS NOTED OTHERWISE
13. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PROVIDE #5 VERTICAL REBAR IN A GROUT FILLED CELL AS FOLLOWS:
    A. ONE CELL AT 48" ON-CENTER
    B. ONE CELL EACH SIDE OF OPENING
    C. ONE CELL IN EACH CORNER
    D. ONE CELL IN EACH INTERSECTION
    E. ONE CELL EACH SIDE OF VERTICAL WALL JOINTS
    F. ONE CELL AT END OF WALL
14. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, LAP SPLICE REINFORCING BARS A MINIMUM OF 48x (BAR DIAMETER).
15. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PROVIDE HORIZONTAL JOINT REINFORCEMENT:
    A. MAXIMUM SPACING OF 16"
    B. IN TOP COURSE OF FOUNDATION WALLS
    C. AT EACH FLOOR AND ROOF LEVEL
    D. AT TOP OF PARAPET WALLS
    E. TWO LAYERS @ 8" SPACINGS IMMEDIATELY ABOVE AND BELOW ALL WALL OPENINGS
16. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PROVIDE MORTAR JOINT THICKNESS:
    A. THEORETICAL = 3/8"
    B. MAXIMUM ACTUAL = 1/2"
17. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PROVIDE VERTICAL CONTRACTION JOINTS:
    A. AT 25 FEET MAXIMUM HORIZONTAL SPACING.
    B. AT CHANGES IN WALL HEIGHT.
    C. AT CHANGES IN WALL THICKNESS, SUCH AS PIPE AND DUCT CHASES AND PILASTERS.
    D. AT (ABOVE) MOVEMENT JOINTS IN FOUNDATIONS AND FLOORS.
    E. AT (BELOW) MOVEMENT JOINTS IN ROOFS AND FLOORS THAT BEAR ON A WALL.
    F. AT ONE OR BOTH SIDES OF WALL OPENINGS (STEPPED AT LINTELS).
    G. ADJACENT TO CORNERS OF WALLS OR INTERSECTIONS WITHIN A DISTANCE EQUAL TO HALF OF THE CONTROL JOINT SPACING.
18. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PROVIDE MASONRY BOND BEAMS REINFORCED WITH A MINIMUM OF (2) #5 REBARS EXTENDING 24" PAST EDGES OF OPENINGS FILLED WITH GROUT:
    A. OVER DOORS AND WINDOWS AS LINTEL BEAMS (EXCEPT WHERE CAST-IN-PLACE, PRECAST OR STEEL LINTELS ARE NOTED OR REQUIRED).
    B. OVER MISCELLANEOUS OPENINGS AS LINTEL BEAMS (EXCEPT WHERE CAST-IN-PLACE, PRECAST OR STEEL LINTELS ARE NOTED OR REQUIRED).
    C. BELOW SILL IN WALLS WITH OPENINGS.
    D. AT THE TOP OF WALLS AND AT FLOOR LEVELS (EXCEPT WHERE CAST-IN-PLACE OR PRECAST BEAMS ARE NOTED OR REQUIRED) INCLUDING THE TOP COURSE OF ALL PARAPET WALLS.
19. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, PLACE MASONRY UNITS IN RUNNING BOND.
20. VERTICAL REINFORCING BARS SHALL BE CENTERED IN MASONRY WALL CELLS UNLESS NOTED OTHERWISE. PROVIDE REINFORCING BAR POSITIONERS AS NEEDED.
21. WHERE STEEL COLUMNS ARE EMBEDDED IN MASONRY WALLS, FILL SPACE BETWEEN STEEL AND MASONRY SOLIDLY WITH MORTAR UNLESS NOTED OTHERWISE.
22. MASONRY WALL REINFORCING STEEL SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW. INCLUDE THE FOLLOWING:
    A. BUILDING ELEVATION VIEWS OF ALL REINFORCED CONCRETE MASONRY WALLS.
    B. LOCATIONS, SIZE AND EXTENT OF ALL MASONRY WALL STEEL REINFORCING, INCLUDING TYPICAL VERTICAL REINFORCEMENT, VERTICAL JAMB REINFORCEMENT, LINTEL REINFORCEMENT, HORIZONTAL BOND BEAM REINFORCEMENT AND VERTICAL DOWELS INTO FOUNDATION ELEMENTS.
    C. LOCATIONS AND EXTENTS OF ALL MASONRY WALL CONTRACTION, EXPANSION AND CONSTRUCTION JOINTS.
23. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE CONCRETE MASONRY UNIT CONSTRUCTION TESTING AND INSPECTION REQUIREMENTS.

SAWN LUMBER

1. THE WORKMANSHIP OF ALL SAWN LUMBER SHALL BE IN ACCORDANCE WITH ANSI/AWC NDS, LATEST EDITION.
2. ALL SAWN LUMBER SHALL BE INSTALLED AT A MAXIMUM MOISTURE CONTENT OF 19%.
3. ALL SAWN DIMENSIONAL LUMBER (2" TO 4" THICK) OF THE SPECIES AND GRADES INDICATED SHALL POSSES THE FOLLOWING MINIMUM MATERIAL PROPERTIES:
   A. SPRUCE-PINE-FIR NO. 2
      BENDING.............. Fb 875 PSI
      TENSION PARALLEL TO GRAIN.............. Ft 450 PSI
      SHEAR PERPENDICULAR TO GRAIN.............. Fv 135 PSI
      COMPRESSION PERPENDICULAR TO GRAIN.............. Fc⊥ 425 PSI
      COMPRESSION PARALLEL TO GRAIN.............. Fc 1,150 PSI
      MODULUS OF ELASTICITY.............. E 1,400,000 PSI
   B. SOUTHERN PINE NO. 1 (VALUES LISTED ARE FOR MEMBERS 2" TO 4" WIDE)
      BENDING.............. Fb 1,500 PSI
      TENSION PARALLEL TO GRAIN.............. Ft 1,000 PSI
      SHEAR PERPENDICULAR TO GRAIN.............. Fv 175 PSI
      COMPRESSION PERPENDICULAR TO GRAIN.............. Fc⊥ 565 PSI
      COMPRESSION PARALLEL TO GRAIN.............. Fc 1,650 PSI
      MODULUS OF ELASTICITY.............. E 1,600,000 PSI
4. ALL SAWN TIMBER (6" THICK OR THICKER) OF THE SPECIES AND GRADES INDICATED SHALL POSSES THE FOLLOWING MINIMUM MATERIAL PROPERTIES:
   A. SOUTHERN PINE NO. 1
      BENDING.............. Fb 1,350 PSI
      TENSION PARALLEL TO GRAIN.............. Ft 900 PSI
      SHEAR PERPENDICULAR TO GRAIN.............. Fv 165 PSI
      COMPRESSION PERPENDICULAR TO GRAIN.............. Fc⊥ 375 PSI
      COMPRESSION PARALLEL TO GRAIN.............. Fc 825 PSI
      MODULUS OF ELASTICITY.............. E 1,500,000 PSI
5. PROVIDE TWO STUDS UNDER ALL BEAMS OR HEADERS, PROVIDE ONE STUD UNDER JOISTS AND TRUSSES, UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS. WHERE POSTS OR MULTIPLE STUDS UNDER BEAMS OR HEADERS ARE INDICATED IN THE STRUCTURAL DRAWINGS, THOSE POSTS OR MULTIPLE STUDS SHALL BE CARRIED TO THE FOUNDATION.
6. FIRE STOPPING, BACKING FOR INTERIOR FINISHES, NON-BEARING WALLS, AND OTHER NON-STRUCTURAL FRAMING ARE NOT NECESSARILY SHOWN ON STRUCTURAL DRAWINGS.
7. CONNECTIONS OF ALL 2x MATERIAL TO OTHER 2x MATERIAL OR OTHER WOOD MEMBERS SHALL BE AS INDICATED BELOW AND ACCORDING TO THE INTERNATIONAL BUILDING CODE FASTENING SCHEDULE (TABLE 2304.10.1), UNLESS OTHERWISE NOTED ON THE DRAWINGS:
   A. 2x4, 2x6 - (3) 10d NAILS MIN
   B. 2x8, 2x10, 2x12 - (4) 10d NAILS MIN
8. STUD WALLS SHOWN ON STRUCTURAL PLANS ARE BEARING WALLS BELOW FRAMING PLAN LEVEL. SEE WOOD STUD BEARING WALL SCHEDULE.
9. AT FLOOR AND ROOF JOISTS PROVIDE JOIST BRIDGING CONSISTING OF SOLID BLOCKS INSTALLED AT 8'-0" ON-CENTER, MAXIMUM, NOT MORE THAN 8'-0" FROM SUPPORT.
10. DO NOT SPLICE MEMBERS BETWEEN SUPPORTS UNLESS NOTED OTHERWISE.
11. PROVIDE BLOCKING AND OTHER MISCELLANEOUS MEMBERS AS REQUIRED FOR ATTACHMENT OF ARCHITECTURAL MATERIALS, FIXTURES, MEP/FP COMPONENTS, FIRE BLOCKING, ETC.
12. AT BEARING WALLS PROVIDE 2x SOLID BLOCKING AT MID-HEIGHT OF ALL STUDS, UNLESS NOTED OTHERWISE.
13. ALL JOISTS SHALL BE CONNECTED AT EACH BEARING LOCATION AS FOLLOWS:
    A. WHERE THE JOIST BEARS DIRECTLY ON A WOOD SUPPORT, EACH JOIST SHALL BE CONNECTED WITH (3) 16d TOE-NAILS.
    B. AT ROOF JOISTS, PROVIDE A SIMPSON H2A TIE IN ADDITION TO NAILING INDICATED ABOVE, UNLESS NOTED OTHERWISE IN THE STRUCTURAL DRAWINGS.
14. ALL SAWN LUMBER INDICATED TO RECEIVE FIRE-RETARDANT TREATMENT SHALL CONFORM TO THE PROVISIONS OF ASTM D5664 AND ASTM D6841. SEE ARCHITECTURAL DRAWINGS AND/OR PROJECT SPECIFICATIONS.
15. ALL SAWN LUMBER INDICATED TO RECEIVE PRESERVATIVE PRESSURE TREATMENT SHALL CONFORM TO THE PROVISIONS OF AWPA U1. SEE ARCHITECTURAL DRAWINGS AND/OR PROJECT SPECIFICATIONS.
16. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE SAWN LUMBER TESTING AND INSPECTION REQUIREMENTS.

PLYWOOD SHEATHING

1. THE WORKMANSHIP OF ALL PLYWOOD SHEATHING SHALL BE IN ACCORDANCE WITH APA.
2. ROOF SHEATHING SHALL BE 3/4" THICK APA RATED PLYWOOD WITH SPAN RATING OF 48/24 OR BETTER, UNLESS NOTED OTHERWISE IN THE STRUCTURAL DRAWINGS. ATTACH THE PANELS WITH 8d NAILS @ 6" ON-CENTER AT PANEL EDGES AND WITH 8d NAILS @ 12" ON-CENTER AT THE INTERIOR SUPPORTS OF THE PANEL, UNLESS NOTED OTHERWISE IN THE STRUCTURAL DRAWINGS. ORIENT THE LONG DIMENSION OF THE PANELS ACROSS THREE OR MORE SUPPORTS. BLOCK WITH FLAT MINIMUM 2x4 BLOCKING AT ALL UNSUPPORTED EDGES OF PANELS WHERE SHOWN ON PLANS FOR PLYWOOD DIAPHRAGMS. LONG PANEL EDGES SHALL ALIGN AND SHORT PANEL EDGES SHALL BE STAGGERED. PLYCLIPS OR APPROVED EQUAL CONNECTORS SHALL BE INSTALLED AT MIDSPAN BETWEEN EACH SUPPORT WHEN SPACING OF ROOF FRAMING MEMBERS EXCEEDS 16".
3. EXTERIOR WALL SHEATHING SHALL BE 5/8" THICK APA RATED PLYWOOD WITH SPAN RATING OF 32/16 OR BETTER. ATTACH WITH 8d NAILS @ 6" ON-CENTER AT PANEL EDGES AND 8d NAILS @ 12" ON-CENTER AT THE INTERIOR SUPPORTS OF THE PANEL, UNLESS NOTED OTHERWISE IN THE STRUCTURAL DRAWINGS. ATTACHMENTS MAY DIFFER AT SHEAR WALLS (SEE SHEAR WALL SCHEDULE). AT SHEAR WALLS, BLOCKING IS REQUIRED AT ALL HORIZONTAL PANEL EDGES, AND VERTICAL PANEL EDGES SHALL ALIGN WITH WALL STUDS.
4. INTERIOR WALL SHEATHING SHALL BE 5/8" THICK APA RATED PLYWOOD WITH SPAN RATING OF 32/16 OR BETTER. ATTACH WITH 8d NAILS @ 6" ON-CENTER AT PANEL EDGES AND 8d NAILS @ 12" ON-CENTER AT THE INTERIOR SUPPORTS OF THE PANEL, UNLESS NOTED OTHERWISE IN THE STRUCTURAL DRAWINGS. ATTACHMENTS MAY DIFFER AT SHEAR WALLS (SEE SHEAR WALL SCHEDULE). AT SHEAR WALLS, BLOCKING IS REQUIRED AT ALL HORIZONTAL PANEL EDGES, AND VERTICAL PANEL EDGES SHALL ALIGN WITH WALL STUDS.
5. ALL PLYWOOD INDICATED IN THE STRUCTURAL DRAWINGS SHALL BE GRADE CD INTERIOR WITH EXTERIOR GLUE AND SHALL BE IDENTIFIED WITH THE GRADE TRADEMARK OF THE AMERICAN PLYWOOD ASSOCIATION.
6. ORIENTED STRAND BOARD (OSB) PANELS OF EQUAL THICKNESS AND GRADE MAY BE SUBSTITUTED FOR PLYWOOD PANELS WHERE FIRE-TREATED PANELS ARE NOT REQUIRED.
7. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE PLYWOOD SHEATHING TESTING AND INSPECTION REQUIREMENTS.

WOOD HARDWARE

1. FRAMING CONNECTORS INDICATED ON DRAWINGS SHALL BE MANUFACTURED BY SIMPSON STRONG-TIE COMPANY. THE CONTRACTOR MAY SUBMIT SUBSTITUTE CONNECTORS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF SIMPSON STRONG-TIE COMPANY CONNECTORS INDICATED ON DRAWINGS. CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS WITH THE TYPE, SIZE, AND QUANTITY OF FASTENERS REQUIRED TO ACHIEVE MAXIMUM LOAD CAPACITY, UNLESS NOTED OTHERWISE.
2. ALL FRAMING CONNECTORS SHALL BE FURNISHED FROM THE FOLLOWING MATERIALS:
   A. GALVANIZED STEEL COMPLYING WITH ASTM A653, G60 COATING FOR ALL LOCATIONS UNLESS NOTED OTHERWISE.
   B. GALVANIZED STEEL COMPLYING WITH ASTM A653, G185 COATING FOR USE WITH PRESERVATIVE TREATED LUMBER AND WHERE INDICATED.
   C. STAINLESS STEEL COMPLYING WITH ASTM A240, TYPE 316L FOR USE IN EXTERIOR APPLICATIONS AND WHERE INDICATED.
3. NAILS: PROVIDE COATED COMMON NAILS IN ACCORDANCE WITH ASTM F1667, UNLESS OTHERWISE NOTED. THE CONTRACTOR MAY SUBMIT SUBSTITUTE NAILS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF THE COATED COMMON NAILS INDICATED ON DRAWINGS. NAILS INDICATED ON THE DRAWINGS SHALL BE OF THE FOLLOWING DIAMETERS:
   A. 6d – 0.113 IN
   B. 8d – 0.131 IN
   C. 10d – 0.148 IN
   D. 12d – 0.148 IN
   E. 16d – 0.162 IN
   F. 20d – 0.192 IN
4. SCREWS: PROVIDE WOOD SCREWS IN ACCORDANCE WITH ANSI/ASME STANDARD B18.6.1. THE CONTRACTOR MAY SUBMIT SUBSTITUTE WOOD SCREWS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF THE WOOD SCREWS INDICATED ON DRAWINGS.
5. LAG SCREWS: PROVIDE LAG SCREWS IN ACCORDANCE WITH ANSI/ASME B18.2.1. THE CONTRACTOR MAY SUBMIT SUBSTITUTE LAG SCREWS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF THE LAG SCREWS INDICATED ON DRAWINGS.
6. BOLTS: PROVIDE BOLTS IN ACCORDANCE WITH ANSI/ASME B18.2.1. THE CONTRACTOR MAY SUBMIT SUBSTITUTE BOLTS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF THE BOLTS INDICATED ON DRAWINGS.
7. ALL FASTENERS IN CONTACT WITH PRESERVATIVE PRESSURE TREATED WOOD SHALL BE FURNISHED FROM STAINLESS STEEL.

ENGINEERED WOOD

1. THE WORKMANSHIP OF ALL ENGINEERED WOOD SHALL BE IN ACCORDANCE WITH ANSI/AWC NDS, LATEST EDITION.
2. ALL ENGINEERED WOOD SHALL BE INSTALLED AT A MAXIMUM MOISTURE CONTENT OF 16%.
3. ALL ENGINEERED WOOD SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
4. LAMINATED VENEER LUMBER (LVL)
   A. LVL MEMBERS SHALL POSSES MATERIAL PROPERTIES THAT MEET OR EXCEED THE FOLLOWING (BASED ON LVL 2.0E BY WEYERHAUSER)
      BENDING (FOR 12" DEEP MEMBER).............. Fb 2,600 PSI
      SHEAR PERPENDICULAR TO GRAIN.............. Fv 285 PSI
      TENSION PARALLEL TO GRAIN (FOR 4'-0" LONG MEMBER).............. Ft 1,895 PSI
      COMPRESSION PERPENDICULAR TO GRAIN.............. Fc⊥ 750 PSI
      COMPRESSION PARALLEL TO GRAIN.............. Fc 2,510 PSI
      MODULUS OF ELASTICITY.............. E 2,000,000 PSI
5. PARALLEL STRAND LUMBER (PSL)
   A. PSL MEMBERS SHALL POSSES MATERIAL PROPERTIES THAT MEET OR EXCEED THE FOLLOWING (BASED ON PSL 1.8E BY WEYERHAUSER)
      BENDING (FOR 12" DEEP MEMBER).............. Fb 2,400 PSI
      SHEAR PERPENDICULAR TO GRAIN.............. Fv 190 PSI
      TENSION PARALLEL TO GRAIN (FOR 4'-0" LONG MEMBER).............. Ft 1,995 PSI
      COMPRESSION PERPENDICULAR TO GRAIN.............. Fc⊥ 545 PSI
      COMPRESSION PARALLEL TO GRAIN.............. Fc 2,500 PSI
      MODULUS OF ELASTICITY.............. E 1,800,000 PSI
6. LAMINATED STRAND LUMBER (LSL)
   A. LSL MEMBERS SHALL POSSES MATERIAL PROPERTIES THAT MEET OR EXCEED THE FOLLOWING (BASED ON LSL 1.3E BY WEYERHAUSER)
      BENDING (FOR 12" DEEP MEMBER).............. Fb 1,700 PSI
      SHEAR PERPENDICULAR TO GRAIN.............. Fv 425 PSI
      TENSION PARALLEL TO GRAIN (FOR 4'-0" LONG MEMBER).............. Ft 1,300 PSI
      COMPRESSION PERPENDICULAR TO GRAIN.............. Fc⊥ 710 PSI
      COMPRESSION PARALLEL TO GRAIN.............. Fc 1,835 PSI
      MODULUS OF ELASTICITY.............. E 1,300,000 PSI
7. GLUED LAMINATED LUMBER (GLULAM)
   A. GLULAM MEMBERS STRESSED PRIMARILY IN BENDING SHALL POSSES MATERIAL PROPERTIES THAT MEET OR EXCEED THE FOLLOWING (BASED ON 24F-1.7E-V1 SP/SP)
      1. X-X AXIS BENDING
         BENDING (POSITIVE AND NEGATIVE).............. Fbx 2,400 PSI
         SHEAR PARALLEL TO GRAIN.............. Fvx 300 PSI
         COMPRESSION PERPENDICULAR TO GRAIN (T&B FACE)... Fc⊥x 740 PSI
         MODULUS OF ELASTICITY (FOR DEFLECTION).............. Ex,TRUE 1,800,000 PSI
      2. Y-Y AXIS BENDING
         BENDING.............. Fby 1,750 PSI
         SHEAR PARALLEL TO GRAIN.............. Fvy 260 PSI
         COMPRESSION PERPENDICULAR TO GRAIN.............. Fc⊥y 650 PSI
         MODULUS OF ELASTICITY (FOR DEFLECTION).............. Ey,TRUE 1,700,000 PSI
      3. AXIALLY LOADED
         TENSION PARALLEL TO GRAIN.............. Ft 1,150 PSI
         COMPRESSION PARALLEL TO GRAIN.............. Fc 1,600 PSI
8. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR ENGINEERED LUMBER TESTING AND INSPECTION REQUIREMENTS.

OPEN-WEB WOOD TRUSSES

1. THE DESIGN AND WORKMANSHIP OF ALL OPEN-WEB WOOD TRUSSES SHALL BE IN ACCORDANCE WITH ANSI/TPI, LATEST EDITION.
2. SAWN LUMBER USED FOR ALL OPEN-WEB WOOD TRUSSES SHALL BE IN ACCORDANCE WITH ANSI/AWC NDS, LATEST EDITION.
3. MANUFACTURER TO DESIGN WOOD TRUSSES, TRUSS GIRDERS, AND CONNECTIONS OF WOOD TRUSSES FOR ALL LOADS AS INDICATED ON THE DRAWINGS.
4. ROOF TRUSSES SHALL BE CAPABLE OF RESISTING A MINIMUM NET UPLIFT WIND PRESSURE INDICATED ON S002.
5. ROOF TRUSSES SHALL BE MANUFACTURED BY REDBUILT.
6. SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF ILLINOIS AND SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO FABRICATION.
7. THE TRUSS MANUFACTURER SHALL INDICATE ON THE SHOP DRAWINGS THE LOCATIONS OF PERMANENT BRACING REQUIRED TO TRANSFER TRUSS MEMBER BUCKLING FORCES TO THE STRUCTURE. UPON REVIEW OF THE SHOP DRAWINGS, TGRWA WILL INDICATE METHOD OF ATTACHMENT AND ADDITIONAL PERMANENT BRACING NEEDED TO TRANSFER MEMBER BUCKLING FORCES TO THE STRUCTURE. CONTRACTOR SHALL INCLUDE IN AND NOTE IN SUBMITTED BID, AN ALLOWANCE FOR PERMANENT BRACING.
8. WOOD TRUSSES SHALL BE ERECTED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. PROVIDE TEMPORARY ERECTION BRACING AND BRIDGING PER MANUFACTURER'S SPECIFICATIONS.
9. MANUFACTURER SHALL USE L/360 SNOW LOAD, L/240 (DEAD + SNOW) LOAD, AND L/180 (DEAD + SNOW + WIND) LOAD DEFLECTION CRITERIA.
10. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE WOOD TRUSS TESTING AND INSPECTION REQUIREMENTS.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT/BID
	11/09/20	ISSUE FOR LL REVIEW

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LICENSE EXPIRES:11/30/2020

Drawing Title
STRUCTURAL NOTES

Job No. 20043
Drawn CAH
Scale 12" = 1'-0"
Date 11/24/2020
Sheet No.
S001

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STRUCTURAL LOADING CRITERIA

1. STRUCTURAL BUILDING CODE - 2012 INTERNATIONAL BUILDING CODE

2. SUPERIMPOSED DEAD LOADS:
   - A. PATIO
     - a. METAL ROOF DECK 3 PSF
     - b. ROOF MEMBRANE 2 PSF
     - c. MISC. MEP 2 PSF
     - DEAD LOAD = 7 PSF
   - B. DINING
     - a. PLYWOOD SHEATHING 3 PSF
     - b. ROOF MEMBRANE 2 PSF
     - c. CEILING 3 PSF
     - d. MISC. MEP 5 PSF
     - DEAD LOAD = 13 PSF
   - C. BACK-OF-HOUSE (BOH)
     - a. PLYWOOD SHEATHING 3 PSF
     - b. ROOF MEMBRANE 2 PSF
     - c. RIGID INSULATION 3 PSF
     - d. CEILING 3 PSF
     - e. MISC. MEP 5 PSF
     - DEAD LOAD = 16 PSF

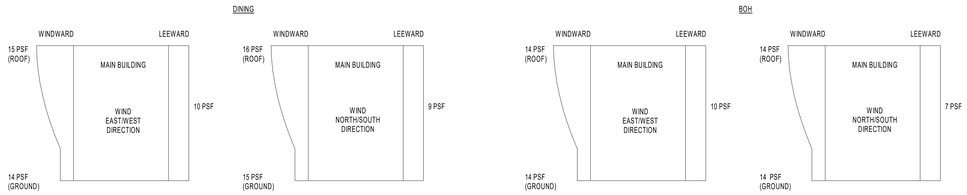
3. LIVE LOADS:
   - A. ROOF LIVE LOAD = 20 PSF

4. WIND LOADS:
   - A. BASIC WIND SPEED (3 SECOND GUST) - V = 115 MPH
   - B. RISK CATEGORY = II
   - C. IMPORTANCE FACTOR I = 1.0
   - D. EXPOSURE CATEGORY = B
   - E. INTERNAL PRESSURE COEFFICIENT = ±0.18
   - F. MAIN FORCE RESISTING SYSTEM:
     - a. DINING
       1. WINDWARD WALLS (@ HIGH POINT)
          - a. EAST/WEST WIND = 15 PSF
          - b. NORTH/SOUTH WIND = 16 PSF
       2. LEEWARD WALLS
          - a. EAST/WEST WIND = 10 PSF
          - b. NORTH/SOUTH WIND = 9 PSF
       3. SIDE WALLS = 14 PSF
       4. ROOF = SEE DIAGRAM
     - b. BOH
       1. WINDWARD WALLS (@ HIGH POINT)
          - a. EAST/WEST WIND = 14 PSF
          - b. NORTH/SOUTH WIND = 14 PSF
       2. LEEWARD WALLS
          - a. EAST/WEST WIND = 10 PSF
          - b. NORTH/SOUTH WIND = 7 PSF
       3. SIDE WALLS = 13 PSF
       4. ROOF = SEE DIAGRAM
   - G. COMPONENTS TRANSFERRING WIND LOAD TO PRIMARY STRUCTURAL SYSTEM - SEE REFERENCED CODE ABOVE.

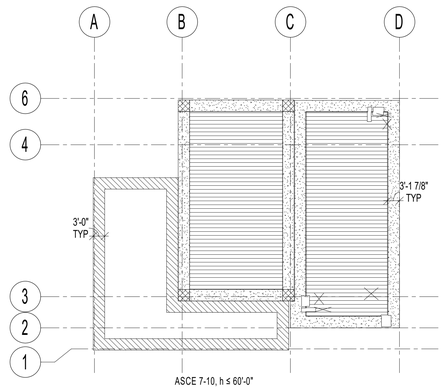
5. SNOW LOADS:
   - A. BOH & PATIO
     - a. GROUND SNOW LOAD - Pg = 25 PSF
     - b. RISK CATEGORY = II
     - c. IMPORTANCE FACTOR I = 1.0
     - d. EXPOSURE FACTOR Ce = B
     - e. THERMAL FACTOR Ct = 1.0
       - = 1.2 @ PATIO
     - f. ROOF SNOW LOAD Pf = 25 PSF
     - g. SNOW DRIFT LOADS = SEE SNOW DRIFT DIAGRAM(S)
   - B. DINING (SLOPED ROOF)
     - a. GROUND SNOW LOAD - Pg = 25 PSF
     - b. RISK CATEGORY = II
     - c. IMPORTANCE FACTOR I = 1.0
     - d. EXPOSURE FACTOR Ce = B
     - e. THERMAL FACTOR Ct = 1.0
     - f. ROOF SNOW LOAD Pf = 20 PSF
     - g. SNOW DRIFT LOADS = SEE SNOW DRIFT DIAGRAM(S)
   - C. NOTE: DRIFT LOAD IS IN ADDITION TO ROOF SNOW LOAD.

6. RAIN LOADS:
   - A. ROOF DRAINAGE SYSTEM
     1. ROOF IS DRAINED FROM ITS HIGH POINTS TO (2) PRIMARY DRAINS AT LOW POINTS.
     2. EACH PRIMARY DRAIN IS 8" DIAMETER8 LOCATED AT THE ROOF LOW POINTS
     3. EACH PRIMARY DRAIN IS ACCOMPANIED BY (1) 8" DIAMETER SECONDARY DRAIN LOCATED 3" ABOVE EACH ROOF LOW POINT.
     4. DRAINAGE SYSTEM AND DRAIN DESIGN NOT BY TGRWA.
     5. REFER TO ARCHITECTURAL & PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
     6. ROOF SLOPE = 1/4 INCH PER FOOT MINIMUM SO PONDING INSTABILITY DOES NOT OCCUR. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
   - B. RAINFALL INTENSITY = 4.0 INCHES/HOUR FOR 100 YEAR STORM WITH 60 MINUTE DURATION.
   - C. DESIGN RAIN LOAD = A MAXIMUM OF 3" OF WATER ABOVE THE ROOF SURFACE AT THE DRAINAGE LOW POINTS, EQUATING TO A RAIN LOAD = 16 PSF.

7. SEISMIC LOADS:
   - A. SHORT PERIOD MAPPED SPECTRAL ACCELERATION Ss = 0.143
   - B. 1-SECOND PERIOD MAPPED SPECTRAL ACCELERATION S1 = 0.065
   - C. SITE CLASS = D
   - D. RISK CATEGORY = II
   - E. IMPORTANCE FACTOR I = 1.0
   - F. SHORT PERIOD SITE COEFFICIENT Fa = 1.6
   - G. 1-SECOND PERIOD SITE COEFFICIENT Fv = 2.4
   - H. SHORT PERIOD DESIGN SPECTRAL RESPONSE ACCELERATION SDS = 0.153
   - I. 1-SECOND PERIOD DESIGN SPECTRAL RESPONSE ACCELERATION SD1 = 0.103
   - J. SEISMIC DESIGN CATEGORY = B

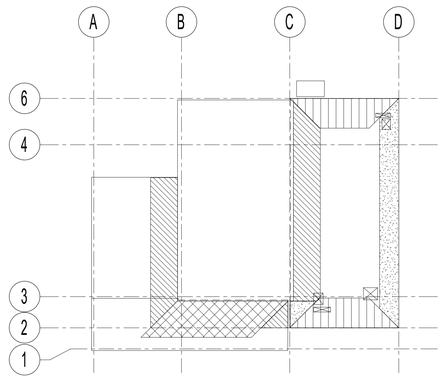


1 MAIN WIND FORCE RESISTING SYSTEM DIAGRAMS
SCALE: NTS



2 ROOF WIND UPLIFT DIAGRAM
SCALE: NTS

UPLIFT LEGEND
- - CANOPY ZONE 1 = -22 PSF
- - CANOPY ZONE 2 = -26 PSF
- - DINING/BOH FIELD = -22 PSF
- - DINING/BOH PERIMETER = -26 PSF
- - DINING CORNER = -44 PSF



3 SNOW DRIFT DIAGRAM
SCALE: NTS

3A DRIFT
3B DRIFT
3C DRIFT
3D DRIFT

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Drawing Title: STRUCTURAL LOADING

Job No.	Drawn
20043	CAH

Scale	Date
As indicated	11/24/2020

Sheet No. S002

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SPECIAL INSPECTIONS AND TESTS (IBC 2012)

1. THE OWNER OR THE OWNER'S AUTHORIZED AGENT, OTHER THAN THE CONTRACTOR, SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PROVIDE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION ON THE TYPES OF WORK SPECIFIED BELOW AND IDENTIFY THE APPROVED AGENCIES TO THE BUILDING OFFICIAL.
2. THE APPROVED AGENCIES SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING THE COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION.
3. THE CONSTRUCTION OR WORK FOR WHICH SPECIAL INSPECTION OR TESTING IS REQUIRED SHALL REMAIN ACCESSIBLE AND EXPOSED FOR SPECIAL INSPECTION OR TESTING PURPOSES UNTIL COMPLETION OF THE REQUIRED SPECIAL INSPECTIONS OR TESTS.
4. APPROVED AGENCIES SHALL KEEP RECORDS OF SPECIAL INSPECTIONS AND TESTS. THE APPROVED AGENCY SHALL SUBMIT REPORTS OF SPECIAL INSPECTIONS AND TESTS TO THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED OR TESTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF WORK. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSTRUCTIONS AND TESTS, AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS OR TESTS, SHALL BE SUBMITTED AT A POINT IN TIME AGREED UPON PRIOR TO THE START OF WORK BY THE OWNER OR THE OWNER'S AUTHORIZED AGENT TO THE BUILDING OFFICIAL.
5. REFER TO 2012 INTERNATIONAL BUILDING CODE FOR DEFINITION OF TERMS.

SOILS CONSTRUCTION (IBC 1705.6)

1. VERIFY SUBGRADE IS ADEQUATE TO ACHIEVE DESIGN BEARING CAPACITY	☐ CONTINUOUS	☒ PERIODIC	PRIOR TO PLACEMENT OF CONCRETE.
2. VERIFY EXCAVATIONS EXTEND TO PROPER DEPTH AND MATERIAL	☐ CONTINUOUS	☒ PERIODIC	PRIOR TO PLACEMENT OF COMPACTED FILL OR CONCRETE.
3. VERIFY THAT SUBGRADE HAS BEEN APPROPRIATELY PREPARED PRIOR TO PLACING COMPACTED FILL	☐ CONTINUOUS	☒ PERIODIC	PRIOR TO PLACEMENT OF COMPACTED FILL
4. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	☐ CONTINUOUS	☒ PERIODIC	ALL MATERIALS SHALL BE CHECKED AT EACH LIFT FOR PROPER CLASSIFICATIONS AND GRADATIONS NOT LESS THAN ONCE FOR EACH 10,000 FT² OF SURFACE AREA
5. VERIFY PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION	☒ CONTINUOUS	☐ PERIODIC	

CONCRETE CONSTRUCTION (IBC 1705.3 AND IBC CHAPTER 19)

1. REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS	☐ CONTINUOUS	☒ PERIODIC	VERIFY PRIOR TO PLACING CONCRETE THAT REINFORCING IS OF SPECIFIED TYPE, GRADE AND SIZE; THAT IT IS FREE OF OIL, DIRT AND RUST; THAT IT IS LOCATED AND SPACED PROPERLY; THAT HOOKS, BENDS, TIES, STIRRUPS AND SUPPLEMENTAL REINFORCEMENT ARE PLACED CORRECTLY; THAT LAP LENGTHS, STAGGER AND OFFSETS ARE PROVIDED; AND THAT ALL MECHANICAL CONNECTIONS ARE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND/OR EVALUATION REPORT. (REF. CHAPTER 20 AND SECTIONS 25.2, 25.3, & 26.6.1-26.6.3 OF ACI 318-14)
2. CAST-IN ANCHORS & EMBEDS	☐ CONTINUOUS	☒ PERIODIC	COMPLY WITH SECTIONS 1.9 & 17.8.2 OF ACI 318-14.
3A. POST-INSTALLED ANCHORS (ADHESIVE)	☒ CONTINUOUS	☐ PERIODIC	ALL POST-INSTALLED ANCHORS/DOWELS SHALL BE SPECIALLY INSPECTED AS REQUIRED BY THE APPROVED ICC-ES REPORT, AND SHALL COMPLY WITH SECTIONS 17.8.2, 26.7.2, AND 26.13.3.2&3 OF ACI 318-14.
3B. POST-INSTALLED ANCHORS (NON-ADHESIVE)	☐ CONTINUOUS	☒ PERIODIC	ALL POST-INSTALLED ANCHORS/DOWELS SHALL BE SPECIALLY INSPECTED AS REQUIRED BY THE APPROVED ICC-ES REPORT, AND SHALL COMPLY WITH SECTIONS 17.8.2, 26.7.2, AND 26.13.3.2&3 OF ACI 318-14.
4. USE OF REQUIRED MIX DESIGN	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT ALL MIXES USED COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS AND CHAPTER 19 & SECTIONS 26.4.3&4 OF ACI 318-14.
5. CONCRETE SAMPLING FOR STRENGTH TESTS, SLUMP, AIR CONTENT, AND TEMPERATURE	☐ CONTINUOUS	☒ PERIODIC	COMPLY WITH SECTIONS 26.4 & 26.12 OF ACI 318-14.
6. CONCRETE & SHOTCRETE PLACEMENT	☒ CONTINUOUS	☐ PERIODIC	COMPLY WITH SECTION 26.5 OF ACI 318-14 AND SECTION 1908 OF IBC.
7. CURING TEMPERATURE AND TECHNIQUES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT THE AMBIENT TEMPERATURE FOR CONCRETE IS KEPT AT > 50°F FOR AT LEAST 7 DAYS AFTER PLACEMENT. HIGH-EARLY-STRENGTH CONCRETE SHALL BE KEPT AT > 50°F FOR AT LEAST 3 DAYS. ACCELERATED CURING METHODS MAY BE USED. THE AMBIENT TEMPERATURE FOR SHOTCRETE SHALL BE > 40°F FOR THE SAME PERIOD OF TIME AS NOTED FOR CONCRETE. SHOTCRETE SHALL BE KEPT CONTINUOUSLY MOIST FOR AT LEAST 24 HOURS AFTER SHOTCRETING. ALL CONCRETE MATERIALS, REINFORCEMENT, FORMS, FILLERS, AND GROUND SHALL BE FREE FROM FROST. IN HOT WEATHER CONDITIONS ENSURE THAT APPROPRIATE MEASURES ARE TAKEN TO AVOID PLASTIC SHRINKAGE CRACKING AND THAT THE SPECIFIED WATER/CEMENT RATIO IS NOT EXCEEDED. (REF SECTIONS 26.5.3 THRU 26.5.5 OF ACI 318-14)
8. PRE-STRESSED CONCRETE	☒ CONTINUOUS	☐ PERIODIC	COMPLY WITH SECTION 26.10.2 OF ACI 318-14.
9. ERECTION OF PRECAST CONCRETE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT ALL PRECAST ELEMENTS ARE LIFTED, ASSEMBLED AND BRACED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
10. STRENGTH VERIFICATION FOR REMOVAL OF SHORES/FORMS AND FOR POST-TENSIONED CONCRETE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT ADEQUATE STRENGTH HAS BEEN ACHIEVED PRIOR TO THE REMOVAL OF SHORES AND FORMS OR THE STRESSING OF POST-TENSIONED TENDONS.
11. FORMWORK	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT THE FORMS ARE PLACED PLUMB AND CONFORM TO THE SHAPES, LINES, AND DIMENSIONS OF THE MEMBERS AS REQUIRED BY THE APPROVED CONSTRUCTION DOCUMENTS.
12. VERIFICATION OF WELDABILITY OF REINFORCING STEEL	☐ CONTINUOUS	☒ PERIODIC	VERIFY WELDABILITY OF REINFORCING STEEL BASED UPON CARBON EQUIVALENT AND IN ACCORDANCE WITH AWS D1.4 & SECTION 26.6.4.1 OF ACI 318-14.

STRUCTURAL STEEL (IBC 1705.2.1, 1705.12.1 & 1705.13.1)

PRIOR TO WELDING (TABLE N5.4-1, AISC 360-10)			
1. VERIFY WELDING PROCEDURES (WPS) AND CONSUMABLE CERTIFICATES	☒ CONTINUOUS	☐ PERIODIC	
2. MATERIAL IDENTIFICATION	☐ CONTINUOUS	☒ PERIODIC	VERIFY TYPE AND GRADE OF MATERIAL
3. WELDER IDENTIFICATION	☐ CONTINUOUS	☒ PERIODIC	A SYSTEM SHALL BE MAINTAINED BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED
4. FIT-UP GROOVE WELDS	☐ CONTINUOUS	☒ PERIODIC	VERIFY JOINT PREPARATION, DIMENSIONS, CLEANLINESS, TACKING, AND BACKING.
5. ACCESS HOLES	☐ CONTINUOUS	☒ PERIODIC	VERIFY CONFIGURATION AND FINISH.
6. FIT-UP OF FILLET WELDS	☐ CONTINUOUS	☒ PERIODIC	VERIFY ALIGNMENT, GAPS AT ROOT, CLEANLINESS OF STEEL SURFACES, AND TACK WELD QUALITY AND LOCATION.

STRUCTURAL STEEL (CONT) (IBC 1705.2.1, 1705.12.1 & 1705.13.1)

DURING WELDING (TABLE N5.4-2, AISC 360-10)			
1. USE OF QUALIFIED WELDERS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT WELDERS ARE APPROPRIATELY QUALIFIED.
2. CONTROL AND HANDLING OF WELDING CONSUMABLES	☐ CONTINUOUS	☒ PERIODIC	VERIFY PACKAGING AND EXPOSURE CONTROL.
3. CRACKED TACK WELDS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT WELDING DOES NOT OCCUR OVER CRACKED TACK WELDS.
4. ENVIRONMENTAL CONDITIONS	☐ CONTINUOUS	☒ PERIODIC	VERIFY WIND SPEED IS WITHIN LIMITS AS WELL AS PRECIPITATION AND TEMPERATURE.
5. WPS FOLLOWED	☐ CONTINUOUS	☒ PERIODIC	VERIFY ITEMS SUCH AS SETTINGS ON WELDING EQUIPMENT, TRAVEL SPEED, WELDING MATERIALS, SHIELDING GAS TYPE/FLOW RATE, PREHEAT APPLIED, INTERPASS TEMPERATURE MAINTAINED, AND PROPER POSITION.
6. WELDING TECHNIQUES	☐ CONTINUOUS	☒ PERIODIC	VERIFY INTERPASS AND FINAL CLEANING, EACH PASS IS WITHIN PROFILE LIMITATIONS, AND QUALITY OF EACH PASS.
AFTER WELDING (TABLE N5.4-3, AISC 360-10)			
1. WELDS CLEANED	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT WELDS HAVE BEEN PROPERLY CLEANED.
2. SIZE, LENGTH, AND LOCATION OF WELDS	☒ CONTINUOUS	☐ PERIODIC	
3. WELDS MEET VISUAL ACCEPTANCE CRITERIA	☒ CONTINUOUS	☐ PERIODIC	VERIFY CRACK PROHIBITION, WELD/BASE METAL FUSION, CRATER CROSS SECTION, WELD PROFILES, WELD SIZE, UNDERCUT, AND POROSITY ARE ALL ACCEPTABLE
4. ARC STRIKES	☒ CONTINUOUS	☐ PERIODIC	
5. K-AREA	☒ CONTINUOUS	☐ PERIODIC	
6. BACKING & WELD TABS REMOVED	☒ CONTINUOUS	☐ PERIODIC	
7. REPAIR ACTIVITIES	☒ CONTINUOUS	☐ PERIODIC	
8. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT/MEMBER	☒ CONTINUOUS	☐ PERIODIC	
NONDESTRUCTIVE TESTING (SECTION N5.5, AISC 360-10)			
1. CJP WELDS (RISK CAT. II)	☐ CONTINUOUS	☒ PERIODIC	ULTRASONIC TESTING SHALL BE PERFORMED ON 10% OF CJP GROOVE WELDS IN BUTT, T- AND CORNER JOINTS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN MATERIALS 5/16 INCH THICK OR GREATER. TESTING RATE MUST BE INCREASED IF > 5% OF WELDS TESTED HAVE UNACCEPTABLE DEFECTS PER SECTION N5.5F.
2. CJP WELDS (RISK CAT. III OR IV)	☒ CONTINUOUS	☐ PERIODIC	ULTRASONIC TESTING SHALL BE PERFORMED ON ALL CJP GROOVE WELDS IN BUTT, T- AND CORNER JOINTS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN MATERIALS 5/16 INCH THICK OR GREATER. A REDUCTION IN THE RATE OF ULTRASONIC TESTING IS ALLOWED PER SECTION N5.5E.
3. ACCESS HOLES (FLANGE > 2")	☒ CONTINUOUS	☐ PERIODIC	MAGNETIC PARTICLE TESTING OR PENETRANT TESTING SHALL BE PERFORMED. ANY CRACK SHALL BE DEEMED UNACCEPTABLE
4. WELDED JOINTS SUBJECT TO FATIGUE	☒ CONTINUOUS	☐ PERIODIC	REFER TO APPENDIX 3, TABLE A-3.1.
PRIOR TO BOLTING (TABLE N5.6-1. AISC 360-10) NOT REQUIRED IF ONLY SNUG-TIGHT JOINTS ARE SPECIFIED [PER SECTION N5.6(1) OF AISC 360-10].			
1. CERTIFICATIONS OF FASTENERS	☒ CONTINUOUS	☐ PERIODIC	
2. FASTENERS MARKED	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENERS HAVE BEEN MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS.
3. PROPER FASTENERS FOR JOINT	☐ CONTINUOUS	☒ PERIODIC	VERIFY GRADE, TYPE, AND BOLT LENGTH IF THREADS ARE EXCLUDED FROM THE SHEAR PLANE.
4. PROPER BOLTING PROCEDURE	☐ CONTINUOUS	☒ PERIODIC	VERIFY PROPER PROCEDURE IS USED FOR THE JOINT DETAIL.
5. CONNECTING ELEMENTS	☐ CONTINUOUS	☒ PERIODIC	VERIFY APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET REQUIREMENTS.
6. PRE-INSTALLATION VERIFICATION TESTING	☐ CONTINUOUS	☒ PERIODIC	OBSERVE AND DOCUMENT VERIFICATION TESTING BY INSTALLATION PERSONNEL FOR FASTENER ASSEMBLIES AND METHODS USED. COMPONENTS.
7. PROPER STORAGE	☐ CONTINUOUS	☒ PERIODIC	VERIFY PROPER STORAGE OF BOLTS, NUTS, WASHERS, AND OTHER FASTENER COMPONENTS.
DURING BOLTING (TABLE N5.6-2, AISC 360-10) NOT REQUIRED IF ONLY SNUG-TIGHT JOINTS ARE SPECIFIED [PER SECTION N5.6(1) OF AISC 360-10]. NOT REQUIRED FOR PRETENSIONED JOINTS USING TURN-OF-THE-NUT METHOD WITH MATCH-MARKING, DIRECT-TENSION-INDICATORS, OR TWIST-OFF TYPE TENSION CONTROL METHOD [PER SECTION N5.6(2) OF AISC 360-10]			
1. FASTENER ASSEMBLIES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENER ASSEMBLIES ARE OF SUITABLE CONDITION, PLACED IN ALL HOLES, AND WASHERS ARE POSITIONED AS REQUIRED.
2. SNUG-TIGHT PRIOR TO PRETENSIONING	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT JOINTS ARE BROUGHT TO SNUG-TIGHT CONDITION PRIOR TO PRETENSIONING OPERATION.
3. FASTENER COMPONENT	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENER COMPONENT IS NOT TURNED BY WRENCH PREVENTED FROM ROTATING.
4. PRETENSIONED FASTENERS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES.
AFTER BOLTING (TABLE N5.6-3, AISC 360-10)			
1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	☒ CONTINUOUS	☐ PERIODIC	
OTHER STEEL INSPECTIONS (SECTION N5.7, AISC 360-10; TABLES J8-1 & J10-1, AISC 341-10)			
1. STRUCTURAL STEEL DETAILS	☐ CONTINUOUS	☒ PERIODIC	ALL FABRICATED STEEL OR STEEL FRAMES SHALL BE INSPECTED TO VERIFY COMPLIANCE WITH THE DETAILS SHOWN IN THE CONSTRUCTION DOCUMENTS, SUCH AS BRACES, STIFFENERS, MEMBER LOCATIONS, AND PROPER APPLICATION OF JOINT DETAILS AT EACH CONNECTION.
2. ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL	☐ CONTINUOUS	☒ PERIODIC	SHALL BE ON THE PREMISES DURING THE PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL FOR COMPLIANCE WITH CONSTRUCTION DOCUMENTS. VERIFY THE DIAMETER, GRADE, TYPE, AND LENGTH OF THE ANCHOR ROD OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT PRIOR TO PLACEMENT OF CONCRETE.
3. REDUCED BEAM SECTIONS (RBS)	☒ CONTINUOUS	☐ PERIODIC	VERIFY CONTOUR AND FINISH AS WELL AS DIMENSIONAL TOLERANCES (SEE TABLE J8-1 OF AISC 341-10).
4. PROTECTED ZONES	☒ CONTINUOUS	☐ PERIODIC	VERIFY THAT NO HOLES OR UNAPPROVED ATTACHMENTS ARE MADE WITHIN THE PROTECTED ZONE (SEE TABLE J8-1 OF AISC 341-10).
5. H-PILES	☒ CONTINUOUS	☐ PERIODIC	VERIFY THAT NO HOLES OR UNAPPROVED ATTACHMENTS OCCUR WITHIN THE PROTECTED ZONES OF PILING (SEE TABLE J10-1 OF AISC 341-10).
STEEL ELEMENTS OF COMPOSITE CONSTRUCTION (TABLE N6.1, AISC 360-10; TABLES J9-1 THRU J9-3, AISC 341-10)			
1. PLACEMENT AND INSTALLATION OF STEEL DECK	☒ CONTINUOUS	☐ PERIODIC	
2. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	☒ CONTINUOUS	☐ PERIODIC	
3. DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS	☒ CONTINUOUS	☐ PERIODIC	
4. REINFORCING STEEL	☐ CONTINUOUS	☒ PERIODIC	VERIFY APPROPRIATE REINFORCEMENT SIZE, SPACING, AND ORIENTATION; THAT IT HAS NOT BEEN RE-BENT IN FIELD; THAT IT IS CORRECTLY TIED AND SUPPORTED; AND THAT REQUIRED STEEL CLEARANCES HAVE BEEN PROVIDED.
5. COMPOSITE MEMBER SIZE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT COMPOSITE MEMBER IS THE REQUIRED SIZE.

STEEL ROOF AND FLOOR DECKS (SDI/ANSI QA/QC 2011 STANDARD):

1. MATERIAL VERIFICATION OF STEEL DECK	☐ CONTINUOUS	☒ PERIODIC	CONFIRM THAT IDENTIFICATION MARKINGS ARE PROVIDED TO CONFORM TO ASTM STANDARDS SPECIFIED ON CONSTRUCTION DOCUMENTS.
2. FLOOR AND ROOF DECK WELDS	☐ CONTINUOUS	☒ PERIODIC	VISUAL INSPECTION IS REQUIRED TO CONFIRM THAT WELD MEETS ACCEPTANCE CRITERIA OF AWS D1.3. WELDER QUALIFICATIONS SHOULD ALSO BE VERIFIED.

MASONRY CONSTRUCTION (IBC 1705.4)

MINIMUM TESTING (TABLE 1.19.2, TMS-402/ACI 530-11; TMS-602/ACI 530.1-11)			
1. VERIFICATION OF SLUMP FLOW AND VISUAL STABILITY INDEX (VSI) FOR SELF-CONSOLIDATING GROUT	☐ CONTINUOUS	☒ PERIODIC	COMPRESSIVE STRENGTH TESTS SHOULD BE PERFORMED IN ACCORDANCE WITH ASTM C 1019 FOR SLUMP FLOW AND ASTM C 1611 FOR VSI.
2. VERIFICATION OF F'm AND F'ACC	☐ CONTINUOUS	☒ PERIODIC	DETERMINE THE COMPRESSIVE STRENGTH FOR EACH WYTHE BY THE "UNIT STRENGTH METHOD" OR BY THE "PRISM TEST METHOD" AS SPECIFIED IN ARTICLE 1.4 B OF TMS 602/ACI 530.1-11 PRIOR TO CONSTRUCTION. FOR RISK CATEGORY IV BUILDINGS THIS SHOULD BE VERIFIED AT EVERY 5,000FT² OF CONSTRUCTION.
3. VERIFICATION OF PROPORTIONS OF MATERIALS IN PREMIXED OR PRE-BLENDED MORTAR AND GROUT	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT PROPORTIONS FOR MORTAR MEET ASTM C 270 AND PROPORTIONS FOR GROUT MEET ASTM C 476. THIS APPLIES TO RISK CATEGORY IV BUILDINGS ONLY.
PRIOR TO CONSTRUCTION (TABLE 1.19.2, TMS-402/ACI 530-11; ARTICLE 1.5, TMS-602/ACI 530.1-11):			
1. REVIEW MATERIAL CERTIFICATES, MIX DESIGNS, TEST RESULTS AND CONSTRUCTION PROCEDURES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT MATERIALS CONFORM TO THE REQUIREMENTS OF THE APPROVED CONSTRUCTION DOCUMENTS. MIX DESIGN, TEST RESULTS, MATERIAL CERTIFICATES, AND CONSTRUCTION PROCEDURES SHOULD BE SUBMITTED FOR REVIEW. MORTAR MIX DESIGNS SHALL CONFORM TO ASTM C 270 WHILE GROUT SHALL CONFORM TO ASTM C 476. MATERIAL CERTIFICATES SHALL BE PROVIDED FOR THE FOLLOWING: REINFORCEMENT; ANCHORS, TIES, FASTENERS, AND METAL ACCESSORIES; MASONRY UNITS; MORTAR AND GROUT MATERIALS. CONSTRUCTION PROCEDURES FOR COLD-WEATHER OR HOT-WEATHER CONSTRUCTION SHALL BE REVIEWED.
AS CONSTRUCTION BEGINS (TABLE 1.19.2, TMS-402/ACI 530-11; TMS-602/ACI 530.1-11):			
1. PROPORTIONS OF SITE-PREPARED MORTAR	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT MORTAR IS OF THE TYPE AND COLOR SPECIFIED ON THE CONSTRUCTION DOCUMENTS, THAT IT CONFORMS TO ASTM C 270, AND THAT IT IS MIXED IN ACCORDANCE WITH ARTICLE 2.6 A OF TMS-602/ACI 530.1-11.
2. CONSTRUCTION OF MORTAR JOINTS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT MORTAR JOINTS COMPLY WITH ARTICLE 3.3 B OF TMS-602/ACI 530.1-11.
3. GRADE AND SIZE OF PRESTRESSING TENDONS AND ANCHORAGES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT PRESTRESSING TENDONS COMPLY WITH ARTICLE 2.4 B OF TMS-602/ACI 530.1-11 AND THAT ANCHORAGES, COUPLERS, AND END BLOCKS COMPLY WITH ARTICLE 2.4 H.
4. LOCATION OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT REINFORCEMENT IS PLACED IN ACCORDANCE WITH ARTICLE 3.4 OF TMS-602/ACI 530.1-11. PRESTRESSING TENDONS SHALL BE PLACED PER ARTICLE 3.6 A.
5. PRESTRESSING TECHNIQUE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT PRESTRESSING TECHNIQUE COMPLIES WITH ARTICLE 3.6 B OF TMS-602/ACI 530.1-11.
6. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT MORTAR COMPLIES WITH ARTICLE 2.1 C OF TMS-602/ACI 530.1-11.
PRIOR TO GROUTING (TABLE 1.19.2, TMS-402/ACI 530-11; TMS-602/ACI 530.1-11):			
1. GROUT SPACE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT GROUT SPACE IS FREE OF MORTAR DROPPINGS, DEBRIS, LOOSE AGGREGATE, AND OTHER DELETERIOUS MATERIALS AND THAT CLEANOUTS ARE PROVIDED PER ARTICLE 3.2 D AND 3.2 F OF TMS-602/ACI 530.1-11. CONTINUOUS INSPECTION IS REQUIRED FOR RISK CATEGORY IV BUILDINGS.
2. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT REINFORCEMENT, JOINT REINFORCEMENT, WALL TIES, ANCHOR BOLTS AND VENEER ANCHORS COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS AND SECTION 1.16 OF TMS 402/ACI 530-11.
3. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT REINFORCEMENT, JOINT REINFORCEMENT, WALL TIES, ANCHOR BOLTS AND VENEER ANCHORS ARE INSTALLED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND ARTICLES 3.2 E, 3.4, AND 3.6 A OF TMS 602/ACI 530.1-11. CONTINUOUS INSPECTION IS REQUIRED FOR RISK CATEGORY IV BUILDINGS.
4. PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT GROUT IS PROPORTIONED PER ASTM C 476 AND HAS A SLUMP BETWEEN 8-11 INCHES. SELF-CONSOLIDATED GROUT SHALL NOT BE PROPORTIONED ONSITE. (SEE ARTICLES 2.6 B AND 2.4 G.1.B OF TMS 602/ACI 530.1-11). CONTINUOUS INSPECTION IS REQUIRED FOR RISK CATEGORY IV BUILDINGS.
5. CONSTRUCTION OF MORTAR JOINTS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT MORTAR JOINTS ARE PLACED IN ACCORDANCE WITH ARTICLE 3.3 B OF TMS 602/ACI 530.1-11.
DURING MASONRY CONSTRUCTION (TABLE 1.19.2, TMS-402/ACI 530-11; TMS-602/ACI 530.1-11):			
1. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THE LOCATIONS OF STRUCTURAL ELEMENTS WITH RESPECT TO THE APPROVED PLANS AND CONFIRM THAT TOLERANCES MEET THE REQUIREMENTS OF ARTICLE 3.3 F OF TMS 602/ACI 530.1-11.
2. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION.	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT CORRECT ANCHORAGES AND CONNECTIONS ARE PROVIDED PER THE APPROVED PLANS AND SECTIONS 1.16.4.3 AND 1.17.1 OF TMS 402/ACI 530-11. CONTINUOUS INSPECTION IS REQUIRED FOR RISK CATEGORY IV BUILDINGS.
3. WELDING OF REINFORCEMENT	☒ CONTINUOUS	☐ PERIODIC	
4. PREPARATION, CONSTRUCTION, AND PROTECTION OF MASONRY DURING COLD WEATHER (<40°F) OR HOT WEATHER (>90°F).	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT COLD-WEATHER CONSTRUCTION IS PERFORMED IN ACCORDANCE WITH ARTICLE 1.8 C OF TMS 602/ACI 530.1-11 AND HOT WEATHER CONSTRUCTION PER ARTICLE 1.8 D OF TMS 602/ACI 530.1-11.
5. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE	☒ CONTINUOUS	☐ PERIODIC	
6. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS IS IN COMPLIANCE	☒ CONTINUOUS	☐ PERIODIC	
7. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT MORTAR IS PLACED IN ACCORDANCE WITH ARTICLE 3.3 B.8 OF TMS-602/ACI 530.1-11.
8. OBSERVATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	☐ CONTINUOUS	☒ PERIODIC	CONFIRM THAT SPECIMENS/PRISMS ARE PERFORMED AS REQUIRED BY ARTICLE 1.4 OF TMS-602/ACI 530.1-11. CONTINUOUS INSPECTION IS REQUIRED FOR RISK CATEGORY IV BUILDINGS.

WOOD CONSTRUCTION (IBC 1705.5, 1705.11.1, 1705.12.2 & 1705.12.3)

1. MATERIAL	☐ CONTINUOUS	☒ PERIODIC	VERIFY ALL MATERIALS ARE COVERED AND NO MATERIALS ARE PLACED DIRECTLY IN CONTACT WITH THE GROUND.
2. WOOD TREATMENT	☐ CONTINUOUS	☒ PERIODIC	VERIFY ALL WOOD TO BE TREATED IS ACCOMPANIED BY A UL CERTIFICATE INDICATING COMPLIANCE WITH UL STANDARDS.
3. STRAPS AT ROOF FRAMING	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT STRAPS HAVE BEEN FASTENED TO ALL ROOF TRUSSES AND JOISTS IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
4. PLYWOOD SHEAR WALLS AND DIAPHRAGMS, GENERAL REQUIREMENTS	☐ CONTINUOUS	☒ PERIODIC	VERIFY SHEATHING HAS BEEN MARKED IN ACCORDANCE WITH APA REQUIREMENTS; VERIFY SHEATHING THICKNESS AND GRADE IS IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS; VERIFY BLOCKING IS INSTALLED AT ALL PANEL EDGES IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS; VERIFY PANEL EDGES & BOUNDARY NAIL SIZES AND SPACING IS IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS; VERIFY HOLDOWNS HAVE BEEN PROPERLY INSTALLED AT ALL LOCATIONS INDICATED IN THE APPROVED CONSTRUCTION DOCUMENTS.
5. PLYWOOD SHEAR WALLS AND DIAPHRAGMS, FASTENER SPACING ≤ 4" OC	☐ CONTINUOUS	☒ PERIODIC	IF SHEAR WALL OR DIAPHRAGM FASTENER SPACING IS ≤ 4"OC: VERIFY THAT PROPER NAILING, BOLTING, ANCHORING AND OTHER FASTENING OF SHEAR WALLS, DIAPHRAGMS, DRAG STRUTS, BRACES, AND HOLDOWNS MATCHES CONSTRUCTION DOCUMENTS.
6. PLYWOOD DIAPHRAGMS WITH MULTIPLE ROWS OF FASTENERS ("HIGH LOAD DIAPHRAGMS")	☐ CONTINUOUS	☒ PERIODIC	VERIFY THICKNESS AND GRADE OF SHEATHING, SIZE OF FRAMING MEMBERS AT PANEL EDGES, NAIL/STAPLE DIAMETERS AND LENGTH, AND THE NUMBER OF FASTENER LINES AND FASTENER SPACING MATCHES CONSTRUCTION DOCUMENTS.
7. WOOD TRUSSES SPANNING > 60-FEET	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT TEMPORARY AND PERMANENT TRUSS BRACING IS INSTALLED IN ACCORDANCE WITH APPROVED TRUSS PACKAGE.

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NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT/BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

STATE OF ILLINOIS
KEVIN M. WILSON
081-004714
CHICAGO, IL
LICENSED STRUCTURAL ENGINEER
DATE:11/24/2020
LICENSE EXPIRES:11/30/2020

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TESTING AND INSPECTION NOTES

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Scale
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ABBREVIATIONS

ADDL	ADDITIONAL	LL	LIVE LOAD
ALT	ALTERNATE	LLH	LONG LEG HORIZONTAL
ALUM	ALUMINUM	LLV	LONG LEG VERTICAL
APPROX	APPROXIMATE	LSL	LONG SLOT
ARCH	ARCHITECT(URAL)	LVL	LAMINATED VENEER LUMBER
ASSY	ASSEMBLY	LW	LIGHT WEIGHT
BI	BOTTOM OF	MAX	MAXIMUM
BLDG	BUILDING	MECH	MECHANICAL
BM	BEAM	MED	MEDIUM
BOT	BOTTOM	MEP	MECHANICAL ELECTRICAL PLUMBING
BRDG	BRIDGING		
BRG	BEARING	MEZZ	MEZZANINE
BRKT	BRACKET	MFR	MANUFACTURER
BW	BOTH WAYS	MIN	MINIMUM
C/C	CENTER TO CENTER	MISC	MISCELLANEOUS
CCD	CHICAGO CITY DATUM	MK	MARK
CIP	CAST IN PLACE	MO	MASONRY OPENING
CJ	CONSTRUCTION JOINT, CONTROL JOINT	MTL	METAL
		NIC	NOT IN CONTRACT
CJP	COMPLETE JOINT PENETRATION	NOM	NOMINAL
CL	CENTERLINE	NS	NEAR SIDE
CLR	CLEAR	NTS	NOT TO SCALE
CMU	CONCRETE MASONRY UNIT	NW	NORMAL WEIGHT
COL	COLUMN	OC	ON CENTER
CONC	CONCRETE	OD	OUTSIDE DIAMETER
CONN	CONNECTION	OPNG	OPENING
CONT	CONTINUOUS	OPP	OPPOSITE
COORD	COORDINATE, COORDINATION	OPP HD	OPPOSITE HAND
CTR	CENTER	PC	PRECAST CONCRETE
CU FT	CUBIC FOOT	PCF	POUNDS PER CUBIC FOOT
CU YD	CUBIC YARD	PERIM	PERIMETER
DBA	DEFORMED BAR ANCHOR	PERP	PERPENDICULAR
DEG	DEGREE	PL	PLATE
DEMO	DEMOLISH	PLF	POUNDS PER LINEAR FOOT
DIA	DIAMETER	PLUMB	PLUMBING
DIM	DIMENSION	PLYWD	PLYWOOD
DL	DEAD LOAD	PROJ	PROJECT
DWG	DRAWING	PSF	POUNDS PER SQUARE FOOT
DWGS	DRAWINGS	PSI	POUNDS PER SQUARE INCH
(E)	EXISTING	PSL	PARALLEL STRAND LUMBER
EA	EACH	PT	POST TENSIONED
EF	EACH FACE	QTY	QUANTITY
EL	ELEVATION	RAD	RADIUS
ELEC	ELECTRICAL	REBAR	REINFORCING BAR
EMBED	EMBEDDED	REF	REFER, REFERENCE
ENGR	ENGINEER	REINF	REINFORCE, REINFORCEMENT
EOD	EDGE OF DECK	REQD	REQUIRED
EOS	EDGE OF SLAB	REV	REVISION
EQ	EQUAL, EQUIVALENT	RO	ROUGH OPENING
EQUIP	EQUIPMENT	SC	SLIP CRITICAL
EW	EACH WAY	SCHED	SCHEDULE
EXIST	EXISTING	SE	STRUCTURAL ENGINEER
EXP JT	EXPANSION JOINT	SECT	SECTION
EXT	EXTERIOR	SF	SQUARE FOOT
FDN	FOUNDATION	SHT	SHEET
FF	FINISHED FLOOR	SIM	SIMILAR
FIN	FINISH	SOG	SLAB ON GRADE
FLR	FLOOR	SPECS	SPECIFICATIONS
FS	FAR SIDE	SQ	SQUARE
FT	FOOT, FEET	SQ FT	SQUARE FOOT (FEET)
FTG	FOOTING	SS	STAINLESS STEEL
GA	GAUGE	SSL	SHORT SLOT
GALV	GALVANIZED	STD	STANDARD
GB	GRADE BEAM	STIFF	STIFFENER
GC	GENERAL CONTRACTOR	STL	STEEL
GYP	GYPSUM	STRUCT	STRUCTURAL
GYP BD	GYPSUM BOARD	SYM	SYMMETRICAL
HORIZ	HORIZONTAL	t	THICKNESS
ID	INSIDE DIAMETER	T&B	TOP & BOTTOM
IN	INCH(ES)	T/	TOP OF
INFO	INFORMATION	TEMP	TEMPORARY
INSUL	INSULATION	THRU	THROUGH
INT	INTERIOR	TYP	TYPICAL
JST	JOIST	UNO	UNLESS NOTED OTHERWISE
JT	JOINT	VERT	VERTICAL
K	KIPS	VIF	VERIFY IN FIELD
KSI	KIPS PER SQUARE INCH	W/	WITH
LAT	LATERAL	W/O	WITHOUT
LB	POUND	WF	WIDE FLANGE
LFH	LONG FACE HORIZONTAL	WP	WORK POINT
LFV	LONG FACE VERTICAL	WWF	WELDED WIRE FABRIC
LIN	LINEAR	YD	YARD

MARK DESIGNATIONS

BFx	INDICATES BRACED FRAME TYPE. REFER TO BRACED FRAME ELEVATIONS AND DETAILS FOR ADDITIONAL INFORMATION.
BPx	INDICATES BASE PLATE TYPE. REFER TO BASE PLATE SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
Bx	INDICATES BEAM TYPE. REFER TO BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
CCx	INDICATES CAISSON CAP TYPE. REFER TO CAISSON CAP SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
CSx	INDICATES CAISSON TYPE. REFER TO CAISSON SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
Cx	INDICATES COLUMN TYPE. REFER TO COLUMN SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
DPx	INDICATES DRIVEN / DRILLED PILE TYPE. REFER TO DRIVEN / DRILLED PILE SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
Fx	INDICATES SPREAD FOOTING TYPE. REFER TO FOOTING SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
GBx	INDICATES GRADE BEAM TYPE. REFER TO GRADE BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
Jx	INDICATES JOIST TYPE. REFER TO CONCRETE JOIST SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
Lx	INDICATES LINTEL TYPE. REFER TO LINTEL SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION
PCBx	INDICATES PRECAST BEAM TYPE BY PRECAST MANUFACTURER.
PCPx	INDICATES PRECAST PLANK TYPE BY PRECAST MANUFACTURER.
PCx	INDICATES PILE CAP TYPE. REFER TO PILE CAP DETAILS FOR ADDITIONAL INFORMATION.
PTBx	INDICATES POST TENSIONED BEAM TYPE. REFER TO POST TENSIONED BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
Px	INDICATES PIER TYPE. REFER TO PIER DETAILS FOR ADDITIONAL INFORMATION.
SWBx	INDICATES SHEAR WALL BEAM TYPE. REFER TO SHEAR WALL BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
SWx	INDICATES SHEAR WALL TYPE. REFER TO SHEAR WALL ELEVATIONS, SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.

HATCH PATTERNS

	EARTH / NATIVE SOIL
	GRAVEL
	GROUT / SAND
	CONCRETE
	STEEL
	WOOD
	CONCRETE MASONRY (PLAN)
	CONCRETE MASONRY (ELEVATION)
	GEOFOAM
	PRECAST
	DEMOLITION

GENERAL SYMBOLS

X	REVISION
	REVISION CLOUD
NORTH	NORTH ARROW
	ELEVATION TARGET
	SLAB STEP
	RAMP SLOPE UP
	RAMP SLOPE DOWN
	SPAN DIRECTION OF ONE WAY SLAB OR METAL ROOF DECK
	SPAN DIRECTION OF TWO WAY SLAB

POST TENSIONED / REINFORCED CONCRETE SLAB SYMBOLS

SRX	STUD RAIL REINFORCEMENT TYPE. REFER TO STUD RAIL SCHEDULE FOR ADDITIONAL INFORMATION.
	ANCHORING OR STRESSING END OF POST TENSIONED TENDON
(X")	INDICATES TENDON DRAPES MEASURED FROM TENDON CENTERLINE TO BOTTOM OF SLAB AT POINT SHOWN.

TYPICAL STEEL BEAM DESIGNATIONS

WXxXX (X) <C=X">
[-X X/X"]

(X)	**INDICATES NUMBER OF X/X" Ø x/X" WELDED HEADED STUDS UNIFORMLY SPACED ALONG THE BEAM AND SLAB INTERFACE LENGTH. REFER TO DETAIL XX/SXXX FOR ADDITIONAL INFORMATION.**
<C=X">	INDICATES REQUIRED CAMBER UP FOR FLOOR FRAMING. INSTALL ALL BEAMS AND GIRDERS WITHOUT CAMBER SPECIFIED WITH NATURAL CAMBER UP.
[-X X/X"]	INDICATES ELEVATION DIFFERENCE BETWEEN TYPICAL T/STEEL ELEVATION AND THIS MEMBER

STEEL FRAMING SYMBOLS

	MOMENT CONNECTION
	DRAG STRUT CONNECTION
	SLIP CRITICAL CONNECTION
	SLIDE BEARING CONNECTION
X	BEAM OPENING. REFER TO BEAM OPENING SCHEDULE FOR ADDITIONAL INFORMATION.
	STAIR CONNECTION
	COLUMN SPLICE
	COLUMN ABOVE
	ROOF DAVIT
	ROOF TIEBACK
	ROOF FALL ARREST
RTU# XXX LBS	ROOFTOP UNIT DESIGNATION

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SHAKE SHACK

4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT/BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

KEVIN M. WILSON
081-004714
CHICAGO, IL
LICENSED STRUCTURAL ENGINEER

DATE:11/24/2020
LICENSE EXPIRES:11/30/2020

Drawing Title
ABBREVIATIONS AND SYMBOLS

Job No.	Drawn
20043	CAH

Scale	Date
	11/24/2020

Sheet No.
S004

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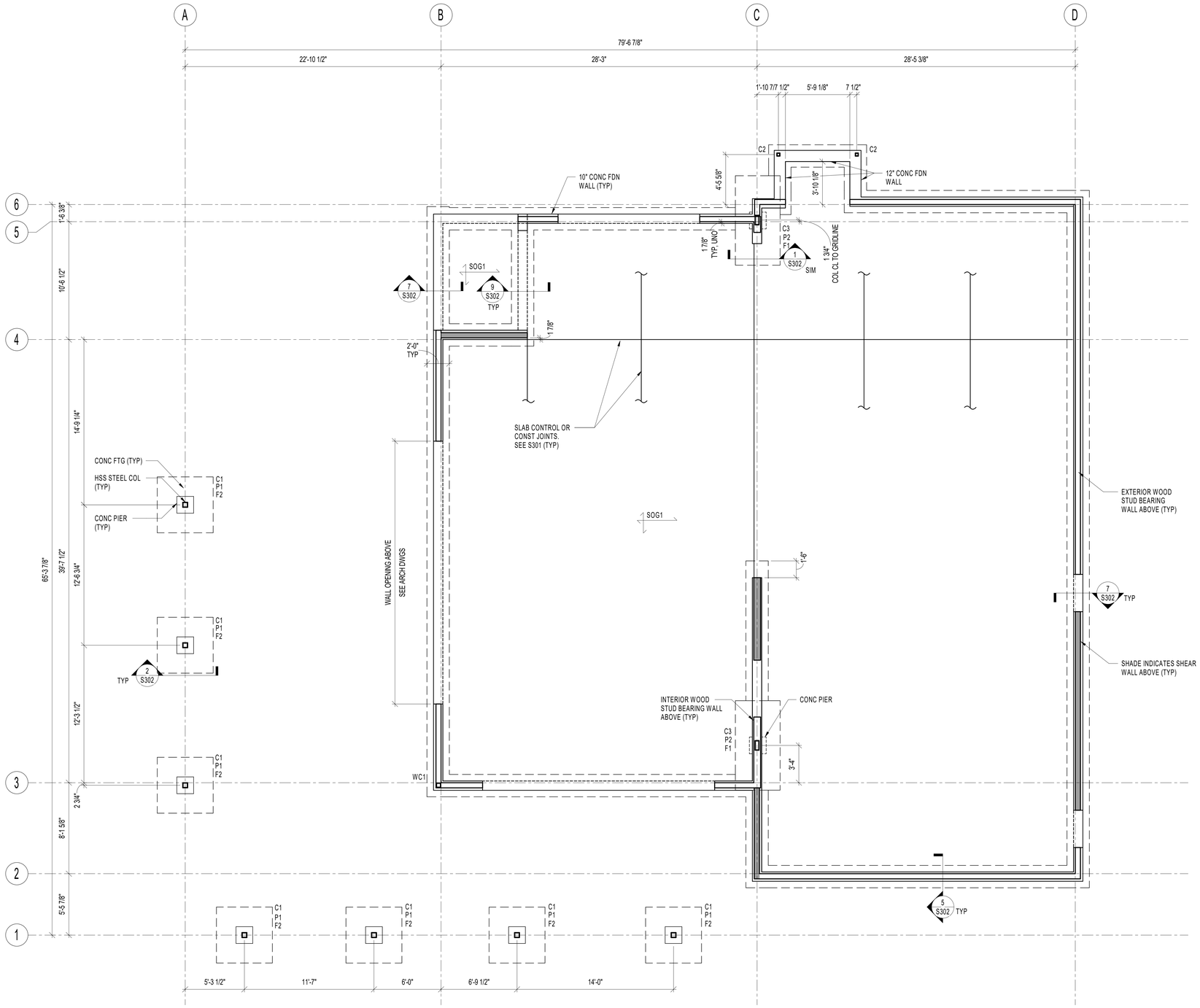


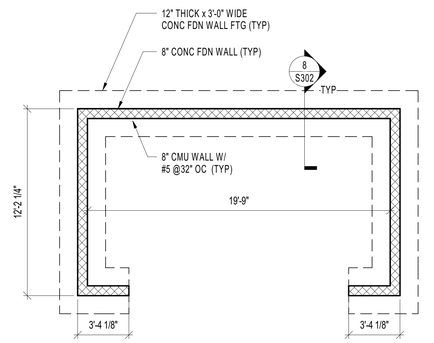
1 LEVEL 01 / FOUNDATION PLAN

SCALE 1/4"=1'-0"

4 0 4 8 FEET

NORTH

NOTES:
1. T/FTG EL = 97'-0" (UNO).
2. T/FDN WALL EL = 100'-0" (UNO).
3. T/FDN WALL @ ENTRIES & WINDOW WALLS EL = 99'-0"
4. T/PIER EL = 99'-0" (UNO).
5. T/SOG EL = 100'-0" (UNO).
6. SOG1 - INDICATES 5" INTERIOR CONCRETE SLAB-ON-GRADE REINFORCED WITH 6x6 - W2.9xW2.9 WWF.
7. SEE ARCHITECTURAL DRAWINGS FOR PAINTING/COATING REQUIREDMENTS FOR EXPOSED EXTERIOR STEEL MEMBERS.
8. REFER TO S301 FOR TYPICAL SLAB-ON-GRADE DETAILS.
9. REFER TO S302 FOR PIER INFORMATION AND REINFORCEMENT.



2 TRASH ENCLOSURE PLAN

SCALE 1/4"=1'-0"

4 0 4 8 FEET

NORTH

NOTES:
1. B/FOOTING EL = MIN 3'-6" BELOW GRADE
2. T/FOUNDATION WALL EL = T/GRADE. SEE CIVIL DWGS.

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SHACK #1345

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REVISIONS

KEVIN M. WILSON
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CHICAGO, IL
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DATE:11/24/2020
LICENSE EXPIRES:11/30/2020

Drawing Title
FIRST FLOOR FOUNDATION PLAN

Job No.	Drawn
20043	CAH

Scale	Date
1/4" = 1'-0"	11/24/2020

Sheet No.
S100

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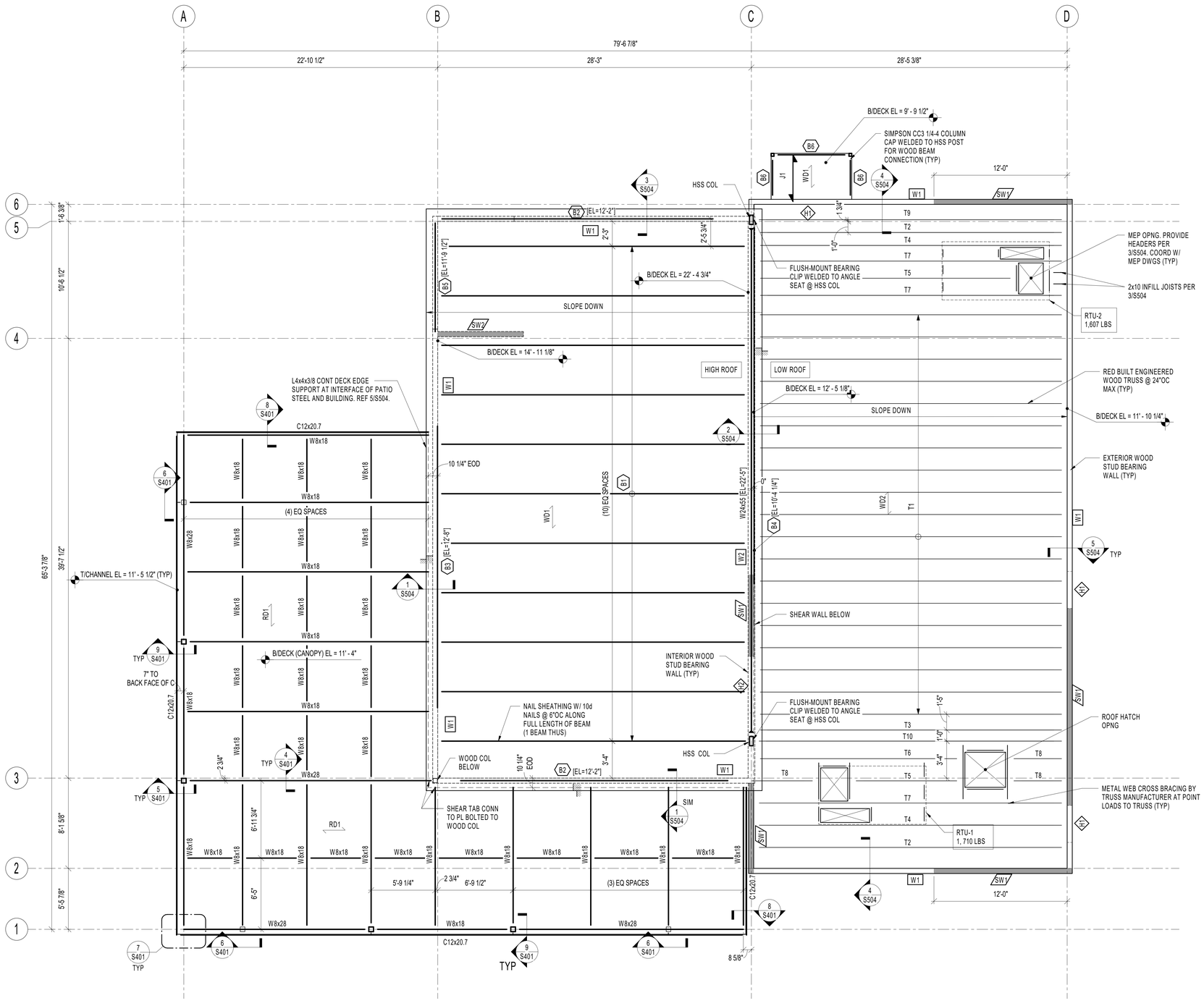

1 ROOF FRAMING PLAN

SCALE 1/4"=1'-0"

4 0 4 8 FEET

NORTH

NOTES:
1. B/DECK EL = SEE PLAN
2. T/STEEL EL = B/DECK EL (TYP, UNO).
3. RD1 - INDICATES SPAN DIRECTION OF 1 1/2", 20 GAUGE METAL ROOF DECK.
4. CONTRACTOR SHALL COORDINATE DIMENSIONED SIZE AND LOCATION OF ALL MECHANICAL EQUIPMENT, DECK OPENINGS, AND KITCHEN DRAWINGS. PROVIDE WOOD FRAMES PER DETAIL 3/S504 AROUND ALL DECK OPENINGS (INCLUDING ROOF DRAINS).
5. SEE ARCHITECTURAL DRAWINGS FOR PAINTING/COATING REQUIREDMENTS FOR EXPOSED EXTERIOR STEEL MEMBERS.

LEGEND

J#	INDICATES WOOD JOIST. SEE SCHEDULE ON S501
T#	INDICATES WOOD TRUSS. SEE SCHEDULE ON S501
WD#	INDICATES WOOD DECKING. SEE SCHEDULE ON S501

W#	WOOD STUD BEARING WALL. SEE SCHEDULE ON S501.
SW#	WOOD SHEAR WALL. SEE SCHEDULE ON S501.
B#	WOOD BEAM. SEE SCHEDULE ON S501.
H#	WOOD HEADER. SEE SCHEDULE ON S501.

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REVISIONS

KEVIN M. WILSON 081-004714 CHICAGO, IL LICENSED STRUCTURAL ENGINEER

DATE:11/24/2020
LICENSE EXPIRES:11/30/2020

Drawing Title
ROOF FRAMING PLAN

Job No.	Drawn
20043	CAH

Scale	Date
As indicated	11/24/2020

Sheet No.
S150

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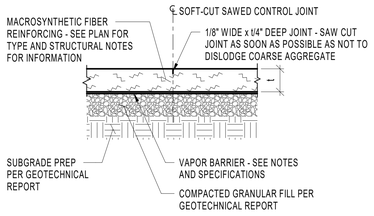
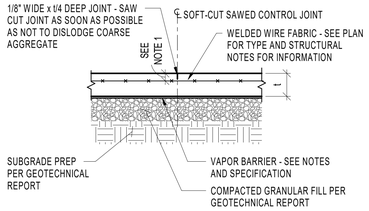


1 SLAB-ON-GRADE CONSTRUCTION AND CONTROL JOINT SECTION

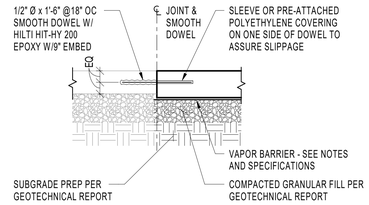
SCALE: NTS



2 SLAB-ON-GRADE CONSTRUCTION AND CONTROL JOINT SECTION

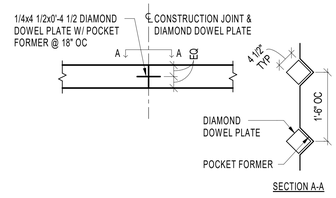
SCALE: NTS

NOTES:
1. PROVIDE 1 1/4", 1 1/2", AND 1 3/4" CLEAR COVER FOR 4", 5", AND 6" SLAB, RESPECTIVELY.



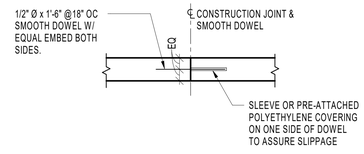
3 SLAB-ON-GRADE CONSTRUCTION AT EXISTING SLAB-ON-GRADE INTERFACE

SCALE: NTS



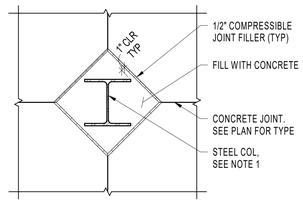
4 SLAB-ON-GRADE CONSTRUCTION JOINT SECTION

SCALE: NTS



5 SLAB-ON-GRADE CONSTRUCTION JOINT SECTION

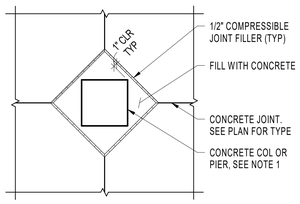
SCALE: NTS



6 INTERIOR ISOLATION JOINT DETAIL

SCALE: NTS

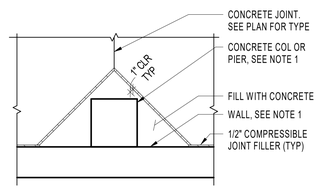
NOTES:
1. SEE PLAN FOR TYPE AND LOCATION OF STRUCTURAL ELEMENTS.



7 INTERIOR ISOLATION JOINT DETAIL

SCALE: NTS

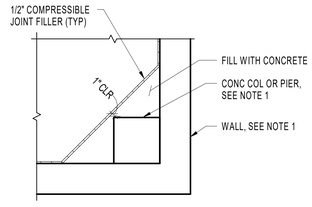
NOTES:
1. SEE PLAN FOR TYPE AND LOCATION OF STRUCTURAL ELEMENTS.



8 PERIMETER ISOLATION JOINT DETAIL

SCALE: NTS

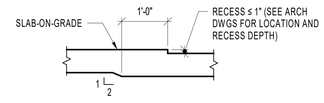
NOTES:
1. SEE PLAN FOR TYPE AND LOCATION OF STRUCTURAL ELEMENTS.



9 CORNER ISOLATION JOINT DETAIL

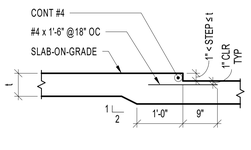
SCALE: NTS

NOTES:
1. SEE PLAN FOR TYPE AND LOCATION OF STRUCTURAL ELEMENTS.



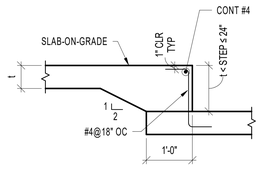
10 SLAB DETAIL AT RECESS

SCALE: NTS



11 SLAB STEP DETAIL AT SMALL STEP

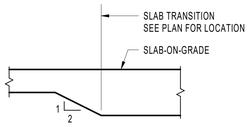
SCALE: NTS



12 SLAB STEP DETAIL AT LARGE STEP

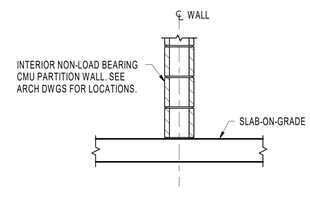
SCALE: NTS

NOTES:
1. SEE PLAN FOR SLAB STEPS LARGER THAN 24".



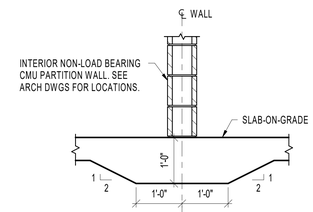
13 SLAB-ON-GRADE TRANSITION DETAIL

SCALE: NTS



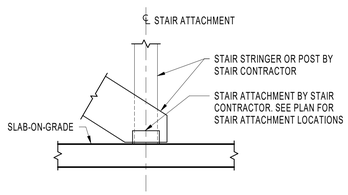
14 SLAB-ON-GRADE AT INTERIOR CMU PARTITIONS NO MORE THAN 10'-0" TALL

SCALE: NTS



15 SLAB-ON-GRADE AT INTERIOR CMU PARTITIONS MORE THAN 10'-0" TALL

SCALE: NTS



16 SLAB-ON-GRADE AT STAIR STRINGER OR POST ATTACHMENT

SCALE: NTS

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SHACK #1345

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REVISIONS

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REGISTERED STRUCTURAL ENGINEER
CHICAGO, IL
DATE:11/24/2020
LICENSE EXPIRES:11/30/2020

Drawing Title
CONCRETE DETAILS

Job No. 20043
Drawn Author
Scale 3/4" = 1'-0"
Date 11/24/2020

Sheet No.
S301

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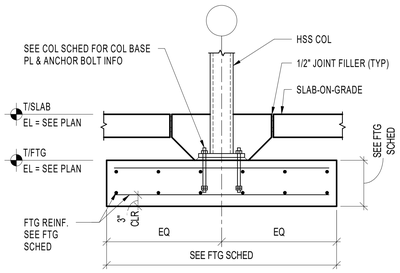
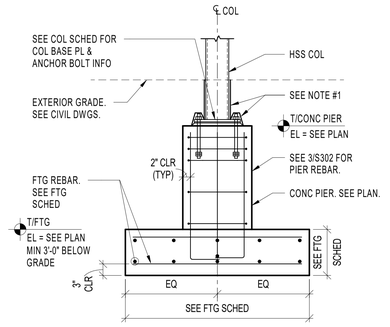
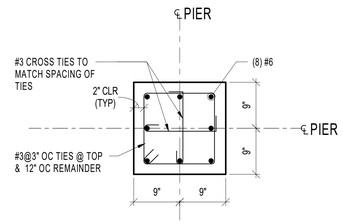
FOOTING SCHEDULE					
MARK	LENGTH	WIDTH	THICKNESS	REINFORCING BOTTOM BARS	REINFORCING TOP BARS
F1	8'-0"	4'-0"	18"	(5) #7 LONG, (9) #7 SHORT	(5) #7 LONG, (9) #7 SHORT
F2	5'-0"	5'-0"	12"	(5) #5 EW	(5) #5 EW



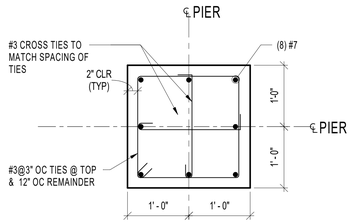
1 INTERIOR COLUMN FOOTING AT HSS COLUMN DETAIL
SCALE: NTS



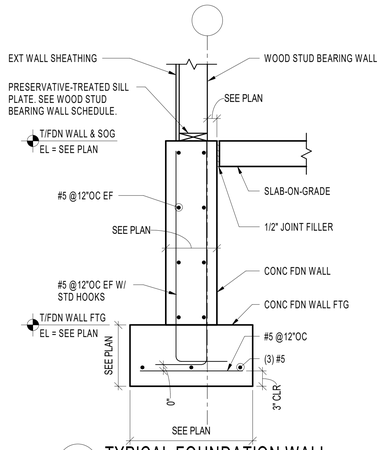
2 TYPICAL PIER AND FOOTING SECTION
SCALE: NTS
NOTES:
1. FOR EXTERIOR COLUMNS ONLY: NON-SOLVENT/NON-ASPHALTIC COLD FLUID APPLIED WATERPROOFING COATING FULLY AROUND COLUMN, BASE PLATE AND ANCHOR BOLTS. APPLY PER MANUFACTURER'S RECOMMENDATIONS



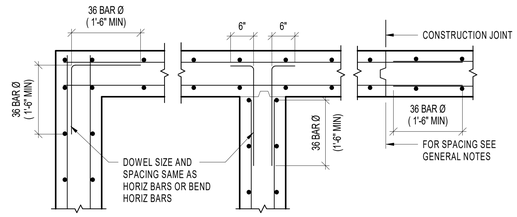
3 PIER P1 REINFORCING DETAIL
SCALE: 1" = 1'-0"



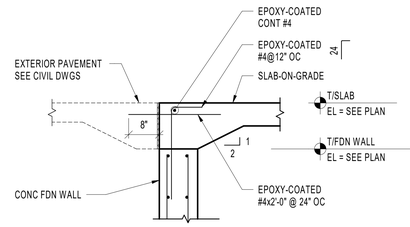
4 PIER 2 REINFORCING DETAIL
SCALE: 1" = 1'-0"



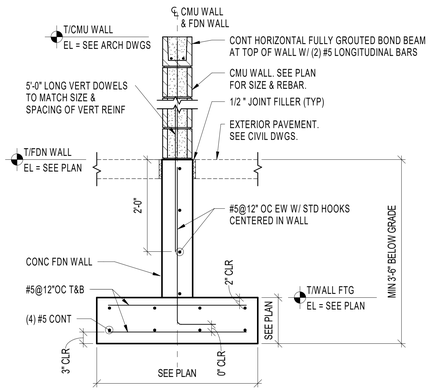
5 TYPICAL FOUNDATION WALL @ STUD WALL DETAIL
SCALE: NTS



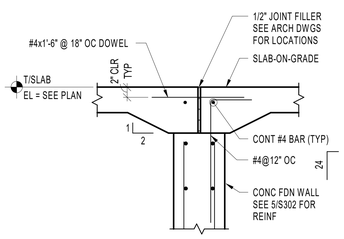
6 TYPICAL CONCRETE WALL CORNERS INTERSECTIONS AND CONSTRUCTION DETAIL
SCALE: NTS
NOTES:
1. FOR CONCRETE WALLS LESS THAN 10" WIDE, USE SINGLE BAR CENTERED IN CONCRETE FOUNDATION WALL.



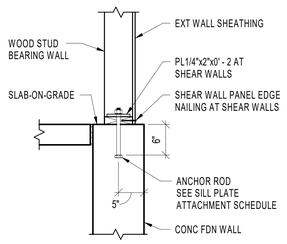
7 EXTERIOR WALL AT OPENING
SCALE: NTS
NOTES:
1. REFER TO 5/S302 FOR ALL INFORMATION NOT SHOWN.



8 TRASH ENCLOSURE WALL SECTION
SCALE: NTS



9 FOUNDATION WALL AT DOORS DETAIL
SCALE: NTS



10 SILL PLATE ANCHORS
SCALE: NTS

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SHACK #1345

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	11/09/20	ISSUE FOR LL REVIEW

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Drawn Author
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Sheet No.
S302

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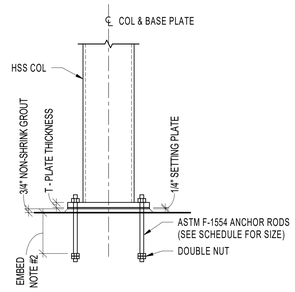
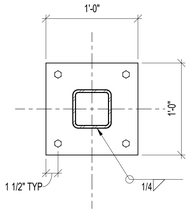
STEEL COLUMN SCHEDULE				
MARK	SIZE	BASE PLATE (WxLxT)	ANCHOR ROD DIA.	REMARKS
C1	HSS5x5x3/8	12x12x3/4	3/4"	SEE 1&3/S401
C2	HSS3x3x1/4	7"x7"x1/2"	3/4"	SEE 1&2/S401
C3	HSS10x4x1/2	11"x14"x1 1/4"	1"	SEE 1&3/S401



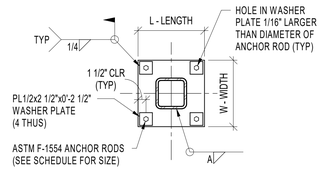
1 HSS COLUMN BASE DETAIL
SCALE: NTS

NOTES:
1. ALL ANCHORS RODS SHALL BE ASTM F1554 GR. 36.
2. EMBEDS:
   A. AT GRAVITY COLUMNS: 8"
   B. AT MOMENT FRAME COLUMNS: 15"



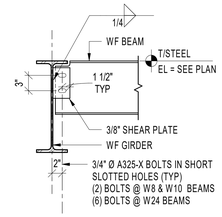
2 HSS COLUMN BASE DETAIL
SCALE: NTS

NOTES:
1. SEE 1/S401 FOR INFORMATION NOT SHOWN

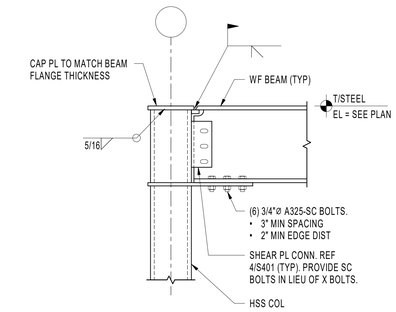


3 HSS COLUMN BASE DETAIL
SCALE: NTS

NOTES:
1. PROVIDE WASHER PLATES AT COLUMNS ALONG GRIDLINE A AND GRIDLINE 1 ONLY.
2. SEE 2/S401 FOR A, W, & L VALUES.
3. SEE 1/S401 FOR INFORMATION NOT SHOWN.



4 BEAM TO GIRDER SHEAR PLATE CONNECTION DETAIL
SCALE: NTS



5 BEAM TO HSS COLUMN SHEAR PLATE MOMENT CONNECTION DETAIL
SCALE: NTS

NOTES:
1. PERPENDICULAR BEAMS NOT SHOWN FOR CLARITY

6 WF BEAM OVER HSS POST CONNECTION DETAIL
SCALE: NTS

7 TYPICAL SIGN BEAM MITERED CORNER DETAIL
SCALE: NTS

8 TYPICAL SIGN BEAM TO WF BEAM CONNECTION DETAIL
SCALE: NTS

NOTES:
1. METAL DECK NOT SHOWN FOR CLARITY
2. PROVIDE EPOXY FILLER BETWEEN STITCH WELDS

9 TYPICAL SIGN BEAM TO HSS COL CONNECTION DETAIL
SCALE: NTS

NOTES:
1. WF BEAMS AND METAL DECK NOT SHOWN FOR CLARITY

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DATE:11/24/2020
LICENSE EXPIRES:11/30/2020

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Job No. 20043 | Drawn Author

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WOOD STUD BEARING WALL SCHEDULE

MARK	STUD SIZE	STUD SPACING	STUD SPECIES & GRADE	TOP & BOTTOM PL SPECIES & GRADE	BLOCKING	COMMENTS
W1	2x6	16"	SPF No.2	SPF No.2	MID-HEIGHT	
W2	2x8	16"	SPF No.2	SPF No.2	MID-HEIGHT	

NOTES:
1. ALL TOP PLATES SHALL BE (2) 2x. ALL BOTTOM PLATES SHALL BE 2x.
2. SPF - INDICATES SPRUCE-PINE-FIR.
3. BLOCKING SPECIES AND GRADE TO MATCH PLATES.

2x SILL PLATE ATTACHMENT SCHEDULE

	LOCATION	
ATTACHMENT METHOD	BEARING WALLS	SHEAR WALLS
1/2" Ø ANCHOR ROD	4'-0" ON CENTER	16" ON CENTER

NOTES:
1. PROVIDE DOUBLE SILL PLATE AT SHEAR WALLS
2. SILL PLATE TO MATCH WIDTH OF STUD BEARING WALL
3. SILL PLATE ANCHORS TO BEGIN SPACING MAX 12" FROM ENDS OF SILL PLATES.
4. ALL SILL PLATES SHALL BE PRESERVATIVE PRESSURE-TREATED.
5. SEE DETAIL 10/S302 FOR SILL PLATE ANCHOR EMBEDMENT.

WOOD COLUMN SCHEDULE

MARK	SIZE	BASE PLATE (WxLxT)	ANCHOR ROD DIA.	REMARKS
WC1	5x5	-	(2) 1/2"	STRONG-TIE ABU5-5Z

WOOD TRUSS SCHEDULE

MARK	REDBUILT TRUSS	SPACING	LOADING DIAGRAM	COMMENTS
T1	RED-W 16"	2'-0" MAX	3/S503	-
T2	RED-W 16"	2'-0" MAX	4/S503	-
T3	RED-W 16"	2'-0" MAX	3/S503	TRUSS SHALL BE DESIGNED FOR HEADER LOADS, SEE PLAN FOR HEADER LOCATION
T4	RED-W 16"	2'-0" MAX	5/S503	-
T5	RED-W 16"	2'-0" MAX	5/S503	TRUSS HEADERED, TRUSS SHALL BE DESIGNED FOR PARTIAL SPAN OF LOADING DIAGRAM, SEE PLAN
T6	RED-W 16"	2'-0" MAX	5/S503	TRUSS SHALL BE DESIGNED FOR HEADER LOADS, SEE PLAN FOR HEADER LOCATION. TRUSS HEADERED, TRUSS SHALL BE DESIGNED FOR PARTIAL SPAN OF LOADING DIAGRAM, SEE PLAN
T7	RED-W 16"	2'-0" MAX	5/S503	TRUSS SHALL BE DESIGNED FOR HEADER LOADS, SEE PLAN FOR HEADER LOCATION.
T8	RED-W 16"	2'-0" MAX	3/S503	TRUSS HEADERED, TRUSS SHALL BE DESIGNED FOR PARTIAL SPAN OF LOADING DIAGRAM, SEE PLAN
T9	RED-W 16"	2'-0" MAX	4/S503	TOP CHORD TO BE DESIGNED FOR MAX AXIAL = 5000 LBS (WIND)
T10	RED-W 16"	2'-0" MAX	3/S503	TOP CHORD TO BE DESIGNED FOR MAX AXIAL = 5000 LBS (WIND)

NOTES:
1. ALL WOOD TRUSSES SHALL BE DESIGNED AND MANUFACTURED BY REDBUILT

WOOD JOIST SCHEDULE

MARK	SIZE	SPACING	SPECIES & GRADE	HANGER	REMARKS
J1	2x8	16" OC	SPF No.2	SIMPSON LU26 W/ (6) 10 d NAILS TO WOOD BEAM & (4) 10dx1 1/2" NAIL TO JOIST	

WOOD DECKING SCHEDULE

MARK	TYPE	GRADE	NAILS	DIAPHRAGM PANEL EDGE & BOUNDARY NAILING	FIELD NAIL SPACING	PANEL EDGE BLOCKING	COMMENTS
WD1	3/4" PLYWOOD OR OSB	APA RATED	8d	6"	12"	NO	-
WD2	3/4" PLYWOOD OR OSB	APA RATED	8d	4" @ BOUNDARY / 6" @ PANEL DGES	12"	YES	-

WOOD SHEAR WALL SCHEDULE

MARK	SHEATHING	SHEATHING GRADE	NAILS	NAIL PENETRATION	PANEL EDGE & BOUNDARY NAIL SPACING	FIELD NAIL SPACING	PANEL EDGE BLOCKING	END CHORD SIZE	END CHORD SPECIES & GRADE	HOLDOWN	HOLDOWN TO END CHORD	ANCHOR ROD DIA
SW1	5/8" PLYWOOD OR OSB	APA RATED	8d	1 3/8"	6"	12"	YES	4x6	SPF NO. 2	HD7B	(3) 3/4" STUD BOLTS	7/8"
SW2	5/8" PLYWOOD OR OSB	APA RATED	10d	1 1/2"	3"	12"	YES	4x6	SPF NO. 2	HD7B	(3) 3/4" STUD BOLTS	7/8"

NOTES:
1. ALL PANELS TO BE MIN 4'x8', APPLIED TO (1) SIDE OF WALL AS INDICATED IN DETAILS ON SHEET S401, UNO.
2. PANEL EDGE NAIL SPACING APPLIES TO ALL PANEL EDGES AS WELL AS ALL BLOCKING, TOP PLATES, BOTTOM PLATES, HEADERS, TRIMMER STUDS, SILL PLATES, AND SOLE PLATES.
3. HOLDOWNS INDICATED SHALL BE INSTALLED AT THE BOTTOM OF THE INDICATED SHEAR WALL AND AT THE TOP OF THE SHEAR WALL BELOW, WHERE APPLICABLE.
4. ALL HARDWARE INDICATED SHALL BE BY SIMPSON STRONG-TIE OR EQUIVALENT. FOLLOW MANUFACTURER'S RECOMMENDATIONS. COORDINATE HOLDOWN TYPE WITH REQUIRED EDGE DISTANCES PROVIDED.
5. NAIL ALL PLIES OF SHEAR WALL END CHORD TOGETHER W/ 10d NAILS @ 8" OC STAGGERED.
6. PLYWOOD SHEAR WALL SHEATHING SHALL BE PER THE STRUCTURAL NOTES ON S001.
7. STUDS AND STRAPS SHALL BE VERTICALLY ALIGNED. SEE SHEAR WALL ELEVATION ON S502 FOR ADDITIONAL INFORMATION.
8. SHEAR WALLS SHALL EXTEND FROM BOTTOM OF 2x6 SILL/BOTTOM PLATE TO TOP OF (2) 2x6 TOP PLATE AT EACH STORY AND SHALL BE UNINTERRUPTED FROM END TO END AS INDICATED ON PLANS. PARAPET WALL FRAMING IS NOT PART OF SHEAR WALLS.
9. END CHORD WIDTH TO MATCH WOOD STUD WALL WIDTH.
10. WHERE SHEAR WALL DOES NOT EXTEND TO FOUNDATION, PROVIDE END CHORDS AND HOLDOWNS AT ALL LEVELS DOWN TO FOUNDATION.

WOOD BEAM SCHEDULE

MARK	BEAM SIZE	BEAM SPECIES & GRADE	TRIMMER STUDS	TRIMMER STUD SPECIES & GRADE	KING STUDS/POST	KING STUDS/POST SPECIES & GRADE	TRIMMER TO KING FASTENERS	HANGER/POST CAP	COMMENTS
B1	5 1/2x13 3/4	GLULAM	(2) 2x6	SPF No.2	(2) 2x6	SPF No.2	10d NAILS STAGGERED @ 12" OC	-	SEE 1/S504
B2	5 1/2x18	GLULAM	(2) 2x6	SPF No.2	6x8	SPF No.2	10d NAILS STAGGERED @ 12" OC	-	
B3	5 1/2x24	GLULAM	(3) 2x6	SPF No.2	(3) 2x6	SPF No.2	10d NAILS STAGGERED @ 12" OC	-	
B4	5 1/2x24	GLULAM	(2) 2x8	SPF No.2	2x8	SPF No.2	10d NAILS STAGGERED @ 12" OC	-	
B5	5 1/2x13 3/4	GLULAM	(2) 2x6	SPF No.2	(2) 2x6	SPF No.2	10d NAILS STAGGERED @ 12" OC	-	
B6	(2) 2x8	SPF No.2	(2) 2x6	SPF No.2	-	-	-	SEE PLAN	

NOTES:
1. WHERE BEAM WIDTH IS LESS THAN THE ASSOCIATED WOOD STUD WIDTH, BUILD OUT THE BEAM WIDTH TO MATCH STUD WIDTH USING WOOD OR PLYWOOD FILLER INSTALLED SYMMETRICALLY BETWEEN THE PLIES. FILLER SPECIES AND GRADE SHALL MATCH BEAM SPECIES AND GRADE OR BE BETTER .

WOOD HEADER SCHEDULE

MARK	HEADER SIZE	HEADER SPECIES & GRADE	TRIMMER STUDS	TRIMMER STUD SPECIES & GRADE	KING STUDS/POST	KING STUDS/POST SPECIES AND GRADE	TRIMMER TO KING FASTENERS	COMMENTS
H1	(3) 2x8	SPF No.2	(2) 2x6	SPF No.2	(2) 2x6	SPF No.2	10d NAILS STAGGERED @ 12" OC	-
H2	(3) 2x8	SPF No.2	(2) 2x8	SPF No.2	2x8	SPF No.2	10d NAILS STAGGERED @ 12" OC	

NOTES:
1. UNLESS NOTED OTHERWISE, WHERE HEADER WIDTH IS LESS THAN THE ASSOCIATED WOOD STUD WIDTH, BUILD OUT THE HEADER WIDTH TO MATCH STUD WIDTH USING WOOD OR PLYWOOD FILLER INSTALLED SYMMETRICALLY BETWEEN THE PLIES . FILLER SPECIES AND GRADE SHALL MATCH BEAM SPECIES AND GRADE OR BE BETTER. SEE NOTE 3.
2. SEE DETAIL 6/S402 FOR MULTI-PLY FASTENING.
3. AT HEADERS IN EXTERIOR WALLS, ALL PLIES SHALL BE DIRECTLY FASTENED TOGETHER WITH EXTERIOR FACE OF EXTERIOR PLY ALIGNED WITH EXTERIOR FACE OF WOOD STUD BEARING WALL. SEE ARCHITECTURAL DRAWINGS FOR INSULATION AT INTERIOR FACE OF HEADER.

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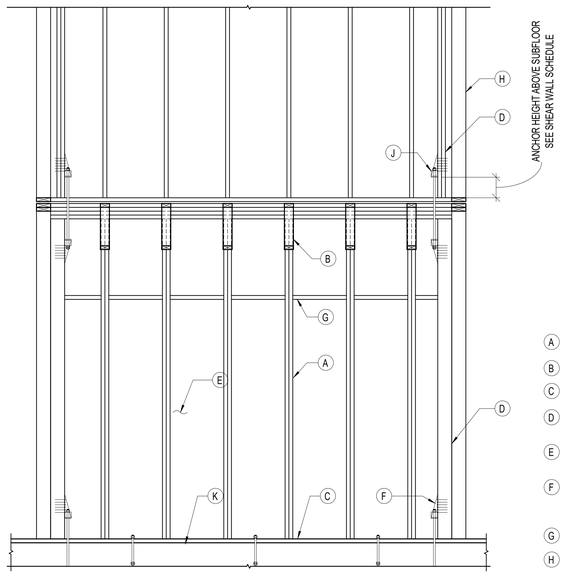


1 TYPICAL SHEAR WALL ELEVATION
SCALE: NTS

SHEAR WALL ELEVATION KEY NOTES

(A) STUD IN SHEAR WALL. SEE WOOD STUD BEARING WALL.

(B) FLOOR TRUSS.

(C) PRESSURE TREATED SILL PLATE - SEE SILL PLATE ATTACHMENT SCHEDULE.

(D) SHEAR WALL END CHORDS WITH HOLDOWN AT TOP AND BOT OF EACH END OF EACH SHEAR WALL - SEE SHEAR WALL SCHEDULE.

(E) SHEAR WALL SHEATHING - ATTACH TO WALL STUDS, PLATES, BLOCKING, AND TRUSS ENDS AS INDICATED IN SHEAR WALL ATTACHMENT SCHEDULE AND NOTES.

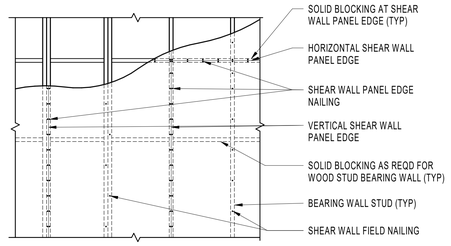
(F) HOLDOWN @ EACH END OF SHEAR WALL. SEE SHEAR WALL SCHEDULE. FOLLOW MANUFACTURER'S RECOMMENDATIONS. COORDINATE HOLDOWN TYPE WITH REQUIRED EDGE DISTANCES PROVIDED.

(G) SOLID BLOCKING AT SHEAR WALL PANEL EDGES.

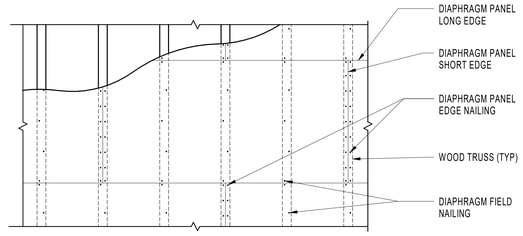
(H) STUD WALL PERPENDICULAR TO SHEAR WALL. SEE PLAN.

(J) TAKEUP DEVICE AT ALL HOLDOWNS. SEE SHEAR WALL SCHEDULE. FOLLOW MANUFACTURER'S RECOMMENDATIONS.

(K) CONCRETE FOUNDATION.



2 SHEAR WALL NAILING
SCALE: NTS



3 DIAPHRAGM NAILING
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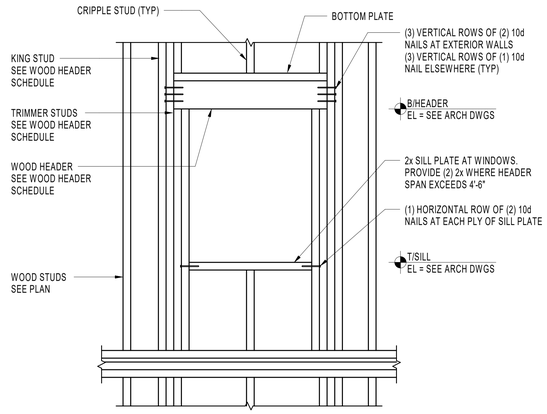

4 TYPICAL WINDOW & DOOR HEADER
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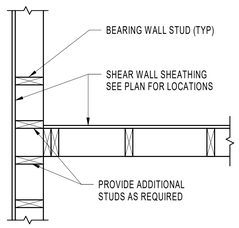
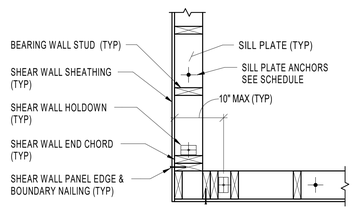
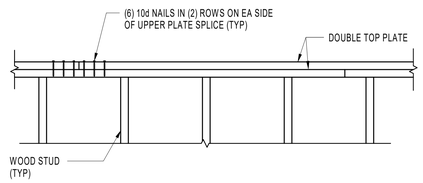


5 TYPICAL SHEAR WALL CONNECTION PLAN
SCALE: NTS



6 TYPICAL SHEAR WALL PLAN AT BASE
SCALE: NTS



7 TYPICAL DOUBLE TOP PLATE SPLICE
SCALE: NTS

NOTES:
1. SPLICE DETAIL APPLIES AT ALL LOCATIONS FOR 2x STUD WALLS BELOW THE FLOOR AND ROOF DIAPHRAGMS.
2. SPLICE NOT REQUIRED FOR LOWER PLATE DISCONTINUITIES. PROVIDE LAP SPLICE PER IBC NAILING SCHEDULE AT THESE LOCATIONS.
3. SPLICE NOT REQUIRED FOR TOP PLATES OF PARAPET WALL FRAMING. PROVIDE LAP SPLICE PER IBC NAILING SCHEDULE AT THESE LOCATIONS.

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Drawing Title
WOOD DETAILS

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20043	Author

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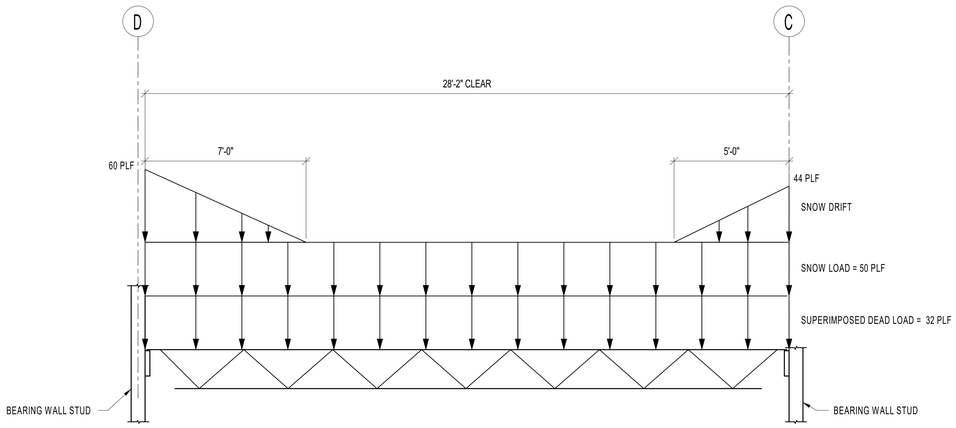
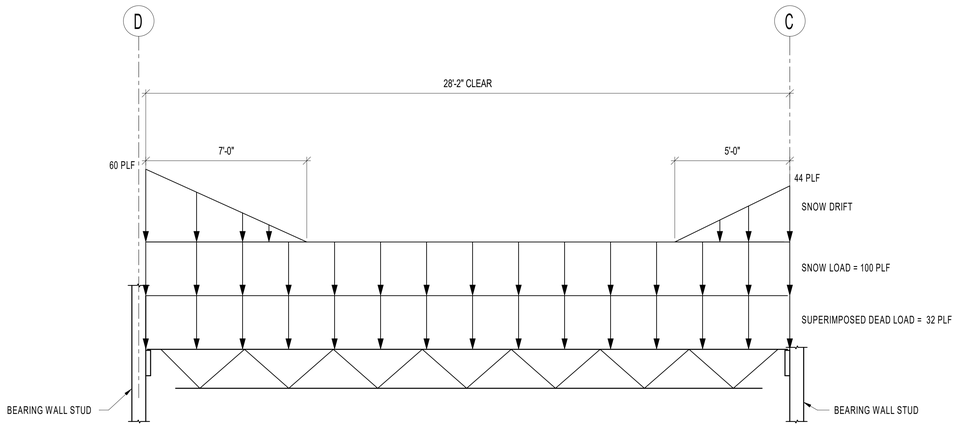


1 WOOD TRUSS LOADING DIAGRAM #1

SCALE: NTS

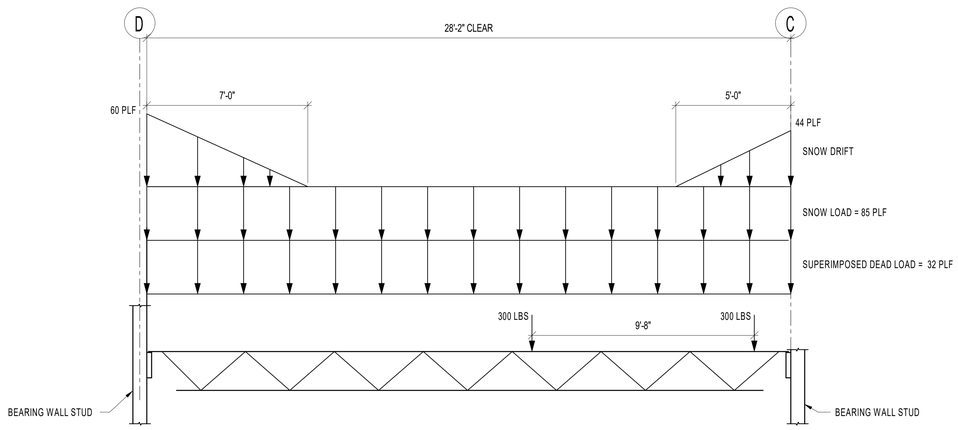
NOTES:
1. ALL WOOD TRUSSES SHALL BE DESIGNED BY THE TRUSS MANUFACTURER
2. TRUSS DEFLECTIONS SHALL BE LIMITED TO THE FOLLOWING RATIOS:
   A. SPAN/240 UNDER DEAD + SNOW LOAD LOAD
   B. SPAN/360 UNDER SNOW LOAD OR DEAD LOAD
3. TRUSSES SHALL BE DESIGNED FOR THE NET UPLIFT DUE TO WIND LOADING. SEE WIND UPLIFT DIAGRAM, 2/S002
4. TRUSSES SHALL BE DESIGNED TO GLOBALLY RESIST ALL SPECIFIED LOADS ABOVE IN ANY COMBINATION



2 WOOD TRUSS LOADING DIAGRAM #2

SCALE: NTS

NOTES:
1. ALL WOOD TRUSSES SHALL BE DESIGNED AND MANUFACTURED BY REDBUILT
2. TRUSS DEFLECTIONS SHALL BE LIMITED TO THE FOLLOWING RATIOS:
   A. SPAN/240 UNDER DEAD + SNOW LOAD LOAD
   B. SPAN/360 UNDER SNOW LOAD OR DEAD LOAD
3. TRUSSES SHALL BE DESIGNED FOR THE NET UPLIFT DUE TO WIND LOADING. SEE WIND UPLIFT DIAGRAM, 2/S002
4. TRUSSES SHALL BE DESIGNED TO GLOBALLY RESIST ALL SPECIFIED LAODS ABOVE IN ANY COMBINATION



3 WOOD TRUSS LOADING DIAGRAM #3

SCALE: NTS

NOTES:
1. ALL WOOD TRUSSES SHALL BE DESIGNED BY THE TRUSS MANUFACTURER
2. TRUSS DEFLECTIONS SHALL BE LIMITED TO THE FOLLOWING RATIOS:
   A. SPAN/240 UNDER DEAD + SNOW LOAD LOAD
   B. SPAN/360 UNDER SNOW LOAD OR DEAD LOAD
3. SPECIFIED POINT LOADS ARE DEAD LOADS AND SHALL BE APPLIED SIMULTANEOUSLY ON TOP CHORD ANYWHERE WITHIN SPAN WITH SPACING AS SPECIFIED
4. TRUSSES SHALL BE DESIGNED FOR THE NET UPLIFT DUE TO WIND LOADING. SEE WIND UPLIFT DIAGRAM, 2/S002
5. TRUSSES SHALL BE DESIGNED TO GLOBALLY RESIST ALL SPECIFIED LAODS ABOVE IN ANY COMBINATION

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SHACK #1345

NO.	DATE	REMARKS
	11/24/20	ISSUE FOR PERMIT/BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

KEVIN M. WILSON
081-004714
CHICAGO, IL
LICENSED STRUCTURAL ENGINEER

DATE:11/24/2020
LICENSE EXPIRES:11/30/2020

Drawing Title
WOOD DETAILS

Job No.	Drawn
20043	Author

Scale	Date
3/8" = 1'-0"	11/24/2020

Sheet No.
S503

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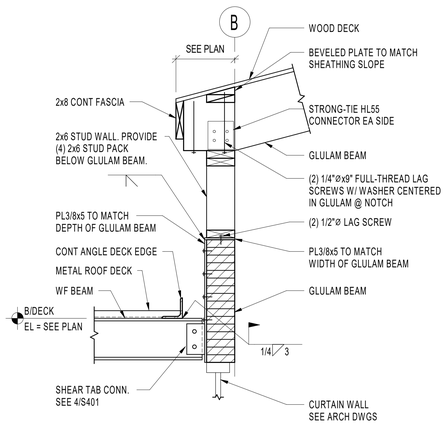
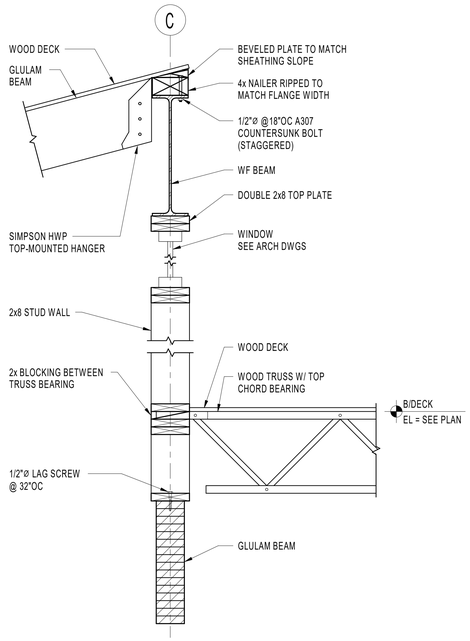
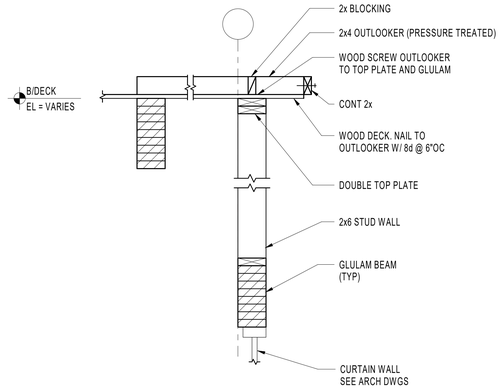


1 SECTION @ ROOF LOW POINT
SCALE: NTS

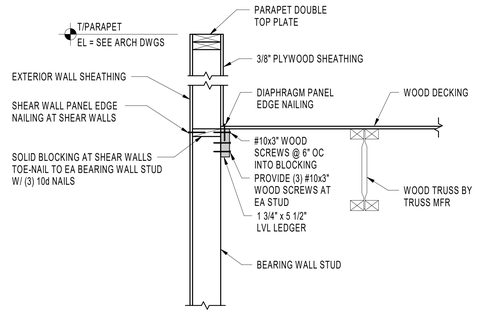


2 SECTION @ SLOPED ROOF HIGH POINT
SCALE: NTS

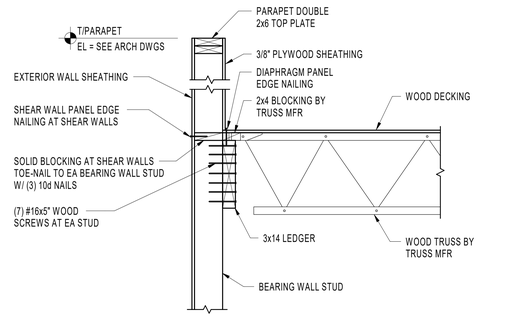


3 SECTION @ SLOPED ROOF OVERHANG
SCALE: NTS

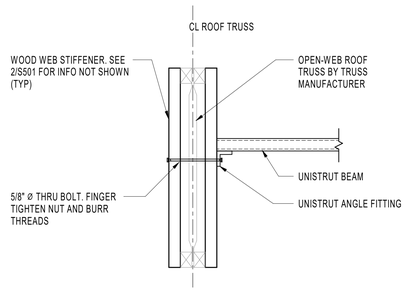
NOTES:
1. 2x OUTLOOKER AND BLOCKING TO BE PRESSURE TREATED



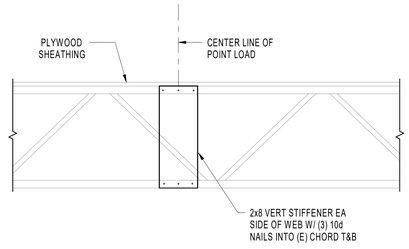
4 PARAPET PARALLEL TO TRUSSES
SCALE: NTS



5 TRUSS BEARING DETAIL AT BALLOON FRAMED PARAPET
SCALE: NTS

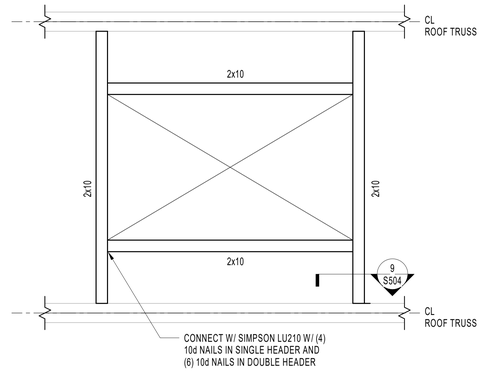


6 TYPICAL UNISTRUT CONNECTION TO ROOF TRUSS
SCALE: NTS



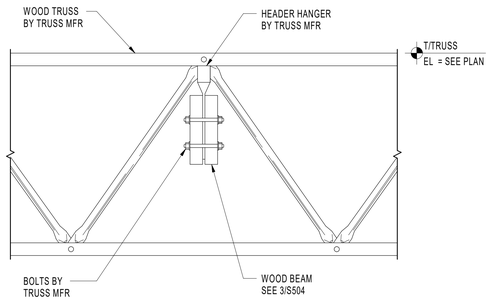
7 TYPICAL ROOF OPENING & RTU SUPPORT FRAME DETAIL
SCALE: NTS

NOTES:
1. GENERAL CONTRACTOR TO COORDINATE LOCATIONS OF REINFORCEMENT AS REQUIRED.
2. REINFORCEMENT IS REQUIRED FOR ALL POINT LOADS.

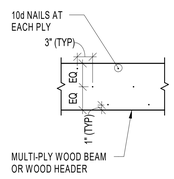


8 TYPICAL WOOD BEAM TO ROOF TRUSS CONNECTION DETAIL
SCALE: NTS

NOTES:
1. COORDINATE FRAME SIZES AND LOCATIONS WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
2. PROVIDE (2) 2x10 UNDERNEATH MECH UNITS SUPPORTS. NAIL TOGETHER W/ 10d NAIL @ 4" OC STAGGERED.
3. PROVIDE (1) 2x10 AT OPENINGS.



9 TYPICAL ROOF TRUSS HEADER DETAIL
SCALE: NTS



10 MULTI-PLY BEAM/HEADER FASTENERS
SCALE: NTS

NOTES:
1. WHERE 1/2" WOOD FILLER IS REQUIRED BETWEEN PLIES, UTILIZE 16d BOX NAILS IN LIEU OF 10d NAILS.

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As indicated	11/24/2020

Sheet No.
S504

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FOODSERVICE SHEET LIST

NO.	SHEET NAME
GENERAL	
K001	KITCHEN EQUIPMENT GENERAL NOTES, LEGENDS, SHEET INDEX
EQUIPMENT PLANS	
K101	KITCHEN EQUIPMENT PLAN
SPECIAL CONDITIONS	
K102	KITCHEN EQUIPMENT SPECIAL CONDITIONS PLAN
KITCHEN EQUIPMENTELEVATIONS	
K201	KITCHEN EQUIPMENT ELEVATIONS
EQUIPMENT SCHEDULES	
K601	KITCHEN EQUIPMENT SCHEDULES
K602	KITCHEN EQUIPMENT SCHEDULES
K603	KITCHEN EQUIPMENT ROUGH IN SCHEDULES
ELECTRICAL ROUGH-INS	
KE101	KITCHEN EQUIPMENT ELECTRICAL ROUGH-IN PLAN
PLUMBING ROUGH-INS	
KP101	KITCHEN EQUIPMENT PLUMBING ROUGH-IN PLAN

PLUMBING LEGEND

- COLD WATER
- HOT WATER
- CHILLED WATER
- CHILLED WATER RETURN
- DIRECT WASTE
- FLOOR DRAIN
- FLOOR SINK - FULL GRATE
- FLOOR SINK - PARTIAL GRATE
- FLOOR SINK - NO GRATE
- FUNNEL FLOOR DRAIN
- HUB FLOOR DRAIN
- GAS DROP FROM MANIFOLD
- SS STEAM SUPPLY
- CR CONDENSATE RETURN
- PIPING STUB UP
- FILTERED WATER
- BEVERAGE CONDUIT STUB UP

ELECTRICAL LEGEND

- DUPLEX RECEPTACLE
- GFCI RECEPTACLE
- WEATHERPROOF RECEPTACLE
- SINGLE RECEPTACLE
- SPECIAL PURPOSE RECEPTACLE
- DOUBLE DUPLEX RECEPTACLE
- FLUSH FLOOR MOUNT RECEPTACLE
- JUNCTION BOX - CEILING MOUNTED
- JUNCTION BOX - WALL MOUNTED
- SWITCH
- DATA CONNECTION
- MANUAL PULL STATION
- DROP CORD MOUNTED FROM CEILING
- CONDUIT STUB LOCATION
- DEFROST TIME CLOCK
- DISCONNECT
- LIGHT - RECTANGULAR
- LIGHT - ROUND
- MOTOR

DEFINITION OF TERMS

FURNISH: SUPPLY AND DELIVER TO APPROPRIATE CONTRACTOR FOR INSTALLATION.

INSTALL: FURNISH TO PROJECT SITE INCLUDING UNLOADING, UNPACKING, ASSEMBLY, ERECTING, PLACING, ANCHORING, PROTECTING, CLEANING AND SIMILAR OPERATIONS; READY FOR FINAL UTILITY CONNECTIONS BY APPROPRIATE CONTRACTOR.

PROVIDE: FURNISH AND INSTALL COMPLETE, READY FOR INTENDED USE.

FOODSERVICE ABBREVIATIONS - SECTION 114000

ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ALUM	ALUMINUM
AMP	AMPERE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
BLDG	BUILDING
BTU	BRITISH THERMAL UNIT
C&P	CORD AND PLUG
CBT	CABINET
CFM	CUBIC FEET PER MINUTE
CL	CENTER LINE
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONN	CONNECTION
CU FT	CUBIC FEET
CW	COLD WATER
DC	DROP CORD
DFA	DOWN FROM ABOVE
DIAM	DIAMETER
DIM.	DIMENSION
DISP	DISPENSER
DIV	DIVISION
DN	DOWN
DR	DUPLEX RECEPTACLE
DTL	DETAIL
DWG	DRAWING
DWR	DRAWER
EA	EACH
EC	ELECTRICAL CONTRACTOR
EL	ELEVATION
ELEC	ELECTRICAL
EQ	EQUAL
EQPM	EQUIPMENT
ETR	EXISTING TO REMAIN
EX	EXISTING
EXH	EXHAUST
EXT	EXTERIOR
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FF	FINISHED FLOOR
FIN.	FINISH(ED)
FLR	FLOOR
FLSHG	FLASHING
FLUR	FLUORESCENT
FRZ	FREEZER
FT	FOOT
FURN	FURNITURE
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERUPTER
GPM	GALLONS PER MINUTE
HGT	HEIGHT
HP	HORSEPOWER
HVAC	HEATING, VENTILATING, AIR CONDITIONING
HW	HOT WATER
ID	INSIDE DIAMETER
IN.	INCH
INCL	INCLUDE
INST	INSTALL(ATION)
INSUL	INSULATE(ION)
INT	INTERIOR
IW	INDIRECT WASTE
JAN	JANITOR
JB	JUNCTION BOX
JBH	JUNCTION BOX - CEILING/HORIZONTAL MOUNTED
JBW	JUNCTION BOX - WALL MOUNTED
JC	JANITOR'S CLOSET
KEC	KITCHEN EQUIPMENT CONTRACTOR
KTN	KITCHEN
KW	KILOWATT HOUR
LAM	LAMINATE
LBS	POUNDS
LKR	LOCKER
LT	LIGHT
LVR	LOUVER
MAX	MAXIMUM
MBTUH	1000 BTU/HOUR
MECH	MECHANICAL
MIN	MINIMUM
MISC	MISCELLANEOUS
MTD	MOUNTED
MTL	METAL
MUL	MULLION
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO.	NUMBER
NS	NO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFC	OFFICE
OH.	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OPP H	OPPOSITE HAND
PC	PLUMBING CONTRACTOR
PERF	PERFORATE(D)
PH	PHASE
PLAM	PLASTIC LAMINATE
PLUMB	PLUMBING
PLYWD	PLYWOOD
PNL	PANEL
PREP	PREPARATION
PSI	POUNDS PER SQUARE INCH
QT	QUARRY TILE
QTY	QUANTITY
QUAD	QUAD RECEPTACLE
RAD	RADIUS
RCP	REFLECTED CEILING PLAN
RECP	RECEPTACLE
REFG	REFRIGERATOR
REQD	REQUIRED
RET	RETURN
RI	ROUGH-IN
RM	ROOM
RO	ROUGH OPENING
SAN	SANITARY
SCH	SCHEDULE
SHLVG	SHELVING
SHT	SHEET
SP	SPECIAL RECEPTACLE
SPEC	SPECIFICATION
SQ	SQUARE
SR	SINGLE RECEPTACLE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STOR	STORAGE
STP	STATIC PRESSURE
SUP	SUPPLY
TEL	TELEPHONE
TV	TELEVISION
TYP	TYPICAL
UDS	UTILITY DISTRIBUTION SYSTEM
UNFIN	UNFINISHED
UNK	UNKNOWN
VAC	VACUUM
VERT	VERTICAL
W/	WITH
W/O	WITHOUT
WH	WATER HEATER
WL	WALL
WP	WEATHER PROOF
WT	WEIGHT

WALL BLOCKING SCHEDULE (DIVISION 6)

WB-1 3/4" WALL BLOCKING FROM 24" TO 72" AFF. G.C. TO PROVIDE WALL BLOCKING.

WB-2 3/4" WALL BLOCKING FROM 30" TO 96" AFF. G.C. TO PROVIDE WALL BLOCKING.

WB-3 3/4" WALL BLOCKING FROM 24" TO 96" AFF. G.C. TO PROVIDE WALL BLOCKING.

WB-4 3/4" WALL BLOCKING FROM 48" TO FINISHED CEILING AFF. G.C. TO PROVIDE WALL BLOCKING.

WB-5 3/4" WALL BLOCKING FROM FINISHED FLOOR TO TOP OF WALL. G.C. TO PROVIDE WALL BLOCKING.

WB-6 3/4" WALL BLOCKING FROM TOP OF WINDOW TO FINISHED CEILING. G.C. TO PROVIDE WALL BLOCKING.
3/4" WALL BLOCKING FROM BOTTOM OF SOFFIT TO FINISHED CEILING. G.C. TO PROVIDE WALL BLOCKING.

SP-1 4" DEEP DEPRESSION BY G.C. TO BE SMOOTH, LEVEL. ALL WATERPROOFING, GROUTING AND FINISHED FLOOR TO BE PROVIDED BY G.C..

NOTE: ALL WALL BLOCKING TO BE 5/8" FIRE RATED/TREATED PLYWOOD MINIMUM OR 18GA METAL WHERE REQUIRED.

NOTE: FOODSERVICE DRAWINGS INDICATE PLUMBING ROUGH-IN/CONNECTION POINTS ONLY FOR EQUIPMENT SPECIFIED UNDER THE KITCHEN EQUIPMENT (SECTION 114000) CONTRACT. ANY ADDITIONAL PLUMBING REQUIREMENTS ARE NOT INDICATED ON FOODSERVICE DRAWINGS. THE PLUMBING CONTRACTOR (DIVISION 22) SHALL FURNISH AND INSTALL PRESSURE REDUCING VALVES, FLOW CONTROLS, BACK FLOW PREVENTION, RPZ (REDUCED PRESSURE ZONE) VALVES, WATER HAMMER ARRESTOR, GATE VALVES, FOR WATER CONNECTIONS AS REQUIRED PER LOCAL CODES.

PLUMBING NOTES (DIVISION 22)

1. INSTALL KEC (SECTION 114000) FURNISHED FAUCET(S).
2. INSTALL KEC (SECTION 114000) FURNISHED TWIST WASTE/LEVER(S).
3. INSTALL KEC (SECTION 114000) FURNISHED HAND SINKS (WALL MOUNT STYLE) IN LOCATION SHOWN WITH THE MOUNTING HEIGHT TO BE A.D.A. COMPLIANT. PROVIDE AND INSTALL ALL NECESSARY HARDWARE FOR FINAL CONNECTION.
4. INSTALL KEC (SECTION 114000) FURNISHED QUICK DISCONNECT(S) & RESTRAINING DEVICE(S) PER MANUFACTURER'S RECOMMENDATIONS. INSTALL KEC (SECTION 114000) FURNISHED FLOOR TROUGH(S).
5. EXTEND AND/OR CONNECT DRAIN(S).
6. MANIFOLD DRAINS TO SINGLE CONNECTION.
7. FURNISH AND INSTALL BALL VALVE IN DRAIN LINE. VALVE TO BE IN EASILY ACCESSIBLE LOCATION.
8. INSTALL KEC (SECTION 114000) FURNISHED WATER FILTER. PIPING FROM FILTER OUTLET TO POINTS OF USE SHALL BE CONCEALED WITHIN WALLS AND CEILINGS. EXTEND DRAIN(S) TO FLOOR SINK/FLOOR DRAIN.
9. INSTALL KEC (SECTION 114000) FURNISHED SOLENOID VALVE(S), VACUUM BREAKER(S), FLOW CONTROL(S), PRESSURE REGULATOR(S), AND WATER INLET(S).
10. CONNECT MIN. 110°F HOT WATER SUPPLY (70° RISE) BOOSTER HEATER, THEN INTERPIPE TO DISHWASHER INLET. INSTALL TEMPERATURE/PRESSURE GAUGE(S) AND PRESSURE REGULATOR. CONNECT BOOSTER HEATER DRAIN(S) IN HARD COPPER TO FLOOR SINK/FLOOR DRAIN.
11. INSTALL KEC (SECTION 114000) FURNISHED DRAIN LINE TEMPERING KIT PER MANUFACTURER'S RECOMMENDATIONS.
12. CONNECT DRAIN(S) WITH REFRIGERATION GRADE HARD COPPER USING 1" STANDOFFS. "P" TRAP DRAIN OUTSIDE WALK-IN COMPARTMENT(S). PROVIDE AND INSTALL SLEEVES THRU WALK-IN AND BUILDING WALLS FOR DRAIN LINE(S). FOAM & CAULK AROUND SLEEVES AND DRAIN LINES. WRAP WITH DRAIN LINE HEATER AND INSULATION WHERE SUBJECT TO FREEZING TEMPERATURES.
13. INSTALL KEC (SECTION 114000) FURNISHED HOSE REEL, MIXING VALVE, CHROME FITTINGS, VACUUM BREAKER, AND CONTROL VALVE.
14. INSTALL KEC (SECTION 114000) FURNISHED FIRE SUPPRESSION SYSTEM GAS SHUT OFF VALVE. MUST BE ACCESSIBLE AND NOT CONCEALED IN WALL OR CEILING.
15. PROVIDE GRAY WATER AND SLURRY PIPING TO AND FROM (SECTION 114000) FURNISHED PULPER, TROUGH, AND WATER EXTRACTOR. INSTALL KEC (SECTION 114000) FURNISHED TROUGH INLET NOZZLES AND PROVIDE SHUT OFF VALVE AT EACH NOZZLE.
16. VERIFY UTILITIES FOR EXISTING & NIC EQUIPMENT.

NOTE: FOODSERVICE DRAWINGS INDICATE ELECTRICAL ROUGH-IN/CONNECTION POINTS ONLY FOR EQUIPMENT SPECIFIED UNDER THE KITCHEN EQUIPMENT (SECTION 114000) CONTRACT. ANY ADDITIONAL ELECTRICAL REQUIREMENTS ARE NOT INDICATED ON FOODSERVICE DRAWINGS.

ELECTRICAL NOTES (DIVISION 26)

1. FURNISH AND INSTALL CORD AND PLUG SET(S).
2. INSTALL KEC (SECTION 114000) FURNISHED CORD AND PLUG SET(S).
3. FURNISH AND INSTALL DEVICE & COVER IN KEC (SECTION 114000) FURNISHED JUNCTION BOX.
4. CONNECT TO JUNCTION BOX, DEVICE, & COVER FURNISHED BY KEC (SECTION 114000).
5. CONNECT WITH LIQUID TIGHT CONDUIT FROM JUNCTION BOX TO EQUIPMENT/DEVICE(S) FOR A DIRECT CONNECTION.
6. CONNECT WITH LIQUID TIGHT CONDUIT FROM JUNCTION BOX THROUGH THE CONTROL THEN TO EQUIPMENT/DEVICE(S) FOR A DIRECT CONNECTION.
7. CONNECT THRU DISPOSER CONTROL TO SOLENOID VALVE AND MOTOR.
8. FURNISH AND INSTALL WIRING TO KEC (SECTION 114000) FURNISHED REMOTE CONTROL SWITCHES.
9. FURNISH AND INSTALL SWITCH. CONNECT TO LIGHTS FURNISHED AND INSTALLED BY KEC (SECTION 114000).
10. CONNECT POWER SUPPLY TO KEC (SECTION 114000) FURNISHED LOAD CENTER. COUNTER SHALL BE PREWIRED AND SHIPPED IN SECTIONS. CONNECT BETWEEN SECTIONS.
11. CONNECT TO KEC (SECTION 114000) FURNISHED JUNCTION BOX ABOVE WALK-IN DOOR. LIGHT FIXTURE LOCATED ADJACENT/ABOVE DOOR IS PREWIRED TO FACTORY MOUNTED LIGHT SWITCH. MOUNT ADDITIONAL SECTION 114000 FURNISHED LIGHTS WHERE INDICATED AND CONNECT TO SWITCH. ALL CONDUIT SHALL BE EXPOSED ON TOP OF THE WALK-IN. NO EXPOSED CONDUIT WILL BE ALLOWED INSIDE THE WALK-IN.
12. FOAM & SEAL INSIDE AND OUTSIDE OF CONDUIT PENETRATIONS THRU WALK-IN.
13. CONNECT KEC (SECTION 114000) FURNISHED TEMPERATURE ALARM SYSTEM. COORDINATE WITH BUILDING SYSTEMS.
14. CONNECT TO ELECTRICAL CONTRACTOR (DIVISION 26) FURNISHED FUSED DISCONNECT AT CONDENSING UNIT.
15. INSTALL KEC (SECTION 114000) FURNISHED DEFROST TIMER. CONNECT THRU TIMER TO EVAPORATOR COIL.
16. CONNECT FROM KEC (SECTION 114000) FURNISHED CONDENSING UNIT, THRU DEFROST TIMER, TO EVAPORATOR COIL.
17. PROVIDE NEMA RECEPTACLE WITH WEATHER COVER BEHIND FREEZER EVAPORATOR COIL FOR DRAIN LINE HEATER.
18. CONNECT EXHAUST FAN THRU FAN CONTROL CONTACTS IN DISHWASHER.
19. CONNECT TABLE LIMIT SWITCH TO DRY CONTACT ON KEC (SECTION 11400) FURNISHED DISH MACHINE.
20. CONNECT DRAIN WATER TEMPERING DEVICE PER MANUFACTURER'S RECOMMENDATIONS.
21. CONNECT THRU KEC (SECTION 114000) FURNISHED LIGHT SWITCH MOUNTED IN FACE OF HOOD OR HOOD CONTROL CABINET TO LIGHT FIXTURES IN HOOD(S). INTERWIRE LIGHT FIXTURES BETWEEN HOOD SECTIONS AS REQUIRED.
22. CONNECT THRU KEC (SECTION 114000) FURNISHED FAN CONTROL SWITCH MOUNTED IN FACE OF HOOD OR HOOD CONTROL CABINET TO EXHAUST FAN(S)/MAKE-UP AIR UNIT(S). INTERWIRE THRU MOTOR STARTER(S)/VARIABLE FREQUENCY DRIVE(S) AND OVERLOAD PROTECTION DEVICE(S) AS REQUIRED. INSTALL AND/OR INTERWIRE THE KEC (SECTION 114000) FURNISHED HOOD HEAT SENSOR(S) AND SMOKE SENSORS AS REQUIRED.
23. CONNECT 120 VOLT FROM KEC (SECTION 114000) FURNISHED MICRO SWITCH IN FIRE SUPPRESSION SYSTEM CONTROL PANEL TO SHUNT TRIP BREAKER(S) FOR SHUT DOWN OF POWER TO ALL ELECTRICAL DEVICES UNDER HOOD(S) AND 18" OUTSIDE PERIMETER OF HOOD(S). CONNECT FROM MICRO SWITCH TO DIVISION 26 FURNISHED RELAY(S) OR SWITCHES FOR SHUT DOWN/CONTROL OF HOOD LIGHTS, MAKE-UP AIR FAN, AND FIRE ALARM SYSTEM.
24. CONNECT 120 VOLT FROM KEC (SECTION 114000) FURNISHED MICRO SWITCH IN FIRE SUPPRESSION SYSTEM CONTROL PANEL THRU MANUAL RESET RELAY TO ELECTRIC GAS VALVE. EC IS RESPONSIBLE FOR ANY REQUIRED INTERWIRING/CONTROL WIRES FOR THE FIRE SUPPRESSION SYSTEM AND ASSOCIATED ELECTRICAL GAS SOLENOID VALVES.
25. PROVIDE CONCEALED CONDUIT AND RECESSED OCTAGONAL JUNCTION BOX IN WALL AT 42"-48" AFF FOR REMOTE MANUAL PULL STATION(S). COORDINATE LOCATION(S) WITH FIRE SUPPRESSION SYSTEM CONTRACTOR AND AUTHORITIES HAVING JURISDICTION PRIOR TO ROUGH-IN. EC IS RESPONSIBLE FOR ANY REQUIRED INTERWIRING/CONTROL WIRES FOR THE FIRE SUPPRESSION SYSTEM AND ASSOCIATED ELECTRICAL GAS SOLENOID VALVES. VERIFY AND PROVIDE UTILITIES FOR EXISTING/NIC EQUIPMENT PRIOR TO ROUGH-IN.
26. INSTALL 3/4" EMPTY CONDUIT AND JUNCTION BOX FOR DATA CONNECTION. VERIFY EXACT REQUIREMENTS AND TERMINATION POINTS PRIOR TO ROUGH-IN.
27. EC TO PROVIDE AND INSTALL AN APPROVED GFCI RECEPTACLE WHEN THE EQUIPMENT IS PROVIDED WITH A CORD AND PLUG.

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Shack # 1345

NO.	DATE	REMARKS
		ISSUE FOR PERMIT / BID
		ISSUE FOR LL REVIEW

REVISIONS

Drawing Title: KITCHEN EQUIPMENT GENERAL NOTES. LEGENDS, SHEET INDEX

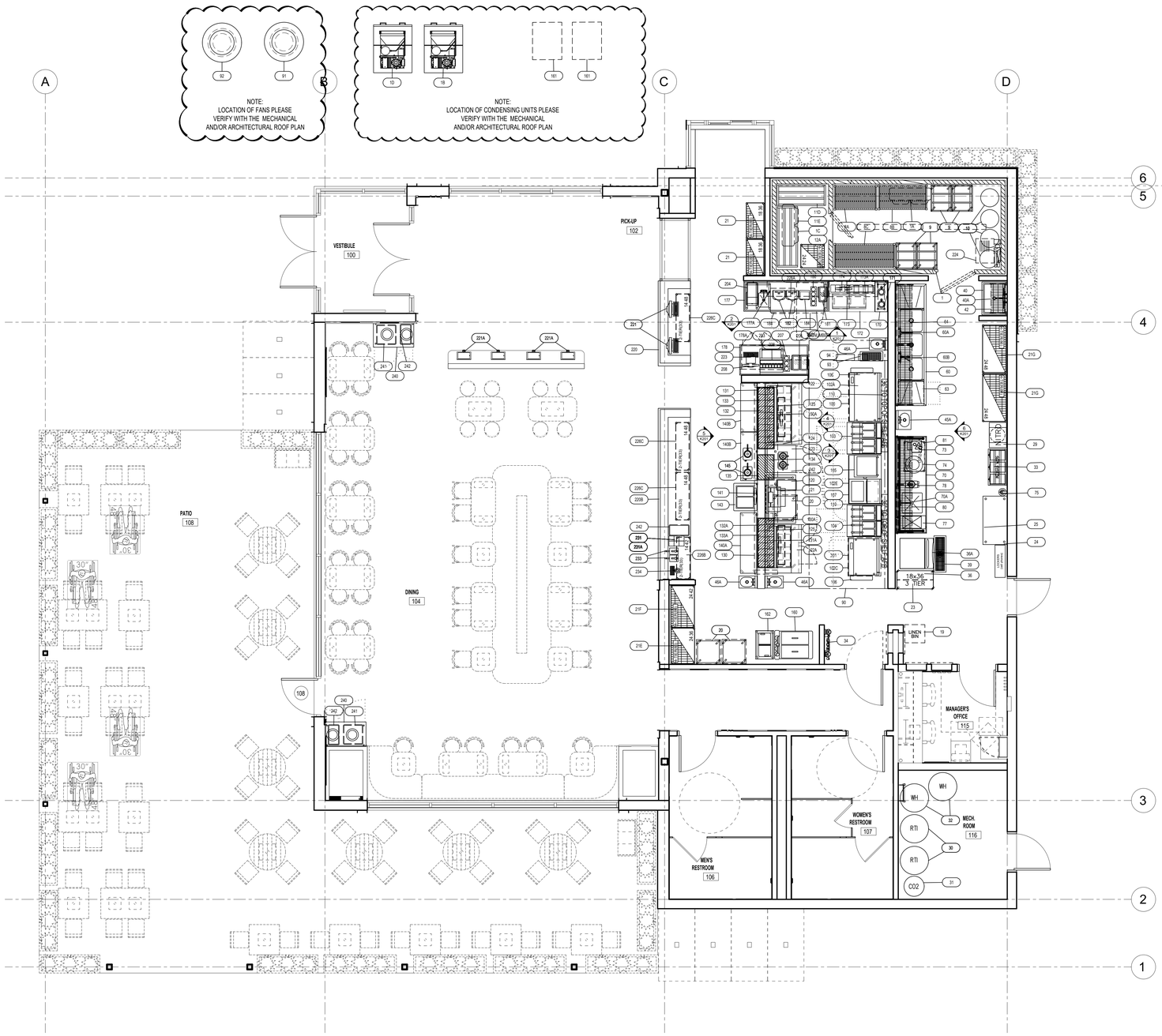
Job No.

Drawn: MSH

Scale: AS NOTED

Date

Sheet No.: K001



FOODSERVICE EQUIPMENT LAYOUT
SCALE: 1/4" - 1' - 0"

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SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
Shack # 1345

NO.	DATE	REMARKS
		ISSUE FOR PERMIT / BID
		ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
KITCHEN EQUIPMENT PLAN

Job No.	Drawn
	MSH
Scale	Date
AS NOTED	

Sheet No.
K101

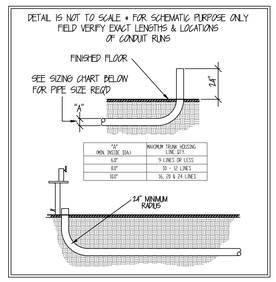
SPECIAL CONDITIONS SCHEDULE

WB-1	3/4" WALL BLOCKING FROM 24" TO 72" AFF. G.C. TO PROVIDE WALL BLOCKING.
WB-2	3/4" WALL BLOCKING FROM 30" TO 96" AFF. G.C. TO PROVIDE WALL BLOCKING.
WB-3	3/4" WALL BLOCKING FROM 24" TO 96" AFF. G.C. TO PROVIDE WALL BLOCKING.
WB-4	3/4" WALL BLOCKING FROM 48" TO FINISHED CEILING AFF. G.C. TO PROVIDE WALL BLOCKING.
WB-5	3/4" WALL BLOCKING FROM FINISHED FLOOR TO TOP OF WALL. G.C. TO PROVIDE WALL BLOCKING.
WB-6	3/4" WALL BLOCKING FROM TOP OF WINDOW TO FINISHED CEILING. G.C. TO PROVIDE WALL BLOCKING. 3/4" WALL BLOCKING FROM BOTTOM OF SOFFIT TO FINISHED CEILING. G.C. TO PROVIDE WALL BLOCKING.
SP-1	4" DEEP DEPRESSION BY G.C. TO BE SMOOTH, LEVEL. ALL WATERPROOFING, GROUTING AND FINISHED FLOOR TO BE PROVIDED BY G.C..

MECHANICAL CONNECTION SCHEDULE

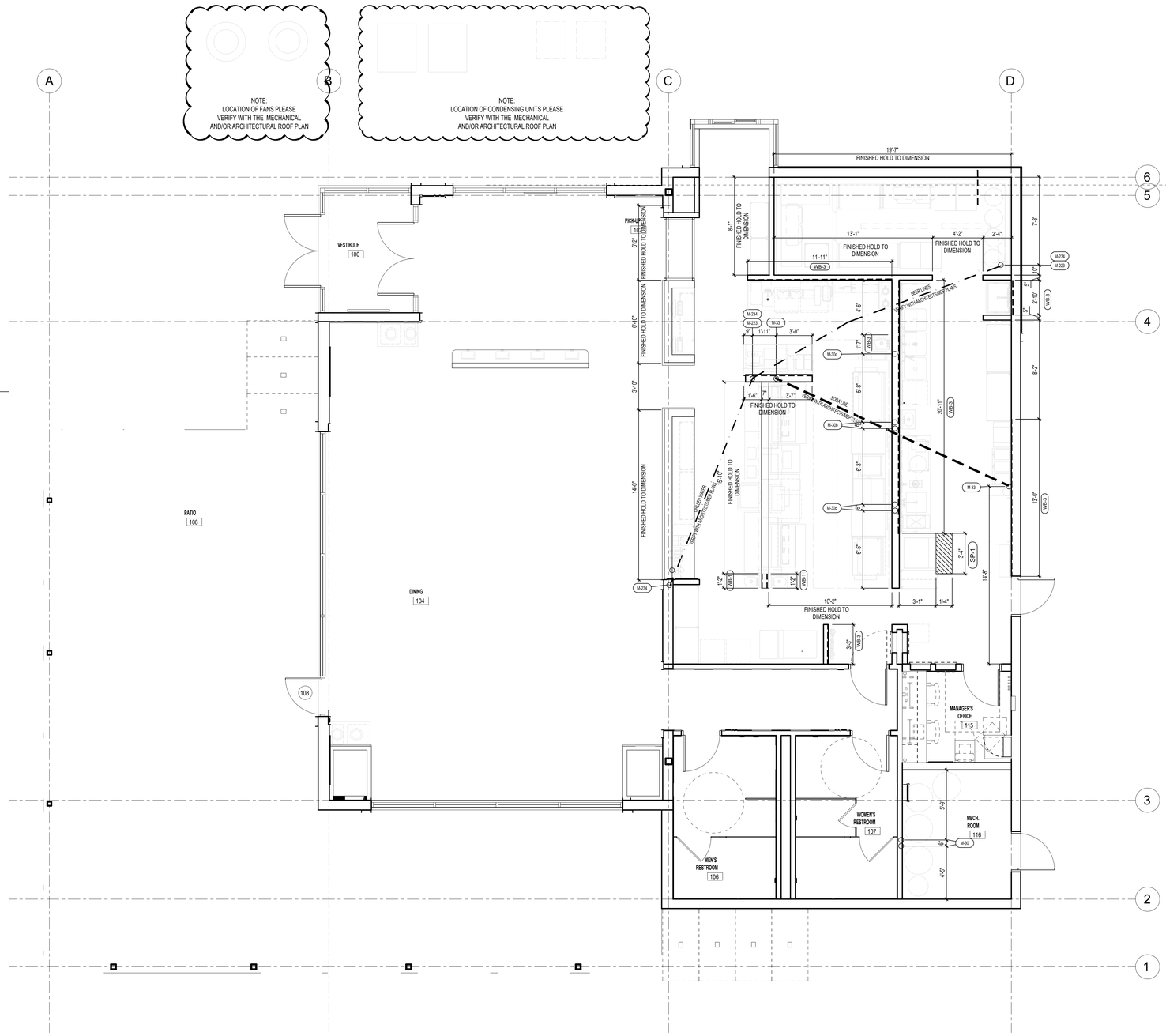
M-30	RTI OIL FILL BOX AT 36" ABOVE SIDE WALL. G.C. TO PIPE FROM BOX TO TANKS LOCATED IN KICHEN. VERIFY WITH THE ARCHITECT/MEP ENGINEER FOR ANY IN WALL CONDUIT.
M-30b	RTI OIL FILL AND RETURN PIPING STUB OUT WALL AT 24" AFF AND CONNECT TO FRYERS. G.C. TO PIPE TO TANKS VERIFY WITH THE ARCHITECT/MEP ENGINEER FOR ANY IN WALL CONDUIT.
M-30c	RTI OIL RETURN PIPING STUB OUT WALL AT 24" AFF AND CONNECT TO GREASE COLLECTOR. G.C. TO PIPE TO TANKS VERIFY WITH THE ARCHITECT/MEP ENGINEER FOR ANY IN WALL CONDUIT.
M-31	CO2 FILL BOX AT 36" ABOVE SIDE WALK. G.C. TO PIPE TO TANK LOCATED IN KITCHEN.
M-33	SODA TRUNK LINE FROM BAG N BOX. STUB UP LOCATION (TWO LOCATIONS). VERIFY WITH THE ARCHITECT/MEP ENGINEER FOR ANY IN WALL OR UNDERGROUND CONDUIT.
M-223	BEER TRUNK LINE FROM WALK IN. STUB UP LOCATION (TWO LOCATIONS). VERIFY WITH THE ARCHITECT/MEP ENGINEER FOR ANY IN WALL OR UNDERGROUND CONDUIT.
M-234	CHILLED WATER FROM BEER TRUNK LINE STUB UP LOCATION (ONE LOCATION).

CONDUIT SCHEMATIC - UNDER FLOOR



CONDUIT NOTES:

1. CONDUIT TO BE PROVIDED BY GENERAL CONTRACTOR
2. CONDUIT TYPE SHALL BE GREY ELECTRICAL PVC
3. CONDUIT RUNS UNDER GROUND MUST HAVE A SMOOTH INTERIOR WITH MINIMUM INSIDE DIMENSION OF SIX INCHES, AND HAVE ONLY ONE (1) 24" OR 30" RADIUS SWEEP BEND (45 or 90 DEGREES) AT EACH END
4. DURING CONSTRUCTION, CONDUIT TO BE FINISHED AT 24"-AFF TO BE CONSTRUCTED WITH INTERNALLY SMOOTH, LEAK TIGHT JOINTS
5. CONDUIT TO BE CAPPED AND SEALED AT BOTH ENDS DURING CONSTRUCTION. INSTALLER TO TRIM EXPOSED ENDS
6. AFTER PRODUCT LINES ARE INSTALLED, THE OPEN ENDS OF THE CONDUIT ARE TO BE FILLED AND SEALED (WATERTIGHT) APPROXIMATELY 2" TO 4" @ EACH END



FOODSERVICE SPECIAL CONDITIONS PLAN

SCALE: 1/4" - 1' - 0"

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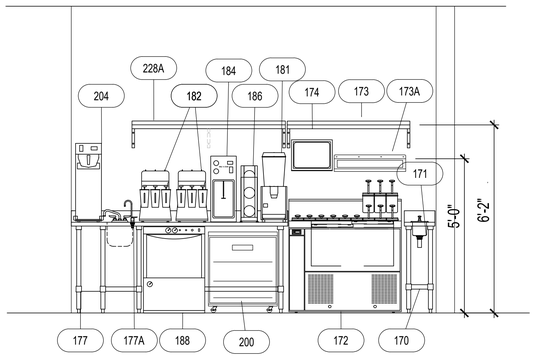
Drawing Title
KITCHEN EQUIPMENT SPECIAL CONDITIONS PLAN

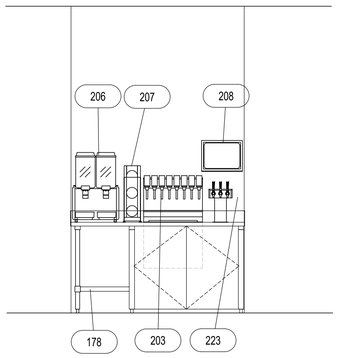
Job No.	Drawn
	MSH
Scale	Date
AS NOTED	

Sheet No.
K102



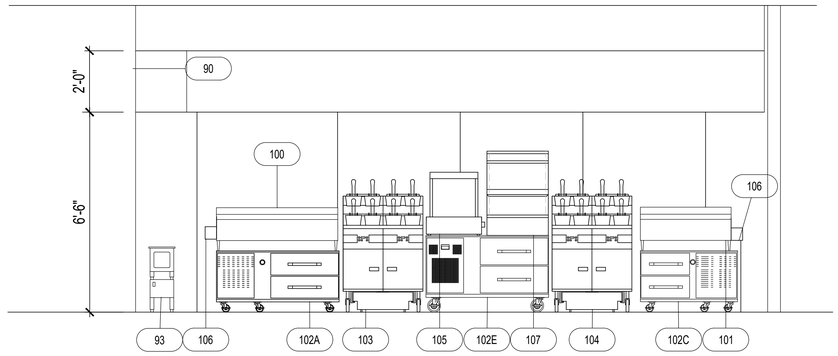
1 **ELEVATION**

SCALE - 1/2" = 1' - 0"



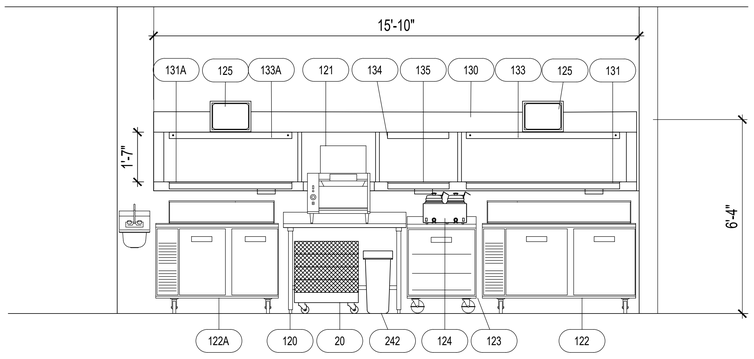
2 **ELEVATION**

SCALE - 1/2" = 1' - 0"



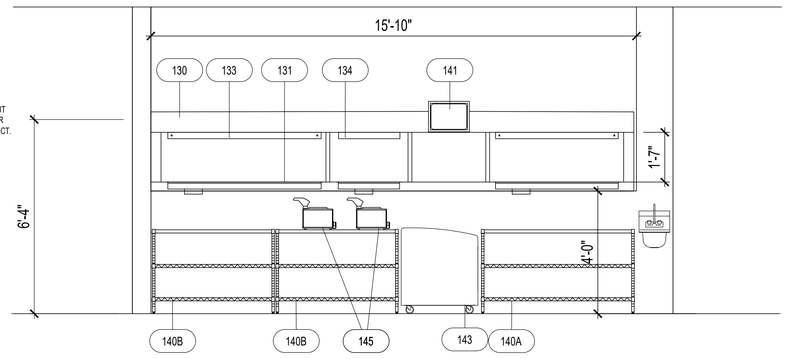
3 **ELEVATION**

SCALE - 1/2" = 1' - 0"



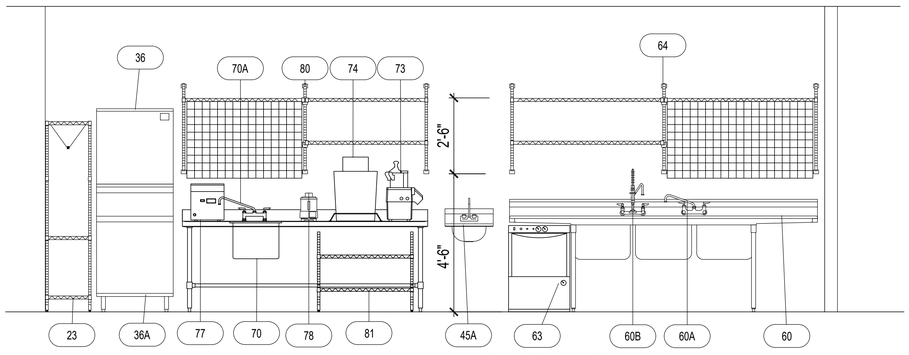
4 **ELEVATION**

SCALE - 1/2" = 1' - 0"



5 **ELEVATION**

SCALE - 1/2" = 1' - 0"



6 **ELEVATION**

SCALE - 1/2" = 1' - 0"

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Drawing Title
KITCHEN EQUIPMENT ELEVATIONS

Job No.
Drawn MSH
Scale AS NOTED
Date

Sheet No.
K201

EQUIPMENT UTILITY SCHEDULE

						ELECTRICAL						PLUMBING							
REV	ITEM NO.	QTY	ITEM DESCRIPTION	MFR	MODEL	VOLTS	PH	AMPS	KW	HP	CONN.	NEMA	CW (IN)	HW (IN)	IW	DW	GAS SIZE	MBTU	REMARKS	ITEM NO.
	1	1	WALKIN COOLER/FREEZER COMBO	BALLY FOR SHAKE SHACK	CUSTOM C/F	(2)120	1	(2) 15.0			JBH								REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	1
	1A	1	COOLER EVAPORATOR	BALLY FOR SHAKE SHACK	COOLER EVAPORATOR	115	1	15.0			JBH				3/4"				REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	1A
	1B	1	AIR-COOLED COOLER CONDENSING UNIT	BALLY FOR SHAKE SHACK	COOLER CONDENSING UNIT	208	3	20.0			JBH								AIR - COOLED, REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	1B
	1C	1	FREEZER EVAPORATOR	BALLY FOR SHAKE SHACK	FREEZER EVAPORATOR	208	1	15.0			JBH				3/4"				REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	1C
	1D	1	AIR-COOLED FREEZER CONDENSING UNIT	BALLY FOR SHAKE SHACK	FREEZER CONDENSING UNIT	208	1	20.0			JBH								AIR - COOLED, REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	1D
	2-8	1	SPARE NUMBER	CUSTOM																2-8
	8A	1	SHELVING UNIT, PLASTIC WITH POLY EXTERIOR STEEL POSTS	CAMBRO	CPU244272V4480														4-TIER SHELVING UNITS, WITH 7-1/2" H DUNNAGE SUPPORT	8A
	8B	1	SHELVING UNIT, PLASTIC WITH POLY EXTERIOR STEEL POSTS	CAMBRO	CPU244872V4480														4-TIER SHELVING UNITS, WITH 7-1/2" H DUNNAGE SUPPORT	8B
	8C	1	SHELVING UNIT, PLASTIC WITH POLY EXTERIOR STEEL POSTS	CAMBRO	CPU246072V4480														4-TIER SHELVING UNITS, WITH 7-1/2" H DUNNAGE SUPPORT	8C
	9	4	UNIVERSAL PAN RACK	EAGLE GROUP	Z8690															9
	10	4	KEG DOLLIES	NIC	BY OTHERS															10
	11D	1	DUNNAGE RACK	LOCKWOOD	DR-2048-12															11D
	11E	1	DUNNAGE RACK	LOCKWOOD	DR-2060-12															11E
	12A	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														4-TIER UNIT WITH 74" POST; SIZES PER PLAN	12A
	13-18	1	SPARE NUMBER	CUSTOM																13-18
	19	1	LINEN BIN	NIC	BY OTHERS														NOT IN CONTRACT - BY OTHERS	19
	20	3	BREAD RACK DOLLY	NIC	BY OTHERS														NOT IN CONTRACT - BY OTHERS	20
	21	2	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														4-TIER UNITS WITH 86" POST; SIZES PER PLAN	21
		8	WIRE SHELVING	EAGLE GROUP	1830VG															
	21E	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														4-TIER UNITS WITH 86" POST; SIZES PER PLAN	21E
	21F	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														4-TIER UNITS WITH 86" POST; SIZES PER PLAN	21F
	21G	2	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														4-TIER UNITS WITH 86" POST; SIZES PER PLAN	21G
	23	1	MOBIL GARMENT RACK	EAGLE FOR SHAKE SHACK	MOBIL GARMENT RACK														CONSISTS OF (3) 1836VG-X WIRE SHELVES, (4) P86-VG-CO POSTS, (1) CH36 HANGER RAIL., (4) CASTERS	23
	24	1	LOCKERS	GLOBAL IND EQUIP	WB493332BK														G.C. TO PROVIDE WALL BLOCKING.	24
	25	1	EMPLOYEE TABLE	NIC	BY OTHERS															25
	25-28	1	SPARE NUMBER	CUSTOM																25-28
	29	1	NITROGEN TANK	NIC	BY OTHERS	115	1	20.0			DR	5-20P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	29
	30	2	RTI OIL TANK	NIC	BY OTHERS	110	1	20.0			JBW								ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	30
	31	1	CO2 TANK	NIC	BY OTHERS														ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	31
	32	2	WATER HEATER	NIC	BY OTHERS														ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	32
	33	1	BAG N BOX	NIC	BY OTHERS	120	1	20.0			DR	5-20P	1/2"						ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	33
	34	1	WATER FILTRATION SYSTEM	EVERPURE	EV932806								3/4"						G.C. TO PROVIDE WALL BLOCKING. P.C. TO INTERPIPE TO ICE MAKER/COFFEE MAKER; GC TO PROVIDE WALL BLOCKING	34
	35	1	SPARE NUMBER	CUSTOM																35
	36	1	ICE CUBER	MANITOWOC	IYT1200A	208-230	1	14.2			JBW		3/8"		1/2"					36
	36A	1	ICE BIN FOR ICE MACHINES	MANITOWOC	D570										3/4"					36A
	37-38	1	SPARE NUMBER	CUSTOM																37-38
	39	1	FLOOR TROUGH	NIC	BY OTHERS											4"			ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	39
	40	1	MOP SINK	NIC	EAGLE F2820-12														TO BE PROVIDED BY THE PLUMBER.	40
	40A	1	SERVICE FAUCET	T&S BRASS	B-0658								1/2"	1/2"					G.C. TO PROVIDE WALL BLOCKING.	40A
	41	1	SPARE NUMBER	CUSTOM																41
	42	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	WALL SHELVING UNIT 30_14														2-TIER UNIT 30"X14" WITH 33" POST AND WALL BRACKETS; SIZES PER PLAN. G.C. TO PROVIDE WALL BLOCKING.	42
	43-45	1	SPARE NUMBER	CUSTOM																43-45
	45A	1	HAND SINK	EAGLE GROUP	HSA-10-F-LRS								1/2"	1/2"		1-1/2"			G.C. TO PROVIDE WALL BLOCKING.	45A
	46	1	SPARE NUMBER	CUSTOM																46
	46A	3	HAND SINK	EAGLE GROUP	HSAN-10-F-LRS								1/2"	1/2"		1-1/2"			G.C. TO PROVIDE WALL BLOCKING.	46A
	47-59	1	SPARE NUMBER	CUSTOM																47-59
	60	1	THREE (3) COMPARTMENT SINK	EAGLE GROUP	314-22-3-24										(3) 2"					60
	60A	1	WALL / SPLASH MOUNT FAUCET	T&S BRASS	B-0231-CC								1/2"	1/2"						60A
	60B	1	MINI PRE-RINSE FAUCET ASSEMBLY	T&S BRASS	MPZ-8WLN-08														WITH ADD ON FAUCET AND WALL BRACKET, G.C. TO PROVIDE WALL BLOCKING.	60B
	60C	3	DRAIN, LEVER / TWIST WASTE	FISHER	22209														NOT SHOWN ON PLAN.	60C
	60D	1	FAUCET, PARTS	T&S BRASS	B-TEE-EZK														NOT SHOWN ON PLAN.	60D
	61-62	1	SPARE NUMBER	CUSTOM																61-62
	63	1	DISHWASHER, UNDERCOUNTER	MOYER DIEBEL	201HT	208	3	29.0	9.0	1	JBW			3/4"	5/8"				WITH BUILT IN HOT WATER BOOSTER.	63
	64	1	WALL GRID SYSTEM	EAGLE FOR SHAKE SHACK	YSHAKE-GRID-0002-00														(1) 2-TIER UNIT, (1) 1-TIER UNIT WITH WALL MAT, 33" POST AND WALL BRACKETS; SIZES PER PLAN. G.C. TO PROVIDE WALL BLOCKING.	64
	65-69	1	SPARE NUMBER	CUSTOM																65-69
	70	1	PREP TABLE	EAGLE GROUP	T3096STEM-BS										2"				WITH (1) E24 18" X 20" SINK BOWL, (1) FISHER 22209 LEVER WASTE, FAUCET AND SINK COVER.	70
	70A	1	DECK MOUNT FAUCET	T&S BRASS	B-0227								1/2"	1/2"						70A
	70B	1	FAUCET, PARTS	T&S BRASS	B-TEE-EZK														NOT SHOWN ON THE PLAN.	70B
	70C	1	DRAIN, LEVER / TWIST WASTE	FISHER	22209														NOT SHOWN ON PLAN.	70C
	71-72	1	SPARE NUMBER	CUSTOM																71-72
	73	1	FOOD PROCESSOR	ROBOT COUPE	CL50 GOURMET	120	1	13.5		1-1/2	DR	5-15P								73
	74	1	VEGETABLE DRYER	DYNAMIC USA	SD92SC														WITH SSB-1 STABILIZING BASE.	74
	75	1	MIXER, HAND	ROBOT COUPE	MP 350TURBOCOMBI	120	1	5.5	0.66	1	DR	5-15P							WITH STORAGE BRACKET. G.C. TO PROVIDE WALL BLOCKING.	75
	76	1	SPARE NUMBER	CUSTOM																76
	77	1	RETHERMALIZER, WATER TANK, ELECTRIC	PITCO FOR SHAKE SHACK	TH-CRTE	208	1	29.8	6.0		SP	L6-30P			3/8"					77
	78	1	FOOD PROCESSOR	WARING	WFP11SW	120	1	6.0		3/4	DR	5-15P								78
	79	1	SPARE NUMBER	CUSTOM																79
	80	1	WALL GRID SYSTEM	EAGLE FOR SHAKE SHACK	YSHAKE-GRID-0001-00														(1) 2-TIER UNIT, (1) 1-TIER UNIT WITH WALL MAT, 33" POST AND WALL BRACKETS; SIZES PER PLAN. G.C. TO PROVIDE WALL BLOCKING.	80
	81	1	WIRE SHELVES EPOXY	EAGLE FOR SHAKE SHACK	SHELVING UNIT														2-TIER UNIT WITH 33" POST; SIZES PER PLAN	81
	82-89	1	SPARE NUMBER	CUSTOM																82-89
	90	1	EXHAUST HOOD	NIC	BY OTHERS	X	X	X			JBH								* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER. REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	90
	91	1	EXHAUST FAN	NIC	BY OTHERS	X	X	X			X								* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER. REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	91
	92	1	SUPPLY FAN	NIC	BY OTHERS	X	X	X			X								* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER. REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	92
	93	1	GREASE COLLECTOR	NIC	BY OTHERS	120	1	20.0			DR	5-20P							* ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER.	93
	94	1	ANSUL	NIC	BY OTHERS	120	1	15.0			JBH								E.C. TO INTERWIRE TO BUILDING ALARM SYSTEM AND FOR EQUIPMENT SHUT-DOWN. ALL TRADES MUST VERIFY UTILITY REQUIREMENTS WITH THE OWNER.	94
	95-99	1	SPARE NUMBER	CUSTOM																95-99
	100	1	GAS COUNTERTOP GRIDDLE	LANG	9K-248SC-NATSH	120	1	2.0			DR	5-15P					3/4"	108.0		100
	100A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	1675KIT2S48														NOT SHOWN ON PLAN.	100A
	101	1	GAS COUNTERTOP GRIDDLE	LANG	9K-236SC-NATSH	120	1	2.0			DR	5-15P					3/4"	81.0		101
	101A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	1675KIT2S48														NOT SHOWN ON PLAN.	101A
	102A	1	EQUIPMENT STAND, REFRIGERATED BASE	RANDELL FOR SHAKE SHACK	20048-513-SS-L	115	1	8.7		1/4	DR	5-15P							ON CASTERS, LEFT SIDE COMPRESSOR.	102A
	102C	1	EQUIPMENT STAND, REFRIGERATED BASE	RANDELL FOR SHAKE SHACK	20038-513-SS-R	115	1	8.7		1/4	DR	5-15P							ON CASTERS, RIGHT SIDE COMPRESSOR.	102C
	102E	1	EQUIPMENT STAND, REFRIGERATED BASE	RANDELL FOR SHAKE SHACK	20048-513-30HSS-L	115	1	8.7		1/4	DR	5-15P							ON CASTERS, LEFT SIDE COMPRESSOR.	102E
	103	1	FRYER BATTERY, GAS	PITCO	SSH55-2FD	115	1	1.7			DR	5-15P					1"	160.0	WITH FILTER DRAWER, DIGITAL CONTROLS, CASTERS, DOUBLE BASKET HANGERS.	103
		1		PITCO FOR SHAKE SHACK		115	1	7.0		1/3	DR	5-15P								
	103A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	16100KIT2S48														NOT SHOWN ON PLAN.	103A

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KITCHEN EQUIPMENT SCHEDULE

Job No.

Drawn
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Scale
AS NOTED

Date

Sheet No.
K601

EQUIPMENT UTILITY SCHEDULE

					ELECTRICAL							PLUMBING							
REV	ITEM NO.	QTY	ITEM DESCRIPTION	MFR	MODEL	VOLTS	PH	AMPS	KW	HP	CONN.	NEMA	CW (IN)	HW (IN)	IW	DW	GAS SIZE	MBTU	REMARKS	ITEM NO.
	104	1	FRYER BATTERY, GAS	PITCO	SSH55-2FD	115	1	1.7			DR	5-15P					1"	160.0	WITH FILTER DRAWER, DIGITAL CONTROLS, CASTERS, DOUBLE BASKET HANGERS.	104
		1		PITCO FOR SHAKE SHACK		115	1	7.0		1/3	DR	5-15P								
	104A	1	SAFETY SYSTEM MOVEABLE GAS CONNECTOR	DORMONT	16100KIT2S48														NOT SHOWN ON PLAN.	104A
	105	1	FRENCH FRY WARMER	HATCO	GRFHS-PT16	120	1	9.1	1.09		DR	5-15P								105
	106	2	SPEED RAIL / RACK	EAGLE GROUP	500778															106
	107	1	BREADING STATION	EAGLE FOR SHAKE SHACK	YCOUNTER-0520-00															107
	108-109	1	SPARE NUMBER	CUSTOM																108-109
	110	2	STANDOFF SHELF	EAGLE FOR SHAKE SHACK	YWS672-0001-00														ALL S/S 6" X 72".	110
	111	1	TIMER, ELECTRONIC	COOPER-ATKINS	TFS4-01														NOT SHOWN ON PLAN.	111
	112-119	1	SPARE NUMBER	CUSTOM																112-119
	120	1	BUN TOASTER TABLE	EAGLE GROUP	T3048STB-BS															120
	121	1	TOASTER, CONTACT GRILL, CONVEYOR TYPE	APW WYOTT	M-95-3	208	1	13.4	2.78		SP	6-20P								121
	122	1	MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR	RANDELL	9040K-513	115	1	9.0		1/3	DR	5-15P								122
	122A	1	MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR	RANDELL	9030K-513	115	1	9.0		1/3	DR	5-15P								122A
	123	1	WORKTOP FREEZER	RANDELL	9402F-290	115	1	2.2		1/4	DR	5-15P								123
	124	1	FOOD TOPPING WARMER, COUNTERTOP	SERVER PRODUCTS	81220	120	1	8.3	1.0		DR	5-15P							WITH (2)94009 S/S JARS.	124
	125	2	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	125
	126	2	BRACKET	CDW	1711461/SHACK														NOT SHOWN ON PLAN.	126
	127-129	1	SPARE NUMBER	CUSTOM																127-129
	130	1	OVERSHELF	EAGLE FOR SHAKE SHACK	OVERSHELF	120/208	1	20.0			JBW								ALL S/S SIZE AS PER PLANS	130
	130A	2	PAN HOLDER	EAGLE FOR SHAKE SHACK	YJ-3618-00															130A
	131	1	HEATED SHELF FOOD WARMER	HATCO	GRSB-60-F	120	1	7.9	0.95		JBH									131
	131A	1	HEATED SHELF FOOD WARMER	HATCO	GRSB-48-F	120	1	6.4	0.77		JBH									131A
	132	1	S/S SANDWICH DIVIDER	EAGLE FOR SHAKE SHACK	YJ-3488-00														S/S RODS SIZED TO FIT ON HEATED SHELF.	132
	132A	1	S/S SANDWICH DIVIDER	EAGLE FOR SHAKE SHACK	YJ-3684-00														S/S RODS SIZED TO FIT ON HEATED SHELF.	132A
	133	1	HEAT LAMP	HATCO	GRAHL-60D3	120/208	1	16.0	3.1		JBH								WITH REMOTE BOX ENCLOSURE.	133
	133A	1	HEAT LAMP	HATCO	GRAHL-48D3	120/208	1	12.6	2.44		JBH								WITH REMOTE BOX ENCLOSURE.	133A
	134	1	HEAT LAMP	HATCO	UGAHL-24D3	120/208	1	8.2	1.62		JBH								UNIT WITH CLED-2700 LED LIGHT BULBS.	134
	135	1	HEATED SHELF FOOD WARMER	HATCO	GRSB-24-F	120	1	3.5	0.42		JBH									135
	136-140	1	SPARE NUMBER	CUSTOM																136-140
	140A	1	WORK CENTER	EAGLE FOR SHAKE SHACK	YT1660-0002-00														CONSISTING OF: 16" X 60", S/S TOP, (2) WIRE SHELVES BELOW AND CASTERS.	140A
	140B	2	WORK CENTER	EAGLE FOR SHAKE SHACK	YT1648-0002-00														CONSISTING OF: 16" X 48", S/S TOP, (2) WIRE SHELVES BELOW AND CASTERS.	140B
	141	1	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	141
	142	1	BRACKET	NIC															NOT SHOWN ON PLAN.	142
	143	1	CURVED LID DISPLAY FREEZER	EXCELLENCE IND	MB-2HCD	115	1	1		1/3	DR	5-15P								143
	144	1	SPARE NUMBER	CUSTOM																144
	145	2	FOOD TOPPING WARMER, COUNTERTOP	SERVER PRODUCTS	81195	120	1	4.3	0.517		DR	5-15P							WITH 94009 S/S JARS.	145
	146-159	1	SPARE NUMBER	CUSTOM																146-159
	160	1	FROZEN CUSTARD MACHINE	STOELTING	M202-209B00SIR	208-230	3	15.0		3	SP		1/2"		1-1/2"				REFRIGERATION INSTALLER TO PROVIDE QUICK DISCONNECT LINES.	160
	161	2	REMOTE AIR-COOLED CONDENSER UNIT	STOELTING	285091	208-230	3	15.0			JBH								AIR-COOLED REFER TO MANUFACTURER'S SHOP DRAWINGS FOR DETAILS	161
	162	1	FROZEN CUSTARD DIPPING CABINET	C NELSON	BS2SE-RB	115	1	15.0			DR	5-15P			1"					162
	163-169	1	SPARE NUMBER	CUSTOM																163-169
	170	1	SHAKE SLEEVE TABLE	EAGLE GROUP	YUT3012-0009-00														ALL WELDED CONSTRUCTION AND TOP CUTOUT FOR ITEM 171.	170
	171	2	DIPPER WELL	T&S BRASS	B-2282-01								1/2"		1-1/2"				WITH FAUCET.	171
	172	1	DIPPING CABINET	RANDELL FOR SHAKE SHACK	69345A-SS44	115	1	6.5		1/3	DR	5-15P								172
	173	1	SHELVING, WALL-MOUNTED	EAGLE FOR SHAKE SHACK	WS1548-16/4														G.C. TO PROVIDE WALL BLOCKING.	173
	173A	1	CONDIMENT SHELF	EAGLE FOR SHAKE SHACK	YRAIL-0026-00														G.C. TO PROVIDE WALL BLOCKING.	173A
	174	1	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	174
	175	1	BRACKET	CDW	1711461/SHACK														NOT SHOWN ON PLAN, G.C. TO PROVIDE WALL BLOCKING.	175
	176	1	BRACKET, POWER CONDITION	EAGLE GROUP	YJ-2990-00														NOT SHOWN ON PLAN, BRACKETS FOR ITEM# 174, G.C. TO PROVIDE WALL BLOCKING, NOT SHOWN ON PLAN.	176
	177	1	SHAKE TABLE W/ SINK	EAGLE FOR SHAKE SHACK	CUSTOM								1/2"	1/2"	2"				ALL S/S CONSTRUCTION 13'-0" X 30" DEEP W/ 10" X 14" X 9.5" DEEP INTEGRAL SINK W/ FAUCET W/ BASKET DRAIN, MARINE EDGES,BACK & LEFT SIDE SPLASH.	177
	177A	1	FAUCET	ELKAY FOODSERVICE	LK-1110								1/2"						P.C. TO INTERPIPE THIS CONNECTION FROM WATER FILTER, MOUNTED TO ITEM#177.	177A
	178A	1	S/S UNDERCOUNTER WINE CABINET	EAGLE FOR SHAKE SHACK	FABRICATE														ALL S/S CONSTRUCTION 24" X 48" UNDERCOUNTER CABINET; CABINET IS PART OF TABLE #177	178A
	178	1	WORK TABLE, STAINLESS STEEL TOP	EAGLE GROUP	T3072STEM-BS															178
	179-180	1	SPARE NUMBER	CUSTOM																179-180
	181	1	BEVERAGE DISPENSER, ELECTRIC (COLD)	GRINDMASTER-CECILWARE	C-1S-16	120	1	4.0	0.45		DR	5-15P							WITH CUP ACTIVATED HANDLE OPTION AND 11161M MILK IMPELLER.	181
	182	3	MIXER, DRINK / BAR	HAMILTON BEACH	HMD400	120	1		0.9	(3) 1/3	DR	5-15P							ONE (1) BACKUP MIXER NOT SHOWN ON PLAN.	182
	183	1	SPARE NUMBER	CUSTOM																183
	184	1	MIXER, DRINK / BAR	HAMILTON BEACH	HMD900	120	1	5.2		3/4	DR	5-15P								184
	185	1	SPARE NUMBER	CUSTOM																185
	186	1	CUP & LID ORGANIZER	SAN JAMAR	C8503WF															186
	187	1	SPARE NUMBER	CUSTOM																187
	188	1	DISHWASHER, UNDERCOUNTER	MOYER DIEBEL	201HT	208	3	29.0	9.0	1	JBW			1/2"	5/8"				WITH BUILT IN HOT WATER BOOSTER.	188
	189-199	1	SPARE NUMBER	CUSTOM																189-199
	200	1	UNDERCOUNTER REFRIGERATOR	RANDELL	9404-290	115	1	2.4		1/4	DR	5-15P							WITH 3" CASTERS.	200
	201-202	1	SPARE NUMBER	CUSTOM																201-202
	203	1	ICE CHEST & SODA TOWER	NIC	BY OTHERS	120	1	15.0			SR	5-20P			3/4"				ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	203
	204	1	TEA BREWER	NIC	BY OTHERS	120	1	14.4	1.7		SR	5-20P	1/4"						ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	204
	205	1	SPARE NUMBER	CUSTOM																205
	206	1	BEVERAGE DISPENSER, ELECTRIC (COLD)	GRINDMASTER-CECILWARE	D25-3	120	1	6.0	0.66	1/5	DR	5-15P							WITH 3709 LOW FOAM IMPELLER AND 2266 CUP ACTIVATED HANDLE	206
	207	1	CUP & LID ORGANIZER	SAN JAMAR	C8503WF															207
	208	1	KDS SCREEN	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	208
	209	1	BRACKET	CDW	1711461/SHACK														NOT SHOWN ON PLAN, G.C. TO PROVIDE WALL BLOCKING.	209
	210	1	BRACKET, POWER CONDITION	EAGLE GROUP	YJ-2990-00														NOT SHOWN ON PLAN, BRACKETS FOR ITEM# 208, G.C. TO PROVIDE WALL BLOCKING, NOT SHOWN ON PLAN.	210
	211-219	1	SPARE NUMBER	CUSTOM																211-219
	220	1	FRONT COUNTER	EAGLE FOR SHAKE SHACK	FABRICATE														S/S STEEL TOP	220
	220B	1	PICK UP COUNTER	EAGLE FOR SHAKE SHACK	FABRICATE														S/S STEEL TOP	220B
	221	2	P.O.S. TERMINALS	NIC	BY OTHERS	120	1	15.0			DR	5-20P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	221
	221A	4	KIOSK TERMINAL	NIC	BY OTHERS	120	1	15.0			DR	5-15P							ALL TRADES TO VERIFY UTILITY REQUIREMENTS.	221A
	222	1	BRACKET	CDW	851839														NOT SHOWN ON PLAN.	222
	223	1	3-FAUCET T-TOWER	CHILL-RITE	THT-3-S/S										3/4"				THREE FAUCET WITH DRIP PAN.	223
	224	1	DRAFT BEER SYSTEM POWER PACK	CHILL-RITE	MLN-33	120	1	12.0		1/3	SR	5-20P	1/2"							224
	225-226	1	SPARE NUMBER	CUSTOM																225-226
	226B	1	WIRE SHELVING CHROME	EAGLE FOR SHAKE SHACK	SHELVING UNIT														2-TIER UNITS WITH 33" POST; SIZES PER PLAN	226B
	226C	3	WIRE SHELVING CHROME	EAGLE FOR SHAKE SHACK	SHELVING UNIT														2-TIER UNITS WITH 33" POST; SIZES PER PLAN	226C
	227	1	SPARE NUMBER	CUSTOM																227
	228	1	SHELVING, WALL-MOUNTED	EAGLE FOR SHAKE SHACK	WS1548-16/4														G.C. TO PROVIDE WALL BLOCKING.	228
	228A	1	SHELVING, WALL-MOUNTED	EAGLE FOR SHAKE SHACK	WS1560-16/4														G.C. TO PROVIDE WALL BLOCKING.	228A
	229-230	1	SPARE NUMBER	CUSTOM																229-230
	231	16	5"X5"X6" CUSTOM PAN	EAGLE FOR SHAKE SHACK	YSHAKE-BIN-0002-00															231
	231A	16	5"X5"X3" CUSTOM PAN	GET	SSPAN-03															231A
	232	2	TEA DISPENSER	BUNN	39600.0001														PART OF ITEM 204. NOT SHOWN ON THE PLAN.	232
	233	2	CONDIMENT DISPENSER	SERVER PRODUCTS	07125															233
	234	1	WATER DISPENSING ARM	CHILL-RITE	COLUM-1										3/4"					234
	235	2	NAPKIN DISPENSER	NIC															NOT SHOWN ON PLAN.	235
	236-240	1	SPARE NUMBER	CUSTOM																236-240
	240	2	TRASH UNIT	EAGLE-ACS	YSHAKE-TRASH-0005-00															240
	241	2	WASTE RECEPTACLE	NIC	BY OTHERS															241
	242	3	WASTE RECEPTACLE	NIC	BY OTHERS															242
	243-249	1	SPARE NUMBER	CUSTOM																243-249
	250	1	WALL PANELS	EAGLE GROUP	WALL PANELS														NOT SHOWN ON PLAN, REFER TO ARCHITECTUAL PLAN FOR S/S LINEAR AMOUNT NEEDED, NOT SHOWN ON PLAN.	250
	251	1	CORNER GUARDS	EAGLE GROUP	CORNER GUARDS														NOT SHOWN ON PLAN, REFER TO ARCHITECTUAL PLAN FOR S/S LINEAR AMOUNT NEEDED, NOT SHOWN ON PLAN.	251
	252	1	WALL CAP	EAGLE GROUP	WALL CAP														NOT SHOWN ON PLAN, REFER TO ARCHITECTUAL PLAN FOR S/S LINEAR AMOUNT NEEDED, NOT SHOWN ON PLAN.	252

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NO.	DATE	REMARKS
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		ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
KITCHEN EQUIPMENT SCHEDULE

Job No.

Drawn
MSH

Scale
AS NOTED

Date

Sheet No.
K602

ELECTRICAL SCHEDULE

ENG. REV	ITEM NO.	QTY	ITEM DESCRIPTION	VOLTS	PH	AMPS	HP	KW	CONN.	NEMA	CONN. HGT	ELEC REMARKS	ITEM NO.
	1	1	WALKIN COOLER/FREEZER COMBO	(2)120	1	(2) 15.0			JBH		D.F.A.	E.C. TO MOUNT AND INTERWIRE FROM SWITCH TO FLOURSCENT LIGHT FIXTURES.	1
	1A	1	COOLER EVAPORATOR	115	1	15.0			JBH		D.F.A.	INFORMATION SHOWN IS FOR COORDINATION AND IS TO BE VERIFIED WITH THE SHOP DRAWINGS.	1A
	1B	1	AIR-COOLED COOLER CONDENSING UNIT	208	3	20.0			JBH		VRFY	INFORMATION SHOWN IS FOR COORDINATION AND IS TO BE VERIFIED WITH THE SHOP DRAWINGS.	1B
	1C	1	FREEZER EVAPORATOR	208	1	15.0			JBH		D.F.A.	INFORMATION SHOWN IS FOR COORDINATION AND IS TO BE VERIFIED WITH THE SHOP DRAWINGS.	1C
	1D	1	AIR-COOLED FREEZER CONDENSING UNIT	208	1	20.0			JBH		VRFY	INFORMATION SHOWN IS FOR COORDINATION AND IS TO BE VERIFIED WITH THE SHOP DRAWINGS.	1D
	29	1	NITROGEN TANK	115	1	20.0			DR	5-20P	84"	OUTLET TO BE 84" AFF TO TOP OF OUTLET.	29
	30	2	RTI OIL TANK	110	1	20.0			JBW		60"	OUTLET TO BE 60" AFF TO TOP OF OUTLET.	30
	33	1	BAG N BOX	120	1	20.0			DR	5-20P	60"	E.C. TO VERIFY ALL UTILITY REQUIREMENTS WITH THE SODA VENDOR PRIOR TO ROUGHING IN. OUTLET TO BE 60" AFF TO TOP OF OUTLET.	33
	36	1	ICE CUBER	208-230	1	14.2			JBW		84"	TO TOP OF JUNCITON BOX.	36
	63	1	DISHWASHER, UNDERCOUNTER	208	3	29.0	1	9.0	JBW		16"	E.C. SHALL VERIFY DISHMACHINE PHASE WITH G.C. PRIOR TO ROUGH-IN, AS REQUIRED; 3 PHASE REQUIRES 4 WIRE AND GROUND CONNECTION. OUTLET TO BE 16" AFF TO TOP OF OUTLET.	63
	73	1	FOOD PROCESSOR	120	1	13.5	1-1/2		DR	5-15P	48"	OUTLET TO BE 48" AFF TO TOP OF OUTLET.	73
	75	1	MIXER, HAND	120	1	5.5	1	0.66	DR	5-15P	48"	OUTLET TO BE 48" AFF TO TOP OF OUTLET.	75
	77	1	RETHERMALIZER, WATER TANK, ELECTRIC	208	1	29.8		6.0	SP	L6-30P	48"	OUTLET TO BE 48" AFF TO TOP OF OUTLET.	77
	78	1	FOOD PROCESSOR	120	1	6.0	3/4		DR	5-15P	48"	OUTLET TO BE 48" AFF TO TOP OF OUTLET.	78
	90	1	EXHAUST HOOD	X	X	X			JBH		D.F.A.	STUB FROM CEILING, TO BE VERIFIED WITH OWNER PRIOR TO ROUGH-IN.	90
	91	1	EXHAUST FAN	X	X	X			X		D.F.A.	STUB FROM ROOF, TO BE VERIFIED WITH OWNER PRIOR TO ROUGH-IN.	91
	92	1	SUPPLY FAN	X	X	X			X		D.F.A.	STUB FROM ROOF, TO BE VERIFIED WITH OWNER PRIOR TO ROUGH-IN.	92
	93	1	GREASE COLLECTOR	120	1	20.0			DR	5-20P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	93
	94	1	ANSUL	120	1	15.0			JBH		D.F.A.	STUB FROM CEILING, TO BE VERIFIED WITH OWNER PRIOR TO ROUGH-IN, E.C. TO INTERWIRE TO BUILDING ALARM SYSTEM AND FOR EQUIPMENT SHUT DOWN.	94
	100	1	GAS COUNTERTOP GRIDDLE	120	1	2.0			DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	100
	101	1	GAS COUNTERTOP GRIDDLE	120	1	2.0			DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	101
	102A	1	EQUIPMENT STAND, REFRIGERATED BASE	115	1	8.7	1/4		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	102A
	102C	1	EQUIPMENT STAND, REFRIGERATED BASE	115	1	8.7	1/4		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	102C
	102E	1	EQUIPMENT STAND, REFRIGERATED BASE	115	1	8.7	1/4		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	102E
	103	1	FRYER BATTERY, GAS	115	1	1.7			DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	103
		1		115	1	7.0	1/3		DR	5-15P	16"	FILTER VOLTAGE OUTLET TO BE 16" AFF TO TOP OF OUTLET.	
	104	1	FRYER BATTERY, GAS	115	1	1.7			DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	104
		1		115	1	7.0	1/3		DR	5-15P	16"	FILTER VOLTAGE OUTLET TO BE 16" AFF TO TOP OF OUTLET.	
	105	1	FRENCH FRY WARMER	120	1	9.1		1.09	DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	105
	121	1	TOASTER, CONTACT GRILL, CONVEYOR TYPE	208	1	13.4		2.78	SP	6-20P	42"	ELECTRICAL OUTLET AT 42" AFF TO BOTTOM OF OUTLET, E.C. TO MOUNT OUTLET HORIZONTAL.	121
	122	1	MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR	115	1	9.0	1/3		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	122
	122A	1	MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR	115	1	9.0	1/3		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	122A
	123	1	WORKTOP FREEZER	115	1	2.2	1/4		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	123
	124	1	FOOD TOPPING WARMER, COUNTERTOP	120	1	8.3		1.0	DR	5-15P	42"	ELECTRICAL OUTLET AT 42" AFF TO THE BOTTOM OF OUTLET, E.C. TO MOUNT OUTLET HORIZONTAL.	124
	125	2	KDS SCREEN	120	1	15.0			DR	5-15P	VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE.	125
	130	1	OVERSHELF	120/208	1	20.0			JBW		76"	TO STUB OUT OF WALL WITH CIRCUITS FOR ITEM#S 125, 131, 133, 134, 135, 141, (6) 120V/1PH/20AMP CIRCUITS AND (6) DATA OUTLETS	130
	131	1	HEATED SHELF FOOD WARMER	120	1	7.9		0.95	JBH		VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE	131
	131A	1	HEATED SHELF FOOD WARMER	120	1	6.4		0.77	JBH		VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE	131A
	133	1	HEAT LAMP	120/208	1	16.0		3.1	JBH		VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE.	133
	133A	1	HEAT LAMP	120/208	1	12.6		2.44	JBH		VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE.	133A
	134	1	HEAT LAMP	120/208	1	8.2		1.62	JBH		VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE.	134
	135	1	HEATED SHELF FOOD WARMER	120	1	3.5		0.42	JBH		VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE.	135
	141	1	KDS SCREEN	120	1	15.0			DR	5-15P	VRFY	STUB OUT OF WALL WITH ITEM# 130, WIRE IN TOP CHASE.	141
	143	1	CURVED LID DISPLAY FREEZER	115	1	1	1/3		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	143
	145	2	FOOD TOPPING WARMER, COUNTERTOP	120	1	4.3		0.517	DR	5-15P	42"	ELECTRICAL OUTLET AT 42" AFF TO BOTTOM OF OUTLET, E.C. TO MOUNTED OUTLET HORIZONTAL.	145
	160	1	FROZEN CUSTARD MACHINE	208-230	3	15.0	3		SP		16"	(2) CIRCUITS WITH OVER CURRENT PROTECTION DEVICE, OUTLET TO BE 16" AFF TO TOP OF OUTLET, E.C. TO PROVIDE CORD AND PLUG PER LOCAL CODES, ALL TO BE VERIFIED WITH MANUFACTURES SHOP DRAWINGS	160
	161	2	REMOTE AIR-COOLED CONDENSER UNIT	208-230	3	15.0			JBH		6"		161
	162	1	FROZEN CUSTARD DIPPING CABINET	115	1	15.0			DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	162
	172	1	DIPPING CABINET	115	1	6.5	1/3		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	172
	174	1	KDS SCREEN	120	1	15.0			DR	5-15P	60"	OUTLET TO BE 60" AFF TO TOP OF OUTLET.	174
	181	1	BEVERAGE DISPENSER, ELECTRIC (COLD)	120	1	4.0		0.45	DR	5-15P	42"	ELECTRICAL OUTLET 42" AFF TO BOTTOM OF OUTLET, E.C. TO MOUNT OUTLET HORIZONTAL.	181
	182	3	MIXER, DRINK / BAR	120	1		(3) 1/3	0.9	DR	5-15P	42"	ELECTRICAL OUTLET 42" AFF TO BOTTOM OF OUTLET, E.C. TO MOUNT OUTLET HORIZONTAL.	182
	184	1	MIXER, DRINK / BAR	120	1	5.2	3/4		DR	5-15P	42"	ELECTRICAL OUTLET 42" AFF TO BOTTOM OF OUTLET, E.C. TO MOUNT OUTLET HORIZONTAL.	184
	188	1	DISHWASHER, UNDERCOUNTER	208	3	29.0	1	9.0	JBW		16"	E.C. SHALL VERIFY DISHMACHINE PHASE WITH G.C. PRIOR TO ROUGH-IN, AS REQUIRED; 3 PHASE REQUIRES 4 WIRE AND GROUND CONNECTION. OUTLET TO BE 16" AFF TO TOP OF OUTLET.	188
	200	1	UNDERCOUNTER REFRIGERATOR	115	1	2.4	1/4		DR	5-15P	16"	OUTLET TO BE 16" AFF TO TOP OF OUTLET.	200
	203	1	ICE CHEST & SODA TOWER	120	1	15.0			SR	5-20P	48"	E.C. TO VERIFY ALL UTITILITY REQUIRMENTS WITH THE SODA VENDOR.	203
	204	1	TEA BREWER	120	1	14.4		1.7	SR	5-20P	42"	ELECTRICAL OUTLET 42" AFF TO BOTTOM OF OUTLET, E.C. TO MOUNTED OUTLET HORIZONTAL.	204
	206	1	BEVERAGE DISPENSER, ELECTRIC (COLD)	120	1	6.0	1/5	0.66	DR	5-15P	42"	ELECTRICAL OUTLET 42" AFF TO BOTTOM OF OUTLET, E.C. TO MOUNTED OUTLET HORIZONTAL.	206
	208	1	KDS SCREEN	120	1	15.0			DR	5-15P	60"	OUTLET TO BE 60" AFF TO TOP OF OUTLET.	208
	221	2	P.O.S. TERMINALS	120	1	15.0			DR	5-20P	X	X - E.C. TO VERIFY EXACT LOCATION WITH EELCETRICAL, ARCHITECTUAL AND SHAKE SHACK PM PRIOR TO ROUGHING IN.	221
	221A	4	KIOSK TERMINAL	120	1	15.0			DR	5-15P	18"	E.C. TO VERIFY EXACT LOCATION WITH WITH CASH DRAWERS LOCATION WITH OWNER PRIOR TO ROUGHING IN.	221A
	224	1	DRAFT BEER SYSTEM POWER PACK	120	1	12.0	1/3		SR	5-20P	114"	E.C. TO VERIFY FINAL LOCATION WITH THE G.C.	224

PLUMBING SCHEDULE

ENG. REV	ITEM NO.	QTY	ITEM DESCRIPTION	CW (IN)	CW CONN. HGT	HW (IN)	HW CONN. HGT	IW (IN)	DW (IN)	DW CONN. HGT	GAS SIZE	MBTUH	GAS CONN. HGT	PLUMBING REMARKS	ITEM NO.
	1A	1	COOLER EVAPORATOR					3/4"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	1A
	1C	1	FREEZER EVAPORATOR					3/4"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	1C
	33	1	BAG N BOX	1/2"	48"									P.C. TO INTERPIPE THIS COLD WATER CONNECTION FROM ITEM 34. VERIFY ALL UTILITY REQUIREMENTS WITH THE SODA VENDOR.	33
	34	1	WATER FILTRATION SYSTEM	3/4"	84"									P.C. TO INTERPIPE COLD WATER OUTLET TO ICE MAKER, COFFEE AND WATER EQUIPMENT.	34
	36	1	ICE CUBER	3/8"	72"			1/2"						P.C. TO INTERPIPE COLD WATER CONNECTION FROM ITEM 34 WATER FILTER; P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	36
	36A	1	ICE BIN FOR ICE MACHINES					3/4"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	36A
	39	1	FLOOR TROUGH						4"					STUB AT 7-1/2" BELOW FINISHED FLOOR.	39
	40A	1	SERVICE FAUCET	1/2"	36"	1/2"	36"								40A
	45A	1	HAND SINK	1/2"	26"	1/2"	26"		1-1/2"	24"					45A
	46A	3	HAND SINK	1/2"	26"	1/2"	26"		1-1/2"	24"					46A
	60	1	THREE (3) COMPARTMENT SINK					(3) 2"						P.C. TO MANIFOLD DRAINS AND BRANCH TO FLOOR SINK.	60
	60A	1	WALL / SPLASH MOUNT FAUCET	1/2"	16"	1/2"	16"								60A
	63	1	DISHWASHER, UNDERCOUNTER			3/4"	18"	5/8"						P.C. TO INTERPIPE TO FLOOR SINK; 140 DEGREE HOT WATER REQUIRED FROM BUILDING WATER SUPPLY.	63
	70	1	PREP TABLE					2"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	70
	70A	1	DECK MOUNT FAUCET	1/2"	16"	1/2"	16"								70A
	77	1	RETHERMALIZER, WATER TANK, ELECTRIC					3/8"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	77
	100	1	GAS COUNTERTOP GRIDDLE								3/4"	108.0	18"	P.C. TO CONNECT THRU QUICK DISCONNECT HOSE.	100
	101	1	GAS COUNTERTOP GRIDDLE								3/4"	81.0	18"	P.C. TO CONNECT THRU QUICK DISCONNECT HOSE.	101
	103	1	FRYER BATTERY, GAS								1"	160.0	18"	P.C. TO CONNECT THRU QUICK DISCONNECT HOSE.	103
	104	1	FRYER BATTERY, GAS								1"	160.0	18"	P.C. TO CONNECT THRU QUICK DISCONNECT HOSE.	104
	160	1	FROZEN CUSTARD MACHINE	1/2"	12"			1-1/2"						P.C. TO SUPPLY REDUCER , SHUT-OFF VALVE AND INTERPIPE TO EQUIPMENT FITTINGS; P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	160
	162	1	FROZEN CUSTARD DIPPING CABINET					1"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	162
	171	2	DIPPER WELL	1/2"	18"			1-1/2"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	171
	177	1	SHAKE TABLE W/ SINK	1/2"	18"	1/2"	18"	2"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	177
	177A	1	FAUCET	1/2"	18"									PC TO INTERPIPE THIS COLD WATER CONNECTION FROM ITEM 34 WATER FILTER.	177A
	188	1	DISHWASHER, UNDERCOUNTER			1/2"	18"	5/8"						140 DEGREE HOT WATER REQUIRED FROM BUILDING WATER SUPPLY; P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	188
	203	1	ICE CHEST & SODA TOWER					3/4"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	203
	204	1	TEA BREWER	1/4"	45"									P.C. TO INTERPIPE THIS COLD WATER CONNECTION FROM ITEM 34 WATER FILTER.	204
	223	1	3-FAUCET T-TOWER					3/4"						P.C. TO RUN I.W. TO FLOOR SINK AS REQUIRED.	223
	224	1	DRAFT BEER SYSTEM POWER PACK	1/2"	108"									P.C. TO INTERPIPE THIS COLD WATER CONNECTION FROM ITEM 34 WATER FILTER.	224
	234	1	WATER DISPENSING ARM					3/4"							234

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NO.	DATE	REMARKS
		ISSUE FOR PERMIT / BID
		ISSUE FOR L1 REVIEW

REVISIONS

Drawing Title
KITCHEN EQUIPMENT UTILITY SCHEDULES

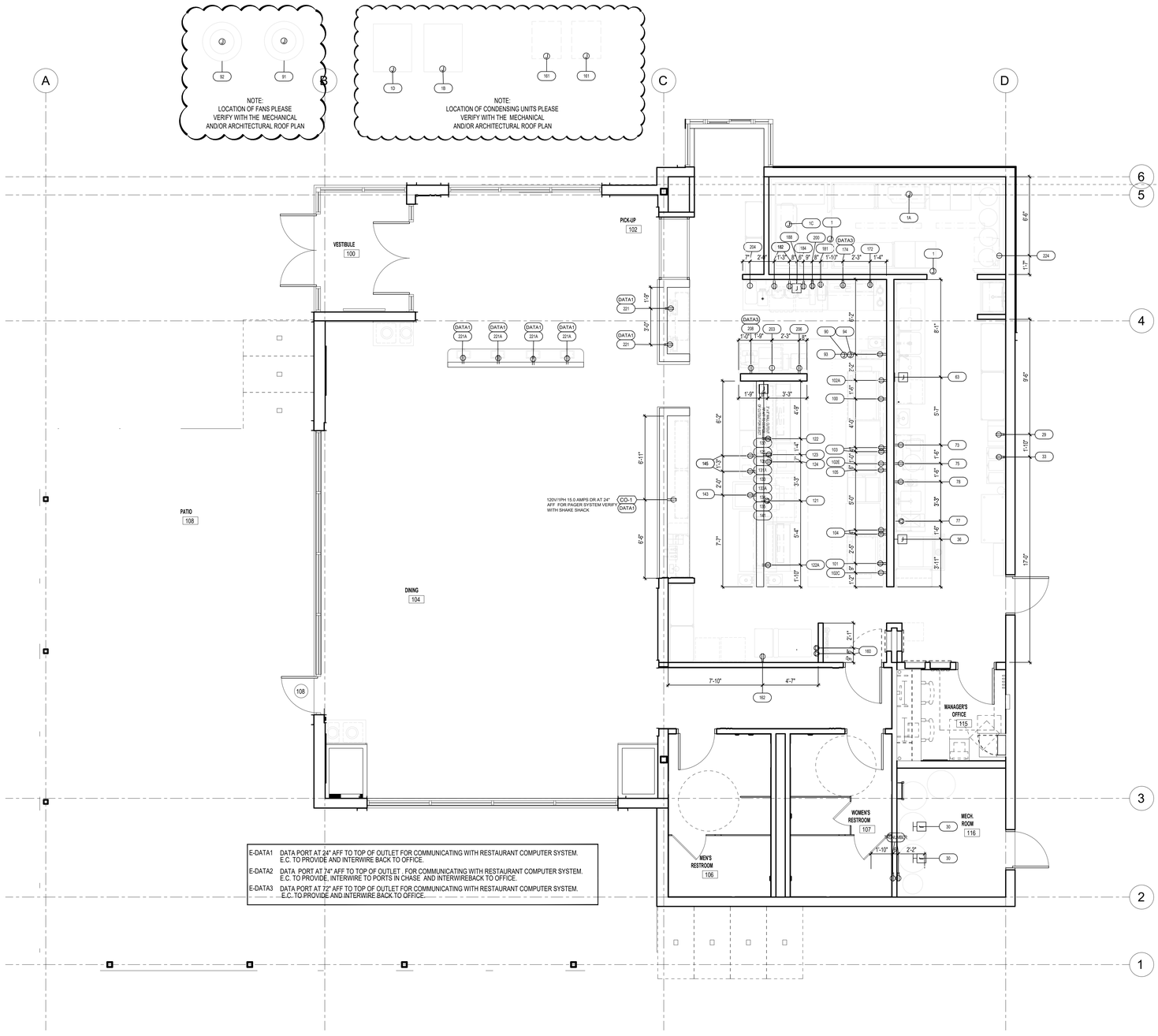
Job No.

Drawn
MSH

Scale
AS NOTED

Date

Sheet No.
K603



ELECTRICAL LEGEND

- DUPLEX RECEPTACLE
- SPECIAL PURPOSE RECEPTACLE
- JUNCTION BOX - WALL MOUNTED
- J JUNCTION BOX - CEILING MOUNTED

FOODSERVICE ELECTRICAL ROUGH-IN PLAN

SCALE: 1/4" - 1' - 0"

FOODSERVICE DRAWINGS INDICATE ELECTRICAL ROUGH-IN/CONNECTION POINTS ONLY FOR EQUIPMENT SPECIFIED UNDER THE KITCHEN EQUIPMENT (SECTION 114000) CONTRACT. ANY ADDITIONAL ELECTRICAL REQUIREMENTS ARE NOT INDICATED ON FOODSERVICE DRAWINGS.

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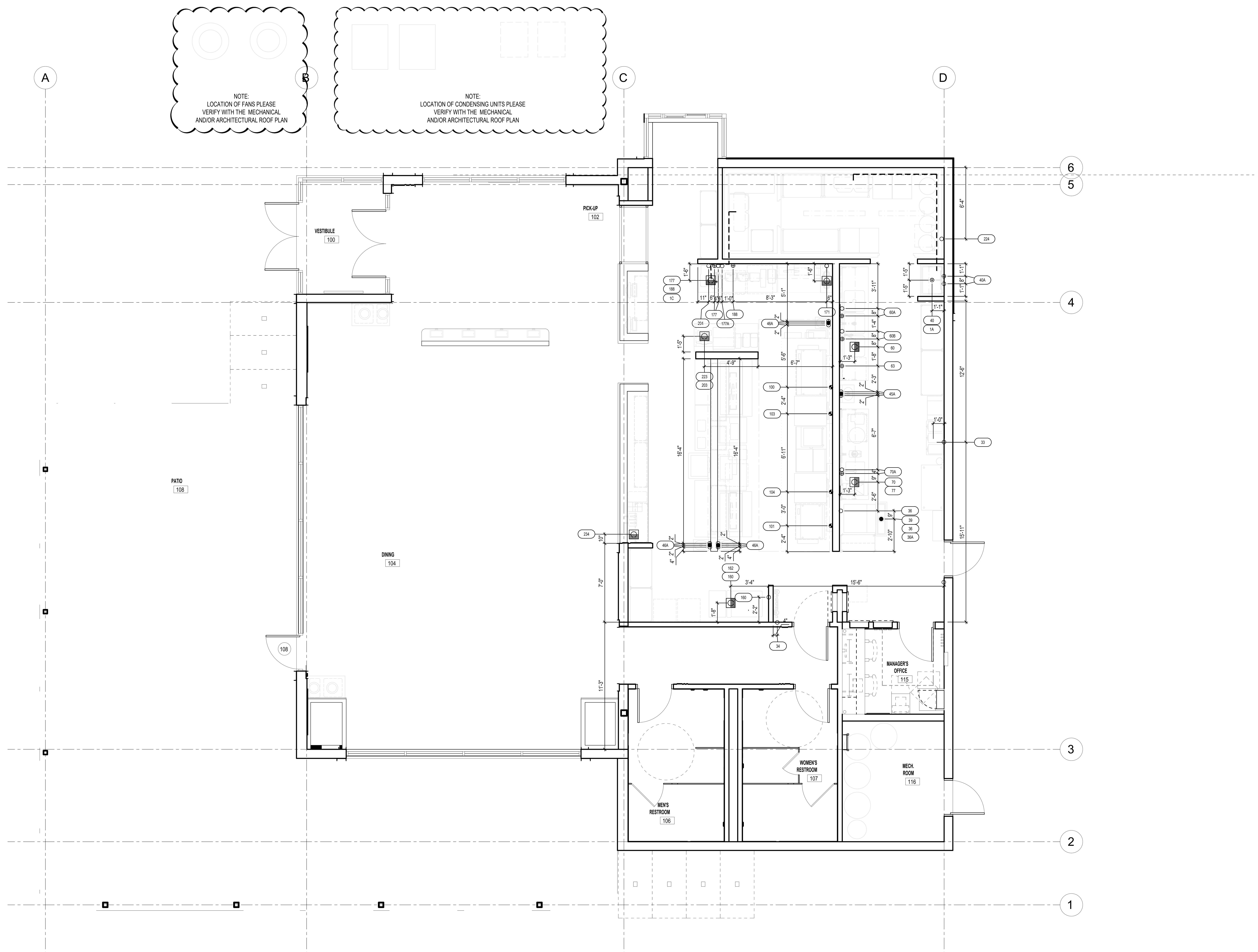
REVISIONS

Drawing Title
KITCHEN EQUIPMENT ELECTRICAL ROUGH- IN PLAN

Job No.
Drawn MSH
Scale AS NOTED
Date
Sheet No.
KE101



PLUMBING LEGEND

- ○ COLD WATER
- ⊕ HOT WATER
- ● DIRECT WASTE
- FLOOR SINK - PARTIAL GRATE
- GAS DROP FROM MANIFOLD
- Ⓕ FILTERED WATER

FOODSERVICE PLUMBING SUPPLY ROUGH-IN PLAN

SCALE: 1/4" - 1' - 0"

FOODSERVICE DRAWINGS INDICATE PLUMBING ROUGH-IN/CONNECTION POINTS ONLY FOR EQUIPMENT SPECIFIED UNDER THE KITCHEN EQUIPMENT (SECTION 114000) CONTRACT. ANY ADDITIONAL PLUMBING REQUIREMENTS ARE NOT INDICATED ON FOODSERVICE DRAWINGS. THE PLUMBING CONTRACTOR (DIVISION 22) SHALL FURNISH AND INSTALL PRESSURE REDUCING VALVES, FLOW CONTROLS, BACK FLOW PREVENTION, RPZ (REDUCED PRESSURE ZONE) VALVES, WATER HAMMER ARRESTOR, GATE VALVES, FOR WATER CONNECTIONS AS REQUIRED PER LOCAL CODES.

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Drawing Title
KITCHEN EQUIPMENT
PLUMBING
ROUGH- IN PLAN

Job No.
Drawn: MSH
Scale: AS NOTED
Date
Sheet No.
KP101

GENERAL NEW NOTES:

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.

2. COORDINATE THE INSTALLATION OF THE MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT AND ORDERLY INSTALLATION. INSTALL DUCTWORK AND PIPING AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATE INSTALLATION OF DUCTWORK AND PIPING TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC. ANY MODIFICATIONS REQUIRED DUE TO LACK OF COORDINATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO EXTRA COST TO THE OWNER.

3. PROVIDE TEMPORARY BARRIERS TO CONTAIN DUST AND DEBRIS RESULTING FROM THE PERFORMANCE OF THE WORK TO THE AREA WHERE WORK IS BEING PERFORMED.

4. ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY DIVISION 23 UNLESS OTHERWISE NOTED.

5. NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING ARE SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND MAKE ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. VERIFY THAT FINAL EQUIPMENT LOCATIONS MEET MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.

6. REFER TO ARCHITECTURAL DRAWINGS FOR RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. VERIFY CHASES AND PENETRATIONS SHOWN ON ARCHITECTURAL DRAWINGS THAT ARE INTENDED FOR DUCTWORK AND PIPING MEET REQUIREMENTS.

7. COORDINATE LOCATION OF ROOF MOUNTED HVAC EQUIPMENT AND ROOF PENETRATIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.

8. INDOOR AIR QUALITY MEASURES: PROTECT INSIDE OF (INSTALLED AND DELIVERED) DUCTWORK AND HVAC UNITS FROM EXPOSURE TO DUST, DIRT, PAINT AND MOISTURE. REPLACE INSULATION THAT HAS BECOME WET AT ANY TIME DURING CONSTRUCTION. DRYING THE INSULATION IS NOT ACCEPTABLE. SEAL ANY TEARS OR JOINTS OF INTERNAL FIBERGLASS INSULATION. REMOVE DEBRIS FROM CEILING/RETURN AIR PLENUM INCLUDING DUST. AN INDEPENDENT, PROFESSIONAL DUCT CLEANING COMPANY SHALL VACUUM CLEAN ANY DUCTWORK CONNECTED TO HVAC UNITS THAT WERE OPERATED DURING THE CONSTRUCTION PERIOD AFTER NEW FILTERS ARE INSTALLED AND PRIOR TO TURNING SYSTEM OVER TO THE OWNER. THE INTERNAL SURFACES AND ASSOCIATED COILS OF ANY HVAC UNITS THAT WERE OPERATED SHALL ALSO BE CLEANED.

9. INSTALL DUCTWORK AND PIPING PARALLEL TO BUILDING COLUMN LINES UNLESS OTHERWISE SHOWN OR NOTED.

10. OVERHEAD HANGERS AND SUPPORTS FOR EQUIPMENT, DUCTWORK AND PIPING SHALL BE FASTENED TO BUILDING JOISTS OR BEAMS. DO NOT ATTACH HANGERS AND SUPPORTS TO THE ABOVE FLOOR SLAB OR ROOF EXCEPT WHERE CONCRETE INSERTS IN CONCRETE SLABS ARE ALLOWED BY THE SPECIFICATIONS.

11. COORDINATE LOCATION OF EQUIPMENT SUPPORTS WITH LOCATION OF EQUIPMENT ACCESS PANELS/DOORS TO ENABLE SERVICE OF EQUIPMENT AND/OR FILTER REPLACEMENT.

12. SEAL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. FIREPROOF PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.

13. COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES WITH THE SUPPLIER TO MEET THE CEILING, WALL AND DUCT INSTALLATION REQUIREMENTS.

14. ADJUST LOCATION OF CEILING DIFFUSERS, REGISTERS AND GRILLES AS REQUIRED TO ACCOMMODATE FINAL CEILING GRID AND LIGHTING LOCATIONS.

15. PAINT PORTIONS OF DUCTWORK AND INSULATION THAT ARE EXPOSED TO VIEW BY THE INSTALLATION OF DIFFUSERS, REGISTERS, AND GRILLES IN CEILINGS OR WALLS FLAT BLACK. PORTIONS INCLUDE BOTH THE INTERIOR OF UNLINED DUCTWORK AND THE EXTERIOR OF DUCTWORK AND INSULATION.

16. LOCATE AND SET THERMOSTATS AND HUMIDISTATS AT LOCATIONS SHOWN ON PLANS. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION. INSTALL DEVICES WITH TOP OF DEVICE AT MAXIMUM 48" AFF TO MEET ADA REQUIREMENTS UNLESS NOTED OTHERWISE ON PLANS. PROVIDE INSULATED BACKING FOR THERMOSTATS MOUNTED ON EXTERIOR BUILDING WALLS. INSTALL WIRING IN CONDUIT PROVIDED BY DIVISION 26. AT A MINIMUM, PROVIDE CONDUIT IN THE WALL FROM THE JUNCTION BOX TO 6" ABOVE THE CEILING.

17. COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH PRESENTATION BOARDS, DISPLAY CABINETS, SHELVES OR OTHER COMPONENTS SHOWN ON THE ARCHITECTURAL DRAWINGS THAT ARE TO BE INSTALLED UNDER OTHER DIVISIONS. CONTRACTOR WILL NOT BE REIMBURSED FOR RELOCATION OF WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.

18. PROVIDE A LOCKING QUADRANT MANUAL BALANCING DAMPER IN EACH DUCT TAKEOFF FROM SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTS.

19. PROVIDE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY, RECTANGULAR/ROUND BRANCH DUCT TAKEOFF FITTING FOR BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS AND GRILLES. PROVIDE WITH INTEGRAL MANUAL BALANCING DAMPER AND LOCKING QUADRANT WHERE INDICATED ON PLANS.

20. BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE NOTED.

21. REFER TO SPECIFICATIONS FOR DUCTWORK AND PIPING INSULATION REQUIREMENTS. DUCT SIZES ON MECHANICAL PLANS INDICATE CLEAR INSIDE AIRFLOW DIMENSIONS, INCLUDE SHEET METAL SIZES ACCORDINGLY TO ACCOUNT FOR THICKNESS OF DUCT LINER.

22. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH AND SHALL BE INSTALLED AND SUPPORTED TO AVOID SHARP BENDS AND SAGGING. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

23. PROVIDE EQUIPMENT VENTS AND FLUES PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS AND EQUIPMENT SPECIFICATIONS. KEEP PENETRATIONS THROUGH ROOF A MINIMUM OF 10'-0" FROM HVAC EQUIPMENT FRESH AIR INLETS AND 2'-0" FROM ROOF PARAPETS.

24. PROVIDE TYPE I GREASE HOOD EXHAUST DUCTWORK OF MINIMUM 16 GAUGE BLACK IRON WITH LIQUID TIGHT WELDS, WITH ACCESS PANELS FOR GREASE CLEANING AS REQUIRED BY NFPA 96 AND LOCAL CODES. SLOPE DUCT BACK TOWARDS HOOD AT MINIMUM OF 1/4" PER LINEAL FOOT MAINTAINING 18" CLEARANCE TO COMBUSTIBLE MATERIALS. INSTALL GREASE DUCTS IN AN APPROVED FIRE-RATED ENCLOSURE SEPARATED FROM THE EXHAUST DUCT BY A MINIMUM OF 6" AND MAXIMUM OF 12". VENTILATE ENCLOSURE TO THE OUTSIDE AIR IF REQUIRED BY CODE. AS AN OPTION, IF APPROVED BY LOCAL CODES, PROVIDE AN APPROVED WRAP SYSTEM IN LIEU OF THE RATED DUCT ENCLOSURE SYSTEM. DUCT WRAP SYSTEM SHALL MEET UL REQUIREMENTS FOR GREASE DUCT ENCLOSURES.

25. PROVIDE A NEW SET OF AIR FILTERS IN UNITS PRIOR TO TESTING, ADJUSTING AND BALANCING AND BEFORE TURNING SYSTEM(S) OVER TO OWNER.

26. TEMPORARY INSTALLATIONS OF INFECTION CONTROL MEASURES DURING CONSTRUCTION SHALL BE COORDINATED WITH THE FACILITY'S INFECTION CONTROL STAFF. PRIOR TO CONSTRUCTION PROVIDE ALL REQUIRED TEMPORARY INSTALLATIONS, INCLUDING DETAILS OF THE INFECTION CONTROL MEASURES SUCH AS TEMPORARY BARRIERS AND MEMBRANES, PORTABLE EXHAUST FANS AND TEMPORARY DUCTWORK. TEMPORARY INSTALLATIONS MUST NOT HAVE A NEGATIVE IMPACT ON EXISTING SYSTEMS NOR CAUSE UNSAFE CONDITIONS. TEMPORARY INSTALLATIONS SHALL MAINTAIN ADEQUATE EGRESS AND SHALL NOT OBSTRUCT EXISTING EXITS, CREATE A FIRE HAZARD OR REDUCE REQUIRED FIRE RESISTANCE. TEMPORARY VENTILATION SYSTEMS SHALL NOT CAUSE THE AIR BALANCE OF ADJACENT ROOMS OR SPACES TO BE IMPACTED OR ALTER THE PERFORMANCE OF PERMANENT BUILDING VENTILATION SYSTEMS. AIRFLOW MEASUREMENTS SHALL BE TAKEN TO VERIFY ADJACENT ROOMS OR SPACES ARE NOT IMPACTED.

27. CONTRACTOR'S BID SHALL INCLUDE PROVISIONS TO PROVIDE ALL SERVICES RELATED TO BUILDING SYSTEMS COMMISSIONING INCLUDING, FUNCTIONAL TESTING, RELATED DOCUMENTATION, REPORTS AND OWNER TRAINING. COORDINATE ALL REQUIREMENTS WITH THE DESIGNATED COMMISSIONING AGENT. CONTRACTOR SHALL COMPLETE ALL REQUIRED COMMISSIONING ACTIVITIES PRIOR TO FINAL INSPECTIONS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, COMMISSIONING PLAN, APPLICABLE CODE AND MANUFACTURER'S INSTRUCTIONS.

MECHANICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V2.06

STANDARD MOUNTING HEIGHT

THERMOSTATS (USER ADJUSTABLE)(TOP OF DEVICE)	48"
CONTROLS (TOP OF DEVICE)	48"

INSTALL DEVICES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS ARE AFF OR AFG TO BOTTOM OF DEVICE UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ANNOTATION

- 1 — MECHANICAL PLAN NOTE CALLOUT
- CU 1 — MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- 1 / M1 — DETAIL REFERENCE. UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- 1 / M1 — SECTION CUT DESIGNATION

ABBREVIATIONS

A/C	AIR CONDITIONING
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APD	AIR PRESSURE DROP
AWG	AMERICAN WIRE GAUGE
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BB	BACKBONE
BD	BACKDRAFT DAMPER
BD	BLOWDOWN
BFC	BELOW FINISHED CEILING
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BFP	BOILER FEED PUMP
BHP	BRAKE HORSEPOWER
BI	BINARY INPUT
BO	BINARY OUTPUT
BOD	BOTTOM OF DUCT
BOS	BOTTOM OF STRUCTURE
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CLG	COOLING
CP	CONDENSATE PUMP
CPT	CONTROL POWER TRANSFORMER
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRU	COMPUTER ROOM UNIT
CT	COOLING TOWER
CV	CONTROL VALVE
CWP	CONDENSER WATER PUMP
CU	CONDENSING UNIT
CHWP	CHILLED WATER PUMP
DB	DECIBELS
DBA	DECIBEL AVERAGE
DDC	DIRECT DIGITAL CONTROL
DI	DIGITAL INPUT
DISC	DISCONNECT
DN	DOWN
DS	DUCT SILENCER
DX	DIRECT EXPANSION
(E)	EXISTING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
ED	EXHAUST DUCT
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EFF	EFFICIENCY
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
ETR	EXISTING TO REMAIN
EWB	ENTERING WET BULB
EWT	ENTERING WATER TEMPERATURE
FCU	FAN COIL UNIT
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
FF	FINISHED FLOOR
FPI	FINS PER INCH
FPM	FEET PER MINUTE
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HTG	HEATING
HWP	HEATING WATER PUMP
IN WC	INCHES OF WATER COLUMN
L	LOUVER
LAT	LEAVING AIR TEMPERATURE
LDB	LEAVING DRY BULB
LP	LOW PRESSURE
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MBH	1000 BTU PER HOUR
MD	MOTORIZED DAMPER
MFR	MANUFACTURER
MIN	MINIMUM
N/A	NOT APPLICABLE
N/C	NORMALLY CLOSED
N/O	NORMALLY OPEN
NOM	NOMINAL
NC	NOISE CRITERIA
NF	NON-FUSED
NIC	NOT IN CONTRACT
OA	OUTSIDE AIR
PICV	PRESSURE INDEP. CONTROL VALVE
PROVIDE	FURNISH AND INSTALL
QTY	QUANTITY
RA	RETURN AIR
RC	ROOM CRITERIA
RD	RETURN DUCT
REA	RELIEF AIR
RF	RETURN FAN
RFR	REFRIGERANT
RH	RELATIVE HUMIDITY
RH	ROOF HOOD
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SA	SUPPLY AIR
SCP	STEAM CONDENSATE PUMP
SD	SMOKE DUCT DETECTOR
SD	SUPPLY DUCT
SF	SUPPLY FAN
SH	SENSIBLE HEAT CAPACITY
SOW	SCOPE OF WORK
SP	STATIC PRESSURE
ST	STEAM TRAP
STM	STEAM
TBD	TO BE DETERMINED
TC/C	TEMPERATURE CONTROLS CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TF	TRANSFER FAN
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TH	TOTAL HEAT CAPACITY
TSP	TOTAL STATIC PRESSURE
TT	TEMPERATURE TRANSMITTAL
TYP	TYPICAL
U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VRV	VARIABLE REFRIGERANT VOLUME
W/	WITH
W/O	WITHOUT
WB	WET BULB
WC	WATER COLUMN
WPD	WATER PRESSURE DROP
XP	EXPLOSION PROOF

HVAC DUCTWORK AND ACCESSORIES

- LINEAR SLOT DIFFUSER
- INSULATED FLEXIBLE DUCT (MAX. 5'-0" LONG)
- BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER
- ELBOW WITH TURNING VANES
- BRANCH DUCT WITH BELL-MOUTH FITTING & MANUAL VOLUME CONTROL DAMPER
- RETURN, EXHAUST, OR OUTSIDE AIR DUCT UP
- RETURN, EXHAUST, OR OUTSIDE AIR DUCT DOWN
- SUPPLY AIR DUCT UP
- SUPPLY AIR DUCT DOWN
- EQUIPMENT WITH FLEXIBLE DUCT CONNECTION
- 10" (NECK SIZE) CSD-1 (TYPE) 300 CFM (CFM OF SUPPLY DIFFUSER OR REGISTER)
- 24x24 (NECK SIZE) CEG-1 (TYPE) 800 CFM (CFM OF EXHAUST GRILLE)
- MANUAL VOLUME DAMPER
- SQUARE TO ROUND TRANSITION
- RD — DUCT MOUNTED SMOKE DETECTOR (SD=SUPPLY/RD=RETURN)
- XX" Ø — ROUND DUCT TAG INDICATING DIAMETER
- XX" x XX" — RECTANGULAR DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS.
- XX' / XX" — FLAT OVAL DUCT TAG INDICATING INTERNAL DUCT DIMENSIONS
- # — RISER DESIGNATION
- FD — FIRE DAMPER
- FSD — FIRE SMOKE DAMPER
- SD — SMOKE DAMPER
- VD — VOLUME DAMPER
- MD — MOTORIZED DAMPER
- BD — BACKDRAFT DAMPER

ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS. REFER TO DUCTWORK SPECIFICATIONS FOR DUCTWORK INSULATION AND LINER INFORMATION.

HVAC CONTROL DEVICES

- H — HUMIDISTAT
- T — THERMOSTAT
- CO — CARBON MONOXIDE SENSOR
- CO2 — CARBON DIOXIDE SENSOR
- DP — DIFFERENTIAL PRESSURE SENSOR
- FS — FLOW SWITCH
- HS — HUMIDITY SENSOR
- PS — PULL STATION
- RT — REMOTE TESTING STATION WITH INDICATING LIGHT
- SP — STATIC PRESSURE
- TS — TEMPERATURE SENSOR

PIPING SYMBOLS

- DIRECTION OF FLOW
- CONTROL VALVE
- THREE-WAY CONTROL VALVE
- SHUTOFF VALVE
- CHECK VALVE
- BALANCING VALVE WITH PRESSURE PORTS
- TRIPLE DUTY VALVE WITH PRESSURE PORTS
- STRAINER
- STRAINER WITH BLOWDOWN VALVE
- RELIEF / SAFETY VALVE
- SOLENOID VALVE
- PRESSURE REDUCING VALVE
- GAS PRESSURE REGULATOR
- THERMOSTATIC MIXING VALVE
- PA — PIPE ANCHOR
- EJ — EXPANSION JOINT
- PIPE GUIDE
- PIPING SUPPORT
- F & T TRAP
- BUCKET TRAP
- THERMOSTATIC TRAP
- BACKFLOW PREVENTER
- PRESSURE GAUGE
- THERMOMETER
- PRESSURE AND TEMPERATURE TEST PLUG
- UNION
- FLANGE CONNECTION
- VACUUM RELIEF VALVE
- AV — AUTOMATIC AIR VENT
- MV — MANUAL AIR VENT
- PRESSURE / VACUUM SWITCH
- CLEANOUT
- CAP
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- ELBOW UP WITH SHUT-OFF VALVE (SOV)
- ELBOW DOWN WITH SHUT-OFF VALVE (SOV)
- TEE UP WITH SHUT-OFF VALVE (SOV)
- TEE DOWN WITH SHUT-OFF VALVE (SOV)
- REDUCER
- RECIRCULATION PUMP
- P-TRAP
- GAS COCK
- TOP BEAM CLAMP
- TRAPEZE HANGER
- FLEXIBLE CONNECTION

PIPING LINETYPES

CD	CONDENSATE DRAIN (CD)
ACD	AUXILIARY CONDENSATE DRAIN (ACD)
NPW	NON-POTABLE WATER (NPW)
G	NATURAL GAS (G)
G	NATURAL GAS ON ROOF (G)
MPG	MEDIUM PRESSURE NATURAL GAS (MPG)
MPG	MEDIUM PRESSURE NATURAL GAS ON ROOF (MGP)
FOS	FUEL OIL SUPPLY (FOS)
FOR	FUEL OIL RETURN (FOR)
FOV	FUEL OIL VENT (FOV)
LPG	LIQUEFIED PETROLEUM GAS (LPG)
BFW	BOILER FEED WATER (BFW)
HPS	HIGH PRESSURE STEAM SUPPLY (HPS)
HPC	HIGH PRESSURE STEAM CONDENSATE (HPC)
LPS	LOW PRESSURE STEAM SUPPLY (LPS)
LPC	LOW PRESSURE STEAM CONDENSATE (LPC)
PD	CONDENSATE PUMP DISCHARGE (PD)
HWS	HEATING HOT WATER SUPPLY (HWS)
HWR	HEATING HOT WATER RETURN (HWR)
CHWS	CHILLED WATER SUPPLY (CHWS)
CHWR	CHILLED WATER RETURN (CHR)
HCS	HOT / CHILLED WATER SUPPLY (HCS)
HCR	HOT / CHILLED WATER SUPPLY (HCR)
CWS	CONDENSER WATER SUPPLY (CWS)
CWR	CONDENSER WATER RETURN (CWR)
HPWS	HEAT PUMP WATER SUPPLY (HPWS)
HPWR	HEAT PUMP WATER RETURN (HPWR)
RL	REFRIGERANT LIQUID (RL)
RD	REFRIGERANT DISCHARGE (HOT GAS) (RD)
RS	REFRIGERANT SUCTION (RS)
RDB	REFRIGERANT DISCHARGE BYPASS (RDB)
RV	REFRIGERANT VENT (RV)

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING	NEW
DEMOLISH	FUTURE

MECHANICAL SHEET INDEX

M001	MECHANICAL ABBREVIATIONS & SYMBOLS
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M701	HALTON DRAWINGS
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M704	HALTON DRAWINGS

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Drawing Title: MECHANICAL ABBREVIATIONS & SYMBOLS

Job No. 204461	Drawn Author
Scale 12" = 1'-0"	Date 11/09/20

Sheet No. M001

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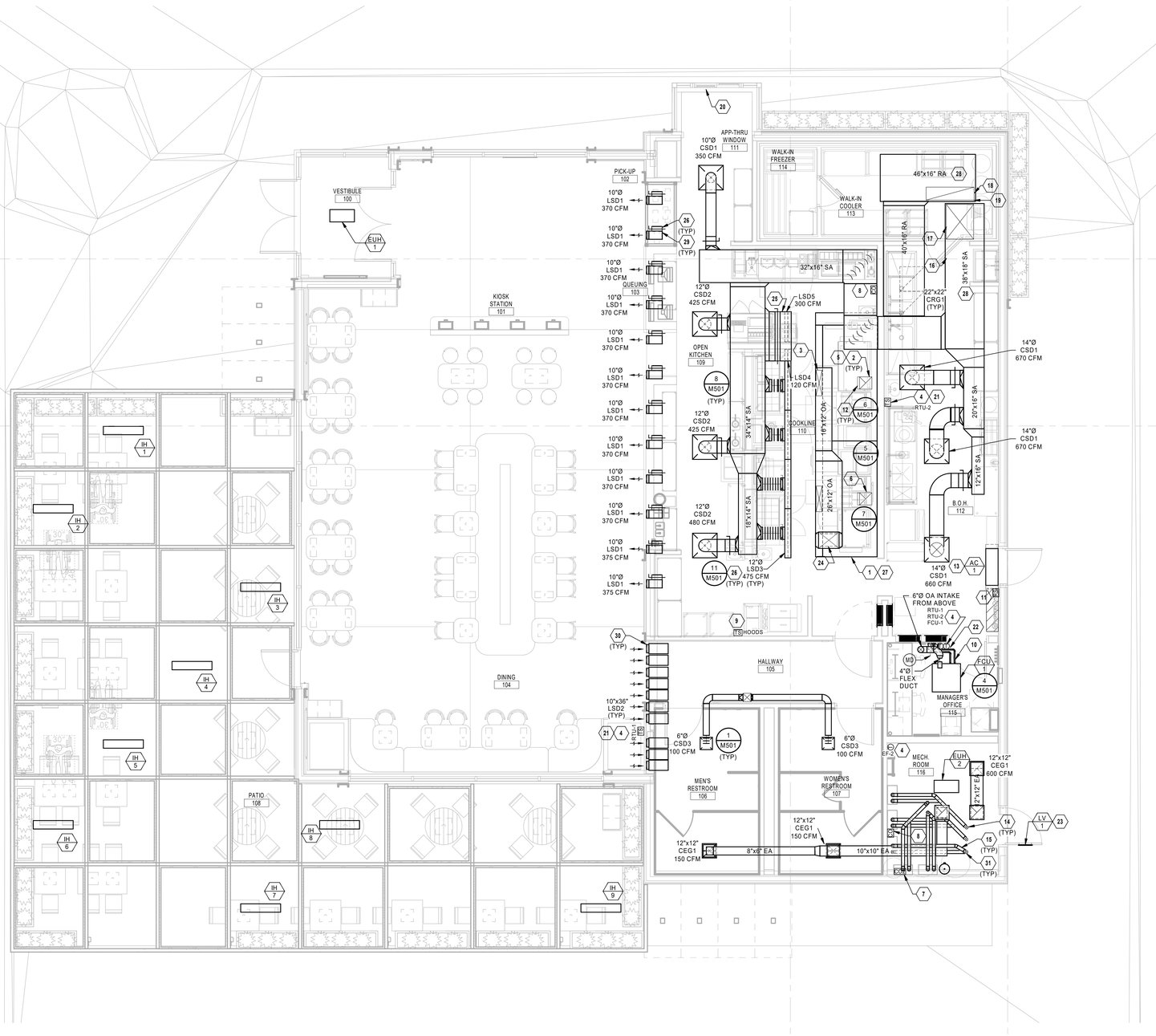

1 HVAC FLOOR PLAN - OVERALL
1/4" = 1'-0"

MECHANICAL PLAN NOTES:

1. TYPE I HOODS SHALL BE FURNISHED COMPLETE WITH INTERNALLY PIPED FIRE SUPPRESSION SYSTEM AND EXTERNAL FOAM SUPPLY BOTTLES WITH REMOTE PULL CONTROLS AND IN COMPLIANCE WITH NFPA 96. DIVISION 23 SHALL COORDINATE COMPLETE INSTALLATION WITH FIRE PROTECTION CONTRACTOR TO MEET APPROVAL OF LOCAL INSPECTOR AND CODE COMPLIANCE INCLUDING TESTING.
2. TYPE I GREASE HOOD EXHAUST DUCTWORK SHALL BE MINIMUM 16 GAUGE STEEL OR MINIMUM 18 GAUGE STAINLESS STEEL WITH LIQUID TIGHT WELDS. INSTALL ACCESS PANELS FOR CLEANING AS REQUIRED BY NFPA 96 AND LOCAL CODES. TRANSITION GREASE DUCTWORK AS REQUIRED TO HOOD AND FAN CONNECTIONS. PROVIDE 45° MAX OFFSETS AS REQUIRED TO COORDINATE WITH STRUCTURE. PROVIDE RADIUS ELBOWS WITHOUT TURNING VANES. SLOPE HORIZONTAL GREASE DUCT BACK TOWARDS HOOD AT MINIMUM OF 1/4" PER LINEAL FOOT. GREASE DUCTS SHALL BE CONTAINED IN A UL APPROVED GREASE DUCT WRAP SYSTEM.
3. REFER TO HALTON DRAWINGS FOR INFORMATION REGARDING HOOD MAKEUP AIR PLENUM.
4. MOUNT THERMOSTATS AND TEMPERATURE SENSOR(S) ON WALL. THERMOSTATS AND SENSOR(S) SHALL BE LABELED TO MATCH THE UNIT TAG AND CORRESPOND TO THE ELECTRICAL LEGEND IN THE ELECTRICAL PANELBOARD SERVING THE EQUIPMENT. COORDINATE COLOR WITH ARCHITECT.
5. 12"X12" GREASE EXHAUST DUCT UP TO KEF-1 ON ROOF.
6. 12"X12" GREASE EXHAUST DUCT UP TO KEF-2 ON ROOF.
7. PROVIDE ANALOX AX60 OR APPROVED EQUAL CARBON DIOXIDE SENSOR WITH REMOTE ALARM REPEATER TO BE MOUNTED AT 18"AFF. PROVIDE CARBON DIOXIDE SENSOR WITH RELAY. RELAY SHALL BE INTERLOCKED WITH THE BUILDING FIRE ALARM SYSTEM. THE SENSOR SHALL BE EQUIPPED WITH A LOCAL AUDIBLE AND VISUAL ALARM. THE LOW LEVEL ALARM SHALL ACTIVATE THE LOCAL AUDIBLE AND VISUAL ALARM. THE HIGH LEVEL ALARM SHALL ACTIVATE RELAY. INSTALL SENSOR PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
8. CARBON MONOXIDE DETECTOR FURNISHED BY OWNER. INSTALL AT 5'-0" AFF. COORDINATE FINAL LOCATION WITH OWNER REPRESENTATIVE.
9. MOUNT TEMPERATURE SENSOR PROVIDED WITH KITCHEN EXHAUST HOODS ON WALL.
10. REFRIGERANT PIPING UP TO CU-1 ON ROOF, REF 1/M150.
11. INSTALL HOOD FIRE SUPPRESSION MANUAL PULL STATION. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH FIRE SUPPRESSION SYSTEM INSTALLER AND THE AUTHORITY HAVING JURISDICTION.
12. INSTALL "DUCTMATE ULTIMATE DOOR" GREASE DUCT ACCESS PANELS FOR CLEANING IN LOCATION SHOWN AT A MINIMUM AND AS REQUIRED BY NFPA 96 AND LOCAL CODES.
13. AIR CURTAIN MOUNTED ABOVE DOOR. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
14. PROVIDE COMBUSTION AIR AND EXHAUST PIPE AND ROUTE TO CONCENTRIC VENT THROUGH ROOF.
15. INSTALL COMBINATION CONCENTRIC INTAKE AND EXHAUST KIT FURNISHED WITH WATER HEATER. TERMINATE PER MANUFACTURER'S REQUIREMENTS AND SPECIFICATIONS AND IN COMPLIANCE WITH LOCAL CODES. MAINTAIN A MINIMUM 10'-0" SEPARATION FROM ALL AIR INTAKES.
16. REFER TO SHEET M601 ROOFTOP UNIT SCHEDULES FOR UV AIRBORNE DISINFECTION SYSTEM AND INSTALL PER MANUFACTURER'S INSTRUCTIONS. EACH RTU WILL REQUIRE TWO (2) AXIAL UV LIGHTS IN THE SUPPLY DUCT.
17. PROVIDE SA DUCT THROUGH ROOF. FULL SIZE OF UNIT OPENING, AND CONNECT TO UNIT WITH FLEXIBLE CONNECTOR.
18. PROVIDE RA DUCT THROUGH ROOF. FULL SIZE OF UNIT OPENING, AND CONNECT TO UNIT WITH FLEXIBLE CONNECTOR.
19. INSTALL DUCT SMOKE DETECTOR IN RETURN AIR PLENUM.
20. CONTRACTOR TO INSTALL AIR CURTAIN PROVIDED WITH DRIVE THRU WINDOW.
21. COMBINATION TEMPERATURE SENSOR AND HUMIDITY SENSOR.
22. INSTALL EMERGENCY ALARM IN MANAGER'S OFFICE TO INDICATE CARBON MONOXIDE AND CARBON DIOXIDE DETECTION IN MECHANICAL ROOM. PROVIDE LIGHT IN OFFICE WITH TAG FOR EACH ALARM.
23. PROVIDE LOUVER IN DOOR AS MEANS OF AIR TRANSFER IN THE EVENT OF ACCESS CARBON MONOXIDE OR CARBON DIOXIDE DETECTION. BOTTOM OF LOUVER: 10" ABOVE BOTTOM OF DOOR.
24. PROVIDE MAKEUP AIR SUPPLY DUCT THROUGH ROOF, FULL SIZE OF UNIT OPENING, AND CONNECT TO UNIT WITH FLEXIBLE CONNECTOR.
25. CONTRACTOR TO ROUTE CUSTOM PLENUM 48"X10" DUCT TO SERVE SLOT DIFFUSERS LSD4 AND LSD5.
26. PROVIDE SUPPLY PLENUM BOX WITH DAMPER AND WORM GEAR OPERATOR.
27. INSTALL KITCHEN HOODS CENTERED OVER THE COOKLINE SO THAT THE HOOD OVERHANGS THE COOKING SURFACES BY AT LEAST 6" ON BOTH SIDES.
28. B.O.D.: 8'-4" A.F.F.
29. INSTALL LINEAR SLOT DIFFUSER VERTICALLY WITH SUPPLY PLENUM BOX ON THE WALL PANEL BELOW WINDOW LINE. ELEVATION SHALL BE SUCH THAT THE INLET OF THE PLENUM BOX IS IN LINE DIRECTLY WITH DUCT MAIN ON ROOF PLAN. COORDINATE EXACT ELEVATION WITH ARCHITECT. DUCTWORK ROUTING FROM SUPPLY PLENUM BOX SHALL ELBOW THROUGH WALL TO TAP FROM MAIN BRANCH HOUSED IN DOG HOUSE AS SHOWN AND NOTED ON ROOF PLAN.
30. INSTALL LINEAR SLOT DIFFUSER VERTICALLY. CONNECT INTO RETURN DUCT THRU WALL PANEL TO TAP INTO MAIN RETURN DUCT AS SHOWN ON ROOF PLAN.
31. PROVIDE CONCENTRIC VENT MODEL NUMBER PVC-3CT.

ALL GREASE DUCT TO BE WATER TESTED BY ENVIROMATIC AT MECHANICAL CONTRACTOR'S EXPENSE. CONTACT OWNER'S NATIONAL ACCOUNT VENDOR:

ENVIROMATIC
DON PFLEDERER
1.800.325.8476
inspections@enviromatic.com

THE BUILDINGS HVAC SYSTEMS SHALL BE BALANCED BY NATIONAL TAB (NO EXCEPTIONS) AND CONTRACTED BY THE GENERAL CONTRACTOR.

CONTACT:
WILL TURNBOUGH
will@natonaltab.com
855-682-6822 ext704

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Nov 23 2020

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Drawing Title
MECHANICAL FLOOR PLAN

Job No.	Drawn
204461	Author

Scale	Date
1/4" = 1'-0"	11/09/20

Sheet No.
M101

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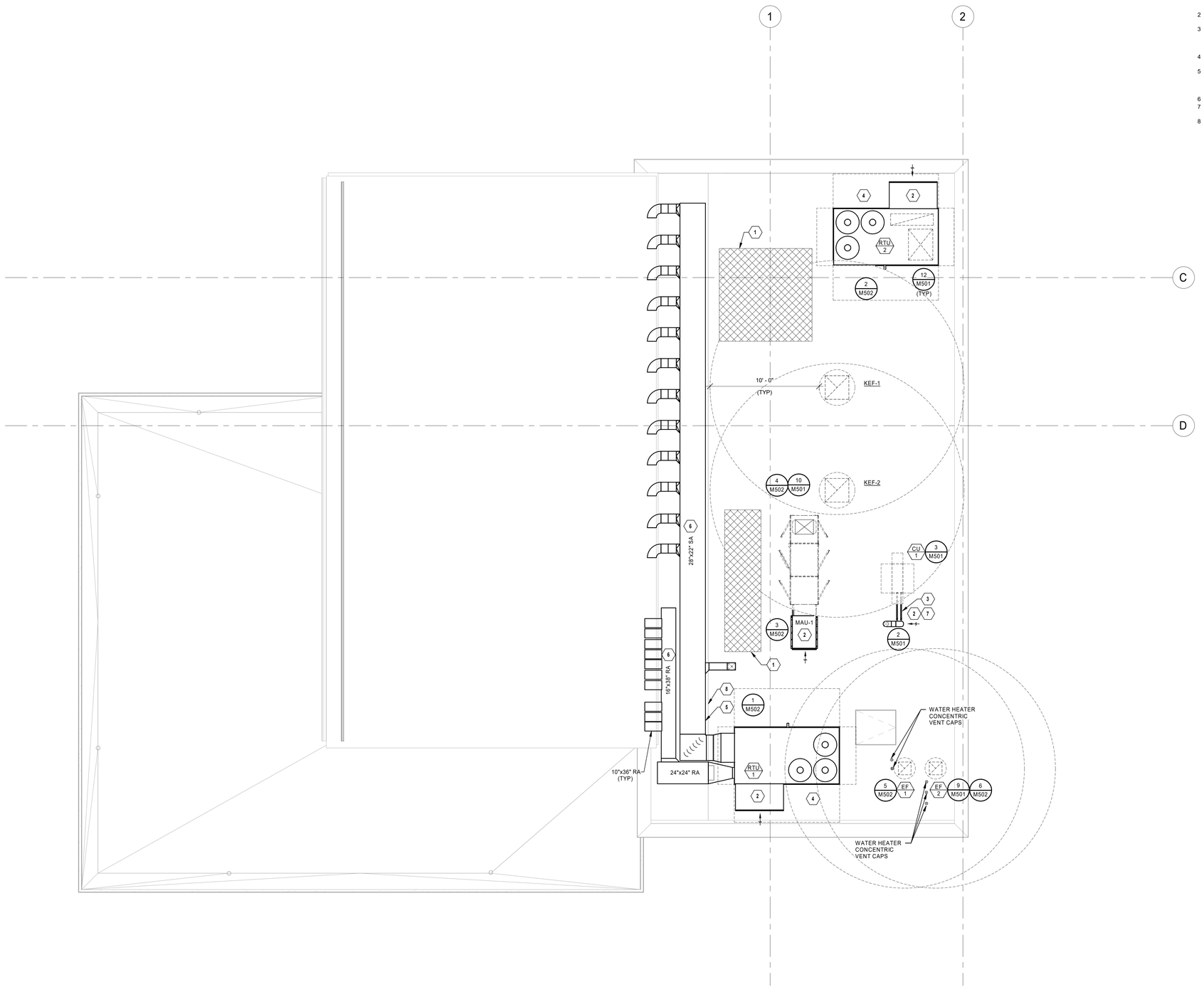
MECHANICAL PLAN NOTES:

1. AREA RESERVED FOR REFRIGERATION CONDENSER(S) PROVIDED BY KITCHEN EQUIPMENT CONTRACTOR. COORDINATE EQUIPMENT LOCATION AND CONDENSER INSTALLATION WITH KITCHEN EQUIPMENT CONTRACTOR.
2. MAINTAIN ALL OUTSIDE AIR INTAKES A MINIMUM OF 10'-0" RADIUS FROM EXHAUST, TYPICAL.
3. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT ROUTING AND SIZE OF INSULATED REFRIGERANT PIPING. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
4. REFERENCE P150 FOR CONDENSATE DRAIN ROUTING AND TERMINATION REQUIREMENTS.
5. REFER TO SHEET M601 ROOFTOP UNIT SCHEDULES FOR UV AIRBORNE DISINFECTION SYSTEM AND INSTALL PER MANUFACTURER'S INSTRUCTIONS. EACH RTU WILL REQUIRE TWO (2) AXIAL UV LIGHTS IN THE SUPPLY DUCT.
6. DUCTWORK SHALL NOT BE VISIBLE FROM INSIDE WINDOWS.
7. TURN DOWN 6"Ø INTAKE AND END OPEN OVER ROOF (MIN. 24") WITH INSECT SCREEN.
8. ROUTE SUPPLY AND RETURN DUCTWORK FROM RTU-1 INTO ROOF DOGHOUSE. FOR SUPPLY TAP FROM MAIN AND ELBOW TO INLET ON THE SIDE OF THE SUPPLY PLENUM BOX. FOR RETURN TAP FROM MAIN WITH RECTANGULAR DUCT DIRECTLY TO SLOT DIFFUSER.



1 HVAC ROOF PLAN - OVERALL
1/4" = 1'-0"

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Drawing Title
MECHANICAL ROOF PLAN

Job No.	Drawn
204461	Author
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1/4" = 1'-0"	11/09/20

Sheet No.
M150

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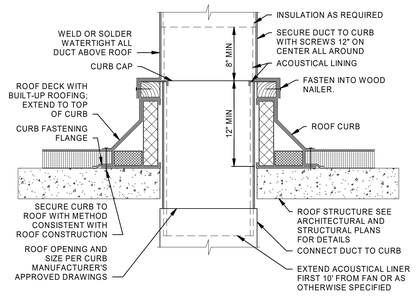
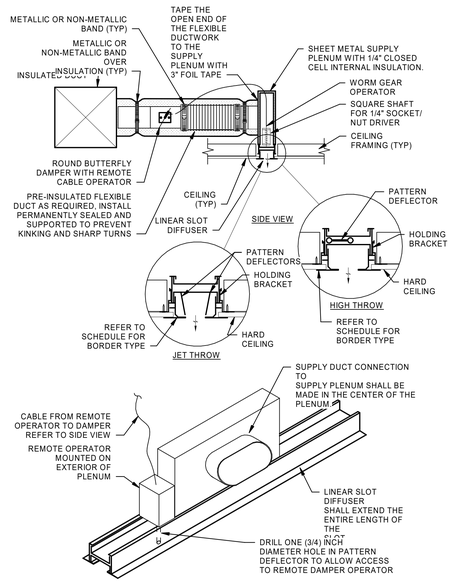


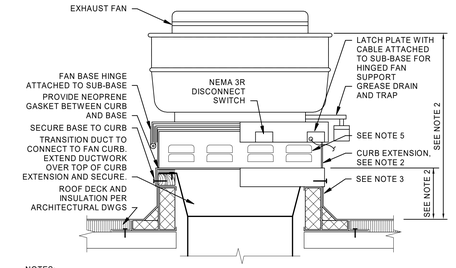
NOTES:
1. SPUD BACK GRAVEL A MINIMUM OF 30" IN ALL DIRECTIONS. FLASH WITH 90# MINERAL FACED BASED FLASHING. STRIP WITH THREE LAYERS OF ROOFING FELT EMBEDDED IN HOT ASPHALT. GRAVEL TO MATCH.

12 RECTANGULAR AIR DUCT PENETRATION THROUGH ROOF DETAIL
NTS



NOTES:
1. EXTEND HARD METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT EXCEED 5'-0". PROVIDE RIGID 90° ELBOW WHERE REQUIRED TO KEEP FLEXIBLE DUCT WITHIN 5'-0" LENGTH LIMITATION.
2. COORDINATE EXACT LENGTH AND LOCATION OF SLOT DIFFUSER WITH ARCHITECT'S REFLECTED CEILING PLAN.
3. PORTIONS OF THE SLOT DIFFUSER NOT USED FOR SUPPLY SHALL REMAIN OPEN TO THE PLENUM FOR RETURN UNLESS NOTED OTHERWISE.
4. ALL FLEXIBLE DUCT OFFSETS SHALL MAINTAIN A RADIUS OF 1.5 TIMES THE DIAMETER.
5. SUPPLY PLENUM MAY BE FIELD FABRICATED AS INDICATED ON PLANS OR PURCHASED FROM DIFFUSER SUPPLIER.
6. REFER TO DIFFUSER MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR EACH SCHEDULED BORDER TYPE.

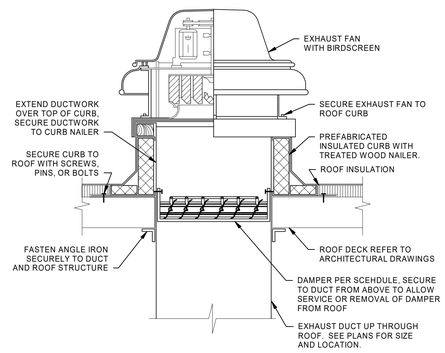
11 LINEAR SLOT DIFFUSER DETAIL
NTS



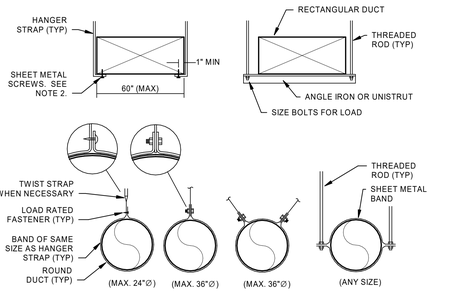
NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE.
2. IF DAMPER IS SPECIFIED IN EQUIPMENT SCHEDULE, INSTALL DAMPER AT BASE OF CURB AND SECURE FROM ABOVE TO ALLOW SERVICE THROUGH TOP OF CURB.
3. PREFABRICATED INSULATED ROOF CURB WITH TREATED WOOD NAILER, CANT, AND STEP AS REQUIRED TO ACCOMMODATE ROOF INSULATION. FRAME AND SECURE CURB TO ROOF WITH METHOD CONSISTENT WITH ROOF CONSTRUCTION. ROOF CURB SHALL BEAR ON ROOF STRUCTURE. REFER TO ARCHITECTURAL DRAWINGS AND CURB MANUFACTURER'S DETAILS FOR MORE INFORMATION.
4. FOR SLOPED ROOFS, PROVIDE CURB WITH DIMENSIONS CAPABLE OF COMPENSATING ROOF SLOPE TO ENSURE FAN IS INSTALLED LEVEL.
5. VENTED CURB EXTENSION. IF DOUBLE-WALL U.L. LISTED ZERO CLEARANCE GREASE DUCT IS USED, PROVIDE BLANK OFF PANELS ON INTERIOR OF CURB OPENINGS AND SEAL AIRTIGHT.

HIGH WIND STRAPPING: PROVIDE STAINLESS STEEL STRAPS OF LENGTH, WIDTH, THICKNESS, AND SPACING SUFFICIENT TO SECURE FAN TO CURB TO WITHSTAND WIND SPEED REQUIREMENTS PER LOCAL CODE. WRAP STRAPS OVER FAN AND SECURELY ATTACH TO OPPOSITE SIDE OF THE CURB.

10 UPBLAST GREASE EXHAUST FAN DETAIL
NTS



9 DOWNBLAST EXHAUST FAN DETAIL
NTS

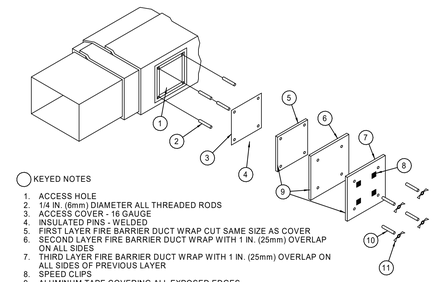


NOTES:
1. USE THREADED ROD FOR RECTANGULAR DUCTS LARGER THAN 60" WIDE.
2. OMIT SHEET METAL SCREWS IF HANGER STRAP IS CONTINUOUS AND LOOPS UNDER ENTIRE RECTANGULAR DUCT.
3. FOR ROUND DUCTS LARGER THAN 36"∅, USE TWO HANGER RODS TO SUPPORT DUCT FROM EACH SIDE.
4. HANGERS MUST NOT DEFORM DUCT SHAPE.

8 DUCT HANGER LOWER ATTACHMENT DETAILS
NTS

NOTES:
1. INSTALL GREASE EXHAUST AND FIRE RATED DUCT WRAP IN ACCORDANCE WITH THE MANUFACTURER'S APPROVED INSTRUCTIONS AND UL LISTED INSTALLATION DETAILS. TECHNIQUES THAT DIFFER FROM THE ABOVE METHOD ARE ACCEPTABLE IF THEY ARE UL TESTED AND APPROVED.

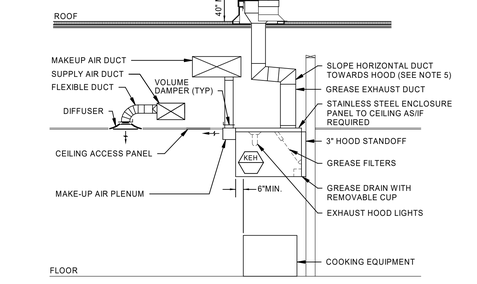
7 GREASE DUCT FIRE WRAP INSULATION INSTALLATION DETAIL
NTS



KEYED NOTES
1. ACCESS HOLE
2. 1/4 IN. (6mm) DIAMETER ALL THREADED RODS
3. ACCESS COVER - 16 GAUGE
4. INSULATED PINS - WELDED
5. FIRST LAYER FIRE BARRIER DUCT WRAP CUT SAME SIZE AS COVER
6. SECOND LAYER FIRE BARRIER DUCT WRAP WITH 1 IN. (25mm) OVERLAP ON ALL SIDES
7. THIRD LAYER FIRE BARRIER DUCT WRAP WITH 1 IN. (25mm) OVERLAP ON ALL SIDES OF PREVIOUS LAYER
8. SPEED CLIPS
9. ALUMINUM TAPE COVERING ALL EXPOSED EDGES
10. SPOOL PIECES FOR THREADED RODS
11. 1/4 IN. (6mm) DIAMETER WING NUTS

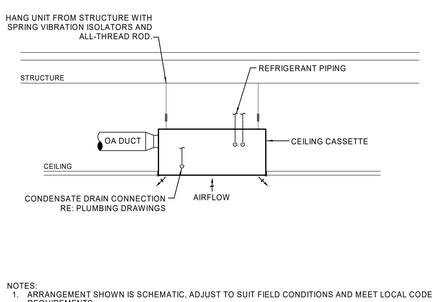
NOTES:
1. FOR REFERENCE ONLY. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
2. AT CONTRACTOR'S OPTION, A LISTED UL 1978 GREASE ACCESS DOOR PRODUCT MAY BE SUBSTITUTED FOR THE ACCESS DOOR PICTURED IN THIS DETAIL. DOOR SHALL BE RATED FOR UP TO 2,000F AND MEET NFPA96 STANDARDS. BOLTS SHALL BE LONG ENOUGH FOR DUCT WRAP SYSTEM (WHEN USED). INSTALL IN ACCORDANCE WITH MANUFACTURER'S LITERATURE.

6 GREASE DUCT CLEANOUT ACCESS DOOR DETAIL
NTS



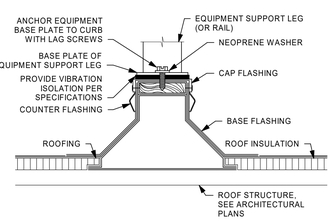
NOTES:
1. SUBMIT SHOP DRAWINGS OF ALL HOOD SYSTEMS TO CITY FOR APPROVAL PRIOR TO INSTALLATION.
2. TOTAL HOOD SYSTEM TO BE IN COMPLETE CONFORMANCE WITH NFPA, AND ALL LOCAL CODES AND REGULATIONS.
3. COORDINATE ALL FIRE PROTECTION SYSTEMS WITH FIRE PROTECTION CONTRACTOR WHO SHALL ALSO BE RESPONSIBLE FOR ALL PERMITS AND TESTING REQUIRED.
4. PROVIDE WRAP SYSTEM WHERE APPROVED BY LOCAL CODES IN LIEU OF RATED ENCLOSURE
5. PROVIDE ACCESS PANELS AS REQUIRED BY LOCAL CODE AND PER PLAN.
6. HOODS SHALL EXTEND MINIMUM 6" BEYOND ALL OPEN SIDES AND FRONT EDGE OF FOOD COOKING EQUIPMENT BEING SERVED.

5 KITCHEN EXHAUST HOOD ELEVATION DETAIL
NTS



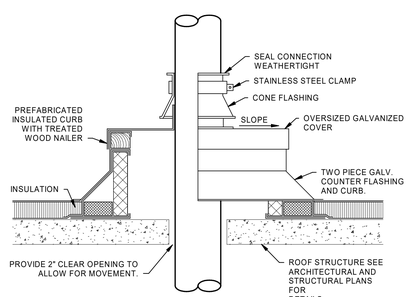
NOTES:
1. ARRANGEMENT SHOWN IS SCHEMATIC, ADJUST TO SUIT FIELD CONDITIONS AND MEET LOCAL CODE REQUIREMENTS.
2. SET DAMPER TO DELIVER SCHEDULED OUTSIDE AIR FLOW.
3. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR MAXIMUM CONDENSATE DRAIN LIFT HEIGHTS.
4. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR HORIZONTAL CONDENSATE DRAIN CONNECTION FROM THE UNIT.

4 CEILING CASSETTE DETAIL
NTS

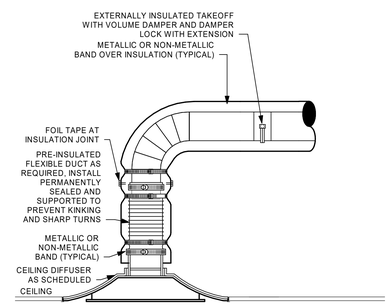


NOTES
1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR EQUIPMENT SUPPORTS, ANCHORING AND SEISMIC/WIND RESISTANCE.

3 ROOF EQUIPMENT SUPPORT RAIL DETAIL
NTS



ROUND AIR DUCT OR PIPE PENETRATION THROUGH ROOF DETAIL
2 NTS



NOTES:
1. FLEXIBLE DUCT LENGTH MAY NOT EXCEED 5'-0". EXTEND RIGID DUCT AS REQUIRED.
2. REFER TO SPECIFICATIONS FOR FLEXIBLE DUCTWORK INSTALLATION REQUIREMENTS.

1 CEILING DIFFUSER DETAIL
NTS

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL. CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

EXPIRES ON: 11/30/2021

LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
062-069411
ILLINOIS

Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
MECHANICAL DETAILS

Job No.	Drawn
204461	Author

Scale	Date
12" = 1'-0"	11/09/20

Sheet No.
M501

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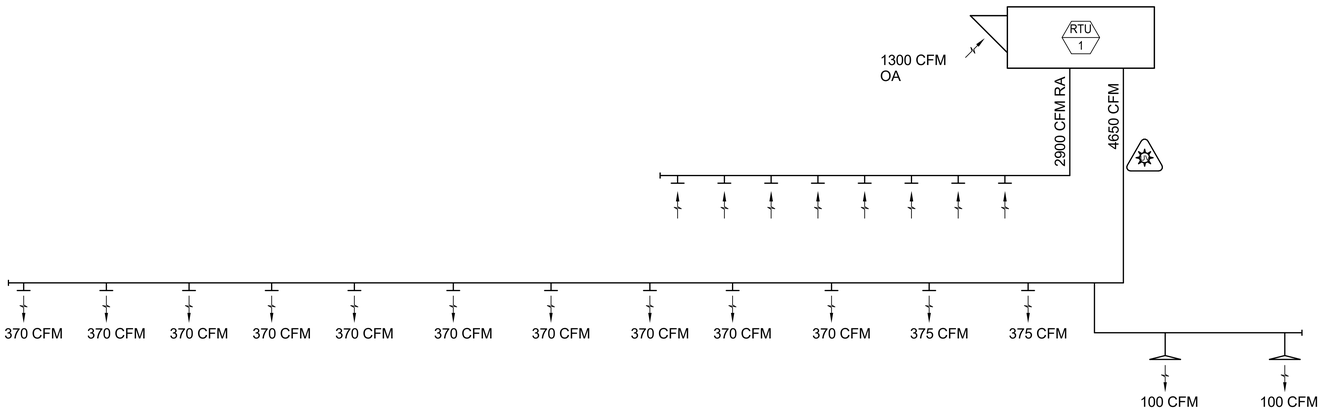
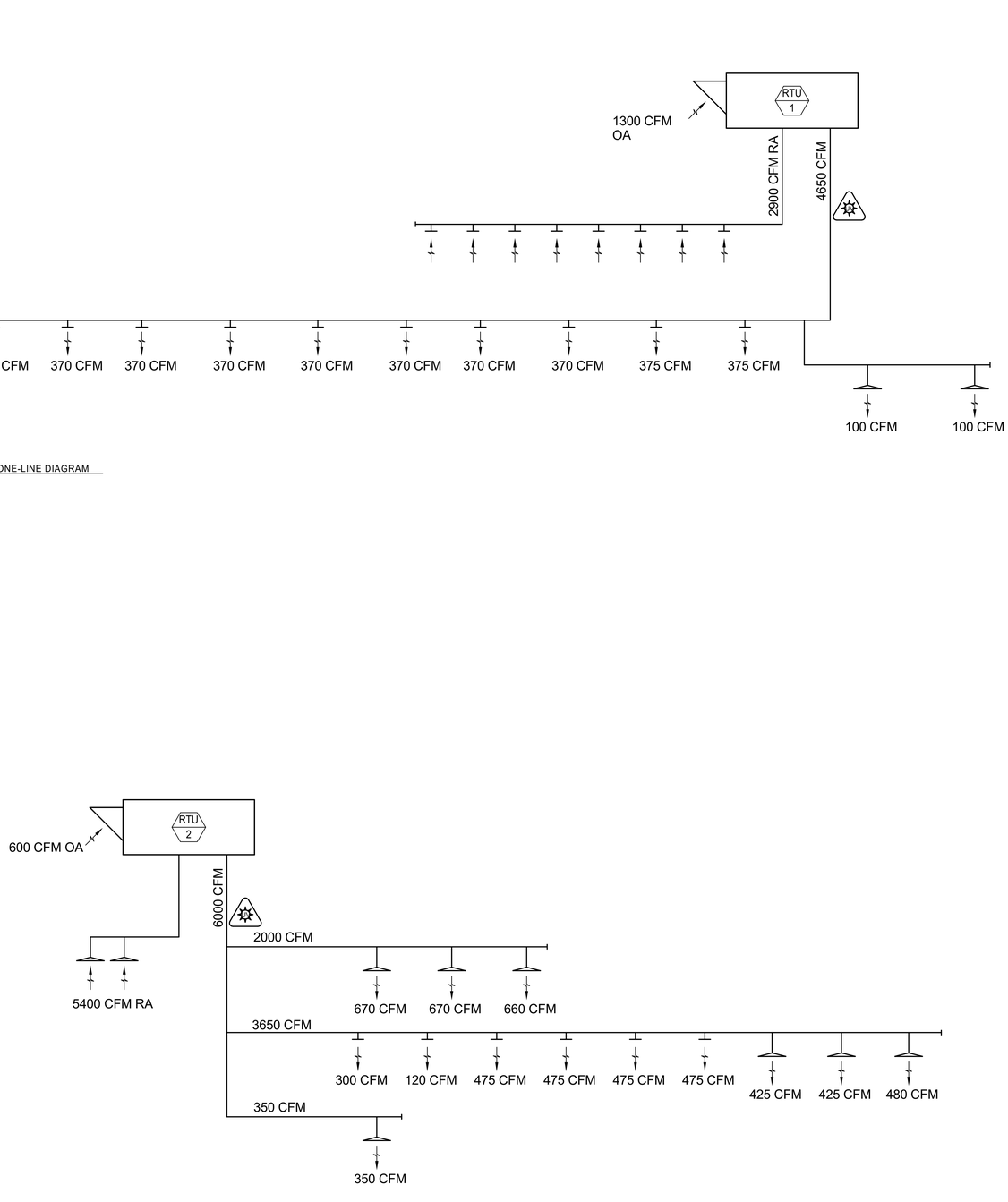
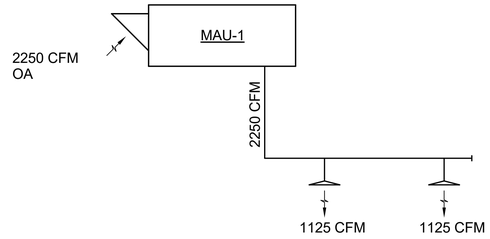
JOSHUA N. HOVER



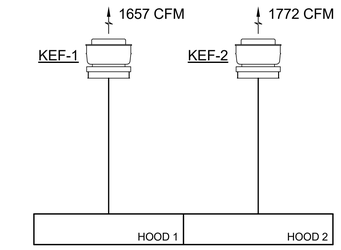
1 RTU-1 ONE-LINE DIAGRAM
NTS



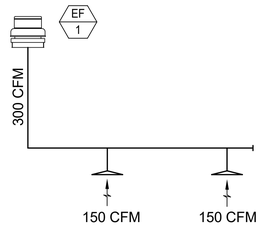
2 RTU-2 ONE-LINE DIAGRAM
NTS



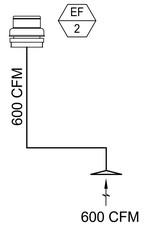
3 MAU-1 ONE-LINE DIAGRAM
NTS



4 KEF-1 & KEF-2 ONE-LINE DIAGRAM
NTS



5 EF-1 ONE-LINE DIAGRAM
NTS



6 EF-2 ONE-LINE DIAGRAM
NTS

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM

2050001105
IL CORPORATE NO: 184-002965
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SHAKE SHACK

4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

EXPIRES ON: 11/30/2021

LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
062-069411
OF ILLINOIS

Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
MECHANICAL DETAILS

Job No.	Drawn
204461	Author

Scale	Date
1/8" = 1'-0"	11/09/20

Sheet No.
M502

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Division 23: HEATING, VENTILATING, AND AIR CONDITIONING

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

2004 Edition	1995 Edition
1. Division 21 - Fire Suppression	Division 15
2. Division 22 - Plumbing	Division 15
3. Division 23 - HVAC	Division 15
4. Division 26 - Electrical	Division 16
5. Division 27 - Communications	Division 16
6. Division 28 - Electronic Safety and Security	Division 16

Furnish: “to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations.”

Install: “to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use.”

Provide: “to furnish and install.”

Furnished by Owner (or Owner-Furnished) or Furnished by Others: “an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete and ready for intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.”

Engineer: Where referenced in this division, “Engineer” is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the work.

NRTL: Nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.
1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

The terms "approved equal", “equivalent”, or "equal" are used synonymously and shall mean “accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified”. The term "approved" shall mean labeled, listed, or both, by an NRTL, and acceptable to the AHJ over this project.

C. PREBID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Install material and equipment in accordance with the manufacturer's installation instructions. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States or certified to meet the specified ASTM and ANSI standards.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Architect and Engineer. Workmanship shall be the finest possible by experienced mechanics. Installations shall comply with applicable codes and laws.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal noise caused by rattling equipment, piping, ducts, air devices, and squeaks in rotating components shall not be acceptable. Materials and equipment shall be of commercial specification grade in quality. Light duty and residential grade equipment shall not be accepted unless otherwise indicated.

Remove from the premises waste material present as a result of work, including cartons, crating, paper, stickers, and/or excavation material not used in backfilling, etc. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

F. COORDINATION

Coordinate work with that of other trades so that the various components of the systems are installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

Unless otherwise indicated, the General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:
1. National Electric Code (NEC)
2. National Fire Protection Association (NFPA)
3. Underwriters Laboratories (UL)
4. Occupational Safety and Health Administration (OSHA)
5. American Society of Mechanical Engineers (ASME)
6. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
7. American National Standards Institute (ANSI)
8. American Society of Testing Materials (ASTM)
9. Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner.

H. PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of ductwork and piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request Form for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:

1. Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
2. Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.
3. Proposed substitution has received necessary approvals of authorities having jurisdiction.
Same warranty will be furnished for proposed substitution as for specified Work.
5. If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.
6. Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these contract documents and the design concept. Prior to transmitting submittals, verify that the equipment submitted is mutually compatible and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow for two weeks Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittal, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal date, equipment identification acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph “Electronic Drawing Files” for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. For equipment with motor starters or VFDs, include short circuit current ratings. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, size of members, or quantities, omissions of components or fittings; coordination of electrical requirements; and not coordinating items with actual building conditions and adjacent work. Proceed with the procurement and installation of equipment only after receiving approved shop drawings relative to each item.

K. ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive or direct download, as desired, from the Engineer for a shipping and handling fee of $200 for a drawing set up to 12 sheets and $15 per sheet for each additional sheet. Contact the Architect for written authorization and Engineer for the necessary release agreement form and to specify shipping method and drawing format. In addition to payment, the written authorization from the Architect and release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include Record Drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph “Submittals” for requirements.

N. SPARE PARTS

Furnish to Owner, with receipt, the following spare parts for the equipment furnished for this project:
1. One set of spare filters of each type required for each unit. In addition to the spare set of filters, install new filters prior to testing, adjusting, and balancing work and before turning system over to Owner.
2. Furnish one complete set of belts for each fan.
3. Furnish three operating keys for each type of air outlet and inlet that require them.

O. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The Contractor and the Owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with Owner with at least 7 days advance notice.

P. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects, occurring within the warranty period(s), as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in operation at all times. Accomplish work requiring interruption of building operation at a time when the building is not in operation and only with written approval of building Owner and/or tenant. Coordinate interruption of building operation with the Owner and/or tenant a minimum of seven (7) days in advance of work.

B. COINCIDENTAL DAMAGE

Repair streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of the work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect.

C. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission from the Architect prior to cutting. Do not cut or disturb structural members without prior approval from the Architect. Cut holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. Patching shall match the original material and construction including fire ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the Architect.

D. ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal piping, conduit, and rough-in except in unfinished areas and where otherwise shown.

E. SUPPORT SYSTEMS

Structural steel used for support of equipment, ductwork and piping shall be new, clean, and conform to ASTM Designation A-36.

Support mechanical components from the building structure. Do not support mechanical components from ceilings, other mechanical or electrical components, and other non-structural elements.

F. ACCESS DOORS

Provide access doors for all concealed equipment and duct and piping accessories that require service where indicated or as required, except where above lay-in ceilings. Access doors shall be adequately sized for the devices served with a minimum size of 18 inches x 18 inches. Access doors must be of the proper construction for type of construction in which it is installed. Obtain Architect's approval of type, size, location and color before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation, concealed hinges, flush screwdriver-operated cam lock, and anchor straps. Provide access doors manufactured by Milcor, Titus, Zurn, or equal.

G. PENETRATIONS

Seal elevated floor, exterior wall and roof penetrations watertight and weathertight with non-shrink, non-hardening commercial sealant. Pack with mineral wool and seal both ends with minimum of 1/2 inch of sealant.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system.

Provide prefabricated roof curbs manufactured by Custom Curb, Inc., Pate Company, Thycurb or approved equal. Provide roof curb with factory installed wood nailer; welded, 18 gauge galvanized steel shell, base plate and flashing; 1-1/2 inch thick, 3 pound rigid insulation; fully mitered 3-inch raised cant; cover of weather-resistant, weather-proof material and pipe collar of weather-resistant material with stainless steel pipe clamps.

H. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilti, RectorSeal, Specified Technologies Inc., United States Gypsum Company, or 3M corp.

Through and Membrane Penetration Firestopping Systems Product Schedule: Provide UL listing, location, wall or floor rating, and installation drawing for each penetration fire stop system.

Where project conditions require modification to qualified testing and inspecting agency's illustrations for a particular firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Include qualifications data for testing agency.

I. MOTORS AND STARTERS

Provide motors and starting equipment where not furnished with the equipment package. Motors shall have copper windings, Class B insulation, and standard squirrel cage with starting torque characteristics suitable for the equipment served. Motors controlled by variable frequency drives shall be rated for voltage peaks and minimum rise times in accordance with NEMA MG1, Part 31. Motors for air handling equipment shall be selected for quiet operation. Each motor shall be checked for proper rotation after electrical connection has been completed. Provide drip-proof enclosure for locations protected from weather and not in air stream of fan; and totally enclosed fan cooled enclosure for motors exposed to weather. Motors shall be manufactured by Century, General Electric, Louis Allis, Westinghouse, or approved equal.

Provide every motor, except fractional horsepower single phase motors with an approved type of "built-in" thermal overload protection, with a motor starter. Each starter shall be provided with overload heaters sized to the motor rating, and every three phase motor starter shall have overload heaters in each phase. Ambient compensated heaters shall be installed wherever necessary. Unless noted otherwise, motor starters shall be furnished by the Division 23 Contractor for installation and connection by the Division 26 Contractor. Starters shall be Allen-Bradley, Clark, Furnas, Square D, or approved equal.

J. ELECTRICAL WIRING

High voltage wiring is defined as 50 Volts or higher. Low voltage wiring is defined as less than 50 Volts. Line voltage wiring shall be provided by Division 26. Line voltage control and interlock wiring for mechanical systems shall also be provided by Division 26. Low voltage control wiring shall be provided by Division 23. Furnish wiring diagrams to Division 26 as required for proper equipment hookup. Coordinate with Division 26 the actual wire sizing amps for mechanical equipment (from the equipment nameplate) to ensure proper installation.

Provide power and communication wiring with transient protection in accordance with IEEE C62.41.2. All control and interlock wiring shall comply with the NEC. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller. Control wiring not installed in conduit shall be UL rated for plenum installation. All NEC Class 1 (line voltage) wiring shall be UL listed in approved raceway according to the NEC and Division 26 requirements. Maximum allowable voltage for control wiring shall be 120 V. All low-voltage wiring shall meet NEC Class 2 requirements. Low-voltage power circuits shall be sub-fused when required to meet Class 2 current limit.

Conduit for Control Wiring: EMT with compression fittings, cold rolled steel, zinc coated or zinc-coated rigid steel with threaded connections.

Pull and Junction Boxes: Size according to number, size, and position of entering raceway as required by National Electrical Codes. Enclosure type shall be suited to location.

Install wiring parallel to building lines wherever possible. Conceal all control wiring in finished rooms. Do not install Class 2 wiring in raceway containing Class 1 wiring. Boxes and panels containing high voltage wiring and equipment may not be used for low-voltage wiring except for the purpose of interfacing the two wires (e.g., relays and transformers). All wire-to device and wire-to-wire connections shall be made at a terminal block or terminal strip. All runs of communication wiring shall be unspliced length when that length is commercially available. Verify the integrity of the entire network following the cable installation. Use appropriate test measures for each particular cable. Label all wiring and cabling at each end within 2 inches of termination with the controller termination number. Label control devices used in the system with permanent labels using the identifiers that match the record documents.

K. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include, but not be limited to flues, vents, intakes, associated roof jacks and caps to outdoors, dampers, in-line fans, roof fans, and control interlocks, etc. as required for proper operation of the complete system in accordance with the manufacturer's instructions.

Contractor shall be responsible for correct rough-in dimensions and shall verify them with Architect and/or equipment supplier prior to service installations.

L. SYSTEM TESTING AND ADJUSTING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test each system installed under this contract. Assume all costs involved in making the tests and repairing and/or replacing any damages resulting therefrom.

The final test and balance of the building HVAC systems shall be completed by National TAB (no exceptions) and contracted by the General Contractor. The representative from National TAB shall be certified by the National Environmental Balancing Bureau (NEBB), Associated Air Balance Council (AABC), or Testing, Adjusting and Balancing Bureau (TABB). TAB shall be performed in accordance with the most current edition of the certified agencies procedural standard for testing, adjusting and balancing and shall comply with the strictest interpretation of that standard for execution and reporting of all TAB work.

Work shall include but not be limited to: Perform test readings on fans, units, coils, pumps, etc. and adjust equipment to deliver specified amounts of air. Prepare testing and balancing report log showing air supply quantities, air entering and leaving temperatures and pressures at design flow, fan and unit test readings, motor voltage and amp draws, etc., and submit six copies of the final compilation of data to the Architect for evaluation and approval before final inspection of the project. Balance air systems to within plus or minus 10 percent for terminal devices and branch lines and plus or minus 5 percent for main ducts and air handling equipment of the amount of air shown on the drawings. TAB Contractor shall record space temperatures and make adjustments in airflow to each diffuser to obtain uniform temperature (no greater than +/- 3 F) in spaces. Document temperatures and adjustments in tab report. Adjust equipment to operate as intended by the specification. TAB report shall include a 'report summary/remarks' section in accordance with the procedural standard that provides both system set up and a summary of deficiencies as defined by the procedural standard..

TAB Contractor shall be responsible to calibrate, set, and adjust automatic temperature control sensors, actuators and control devices. Check proper sequencing of interlock systems, and operation of safety controls, adjust thermostats, and control setpoints, limits and time based adjustment to operate in accordance with the performance requirements of the Construction Documents. Adjust fans for proper and efficient operation. Certify to Architect that adjustments have been made and that system is operating satisfactorily. Calibrate, set, and adjust automatic temperature controls. Check proper sequencing of interlock systems, and operation of safety controls.

Division 23 contractor shall align bearings and replace bearings that have dirt or foreign material in them with new bearings without additional cost to the Owner.

M. VIBRATION ISOLATION

Provide vibration isolation equipment and materials by a single manufacturer. If type and deflection for specific equipment is not specified within the contract documents, reference ASHRAE Handbook “HVAC Applications” or provide per manufacturer's recommendations. Approved manufacturers include Amber Booth, Kinetics Noise Control, Mason Industries, Inc., Vibration Eliminator Co., Inc., and Vibration Mounting and Controls, provided their systems are in compliance with the specified design and performance requirements.

General Requirements: Select vibration isolators by the weight distribution to produce uniform deflection. Vibration isolators shall have either known un-deflected heights or calibration markings so that, after adjustment, the static deflection can be verified, thus determining that the load is within the proper range of the isolator. Isolators shall operate in the linear portion of their load versus deflection curves. Spring isolators shall have 50 percent excess capacity without becoming coil bound. Coat vibration isolators with factory-applied paint. Coat vibration isolators exposed to weather and other corrosive environments with factory-applied corrosion resistance protection. Install and adjust vibration isolators in accordance with manufacturers written instructions.

Pipe connections. Provide flexible connectors for piping system connections on equipment side of shutoff valves for all pumps, mechanical equipment supported or suspended by spring isolators, and where indicated on drawings. Fabricate flexible piping connectors from stainless steel or rubber materials as suitable for system fluid. Flexible piping connectors shall be bellows, spherical or braided hose type as recommended by the manufacturer for the application.

Isolator Types:

1. Type WP (Waffle Pads): Provide 5/16 inch thick neoprene pads ribbed or waffled on both sides. Manufacture pads with bridge bearing quality neoprene, and select for a maximum durometer of 50 and designed for 15 percent strain. Incorporate steel load_spreading plates where required between the equipment and the neoprene pad. If the isolator is bolted to the structure, install a neoprene vibration isolation washer and sleeve (Uniroyal Type 620/660 or as approved) shall be installed under the bolt head between the steel washer and the base plate. Provide Mason Industries Type W or equal.

2. Type SPNH (Spring and Neoprene Hangers): Provide a steel spring in series with a neoprene isolating element. The spring shall have a minimum additional travel to solid equal to 50 percent of the specified deflection. The neoprene element shall have a static deflection of not less than 0.3 inches with a strain not exceeding 15 percent. Unless otherwise specified, the static deflection of SPNH hangers shall be 2 inches. Spring diameter and hanger box hole size shall be large enough to permit the hanger rod to swing through a 30 degree arc. Provide neoprene sleeve where the lower hanger rod passes through the steel hanger box, such that the hanger rod cannot contact the steel hanger. The diameter of the clear hole in the hanger box shall be at least 3/4 inch larger than the diameter of the hanger rod. When installed, do not cock the spring element and do not allow the hanger box to rotate through a full 360 degree arc without encountering obstructions. Provide Mason Industries Type 30N or equal.

O. AIR FILTERS

Provide Farr 30/30, pleated, throwaway type filters, or similar as manufactured by Air Filter, Inc., American Air Filter, Flanders, or approved equal, unless otherwise indicated. Air units shall have new filters installed when they are operated before final acceptance.

If HVAC equipment is used during the construction period, Contractor shall provide one set of filters when the unit is started and replace filters when needed, but not less than every month. On the day of Substantial Completion, the Contractor shall clean the unit and provide a new set of filters in the unit.

P. REFRIGERANT AND OIL

Provide full refrigerant and oil charge in new air conditioning refrigeration systems, and maintain it for full term of the guarantee.

Q. IDENTIFICATION

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Color code pipe markers to comply with ANSI A13.1.

Install pipe markers on each HVAC piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

Provide manufacturer's standard laminated plastic, color coded equipment markers. Conform to the following color code: Green for Cooling; Yellow for Heating; Yellow/Green for combination Cooling and Heating; Brown for Energy Reclamation; Blue for other equipment types. Conform to ANSI A13.1 for Hazardous Equipment.

Provide stenciled signs for equipment identification at Contractor's option or where distance of required identification requires lettering larger than 1 inch height. Stencil paint shall be exterior type, oil-based, alkyd enamel, minimum 1-1/4 inch height or greater as required for long distance identification, white or black color for best contrast.

Provide duct markers or provide stenciled signs and arrows indicating ductwork service and flow direction in black or white lettering for best contrast with duct or insulation color. Locate markers maximum 50 feet along each duct side and within 5 feet of all control and balancing dampers or branch ducts more than 25 feet length and within 5 feet on each side of wall, floor, and ceiling penetrations. Provide additional markers in congested areas or at multiple duct runs as required for clarity.

3. DUCT INSULATION, DUCTWORK, ACCESSORIES, FLUES AND FANS

A. DUCT INSULATION

Provide fiberglass duct liner with fibers firmly bonded together with a thermosetting resin. Liner surface shall serve as a barrier against infiltration of dust and dirt, shall meet ASTM C1338 for fungi resistance, and shall be cleanable using duct cleaning methods and equipment outlined by North American Insulation Manufacturers Association (NAIMA) duct cleaning guide. Install with liner adhesive and mechanical fasteners in accordance with manufacturer's instructions and recommendations. Ductwork sizes shown on drawings are inside clear dimensions. Increase sheet metal by liner thickness in both directions where liner is installed.

Provide rectangular liner conforming to ASTM C1071, Type I or II that is 1-1/2 inch thick, 1-1/2 pound density, minimum R-6.0Certainteed Corp. “Toughgard” or equivalent, Johns Manville, Owens-Corning, or Knauf.

Provide liner on the following interior air ducts and where specified on the drawings:

1. Exposed rectangular supply ductwork.
2. Exposed rectangular return ductwork.

At interface of lined and wrapped ductwork, overlap lined ductwork at least 2 feet beyond wrapped insulation.

Cover concealed, rigid ductwork with ASTM C553, Type II flexible fiberglass insulation. Installed insulation shall be 2 inch thick, 3/4 pound density, minimum R-6.0 duct wrap, Certainteed or equivalent Johns Manville, Owens-Corning, or Knauf with heavy-duty foil-scrim-kraft facing, and with joints taped with 3 inch wide foil tape as follows:

1. Round and rectangular supply and return air ductwork.
2. Unlined Round and rectangular outside air ductwork.
3. Round and rectangular exhaust and relief air ductwork within 10 feet of exterior discharge.

Insulating materials, adhesives, coatings, etc., shall not exceed flame spread rating of 25 and smoke developed rating of 50 per ASTM E84. Containers for mastics and adhesives shall have U.L. Label.

1. Exterior insulation and jacket consisting of 2 inch thickness of Armatuff flexible elastomeric insulation or equivalent meeting ASTM C534 with integral 12 mils thick UV resistant cladding laminated at factory. Cover all seams with Armatuff seal tape.
2. Exterior insulation consisting of 2 inch thickness of flexible elastomeric insulation meeting ASTM C534 or 3 lb density rigid fiberglass meeting ASTM C612, and jacket consisting of 20 gauge corrugated aluminum jacket with aluminum fitting covers and minimum three aluminum attachment bands per section.
3. Exterior insulation consisting of 2 inch thickness of flexible elastomeric insulation meeting ASTM C534 or 3 lb density rigid fiberglass meeting ASTM C612, and jacket consisting of 15.5 mils thick Ventureclad Plus UV resistant cladding.

Install exterior ductwork with sufficient slope to ensure that water cannot pond anywhere on the duct. Drainage must be achieved by sloping ductwork - not by varying the insulation thickness. Locate longitudinal seams of outer shell (aluminum, flexible elastomeric, or cladding as applicable) at bottom of duct.

B. DUCTWORK

Provide galvanized steel ductwork and housings as shown on drawings. Construct ductwork including fittings and transitions in conformance with current SMACNA standards relative to gauge, bracing, joints, etc. Minimum thickness of duct shall be 26-gauge sheet metal. Reinforce housings and ductwork over 30 inches with 1-1/4 inch angles not less than 5'-6" on centers, and closer if required for sufficient rigidity to prevent vibration. Support horizontal runs of duct from strap iron hangers on centers not to exceed 8'-0". Do not support ceiling grid, conduits, pipes, equipment, etc. from ductwork. Coordinate routing of ductwork with other contractors such that piping, electrical conduit, and associated supports are not routed through the ductwork.

Construct non-VAV supply ducts to meet SMACNA positive pressure of 2 inches w.g. Construct Return, Outdoor and Exhaust ductwork upstream of fans to meet SMACNA negative pressure of 1 inch w.g. Construct exhaust ductwork downstream of fans to meet SMACNA positive pressure of 1 inch w.g.

Provide mill phosphatized or galvanealed finish for exposed ductwork to be field painted. Shop treated sheet metal shall have galvanized metal primer applied in the shop after fabrication and prior to shipping.

Seal ductwork with heavy liquid sealant, Hardcast Irongrip 601, Design Polymer DP 1010 , United Mcgill duct sealer or approved equal, applied according to sealant manufacturer's instructions. Seal all longitudinal and transverse ductwork joints airtight to meet SMACNA Seal Class A. Tapes and mastics shall be listed and labeled in accordance with UL 181A.

Provide radius elbows, turns, and offsets with a minimum centerline radius of 1-1/2 times the duct width. Where space does not permit full radius elbows, provide short radius elbows with a minimum of two continuous splitter vanes. Vanes shall be the entire length of the bend. Provide mitered elbows where space does not permit radius elbows, where shown on the drawings, or at the option of the contractor with the engineer's approval. Mitered elbows less than 45 degrees shall not require turning vanes. Mitered elbows 45 degrees and greater shall have single thickness turning vanes of same gauge as ductwork, rigidly fastened with guide strips in ductwork. Vanes for mitered elbows shall be provided in all supply and exhaust ductwork and in return and outside air ductwork that has an air velocity exceeding 1000 fpm. Do not install vanes in grease ductwork.

Ducts shall be connected to fans, fan casings and fan plenums by means of flexible connectors. Flexible connectors shall be neoprene coated glass cloth canvas connections, Duro-Dyne, Elgen, Ventfabric or equal. Flexible connectors shall have a flame spread of 25 or less and smoke developed rating not higher than 50. Make airtight joints and install with minimum 1-1/2 inches slack.

Provide balancing dampers, manufactured by Cesco, Greenheck, Louvers & Dampers, Nailor Industries, Pottorff, Ruskin, Tamco, or approved equal, where shown on drawings and wherever necessary for complete control of air flow. Splitter dampers shall be controlled by locking quadrants; provide Young Regulator or Ventlok end bearings for the damper rod. Rectangular volume dampers shall be opposed blade interlocking type. Round volume dampers shall be single-blade type consisting of circular blade mounted to a shaft. Provide Flexmaster model STO or equal 45 degree rectangular/round side takeoff fitting with model BO3 damper with locking quadrant and insulation build out for round ductwork branch takeoffs to individual air devices. Omit damper at takeoff fitting when damper is located downstream of takeoff.

Where access to dampers through a hard ceiling is required, provide a Metropolitan Air Technology model RT-250 or equal by Young's Regulator concealed, cable operated volume damper with remote operator. Damper shall be adjustable through the diffuser face or frame with standard 1/4 inch nutdriver or flat screwdriver. Cable assembly shall attach to damper as one piece with no linkage adjustment. Positive, direct, two-way damper control shall be provided with no sleeves, springs or screw adjustments to come loose after installation. Support cable assembly to avoid bends and kinks in cable. where approved by architect, a ceiling cup with cover plate can be used for access to cable operator.

Round or oval ductwork shall be FlaktGroup Semco, United, Hercules Industries or equal, sheetmetal, with smooth interior surface, with low pressure (duct pressure class up to and including 2 inches w.g.) Round ductwork gauges per the following table (reference SMACNA HVAC duct construction standards for gauges when pressures exceed 2 inches w.g.):

Size	Duct Gauge	Fitting Gauge
14” & under	26	24
15” thru 26"	24	22
28” thru 36"	22	20
38” thru 50"	20	20
52” thru 60"	18	18

Lewis & Lambert, Linx Industries Lindab Safe, or approved equal factory-manufactured round ductwork and fittings may be substituted for specified round branch ductwork, at Contractors option. Heavy liquid joint sealant may be omitted on factory-manufactured round ductwork.

Low pressure (duct pressure class up to and including 2 inches w.g.) Fittings 24 inches in diameter and less shall be prefabricated, spot-welded and internally sealed. Continuously weld fittings larger than 24 inches in diameter. Fitting gauge shall be 22 gauge for 36 inch fittings and under, 20 gauge for larger sizes. 90 degree tees shall be conical type. Seal longitudinal and transverse ductwork joints airtight with heavy liquid sealant applied according to manufacturer's instructions. Provide gauge thickness in medium pressure (duct pressure class 3 inches to 6 inches w.g.) ductwork as recommended by SMACNA.

C. FLEXIBLE DUCT

Low pressure (duct pressure class up to and including 2 inches w.g.) and medium pressure (duct pressure class 2.1 inch to 6 inches w.g.) flexible duct shall be Flexmaster type 8B, Thermaflex type G-KM, M-KE, JPL type Silver Jacket, or equal (fire retardant polyethylene) protective vapor barrier, U.L.181 Class 1, acoustical insulated duct, R-6.0 fiberglass insulation. Provide CPE liner with steel wire helix mechanically locked or permanently bonded to the liner.

Flexible duct runs shall not exceed 5 feet in length, and shall be installed fully extended and straight as possible avoiding tight turns. Install flexible duct in accordance with manufacturer's instructions. Support flexible duct at maximum 5 feet on center and within 6 inches of bends. Bends shall not exceed a centerline radius of one duct diameter. Duct sag shall not exceed 1/2 inch. Supporting material in direct contact with the duct shall not be less than 1-1/2 inches in width.

Connect flexible duct to rigid metal duct or air devices as recommended by the manufacturer. At a minimum, install two wraps of duct tape around the inner core connection and a metallic or non-metallic clamp over the tape and two wraps of duct tape or a clamp over the outer jacket. Duct clamps shall be labeled in accordance with UL-181B and marked 181B-C. Duct tape shall be labeled in accordance with UL 181B and marked 181B-FX.

D. CONDENSING GAS FURNACE AND APPLIANCE VENT

Vents and combustion air ducts for condensing type appliances shall be special gas vent or schedule 40 CPVC, meeting ASTM F441/F441M. Fittings shall be schedule 40 CPVC meeting ASTM F438 with solvent cement socket joints. Solvent used for joints shall meet ASTM F493.

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL. CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

EXPIRES ON: 11/30/2021
LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
062-069411
OF ILLINOIS
Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title: MECHANICAL SPECIFICATIONS

Job No.: 204461
Drawn: Author
Scale:
Date: 11/09/20
Sheet No.: M590

JOSHUA N. HOVER
11/23/2020 2:31:49 PM C:\Revit\Projects\2050001105 MEP v21_mal.warrick_20201123142903.rvt

E. AIR DEVICES

Provide air devices as scheduled on drawings, manufactured by Carnes, Krueger, Metalaire, Nailor Industries, Price, Titus, or Tuttle & Bailey. Select air devices to limit room noise level to no higher than NC-30 unless otherwise shown. Provide devices with a soft plastic gasket to make an airtight seal against the mounting surface. Coordinate final location, frame, and mounting type of air devices with Architectural reflected ceiling plans.

Submit complete shop drawings including information on noise level, pressure drop, throw, CFM for each air device, styles, borders, etc. Clearly marked with specified equipment number. Submit samples of each air device as requested by the Engineer.

Provide wall supply air registers with double deflection blades and opposed blade dampers. Provide wall return air grilles and exhaust air registers with horizontal 35 or 45 degree angle vision-proof bars. Provide concealed fasteners for wall mounted registers and grilles.

Provide ceiling supply air registers of aluminum curved blade type with blades parallel to long dimension and with throw pattern as indicated on drawings. Provide opposed blade dampers for supply air registers and exhaust air registers unless indicated otherwise.

Provide ceiling mounted air devices of lay-in or surface mounted type as required to be compatible with ceiling construction. Provide ceiling diffusers and grilles with white enamel finish unless noted otherwise.

F. CONTROL DAMPERS

Provide factory fabricated, parallel blade control dampers sized as shown on the drawings and as specified. Individual damper sections shall not be larger than 48 inches x 60 inches with maximum blade width of 6 inches. Frame construction shall be minimum 16 gauge galvanized steel for rectangular dampers, 20 gauge for round, 1/8 inch thick for aluminum, with flanges for duct mounting. Provide elastomeric or neoprene seals, mechanically attached and field replaceable. Provide a minimum of one damper actuator per section. Test damper performance in accordance with AMCA 500-D.

Provide modulating dampers with linear flow characteristics. Size modulating dampers based on the smaller of 1,500 FPM through the damper or full open air pressure drop of 0.1 inches W.C. Size two-position dampers full duct size and select to minimize pressure drop.

Motorized dampers used for ventilation air intake, exhaust air, or relief air shall have leakage rates not to exceed 4.0 CFM/square foot in full closed position at 1 inch W.G. pressure differential across the damper.

Provide dampers as manufactured by Greenheck, CESCO, Pottorff, Nailor, or Ruskin. Reference manufacturer with model number for outside air dampers is Ruskin CD-50 constructed of aluminum, and all other applications is Ruskin CD-35 constructed of galvanized steel.

Provide damper operator for each automatic damper with sufficient capacity to operate the damper under all conditions and to guarantee tight close-off of dampers against system pressure encountered. Each operator shall be provided with spring-return for normally closed or normally open position for fail safe operation to account for fire, low temperatures, or power interruption as required by the control systems specified on the drawings. Damper operators shall be manufactured by Belimo, Johnson Controls or approved equal. Provide transformer for damper motors if different voltages are required.

G. EXHAUST AIR SYSTEMS

Exhaust fans serving Type I kitchen exhaust hoods shall discharge a minimum of 40 inches above the roof surface, shall have hinged access including access for blade inspection and cleaning per NFPA 96, grease drain trough filled with replaceable, absorbent material or replaceable cup and cap with absorbent material which absorbs grease and rejects water, and insulated curb, and shall be installed in accordance with NFPA 96 and local codes.

Provide roof mounted upblast exhaust fans as scheduled on the drawings, Accurex, ACME, Carnes, Cook, Greenheck, Pennbarry, or Twin City Fans complete with aluminum housing, aluminum centrifugal wheel, motor with integral thermal overload protection, disconnect switch mounted inside the housing, drain trough, birdscreen and pre-engineered roof curb with minimum height as scheduled on the drawings. Exhaust fans serving Type I kitchen exhaust hoods shall discharge a minimum of 40 inches above the roof surface, have hinged access including access for blade inspection and cleaning per NFPA 96, grease drain trough filled with replaceable, absorbent material or replaceable cup and cap with absorbent material which absorbs grease and rejects water, and installed in accordance with NFPA 96 and local codes.

H. KITCHEN EXHAUST AIR SYSTEMS

Install kitchen grease exhaust package furnished by the owner. System includes kitchen hood, grease exhaust fan, filtered makeup air unit and a mechanical or electrical gas shutoff valve provided with the kitchen exhaust system to shutoff fuel or power source to cooking equipment upon detection of fire. Valve shall have a clearly marked open/closed indicator.

Provide ducts connecting Type 1 exhaust hoods to exhaust fans made of #16 gauge black iron with continuously welded joints and clean-out doors. Provide transition at connection to fan with opening size equal to or greater than the venturi opening of the fan inlet. Provide gasket at flanged connection to fan rated for 1500 degrees Fahrenheit and grease applications. Enclose duct in fireproof enclosure per locally adopted mechanical code or, if approved by local code official, in fire rated wrap insulation. Insulation shall be minimum two-hour rated duct wrap insulation for Type I hood grease exhaust duct applications and shall conform to ASTM E2336 where required to comply with IMC. Insulation shall be flexible wrap enclosure rated for minimum 2000 degrees Fahrenheit and for zero clearance to combustibles. Insulation shall be non-mineral wool, passive, low bio-persistent fiber totally encapsulated on all sides with aluminum foil. Insulation shall be as manufactured by Certainteed, Thermal Ceramics, Unifrax or 3M. Slope duct back towards hood at minimum of 1/4 inch per lineal foot. At Contractor's option, a UL listed concentric ductwork package that complies with UL 1978 standard for grease ducts may be used in lieu of the welded black iron duct for connecting hood to exhaust fan. Ductwork package shall be as manufactured by Metal-Fab, Schebler, Selkirk, or approved equal. Provide manufacturers UL listing number and verification certificate as a part of the shop drawing submittal. Install duct package in strict conformance with manufacturer's instructions and recommendations.

All portions of grease duct systems shall be tested for leakage in accordance with the "Grease Duct Test" paragraph of the IMC. Leakage tests shall be by water leakage type or equivalent test methods as approved by the local code official to determine that all joints are liquid tight. Water leakage test shall be performed by Enviromatic Corporation of America or owner approved testing contractor. Tests shall be performed in the presence of the local code official. Any joints found defective shall be repaired and retested until satisfactory results are obtained. The contractor shall submit a copy of the grease duct leakage test report to the architect/engineer complete with the approval signature of the local code official.

4. HVAC EQUIPMENT

A. ROOFTOP UNITS (GAS FIRED HEAT) 3-25 TONS

Provide electric cooling, gas heating rooftop units as scheduled on the drawings, manufactured by Aaon, Carrier, Daikin, Lennox, Johnson Controls, Trane, or York, with features as noted in the RTU schedule and in the RTU Control Matrix, and complete with factory installed direct-drive hermetic compressors with internal spring vibration isolation, built-in motor thermal overload protection, crankcase heater, and low pressure switches; direct expansion cooling and condensing coils with1 inch factory installed flexible elastomeric insulation around the suction and liquid lines not directly located above a condensate drain pan and protective UV coating on any insulation exposed to sunlight, minimum SEER or EER rating (cooling) as required by the applicable energy code or greater if scheduled on the drawings, centrifugal evaporator blower; air filter rack, propeller type condenser fan; aluminized steel heat exchanger, minimum AFUE rating (heating) as required by the applicable energy code or greater if scheduled on the drawings, forced combustion air blower; complete factory installed micro-processor controls including anti-short cycle timers, time delay relays and minimum "on" time controls, 100 percent safety gas shutoff, direct spark ignition system; built-in thermal overload protection on motors and compressors; outdoor air damper; relief; weathertight housing constructed of zinc coated, heavy gauge, galvanized steel with weather-resistant baked enamel finish; pre-engineered roof curb with minimum height as scheduled on the drawings if unit is equipped with internal vibration isolators; Type CMB if unit is not equipped with internal vibration isolators; single point electrical power connection. Provide guards or louvered panels to protect the condenser coil from hail or other damage. Provide a 125 VAC, 20 amp duplex convenience receptacle mounted to unit ready for field wiring with a cover UL listed for wet and damp locations when in use. Provide electronic programmable type thermostat. Provide unit complete with manufacturer's one year guarantee on components plus an additional four year guarantee on the compressors and heat exchangers. For units equipped with an economizer assembly, the assembly shall be covered with minimum 5 year manufacturer warranty, certified to operate through 60,000 damper opening and closing cycles, and certified to meet leakage requirements specified under the section, "Control Dampers."

B. SPLIT DUCTLESS AIR-CONDITIONING SYSTEMS

Provide split ductless system consisting of evaporator section for wall or ceiling mounting as indicated and remote condensing section similar to Carrier, Comfort Star, Daikin, Friedrich, Fujitsu, Lennox, LG, Mitsubishi, Sanyo, Trane, or York. Evaporator cabinet shall be factory assembled pre-wired consisting of furniture-grade steel with baked-enamel finish, front access, with direct-drive centrifugal fans, 2-speed motor, and cleanable foam filter. Evaporator coil shall be direct-expansion cooling coil of seamless copper tubes expanded into aluminum fins, with thermal-expansion valve with external equalizer. Air-cooled condenser shall be of corrosion-resistant cabinet containing compressor, copper-tube aluminum-fin coils, direct-drive propeller fans with motors with internal overload protection; capacity control to 0 degrees Fahrenheit.

Provide refrigerant piping sized as recommended by equipment manufacturer with foamed plastic insulation on the suction line as specified in this section.

Control System: Unit-mounted panel with contactors, control transformer with circuit breaker, solid-state temperature- and humidity-control modules. Provide solid-state, unit-mounted control panel with start-stop switch, adjustable humidity set point, and adjustable temperature set point. Refer to sequence of operation.

C. AIR CURTAINS

Provide air curtains manufactured by Berner, Marley, Mars, or Powered Air, of sizes and capacities shown on drawings. Units shall comply with AMCA 220, AHRI 410 and NSF 37. Unit housing shall be constructed of aluminum, aluminized steel, or galvanized steel with powder coatedanodized finish, with steel mounting brackets. Unit shall have air adjustment by way of multi-speed motors or adjustable intake louvers. Unit shall have an adjustable integral discharge nozzle. Units shall have statically and dynamically balanced fans with [direct drivefan drives. Motors shall be single speed resiliently mounted, continuous duty, with permanently sealed pre-lubricated ball bearings, and internal disconnect.

Furnish unit with washable panel filters with welded galvanized steel mounting frames, gasketed, with fasteners for bolting together built-up filter banks. Furnish unit with built-in line voltage thermostat wired to air curtain junction box. Furnish with plunger-type automatic door switch, start-stop pushbutton switch, factory-installed time-delay relay, and mounting brackets and accessories. Furnish unit with motor control panel complete with motor starter, 115V transformer with primary and secondary fuses, terminal strip, and NEMA 250 enclosure.

D. ELECTRIC UNIT HEATERS

Provide electric unit heaters as scheduled on the drawings, manufactured by Berko, Brasch, Indeeco, Markel, QMark, or Raywall, standard type propeller unit heaters with sidewall mounting brackets and hardware for horizontal airflow. Furnish heater fan motors complete with a manual motor starter with automatic thermal cutouts sized to the motor load, disconnect switch, and other code required safety devices. Provide unit mounted thermostat and manual summer/winter changeover switch.

E. ELECTRIC INFRARED RADIANT HEATERS

Provide electric infrared radiant heaters as scheduled on the drawings, or equal by AmbiRad, Chromalox, King Electric, Markel, Berko, or Raywall, complete with painted-steel housing with anodized-aluminum reflector and baked enamel finish. Provide radiation pattern as scheduled, with a beam angle of 30, 60, or 90 degree symmetrical, or 60 degree asymmetrical pattern. Heating elements shall be quartz lamp with coiled tungsten-wire enclosed in clear quartz tube, nickel-chromium-wire enclosed in quartz tube, or nickel-chromium-wire embedded in magnesium oxide power and enclosed in metal sheath. Provide with manufacturer standard thermostat with all required contactors, relays and control transformers. Provide with tilt adjust mounting bracket and manufacturer standard supports for suspending of units from above. Install units with sufficient clearance from adjacent construction, piping, ductwork, and other obstructions to allow for service and maintenance, maintaining all manufacturer required clearances. Verify operation of each unit by measuring input voltage and current simultaneously for a period of ten minutes of continuous operation.

5. PIPING AND PIPING SPECIALTIES

A. REFRIGERANT PIPING AND INSULATION

Copper tubing: ASTM B 280, alloy C12200, type ACR, hard-drawn straight lengths, and soft-annealed coils, seamless copper tubing. Tubing shall be factory cleaned, ready for installation, and have ends capped to protect cleanliness of pipe interiors prior to shipping.

Fittings: wrought-copper fittings: ANSI B16.22, streamlined pattern.

Brazing filler metals: BCUP - 5: copper (CU), phosphorus (P) 4.8 - 5.2 percent, and silver (AG) 14.5 - 15.5 for joining wrought copper fittings and copper tubing. Braze joints with a slow stream of dry nitrogen passing through the piping.

Insulate suction lines with 1 inch and liquid lines with 1 inch foamed plastic insulation, Armaflex or equal. Piping insulation shall have a flame spread of 25 or less, and a smoke developed rating of 50 or less when tested in accordance with ASTM E84. Coat insulation that is exposed to the elements with a protective sealer. Install and support piping to keep noise and vibration to a minimum. Support and secure piping to Unistrut type supports so that no vibration passes to the building structure. Pipe attachments shall be copper-plated or have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing. Install a support within one foot of each change of direction. Mount pipe hangers around the outside of the insulation with saddles to prevent hangers from rupturing the insulation. Replace insulation that is cut or broken by the hangers.

Run refrigerant lines parallel and perpendicular to wall and floor lines and to appear straight and in good order. Pitch suction lines down slightly (1 inch in 20 feet) towards the compressor. Provide oil traps at the base of vertical suction risers over 6 feet high.

Install liquid line sight glasses in liquid lines nearest the expansion valve. Factory mount expansion valves with the sensing bulbs shipped loose. Field mount expansion valve bulb after refrigerant piping is complete (damage may occur if bulbs come in contact with heat).

For systems of 5 ton capacity and smaller, the contractor shall have the option to provide copper refrigerant tubing line set sized as recommended by equipment manufacturer and of length as required for the installation. Provide minimum 1 inch thick foamed plastic insulation, Armaflex or equal, on the suction and liquid lines. Provide quick-connect flare tubing compression fittings or solder connections as required to match the connections of the condensing unit and evaporator coil.

B. SYSTEM EVACUATION AND CHARGING

Blow out refrigeration lines with dry nitrogen at a suitable pressure before making final connection at the condensing unit or coil to ensure against dirt, scale, or other foreign material being in the lines. Draw a vacuum to 29 inches of mercury. Break this vacuum by charging dry refrigerant gas into the system, raising the pressure to 0 PSIG. Repeat the latter two steps for a triple evacuation before the final evacuation is started. Make final evacuation by reducing the system absolute pressure to a maximum of 0.5 millimeters (500 microns) and allowing the pump to run at this pressure for a minimum of two hours.

Repeat the proper amount of refrigerant charge per the manufacturer's recommendations. Record the amount of refrigerant by weight charged into the system for each circuit recorded to the nearest 1/4 pound on tags and attach tags to the liquid line near the condensing unit. Refrigerant shall be supplied by the HVAC Contractor.

6. TEMPERATURE CONTROLS

A. GENERAL REQUIREMENTS

Provide a complete system of temperature controls including controllers, control panels, thermostats, sensors, time switches, override timers, actuators, relays, and wiring required to provide the desired control systems specified on the drawings.

Submit shop drawings of equipment provided for temperature control. Submit operation and maintenance data, including trouble-shooting maintenance guide, step-by-step procedures indexed for each controller and thermostat function, inspection period, cleaning methods and materials, and calibration tolerances.

Provide integrated wiring diagrams showing interconnections between field installed equipment and package wiring furnished with the HVAC equipment. Control wiring shall be sized to accommodate the voltage drop associated with the distance between the control device and the controller.

Provide supervision and on-job checkout service as required to ensure that installation and operation of the temperature control system meets requirements of the drawings, specifications, and sequences of operation. The system shall be guaranteed for a period of one year following the acceptance of the system by the Architect/Engineer. Correct defects occurring during this period at no additional cost to the Owner.

Install control devices with top of device at 48 inches AFF to meet ADA requirements unless otherwise noted on the plans.

B. WIRING

Provide electrical and control wiring as specified under the section "Electrical Wiring."

C. THERMOSTAT CONTROL EQUIPMENT

Manufacturers and model numbers are listed for reference as to quality and features required for the control devices. Provide control devices by Honeywell with quality and features as indicated.

Seven day programmable, occupied/unoccupied thermostats for on/off or multiple stages of heating and cooling systems shall be Honeywell series T7350 or equal with integral subbase. Order thermostat with multi-stage capability as required to match scheduled unit cooling/heating stages.

Remote sensors integrated with the seven day programmable thermostat shall be Honeywell TR21/TR21-H remote sensor.

D. SENSORS AND RELAYS

Provide general-purpose type elements for use in input and output sensors. Provide transmitters or transducers with sensor as required, compatible with the controllers used, with range suitable for the systems encountered. Transmitters and transducers shall have offset and span adjustments, temperature compensation, shock and vibration immunity, and zeroing capability. Accuracy requirements shall include the combined effects of linearity, hysteresis, repeatability, and the transmitter.

Dry-bulb temperature sensors at a minimum shall be accurate to +/- 2 degrees Fahrenheit over the range of 40 to 80 degrees Fahrenheit. Wet-bulb temperature shall be calculated using dry-bulb temperature and humidity and shall be accurate to +/- 2 degrees Fahrenheit. Enthalpy shall be calculated using dry-bulb temperature and humidity and shall be accurate to +/- 3 BTU/lb over the range of 20 to 36 BTU/lb. Humidity sensors at a minimum shall be accurate within +/- 3 percent full range between 20 and 95 percent, with drift less than 1 percent full scale per year. Pressure transmitters at a minimum shall be accurate to +/- 1 percent full scale with drift less than 1 percent full scale per year.

Smoke detectors furnished and installed as indicated in this section or as scheduled on the plans (or heat detectors, if permitted by code) shall shut down each associated unit supply fan upon activation where required by code. Provide remote visual and audible alarm device in an approved location if smoke detectors are not connected to a fire alarm panel and label device as "Air Duct Detector Trouble".

Provide 24 Volt or 120 Volt timeswitches Intermatic Series FM1D20 or equal programmable type with 7-day programming with up to two "ons" and "offs" per day. Battery backup shall provide 48 hours of memory retention. Override timer switches shall be spring wound, 6-hour, normally open type. Coordinate 120 V wiring of timeswitch with electrical contractor if 120 V model is provided.

Provide relays with contact rating, configuration, and coil voltage that is suitable for the application. Relay shall be general purpose, enclosed plug-in type and protected by a heat and shock resistant duct cover. Number of contacts and operational function shall be as required. Transient suppression shall be provided as an integral part of the relay. Contactors shall be single coil, electrically operated, mechanically held, double-break, silver-to-silver type protected by arcing contacts. Positive locking shall be obtained without the use of hooks, latches, or semi-permanent magnets. Operating and release times shall be 100 milliseconds or less.

7. SEQUENCE OF OPERATION

A. FAN COIL UNIT CONTROL

During occupied hours, operate fan coil unit supply fan continuously and open outdoor air damper to maintain minimum ventilation. Cycle stage(s) of DX cooling and electric heating to maintain room thermostat set point (75 degrees Fahrenheit cooling, 70 degrees Fahrenheit heating). Duct mounted smoke detectors shall shutdown unit upon alarm.

During unoccupied hours, cycle the fan coil unit supply fan and cooling or heating system to maintain unoccupied setback temperature set points. Outdoor air damper shall be closed during unoccupied hours.

B. KITCHEN EXHAUST FAN CONTROL

Kitchen exhaust fan shall be energized through on-off switches at the associated exhaust hoods or cooking equipment or through a master kitchen ventilation control panel as indicated on the drawings.
Kitchen fans shall be interlocked to operate with cooking appliances, make-up air and other air-handling equipment providing fresh air to the kitchen area as noted or scheduled on the drawings.

C. MAKE-UP AIR UNIT CONTROL

Make-up air unit supply air fan shall be energized and the outside air damper shall open 100% when exhaust fans are energized. Exhaust fans and make-up air units shall modulate thru the hood control panel. Refer to installation, operation, and maintenance manual.

D. ROOFTOP UNIT CONTROL

Refer to RTU CONTROL MATRIX on Sheet M601 for required rooftop unit control options.

E. RESTROOM EXHAUST FAN (EF-1) CONTROL

Operate exhaust fans continuously during occupied hours and shut down during unoccupied hours. Provide a 7-day timeclock to switch each system between occupied and unoccupied operation.

F. MECHANICAL ROOM EXHAUST FAN (EF-2) CONTROL

Fan shall normally be off. The fan shall activate by mounted thermostat to maintain room temperature setpoint (80 degrees Fahrenheit).

G. AIR CURTAIN CONTROL

Interlock air curtain with door limit switch to energize when the door opens.

H. ELECTRIC UNIT HEATER CONTROL

Unit heater shall be activated by unit mounted thermostat to maintain room temperature setpoint (60 degrees Fahrenheit).

8. ALTERNATES

A. DESCRIPTION

Refer to the architectural portion of the specification for list of alternates. Applicable sections of the base specifications shall apply to all work required by the alternate unless otherwise specified. Determine whether or not and how each alternate affects work. Include labor, materials, equipment, and transportation services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bid for each alternate applicable to work, stating the amount to be added or deducted from the base bid.

END OF SECTION 23

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM

2050001105
IL CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

EXPIRES ON: 11/30/2021

LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
062-069411
ILLINOIS

Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
MECHANICAL SPECIFICATIONS

Job No. 204461
Drawn Author
Scale
Date 11/09/20

Sheet No.
M591

JOSHUA N. HOVER
11/23/2020 2:31:52 PM C:\Revit\Projects\2050001105 MEP v21_mal.warrick_20201123142903.rvt

ROOFTOP UNIT CONTROL MATRIX

CONTROL FEATURE	UNITS	RTU-1 DINING SETPOINT OR Y/N	RTU-2 KITCHEN SETPOINT OR Y/N	NOTES
SETPOINTS				
COOLING - OCCUPIED SETPOINT	°F	75	75	
COOLING - UNOCCUPIED SETPOINT	°F	80	80	
HEATING - OCCUPIED SETPOINT	°F	70	70	
HEATING - UNOCCUPIED SETPOINT	°F	60	60	
DEHUMIDIFICATION SETPOINT - HUMIDITY SENSOR FEEDBACK	% RH	60%	60%	B
PROGRAMMED CONTROL FEATURES				
HVAC SYSTEM OCCUPIED/UNOCCUPIED MODE - PROGRAMMABLE THERMOSTAT		Y	Y	B
REMOTE TEMPERATURE SENSOR		Y	Y	B
EQUIPMENT ACCESSORIES AND CONTROL MODULES				
OUTSIDE AIR DAMPER - MOTOR OPERATED (MODULATING)		Y	Y	L
INTEGRATED ECONOMIZER - DIFFERENTIAL ENTHALPY ENABLE (OA ENTHALPY < RA ENTHALPY)	BTU/LB	Y	Y	E
ECONOMIZER FAULT DETECTION AND DIAGNOSTICS (FDD) SYSTEM		Y	Y	F, G
RELIEF - BAROMETRIC DAMPER		Y	N	
RELIEF - CONSTANT VOLUME POWERED EXHAUST FAN		N	Y	H
COOLING COIL (DX - STAGED)		Y	Y	M
DEHUMIDIFICATION - HOT GAS REHEAT		Y	Y	O
HEATING COIL (NATURAL GAS)		Y	Y	M
SUPPLY FAN CONTROL METHODS				
ON DURING OCCUPIED HOURS		Y	Y	
ON CONTINUOUSLY		Y	Y	
CYCLE WITH LOADS DURING UNOCCUPIED HOURS		Y	Y	
SAFETIES, INTERLOCKS, AND ALARMS				
GAS VALVE SAFETY		Y	Y	F
RETURN AIR SMOKE DETECTOR - SAFETY SHUTDOWN		Y	Y	U
FIRE ALARM CONTROL PANEL - SAFETY SHUTDOWN INTERLOCK		Y	Y	
KITCHEN EXHAUST SYSTEM INTERLOCK		Y	Y	S

DIV. 23 CONTRACTOR SHALL PROVIDE CONTROL PANEL(S), WIRING, THERMOSTAT(S), TEMPERATURE SENSOR(S), HUMIDISTAT(S), AND/OR CO2 SENSOR(S) WHERE SHOWN ON THE DRAWINGS AND AS REQUIRED TO FACILITATE THE SCHEDULED CONTROL MODULES AND SEQUENCES OF OPERATION. EACH UNIT SHALL CONTROL BASED ON ITS OWN INTERNAL SAFETIES, TIME DELAYS, AND SEQUENCES UNLESS NOTED OTHERWISE. COORDINATE WITH OWNER FINAL BUILDING AND EQUIPMENT SCHEDULES DURING STARTUP. REFERENCE DIVISION SPECIFICATIONS FOR INDIVIDUAL DEVICE REQUIREMENTS.

NOTES:

B. DIVISION 23 CONTRACTOR SHALL PROVIDE DEVICE.
E. IF SETPOINT VALUE IS LISTED, IT INDICATES ECONOMIZER HIGH-LIMIT SHUTOFF. UNIT SHALL BE IN ECONOMIZER IF CONDITIONS ARE LESS THAN SETPOINT. THE FOLLOWING SENSORS SHALL DETERMINE ECONOMIZER ON POINT.
   OUTSIDE AIR TEMPERATURE; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.
   RETURN AIR TEMPERATURE; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.
   OUTSIDE AIR HUMIDITY; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.
   RETURN AIR HUMIDITY; DIVISION 23 PROVIDED AS PART OF ECONOMIZER CONTROL MODULE.
F. DEVICE SHALL BE FACTORY MOUNTED AND PRE-WIRED FOR OPERATION SUBJECT TO THE ONBOARD CONTROLLER.
G. PROVIDE UNIT WITH AN FDD SYSTEM CONSISTING OF PERMANENTLY INSTALLED OUTSIDE AIR, SUPPLY AIR, AND RETURN AIR TEMPERATURE SENSORS. THE UNIT CONTROLLER SHALL AT A MINIMUM BE CAPABLE OF PROVIDING SYSTEM STATUS OF ECONOMIZER, COMPRESSOR, HEATING, MIXED AIR LOW LIMIT ALARM, AND SENSOR VALUES. EACH OPERATING MODE SHALL BE CAPABLE OF INDEPENDENTLY OPERATING FOR TESTING. THE SYSTEM SHALL REPORT FAULTS TO AN APPLICATION ACCESSIBLE BY SERVICE PERSONNEL. THE FOLLOWING FAULTS SHALL BE DETECTED: AIR TEMPERATURE SENSOR FAILURE, ECONOMIZER ENABLED/DISABLED WHEN ECONOMIZER SHOULD BE OFF/ON, RESPECTIVELY, DAMPER NOT MODULATING, AND EXCESS OUTSIDE AIR.
H. POWERED EXHAUST FAN SHALL STAGE ON AND OFF ACCORDING TO DAMPER POSITION.
L. EQUIPMENT MANUFACTURER SHALL PROVIDE MODULATING DAMPER AND CONTROLS CAPABLE OF ADJUSTING THE DAMPER POSITION TO MAINTAIN THE SCHEDULED OUTSIDE AIR ON THE DRAWINGS ACROSS ALL FAN SPEEDS. DIV. 23 CONTRACTOR SHALL PROGRAM MULTIPLE DAMPER POSITION SETPOINTS IN THE FIELD DURING TESTING AND BALANCING TO MAINTAIN MINIMUM VENTILATION WHEN NOT IN ECONOMIZER. DAMPER SHALL BE CLOSED DURING UNOCCUPIED HOURS.
M. UNITARY CONTROLLER SHALL MODULATE AND/OR CYCLE SUPPLY FAN SPEED SETTING AND COIL CAPACITY STAGES SUBJECT TO THE INTERNAL SAFETIES AND SEQUENCES TO MAINTAIN SCHEDULED SETPOINTS.
O. PROGRAM DEHUMIDIFICATION SEQUENCE BASED ON ZONE AIR HUMIDITY.
S. INTERLOCK RTU WITH KITCHEN EXHAUST HOOD SYSTEM(S) TO SHUT DOWN UPON SIGNAL FROM HOOD FIRE EXTINGUISHING SYSTEM. INTERLOCK RTU WITH KITCHEN EXHAUST FAN TO ENERGIZE WHEN HOOD SYSTEM IS ENERGIZED FOR PRESSURIZATION.
U. DIVISION 28 CONTRACTOR SHALL PROVIDE DEVICE.

ROOFTOP UNIT SCHEDULE (DX COOLING, NATURAL GAS HEAT)

MARK	MANUFACTURER	MODEL	NOMINAL TONS	UNIT TYPE	SUPPLY FAN CFM	SUPPLY FAN ESP (IN)	SUPPLY FAN BHP	SUPPLY FAN VFD (Y/N)	COOLING COIL TH (MBH)	COOLING COIL SH (MBH)	EAT (°F DB)	EAT (°F WB)	LAT (°F DB)	LAT (°F WB)	REFR TYPE	MIN EFF (EER)	MIN EFF (IEER)	MIN NO STAGES	HEAT EXCHANGER MIN OUT (MBH)	NOM INPUT (MBH)	MIN EFF (%)	EAT (°F DB)	LAT (°F DB)	MIN NO STAGES	MIN O/A CFM	ELECTRICAL V/PH	MCA	MOCP	DISC TYPE	WEIGHT (LBS)	NOTES
RTU-1	CARRIER	48HCFE14A2A5-0A0A0	12.5	SINGLE ZONE	4,650	0.5	1.9	N	144.8	111.7	79.8	68.0	59.7	58.0	R410A	12.2	13	2	156	240	81	50.6	89.2	2	1300	208/3	58	70	FUSED	1710	A-R
RTU-2	CARRIER	48HCFE14A2A5-0A0A0	12.5	SINGLE ZONE	6,000	0.5	3.1	N	158.9	123.8	76.7	65.4	59.2	57.6	R410A	12.2	13	2	156	240	81	61.7	97.6	2	600	208/3	58	70	FUSED	1607	A-Q, S

*** EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS. EQUIPMENT SHALL BE OBTAINED THROUGH SHAKE SHACK NATIONAL ACCOUNT. REFER TO T.12 / VENDOR LIST FOR MORE INFORMATION.**
MODEL NUMBERS AND NOMINAL TONS LISTED SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER, MODEL NUMBERS, OR NOMINAL TONS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. REFER TO ROOFTOP UNIT CONTROL MATRIX FOR CONTROL FEATURES, MODULES, AND ACCESSORIES THAT SHALL BE PROVIDED WITH THE EQUIPMENT.
B. EQUIPMENT SIZED FOR 100°F AMBIENT TEMPERATURE.
C. PROVIDE 2" MERV 8, EFFICIENT PLEATED THROWAWAY AIR FILTERS.
D. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
E. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
F. PROVIDE FACTORY MOUNTED VARIABLE FREQUENCY DRIVE OR 2-SPEED MOTOR TO FACILITATE STAGED FAN SPEED CONTROL.
G. PROVIDE SINGLE POINT POWER CONNECTION.
H. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
J. PROVIDE 125 VAC, 20 AMP DUPLEX CONVENIENCE RECEPTACLE MOUNTED TO UNIT READY FOR FIELD WIRING WITH A COVER UL LISTED FOR WET AND DAMPER LOCATIONS WHEN IN USE.
K. SPECIFIED FAN ESP ACCOUNTS FOR DUCT LOSSES EXTERNAL TO UNIT.
L. PROVIDE MOTOR HORSEPOWER TO OVERCOME INTERNAL UNIT STATIC PRESSURE DROP PLUS SPECIFIED EXTERNAL STATIC PRESSURE DROP. NOMINAL MOTOR HP SHALL BE NO LARGER THAN THE FIRST AVAILABLE NOMINAL MOTOR SIZE GREATER THAN THE REQUIRED BHP.
M. PROVIDE INSULATED ROOF CURB WITH MINIMUM HEIGHT REQUIRED TO MAINTAIN BOTTOM OF EQUIPMENT A MINIMUM OF 18 INCHES ABOVE FINISHED ROOF SURFACE. PROVIDE SLOPED CURB IF NEEDED TO MATCH ROOF SLOPE. COORDINATE WITH ROOF INSULATION THICKNESS AND ROOF TAPER AT INSTALLED LOCATION. COORDINATE CURB TYPE WITH DRAWINGS.
N. SCHEDULED WEIGHT IS THE MAXIMUM ALLOWABLE OPERATING WEIGHT OF THE EQUIPMENT AND CURB.
O. COOLING COIL LAT IS LEAVING AIR TEMPERATURE OF COIL.
P. PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.
Q. PROVIDE HEATER TO MEET OR EXCEED SCHEDULED MINIMUM MBH OUTPUT. NOMINAL INPUT IS BASED ON LISTED MANUFACTURER'S STANDARD PRODUCT. COORDINATE EQUIPMENT GAS LOAD WITH PLUMBING CONTRACTOR IF DIFFERENT FROM THAT SCHEDULED. MEET MINIMUM EFFICIENCY SCHEDULED.
R. PROVIDE ADS AIRBORNE DISINFECTION SYSTEM, ADS MODEL TUVC-ADS-224D-HO.
S. PROVIDE ADS AIRBORNE DISINFECTION SYSTEM, ADS MODEL TUVC-ADS-232D-HO.

BUILDING AIR BALANCE SUMMARY NORMAL OPERATION

UNIT NO.	SUPPLY (CFM)	OUTDOOR (CFM)	EXHAUST (CFM)	PERCENT OA/SA
MUA-1	2,250	2,250	--	100%
RTU-1	4,650	1,300	--	28%
RTU-2	6,000	600	--	10%
FCU-1	420	40	--	10%
KEF-1	--	--	1,657	--
KEF-2	--	--	1,772	--
EF-1	--	--	300	--
TOTAL	13,320	4,190	3,729	--
			DESIGN BUILDING PRESSURIZATION AIRFLOW (CFM)	461
X			**PRESSURIZATION CHECK**	11%

BUILDING AIR BALANCE SUMMARY ECONOMIZER MODE

UNIT NO.	SUPPLY (CFM)	OUTDOOR (CFM)	EXHAUST (CFM)	PERCENT OA/SA
MUA-1	2,250	2,250	--	100%
RTU-1	3,116	3,116	--	100%
RTU-2	4,020	4,020	--	100%
FCU-1	420	40	--	10%
KEF-1	--	--	1,657	--
KEF-2	--	--	1,772	--
EF-1	--	--	300	--
BAROMETRIC RELIEF RTU-1	--	--	1,816	--
POWER EF RTU-2	--	--	3,420	--
TOTAL	9,806	9,426	8,965	--
			DESIGN BUILDING PRESSURIZATION AIRFLOW (CFM)	461
X			**PRESSURIZATION CHECK**	5%

PROJECT DESIGN CONDITIONS

CLIMATE CONDITONS

WEATHER STATION:		CHICAGO MIDWAY INTL, IL				
CLIMATE ZONE		5A				
HEATING (DB):	99.6%	0.5	°F			
COOLING (DB/MCWB):	0.4%	91.9	°F/	74.7	°F/	

BUILDING...

MONDAY - FRIDAY	TBD BY OWNER
SATURDAY	TBD BY OWNER
SUNDAY	TBD BY OWNER
HOLIDAY	TBD BY OWNER

SPACE / UNIT DESCRIPTION	COOLING / DE-HUMIDIFICATION OCC °F	UNOCC °F	MAX RH %	MIN RH %	HEATING OCC °F	UNOCC °F	HUMIDIFICATION MIN RH %	MAX RH %	ZONE VENTILATION RESET CONTROL METHOD	BASE PPM	MAXIMUM PPM	SPACE OPERATING HOURS OCCUPIED / UNOCCUPIED M-F	SAT	SUN	NOTES
DINING AREAS	75	80	60%	NA	70	60	NA	NA	NA	NA	NA	TBD	TBD	TBD	A,B,C
OFFICES	75	80	NA	NA	70	60	NA	NA	NA	NA	NA	TBD	TBD	TBD	A,B,C
STOCKROOM/STORAGE	75	80	NA	NA	70	60	NA	NA	NA	NA	NA	TBD	TBD	TBD	A,B,C
FOOD PREP AREAS	75	80	NA	NA	70	60	NA	NA	NA	NA	NA	TBD	TBD	TBD	A,B,C

NOTES:
A. ZONE LEVEL SET POINT CONDITIONS SHALL BE AS SCHEDULED UNLESS OTHERWISE SCHEDULED OR NOTED ON THE DRAWINGS FOR ROOM SPECIFIC SPACE CONDITIONS.
B ZONE LEVEL OCCUPANCY HOUR SCHEDULE SHALL BE PER BUILDING OPERATING HOURS UNLESS OTHERWISE SCHEDULED.
C. ZONE LEVEL CONTROLS SHALL BE CAPABLE OF OPERATING WITH INDEPENDENT OCCUPANCY SCHEDULES.

AIR CURTAIN SCHEDULE

MARK	SERVICE AREA	MANUFACTURER	MODEL	UNIT SPECS LENGTH (IN)	MAX. AIRFLOW	HEATING CAPACITY (KW)	MOTOR (HP)	V/PH/HZ	NOTES
AC-1	SERVICE ENTRY	MARS	STD2	36	1379	N/A	1/2	115/1	A-E

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
B. MOUNT UNIT PER MANUFACTURERS RECOMMENDATIONS TO FACE OF WALL AND SUPPORT VERTICALLY.
C. PROVIDE INTEGRAL STARTER AND DISCONNECT SWITCH.
D. PROVIDE AIR CURTAIN WITH NORMALLY CLOSED DOOR LIMIT SWITCH FOR INSTALLATION ON DOOR. THE AIR CURTAIN SHALL ENERGIZE WHEN DOOR OPENS.
E. PROVIDE WITH DELAY MICROSWITCH WITH ADJUSTABLE DELAY TIMERS PRE MOUNTED IN THE AIR CURTAIN CONTROL PANEL.

LOUVER SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	SIZE (W" x H")	MIN. FREE AREA (SF)	NOTES
LV-1	GENERAL EXHAUST	GREENHECK	ESU-153	24" x 26"	2.8	A - C

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE.
B. PROVIDE PRIME COAT FINISH. FIELD PAINT COLOR SELECTED BY ARCHITECT.
C. PROVIDE SELF ATTACHING, VANDAL-PROOF FRAME.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	SERVICE	MODEL	CONSTRUCTION MATERIAL	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN)	MAX. NC	NOTES
CEG1	E.H. PRICE	EXHAUST GRILLE W/ DAMPER	80D	STEEL	EGGCRATE	SURFACE	12x12	30	A B C F G H
CRG1	E.H. PRICE	RETURN GRILLE	80	STEEL	EGGCRATE	LAY-IN	24x24	30	A B C F H
CSD1	E.H. PRICE	SUPPLY DIFFUSER	SCD	STEEL	SQUARE CONE	LAY-IN	24x24	30	A B C F H K
CSD2	E.H. PRICE	SUPPLY DIFFUSER	PDDR	STEEL	SQUARE CONE	LAY-IN	24x24	30	A B C F H
CSD3	E.H. PRICE	SUPPLY DIFFUSER	SCD	STEEL	PERFORATED	SURFACE	12x12	30	A B C F H J K L
LSD1	E.H. PRICE	LINEAR SLOT DIFFUSER	SDS100	STEEL	LINEAR SLOT	WALL	(4)-1" SLOTS, 36" LENGTH	30	A B C F H M N
LSD2	E.H. PRICE	LINEAR SLOT DIFFUSER	SDR100	STEEL	LINEAR SLOT	WALL	(4)-1" SLOTS, 36" LENGTH	30	A B C F H
LSD3	E.H. PRICE	LINEAR SLOT DIFFUSER	SDS100	STEEL	LINEAR SLOT	CEILING	(4)-1" SLOTS, 48" LENGTH	30	A B C F H M N
LSD4	E.H. PRICE	LINEAR SLOT DIFFUSER	SDS100	STEEL	LINEAR SLOT	CEILING	(4)-1" SLOTS, 12" LENGTH	30	A B C F H N
LSD5	E.H. PRICE	LINEAR SLOT DIFFUSER	SDS100	STEEL	LINEAR SLOT	CEILING	(4)-1" SLOTS, 30" LENGTH	30	A B C F H N

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:
A. EQUIPMENT FURNISHED AND INSTALLED PER THE EQUIPMENT RESPONSIBILITY SCHEDULE.
B. NECK SIZE SHOWN ON DRAWINGS. PROVIDE BRANCH DUCT TO MATCH NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
C. DIFFUSERS SHALL BE PREFINISHED TO MATCH CEILING/WALL/EXPOSED DUCT COLOR (COORDINATE WITH ARCHITECT).
D. FRONT BLADES PARALLEL TO LONG DIMENSION.
E. DOUBLE DEFLECTION BARS SHALL BE ADJUSTABLE.
F. FRAME TYPE TO MATCH CEILING/WALL CONSTRUCTION, COORDINATE WITH ARCHITECTURAL REFLECTED CEILING/WALL PLAN.
G. PROVIDE OPPOSED BLADE DAMPER ADJUSTABLE FROM FACE OF DEVICE.
H. PROVIDE DIFFUSERS, LINEAR SLOTS, AND GRILLES WITH NO EXPOSED MOUNTING SCREWS.
J. CONTRACTOR SHALL PROVIDE REMOTE CABLE-OPERATED VOLUME DAMPER BY METROPOLITAN AIR TECHNOLOGIES MODEL RT-250 WITH EXTERNAL WORM GEAR OPERATOR OR EQUIVALENT YOUNG REGULATOR BUTTERFLY DAMPER WITH 270-275 CONTROLLER. OPERATOR SHALL HAVE A SQUARE DRIVE FOR 1/4" NUT DRIVER. DAMPER ASSEMBLY SHALL INCLUDE GALVANIZED STEEL DUCT WITH ROLLED BEAD STIFFENERS, REINFORCED BLADE, SELF LUBRICATING BEARING AND WORM GEAR MOUNTING PLATE. DAMPER SHALL BE INSTALLED IN BRANCH DUCT NOT INLET OF PLENUM DIFFUSER.
K. 4-WAY THROW PATTERN UNLESS OTHERWISE INDICATED BY FLOW ARROWS ON DRAWINGS.
L. PROVIDE RAPID MOUNT FRAME FOR INSTALLATION IN HARD CEILING.
M. PROVIDE E.H. PRICE MODEL SDB INTERNALLY LINED SUPPLY AIR PLENUM.
N. PROVIDE E.H. PRICE MODEL VCR8EC CABLE OPERATED DAMPER.

UNIT HEATER SCHEDULE (ELECTRIC)

MARK	MANUFACTURER	MODEL	OUTPUT (KW)	CFM	V/PH	NOTES
EUH-1	QMARK	CDF-558	5	300	208/1	B C E F G
EUH-2	QMARK	MUH03-81	3	350	208/1	A D E F H

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NOTES:

A. MOUNT 8 FEET ABOVE FINISHED FLOOR WITHOUT OBSTRUCTING AIRFLOW.
B. PROVIDE WITH FACTORY INSTALLED THERMOSTAT.
C. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILTY SCHEDULE IN ARCHITECTURAL SET.
D. PROVIDE NECESSARY MOUNTING BRACKET AND ACCESSORIES FOR WALL MOUNTING.
E. PROVIDE FACTORY INSTALLED DISCONNECT SWITCH.
F. SUPPORT UNIT AS RECOMMENDED BY UNIT MANUFACTURER.
G. FURNISH WITH RECESSED MOUNTING ENCLOSURE
H. PROVIDE WITH WALL MOUNTED LINE VOLTAGE THERMOSTAT.

FAN SCHEDULE

MARK	SERVICE DESCRIPTION	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	BHP	NOM HP	FAN RPM	DRIVE (BELT/DIRECT)	VFD (Y/N)	ELECTRICAL V/PH	DISC TYPE	STARTER TYPE	NOTES
EF-1	TOILETS	GREENHECK	ROOF	G-095-D	300	0.5	0.1	1/8	1550	DIRECT	N	120/1	NON-FUSED	N/A	A - E
EF-2	MECH ROOM	GREENHECK	ROOF	G-097-B	600	0.5	0.1	1/6	1140	DIRECT	N	120/1	NON-FUSED	N/A	A - C, E, F

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:

A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
B. PROVIDE WITH MINIMUM 24" HIGH ROOF CURB, BIRDSCREEN AND BACKDRAFT DAMPER.
C. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
D. INTERLOCK FAN OPERATION WITH TIME CLOCK.
E. PROVIDE WITH MANUFACTURER'S FAN SPEED CONTROLLER FOR BALANCING PURPOSES.
F. INTERLOCK FAN WITH THERMOSTAT.

FAN COIL UNIT SCHEDULE (HEAT PUMP)

MARK	MFR	MODEL	SUPPLY FAN CFM	ESP (IN)	NOM HP	COOLING COIL TH (MBH)	SH (MBH)	EAT (°F DB)	EAT (°F WB)	LAT (°F DB)	LAT (°F WB)	REFR TYPE	HEAT PUMP HEATING COIL MIN OUT (MBH)	AMBIENT (DB)	EAT (°F DB)	LAT (°F DB)	MIN O/A (CFM)	ELECTRICAL V/PH	MCA	MOCP	DISC TYPE	WEIGHT (LBS)	NOTES
FCU-1	CARRIER	40MBQB18C	420	0.025	0.061	11.6	10.0	76.5	62.6	54.8	53.0	R410A	12.2	8.7	64.2	90	40	208/1	N/A	N/A	NF	45	A - J

*** EQUIPMENT SHALL BE OBTAINED THROUGH SHAKE SHACK NATIONAL ACCOUNT. REFER TO T002 / VENDOR LIST FOR MORE INFORMATION.**
MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:
A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
B. ASSOCIATED CONDENSING UNIT SHALL BE BY THE SAME MANUFACTURER.
C. FOR COOLING, EQUIPMENT SIZED FOR 95°F AMBIENT TEMPERATURE. HEAT PUMP HEATING CAPACITY BASED ON AMBIENT TEMPERATURE LISTED.
D. PROVIDE UNIT WITH CLEANABLE AIR FILTERS.
E. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT WITH STAGED HEATING AND COOLING CAPABILITY AS REQUIRED FOR OPERATION OF HEATING AND COOLING CONTROLS.
F PROVIDE FACTORY MOUNTED STARTER AND DISCONNECT SWITCH INSTALLED ON SERVICE SIDE OF UNIT.
G PROVIDE SINGLE POINT POWER CONNECTION.
H PROVIDE WITH SPRING VIBRATION ISOLATION AND ALL-THREAD HANGING RODS.
J REFERENCE PLUMBING PLANS FOR CONDENSATE DRAIN PIPING FROM UNIT.

ELECTRIC INFRARED HEATERS

MARK	MANUFACTURER/ MODEL	ALTERNATE MANUFACTURER	DIMENSIONS (L x W x H)	CAPACITY (KW)	ELECTRICAL AMPS	ELECTRICAL V/PH	CLEARANCE TO COMBUSTIBLES (IN) TOP	SIDES	BOTTOM	WEIGHT (LBS)	NOTES
IH 1 - 9	INFRATECH WD-4028	SCHWANK	39" x 8.1875" x 3"	4.0	19	208 / 1	6	18	36	--	A-D

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

NOTES:
A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
B. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR MOUNTING HEIGHTS. MAINTAIN MINIMUM HEIGHT ABOVE FLOOR PER MANUFACTURER'S REQUIREMENTS.
C. MAINTAIN RECOMMENDED CLEARANCES ON ALL SIDES AS INDICATED BY THE MANUFACTURER.
D. PROVIDE HEATERS WITH W-39-BL FLUSH MOUNT FRAME.

SSE V1.00

HEAT PUMP CONDENSING UNIT SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	REFR TYPE	COOLING CAPACITY TH (MBH)	AMBIENT (DB)	MIN EFF (SEER)	HEATING CAPACITY CAP (MBH)	AMBIENT (DB)	MIN EFF COP 47°F	ELECTRICAL MCA	MOCP	V/PH	WEIGHT (LBS)	NOTES
CU-1	FCU-1	CARRIER	38MAQB18	R410A	11.6	91.0	19.0	12.2	8.7	3.3	13	25	208 / 1	102.5	A - H

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NOTES:
A. EQUIPMENT FURNISHED AND INSTALLED PER THE RESPONSIBILITY SCHEDULE, REF ARCHITECTURAL DRAWINGS.
B. EQUIPMENT CAPACITY SCHEDULED IS MINIMUM CAPACITY THAT MUST BE PROVIDED AT AMBIENT TEMPERATURE INDICATED.
C. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT QUANTITY AND SIZE OF REFRIGERANT PIPING.
D. PROVIDE LIQUID LINE FILTER DRYER AND SIGHT GLASS.
E. PROVIDE PREFABRICATED EQUIPMENT SUPPORT RAILS.
F. PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT.
G. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
H. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.

OUTSIDE AIR REQUIREMENTS, IMC-2012 (IP)

SYSTEM DESIGNATION	SYSTEM TAB NAME OR LIST 'SINGLE'	SINGLE-ZONE SYSTEMS ONLY: SINGLE-ZONE SYSTEM ASSOCIATED VENTILATION ZONE	SINGLE ZONE WORST CASE ZONE AIR DISTRIBUTION EFFECTIVENESS [Ez]	MULTI-ZONE SYSTEMS ONLY: SYSTEM VENTILATION EFFICIENCY [Ev]	FLOOR AREA SERVED BY SYSTEM [As] (SF)	SYSTEM AVERAGED AREA-BASED OUTDOOR AIR RATE (CFM/SF)	SYSTEM POPULATION [Ps] (PEOPLE)	SYSTEM AVERAGED PEOPLE-BASED OUTDOOR AIR RATE (CFM/P)	REQUIRED OA INTAKE FLOW [Vot] (CFM)	REQUIRED DCV OA INTAKE FLOW [Vot] (CFM)	DESIGN OA INTAKE FLOW [Vot] (CFM)
RTU-1	MULTIZONE (RTU-1)	-	-	0.89	1,762	0.129	76	7.50	898	N/A	1,300
RTU-2	MULTIZONE (RTU-2)	-	-	1.00	1,014	0.000	16	0.00	0	N/A	600
FCU-1	SINGLE ZONE	OFFICE	0.80	-	73	0.060	2	5.00	18	N/A	40
								TOTALS	916	0	1,940

GENERAL NOTES:
1. VENTILATION CALCULATIONS BASED ON IMC-2012.
2. SYSTEM POPULATIONS BASED ON MAX SEATING AND/OR CODE MAXIMUM VALUES.
3. SINGLE ZONE SYSTEMS (Vot = Voz): SYSTEM VENTILATION EFFICIENCY CALCULATION IS NOT REQUIRED FOR SINGLE ZONE SYSTEMS. WORST CASE AIR DISTRIBUTION EFFECTIVENESS BETWEEN HEATING AND COOLING MODES OF OPERATION IS SHOWN IN TABLE.
4. MULTI-ZONE RECIRCULATING SYSTEMS: CALCULATOR WAS USED TO DETERMINE VENTILATION AIRFLOW IN COMPLIANCE WITH IMC-2012 VRP AND ASHRAE 62.1-2010 APPENDIX A. VENTILATION RATE SHOWN IS ACTUAL CALCULATED WITH CORRECTION FACTORS INCLUDED. EACH ZONE IS CALCULATED WITH ITS WORST CASE ZONE AIR DISTRIBUTION EFFECTIVENESS (HEATING/COOLING) AS PART OF CALCULATIONS TO FIND Ev.

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IL. CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

EXPIRES ON: 11/30/2021
LICENSED PROFESSIONAL ENGINEER JOSHUA N. HOVER 062-069411 OF ILLINOIS
Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title: MECHANICAL SCHEDULES
Job No. 204461
Drawn Author
Scale
Date 11/09/20
Sheet No. M601

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SHAKE SHACK
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SHACK #1345

EXPIRES ON: 11/30/2021

JOSHUA N. HOVER
062-069411
ILLINOIS

Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
MECHANICAL ENERGY CODE COMPLIANCE

Job No. 204461 | Drawn Author | Scale | Date 11/09/20

Sheet No.
M630

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COMcheck Software Version 4.1.4.0
Mechanical Compliance Certificate

Project Information

Energy Code:	2018 IECC
Project Title:	Shake Shack
Location:	Oak Lawn, Illinois
Climate Zone:	5a
Project Type:	New Construction

Construction Site:
W 95th St/US TRE 12-20
Oak Lawn, IL 60453

Owner/Agent:
SHAKE SHACK

Designer/Contractor:
Henderson Engineers
8345 Lenexa Dr
Suite 300
Lenexa, KS 66214

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Mechanical Systems List

Quantity **System Type & Description**

1 RTU-1 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 156 kBtu/h
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 145 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.20 EER, Required Efficiency: 10.80 EER + 12.2 IEER
Fan System: RTU-1 | Dining -- Compliance (Brake HP method) : Passes

Fans:
RTU1 Supply, Constant Volume, 4650 CFM, 3.0 motor nameplate hp, 1.9 design brake hp (1.9 max. BHP), 0.0 fan efficiency grade

1 RTU-2 (Single Zone):
Heating: 1 each - Central Furnace, Gas, Capacity = 156 kBtu/h
Proposed Efficiency = 81.00% Et, Required Efficiency: 80.00 % Et or 80% AFUE
Cooling: 1 each - Single Package DX Unit, Capacity = 159 kBtu/h, Air-Cooled Condenser, Air Economizer
Proposed Efficiency = 12.20 EER, Required Efficiency: 10.80 EER + 12.2 IEER
Fan System: RTU-2 | Kitchen & BOH -- Compliance (Brake HP method) : Passes

Fans:
RTU2 Supply, Constant Volume, 6000 CFM, 3.7 motor nameplate hp, 3.1 design brake hp (3.1 max. BHP), 0.0 fan efficiency grade

1 FCU-1/CU-1 (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 12 kBtu/h,
Proposed Efficiency = 9.00 HSPF, Required Efficiency = 8.20 HSPF
Cooling Mode: Capacity = 10 kBtu/h,
No minimum efficiency requirement applies
Fan System: Unspecified

1 Water Heater 1:
Gas Instantaneous Water Heater, Capacity: 0 gallons, Input Rating: 75 kBtu/h w/ Circulation Pump
No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2018 IECC requirements in COMcheck Version 4.1.4.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Malvin Warrick - Mechanical Designer — Signature — 11/23/2020

Name - Title — Date

COMcheck Software Version 4.1.4.0
Inspection Checklist

Energy Code: 2018 IECC

Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C103.2 [PR3][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C403.12.2 C403.12.3 [FO9][1]	Snow/ice melting system and freeze protection systems have sensors and controls configured to limit service for pavement temperature and outdoor temperature. future connection to controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.5, C404.5.1, C404.5.2 [PL6][1]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6][1]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6][1]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.5, C404.5.1, C404.5.2 [PL6][1]	Heated water supply piping conforms to pipe length and volume requirements. Refer to section details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.1, C404.6.2 [PL3][1]	Automatic time switches installed to automatically switch off the recirculating hot-water system or heat trace.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.3 [PL7][1]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7][1]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7][1]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.6.3 [PL7][1]	Pumps that circulate water between a heater and storage tank have controls that limit operation from startup to <= 5 minutes after end of heating cycle.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.7 [PL8][1]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8][1]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Plumbing Rough-In Inspection	Complies?	Comments/Assumptions
C404.7 [PL8][1]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C404.7 [PL8][1]	Demand recirculation water systems have controls that start the pump upon receiving a signal from the action of a user of a fixture or appliance and limits the temperature of the water entering the cold-water piping to 104°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C402.2.6 [ME41][1]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.11.3 [ME61][1]	HVAC piping insulation insulated in accordance with Table C403.11.3. Insulation exposed to weather is protected from damage and is provided with shielding from solar radiation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.8.1 [ME65][1]	HVAC fan systems at design conditions do not exceed allowable fan system motor nameplate hp or fan system bhp.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
C403.8.3 [ME117][2]	Fans have efficiency grade (FEG) >= 67. The total efficiency of the fan at the design point of operation <= 15% of maximum total efficiency of the fan.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.8.4 [ME142][2]	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.8.4 [ME142][2]	Motors for fans that are not less than 1/12 hp and less than 1 hp are electronically commutated motors or have a minimum motor efficiency of 70 percent. These motors have the means to adjust motor speed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.8.5 [ME143][2]	Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.8.5 [ME143][2]	Each DX cooling system > 65 kBtu and chiller water/evaporative cooling system with fans > 1/4 hp are designed to vary the indoor fan airflow as a function of load and comply with detailed requirements of this section.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.12.1 [ME71][2]	Systems that heat outside the building envelope are radiant heat systems controlled by an occupancy sensing device or timer switch.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.3 [ME55][2]	HVAC equipment efficiency verified.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
C403.5.5 [ME113][2]	Fault detection and diagnostics installed with air-cooled unitary DX units having economizers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.5 [ME113][2]	Fault detection and diagnostics installed with air-cooled unitary DX units having economizers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.2.2 [ME59][1]	Natural or mechanical ventilation is provided in accordance with International Mechanical Code Chapter 4. Mechanical ventilation has capability to reduce outdoor air supply to minimum per IMC Chapter 4.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.1 [ME59][1]	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.2 [ME115][1]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.6 [ME141][1]	HVAC systems serving guestrooms in Group R-1 buildings with > 50 guestrooms: Each guestroom is provided with controls that automatically manage temperature setpoint and ventilation (see sections C403.7.6.1 and C403.7.6.2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.4 [ME57][1]	Exhaust air energy recovery on systems meeting Table C403.7.4(1) and C403.7.4(2).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.7.5 [ME116][1]	Kitchen exhaust systems comply with replacement air and conditioned supply air limitations, and satisfy hood rating requirements and maximum exhaust rate criteria.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.11.1 , C403.11.2 [ME60][1]	HVAC ducts and plenums insulated in accordance with C403.11.1 and constructed in accordance with C403.11.2, verification may need to occur during Foundation Inspection.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME62][1]	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5, C403.5.1, C403.5.2 [ME62][1]	Air economizers provided where required, meet the requirements for design capacity, control signal, ventilation controls, high-limit shut-off, integrated economizer control, and provide a means to relieve excess outside air during operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.3, 3 [ME124][1]	Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.5.3.3 [ME124][1]	Air economizers automatically reduce outdoor air intake to the design minimum outdoor air quantity when outdoor air intake will not reduce cooling energy usage. See Table C403.5.3.3 for applicable device types and climate zones.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.3.4 [ME125][1]	System capable of relieving excess outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet located to avoid recirculation into the building.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.3.4 [ME125][1]	System capable of relieving excess outdoor air during air economizer operation to prevent overpressurizing the building. The relief air outlet located to avoid recirculation into the building.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.3.5 [ME126][1]	Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.3.5 [ME126][1]	Return, exhaust/relief and outdoor air dampers used in economizers have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Reference section C403.7.7 for details.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.3.3.2 [ME121][1]	Closed-circuit cooling tower within heat pump loop have either automatic bypass valve or lower leakage positive closure dampers. Open-circuit tower within heat pump loop have automatic valve to bypass all heat pump water flow around the tower. Open- or closed-circuit cooling towers used in conjunction with a separate heat exchanger have heat loss by shutting down the circulation pump on the cooling tower loop. Open- or closed circuit cooling towers have a separate heat exchanger to isolate the cooling tower from the heat pump loop, and heat loss is controlled by shutting down the circulation pump on the cooling tower loop.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.4.1.4 [ME63][2]	Heating for vestibules and air curtains with integral heating include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.3.3 [ME35][1]	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Complies?	Comments/Assumptions
C403.3.3 [ME35][1]	Hot gas bypass limited to: <=240 kBtu/h - 50% >240 kBtu/h - 25%	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.2.1 [ME53][1]	Air outlets and zone terminal devices have means for air balancing.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.5.1, C403.5.1.1, C403.5.2 [ME123][1]	Refrigerated display cases, walk-in coolers or walk-in freezers served by remote compressors and remote condensers not located in a condensing unit, have fan-powered condensers that comply with Sections C403.5.1 and refrigeration compressor systems that comply with C403.5.2..	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.9 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.3 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.2 [FI27][1]	HVAC systems and equipment capacity does not exceed calculated loads.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][3]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][3]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1 [FI47][3]	Heating and cooling to each zone is controlled by a thermostat control. Minimum one humidity control device per installed humidification/dehumidification system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1.1 [FI42][3]	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.4.1.2 [FI38][3]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.1.3 [FI20][1]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2 [FI39][3]	Each zone equipped with setback controls using automatic time clock or programmable control system.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2.1, C403.2.4.2.2 [FI40][3]	Automatic Controls: Setback to 55°F (heat) and 85°F (cool); 7-day clock, 2-hour occupant override, 10-hour backup	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C403.2.4.2.3 [FI41][3]	Systems include optimum start controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C403.2.4.2.3 [FI41][3]	Systems include optimum start controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C404.3 [FI11][3]	Heat traps installed on supply and discharge piping of non-circulating systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.4 [FI25][2]	All piping insulated in accordance with section details and Table C403.11.3.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C404.6.1 [FI12][3]	Controls are installed that limit the operation of a recirculation pump installed to maintain temperature of a storage tank. System return pipe is a dedicated return pipe or a cold water supply pipe.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.1.1 [FI57][1]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.1 [FI28][1]	Commissioning plan developed by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.1 [FI31][1]	HVAC equipment has been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.2 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.3.3 [FI32][1]	Economizers have been tested to ensure proper operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.4 [FI29][1]	Preliminary commissioning report completed and certified by registered design professional or approved agency.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.1 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.3 [FI43][1]	An air and/or hydronic system balancing report is provided for HVAC systems.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.4 [FI30][1]	Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

Additional Comments/Assumptions:

1 High Impact (Tier 1) | 2 Medium Impact (Tier 2) | 3 Low Impact (Tier 3)

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2050001105
IL CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK # 1345

EXPIRES ON: 11/30/2021

LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
062-069411
STATE OF ILLINOIS

Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
MECHANICAL ENERGY CODE COMPLIANCE

Job No. 204461 | Drawn Author
Scale | Date 11/09/20

Sheet No.
M631

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MUA CHART

DATA	IMPERIAL	METRIC
Model	MUA-DG-2800	
Max. Supply Air	2800 CFM	- l/s
Design Supply Air	2250 CFM	- l/s
Internal S.P.	1.37" W.G.	- PA
External S.P.	0.5" W.G.	- PA
Total S.P.	1.87" W.G.	
Motor	1.5 hp	
Power	0.94 bhp	
Full Load AMPS	6.6	
Motor RPM	1800	
Voltage/Phase/HZ	208/3/60	
Fan RPM	1505	
Mounting	Exterior/Floor	
Blower Model	ANPA 16	
Gas Type	Natural	
Min. Gas Pressure	8" W.C.	
Max. Gas Pressure	14" W.C.	
Gas Line Size	1/2"	
Discharge Temperature	70°	
Temperature Rise	75.1°	
Input MBH	198	
Output MBH	182	
Material Type	G90 Galv. 20GA.	
Paint Color	Unpainted	
Weight	1035 lbs	- kg

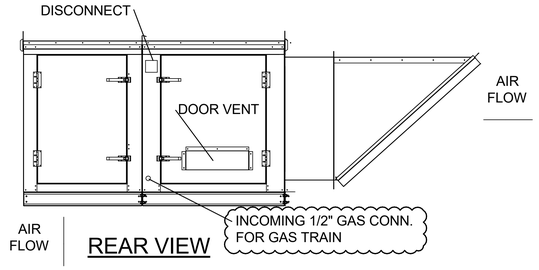
STANDARD FEATURES

	Belt Drive Fan (Comefri ATLI)
✓	1" Duct Board Insulation Double Wall
	Constant Volume
✓	Unit Mounted Controls
✓	Neoprene Fan Isolators
	End Discharge
✓	Gravity Intake Damper
✓	Direct Spark Gas Train

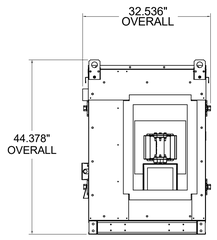
OPTIONS

✓	Direct Drive Plenum Fan (Comefri ANPA)
	No Insulation
✓	Variable Speed (Powerflex 523 VFD)
	Motorized Intake Damper
✓	Intake Hood w/ 2" Alum. Mesh Filters & Birdscreen
✓	MERV 8 Filtered Intake (Dust Filter)
	Remote DAT (Discharge Air Temperature) Controls
	Space Temp Control
	Non Insulated Roof Curb
	Insulated Roof Curb
	Non Insulated Roof Curb w/ Wood Nailer
✓	Insulated Roof Curb w/ Wood Nailer
	Seismic Fan Isolators
	Gas Train Pressure Gauges
	High & Low Gas Pressure Switches
	Freeze Stat
	Remote Start/Stop Contact
	Remote Call for Heat Contact
✓	Down Discharge

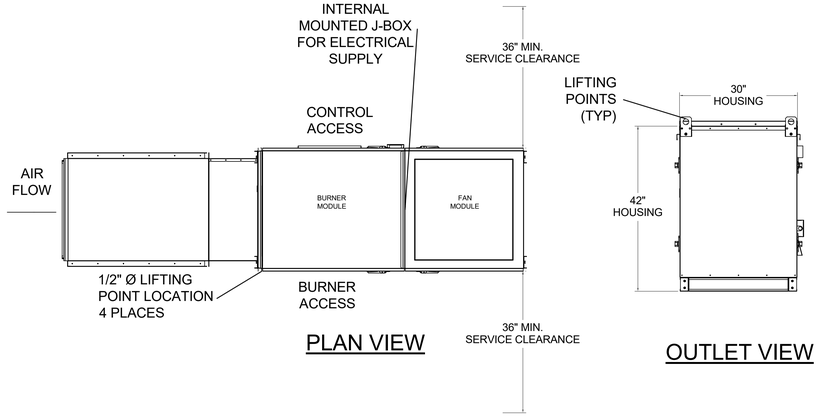
ITEM #MUA-01



REAR VIEW



INLET VIEW

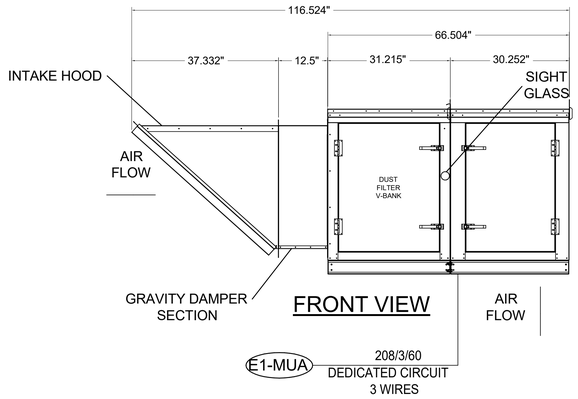


PLAN VIEW

OUTLET VIEW

ELECTRICAL SCHEDULE

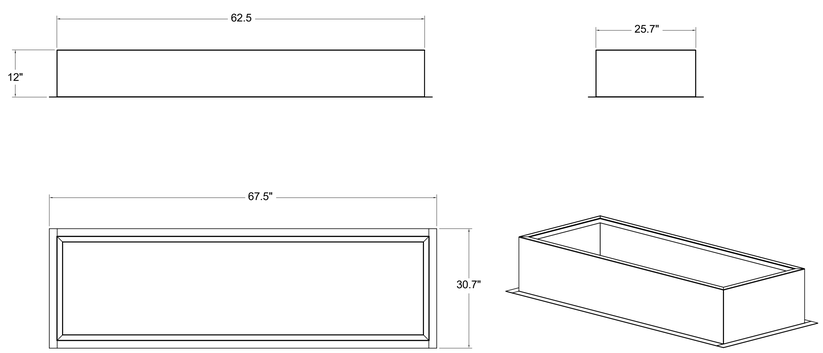
CONNECTION #	CONNECTION DESCRIPTION	FROM	TO
E1-MUA	208/3/60 - FAN MOTOR POWER - 3 WIRES	BUILDING SOURCE	J-BOX



FRONT VIEW

ELECTRICAL CONNECTION WILL COME UP THROUGH CURB INTO BOTTOM OF UNIT

ROOF CURB DETAIL



SPECIFICATIONS

GAS INFORMATION
MIDCO 6" SS BURNER
PRESSURE REGULATOR SUPPLIED
RTC GAS CONTROLS
DISCHARGE TEMPERATURE DIAL MOUNTED IN UNIT
HIGH TEMP LIMIT SWITCH SET TO 140°F

ELECTRICAL INFORMATION
208V / 3PH / 60Hz SUPPLY
INTEGRAL NON-FUSED DISCONNECT SWITCH
PREMIUM EFFICIENCY MOTOR
INTEGRAL MOTOR STARTER WITH THERMAL OVERLOADS
FIRE PROTECTION INTERLOCK
REMOTE START/STOP
50% MUA TURN DOWN

EQUIPMENT SPECIFICATIONS
ENTERING AIR THERMOSTAT/LOW TEMPERATURE CUTOUT
EXTERNAL PROFILE ADJUSTMENT WITH PRESSURE GAUGE
GALVANIZED FINISH
0" CLEARANCE ON TOP & BOTTOM OF UNIT
UNIT SHIPS ASSEMBLED IN ONE PIECE
1" CLEARANCE TO COMBUSTIBLE ON ENDS
LISTED 18" FROM COMBUSTIBLE ON SIDES

NOTE:

THE DOCUMENTATION CONTAINED ON THIS SHEET WAS NOT PREPARED BY HENDERSON ENGINEERS AND IS INCLUDED IN THIS SET FOR REFERENCE ONLY. HENDERSON ENGINEERS REVIEWED THE DOCUMENTATION ON THIS SHEET FOR GENERAL COMPLIANCE WITH DESIGN INTENT. SUPPLIER IS RESPONSIBLE THAT ALL FURNISHED EQUIPMENT ON THIS SHEET COMPLIES WITH APPICABLE LOCAL, STATE, AND FEDERAL LAWS, CODES, AND REGULATIONS.

THIS DRAWING MUST BE CHECKED, SIGNED AND RETURNED TO THE APPROPRIATE FACTORY. PLEASE REVIEW THE FOLLOWING:

1. ALL DIMENSIONAL INFORMATION, MOUNTING POSITIONS AND CLEARANCES.
2. THE LOCATION AND TYPE OF COOKING EQUIPMENT.

NOTE TO APPROVER
ANY CHANGES TO COOKING EQUIPMENT SUCH AS INCREASED ENERGY INPUTS OR EQUIPMENT POSITION MAY AFFECT EXHAUST AIRFLOW. HALTON MUST BE NOTIFIED IF ANY OF THESE CHANGES OCCUR. A RECALCULATION EXHAUST AIRFLOW MAY BE REQUIRED.

☐ REVISE AND RESUBMIT

APPROVED FOR FABRICATION
☐ WITH NO CHANGES ☐ WITH CHANGES AS NOTED

APPROVED BY: DATE

MAIL APPROVED DRAWINGS TO APPROPRIATE FACTORY BELOW:

HALTON CO. (CANADA)
1021 BREVIK PLACE
MISSISSAUGA, ON L4W 3R7
1-905-624-0301

HALTON CO. (USA)
101 INDUSTRIAL DRIVE
SCOTTSVILLE, KY 42164
1-270-237-5600

WEBSITE: www.halton.com

REV.	REVISION DESCRIPTION	BY	DATE
NO CHANGE		NC	11.09.20

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

PROJECT: SHAKE SHACK OAK LAWN, IL
LOCATION:
DRAWN BY: NC
DATE: 10.21.20
SCALE: NTS
CONSULTANT:

Halton

DRAWING TITLE: MUA-DG 2800

DRAWING No.: U20-808

REV. NO.: 1

SHEET NO.: 1 of 4

HENDERSON ENGINEERS
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IL CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK

4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

Drawing Title: HALTON DRAWINGS

Job No. 204461 | Drawn Author

Scale 1/4" = 1'-0" | Date 11/09/20

Sheet No. M701

JOSHUA N. HOVER
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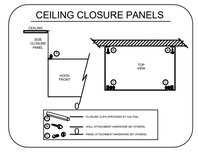
HOOD INFORMATION TABLE

HOOD NUMBER	HOOD MODEL	EXHAUST AIR FLOW REQUIREMENTS						GREASE EXTRACTOR				HOOD CONSTRUCTION	HOOD WEIGHT (LBS)	SUPPLY AIR REQUIREMENTS				
		EXHAUST CFM	T.A.B. PORT STATIC PRESSURE	TOTAL HOOD STATIC PRESSURE	EXHAUST COLLAR			QTY.	SIZE		TYPE			SUPPLY CFM	SUPPLY STATIC PRESSURE	SUPPLY COLLAR		
					QTY.	LENGTH	WIDTH		L	H						QTY.	LENGTH	WIDTH
1-1	KVC	1657	.18"	.28"	1	12"	12"	5	20"	13"	KSA	ALL 18 GA. 304 S.S.	854	1125	.16"	1	25"	6"
								1	11"	13"								
1-2	KVC	1772	.21"	.32"	1	12"	12"	5	20"	13"	KSA	ALL 18 GA. 304 S.S.	846	1125	.17"	1	25"	6"
								1	11"	13"								

TOTAL EXH. CFM = 3429

TOTAL SUPPLY CFM = 2250

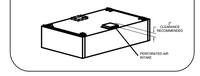
CEILING CLOSURE PANELS



CAPTURE JET CLEARANCE DETAIL

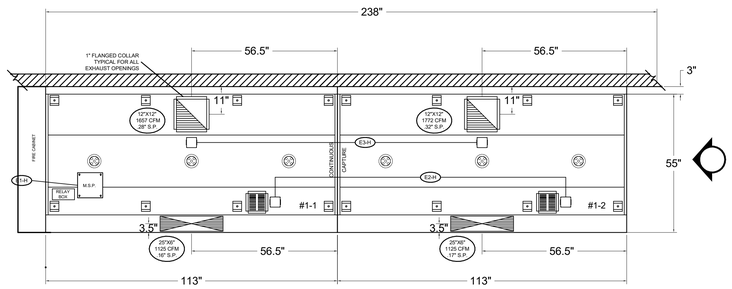
Capture Jet ® Fan Cover Clearance

Patented Capture Jet ® technology perimeter air jets improve capture and containment of heat and grease emissions. It is very important to leave air space above and around the Capture Jet ® air intake cover on the top of the Halton hood. Please leave 2 inches of clearance on the top and sides of the perforated Capture Jet ® intake cover to allow unimpeded entrance of air into the Capture Jet ® fan.



ELECTRICAL CONNECTION SCHEDULE

CONNECTION #	CONNECTION DESCRIPTION	FROM	TO
E1-H	120V, 15AMP - HOOD LIGHT POWER - 3 WIRES	BUILDING SOURCE	HOOD 1-1
E2-H	FIELD CONNECTION FOR HOOD LIGHTS	HOOD 1-1	HOOD 1-2
E3-H	FIELD CONNECTION FOR TEMP SENSORS	HOOD 1-1	HOOD 1-2

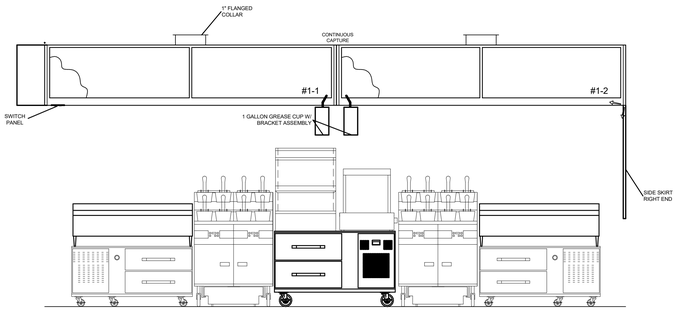


NOTE

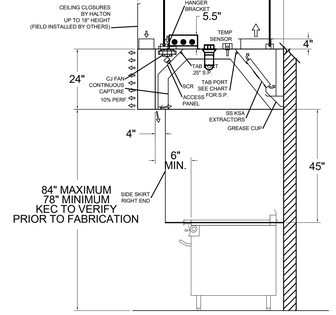
HOOD IS LISTED AND LABELED FOR 0" CLEARANCE.

1 ITEM # 1-1, 1-2
PLAN VIEW

NOTE
T-STAT IS FACTORY PRE-SET FOR 95 DEGREES, IF SPACE CONDITIONS EXCEED 95 DEGREES WITHOUT COOKING TAKING PLACE, THEN A FIELD ADJUSTMENT OF THE T-STAT WILL BE REQUIRED BY PERSONNEL OTHER THAN HALTON. T-STAT IS A SAFETY INTERLOCK ONLY. IT IS NOT INTENDED AS A PRIMARY MEANS OF ENGAGING THE EXHAUST FAN.



2 ITEM # 1-1, 1-2
ELEVATION VIEW



3 ITEM # 1-1, 1-2
SECTION VIEW

NOTE

THE HOODS SHOWN ON THIS DRAWING IS DESIGNED AS THOUGH A SINGLE EXHAUST FAN WILL BE USED FOR HOOD 1-1 & HOOD 1-2. ONE TIMER PANEL IS REQUIRED PER EXHAUST FAN. IT IS THE RESPONSIBILITY OF THE F.S.E.C. TO INFORM HALTON OF THE NUMBER OF EXHAUST FANS BEING UTILIZED ON THIS PROJECT.

GENERAL SPECIFICATIONS

1- HOOD CONSTRUCTION AND DESIGN MEETS NFPA 96 AND UL 710 STANDARD.

2- HOOD IS NSF AND ETL LISTED UNDER THE FOLLOWING FILE NUMBER: ETL #10314/3204PRT-001

3- ALL INSTALLATION WORK IS TO BE PERFORMED BY QUALIFIED PERSONS AND IN ACCORDANCE WITH STATE AND LOCAL BUILDING CODE REQUIREMENTS.

4- THE INSTALLATION SHALL BE IN ACCORDANCE WITH NFPA 96, REMOVAL OF SMOKE AND GREASE LADEN VAPORS FROM COMMERCIAL COOKING EQUIPMENT.

5- ALL EXHAUST DUCTWORK AND TRANSITIONS ARE TO BE PROVIDED BY THE HVAC CONTRACTOR.

6- CLEARANCE FROM HOOD AND DUCTS TO COMBUSTIBLE MATERIAL SHALL BE PER APPLICABLE BUILDING CODES.

7- FOR PROPER OPERATION OF THE HOOD SYSTEM, IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO HAVE THE HOOD BALANCED AND TESTED TO ENSURE THAT THE EXHAUST AND SUPPLY REQUIREMENTS OF THE HOOD ARE MET.

INSTALLATION REQUIREMENTS

KITCHEN EQUIPMENT CONTRACTOR'S REQUIREMENTS

1- PROVIDE DRAWINGS TO APPROPRIATE TRADES REFERENCING UTILITY SERVICE AND COORDINATE FINAL CONNECTION.

2- DELIVER, ASSEMBLE AND INSTALL HALTON SYSTEM PER DRAWING.

3- FURNISH WIRING AND PLUMBING DIAGRAMS TO END USER.

4- THE K.E.C MUST INFORM HALTON OF ANY CHANGES IN EQUIPMENT OR BUILDING STRUCTURE. FIELD MODIFICATIONS ARE THE RESPONSIBILITY OF THE K.E.C.

5- IF HALTON MANUAL EXHAUST VOLUME DAMPERS ARE PROVIDED, THE K.E.C. IS RESPONSIBLE FOR THEIR INSTALLATION OR TO MAKE ARRANGEMENTS WITH OTHER TRADES FOR THEIR INSTALLATION.

6- IF HALTON MODEL KVL BACKSHELF STYLE HOODS ARE PROVIDED, THE K.E.C. IS RESPONSIBLE FOR THE INSTALLATION OF THE CAPTURE-JET FAN.

ELECTRICAL CONTRACTOR'S REQUIREMENTS

1- PROVIDE AND CONNECT ALL REQUIRED VOLTAGES, CONNECTORS, WIRING, CONDUIT, ETC., PER NEC AND ALL APPLICABLE LOCAL CODES.

ELECTRICAL EQUIPMENT REQUIREMENTS

FLUORESCENT LIGHT FIXTURE 40 WATT MAX BULB= .67 AMP EA.

RECESSED INCANDESCENT LIGHT FIXTURE 150 WATT MAX BULB= 1.25 AMP EA.

GLOBE INCANDESCENT LIGHT FIXTURE 100 WATT MAX BULB= .83 AMP EA.

LED LIGHT FIXTURES= .30 AMP EA.

CAPTURE JET FAN= .72 AMP EA

ALL HOOD CIRCUITS ARE NOT TO EXCEED 15 AMP

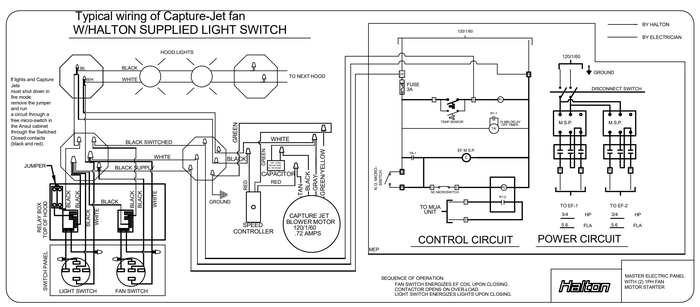
LIGHT BULBS, IF REQUIRED, ARE TO BE PROVIDED BY OTHERS

CEILING HEIGHT NOTE

IF HALTON COMPANY IS TO PROVIDE CEILING CLOSURE PANELS, THE EXACT DIMENSION OF THE FINISHED CEILING HEIGHT MUST BE PROVIDED PRIOR TO RELEASE.

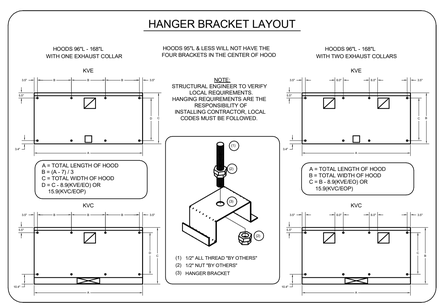
FINISHED CEILING HEIGHT A.F.F.: _____

Typical wiring of Capture-Jet fan W/HALTON SUPPLIED LIGHT SWITCH

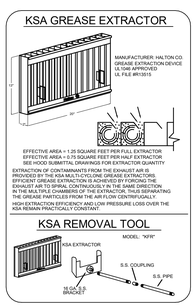


SEQUENCE OF OPERATION:
FAN SWITCH ENERGIZES EF COIL UPON CLOSING.
CONTACTOR OPENS ON OVERLOAD.
LIGHT SWITCH ENERGIZES LIGHTS UPON CLOSING.

HANGER BRACKET LAYOUT



KSA GREASE EXTRACTOR



KSA REMOVAL TOOL

PERFORMANCE CRITERIA

OTHER MANUFACTURERS WISHING TO OFFER AN ALTERNATE TO THE SPECIFIED MANUFACTURER MUST APPLY FOR PERMISSION TO DO SO IN WRITING FROM THE OFFICE OF THE SPECIFYING CONSULTANT. APPLICATION MUST BE RECEIVED BY THE CONSULTANT AT LEAST TEN WORKING DAYS PRIOR TO THE BID DATE. ANY ALTERNATE SYSTEM MUST MEET CONSTRUCTION AND PERFORMANCE REQUIREMENTS AND EFFICIENCIES AS OUTLINED IN THIS SPECIFICATION.

REQUESTS FOR APPROVAL MUST INCLUDE GREASE FILTRATION PERFORMANCE DATA (MICRON SIZE VS. EXTRACTION EFFICIENCY) AND MANUFACTURERS OWN EXHAUST AIR FLOW CALCULATIONS BASED ON THE CONVECTIVE HEAT LOAD OF COOKING EQUIPMENT BENEATH THE HOOD.

EFFICIENCY COMPARISON DATA TO BE PERFORMED IN ACCORDANCE WITH THE MOST CURRENT ASTM STANDARD F1704 AND INCLUDE RESULTS FOR THE REQUIRED CAPTURE AND CONTAINMENT EXHAUST AIR FLOW IN ACCORDANCE WITH THE "TEST METHOD TO DETERMINE THE THRESHOLD OF CAPTURE AND CONTAINMENT." DATA MUST INCLUDE THERMAL IMAGING RESULTS VALIDATING CONFORMANCE TO ASTM F1704 AND SUPPLY AIR TEMPERATURE REQUIREMENT OF 74°F.

MAKE UP AIR WILL BE CALCULATED SO THAT THE SAME AMOUNT OF AIR WILL BE TAKEN FROM THE ZONE AS IS REQUIRED BY THE SPECIFIED SYSTEM. AN ADDITIONAL LOAD CANNOT BE PLACED ON THE KITCHEN HVAC SYSTEM.

MANUFACTURER MUST PROVIDE A WRITTEN GUARANTEE OF PERFORMANCE, ENSURING THE SPECIFYING ENGINEER THAT THE SYSTEM WILL PERFORM TO THE ENGINEER'S SATISFACTION WHEN INSTALLED AND BALANCED ACCORDING TO DESIGN AIR FLOWS AND RESULTS OF ASTM STANDARD F1704 TEST. (AS DETERMINED BY TAB PORTS AND PRESSURE VS. AIR FLOW CURVES.) CONSULTANT RESERVES THE RIGHT TO REJECT ANY SYSTEM WHICH, WHEN INSTALLED, DOES NOT PROVIDE CAPTURE AND CONTAINMENT AT THE THRESHOLD FLOW RATE DETERMINED IN ASTM F1704. REJECTED SYSTEM MUST BE REPLACED WITH SPECIFIED SYSTEM, WITH ALL REPLACEMENT COSTS PAID BY MANUFACTURER OF REJECTED SYSTEM.

ANY CHANGES IN THE SPECIFIED SIZING OF POWER WIRING, FAN SIZE, HORSEPOWER REQUIREMENTS, OR GAS LINES DUE TO THE USE OF ANY SYSTEM OTHER THAN THAT WHICH IS SPECIFIED IS THE RESPONSIBILITY OF THE ALTERNATE HOOD MANUFACTURER, AND MUST BE COORDINATED BY THE HOOD MANUFACTURER AND CONTRACTORS INVOLVED.

NOTE:

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THIS DRAWING MUST BE CHECKED, SIGNED AND RETURNED TO THE APPROPRIATE FACTORY. PLEASE VERIFY THE FOLLOWING:
1. ALL INFORMATION, MOUNTING POSITIONS AND CLEARANCES
2. THE LOCATION AND TYPE OF COOKING EQUIPMENT.

NOTE TO APPROVER
ALL COOKING EQUIPMENT USING EQUIPMENT SUCH AS INCREASED ENERGY INPUTS OR EQUIPMENT POSITION MAY AFFECT EXHAUST AIRFLOW. HALTON MUST BE NOTIFIED IF ANY OF THESE CHANGES OCCUR. A RECALCULATION EXHAUST AIRFLOW MAY BE REQUIRED.

APPROVED FOR FABRICATION
☐ WITH NO CHANGES
☐ WITH CHANGES AS NOTED
☐ REVISE AND RESUBMIT

APPROVED BY: DATE

MAIL APPROVED DRAWINGS TO APPROPRIATE FACTORY BELOW:

HALTON CO. (CANADA)
1021 BREVIK PLACE
MISSISSAUGA, ON L4W 3R7
1-905-624-0301

HALTON CO. (USA)
101 INDUSTRIAL DRIVE
SCOTTSVILLE, KY 42164
1-270-237-5600
WEBSITE: www.halton.com

REV.	DATE	REVISION DESCRIPTION
BY	11.09.20	ADDED TO JOB
NC		

PROJECT: SHAKE SHACK OAK LAWN
LOCATION:
DRAWN BY: NC
DATE: 10.19.20
SCALE: NTS
CONSULTANT:

DRAWING TITLE: HOOD DETAILS

DRAWING No.: U20-808

REV. NO.: 1 SHEET NO.: 2 of 4

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
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TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

Drawing Title: HALTON DRAWINGS

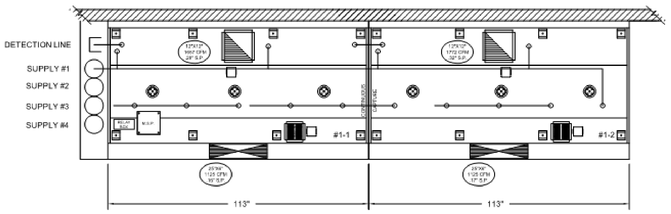
Job No. 204461 | Drawn Author

Scale 1/4" = 1'-0" | Date 11/09/20

Sheet No. M702

11/23/2020 4:24:43 PM C:\Revit Projects\20500011105 MEP - v21_mail warrick_2020\11232142903.rvt JOSHUA N. HOYER

ANSUL R-102 FIRE SUPPRESSION SYSTEM
FIRE SYSTEM IS INTEGRAL WITH FACTORY DESIGN/PIPING/FIELD CERTIFICATION

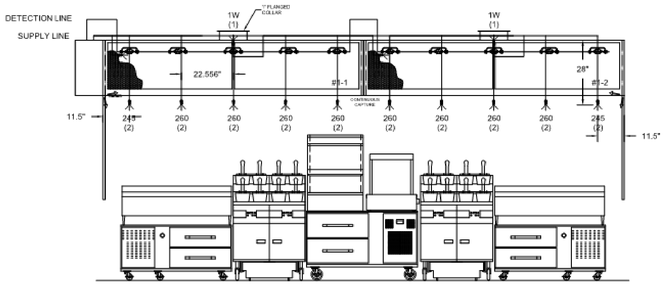


1 ITEM # 1-1, 1-2
PLAN VIEW

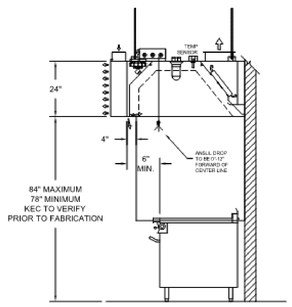
3

NOTE
FULL FLOOD ANSUL SYSTEM

ALL APPLIANCE DROPS TO HAVE SWIVELS



2 ITEM # 1-1, 1-2
ELEVATION VIEW



3 ITEM # 1-1, 1-2
SECTION VIEW

FLOW POINT CHART

ANSUL R-102 FLOW POINT CALCULATION

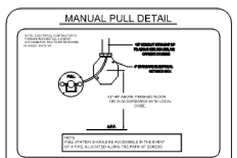
NOZZLE TYPE	NOZZLE FLOW PT.	NOZZLE QUANTITY	TOTAL FLOW PT.
3N	3	0	0
2W	2	0	0
260	2	8	16
245	2	2	4
230	2	0	0
2W	2	0	0
2120	2	0	0
1W	1	2	2
1N	1	2	2
1F	1	0	0
1/2N	1/2	0	0
TOTAL FLOW POINTS USED:			24
MAX. SYSTEM FLOW POINTS:			24(12/GALLON)

ANSUL NOTES

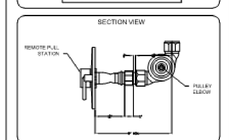
GENERAL NOTES:
1. THIS INSTALLATION IS TO BE MADE IN ACCORDANCE WITH THE R-102 INSTALLATION MANUAL AND IN ACCORDANCE WITH ALL STATE AND LOCAL CODES.
2. THE WIRE ROPE FOR THE DETECTOR AND REMOTE PULL STATION IS TO BE INSTALLED BY AN AUTHORIZED AND FACTORY TRAINED DISTRIBUTOR OR SERVICE REPRESENTATIVE.
3. THIS INSTALLATION IS TO BE INSPECTED, PUT INTO OPERATION AND CERTIFIED BY AN AUTHORIZED AND FACTORY TRAINED DISTRIBUTOR OR SERVICE REPRESENTATIVE.
4. ELECTRICAL CONTACTS AND WIRING FOR APPLIANCE SHUT OFF TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
5. ANSUL R-102 RESTAURANT FIRE SUPPRESSION SYSTEMS HAVE BEEN TESTED AND ARE LISTED BY UNDERWRITERS' LABORATORIES INC. AS PRE-ENGINEERED SYSTEMS, AND WHEN INSTALLED AS SHOWN ON THIS DRAWING SHALL COMPLY WITH ALL RELEVANT ANSUL INSTALLATION RECHARGE INSPECTION AND MAINTENANCE MANUALS AND SHALL COMPLY WITH NFPA 96 WHEN INSTALLED AND CERTIFIED BY AUTHORIZED TRAINED ANSUL DISTRIBUTORS IN ACCORDANCE WITH THE MANUAL.
6. ALL AGENT DISTRIBUTION PIPING AND DETECTION CONDUIT HOOD PENETRATIONS MUST BE PROPERLY SEALED IN ACCORDANCE WITH NFPA 96.

DISTRIBUTION PIPING REQUIREMENT NOTES:
1. PIPE SHALL BE 3/8" SCHEDULE 40 BLACK IRON, CHROME PLATED OR STAINLESS STEEL UNLESS OTHERWISE NOTED.
2. FINAL NOZZLE LOCATION MAY NOT VARY FROM LOCATION SHOWN.

MANUAL PULL DETAIL



SECTION VIEW

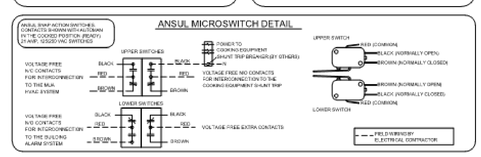


NOTE:
HALTON COMPANY WILL SUPPLY ANSUL COMPONENTS AND PRE-PIPED HOODS PER PUBLISHED ANSUL GUIDELINES AND RECOMMENDATIONS. IT IS THE RESPONSIBILITY OF THE F.S.E.C. TO INFORM HALTON OF ANY SPECIAL REQUIREMENTS OF THE LOCAL JURISDICTION PRIOR TO RELEASE OF EQUIPMENT.

NOTE:
ALL PIPING FOR LOW PROXIMITY APPLIANCE PROTECTION SHALL BE PROVIDED & INSTALLED BY THE INSTALLING ANSUL DISTRIBUTOR & NOT BY HALTON.

NOTE:
HAND HELD EXTINGUISHERS, IF REQUIRED, ARE TO BE PROVIDED BY OTHERS.

ANSUL MICROSWITCH DETAIL



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1. ALL EQUIPMENT DIMENSIONAL INFORMATION, MOUNTING POSITIONS AND CLEARANCES.
2. THE LOCATION AND TYPE OF COOKING EQUIPMENT.
NOTE: ALL CHANGES IN COOKING EQUIPMENT SUCH AS INCREASED ENERGY INPUTS OR EQUIPMENT ANY CHANGES IN COOKING EQUIPMENT SUCH AS INCREASED ENERGY INPUTS OR EQUIPMENT POSITION MAY AFFECT EXHAUST AIRFLOW. HALTON MUST BE NOTIFIED IF ANY OF THESE CONDITIONS CHANGE AFTER APPROVAL HAS BEEN GIVEN FOR FABRICATION.

☐ REVISE AND RESUBMIT
APPROVED FOR FABRICATION
☐ WITH NO CHANGES ☐ WITH CHANGES AS NOTED

MAIL APPROVED DRAWINGS TO APPROPRIATE FACTORY BELOW:

HALTON CO. (CANADA)
1021 BREVIK PLACE
MISSISSAUGA, ON L4W 3K7
1-905-624-0901

☐

HALTON CO. (USA)
101 INDUSTRIAL DRIVE
SCOTTSVILLE, KY 42164
1-270-237-3900

WEBSITE: www.halton.com

REV.	REVISION DESCRIPTION	BY	DATE
	REVISED HOOD AND ANSUL	NC	11.09.20

PROJECT: SHAKE SHACK OAK LAWN, IL
LOCATION:
DRAWN BY: NC
SCALE: NTS
DATE: 10.21.20
CONSULTANT:

Halton

DRAWING TITLE:
FIRE SYSTEM DETAILS
DRAWING No.
U20-808
REV. NO.: 1
SHEET NO.: 3 of 4

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
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TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL. CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

Drawing Title
HALTON DRAWINGS

Job No.	Drawn
204461	Author
Scale	Date
	11/09/20

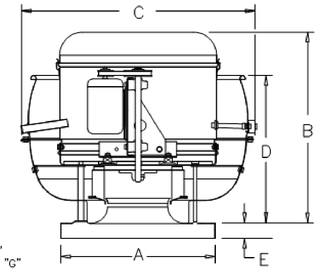
Sheet No.
M703

JOSHUA N. HOYER
11/23/2020 2:32:17 PM C:\Revit\Projects\20500001105 MEP -21_mal.warrick_20201123142903.rvt

FAN INFORMATION TABLE

FAN NO	MODEL	QTY	CFM	S.P.	H.P.	VOLTAGE	AMPS	ACCESSORIES
EF-1	HSTXDRHUL1575SC HOOD #1-1	1	1657	.8"	3/4	115/1/60	5.6	MOUNT & WIRE DISCONNECT, SPD CNTRL, SQ GALV SF CURB, LABEL UL/CUL 762, GREASE CONTAINER, HINGE KIT
EF-2	HSTXDRHUL1575SC HOOD #1-2	1	1772	.8"	3/4	115/1/60	5.6	MOUNT & WIRE DISCONNECT, SPD CNTRL, SQ GALV SF CURB, LABEL UL/CUL 762, GREASE CONTAINER, HINGE KIT

HTXDRHUL

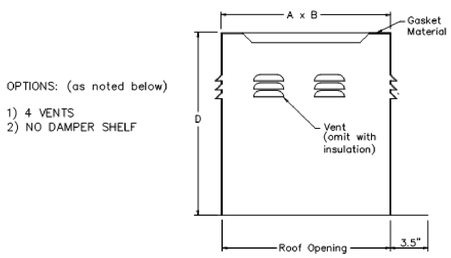


DAMPER OD = "F"
ROOF OPENING = "G"
CURB OD = "H"

TAG	SIZE	A	B	C	D	E	F	G	H	J	SHIP'G WT.-LESS MOTOR
EF-1	15	24"	27.63"	36.5"	22.63"	2"	18"	19.5"	22.5"	19.5"	140
EF-2	15	24"	27.63"	36.5"	22.63"	2"	18"	19.5"	22.5"	19.5"	140

CURB

CURB TYPE: GSFRC



OPTIONS: (as noted below)

1) 4 VENTS
2) NO DAMPER SHELF

TAG	QTY	DESCRIPTION	MATERIAL GUAGE	A	B	C	D	ROOF OPENING	OPTIONS
EF-1	1	GSFRC 22.5	18	22.5"	22.5"	1.5"	18"	19.5" x 19.5"	1,2
EF-2	1	GSFRC 22.5	18	22.5"	22.5"	1.5"	18"	19.5" x 19.5"	1,2

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1. ALL DIMENSIONAL INFORMATION, MOUNTING POSITIONS
2. AND CLEARANCES.
3. THE LOCATION AND TYPE OF COOKING EQUIPMENT.
ARE CORRECT AS SHOWN.
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☐ REVISE AND RESUBMIT
APPROVED FOR FABRICATION
☐ WITH NO CHANGES ☐ WITH CHANGES AS NOTED
APPROVED BY DATE

MAIL APPROVED DRAWINGS TO APPROPRIATE FACTORY BELOW:
HALTON CO. (CANADA) ☐
1021 BREWIK PLACE
MISSISSAUGA, ON L4W 3R7
1-905-624-0301

HALTON CO. (USA) ☒
101 INDUSTRIAL DRIVE
SCOTTSVILLE, KY 42164
1-270-237-5800
WEBSITE: WWW.HALTONCOMPANY.COM

REV.	DESCRIPTION	BY	DATE
1	NO CHANGE	NC	11.09.20
2			
3			
4			
5			
6			
7			

PROJECT: SHAKE SHACK OAK LAWN, IL
LOCATION:
DRAWN BY: NC
DATE: 10.21.20
SCALE: NTS
CONSULTANT:
Halton

DRAWING TITLE: FAN DETAILS
DRAWING No.: U20-808
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KITCHEN GENERAL NOTES

1. REFERENCE KITCHEN EQUIPMENT DRAWINGS FOR ITEMS TO BE FURNISHED AND / OR INSTALLED AND PROVIDE ITEMS AND WORK AS REQUIRED TO COMPLETE THE INSTALLATION OF PLUMBING SYSTEMS FOR KITCHEN EQUIPMENT. REFERENCE THE KITCHEN EQUIPMENT DRAWINGS FOR REQUIRED ROUGH-IN AND FINAL CONNECTIONS FOR KITCHEN EQUIPMENT. REFERENCE THE KITCHEN EQUIPMENT SHOP DRAWINGS PRIOR TO THE START OF INSTALLATION FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE ITEMS AND WORK AS REQUIRED FOR A COMPLETE AND WORKING PLUMBING INSTALLATION FOR EACH PIECE OF KITCHEN EQUIPMENT. PROVIDE ROUGH-INS AND CONNECT TO THE KITCHEN EQUIPMENT WITH TRAPS, SUPPLIES, SHUTOFF VALVES, PIPES TO THE WALL, ESCUTCHEONS, ETC AS SHOWN, SPECIFIED AND REQUIRED.
3. WHERE "FLEX" TUBING IS CALLED FOR, PROVIDE A FOUR FOOT COILED LENGTH OF TYPE "K" SOFT COPPER TUBING FROM WATER SHUT-OFF VALVE TO THE EQUIPMENT CONNECTION OF SAME SIZE AS CONNECTION TO KITCHEN EQUIPMENT WITH 1/4" BEING MINIMUM SIZE. PROVIDE CONNECTORS AND ADAPTERS AS REQUIRED.
4. VERIFY GAS LOADS AND GAS ROUGH-IN OF KITCHEN EQUIPMENT WITH THE KITCHEN EQUIPMENT SHOP DRAWINGS PRIOR TO INSTALLING GAS PIPING. PROVIDE GAS COCKS, UNIONS, ETC. AS SPECIFIED AND REQUIRED. INSTALL GAS QUICK DISCONNECTS WHERE FURNISHED WITH THE KITCHEN EQUIPMENT.
5. PROVIDE INDIRECT WASTE LINES OF SAME SIZE AS CONNECTION TO EQUIPMENT WITH 3/4" BEING MINIMUM SIZE. ROUTE FROM EQUIPMENT CONNECTION POINTS INDICATED TO FLOOR DRAIN OR FLOOR SINK. PROVIDE AIR GAP OF TWO PIPE DIAMETERS MINIMUM PER CODE.
6. COMPLY WITH HEALTH DEPARTMENT REGULATIONS. PROVIDE CLEARANCE FOR CLEANING BEHIND AND UNDER EXPOSED PIPING AS REQUIRED BY HEALTH DEPARTMENT. CONFORM TO HEALTH DEPARTMENT REQUIREMENTS FOR LOCATIONS OF FLOOR SINKS.
7. DO NOT INSTALL PLUMBING ROOF PENETRATIONS THROUGH GREASE FILTER PANS ON THE ROOF. REFER TO MECHANICAL DRAWINGS PRIOR TO START OF INSTALLATION.
8. PROVIDE AIRTIGHT SEAL AROUND PIPING PENETRATIONS THROUGH WALK-IN COOLER OR FREEZER WALLS OR CEILINGS.
9. DO NOT INSTALL PIPING IN COOLER OR FREEZER WALLS. INSTALL EXPOSED PIPING IN A NEAT MANNER.
10. COORDINATE FLOOR DRAIN LOCATION AND FLOOR SLOPE; REQUIREMENTS WITH THE ARCHITECT.
11. INSTALL RIM OF FLOOR DRAINS AND FLOOR SINKS BELOW FINISHED FLOOR LEVEL. SLOPE FLOOR TO DRAINS. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATION.
12. COORDINATE LOCATION OF VENT, WATER, AND GAS PIPING TO AVOID CONFLICT WITH OTHER TRADES.
13. CLEAN INSTALLED PLUMBING FIXTURES AND EQUIPMENT.
14. PROVIDE WALL BACKING OR SPECIFIED CARRIERS FOR THE PROPER SUPPORT OF INSTALLED WALL HUNG FIXTURES AND EQUIPMENT.
15. PROVIDE VERTICAL LIFT SPRING LOADED CHECK VALVES IN HOT AND COLD WATER SUPPLIES FOR 3-COMPARTMENT SINKS, PRE-RINSE UNITS, JANITOR SINKS, MIXING HOSE BIBBS & MIXING WALL HYDRANTS DOWNSTREAM OF SHUTOFF VALVES.
16. SEAL AROUND INSTALLED FIXTURES AND KITCHEN EQUIPMENT WITH CAULK.
17. PROVIDE APPROPRIATE BACKFLOW PREVENTION DEVICES FOR KITCHEN EQUIPMENT REQUIRING THEM PER LOCAL AUTHORITIES REQUIREMENTS. INSTALL BACKFLOW PREVENTION DEVICES FURNISHED WITH KITCHEN EQUIPMENT.

PLUMBING GENERAL NOTES

1. DRAWINGS ARE DIAGRAMMATIC ONLY AND REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY THE ARCHITECT OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
2. FURNISH A CONSTRUCTION RECORD SET OF "AS-BUILT" DOCUMENTS TO THE ARCHITECT REFLECTING ANY VARIANCES OF INSTALLED PIPING LOCATIONS OR EQUIPMENT CONTRARY TO THE CONSTRUCTION DOCUMENTS PREPARED BY THE ENGINEER-OF-RECORD AFTER FINAL INSPECTION OF INSTALLED PLUMBING SYSTEMS.
3. FURNISH TO THE ARCHITECT A COPY OF INSPECTION REPORTS AND APPROVAL CERTIFICATES FROM LOCAL AND STATE INSPECTIONS.
4. INSTALLATION SHALL COMPLY WITH LEGALLY CONSTITUTED CODES AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. PLANS AND SPECIFICATIONS GOVERN WHERE THEY EXCEED CODE REQUIREMENTS.
6. UTILITY INSTALLATIONS SHALL COMPLY WITH ALL LEGALLY CONSTITUTED UTILITY COMPANIES SERVICE REQUIREMENTS HAVING JURISDICTION.
7. COORDINATE LOCATION AND DEPTH OF UTILITIES AT ALL POINTS OF CONNECTION INDICATED ON DRAWINGS BEFORE START OF PROJECT.
8. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF PLUMBING FIXTURES.
9. DO NOT SCALE FLOOR PLANS FOR EXACT HORIZONTAL LOCATION OF PIPE ROUTING.
10. VALVES SHALL BE LINE SIZE UNLESS OTHERWISE NOTED.
11. ROUTE PIPING IN FINISHED AREAS CONCEALED. ROUTE EXPOSED PIPING TIGHT TO STRUCTURE AND TIGHT TO WALLS, PARALLEL TO BUILDING LINES. COORDINATE PIPE ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT PIPING FROM STRUCTURE, NOT ROOF DECK. DO NOT ROUTE PIPING ACROSS SKYLIGHTS.
12. COORDINATE WORK WITH OTHER TRADES AND CONTRACTORS.
13. COORDINATE PIPING INSTALLATION WITH STRUCTURAL GRADE BEAMS, FOOTINGS, COLUMN PIERS, REFRIGERATION PIT AND TUNNEL SYSTEMS, ETC. SLEEVE PIPING THROUGH GRADE BEAMS, FOOTING, ETC. WHERE REQUIRED AND AS NOTED ON PLANS. COORDINATE SLEEVE INSTALLATIONS WITH THE ARCHITECT, STRUCTURAL ENGINEER, STRUCTURAL CONTRACTOR AND GENERAL CONTRACTOR BEFORE CONCRETE IS INSTALLED. REFRIGERATION PIT AND TUNNEL SYSTEM INSTALLED BY GENERAL CONTRACTOR. PIPING INVERTS AND SLOPE SHALL BE CLOSELY COORDINATED TO AVOID CONFLICTS WITH ALL OTHER TRADES BELOW SLAB WORK.
14. CLEAN FAUCET AERATORS AND PIPE STRAINERS PRIOR TO TURNING BUILDING OVER TO THE TENANT.
15. PROVIDE TRAP PRIMERS WHERE REQUIRED BY LOCAL AUTHORITIES.
16. COORDINATE PIPE ROUTING AWAY FROM ELECTRICAL PANELS. DO NOT ROUTE PIPING OVER ELECTRICAL PANELS.
17. PAINT EXTERIOR GAS PIPING WITH A RUST INHIBITOR PAINT PER THE ARCHITECT'S SPECIFICATIONS.
18. COORDINATE ROOF PENETRATIONS WITH OTHER TRADES. MAINTAIN 10' MINIMUM CLEARANCE FROM ROOF TOP AIR INTAKES AND ROOF EDGES AND/OR PARAPETS. MAINTAIN 2' CLEARANCE FROM OTHER ROOF TOP EQUIPMENT.
19. INSULATE PIPING ROUTED IN EXTERIOR BUILDING WALLS WITH MINIMUM 2" BATT INSULATION TO PREVENT FREEZING.
20. INSTALL FLOOR AND WALL CLEANOUTS IN ACCESSIBLE LOCATIONS FOR MAINTENANCE. RELOCATE CLEANOUTS BENEATH OR BEHIND EQUIPMENT/CASES AT NO EXTRA COST TO TENANT.
21. INSTALL FLOOR DRAINS, TRENCH DRAINS AND FLOOR CLEANOUTS FLUSH WITH FINISH FLOOR ELEVATIONS INDICATED ON ARCHITECTURAL DRAWINGS. NO CRACKS, RISES OR FALLS IN FINISH FLOOR AROUND TOPS SHALL BE PERMITTED. MAKE CORRECTIONS AT NO EXTRA COST TO TENANT.
22. INSTALL FLOOR DRAINS AS INDICATED ON DRAWINGS. NOTIFY ARCHITECT OF CONFLICTS AS SOON AS POSSIBLE SO NOT TO DELAY WORK SCHEDULE. REPLACE DRAINS, GRATES AND/OR DRAIN BODIES NOT INSTALLED AS INDICATED OR DAMAGED DUE TO REMOVAL OF PROTECTIVE COVERINGS DURING CONSTRUCTION AT NO EXTRA COST TO TENANT.
23. INSTALL NO BELOW SLAB PLUMBING SYSTEMS BENEATH FREEZER UNITS.
24. INSTALL NO PIPING WITHIN REFRIGERATED PANEL WALLS OF FREEZER/COOLER UNITS. INSTALL AND PROPERLY SECURE PIPING ON EXTERIOR FACE OF REFRIGERATED PANEL WALLS IN A NEAT AND PROFESSIONAL WORKMAN LIKE MANNER.
25. INSTALL PLUMBING FIXTURE SHUT-OFF AND/OR BALANCING VALVES JUST ABOVE THE CEILING LINE SERVING FIXTURES IN PIPE CHASES OR PROVIDE ACCESS DOORS LOW IN CHASE WALL FOR VALVES INSIDE PIPE CHASES.
26. PROVIDE PROPER FREE STANDING INTERNAL WALL SUPPORTS FOR ALL PLUMBING WALL HUNG FIXTURES TO PREVENT PULLOUT FROM WALL.
27. PROVIDE FINAL CLEANING AND GUARANTEE PROPER WORKING OPERATION OF INSTALLED FIXTURES FURNISHED BY CONTRACTOR AND/OR TENANT. CAULK PLUMBING FIXTURES AND EQUIPMENT AROUND WALLS AND FLOORS WITHIN FOOD PREP AREAS IN ACCORDANCE WITH LOCAL HEALTH DEPARTMENT CODES AND REGULATIONS.
28. PROVIDE ESCUTCHEONS AT PIPE PENETRATIONS THROUGH FINISHED WALLS.
29. PROVIDE FINAL CONNECTIONS TO ALL EQUIPMENT SPECIFIED IN PLUMBING FIXTURE SCHEDULE AND OWNER FURNISHED EQUIPMENT SCHEDULE IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. INSTALL OR PROVIDE ALL REQUIRED SHUT-OFFS, BACKFLOW PREVENTERS, PRESSURE REGULATORS, FILTERS AND DRAINS AS INDICATED ON THE SCHEDULES AND/OR AS REQUIRED BY ALL STATE OR LOCAL CODES AND REGULATIONS. REFERENCE EQUIPMENT CUT-SHEETS FOR ADDITIONAL FINAL CONNECTION REQUIREMENTS NOT SHOWN ON THESE DRAWINGS.
30. INSTALL ENTIRE GAS PIPING SYSTEM ON BUILDING ROOF AS INDICATED ON DRAWINGS. MINIMIZE GAS PIPING INSTALLED INSIDE THE BUILDING SHELL SERVING INTERIOR EQUIPMENT. PROVIDE GAS PRESSURE REGULATORS, GAS COCKS AND SUPPORTS FOR A COMPLETE WORKING GAS SYSTEM.
31. REFRIGERATION CONTRACTOR TO PROVIDE CASE AND CONDENSATE DRAIN PIPING FROM REFRIGERATION SYSTEM FREEZER AND COOLER UNITS TO DRAINS WHERE INDICATED ON DRAWINGS.
32. ALL UNISTRUT THAT IS VISIBLE TO CUSTOMER VIEW, SHALL BE GALVANIZED.
33. PROVIDE SIZE AND LENGTH OF HOT WATER FIXTURE SUPPLY PIPE FROM CIRCULATED HOT WATER BRANCH OR MAIN TO TERMINATION OF HOT WATER FIXTURE SUPPLY PIPE AT EACH FIXTURE PER 2018 INTERNATIONAL ENERGY CONSERVATION CODE, TABLE C404.3.1. FOR ½" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL LAVATORIES, PROVIDE MAXIMUM LENGTH OF TWO FEET. FOR ½" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS, PROVIDE MAXIMUM LENGTH OF 43 FEET. FOR 3/4" HOT WATER FIXTURE SUPPLY PIPE SIZE TO INDIVIDUAL SINKS, PROVIDE MAXIMUM LENGTH OF 21 FEET.
34. CONTRACTOR'S BID SHALL INCLUDE PROVISIONS TO PROVIDE ALL SERVICES RELATED TO BUILDING SYSTEMS COMMISSIONING INCLUDING, FUNCTIONAL TESTING, RELATED DOCUMENTATION, REPORTS AND OWNER TRAINING. COORDINATE ALL REQUIREMENTS WITH THE DESIGNATED COMMISSIONING AGENT. CONTRACTOR SHALL COMPLETE ALL REQUIRED COMMISSIONING ACTIVITIES PRIOR TO FINAL INSPECTIONS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, COMMISSIONING PLAN, APPLICABLE CODE AND MANUFACTURER'S INSTRUCTIONS.

PLUMBING SHEET INDEX

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PLUMBING SYMBOLS

NOTE: THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ABBREVIATIONS, ETC. ARE NECESSARILY USED ON THE DRAWINGS.

ANNOTATION

- (1) PLUMBING PLAN NOTE CALLOUT
- (1) PLUMBING EQUIPMENT DESIGNATION. (CONTRACTOR FURNISHED AND INSTALLED). REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
- (1) EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
- (CU 1) MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- (1 / P1) DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER. LOWER NUMBER INDICATES SHEET NUMBER
- (1 / P1) SECTION CUT DESIGNATION

MOUNTING HEIGHTS

PLUMBING (AFF, AFG, UNLESS NOTED OTHERWISE)

INSTALL PLUMBING FIXTURES WITH THE MOUNTING HEIGHTS GIVEN BELOW UNLESS INDICATED OTHERWISE ON THE ARCHITECTURAL DRAWINGS. FINAL APPROVAL OF MOUNTING HEIGHTS SHALL BE BY THE ARCHITECT.

LAVATORY OR SINK	
STANDARD	31" FLOOR TO RIM
ADA ACCESSIBLE	34" FLOOR TO RIM
CHILD STANDARD	24" FLOOR TO RIM
URINAL	
STANDARD	22" FLOOR TO RIM
ADA ACCESSIBLE	17" FLOOR TO RIM
WATER CLOSET	
STANDARD	15" FLOOR TO RIM
ADA ACCESSIBLE	17" TO 19" FLOOR TO TOP OF SEAT
CHILD ADA ACCESSIBLE	15" FLOOR TO RIM
PRE-K ADA ACCESSIBLE	11" FLOOR TO RIM
WATER COOLER OR DRINKING FOUNTAIN	
STANDARD	41" FLOOR TO RIM
ADA ACCESSIBLE	36" FLOOR TO SPOUT
CHILD STANDARD	30" FLOOR TO RIM
SHOWER VALVES	
STANDARD	48" MEN & 42" WOMEN FLOOR TO CENTERLINE
ADA ACCESSIBLE	38" MINIMUM TO 48" MAXIMUM FLOOR TO CENTERLINE
SHOWER HEADS	
STANDARD	6'-6" MEN & 6'-0" WOMEN FLOOR TO CENTERLINE
TUB VALVES	
STANDARD	32" FLOOR TO CENTERLINE
ADA ACCESSIBLE	CENTER BETWEEN GRAB BAR AND TUB RIM
CLINIC SERVICE SINKS	30" FLOOR TO RIM
SURGEON'S SCRUB-UP SINKS	35" FLOOR TO FRONT RIM
ICE MAKER OUTLET BOXES	24" FLOOR TO CENTER OF BOX
WASHING MACHINE OUTLET BOXES	42" FLOOR TO RIM
JANITOR'S SINK FAUCET FITTINGS	42" FLOOR TO CENTERLINE
HOSE BIBBS	36" AFF TO CENTERLINE
NON FREEZE WALL HYDRANT	18" AFG TO CENTERLINE

ABBREVIATIONS

ADA	AMERICANS WITH DISABILITIES ACT	MIN	MINIMUM
AFF	ABOVE FINISHED FLOOR	N/C	NORMALLY CLOSED
AFG	ABOVE FINISHED GRADE	N/O	NORMALLY OPEN
B	BATHTUB	ORD	OVERFLOW ROOF DRAIN
BFF	BELOW FINISHED FLOOR	PDI	PLUMBING DRAINAGE INSTITUTE
BFG	BELOW FINISHED GRADE	PVC	POLYVINYL CHLORIDE
BOP	BOTTOM OF PIPE	RH	ROOF HYDRANT
BOS	BOTTOM OF STRUCTURE	RP	RECIRCULATION PUMP
BP	BOOSTER PUMP	RPM	REVOLUTIONS PER MINUTE
BTU	BRITISH THERMAL UNIT	RPZ	REDUCED PRESSURE ZONE BACKFLOW PREVENTER
CFH	CUBIC FEET PER HOUR	RT	REMOTE TOTALIZER
CFM	CUBIC FEET PER MINUTE	SF	SQUARE FEET
CO	CLEANOUT	SH	SHOWER
CP	CONDENSATE PUMP	SK	SINK
CPVC	CHLORINATED POLYVINYL CHLORIDE	SP	SUMP PUMP
CTL	COUNTERTOP LAVATORY	SS	STAINLESS STEEL, SANITARY SEWER, SOIL STACK, SHOWER STALL
DCV	DOUBLE CHECK VALVE BACKFLOW PREVENTER	SV	SHOWER VALVE, SOLENOID VALVE
DF	DRINKING FOUNTAIN	TD	TRENCH DRAIN
DFU	DRAINAGE FIXTURE UNIT	TDH	TOTAL DYNAMIC HEAD
DN	DOWN	TFA	TO FLOOR ABOVE
DS	DOWNSPOUT	TFB	TO FLOOR BELOW
EES	EMERGENCY EYEWASH AND SHOWER	TMV	THERMOSTATIC MIXING VALVE
EEW	EMERGENCY EYEWASH	TOP	TOP OF PIPE
EMV	EMERGENCY MIXING VALVE	TP	TRAP PRIMER
ESH	EMERGENCY SHOWER	TS	TIME SWITCH, TRAP SEAL
ESP	ELEVATOR SUMP PUMP	TYP	TYPICAL
ET	EXPANSION TANK	UCL	UNDER COUNTER LAVATORY
ETR	EXISTING TO REMAIN	UL	UNDERWRITERS LABORATORIES, INC.
EWC	ELECTRIC WATER COOLER	UNO	UNLESS NOTED OTHERWISE
FFA	FROM FLOOR ABOVE	UPS	UNINTERRUPTIBLE POWER SUPPLY
FFB	FROM FLOOR BELOW	UR	URINAL
FFE	FINISHED FLOOR ELEVATION	V	VOLT(S)
FF	FINISHED FLOOR	VCP	VITRIFIED CLAY PIPE
FL	FLOW LINE	VS	VENT STACK
FLA	FULL LOAD AMPS	VTR	VENT THROUGH ROOF
FLR	FLOOR	W/	WITH
GD	GARBAGE DISPOSER	W/O	WITHOUT
GI	GREASE INTERCEPTOR	WC	WATER COLUMN, WATER CLOSET
GPH	GALLONS PER HOUR	WF	WASH FOUNTAIN, WATER FILTER
GPM	GALLONS PER MINUTE	WH	WATER HEATER
GT	GREASE TRAP	WM	WATER METER
HD	HEAD, HUB DRAIN	WMB	WASHING MACHINE BOX
HI	HAIR INTERCEPTOR	WS	WASTE STACK
IE	INVERT ELEVATION	WSFU	WATER SUPPLY FIXTURE UNIT
IMB	ICE MAKER BOX		
IN WC	INCHES OF WATER COLUMN		
JB	JUNCTION BOX		
J-BOX	JUNCTION BOX		
JS	JANITOR'S SINK (MOP SINK)		
kW	KILOWATT		
LAV	LAVATORY		
MAX	MAXIMUM		
MBH	1000 BTU PER HOUR		
MH	MANHOLE		

PIPING

- CW — DOMESTIC COLD WATER (CW)
- FW1 — FILTERED WATER (FW1)
- FW2 — FILTERED WATER WITH SCALE INHIBITOR (FW2)
- SCW — SOFTENED COLD WATER (SCW)
- HW — DOMESTIC HOT WATER (HW)
- HWR — DOMESTIC HOT WATER RECIRC. (HWR)
- 140° — 140° DOMESTIC HOT WATER (140°)
- T — TRAP PRIMER LINE (T)
- S — SOIL PIPING - ABOVE FLOOR (S)
- S — SOIL PIPING - BELOW FLOOR (S)
- W — WASTE PIPING - ABOVE FLOOR (W)
- W — WASTE PIPING - BELOW FLOOR (W)
- GW — GREASE WASTE - ABOVE FLOOR (GW)
- GW — GREASE WASTE - BELOW FLOOR (GW)
- ST — STORM DRAIN - ABOVE FLOOR (ST)
- ST — STORM DRAIN - BELOW FLOOR (ST)
- OST — OVERFLOW STORM DRAIN - ABOVE FLOOR (OST)
- VBG — VENT BELOW GRADE (VBG)
- VBF — VENT BELOW FLOOR (VBF)
- ID — INDIRECT DRAIN (ID)
- CDH — CONDENSATE DRAIN - HIGH EFFICIENCY RTU (CDH)
- CD — CONDENSATE DRAIN (CD)
- ACD — AUXILIARY CONDENSATE DRAIN (ACD)
- SPD — SUMP OR SEWAGE PUMP DISCHARGE (SPD)
- G — LOW PRESSURE NATURAL GAS (G)
- G — LOW PRESSURE NATURAL GAS ON ROOF (G)
- MPG — MEDIUM PRESSURE NATURAL GAS (MPG)
- MPG — MEDIUM PRESSURE NATURAL GAS ON ROOF (MPG)
- CF — CARBON FILTERED WATER (CF)
- RO — REVERSE OSMOSIS WATER (RO)
- PH — HIGH PH WATER (PH)
- DI — DEIONIZED WATER (DI)
- FP — FIRE PROTECTION (FP)
- DIRECTION OF FLOW
- EXISTING PIPING TO BE REMOVED
- EXISTING PIPING TO REMAIN
- V — VENT PIPING (V)
- AW — ACID WASTE - ABOVE FLOOR (AW)
- AW — ACID WASTE - BELOW FLOOR (AW)
- AV — ACID VENT (AV)
- CA — COMPRESSED AIR (CA)
- AI — MEDICAL AIR INTAKE (AI)
- MA — MEDICAL AIR (MA)
- MV — MEDICAL VACUUM (MV)
- VE — MEDICAL VACUUM EXHAUST (VE)
- EV — EVACUATION (EV)
- CO2 — CARBON DIOXIDE (CO2)
- N2 — NITROGEN (N2)
- O2 — OXYGEN (O2)
- N2O — NITROUS OXIDE (N2O)
- OXYGEN OUTLET
- NITROUS OXIDE OUTLET
- MEDICAL AIR OUTLET
- NITROGEN OUTLET
- CARBON DIOXIDE OUTLET
- MEDICAL VACUUM INLET
- FLOOR SINK (FS), SIZE & TYPE
- FLOOR DRAIN (FD), SIZE & TYPE
- ROOF DRAIN (RD), SIZE & TYPE
- BALL VALVE
- TWO-WAY CONTROL VALVE
- SHUTOFF VALVE
- CHECK VALVE
- FLOW CONTROL VALVE (FCV)
- WATER METER
- STRAINER
- STRAINER WITH BLOWOFF VALVE
- RELIEF/SAFETY VALVE
- SOLENOID VALVE
- PRESSURE REDUCING VALVE (PRV)
- GAS PRESSURE REGULATOR (GPR)
- THERMOSTATIC MIXING VALVE
- PA — PIPE ANCHOR
- EJ — EXPANSION JOINT
- BACKFLOW PREVENTER
- PRESSURE GAUGE
- THERMOMETER
- UNION
- FLANGE CONNECTION
- HOSE BIBB (HB)
- NONFREEZE WALL HYDRANT (NW)
- MANUAL / AUTOMATIC AIR VENT OR VACUUM RELIEF VALVE
- PRESSURE/VACUUM SWITCH
- CLEANOUT
- CAP
- WALL CLEANOUT (WCO)
- FLOOR CLEANOUT (FCO)
- EXTERIOR CLEANOUT (ECO)
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- ELBOW UP WITH SHUT-OFF VALVE (SOV)
- ELBOW DOWN WITH SHUT-OFF VALVE (SOV)
- TEE UP WITH SHUT-OFF VALVE (SOV)
- TEE DOWN WITH SHUT-OFF VALVE (SOV)
- "A" — WATER HAMMER ARRESTER (WHA) WITH PDI SIZES, (A, B, C, D, & E)
- RECIRCULATION PUMP
- P-TRAP
- GAS COCK
- TRAP PRIMER
- TRAP PRIMER WITH DISTRIBUTION UNIT

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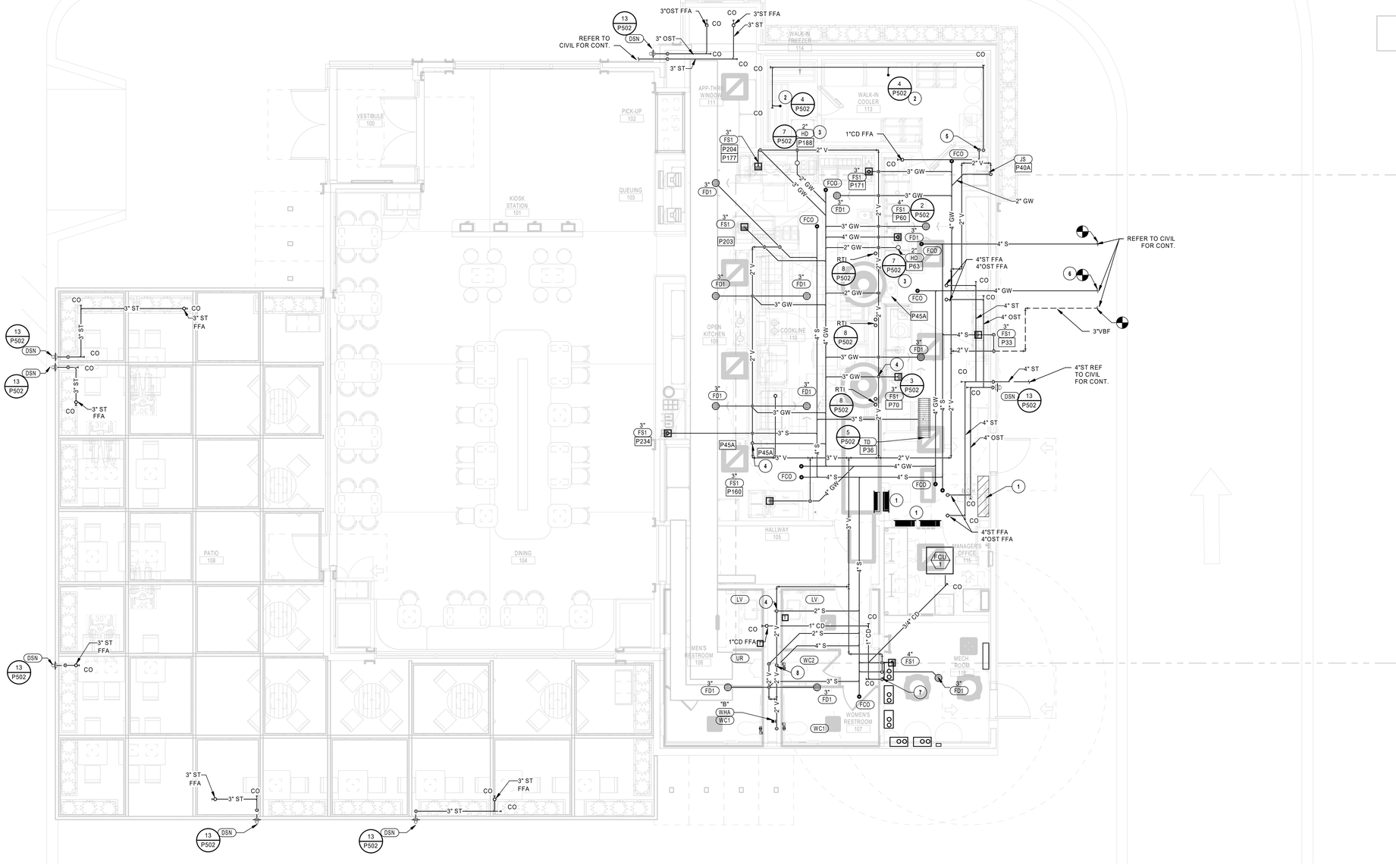
PLUMBING PLAN NOTES:

1. NO PLUMBING PIPING SHALL BE ROUTED OVER ELECTRICAL PANELS OR TRANSFORMERS, AND THEIR WORKING SPACE.
2. ROUTE EVAP COIL CONDENSATE PIPE, SIZE PER COIL REQUIREMENTS, TO PENETRATE THROUGH COOLER WALL AND DOWN ALONG EXTERIOR COOLER WALL TO TERMINATE WITH AIR GAP OVER FLOOR DRAIN. SEAL AROUND PIPING AND BOLT PENETRATIONS THRU COOLER/FREEZER BOX WALLS OR CEILINGS WITH BACKER ROD SEALANT.
3. DISHWASHER DRAIN, P-TRAP AND TRAP ARM SHALL BE CAST IRON A MINIMUM OF 10'-0" FROM THE TRAP BEFORE TRANSITION TO PVC.
4. ROUTE 2" VENT LOW IN WALL.
5. ROUTE CONDENSATE DOWN IN WALL AND DISCHARGE TO MOP SINK WITH AIR GAP.
6. 1500 GALLON GREASE INTERCEPTOR BY LANDLORD. MINIMUM OF 400 GALLON REQUIRED PER CODE. REFER TO CIVIL FOR EXACT LOCATION.
7. ROUTE 1" CD DOWN IN WALL. DISCHARGE TO FLOOR SINK WITH AIR GAP.
8. 4"S DOWN BFF



1 PLUMBING WASTE & VENT PLAN
1/4" = 1'-0"

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SHACK #1345

EXPIRES ON: 11/30/2021

LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
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Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
PLUMBING WASTE & VENT PLAN

Job No.	Drawn
204461	Author
Scale	**Date**
1/4" = 1'-0"	11/09/20

Sheet No.
P101

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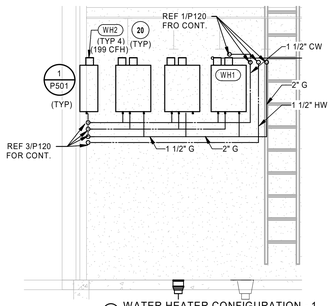
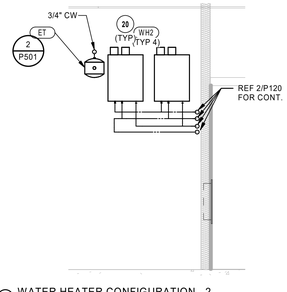
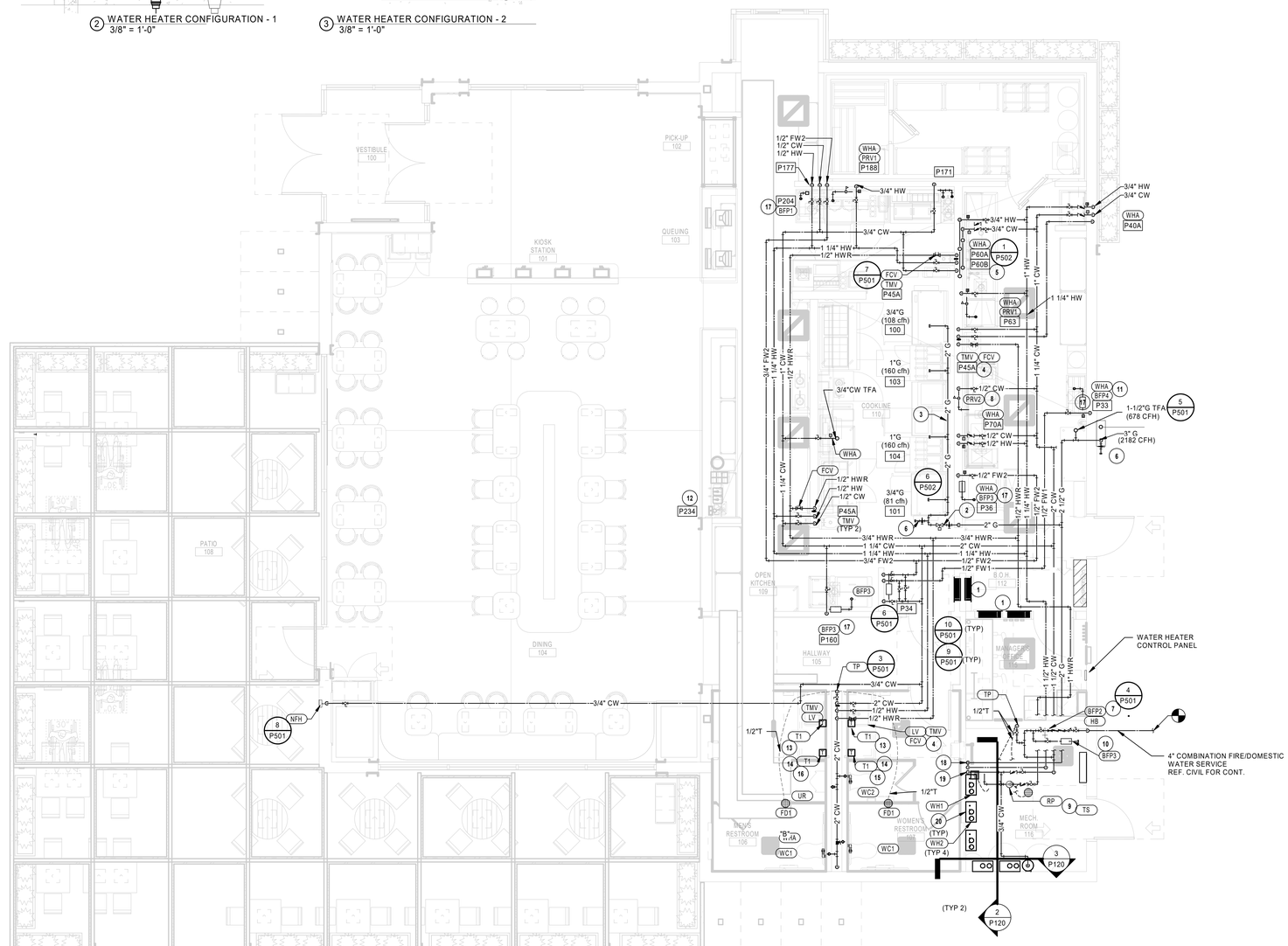


2 WATER HEATER CONFIGURATION - 1
3/8" = 1'-0"



3 WATER HEATER CONFIGURATION - 2
3/8" = 1'-0"



1 PLUMBING WATER & GAS PLAN
1/4" = 1'-0"

PLUMBING PLAN NOTES:

1. NO PLUMBING PIPING SHALL BE ROUTED OVER ELECTRICAL PANELS OR TRANSFORMERS, AND THEIR WORKING SPACE.
2. INSTALL GAS SOLENOID FURNISHED WITH HOOD FIRE SUPPRESSION SYSTEMS. INSTALL GAS SOLENOID AND SHUTOFF VALVE BELOW CEILING VISIBLE FOR MAINTENANCE.
3. INSTALL GAS HEADER ON FACE OF WALL AT 12" AFF AND BEHIND EQUIPMENT.
4. PROVIDE 0.5 GPM FLOW RESTRICTORS. COORDINATE WITH FAUCET FURNISHED WITH KITCHEN EQUIPMENT.
5. PROVIDE TEE FITTING ON FAUCET FOR FUTURE CONNECTION TO SANITATION.
6. 3/4" TEST PORT WITH ISOLATION VALVE. ENSURE THAT A MINIMUM OF 36" BETWEEN GAS METER AND ELECTRICAL SERVICE.
7. FIELD VERIFY PRESSURE AT WATER SERVICE ENTRANCE DOWNSTREAM OF BACKFLOW PREVENTER IS A MINIMUM OF 65 PSI AND MAXIMUM OF 80 PSI PRIOR TO BEGINNING OF NEW WORK. NOTIFY ARCHITECT/ ENGINEER IMMEDIATELY OF INADEQUATE PRESSURE.
8. INSTALL VEGGIE WASH PRV 45° AFF.
9. SET TIMER TO START RECIRCULATION PUMP ONE HOUR BEFORE AND STOP ONE HOUR AFTER NORMAL BUSINESS HOURS. COORDINATE HOURS OF OPERATION WITH TENANT REPRESENTATIVE.
10. 1"CW STUB FOR CONNECTION WITH FUTURE IRRIGATION.
11. ALL PIPING DOWNSTREAM OF BACKFLOW PREVENTER SHALL BE STAINLESS STEEL.
12. STUB UP BEVERAGE CONDUIT WITH CHILLED FCW ABOVE SLAB AND ROUTE LINES TO WATER FILLER. REFERENCE ARCHITECTURAL AND KITCHEN DRAWINGS FOR INSTALLATION.
13. LOCATE TRANSFORMER UNDER COUNTER TO SERVE LAVATORY. FURNISH TRANSFORMER TO ELECTRICAL FOR INSTALLATION.
14. LOCATE TRANSFORMER ABOVE CEILING WITH ACCESS PANEL. FURNISH TO ELECTRICAL FOR INSTALLATION
15. TRANSFORMER TO FEED TWO WATER CLOSETS IN WOMENS ROOM
16. TRANSFORMER TO FEED URINAL AND WATER CLOSET IN MENS ROOM
17. MOUNT BACKFLOW PREVENTER ON WALL. PROVIDE CLEARANCE FOR PROPER MAINTENANCE.
18. 2"G DOWN TO 2"G HEADER UNDER WATER HEATER.
19. 1-1/2"CW DOWN TO AND 1-1/2"HW UP FROM HOT AND COLD WATER HEADERS UNDER WATER HEATERS.
20. 1" COLD WATER UP TO, 1" HOT WATER DOWN FROM, AND 1"G UP TO EACH WATER HEATER.

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Job No.	Drawn
204461	Author
Scale	**Date**
As indicated	11/09/20

Sheet No.
P120

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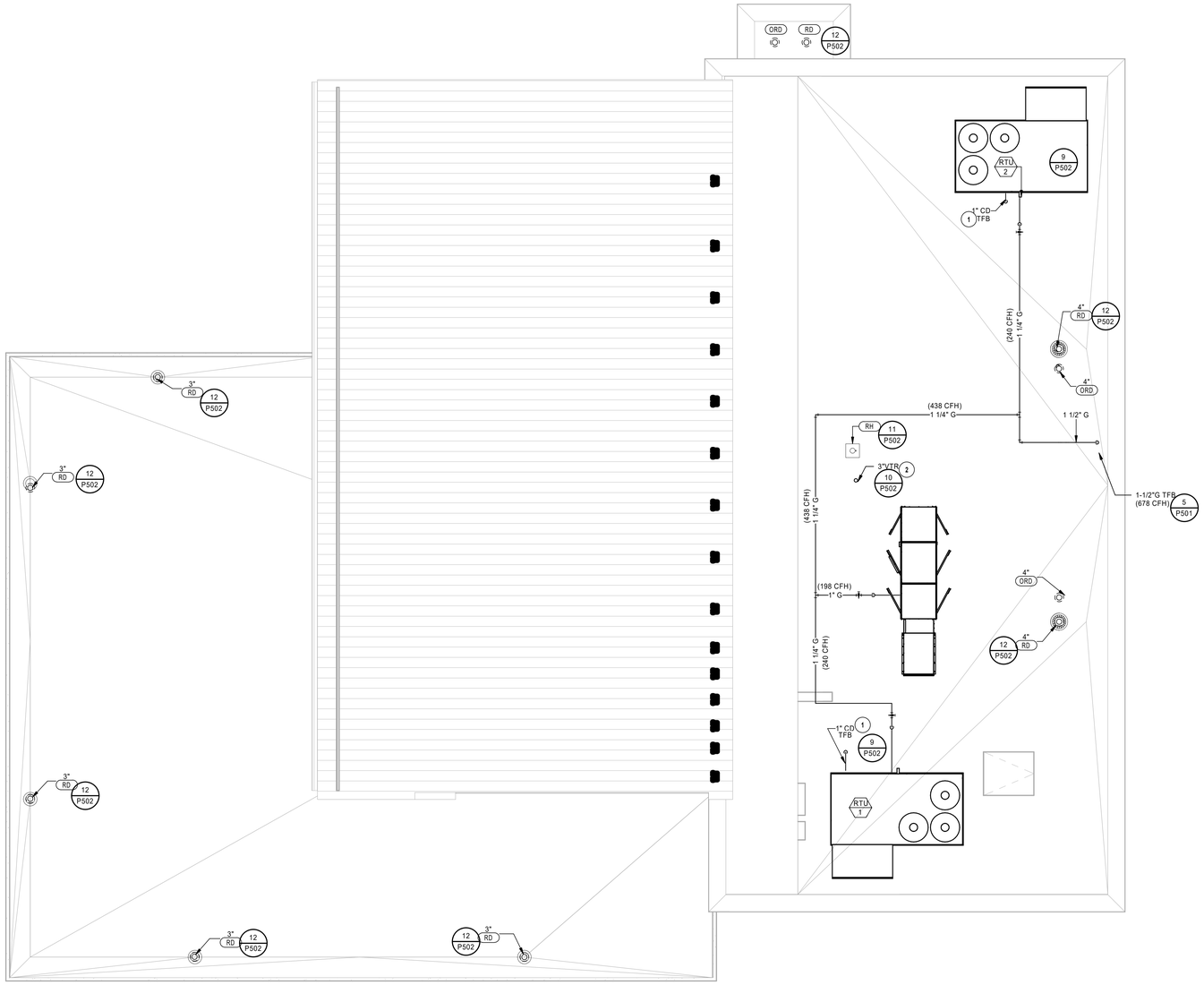

1 PLUMBING ROOF PLAN
1/4" = 1'-0"

PLUMBING PLAN NOTES:

1 1"CD TFB. RE: 1/P101 FOR CONT.
2 EXTEND VENT TO BE LEVEL WITH PARAPET HEIGHT.

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1/4" = 1'-0"	11/09/20

Sheet No.
P150

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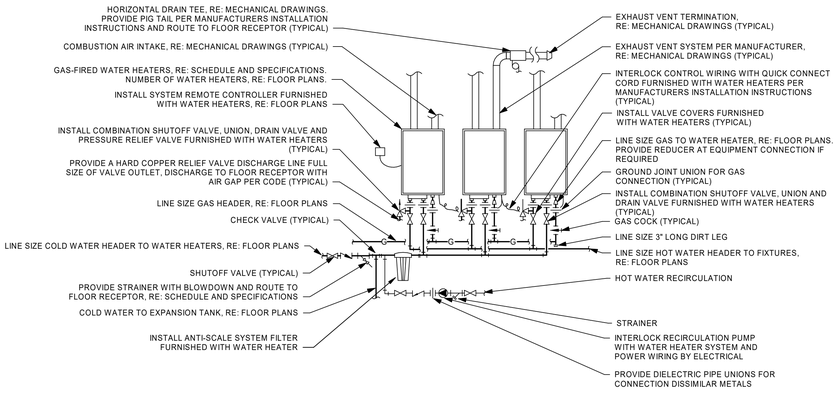
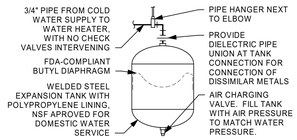


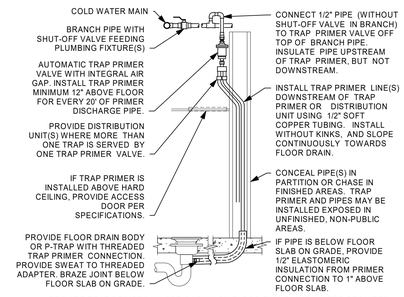
REFER TO SCHEDULES, SPECIFICATIONS AND NOTES FOR MORE INFORMATION. PIPING ARRANGEMENT SHOWN IS SCHEMATIC. VERIFY ALL CONNECTION SIZES AND LOCATIONS PER MANUFACTURERS REQUIREMENTS. ADJUST TO SUIT FIELD CONDITIONS. REFER TO FLOOR PLANS FOR PIPE SIZES. INTERLOCK AQUASTAT WITH RECIRCULATION PUMP BY ELECTRICAL.

1 MULTIPLE INDOOR INSTANTANEOUS GAS WATER HEATER CONNECTIONS WITH RECIRCULATION SYSTEM
12" = 1'-0"



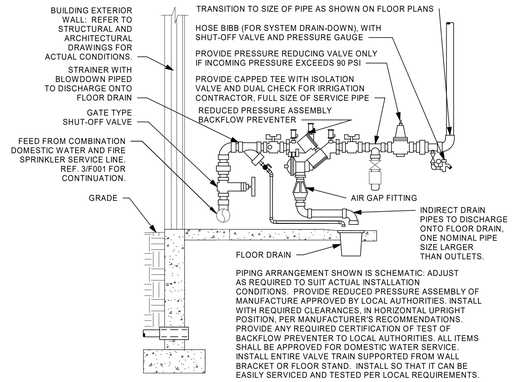
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION PROCEDURE. VERIFY PROPER OPERATION WHEN INSTALLED. PROVIDE SEISMIC STRAP OR BRACING WHEN REQUIRED BY LOCAL AUTHORITIES.

2 SMALL EXPANSION TANK
12" = 1'-0"



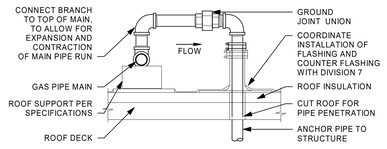
PROVIDE TRAP PRIMERS WHERE SHOWN ON FLOOR PLANS, AND WHERE REQUIRED BY LOCAL AUTHORITIES. PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. REFER TO SPECIFICATIONS AND PLUMBING FIXTURE SCHEDULE FOR MORE INFORMATION. INSTALL TRAP PRIMER VALVE AND DISTRIBUTION UNIT PER MANUFACTURER'S RECOMMENDATIONS.

3 TRAP PRIMER OVERHEAD
12" = 1'-0"



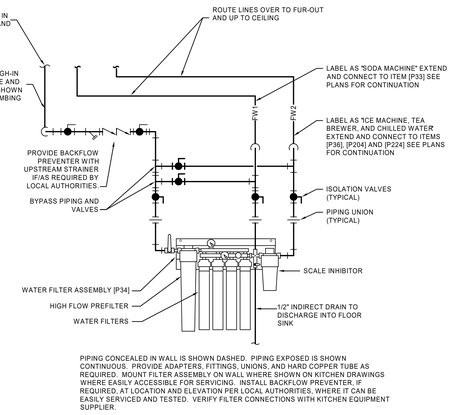
PIPING ARRANGEMENT SHOWN IS SCHEMATIC: ADJUST AS REQUIRED TO SUIT ACTUAL INSTALLATION CONDITIONS. PROVIDE REDUCED PRESSURE ASSEMBLY OF MANUFACTURE APPROVED BY LOCAL AUTHORITIES. INSTALL WITH REQUIRED CLEARANCES, IN HORIZONTAL UPRIGHT POSITION, PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ANY REQUIRED CERTIFICATION OF TEST OF BACKFLOW PREVENTER TO LOCAL AUTHORITIES. ALL ITEMS SHALL BE APPROVED FOR DOMESTIC WATER SERVICE. INSTALL ENTIRE VALVE TRAIN SUPPORTED FROM WALL BRACKET OR FLOOR STAND. INSTALL SO THAT IT CAN BE EASILY SERVICED AND TESTED PER LOCAL REQUIREMENTS.

4 DOMESTIC WATER SERVICE ENTRY
12" = 1'-0"



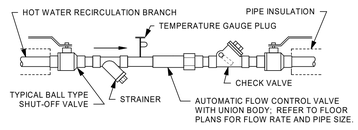
REFER TO PLANS FOR PIPE SIZE(S) AND PENETRATION LOCATION(S). REFER TO SPECIFICATIONS FOR MORE INFORMATION. LOCATE PENETRATION MINIMUM 18" FROM ADJACENT WALLS, VENTS THRU ROOF, EQUIPMENT CURBS, PARAPETS, ROOF DRAINS, EXPANSION JOINTS, AND OTHER ROOF FEATURES.

5 GAS PIPE ROOF PENETRATION
12" = 1'-0"



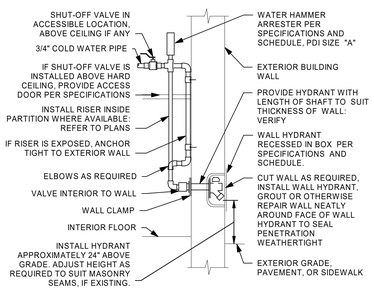
PIPING CONCEALED IN WALL IS SHOWN DASHED. PIPING EXPOSED IS SHOWN CONTINUOUS. PROVIDE ADAPTERS, FITTINGS, UNIONS, AND HARD COPPER TUBE AS REQUIRED. MOUNT FILTER ASSEMBLY ON WALL WHERE SHOWN ON KITCHEN DRAWINGS WHERE EASILY ACCESSIBLE FOR SERVICING. INSTALL BACKFLOW PREVENTER, IF REQUIRED, AT LOCATION AND ELEVATION PER LOCAL AUTHORITIES, WHERE IT CAN BE EASILY SERVICED AND TESTED. VERIFY FILTER CONNECTIONS WITH KITCHEN EQUIPMENT SUPPLIER.

6 Water Filter
12" = 1'-0"



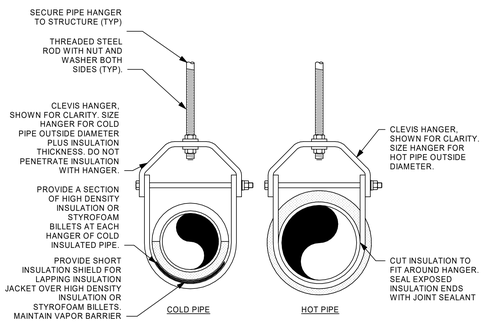
REFER TO SPECIFICATIONS, SCHEDULES, AND NOTES FOR MORE INFORMATION. MAKE CONNECTIONS AND PROVIDE INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS. ARRANGEMENT SHOWN IS SCHEMATIC. PROVIDE REDUCERS AND ADAPTERS AS REQUIRED.

7 AUTOMATIC FLOW CONTROL VALVE TRAIN
12" = 1'-0"



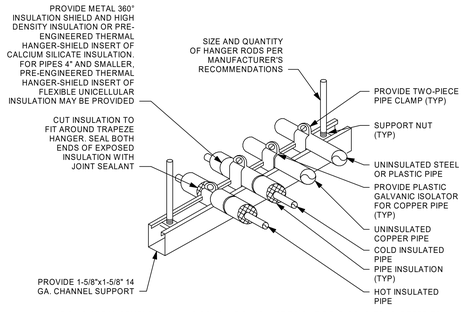
ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED TO SUIT FIELD CONDITIONS. INSTALL PER MANUFACTURER'S INSTRUCTIONS. IN NON-FREEZING CLIMATES, PIPE MAY BE INSTALLED CONCEALED IN EXTERIOR WALL RATHER THAN EXTERIOR TO WALL AS SHOWN. REFER TO PLANS FOR LOCATION.

8 WALL HYDRANT INSTALLATION
12" = 1'-0"



REFER TO SPECIFICATIONS FOR INSULATION TYPES, INSULATION THICKNESSES, HANGER TYPES, HANGER ROD CONNECTIONS TO STRUCTURE AND HANGER SPACING.

9 PIPE HANGER DETAIL
12" = 1'-0"



PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITONS. REFER TO SPECIFICATIONS FOR MORE INFORMATION. PIPE AND CONDUIT OF ALL TRADES MAY BE COMBINED ON THE SAME SUPPORT CHANNEL. COORDINATE SUPPORT CHANNEL LENGTH WITH PIPING AND CONDUIT TO BE SUPPORTED. SUPPORT CHANNEL SPACING SHALL BE DETERMINED BY SMALLEST PIPE TO BE SUPPORTED. CHANNEL SUPPORT MAY BE USED AS A WALL BRACKET, ATTACH TO WALL WITH ANCHOR BOLTS PER SPECIFICATIONS. FOR HORIZONTAL INSULATED PIPING, ATTACH CLAMPS AS INDICATED ABOVE. FOR VERTICAL INSULATED PIPING, ATTACH CLAMPS TO THE PIPE AND SEAL INSULATION AT BOTH CLAMP ENDS.

10 TRAPEZE PIPE HANGER
12" = 1'-0"

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PLUMBING DETAILS

Job No.	Drawn
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Scale	Date
12" = 1'-0"	11/09/20

Sheet No.
P501

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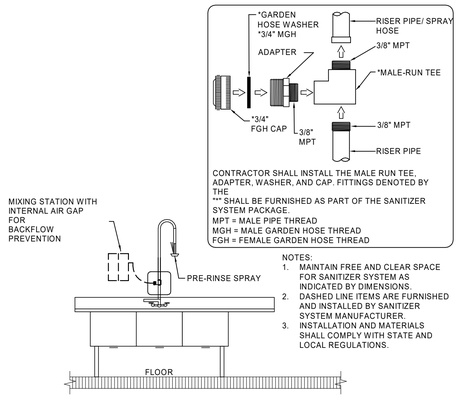
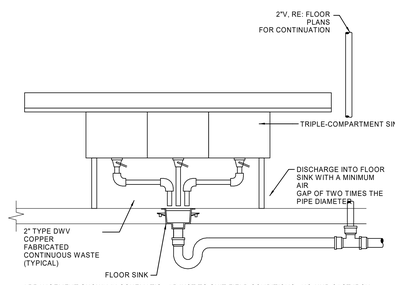
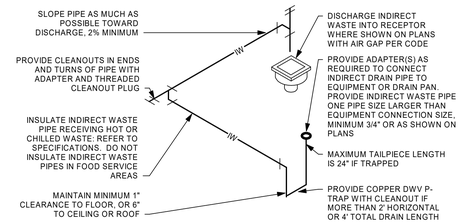


1 3-COMP SINK SANITIZER CONNECTION
12" = 1'-0"



ARRANGEMENT SHOWN IN SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. NO-HUB CAST IRON PIPE, FITTINGS AND CONNECTORS ALL AROUND SINK AND TRAP.

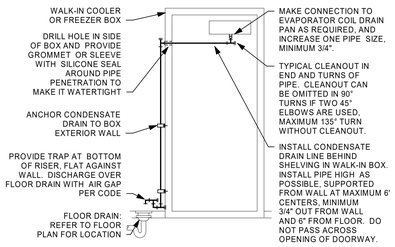
2 SCULLERY SINK
12" = 1'-0"



ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. PROVIDE CONNECTIONS SHOWN IN EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. REFER TO SPECIFICATIONS FOR PIPE AND FITTING MATERIALS, AND INSTALLATION OF HANGERS AND SUPPORTS. PROVIDE DIELECTRIC UNION IF CONNECTING DISSIMILAR METALS. DO NOT COMBINE INDIRECT DRAIN PIPES WITH CONDENSATE DRAIN PIPES. DO NOT PROVIDE TRAP OR VENT ON INDIRECT DRAINS RECEIVING DISCHARGE UNDER PRESSURE.

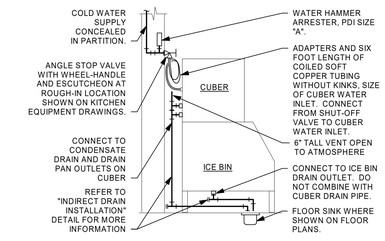
FOOD SERVICE EQUIPMENT INDIRECT WASTE: INSTALL SEPARATE INDIRECT WASTE FROM DIFFERENT EQUIPMENT - DO NOT COMBINE. SECURELY ATTACH INDIRECT DRAINS TO THEIR EQUIPMENT WITH BRACKETS OR SPLIT RING PIPE CLAMPS - REFER TO SPECIFICATIONS. LOOSE, DANGLING, OR PIPES ON THE FLOOR SHALL NOT BE ACCEPTED. INSTALL INDIRECT DRAINS HIGH AS POSSIBLE TO FACILITATE CLEANING UNDER KITCHEN EQUIPMENT.

3 INDIRECT WASTE INSTALLATION - IPC
12" = 1'-0"



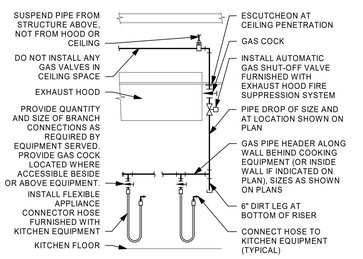
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. REFER TO SPECIFICATIONS FOR TYPE OF PIPE, FITTINGS, AND JOINTS. DO NOT USE PVC PIPE. INSTALL PER LOCAL CODE RULES FOR INDIRECT DRAIN PIPE. SLOPE HORIZONTAL PIPE AT MINIMUM TWO PERCENT. PROVIDE 1" THICK ELASTOMERIC INSULATION OVER HEAT TRACING ON CONDENSATE DRAINS LOCATED IN FREEZER BOXES. (COORDINATE PROVISIONS FOR ELECTRIC HEATING CABLE.) OTHERWISE DO NOT INSULATE PIPE. PROVIDE CHROMATONE PAINT ON PIPE EXTERIOR TO BOX.

4 WALK-IN BOX CONDENSADE DRAIN
12" = 1'-0"



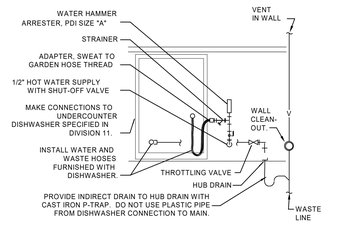
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS AND MEET EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE DUPLICATE WATER AND DRAIN CONNECTIONS IF DUAL CUBERS ARE FURNISHED.

5 ICE MACHINE CONNECTIONS
12" = 1'-0"



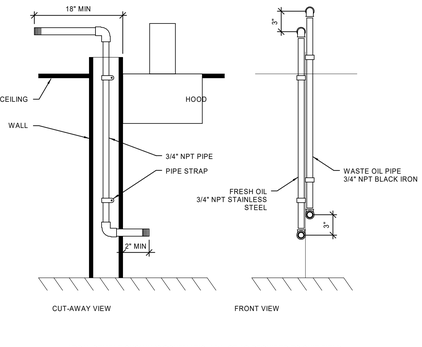
REFER TO SPECIFICATIONS FOR MORE INFORMATION ABOUT PIPE, FITTINGS, AND CONNECTIONS. PIPING ARRANGEMENT SHOWN IS SCHEMATIC; ADJUST TO SUIT FIELD CONDITIONS. IF EXPOSED, ATTACH RISER AND HEADER TO WALL WITH 1" CLEARANCE BEHIND PIPE (UNLESS INSTALLED INSIDE WALL AS SHOWN ON PLANS). MAKE FINAL CONNECTION TO EQUIPMENT AS RECOMMENDED BY MANUFACTURER. INSTALL ANY GAS PRESSURE REGULATORS FURNISHED BY FOOD SERVICE EQUIPMENT CONTRACTOR.

6 COOKING APPLIANCE GAS PIPE
12" = 1'-0"



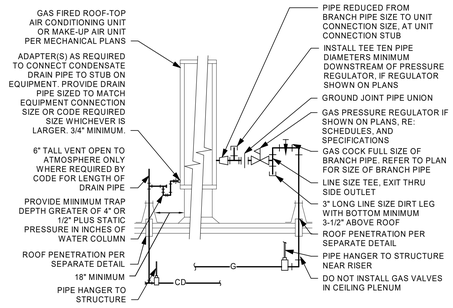
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. PROVIDE CONNECTIONS AND INSTALLATION AS RECOMMENDED BY EQUIPMENT MANUFACTURER. REFER TO PLUMBING FIXTURE SCHEDULE AND SPECIFICATIONS FOR ACCESSORIES SHOWN. IF SINK IS ADA, DO NOT ENCROACH ON ACCESSIBILITY ZONE.

7 UNDER COUNTER DISHWASHER CONNECTION
12" = 1'-0"



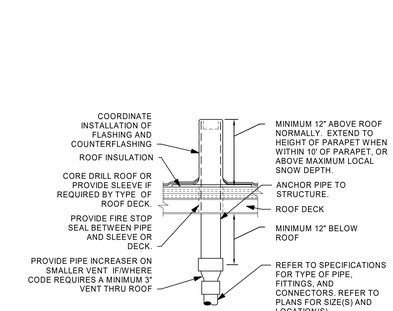
ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST AS REQUIRED TO SUIT FIELD CONDITIONS. INSTALL PER MANUFACTURER'S INSTRUCTIONS. IN NON-FREEZING CLIMATES, PIPE MAY BE INSTALLED CONCEALED IN EXTERIOR WALL RATHER THAN EXTERIOR TO WALL AS SHOWN. REFER TO PLANS FOR LOCATION.

8 FIRE RATED RTI
12" = 1'-0"



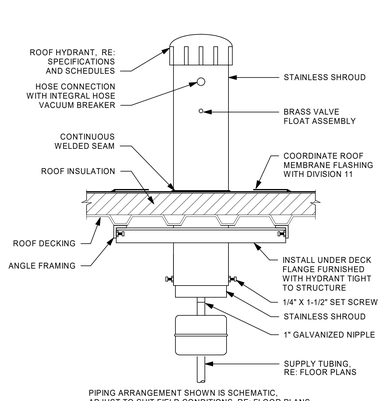
ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. PROVIDE CONNECTIONS SHOWN IN EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. VERIFY CONNECTION LOCATIONS BEFORE INSTALLING PIPE RUNS. REFER TO SPECIFICATIONS FOR PIPE AND FITTING MATERIALS AND INSTALLATION. PROVIDE DIELECTRIC UNION IF CONNECTING DISSIMILAR METALS. FOR PIPE SIZE(S) REFER TO FLOOR PLANS, OR CODE REQUIREMENTS FOR HVAC UNIT TONNAGE. PROVIDE GAS COCK, UNION AND DIRT LEG SAME SIZE AS BRANCH PIPE. SLOPE CONDENSATE PIPE AS MUCH AS POSSIBLE TOWARD DISCHARGE, 2% MINIMUM. PROVIDE CLEANOUTS IN ENDS AND TURNS OF PIPE PER LOCAL CODE REQUIREMENTS: ADAPTER WITH THREADED CLEANOUT PLUG. PROVIDE MINIMUM 6" CLEARANCE TO ROOF UNDER PIPES.

9 CONNECTIONS TO ROOF TOP UNIT
12" = 1'-0"



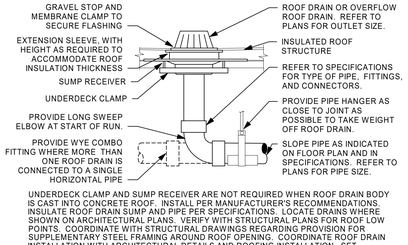
LOCATE VTR MINIMUM THREE FEET FROM PROPERTY LINE, TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, TWENTY FIVE FEET FROM ANY OPENING OR FRESH AIR INTAKE IN MEDICAL FACILITIES AND ONE FOOT FROM ANY VERTICAL SURFACE. REFER TO LOCAL CODES FOR OTHER VENT TERMINATION REQUIREMENTS. LOCATE VTR MINIMUM 18" FROM ADJACENT WALL, PARAPET, EXPANSION JOINT, ROOF DRAIN, EQUIPMENT CURB, OR OTHER ROOF FEATURE. OFFSET IN CEILING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS. INSULATE LAST SIX FEET OF VENT PIPE INSIDE BUILDING PER SPECIFICATIONS.

10 VENT THRU ROOF
12" = 1'-0"



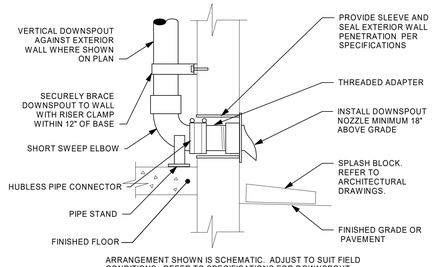
PIPING ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. RE: FLOOR PLANS FOR LOCATION.

11 ROOF HYDRANT DETAIL
12" = 1'-0"



UNDERDECK CLAMP AND SUMP RECEIVER ARE NOT REQUIRED WHEN ROOF DRAIN BODY IS CAST INTO CONCRETE ROOF. INSTALL PER MANUFACTURER'S RECOMMENDATIONS. INSULATE ROOF DRAIN SUMP AND PIPE PER SPECIFICATIONS. LOCATE DRAINS WHERE SHOWN ON ARCHITECTURAL PLANS. VERIFY WITH STRUCTURAL PLANS FOR ROOF LOW POINTS. COORDINATE WITH STRUCTURAL DRAWINGS REGARDING PROVISION FOR SUPPLEMENTARY STEEL FRAMING AROUND ROOF OPENING. COORDINATE ROOF DRAIN INSTALLATION WITH ARCHITECTURAL DETAILS AND ROOFING INSTALLATION. SET OVERFLOW DRAIN WEIR ELEVATION 2" ABOVE PRIMARY ROOF DRAIN WEIR ELEVATION.

12 ROOF DRAIN INSTALLATION
12" = 1'-0"



ARRANGEMENT SHOWN IS SCHEMATIC. ADJUST TO SUIT FIELD CONDITIONS. REFER TO SPECIFICATIONS FOR DOWNSPOUT NOZZLE, AND TYPE OF PIPE, FITTINGS, AND CONNECTORS.

13 DOWNSPOUT NOZZLE
12" = 1'-0"

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

EXPIRES ON: 11/30/2021

LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
062-069411
ILLINOIS
Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
PLUMBING DETAILS

Job No.	Drawn
204461	Author
Scale	Date
12" = 1'-0"	11/09/20

Sheet No.
P502

11/23/2020 2:03:42 PM C:\Revit\Projects\20500001105 MEP v21_gary.hornbeck_2020112313284.rvt JOSHUA N. HOVER

22B: PLUMBING

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and equipment specified.

The specifications and drawings for the Project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Furnish: “to supply and deliver to the project site, ready for unloading, unpacking, assembly, installation and similar operations.”

Install: “to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use.”

Provide: “to furnish and install, complete and ready for the intended use.”

Furnished by Owner (or Owner-Furnished) or Furnished by Others: “an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.”

Engineer: Where referenced in this division, “Engineer” is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the work.

NRTL: Nationally recognized testing laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

The terms "approved equal", “equivalent”, or "equal" are used synonymously and shall mean “accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified”. The term "approved" shall mean labeled, listed, or both, by an NRTL, and acceptable to the AHJ over this project.

The term lead free refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content of less than or equal to 0.25% per safe drinking water act as amended January 4, 2011 Section 1417.

C. PREBID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Model numbers listed in specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Pipe, pipe fittings, pipe specialties and valves shall be manufactured in plants located in the United States or certified to meet the specified ASTM and ANSI standards.

Work performed under this contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Architect and Engineer. Workmanship shall be the finest possible by experienced mechanics. Installations shall comply with applicable codes and laws.

The complete installation shall function as designed and intended with respect to efficiency, capacity, noise level, etc. Abnormal noise caused by rattling equipment, piping and squeaks in rotating components shall not be acceptable. Materials and equipment shall be of commercial specification grade in quality. Light duty and residential grade equipment shall not be accepted unless otherwise indicated.

Remove from the premises waste material present as a result of his work, including cartons, crating, paper, stickers, and/or excavation material not used in backfilling, etc. Clean equipment installed under this contract to present a neat and clean installation at the termination of the work.

Repair or replace public and private property damaged as a result of work performed under this contract to the satisfaction of authorities and regulations having jurisdiction. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

F. COORDINATION

Coordinate work with that of other trades so that the various components of the systems are installed at the proper time, will fit the available space, and will allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

Unless otherwise indicated, General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings when required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute his work in such a manner as not to interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scaled dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors which could have been avoided by proper checking and verification.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:
1. National Fire Protection Association (NFPA)
2. Underwriters Laboratories (UL)
3. Occupational Safety and Health Administration (OSHA)
4. American Society of Mechanical Engineers (ASME)
5. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
6. American National Standards Institute (ANSI)
7. American Society of Testing Materials (ASTM)
8. Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner.

H. PROTECTION OF EQUIPMENT AND MATERIAL

Store and protect from damage equipment and material after delivery to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Piping, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of piping systems while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

Keep the manufacturer-provided protective coverings on floor drains, floor sinks and trench drains during construction. Remove coverings at the termination of the work and polish exposed surfaces.

I. SUBSTITUTIONS

The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids. Each such request shall include the name of the material or equipment for which substitution is requested and a complete description of the proposed substitution including drawings, cuts, performance and test data, and other information necessary for an evaluation. Include a statement setting forth changes in other materials, equipment or other work that incorporation of the substitute would require. The burden of proof of the merit of the proposed substitute is upon the proposer. The Engineer's decision of approval or disapproval to bid of a proposed substitution shall be final.

Coordinate and verify with other trades whether or not the substituted equipment can be installed as shown on the construction drawings without modification to associated systems or architectural or engineering design. Include additional costs for architectural and engineering design fees in bid if drawing modifications are required because of substituted equipment.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

The terms "approved", "approved equal", or "equal", refer to approval by the Engineer as an acceptable alternate bid. No substitutions will be considered that are not bid as an alternate. No material substitutions shall be considered for approval prior to award of contract.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these Contract Documents and the design concept. Prior to transmitting submittal, verify that the equipment submitted is mutually compatible and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow for two weeks Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittal, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal date, equipment identification acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and turned without review.

Submittals and shop drawings shall not contain the firm name, logo, seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph “Electronic Drawing Files” for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. For equipment with motor starters or VFDs, include short circuit current ratings. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.

Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the electronic submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, size of members, or quantities, omissions of components or fittings; coordination of electrical requirements; and not coordinating items with actual building conditions and adjacent work. Proceed with the procurement and installation of equipment only after receiving approved shop drawings relative to each item.

K. ELECTRONIC DRAWINGS

In preparation of shop drawings or record drawings, Contractor may, at his option, obtain electronic drawing files in AutoCAD or DXF format on CD-ROM disk, DVD disk, flash drive, or direct download, as desired, from the Engineer for a shipping and handling fee of $200 for a drawing set up to 12 sheets and $15 per sheet for each additional sheet. Contact the Architect for written authorization and Engineer for the necessary release agreement form and to specify shipping method and drawing format. In addition to payment, written authorization from the Architect and release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include record drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph “Submittals” for requirements.

N. SPARE PARTS

Furnish to Owner, with receipt, the spare parts for faucet washers and O-rings, flushometer repair kits, and water closet tank repair kits for the fixtures furnished for this project.

O. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The Contractor and the Owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with Owner with at least 7 days advance notice.

P. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in the construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects, occurring within the warranty period(s), as stated in the General Conditions and Division 01.

Warranty shall include a guarantee of free circulation of liquids throughout the system as intended without leaks, excessive noise, or water hammer.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Building shall be in operation during normal workday hours. Accomplish work requiring interruption of building operation at a time when the building is not in operation and only with written approval of building Owner and/or tenant. Coordinate interruption of building operation with the Owner and/or tenant a minimum of seven (7) days in advance of work.

B. EXISTING EQUIPMENT REUSE AND REMOVAL

Provide items of plumbing systems modification required because of building remodeling, as noted on the drawings, or necessary for proper operation. Match existing materials and construction techniques when modifying existing systems. Coordinate requirements with general contractor and architect.

Seal existing floor drains to be abandoned or not in use at completion of work gas-tight with plug. Clean P-trap of debris. Provide blank grate. Cover drains with floor material matching adjacent area in finished portions of the building.

New floor drains shall be connected to the existing sanitary drainage system as shown on the drawings or as required. Saw-cut existing concrete floor as required to install new underfloor lines, and patch to match existing sub-floor. Refer to architectural specifications for finish floor patching requirements.

Existing plumbing fixtures where indicated on the drawings to be reused shall be cleaned, repaired, provided with new washers, etc. As required to put them into good operating condition.

Patch holes weather-tight in existing roofs caused by removal of plumbing items such as piping.

Make connection of new pipe to similar existing waste, water and gas pipe using standard fittings and joining practices.

C. EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of new building without prior consultation with the Architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6 inch layers of well-tamped dry earth in a manner to prevent future settlement.

Excavation as specified herein shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Dispose of excavated materials that are considered unsuitable for backfill and surplus of excavated material which is not required for backfill to the satisfaction of the Architect.

D. COINCIDENTAL DAMAGE

Repair streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of the work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect. Conform to requirements of Division 02 of this specification.

E. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission from the Architect prior to cutting. Do not disturb structural members without prior approval from the Architect. Cut holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. Patching shall match original material and construction including fire ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the Architect.

F. ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal piping, conduit, and rough-in except in unfinished areas and where otherwise shown.

G. CONCRETE BASES

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 4 inches greater than the footprint of the equipment that it is supporting and shall have a minimum height as described below.

Construct equipment bases of a minimum 28 day, 4000 psi concrete conforming to American Concrete Institute Standard Building Code for Reinforced Concrete (ACI 318-99) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases and housekeeping pads with No. 4 reinforcing bars conforming to ASTM A615 or 6x6 - W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete equipment bases and housekeeping pads or on concrete slabs. Anchor bolts size, number and placement shall be as recommended by the manufacturer of the equipment.

Concrete equipment bases shall have minimum heights in accordance with the following:
1. For water heaters, water softeners and other equipment not listed, minimum height is 3-1/2 inches.
2. Height of equipment bases applies to equipment installed on slab-on-grade. For equipment installed on floors above grade and on the roof, refer to the drawings.

H. SUPPORT SYSTEMS

Structural steel used for pipe supports, equipment supports, etc., shall be new and clean, and shall conform to ASTM designation A-36.

Support plumbing equipment and piping from the building structure. Do not support plumbing equipment and piping from ceilings, other mechanical or electrical components, and other non-structural elements.
Provide access doors for all concealed equipment where indicated or as required, except where above lay-in ceilings. Access doors shall be adequately sized for the devices served with a minimum size of 18 inches x 18 inches. Access doors must be of the proper construction for type of construction in which it is installed. Obtain Architect's approval of type, size, location, and color before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation, concealed hinges, flush screwdriver-operated cam lock, and anchor straps. Provide access doors manufactured by Milcor, Titus, Zurn, or equal.

J. PENETRATIONS

Provide sleeves for pipes passing through above grade concrete or masonry walls, concrete floor or roof slabs. Sleeves are not required for core drilled holes in existing masonry walls, concrete floors or roofs. Provide 10 gauge galvanized steel sleeves for sleeves 6 inches and smaller. Provide galvanized sheet metal sleeves for larger than 6 inches. Schedule 40 PVC sleeves are acceptable for installation in areas without return air plenums.

Seal around penetrations of fire rated assemblies. Coordinate fire ratings and locations with the architectural drawings. Refer to architectural specifications for fire stoppings. Provide a product schedule for UL listing, location, wall or floor rating and installation drawing for each penetration fire stop system.

Extend pipe insulation for insulated pipe through floor, wall and roof penetrations, including fire rated walls and floors. The vapor barrier shall be maintained. Size sleeve for a minimum of 1 inch annular clear space between inside of sleeve and outside of insulation.

Seal concrete or masonry exterior wall penetrations below grade with “wall pipes” and mechanical sleeve seals. Provide cast iron “wall pipes” with integral waterstop ring manufactured by Josam, Jay R. Smith, Wade, Watts or Zurn. Provide modular mechanical sleeve seals, manufactured by Thunderline / Link Seal, Calpico, Inc. and Metraflex.

Provide sleeves for horizontal pipe passing through or under foundation. Sleeves shall be cast iron soil pipe two nominal pipe sizes larger than the pipe served.

Provide Schedule 40 PVC pipe sleeves for vertical pressure pipe passing through concrete slab on grade. Sleeves shall be one nominal pipe size larger than the pipe served and two pipe sizes larger than pipe served for ductile iron pipes with restraining rods. Seal water-tight with silicone caulk.

Provide 1/2 inch thick cellular foam insulation around perimeter of non-pressure pipe passing thru concrete slab on grade. Insulation shall extend to 2 inches above and below the concrete slab.

K. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilti, RectorSeal, Specified Technologies Inc., United States Gypsum Company, or 3M corp.

Through and Membrane Penetration Firestopping Systems Product Schedule: Provide UL listing, location, wall or floor rating, and installation drawing for each penetration fire stop system.

Where project conditions require modification to qualified testing and inspecting agency's illustrations for a particular firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Include qualifications data for testing agency.

L. ELECTRICAL WIRING

Line voltage wiring shall be provided by Division 26. Line voltage control and interlock wiring for plumbing systems shall also be provided by Division 26. Low voltage control wiring shall be provided by Division 26. Furnish wiring diagrams to Division 26 as required for proper equipment hookup. Coordinate with Division 26 the actual wire sizing amps for plumbing equipment (from the equipment nameplate) to ensure proper installation.

M. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Furnish and install roughed-in wastes, vents and water services. Provide final connection to kitchen equipment, furnished by others, in locations as indicated on the drawings. Provide accessory items that are required but not furnished with the equipment including traps, stop valves, PRVs, indirect drain from equipment to floor drains, and accessory items indicated or required for the proper operation of the complete system at the termination of the work.

Contractor shall be responsible for correct rough-in dimensions and shall verify same with Architect and/or equipment supplier prior to service installations.

Install the emergency natural gas shutoff valve furnished with exhaust hood fire extinguishing system in an accessible location.

N. SYSTEM TESTING AND ADJUSTING

Upon completion of each phase of the installation, test each system in conformance with local code requirements and as noted below. Furnish labor and equipment required to test each system installed under this contract. Assume all costs involved in making the tests and repairing and/or replacing any damages resulting therefrom.

Notify the Architect and the AHJ, three (3) working days prior to making plumbing system tests. Leave concealed work uncovered until the required tests have been completed, but if necessary due to construction procedure, tests on portions of the work may be made, and when satisfactory, the work may be concealed. Test piping before insulation is installed, and before backfill. Pipes, joints, flanges, valve stems, etc., shall be leak tight. Repair or replace system defects with new materials. Caulking of defective joints, cracks or holes will not be permitted. Repeat tests after defects have been eliminated. Make tests in the presence of the administrative authority and/or the Owner's authorized representative.

Upon completion of the systems installation, and prior to acceptance by the Architect and Engineer, make general operating tests to demonstrate that equipment and systems are in proper working order, and are functioning in conformance with the intent of the drawings and specifications. As a part of these tests, open every water outlet to ensure complete system flushing, remove and clean faucet aerators, clean strainers, light pilot lights, and operate every piece of equipment furnished under this contract to demonstrate proper functioning.

Test the drainage and vent system by plugging openings with test plugs, except those at the top of the stacks. Fill the system with water; test results will be satisfactory if the water level remains stationary for not less than one (1) hour. Subject the drainage and vent system to a pressure of at least ten (10) feet of water. If leaks develop, repair them and repeat the test.

Test the domestic water system by filling it with water and then isolating the system from its source. Keep the system closed for a period of twenty-four hours with no fixture being used. The pressure differential for this test period shall not exceed 10 psig. Test water piping to a 125 PSI hydrostatic pressure.

For low pressure natural gas systems, subject the pipe to 10 psig air pressure for a period of one hour. The resultant pressure differential for this period shall be 0 psig. Test per gas company requirements where required.

For welded natural gas systems and systems with an operating pressure in excess of 14” water column, subject the pipe to 60 psig air pressure for a period of one hour. The resultant pressure differential for this period shall be 0 psig. Test per gas company requirements where required.

3. PLUMBING PIPING

A. PIPING MATERIALS

Materials specified or noted on the drawings are subject to the approval of local code authorities. Verify approval before installing any material or joining method.

Domestic Water (Cold, Filtered, Softened, Hot and Hot Water Recirculation): Domestic water piping installed above the floor slab inside the building shall be Type "L" hard temper copper tube with wrought copper fittings and soldered connections made up with 95/5 solder. Brazed mechanically formed tee connections (T-drill) may be used in copper lines where approved by code; connection shall be made with brazed silver solder (Sil-Fos) joints in conformance with manufacturer's instructions.

Underground domestic water piping 2 inch and smaller shall be Type "K" soft temper copper tubing with flared copper alloy fittings and connections, or Type "K" hard temper copper tubing with conventional wrought copper fittings and silver solder (Sil-Fos) joints. Install as few underground copper piping joints as possible. At building service entrance, no joints shall be installed under or within 5 feet of the building. Install domestic water piping below grade outside building at adequate depth to prevent freezing.

Interior Waste And Vent Below Slab: Waste and vent pipe below slab inside building shall be service weight cast iron soil pipe with hub and spigot fittings with neoprene gasket joints, meeting ASTM A74, manufactured by AB & I Foundry, Charlotte or Tyler pipe and bearing the trademark of the CISPI and NSF. Hubless waste and vent pipe is not permitted below base slab. PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM B1784, “solid wall” cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints is also permitted where approved by code.

Interior Waste and Vent Above Slab: Waste and vent pipe above slab inside building shall be hubless cast iron soil pipe and fittings, meeting ASTM A888 and CISPI 301, manufactured by AB & I foundry, Charlotte or Tyler pipe and bearing the trademark of the CISPI and NSF. PVC schedule 40 DWV ASTM D2665 pipe with PVC meeting ASTM B1784, “solid wall” cell class 12454-B with ASTM 2665 socket fittings with solvent weld joints is also permitted where approved by code. (Note: PVC piping is not allowed in ceiling return air plenums)

Interior Storm: Inside building shall be same as specified for interior waste and vent pipe.

Exterior Storm Service: Same as specified for exterior sanitary service.

Natural Gas Above Slab: Gas piping above ground shall be Schedule 40 black steel with malleable iron screwed fittings, or standard welded fittings.

Connections to Plumbing Fixtures and Equipment: 1-1/4 inch and larger waste connections from fixture traps to cast iron pipe shall be “DWV” copper with wrought copper drainage pattern fittings with copper sweat or compression joints at fixture trap connections and threaded joints at connections to cast iron pipe.

Indirect and Condensate Drain Inside Building: Indirect and condensate drain pipe installed inside the building shall be Type "M" hard copper with wrought copper fittings for 1” and smaller and “DWV” copper with wrought copper drainage pattern fittings for 1-1/4” and larger hard temper copper tube and soldered connections made with 95/5 solder. Install cleanouts at elbows greater than 45 degrees.

Indirect And Condensate Drain Outside Building: indirect and condensate drain pipe installed outside the building above ground shall be Type "M" for 1 inch and smaller and “DWV” for 1-1/4 inches and larger hard temper copper tube with wrought copper drainage pattern fittings and soldered connections made with 95/5 solder. Terminate at nearest roof drain, gutter or other location as shown drawings. Install cleanouts at elbows greater than 45 degrees.

B. PIPING AND EQUIPMENT INSULATION

Provide domestic cold water, filtered water, hot water, hot water recirculation, indirect and condensate drain pipe (within building) interior horizontal storm drain piping above ceiling and exposed with 1 inch one-piece fiberglass covering with all-service jacket with self-sealing lap to provide a continuous vapor barrier by Certainteed, Owens-Corning or Armstrong. For hot piping, provide pipe hangers and riser clamps sized for the outside diameter of piping. Butt insulation to hanger or riser clamp for vertical pipe. Seal exposed insulation with insulation sealer. Exception for Vertical Piping: Provide clamps sized for the outside diameter of the vertical pipe and extend clamp through insulation. Seal penetrations of insulation and vapor barrier with wet coat of vapor barrier lap cement. For cold piping at hangers, provide 8 inch long sections of high density, high temperature calcium silicate by Johns-Manville, Fiberglass by Knauf, or 8 inch long styrofoam billets by Dow or flexible unicellular piping insulation meeting ASTM C 534-01A, Type I with integral high density pipe supports and encased in steel insulation shield by Cooper B-line, Armacell, or approved equal. Insulation shall be continuous along the pipe surface, except at valves, unions, and where piping is exposed at fixtures. Provide 1 inch fiberglass insulation on vent piping within six feet of vent through the of roof. Provide fiberglass insulation on domestic cold and hot water pipes installed in walls and chases. Provide fiberglass insulation on domestic cold and hot water pipes installed in walls and chases. Provide insulation protection shield at each hanger for insulated piping.

Cover fittings with Zeston, Knauf, or equal one-piece PVC premolded insulating covers. Fitting covers, jackets and adhesives shall not exceed flame spread rating of 25 and smoke development rating of 50 per ASTM E84. Fill voids between covers and piping with fiberglass insulation and tape joints at all elbows and tees. Install pipe insulation in compliance with manufacturer's recommendations. Where premolded insulating fittings are not approved by the local AHJ, miter insulation at fittings.

C. PIPING JOINTS

Copper Tubing: Joints in hard temper tubing shall be soldered joints using lead-free 95/5 solder except where tubing is installed below grade or below the base slab, in which case joints shall be soldered with silver solder (Sil-Fos). Joints in soft temper copper tubing shall be of the flared type installed in compliance with the fitting manufacturer's recommendations.

Threaded Steel Pipe: Threaded joints shall be full and clean, cut with not more than three (3) threads exposed beyond the fittings. Make joints tight with graphite base pipe joint compound and paint exposed threads of ferrous pipe with acid-resisting paint after piping has been tested and proven tight. No caulking, lamp-wick or other material will be permitted for correction of defective joints.

Welded Steel Pipe: Welded joints shall be of the butt welded single "Vee" type. Bevel pipe at a 45 degree angle to within 1/16 inch of the inside wall, and build up the weld to one fourth greater depth than the pipe wall thickness. Welding shall be either electric or oxy-acetylene, performed in conformance with the ASME code for pressure pipe welding, and only by experienced certified welders.

Cast Iron Pipe Below Grade: Joints in bell and spigot cast iron waste and vent pipe shall be neoprene compression gaskets, Tyseal or equal.

Cast Iron Pipe Above Grade: Joints in hubless pipe shall be standard CISPI 310 NSF certified by Anaco, Ideal, Misson or Tyler. Joints in storm piping, including connections to roof drains, shall be heavy duty couplings meeting ASTM C1540 and FM 1680, Anaco Husky #SD-2000, Clamp-All “Hi Torque” 80 in. lb, Ideal Tridon “HD” or Mission “Heavyweight”.

PVC Pipe: Clean joints free from debris and moisture. Apply PVC primer meeting ASTM F656 to each joint. Apply solvent cement meeting ASTM D2564 and make joint while wet and in accordance with ASTM D2855.

Pipe Adapters: Make connection of new waste pipe to new or existing dissimilar waste pipe using adapter couplings. Provide Fernco, Proflex 3000 Series or Mission Flexseal MR56 Series with neoprene adapter gasket with stainless steel shield and hose clamps for connecting dissimilar pipes above grade. Provide Fernco, 1056 Series or Mission Sewer Couplin

D. PIPING INSTALLATION

General: Clean pipe thoroughly prior to installation. Ream ends of pipe to remove burrs. Cut pipe accurately to measurements taken on the job. Install with adequate clearance for installation of coverings where required. Pipe shall not be sprung or bent. Neatly align pipe, connect it securely, and support it from the building structure with hangers as specified below. Provide chrome-plated escutcheons on pipes passing through ceilings, floors or walls of finished spaces. Run pipes freely through floor and wall penetrations using pipe sleeves. Do not grout in place unless required for structural fire integrity. Install pipe concealed in finished spaces wherever possible. Use a dielectric union where ferrous and copper pipe connect. Dielectric union shall have a zinc-plated steel body, a threaded nylon insert, and insulating pressure gasket. No ferrous metal-to-copper connection made without insulating unions will be allowed.

Hanger & Supports: Pipe hangers shall be as described in the specifications by B-Line or equal by Anvil, Michigan, Truscon, or Unistrut. Connect hangers to the structure with side beam connectors and all thread hanger rods. Provide engineered support struts between joists and other structural members as required to provide a rigid hanging installation. Do not hang pipes from other pipes, conduit or ductwork. Provide hanger rods and space hangers at intervals as specified in “hanger spacing”. Provide support within 1 foot of each elbow and tee. Provide supports within 1 foot of each equipment connection. Provide two nuts on threaded supports to securely fasten the support. Install hanger types or supports for various piping as follows:

Copper Tube: Adjustable band hangers for bare copper tube 3 inches and smaller shall be B-Line #B3170 CT copper plated adjustable band swivel ring type. Adjustable band hangers for insulated copper tube 3 inches and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for insulated copper tube 4 inches and larger shall be B-Line #B3100 galvanized steel clevis type. Support exposed copper tube 2 inches and smaller to walls or in chases with B-Line #B3198RCT copper coated extension split ring pipe clamps, 3/8 inch threaded rod and B-Line #B3199CT ceiling flanges. Support copper tube in chases and walls at plumbing fixtures with plastic or copper brackets secured to structure and U-bolts sized to bare on the pipe. Riser clamps to support vertical copper tube shall be B-Line #B3373CT copper coated steel, cut insulation, seal vapor barrier, and attach to bare tube.

Steel Pipe: Adjustable band hangers for 2 inch and smaller shall be B-Line #B3170 NF adjustable band swivel ring type. Clevis hangers for 2-1/2 inch and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

Cast Iron Pipe: Adjustable band hangers for 2 inch and smaller. Clevis hangers for 3 inch and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

PVC Pipe: Adjustable band hangers for 3 inch and smaller. Clevis hangers for 4 inch and larger shall be B-Line #B3100 galvanized steel clevis type. Riser clamps to support vertical pipe shall be B-Line #B3373 galvanized steel.

Insulation Protection Shields: B-Line #B3151 of 18 gauge galvanized sheet metal. Shield shall cover half of the circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

Hanger Spacing, Rod Sizes & Connectors: Connect rods to steel beams or joists with B-Line #B3031 or #B3033 beam clamps as required. Connect rods to concrete with B-Line #3014 malleable iron single type inserts with malleable iron nut. Connect rods in wood construction with B-Line #B3058 side beam connectors. Hang and support piping with spacing and rod sizes as follows:

Copper Tube: 1-1/2 inch and smaller - every 6 feet with 3/8 inch hanger rods; 2 inch - every 10 feet with 3/8inch hanger rods; 2-1/2 inch - every 10 feet with 3/8 inch hanger rods; 3 inch - every 10 feet with 1/2 inch rods, 4 inch - every 10 feet with 5/8 inch hanger rods. Support vertical copper tube every 10 feet.

Steel Pipe: 1 inch and smaller - every 8 feet with 3/8 inch hanger rods; 1-1/4 inch through 2 inch - every 10 feet with 3/8 inch hanger rods; 2-1/2 inch and 3 inch - every 10 feet with 1/2 inch hanger rods, 4 inch - every 10 feet with 5/8 inch hanger rods. Support vertical steel pipe every 10 feet.

Cast Iron Pipe: Every 10 feet and within 1 foot of each joint. 2 inch and smaller with 3/8 inch hanger rods; 3 inch with 1/2 inch hanger rods; 4 inch with 5/8 inch hanger rods; 6 inch with 3/4 inch hanger rods; 8 inch and larger with 7/8 inch hanger rods. Support vertical cast iron pipe every 15 feet.

PVC Pipe: Support all pipes sizes every 4 feet. 1-1/2 inch and smaller with 3/8 inch hanger rods; 2 inch with 1/2 inch hanger rods; 2-1/2 inch and 3 inch with 1/2 inch hanger rods, 4 inch and larger with 5/8 inch hanger rods. Support vertical PVC pipe every 4 feet.

Supports on Roof: Support piping on roof with pre-engineered roof pipe supports manufactured by B-line, Erico, Miro or Portable Pipe Hangers: 4 inch x 4 inch x 12 inch long closed cell polyethylene blocks with embedded pre-engineered support strut or pre-engineered support struts with factory plastic bases. Two piece straps shall be captivated at the shoulder when attachment nut is tightened and designed for use with strut system. All nuts, brackets and clamps shall have the same finish as the channels. Support pipe with spacing as described above at a minimum 7 inches above the roof. Set supports on 18 inch x 18 inch x 3/16 inch thick roof walkway material compatible with actual roof material.

Supports On Floor: Support piping from the floor where required for ferrous pipe or insulated copper tube, shall be B-Line B3093 galvanized steel with pipe saddle, threaded shank for height adjustment and floor stand secured to the floor.

Below Ground Installation for Soil, Waste, and Storm: Install soil and waste piping to a uniform slope of not less than 1/8 inch per foot for piping 4 inch or larger, and not less than 1/4 inch per foot for piping 3 inch or smaller. Slope storm piping at 1/8 inch per foot. Lay pipe at uniform slope, free from sags, with hub end upstream. Make changes in direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination “Y and 1/8 bend” fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "Y" fittings. Install pipe with the barrel of the pipe on firm, solid earth for its entire length, and excavate holes for the pipe bells. Lay pipe in a straight line and install with uniform grade to line with batten boards set not more than 24'-0" apart. Close open ends of pipe with a stopper when pipe laying is not in progress. Center spigots accurately in bells for uniform caulking. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance. Prior to installation of any building drain pipe, verify elevation of connection point of existing sewer, service line or existing tenant connections indicated on the drawings. If the installation will not tie into the indicated invert elevation point while maintaining proper fall, notify Architect so that an alternative may be determined.

Above Ground Installation for Soil, Waste, and Storm: Install soil and waste piping to a uniform slope of not less than 1/8 inch per foot for piping 4 inch or larger, and not less than 1/4 inch per foot for piping 3 inch or smaller. Slope storm piping at 1/8 inch per foot. Lay pipe at uniform slope free from sags. Support pipe within 12 inches of each joint. Make changes in direction from horizontal to vertical, at fixture branches and other branch connections with sanitary "tees" or short sweep "ells". Make changes in direction from vertical to horizontal or horizontal to horizontal with long radius fittings, long sweeping "ells", combination “Y and 1/8 bend” fittings, or 45 degree "ells" (1/8 bend fittings), 1/6 bend or 1/16 bend and "Y" fittings. Provide a smooth and uniform invert in the system. Drilling or tapping of soil and waste lines, and saddle hubs and bands are not permitted. Locate and install soil and waste lines as indicated on the drawings. Determine exact locations in such a manner as to maintain proper clearance.

Plumbing Vent: Connect plumbing vent pipes to fixture drain pipes as indicated on the drawings or as required by the installation practices adopted and enforced by local codes official, and extend vent pipes full size through the roof line. Grade pipe to a uniform slope so as to drain back by gravity to the drainage piping system. Vents passing through the roof shall be minimum 3 inch size except in tropical climates, per local codes. Turn flashing down into stacks at least 2 inches, and extend flashing 24 inches in all directions from the pipe at the roof line. Apply white lead pipe dope on male steel pipe threads. Vent lines shall be air and water tight. Vent floor drains individually or connect them to a horizontally vented line as shown on the drawings.

Domestic Water: Arrange cold, hot, and hot water recirculation piping to drain at the lowest point in each system. Install at least one pipe union adjacent to all shutoff valves, at connection points of each piece of equipment, and elsewhere in the system where required to allow proper maintenance. Provide unions of the ground joint type. Make allowance for expansion and contraction where required by the installation. Where water piping occurs in exterior walls, hold pipe as close as possible to the interior face of wall and install insulation batt or other insulation (minimum R-8) between piping and the exterior wall face.

Natural Gas: Pitch natural gas piping and provide accessible dirt legs at the low points. Take branch pipes off the top or sides of main pipes to prevent accumulation of water in the branches. Install gas piping valves and unions only in accessible locations. Do not install gas pipe below the base slab.

E. PIPING SANITIZATION

Sanitize the entire domestic water piping system (cold, hot, and hot water return) with a solution containing not less than 50 ppm available chlorine. Keep solution in the system for a minimum of 24 hours, with each valve being operated several times during the period. After completion, flush system with city water until chlorine residual is lowered to incoming city water level.

F. PIPE AND VALVE MARKERS

Provide manufacturer's standard pre-printed, semi-rigid snap-on or permanent adhesive, pressure-sensitive vinyl pipe markers. Pipe markers shall be color-coded complying with ANSA A13.1.

Install pipe markers on each plumbing piping system and include arrows to show normal direction of flow.

Locate pipe markers and color bands wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

Provide plastic laminate or brass valve tag on every valve, cock and control device in each plumbing piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibbs, and shut-off valves at plumbing fixtures and similar rough-in connections of end-use fixtures and units.

4. PLUMBING SPECIALTIES

A. WATER HAMMER ARRESTORS, AND TRAPS

Provide water hammer arrestors at valves or batteries of fixtures as indicated on the drawings to prevent water hammer. Arrestors shall be Josam, Sioux Chief, Smith, Precision Plumbing Products, Proflo, Wade, Watts, or Zurn, stainless steel bellows type, or O-ring sealed and lubricated acetal piston. Install water hammer arrestors per the Plumbing and Drainage Institute (PDI) WH-201 installation instructions. Installation of arrestors at batteries of fixtures precludes the requirement for individual air chambers at each battery fixture. Submit certification that water hammer arrestors comply with NSF 61 Annex G and/or NSF 372.

Provide water-seal traps on floor drains, fixtures and equipment with drain connections, including traps not furnished in combination with fixtures and equipment. Place trap as close to the fixture or drain as possible. Exposed traps in finished spaces shall be chrome-plated brass.

Provide conventional "P" type trap, water-sealed self-cleaning design. Full "S" traps or trap standards shall be used only where specifically called for on the drawings or elsewhere in this specification. Trap water seals shall not be less than 2 inches, and deep seal traps shall be provided where specified or indicated. Each trap not integral with the fixture or floor drain or installed below the base slab shall be provided with an accessible cleanout of adequate size. Provide trap primers where required by code and where indicated on the drawings.

B. CLEANOUTS AND FLOOR DRAINS

Cleanouts, floor drains and roof drains shall be by one manufacturer if possible. Acceptable manufacturers are Josam, Sioux Chief, Smith, Wade, Watts, and Zurn. Provide long sweep fittings for cleanout extensions; short sweeps at start of runs or change in direction and combination wye and eight bend fittings in horizontal runs. Install cleanouts with a minimum of 18 inches clear all around, consult local codes for other requirements, for easy system maintenance. Install plug with Teflon joint compound.

Floor Drains: As scheduled on the drawings.

Trench Drains: As scheduled on the drawings, manufactured by Eagle or approved equal by Zurn, ABT, Inc., Polydrain, Quazite, Smith - ACO or NDS.

Floor Cleanouts: As scheduled on the drawings. Install cleanouts at points as noted on the drawings, at the building exit; at a minimum of every 50 feet in horizontal soil and waste lines; and at turns of pipe greater than 45 degrees cleanouts shall be full size of the pipe up to 4 inches, and 4 inch size for pipes larger than 4 inches. Determine the type of floor covering to be used at each floor cleanout location and provide top with variations suitable for floor covering (carpet markers, recessed for tile and scoriated for unfinished floor). Rough-in and install each floor cleanout flush with the finished floor construction.

Wall Cleanouts: As scheduled on the drawings. Install wall cleanouts at points as noted on the drawings; at the foot of each soil, waste or interior downspout stack; at horizontal soil and waste branches longer than five feet not served by a floor cleanout; consult local codes for installation at specific fixture types. Install wall cleanouts above the flood rim of the fixture served within four feet of the floor and install extensions from the cleanout tee to the wall to locate the plug within 2 inch of the wall where required. Install cleanouts on urinals and sinks where required by code.

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SHACK #1345
EXPIRES ON: 11/30/2021

LICENSED PROFESSIONAL ENGINEER
JOSHUA N. HOVER
062-069411
OF ILLINOIS
Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
PLUMBING SPECIFICATIONS

Job No. 204461
Drawn Author
Scale
Date 11/09/20
Sheet No. P590

JOSHUA N. HOVER
11/23/2020 2:03:44 PM C:\Revit\Projects\2050001105 MEP v21_gary.hornbeck_20201123132804.rvt

C. VALVES, STRAINERS, HOSE BIBBS, AND UNIONS

Plumbing system valves shall be designed for 125 psi steam working pressure and 200 psi cold water pressure. Install valves on the hot and cold water lines at the water heater connections and other items of equipment, at branches from mains serving groups of fixtures, and at other places indicated or required by the installation to allow ease of future maintenance. Submit certification that valves, fittings and specialties comply with NSF 61 Annex G and / or NSF 372. Except for the following: Hose bibbs, hydrants, backflow preventers isolating irrigation or mechanical make-up systems, emergency mixing valves and trap primers.

Gate Valves 2 inch and Smaller: Class 125, rising stem, soldered lead free cast bronze body and parts, sweat ends, with wedge disc. By Apollo # 102S-LF, Hammond # UP-668, Milwaukee # UP668 or Nibco # S-113-LF

Ball Valves 2 inch and Smaller (may be used in lieu of gate valves up to 2 inch): Class 150, two piece lead free cast bronze body, with sweat ends, chrome plated bronze ball with conventional port, 600 psi, blow-out proof stem by Apollo # 70-LF-200, Hammond # UP8501, Milwaukee # UPBA-150.

Swing Check Valves 2 inch and Smaller: Class 125, lead free cast bronze body and with sweat ends by Apollo # 163S-LF, Milwaukee #UP-1509, or Nibco # S-413-Y-LF. Install in horizontal pipe runs.

Lift Check Valves 2 inch and Smaller: Class 125, lead free cast bronze body, stainless steel spring and with sweat ends by Hammond # LP-947 or Nibco # S-413-Y-LF. Install in vertical pipe or in horizontal runs where required.

Gas Cocks 2 inch and Smaller: Lubricated type with semi-steel body an

Gate Valves 2 inch and Smaller: Class 125, rising stem, soldered lead free cast bronze body and parts, sweat ends, with wedge disc. By Apollo # 102S-LF, Hammond # UP-668, Milwaukee # UP668 or Nibco # S-113-LF

Ball Valves 2 inch and Smaller (may be used in lieu of gate valves up to 2 inch): Class 150, two piece lead free cast bronze body, with sweat ends, chrome plated bronze ball with conventional port, 600 psi, blow-out proof stem by Apollo # 70-LF-200, Hammond # UP8501, Milwaukee # UPBA-150.

Swing Check Valves 2 inch and Smaller: Class 125, lead free cast bronze body and with sweat ends by Apollo # 163S-LF, Milwaukee #UP-1509, or Nibco # S-413-Y-LF. Install in horizontal pipe runs.

Lift Check Valves 2 inch and Smaller: Class 125, lead free cast bronze body, stainless steel spring and with sweat ends by Hammond # LP-947 or Nibco # S-413-Y-LF. Install in vertical pipe or in horizontal runs where required.

Gas Cocks 2 inch and Smaller: Lubricated type with semi-steel body and full area rectangular port with screwed ends by Homestead # 601, Milliken #200M or RM Energy Systems # D125.

Point of Use Thermostatic Mixing Valves: Thermostatic mixing valves shall be Powers as scheduled on the drawings by Powers or equal by Acorn Engineering Co. or Leonard meeting ASSE 1070 with lead free brass body, non-corrosive internal parts, tamper resistant temperature adjustment, union inlets and check stops with strainers. Set temperature as scheduled on the drawings.

Strainers: Strainers 2 inch and smaller shall be Watts #LFS777SI with lead free cast bronze body and soldered ends, brass cap and Monel 40 mesh screen. Strainers 2-1/2 inch and larger shall be Watts #77F-DI-FDA-125 with flanged iron body with fused FDA epoxy coating, bolted iron cap and stainless steel screen with 1/16 inch perforations. Strainers size 2-1/2 inch and larger shall have a 1 inch blow-off line with a 1 inch gate valve connected to the blow-off connection and shall be extended to the nearest floor drain.

Drain Valves and Interior Hose Bibbs: As specified on the drawings by Prier or equal by Woodford or Watts.

Exposed Interior Hose Bibbs: As specified on the drawings by Chicago or equal by Speakman, T&S Brass or Zurn.

Hot & Cold Water Mixing Hose Bibbs: As specified on the drawings by Chicago or equal by Speakman, T&S Brass or Zurn.

Wall Hydrants: As specifed on the drawings by Prier or equal Woodford, Josam, Prier, Wade, Watts or Zurn. Provide accessible shutoff valve and water hammer arrestor inside building.

Unions: Ferrous unions shall be Crane or equal, combination iron and brass, ground joint with screwed ends. Copper unions shall be streamline or equal, cast bronze sweat type with ground joint. Ferrous to copper unions shall be universal controls or equal, dielectric type with threaded nylon insert.

Automatic Flow Control Valves: For installation in hot water recirculation lines, shall be Flow Design, Inc #ICSS or equal by Victaulic with stainless steel body and flow cartridge and sweat connections. Provide ball valve, strainer and check valve upstream and union and ball valve downstream of each automatic flow control valve. Provide flow control valve cartridges of the flows as indicated on the drawings.

Pressure Reducing Valves: Self contained type shall be of the type as scheduled and indicated on the drawings by Watts or equal by Cash-ACME or Wilkins.

Backflow Preventers: Shall be of the type as scheduled and indicated on the drawings by Watts, Conbraco, Febco or Wilkins.

D. SYSTEM ACCESSORIES

Thermometers shall be American 3 inch bi-metal dial type with separable socket, and shall be installed where indicated or required.

Pressure gauges shall be Ashcroft 3 inch dial type with shut-off cock, and shall be installed where indicated or required.

Provide trap primers where required by local authorities. Trap primers shall be as specified on the drawings, Precision Plumbing Products "Prime Rite" or equal by Mifab or Sioux Chief with brass body and integral vacuum breaker. Provide distribution box where more than one trap is indicated to be primed on the drawings. Provide access panel where required.

5. PLUMBING FIXTURES AND EQUIPMENT

A. PLUMBING FIXTURES

Furnish and install commercial grade plumbing fixtures, see the drawings for quantities and descriptions. Provide china fixtures as scheduled by American-Standard or approved equal by Crane, Gerber, Kohler, Sloan Valve Co, Toto-Kiki or Zurn. Provide stainless steel sinks as scheduled by Elkay or equal by Just. Provide electric water coolers as scheduled by Elkay or approved equal by Acorn / Aqua, Halsey Taylor or Haws. Provide mop sinks as scheduled by Stern-Williams or equal by Acorn Engineering Co., Fiat or Florestone. Provide emergency equipment as scheduled by Bradley or equal by Chicago, Encon, Guardian, Haws or Speakman. Provide fixtures of same manufacturer where possible.

Fixtures shown on the drawings or specified herein shall be furnished and installed, set firm and true, connected to required piping services, thoroughly cleaned, left clean and ready for use. Exposed fittings and piping at the fixtures shall be chrome-plated, and water supply piping shall be valved at each fixture.

Vitreous china fixtures shall be of the best grade vitreous ware, without pit holes or blemishes, and the outlines shall be generally true. The engineer reserves the right to reject any pieces which, in his opinion, are faulty. Fixtures set against walls shall have ground backs and shall be caulked with silicone sealant of a matching color.

B. PLUMBING FIXTURE TRIM

Submit certification that faucets and trim comply with NSF 61 Annex G and / or NSF 372. Except for the following: Faucets not used for drinking water or cooking, shower valves and heads or flush valves.

Fixture trim shall have the manufacturer's name stamped clearly and visibly on each item.

Provide faucets as scheduled on drawings by Grohe, Chicago, Delta-Commercial, Speakmen, T&S Brass or Zurn.

Fixture P-traps shall be 17 gauge brass body with cleanout, 17 gauge seamless tubular wall bend with cast brass slip nut, shallow steel flange, all chrome plated by McGuire, Brass Craft, Dearborn Brass, EBC, Proflo, Watts Brass and Tubular or Zurn.

Lavatory, sink, and water closet supplies shall be solid brass angle or straight type with full turn brass stem, wheel handle, or loose key types as noted on drawings, shallow steel flange, 3/8 inch copper riser flange, all chrome plated, final connection as required by McGuire, Brass Craft, EBC, Proflo or Zurn.

Lavatory drains shall be grid type chrome plated 17 gauge brass open grid with 1-1/4 inch x 6 inch long seamless brass tailpiece and brass locknut with heavy rubber basin washer and fiber friction washer, by McGuire, Brass Craft, Dearborn Brass, EBC, Proflo, Watts Brass and Tubular or Zurn.

Sink drains shall be basket type with chrome plated forged brass basket strainer and strainer body with 1-1/2 inch x 4 inch long seamless brass tailpiece and cast brass lock and coupling nuts by McGuire, Brass Craft, Dearborn Brass, EBC, Proflo or Zurn.

Provide handicap insulation kits for lavatories and sinks on exposed water and waste pipes and fittings, including offset drain and continuous waste covers where required by Brocar, McGuire, Plumberex "Pro-2000", Proflo, Trap-Wrap or Tru-Bro.

Provide flush valves as specified on drawings: Sloan or approved equal by Delaney or Zurn with chrome plated brass body, chloramine resistant diaphragm with protected orifice, screw driver angle stop, non-hold open feature and sweat adapter kit. Provide ADA handles on ADA compliant fixtures. Provide solid pipe ring supports for urinal flush tubes anchored securely to wall where indicated on the drawings. Provide low consumption type valves with 1.6 gallons per flush for water closets and 1.0 gallons per flush for urinals.

Provide Smith, Josam, Wade, Watts, or Zurn chair carriers for mounting wall mounted water closets and lavatories as described on the drawings. Securely fasten carriers to floor and test per manufacturer's recommendations prior to installation of partitions. Secure wall-mounted water closet carriers to floor with 3/8 inch anchor bolts, including the anchor foot.

C. WATER HEATER

Instantaneous gas water heater shall be of capacity as scheduled on the drawings by Noritz. Furnish with pressure relief valve. Water heater shall be UL listed and meet ASHRAE 90.1B standards for thermal efficiency and standby heat loss. Provide factory start-up of water heating system installation by a trained factory representative. Provide the Architect with a certificate of a properly installed and functioning water heating system. Furnish with condensate neutralization kit of PVC body with socket weld inlets and outlets, minimum ¾". Capacity to match heater input. Install condensate neutralization kit furnished with water heater on floor adjacent to water heater in an accessible location.

Relief Valve: Water heater relief valve shall be of the test lever type, with automatic reset, combination temperature and pressure relief, approved and stamped by the American Gas Association. It shall be installed directly on the heater tank, or in the hot water outlet, not more than 3 inches from the tank. The temperature shall be normally set to relieve at 210 F and the pressure relief shall be at 125 psi. The relief valve discharge line shall be piped down and terminate 6 inces above a floor drain.

Vacuum Relief Valve: Watts #N36 or Wilkins #VR-10 with bronze body and silicon disc. Valve shall open at 0.5 inches HG vacuum and be rated for 200 psig working pressure and 250 F temperature. Install in cold water supply to each water heater downstream of the shutoff and check valves.

Recirculation Pump: By B&G as scheduled on the drawings, or equal by Armstrong, Grundfos or Taco, of all bronze construction with Aquastat and/or timer.

Expansion Tank: Expansion tank shall be Amtrol "Therm-X-Trol" as scheduled on the drawings or equal by Armstrong, Bell & Gossett, Proflo, Taco, or Watts. Unit shall be constructed of welded carbon steel listed for 150 psig working pressure, with a FDA approved butyl rubber diaphragm, taps for pressure gage, air charging fitting, and drain fitting. Support as detailed on the drawings. Charge tank with air pressure equal to the static water pressure.

6. ALTERNATES

A. DESCRIPTION

Refer to the architectural portion of the specification for list of alternates. Applicable sections of the base specifications shall apply to all work required by the alternate unless otherwise specified. Determine whether or not and how each alternate affects work. Include labor, materials, equipment, and transportation services necessary for and incidental to the completion of work under each particular alternate. Furnish separate bid for each alternate applicable to work, stating the amount to be added or deducted from the base bid

END OF SECTION 22B

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062-069411
ILLINOIS

Nov 23 2020

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

Drawing Title
PLUMBING SPECIFICATIONS

Job No. 204461
Drawn Author
Scale
Date 11/09/20

Sheet No.
P591

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EXPANSION TANK SCHEDULE

MARK	MANUFACTURER / MODEL #	TANK SIZE (GALLONS)	MIN. ACCEPTANCE VOLUME (GALLONS)	AIR PRESSURE SETTING (PSI)	SERVICE	NOTE
ET-1	AMTROL ST-5V-C	2	0.9	68	KITCHEN	A

NOTES:

A. CHARGE TANK WITH AIR TO IDENTICAL PRESSURE AS STATIC DOMESTIC WATER PRESSURE.

FIXTURE BRANCH CONNECTION SCHEDULE

FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
WATER CLOSET (FV)	1-1/4"	--	4"	2"
URINAL	1"	--	2"	2"
LAVATORY/ HAND SINK	1/2"	1/2"	2"	1-1/2"
JANITOR'S SINK	1/2"	1/2"	3"	2"
FLOOR DRAIN	--	--	2"	2"
SINK	1/2"	1/2"	2"	2"

NOTE:

PIPE SIZES SHOWN ARE MINIMUM.

RECIRCULATION PUMP SCHEDULE

MARK	MANUFACTURER / MODEL#	LOCATION	GPM	HEAD (FT.)	CONNECTION SIZE	IMPELLER SIZE (IN.)	ELECTR... VOLTS	PHASE	HP	NOTES
RP	BELL & GOSSETT # NBF-22U	STORAGE	2.5	13.23	3/4"	N/A	120	1	1/25	A, B, C, D

NOTES:

A. ALL LEAD FREE CAST BRONZE BOOSTER.
B. PROVIDE WITH STRAINER UPSTREAM OF PUMP
C. PROVIDE ADJUSTABLE, SURFACE MOUNTED AQUASTAT - HONEYWELL L6006C
D. SET AQUASTAT TO SHUT OFF RECIRCULATION PUMP AT WATER HEATER SET POINT AND ON AT 10F BELOW SET POINT

INSTANTANEOUS GAS WATER HEATER SCHEDULE

MARK	MANUFACTURER/ MODEL#	AREA SERVED	INPUT MBTUH	THERMAL EFFICIENCY (%)	TEMPERATURE RISE (DEGREES F)	RECOVERY (GPM)	MINIMUM FLOW FLOW RATE	ELECTRICAL DATA VOLTS	PHASE	WATTS	AMPS	NOTES
WH-1	NORITZ #NC199-CDV	KITCHEN	199	94	93	3.82 GPM	.4 GPM	120	1	360.0	3.0	A, B, C, D, E,F,I
WH-2	NORITZ #NC199-CDV	KITCHEN	199	94	93	3.82 GPM	.4 GPM	120	1	360.0	3.0	A, B, C, E, G

NOTES:

A. SET OPERATING TEMPERATURE AT 140F
B. CONDENSING SEALED COMBUSTION TYPE
C. PROVIDE WITH FACTORY # "ISOLATOR" SHUTOFF VALVE KITS WITH UNIONS, DE-LIMING CONNECTIONS AND PRESSURE RELIEF VALVE
D. ONE NORITZ # RC-7646M REMOTE CONTROLLER WITH #RC-CORD10 CONNECTOR CHORD, AND ONE NORITZ # SC-201-6M SYSTEM CONTROLLER TO CONTROL MULTIPLE WATER HEATERS
E. FURNISH WITH CONDENSATE NEUTRALIZATION KIT TO MATCH HEATER INPUT.
F. FURNISH EACH GROUP OF WATER HEATERS WITH WATTS #1019-20H "ONEFLOW" ANTI-SCALE SYSTEM CAPBALE OF TREATING WATER UP TO 20 GPM
G. NORITZ # QC-1M QUICK CONNECT CABLE
H. PROVIDE WITH PIPE COVER, NORITZ #PC-25-GRY
I. PROVIDE WITH 26' CONTROLLER CABLE, NORTIZ #RC-CORD26

TOTAL CONNECTED NATURAL GAS LOAD

KITCHEN EQUIPMENT

EQUIPMENT DESIGNATION	DESCRIPTION	CFH (EACH)
100	GRIDDLE	108
101	GRIDDLE	81
103	FRYER	160
104	FRYER	160
	TOTAL =	509

MECHANICAL EQUIPMENT

EQUIPMENT DESIGNATION	DESCRIPTION	CFH (EACH)
RTU-1	ROOFTOP UNIT	240
RTU-2	ROOFTOP UNIT	240
MAU	MAKE-UP AIR UNIT	198
WH1	WATER HEATER	199
WH2	WATER HEATER	199
WH2	WATER HEATER	199
WH2	WATER HEATER	199
WH2	WATER HEATER	199
	TOTAL =	1673
	TOTAL CONNECTED LOAD =	2182

NATURAL GAS SYSTEM OPERATING PRESSURE:	7"W.C.
NATURAL GAS SYSTEM SIZED WITH TOTAL DEVELOPED LENGTH FROM GAS METER TO MOST REMOTE PIECE OF EQUIPMENT:	80'
SYSTEM DESIGN PRESSURE DROP:	0.5 W.C.

PLUMBING FIXTURE SCHEDULE

PLUMBING PLAN MARK	DESCRIPTION
BFP1	DUAL CHECK VALVE WITH ATMOSPHERIC PORT: WATTS # SD-3, MEETING ASSE 1022 AND NSF 18, 316 STAINLESS STEEL BODY, 3/8" INLET AND OUTLET, ATMOSPHERIC PORT, AND WYE PATTERN STRAINER. PROVIDE 3/4" INDIRECT DRAIN FROM ATMOSPHERIC PORT AND DISCHARGE TO DRAIN WITH AIR GAP.
BFP2	LF009QT-S, MEETING ASSE 1013, LEAD FREE CAST BRONZE BODY, QUARTER TURN TEST COCKS, QUARTER TURN BALL VALVES, BRONZE STRAINER, AND # 909AG AIR GAP FITTING.
BFP3	SS007QT-S, MEETING ASSE 1015, CAST BRONZE BODY, QUARTER TURN TEST COCKS, QUARTER TURN, FULL PORT BALL VALVES AND BRONZE STRAINER.
BFP4	REDUCED PRESSURE ZONE BACKFLOW PREVENTER: WATTS # SS009QT, MEETING ASSE 1013, 316 STAINLESS STEEL BODY, QUARTER TURN TEST COCKS, QUARTER TURN, FULL PORT BALL VALVES AND # 909AG AIR GAP FITTING.
DSN	DOWNSPOUT NOZZLE: JAY R. SMITH # 1770T, CAST BRONZE BODY AND FLANGE. PROVIDE OUTLET SIZE AS SHOWN ON PLANS.
FCO	FLOOR CLEANOUT: JAY R. SMITH, CAST IRON BODY, FLASHING FLANGE WITH CLAMPING COLLAR, ABS PLUG, AND ADJUSTABLE, ROUND, SECURED, NICKEL BRONZE, TOP. # 4031L (-F-C), SCORIATED TOP FOR EXPOSED, FLUSH WITH FINISHED FLOOR, APPLICATION(S), # 4031L (-F-C-Y), STAINLESS STEEL MARKER FOR INSTALLATION IN CARPETED FLOOR AREA(S), # 4151 (-F-C), 1/8" RECESS FOR INSTALLATION IN TILED FLOOR AREA(S), # 4191 (-F-C), 1/2" RECESS FOR INSTALLATION IN TERRAZZO AND SIMILAR POURED FLOOR AREA(S). REFER TO SPECIFICATIONS FOR INSTALLATION.
FCV	FLOW CONTROL VALVE: FLOWDESIGN # ICSS "AUTOFLOW", SERIES 300 STAINLESS UNION BODY WITH NICKEL PLATED UNION NUT, STAINLESS STEEL PRESSURE COMPENSATING CARTRIDGE, MEETING NSF 61 ANNEX G, NAMEPLATE AND 1/2" VALVE BODY SIZE UNLESS SHOWN OTHERWISE ON PLANS. PROVIDE 0.5 GPM FLOW RATE CARTRIDGE UNLESS SHOWN OTHERWISE ON PLANS.
FD1	FLOOR DRAIN: JAY R. SMITH # 2005L (-A). CAST IRON BODY AND CLAMPING COLLAR, ADJUSTABLE 6" ROUND NICKEL BRONZE STRAINER. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS.
FS1	FLOOR SINK: JAY R. SMITH # 3101L (-12), 6" DEEP CAST IRON BODY WITH ACID RESISTING ENAMELED INTERIOR, ANCHOR FLANGE WITH SEEPAGE HOLES, CLAMP COLLAR, WHITE ABS SEDIMENT BUCKET, AND 8-1/2" SQUARE NICKEL BRONZE RIM AND HALF GRATE. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS. TRIM: GUARDIAN DRAIN LOCK (GDL) STRAINER SAME SIZE AS FLOOR SINK OUTLET. REFER TO PLANS FOR FLOOR SINK OUTLET SIZE.
HB	HOSE BIBB: PRIER PRODUCTS # C-258NP.75, POLISHED NICKEL TCHROME PLATED BRASS 3/4" MALE INLET, 3/4" THREADED HOSE CONNECTION, LOOSE KEY HANDLE, AND ASSE 1011 INTEGRAL VACUUM BREAKER.
HD	HUB DRAIN: PROVIDE A P-TRAP ABOVE FINISHED FLOOR AND STUB THE BELL END OF A CAST IRON PIPE 4" ABOVE FINISHED FLOOR. SIZE AS SHOWN ON FLOOR PLAN(S).
JS	JANITOR'S SINK: EAGLE FLOOR MOUNTED MOP SINK, MODEL #F2820-12. CONSTRUCTED OF TYPE 304 STAINLESS STEEL, WITH 12" DEEP DRAWN CORNER SINK WITH DRAIN AND FLAT STRAINER PLATE.
LV	UNDER COUNTER LAVATORY (ADA ACCESSIBLE): KOHLER # K-2214-O 20-7/8" X 14-3/8" X 8-1/8" UNDERMOUNT SINK, WHITE VITREOUS CHINA FIXTURE AND FRONT OVERFLOW. FAUCET: SLOAN MODEL EAF-100 HARDWIRED FAUCET AND #VDC IQ FAUCET BOX MOUTED ADAPTER WITH 18" FLEXIBLE STAINLESS STEEL 1/2" MALE INLET SUPPLY HOSES. PROVIDE 0.5 GPM FLOW RESTRICTOR. TRIM: McGUIRE # 155A GRID DRAIN WITH TAILPIECE, McGUIRE # 2165CLK LOOSE KEY COMPRESSION ANGLE STOP VALVES WITH RISERS AND ESCUTCHEONS, McGUIRE # 8872CF 1-1/4" 17 GAUGE TUBULAR CHROME PLATED BRASS ADJUSTABLE P-TRAP AND WASTE ARM WITH CLEANOUT PLUG AND ESCUTCHEON, CONCEALED ARM CARRIER WITH STANCHIONS TO FLOOR, AND TRUEBRO "HANDI LAV- GUARD" # 102 INSULATION KIT FOR WATER AND WASTE PIPES.
NFH	NON-FREEZE WALL HYDRANT: PRIER PRODUCTS # C-634NBX1, SATIN NICKEL PLATED BRASS 1" MALE INLET BY 3/4" FEMALE INLET, 3/4" THREADED HOSE CONNECTION, LOOSE KEY HANDLE, HYDRANT LENGTH AS REQUIRED FOR INSTALLED WALL THICKNESS, ADJUSTABLE WALL CLAMP, BRASS BOX WITH SATIN NICKEL PLATED FINISH AND INTEGRAL ASSE 1052 DOUBLE CHECK VACUUM BREAKER.
ORD	OVERFLOW ROOF DRAIN: JAY R. SMITH # 1330Y (-C-R-CID-WD-02), 8-1/2" DIAMETER CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, SUMP RECEIVER, HUBLESS OUTLET, AND CAST IRON DOME BOLTED OR LOCKED DOWN AND 2" HIGH WATER DAM. PROVIDE OUTLET SIZE AS SHOWN ON PLANS.
PRV1	PRESSURE REDUCING VALVE: WATTS # LFU5B-LP-GG-Z3, LEAD FREE BRONZE BODY WITH INTEGRAL STRAINER WITH STAINLESS STEEL SCREEN, STAINLESS STEEL SEAT, SEALED SPRING CAGE, INTEGRAL THERMAL BYPASS, 160F MAXIMUM OPERATING TEMPERATURE, 160 LB. PRESSURE GAUGE AND TAPPING, 3/4" INLET AND OUTLET, 10 - 35 PSI REDUCED PRESSURE RANGE. SET OUTLET PRESSURE TO 35 PSI.
PRV2	PRESSURE REDUCING VALVE: WATTS # LFU5B-GG, LEAD FREE BRONZE BODY, STAINLESS STEEL SEAT, STAINLESS STEEL BOLTS, STAINLESS STEEL INTEGRAL STRAINER, INTEGRAL THERMAL BYPASS, 160 LB. PRESSURE GAUGE AND TAPPING, INLET AND OUTLET SIZE AS SHOWN ON PLANS, 25 - 75 PSI REDUCED PRESSURE RANGE. SET OUTLET PRESSURE TO 35 PSI.
RD	ROOF DRAIN: JAY R. SMITH # 1330Y (-C-R-CID), 8-1/2" DIAMETER CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, SUMP RECEIVER, HUBLESS OUTLET, AND CAST IRON DOME BOLTED OR LOCKED DOWN. PROVIDE OUTLET SIZE AS SHOWN ON PLANS.
RH	ROOF NON-FREEZE POST HYDRANT: MAPA PRODUCTS # MPH-24FP FREEZE PROOF POST HYDRANT MEETING ASSE #1057 WITH BLACK POWDER COATED CAST ALUMINUM WEATHER-GUARD DOME HANDLE, STAINLESS STEEL SHROUD WITH WELDED STAINLESS STEEL FLANGE, UNDER DECK CLAMP, BRONZE GLOBE ANGLE VALVE, 3/4" HOSE CONNECTION, QUICK DISCONNECT WITH BUILT-IN VACUUM BREAKER, STAINLESS STEEL RESERVOIR.
T1	TRANSFORMER: SLOAN#451, 120VAC/ 6 VAC, 25 VOLT AMPS REFER TO ELECTRICAL DRAWINGS FOR WIRING OF TRANSFORMER.
TD	FLOOR TROUGH: EAGLE # FT-1236-SG, 12" X 36", WELDED 14 GAUGE 304 STAINLESS STEEL WITH STAINLESS STEEL BAR GRATE AND 4" OUTLET. PROVIDE WITH SEEPAGE CONTROL FLANGES, WASTE CUP, AND REMOVABLE STAINLESS STEEL BASKET.
TMV	THERMOSTATIC MIXING VALVE: POWERS # LFG480, SOLID LEAD FREE BRASS OR BRONZE BODY, THERMOSTATIC WAX ELEMENT, CORROSION RESISTANT INTERNAL PARTS, AND INTEGRAL CHECKS, ASSE 1070 COMPLIANT, CAPABLE OF 1.6 GPM WITH A 20 PSI DIFFERENTIAL AND A MINIMUM FLOW RATE OF 0.25 GPM. SET TEMPERATURE TO 110F FOR DUAL TEMPERATURE LAVATORIES AND HAND SINKS, 100F FOR SINGLE TEMPERATURE LAVATORIES AND HAND SINKS AND 120F FOR SINKS. MOUNT BELOW THE PLUMBING FIXTURE WHERE INDICATED ON PLAN(S).
TP	TRAP PRIMER: PRECISION PLUMBING PRODUCTS # PR-500 "PRIME RITE", CORROSION RESISTANT BRASS BODY, "O" RING SEALS, 1/2" INLET AND OUTLET, AND INTEGRAL VACUUM BREAKER. INSTALL THE VALVE AT A MINIMUM OF 12" ABOVE FINISHED FLOOR. PROVIDE WITH DISTRIBUTION # DU-2 FOR TWO, # DU-3 FOR THREE, OR # DU-4 FOR FOUR DRAIN CONNECTIONS.
TS	TIME SWITCH: INTERMATIC #ET1705CSPST, 7 DAY, ONE CIRCUIT-SINGLE POLE SINGLE THROW, ELECTRONIC TIME SWITCH OR EQUAL BY TORK. TIME SWITCH SHALL BE MOTOR RATED (1 H.P. @ 120 VOLT, SINGLE PHASE), MINIMUM OF 20 SET POINTS (14 ON/OFF CYCLES) AND BATTERY BACK UP. COORDINATE WITH DIVISION 16 FOR INSTALLATION AND INTERLOCK OF TIME SWITCH IN SERIES WITH THE AQUASTAT AND RECIRCULATION PUMP.
UR	URINAL (ADA ACCESSIBLE): KOHLER # K-4991-ET "BARDON" WHITE VITREOUS CHINA FIXTURE WITH FLUSHING RIM, 3/4" TOP SPUD. VALVE: SLOAN "SLOAN" ECOS #186, 0.125 GALLON PER FLUSH EXPOSED CHROME-PLATED DIAPHRAGM TYPE, HARD WIRED, FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM WITH PROTECTED ORIFICE, OSCILLATING ADA COMPLIANT HANDLE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER, SOLID RING PIPE SUPPORT, AND SWEAT ADAPTER KIT. TRIM: SUITABLE CARRIER WITH STANCHIONS TO FLOOR.
WC1	WALL-MOUNTED WATER CLOSET (ADA ACCESSIBLE): KHOLER MODEL K-4325 VITREOUS CHINA FIXTURE WITH ELONGATED BOWL WITH SIPHON JET ACTION. VALVE: SLOAN #ECOS-111 HARDWIRED 1.6/1.1 GPF FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM AND PROTECTED ORIFICE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER, AND SWEAT ADAPTER KIT. INSTALL FLUSH VALVE HANDLE ON THE WIDE SIDE OF THE STALL. PROVIDE HARDWIRE TRANSFORMER #EL-451. TRIM: KOHLER K-47331-CA. STRONGHOLD ELONGATED COMMERCIAL HEAVY-DUTY TOILET SEAT. PROVIDE SUITABLE FIXTURE CARRIER.
WC2	WALL-MOUNTED WATER CLOSET : KHOLER MODEL K-4325 VITREOUS CHINA FIXTURE WITH ELONGATED BOWL WITH SIPHON JET ACTION. VALVE: SLOAN #ECOS-111 HARDWIRED 1.6/1.1 GPF FLUSH VALVE WITH CHLORAMINE RESISTANT DIAPHRAGM AND PROTECTED ORIFICE, ESCUTCHEON, INTEGRAL SCREWDRIVER STOP WITH VANDAL RESISTANT CAP, VACUUM BREAKER, AND SWEAT ADAPTER KIT. INSTALL FLUSH VALVE HANDLE ON THE WIDE SIDE OF THE STALL. PROVIDE HARDWIRE TRANSFORMER #EL-451. TRIM: KOHLER K-47331-CA. STRONGHOLD ELONGATED COMMERCIAL HEAVY-DUTY TOILET SEAT. PROVIDE SUITABLE FIXTURE CARRIER. (NON ADA)
WHA	WATER HAMMER ARRESTER: PRECISION PLUMBING PRODUCTS, HARD DRAWN COPPER BODY WITH WROUGHT COPPER FITTINGS, PISTON TYPE WITH LUBRICATED EPDM "O" RING SEALS, MEETING ASSE 1010 OR PDI WH-201. PROVIDE PDI SIZES "A" THROUGH "F" AS SHOWN ON PLANS. PROVIDE SIZE "A" UNLESS SHOWN OTHERWISE ON THE PLANS.

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REVISIONS

Drawing Title: PLUMBING SCHEDULE

Job No. 204461 | Drawn Author | Scale | Date 11/09/20

Sheet No. P601

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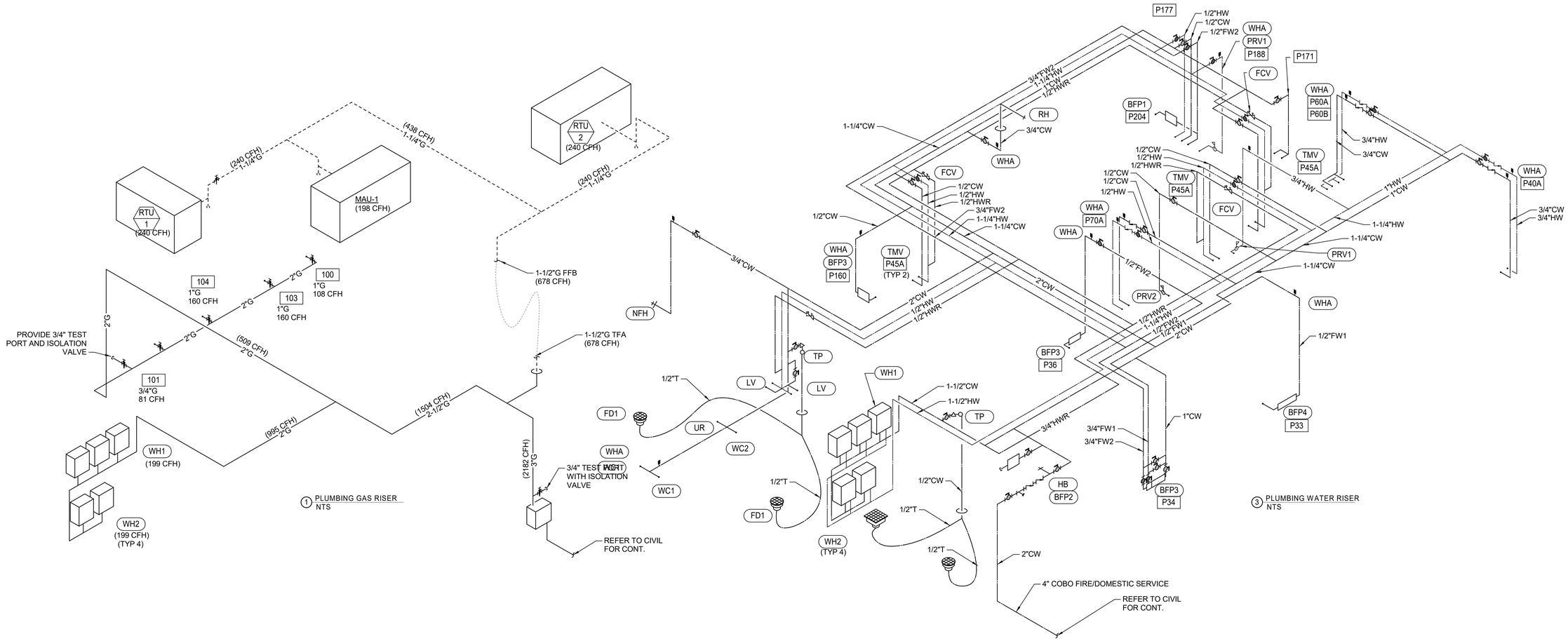

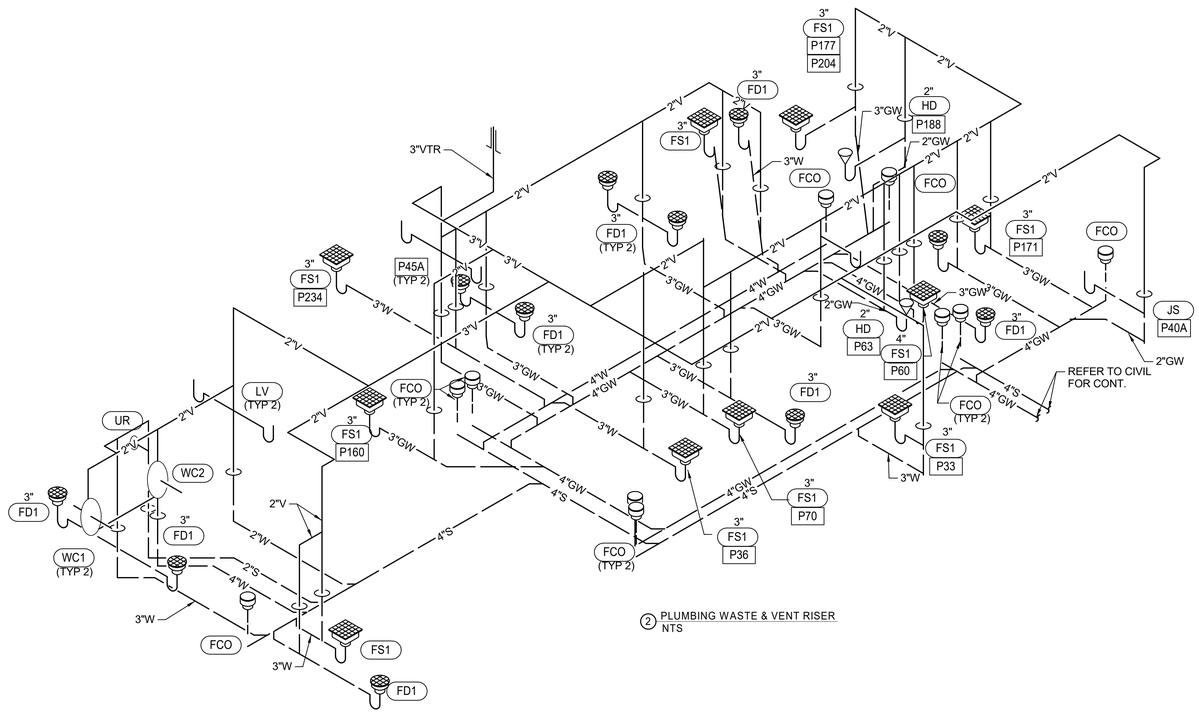

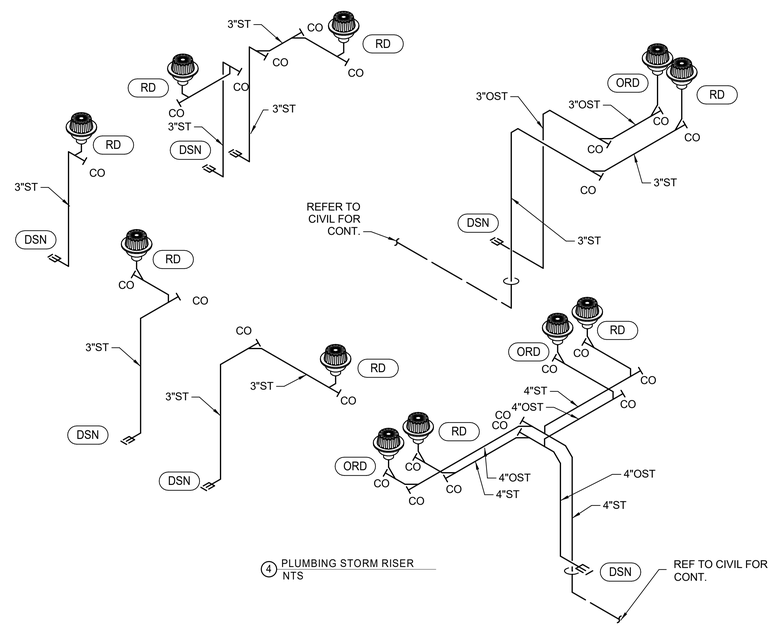

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SHACK #1345

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Nov 23 2020

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Drawing Title
PLUMBING RISER DIAGRAM

Job No.	Drawn
204461	Author

Scale	Date
3/16" = 1'-0"	11/09/20

Sheet No.
P901

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ELECTRICAL SYMBOLS

THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED. V3.00

STANDARD MOUNTING HEIGHTS

AUDIBLE APPLIANCES (CENTERLINE)	84"
ALARMS	48"
ANNUNCIATOR PANELS (DISPLAY)	60"
CONTROLS (TOP OF DEVICE)	48"
EXIT SIGNS (WALL MOUNTED)	92"
FIRE ALARM ANNUNCIATOR PANEL (DISPLAY)	60"
FIRE ALARM BELL (EXTERIOR) (CENTERLINE)	120"
FIRE ALARM CONTROL PANEL/UNIT (DISPLAY)	60"
INTERCOM (AFEA ONLY)	36"
INTERCOMS (TOP OF DEVICE)	48"
PULL STATIONS (TOP OF DEVICE)	48"
PHOTOCELLS	144"
RECEPTACLES	16"
RECEPTACLES (EXTERIOR)	24"
RECEPTACLES (GARAGES)	24"
RECEPTACLES (POOLS)	27"
RECEPTACLES (ABOVE COUNTER) +6" ABOVE BACKSPLASH/COUNTER, 40" MAX	
RECEPTACLES IN EQUIPMENT ROOMS	44"
REMOTE INDICATING LIGHT (EQUIPMENT ROOMS)	48"
REMOTE INDICATING LIGHT (FINISHED AREAS)	CEILING
SAFETY SWITCHES (TOP OF DEVICE)	48"
STARTERS (TOP OF DEVICE)	48"
SWITCHES (TOP OF DEVICE)	44"
TELEPHONE, DATA OUTLETS	SAME AS ADJACENT DEVICE, UNO
TELEPHONE TERMINAL BOARD (BOTTOM)	6"
TELEVISION OUTLETS	REFER TO ARCH DRAWINGS
VISIBLE APPLIANCES (CENTERLINE)	84"

INSTALL OUTLET BOXES AT THE MOUNTING HEIGHTS SHOWN ABOVE UNO IN THE CONSTRUCTION DOCUMENTS. MOUNTING HEIGHTS LISTED ABOVE, OR ELSEWHERE IN THE CONSTRUCTION DOCUMENTS, ARE AFF OR AFG TO BOTTOM OF OUTLET BOX, UNO. ALL DEVICES SHALL BE INSTALLED IN COMPLIANCE WITH CURRENT ADA AND LOCAL REQUIREMENTS.

ABBREVIATIONS

AF	AMPERE FUSE SIZE
AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AS	AMPERE SWITCH SIZE
AT	AMPERE TRIP SETTING
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
BAS	BUILDING AUTOMATION SYSTEM
BKR	BREAKER
C	CONDUIT
CAT	CATEGORY
CATV	CABLE TELEVISION SYSTEM
CCTV	CLOSED CIRCUIT TELEVISION
CD	CANDELA
CKT	CIRCUIT
CODE	APPLICABLE CODE ADOPTED BY JURISDICTION
CT	CURRENT TRANSFORMER
CTR	CENTER
CVD	CUMULATIVE VOLTAGE DROP
D/DEMO	DEMOLITION
DPDT	DOUBLE-POLE, DOUBLE-THROW
DPST	DOUBLE-POLE, SINGLE-THROW
E/ETR/EX	EXISTING TO REMAIN
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
ELV	ELECTRONIC LOW-VOLTAGE
EWC	ELECTRIC WATER COOLER
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FCA	FAULT CURRENT AMPS AVAILABLE
FCU	FAN COIL UNIT
FF	FINISHED FLOOR
FLA	FULL LOAD AMPS
FLR	FLOOR
GC	GENERAL CONTRACTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GES	GROUNDING ELECTRODE SYSTEM
GFR	GROUND FAULT RELAY
G	GROUND
IG	ISOLATED GROUND
ISC	SHORT CIRCUIT CURRENT
JB/J-BOX	JUNCTION BOX
LF	LINEAR FEET
LRA	LOCKED ROTOR AMPS
LTG/LTS	LIGHTING/LIGHTS
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPACITY
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MFR	MANUFACTURER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MLV	MAGNETIC LOW-VOLTAGE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
N/A	NOT APPLICABLE
NF	NON-FUSED
NL	NIGHT LIGHT (24HR ON)
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORY (CSA, ETL, NSF, UL)
NTS	NOT TO SCALE
OS	OCCUPANCY SENSOR
P	POLE
PART	PARTIAL CIRCUIT
PH/Ø	PHASE
PNL	PANEL
PNLBD	PANELBOARD
PROVIDE	FURNISH AND INSTALL
PT	POTENTIAL TRANSFORMER
QTY	QUANTITY
R/REL	RELOCATE
RCPT	RECEPTACLE
RLA	RUNNING LOAD AMPS
RTU	ROOFTOP UNIT
SCCR	SHORT-CIRCUIT CURRENT RATING
SD	SMOKE DUCT DETECTOR
SF	SQUARE-FEET
SPDT	SINGLE-POLE, DOUBLE-THROW
SPST	SINGLE-POLE, SINGLE-THROW
SSBJ	SUPPLY-SIDE BONDING JUMPER
ST	SHUNT TRIP
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TBD	TO BE DETERMINED
TGB	TELECOMMUNICATIONS GROUND BUS BAR
TL	TWISTLOCK
TMGB	TELECOMMUNICATIONS MAIN GROUND BUS BAR
TX/XFMR	TRANSFORMER
TYP	TYPICAL
U/F	UNDERFLOOR
U/G	UNDERGROUND
U/S	UNDERSLAB
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
VD	VOLTAGE DROP
VFD	VARIABLE FREQUENCY DRIVE
VS	VACANCY SENSOR
W	WIRE
W/	WITH
WP	WEATHER PROOF
WR	WEATHER RESISTANT
WT	WATERTIGHT
XP	EXPLOSION PROOF

LINETYPE LEGEND

THROUGHOUT THE DRAWINGS DIFFERENT LINETYPES ARE USED IN COMBINATION WITH THE SYMBOLS TO INDICATE THE STATUS OF ITEMS AS EXISTING, TO BE DEMOLISHED, TO BE INCLUDED AS PART OF NEW WORK AND/OR ITEMS WHICH ARE ANTICIPATED TO BE PROVIDED IN THE FUTURE. THE STATUS OF ITEMS USING THESE LINETYPES ARE RELATIVE TO THE VIEW IN WHICH THEY APPEAR. PHASING SHOWN IN DRAWINGS IS NOT INTENDED TO FULLY DESCRIBE ALL NECESSARY CONSTRUCTION PHASING, WHICH IS DETERMINED BY THE CONTRACTOR AS PART OF THEIR RESPONSIBILITIES. ANY SUCH PHASES DESCRIBED IN THE CONSTRUCTION DOCUMENTS ARE GENERAL AND ONLY INTENDED TO INDICATE A BROAD ORDER FOR THE SAKE OF DESCRIBING THE PROJECT. THE FOLLOWING LINETYPES MAY BE USED ON ANY DEVICE, EQUIPMENT, NOTE, LINE, SHAPE, ETC.

EXISTING

DEMOLISH — — — —

NEW

FUTURE - - - - - - - -

ANNOTATION

- MECHANICAL OR FIRE PROTECTION PLAN NOTE CALLOUT
- PLUMBING PLAN NOTE CALLOUT
- ELECTRICAL OR FIRE ALARM PLAN NOTE CALLOUT
- TECHNOLOGY PLAN CALLOUT
- PLUMBING EQUIPMENT DESIGNATION, (CONTRACTOR FURNISHED AND INSTALLED), REFER TO PLUMBING FIXTURE OR EQUIPMENT SCHEDULES
- EQUIPMENT DESIGNATION (OWNER FURNISHED, CONTRACTOR INSTALLED)
- MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- SECTION CUT DESIGNATION

CIRCUITING & WIRING

- HOMERUN TO PANELBOARD. INFORMATION AT ARROWS ARE CIRCUIT NUMBERS AND PANELBOARD FOR TERMINATION. REFER TO PANELBOARD SCHEDULES FOR BRANCH CIRCUIT CONDUCTOR SIZES.
- INDICATES RELAY NUMBER
- CIRCUIT CONTINUATION OR PARTIAL CIRCUIT
- CONDUIT CONCEALED
- CONDUIT CONCEALED (EMERGENCY)
- CONDUIT IN/UNDER FLOOR/GROUND CONSTRUCTION
- EXPOSED CONDUIT
- EXPOSED CONDUIT (EMERGENCY)
- FLEXIBLE CONDUIT
- LOW VOLTAGE CABLE (NOT ROUTED IN CONDUIT)
- CONDUIT TURNING DOWN
- CONDUIT TURNING UP
- CONNECTION POINT OR EQUIPMENT TERMINATION
- EQUIPMENT TERMINATION

CONDUCTOR TICK MARK LEGEND

WHERE TICK MARKS ARE SHOWN, THE FOLLOWING SHALL GOVERN:

- SWITCHED HOT (PHASE) CONDUCTORS (SHOWN TRAILING NEUTRAL)
- NEUTRAL (GROUNDED) CONDUCTOR
- UNSWITCHED HOT (PHASE) CONDUCTORS (SHOWN LEADING NEUTRAL)
- NOTE: HASH MARKS INDICATE QUANTITY OF CONDUCTORS
- EQUIPMENT GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION OR BARE)
- ISOLATED GROUNDING CONDUCTOR IN CONDUIT (GREEN INSULATION WITH YELLOW TRACER)

BRANCH CIRCUIT CONDUCTOR TABLE

WHERE TICK MARKS ARE NOT SHOWN, THE FOLLOWING SHALL GOVERN:

# OF POLES	HOT (PHASE)*	NEUTRAL (GROUNDED)**	GROUNDING***
1P	(1)	(1) UNO	(1)
2P	(2)	(1) UNO	(1)
3P	(3)	(1) UNO	(1)

* PROVIDE ADDITIONAL CONDUCTORS THROUGH ENTIRE CIRCUIT (SWITCHED, UNSWITCHED/EM, ETC.) AS INDICATED THROUGHOUT CONSTRUCTION DOCUMENTS AND AS REQUIRED FOR A COMPLETE AND WORKING SYSTEM.

** REFER TO SPECIFICATIONS FOR LIMITATIONS ON SHARING NEUTRAL (GROUNDED) CONDUCTORS. DO NOT CIRCUIT AS A MULTI-WIRE BRANCH CIRCUIT, UNO.

*** PROVIDE ADDITIONAL ISOLATED GROUNDING CONDUCTORS WHERE INDICATED.

REFER TO SPECIFICATIONS, PLANS, NOTES, WIRING AND CONTROL DIAGRAMS FOR ADDITIONAL CIRCUITING REQUIREMENTS.

SIGNALING

- SIGNALING BELL
- SIGNALING BUZZER
- LV TRANSFORMER

LIGHTING

- LIGHT FIXTURE
- a = LOWER CASE LETTER IS SWITCH IDENTIFIER
- A = UPPER CASE LETTER INDICATES LIGHT FIXTURE TYPE
- = WALL MOUNT
- = ARROW INDICATED AIMING DIRECTION
- LIGHT FIXTURE CIRCUITED AS A NIGHT LIGHT (NL)
- EMERGENCY LIGHT FIXTURE WITH EMERGENCY LIGHTING BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- NIGHT LIGHT/EMERGENCY LIGHT FIXTURE WITH EMERGENCY BATTERY PACK OR CONNECTED TO EMERGENCY SOURCE
- LIGHT FIXTURE WITH DUAL BALLASTS CIRCUITED SEPARATELY (SHADING IMPLIES EMERGENCY LIGHT FIXTURE)
- LIGHTING TRACK (# INDICATES RELAY NUMBER)
- MIRROR LIGHTS
- EXTERIOR PARKING LOT LIGHT FIXTURE
- EXTERIOR PEDESTRIAN POST TOP LIGHT FIXTURE
- EXTERIOR LIT BOLLARD LIGHT
- EXIT SIGN - CEILING / WALL MOUNTED, ARROWS AS INDICATED, FACE HATCHED
- EMERGENCY LIGHTING UNIT EQUIPMENT WITH BATTERY PACK - CEILING/WALL MOUNTED
- AFEA (AREA FOR EVACUATION ASSISTANCE) SIGN - CEILING/WALL MOUNTED, ARROWS AS INDICATED

REFER TO LIGHT FIXTURE SCHEDULE FOR MORE INFORMATION

POWER EQUIPMENT & DEVICES

- ELECTRICAL PANELBOARD (SURFACE OR FLUSH MOUNT)
- ELECTRICAL CABINET (SURFACE OR FLUSH MOUNT), TYPE AS NOTED
- PLYWOOD TERMINAL BOARD FOR TELEPHONE SYSTEM, UNO. SIZE AS NOTED
- SWITCHBOARD OR MOTOR CONTROL CENTER ON HOUSEKEEPING PAD
- ELECTRICAL DISTRIBUTION PANELBOARD
- TRANSFORMER
- DISCONNECT SWITCH - "200/3/150/3R" DENOTES AMPERES/POLE/FUSE/NEMA ENCLOSURE RATING, NF= NON-FUSED, CB= CIRCUIT BREAKER (200/3/CB), NO VALUE (200/3/150) FOR NEMA ENCLOSURE MEANS STANDARD NEMA 1 RATING
- COMBINATION DISCONNECT (SAFETY) SWITCH AND MOTOR STARTER "30/3/15/1/3R" DENOTES AMPERES/POLE/FUSE/NEMA STARTER SIZE/NEMA ENCLOSURE RATING. NF= NON-FUSED, CB= CIRCUIT BREAKER (30/3/CB/1), NO VALUE (200/3/150/1) FOR NEMA ENCLOSURE MEANS STANDARD NEMA 1 ENCLOSURE RATING
- MAGNETIC MOTOR STARTER, NEMA SIZE AS NOTED. 3-POLE, UNO
- VARIABLE FREQUENCY DRIVE
- INDICATING LIGHT
- EMERGENCY POWER OFF BUTTON
- STOP-START PUSH BUTTON CONTROL STATION
- HAND-OFF-AUTO PUSH BUTTON CONTROL STATION
- MUSHROOM-TYPE PUSH BUTTON
- OVERHEAD PADDLE FAN

NURSE CALL (HOSPITAL)

- CODE BLUE PUSHBUTTON STATION
- BED RECEPTACLE
- DUTY STATION
- STAFF EMERGENCY ASSIST STATION
- PATIENT EMERGENCY PULL CORD STATION
- INTERCOM
- NURSE CALL KEY SWITCH
- NURSE CALL BEDSIDE STATION - SINGLE PATIENT
- NURSE CALL BEDSIDE STATION - DOUBLE PATIENT
- NURSE CALL VISUAL ANNUNCIATOR PANEL
- STAFF STATION (NORMAL, EMERGENCY & CODE BLUE)
- NURSE CALL MASTER STATION
- DOME LIGHT - CEILING MOUNTED, B = BUZZER
- DOME LIGHT - WALL MOUNTED, B = BUZZER
- ZONE DOME LIGHT, B = BUZZER

BOXES, LIGHTING CONTROL & WIRING DEVICES

SWITCH LETTER DESIGNATIONS AS FOLLOWS:
BLANK = SINGLE
2 = TWO POLE
3 = THREE-WAY
4 = FOUR-WAY
D = DIMMER
F = FAN SPEED CONTROL
FH = FRACTIONAL HORSEPOWER MANUAL CONTROLLER
IH = INTEGRAL HORSEPOWER MANUAL CONTROLLER
K = KEYED
LV# = LOW VOLTAGE / DIGITAL
M = MANUAL MOTOR STARTER DISCONNECT
OS# = OCCUPANCY SENSOR
P = SPST PILOT LIGHT
WP = WEATHER PROOF
# = REFER TO LIGHTING CONTROL DEVICE SCHEDULE

- AUTOMATIC LOAD CONTROL RELAY
- BRANCH CIRCUIT TRANSFER SWITCH
- CEILING / WALL MOUNTED OCCUPANCY SENSOR (# INDICATES TYPE PER SCHEDULE)
  - CORNER 90 DEGREE SENSING
  - ONE-DIRECTION SENSING, CEILING/WALL MOUNT
  - CEILING MOUNT, TWO DIRECTION SENSING
  - CEILING MOUNT, FOUR DIRECTION SENSING
- CONTACTOR (SIZE, COIL VOLTAGE AND NUMBER OF POLES AS INDICATED)
- TRACK-MOUNTED CURRENT LIMITER (## INDICATES AMPERAGE)
- DAYLIGHT SENSOR (# INDICATES TYPE PER SCHEDULE)
- LIGHTING CONTROLS PROCESSOR AND/OR EQUIPMENT
- POWER PACK (# INDICATES TYPE PER SCHEDULE)
- PHOTOELECTRIC SWITCH
- ROOM CONTROLLER (# INDICATES TYPE PER SCHEDULE)
- TIME SWITCH
- SIMPLEX RECEPTACLE - NEMA 5-20R, UNO
- DUPLEX RECEPTACLE - NEMA 5-20R, UNO
- DOUBLE DUPLEX RECEPTACLE - NEMA 5-20R, UNO
- SPECIAL RECEPTACLE - NEMA TYPE AS NOTED
- TWIST-LOCK TYPE RECEPTACLE
- BLANK FACE GFCI FEED THROUGH DEVICE
- GFCI TYPE RECEPTACLE*
- ISOLATED GROUND TYPE RECEPTACLE*
- EMERGENCY RECEPTACLE*
- RECEPTACLE INSTALLED ABOVE COUNTER OR BACKSPLASH*
- RECEPTACLE INSTALLED IN CEILING*
- RECEPTACLE INSTALLED IN FLOOR*
- RECEPTACLE INSTALLED VIA DROP CORD*

RECEPTACLE LETTER DESIGNATIONS AS FOLLOWS:
C = AUTOMATICALLY CONTROLLED
CH = CLOCK HANGER TYPE
G=RCPT PROTECTED BY GFCI CIRCUIT BREAKER OR UPSTREAM GFCI DEVICE
H = HORIZONTALLY MOUNTED
S = MANUALLY CONTROLLED
SP / TVSS = SURGE PROTECTION
TR = TAMPER RESISTANT
TV = TELEVISION
USB = USB/DUPLEX
WP = WEATHER PROOF COVER
WR = WEATHER RESISTANT

- MULTI-OUTLET ASSEMBLY
- TELEPHONE OUTLET
- DATA OUTLET
- MULTI-SERVICE OUTLET; TELEPHONE AND DATA
  - ABOVE COUNTER, TYP
  - WALL, TYP
  - FLOOR, TYP
- MULTI-SERVICE POWER POLE WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- MULTI-SERVICE FLOOR BOX WITH TELEPHONE, DATA AND POWER OUTLETS A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- POKE THROUGH, A = TYPE, REFER TO PLANS, SCHEDULES AND SPECIFICATIONS
- THERMOSTAT
- CEILING/FLOOR MOUNT JUNCTION/OUTLET BOX
- WALL MOUNT JUNCTION/OUTLET BOX

* SYMBOL DEMONSTRATED WITH DUPLEX RECEPTACLE, WHEN USED IN COMBINATION WITH OTHER DEVICES MEANING IS SIMILAR FOR THOSE DEVICE TYPES.

REFER TO LIGHTING CONTROL DEVICE SCHEDULE FOR MORE INFORMATION.

ELECTRICAL ONE-LINE & RISER DIAGRAM

- SWITCH (RATING AS INDICATED)
- DRAWOUT CIRCUIT BREAKER (RATINGS AS INDICATED)
- FUSED SWITCH (RATING, POLES AND FUSE TYPE AS INDICATED)
- COMBINATION FUSED SWITCH/STARTER AND STARTER SIZE
- CIRCUIT BREAKER (RATINGS AS INDICATED)
- COMBINATION CIRCUIT BREAKER/STARTER AND STARTER SIZE
- PANELBOARD, SINGLE OR MULTI-SECTION (REFER TO SCHEDULES)
- ISOLATED POWER PANELBOARD W/ INTEGRAL TRANSFORMER (REFER TO SCHEDULES)
- TRANSFORMER (TYPE AND RATINGS AS INDICATED)
- SHIELDED TRANSFORMER (TYPE AND RATINGS AS INDICATED)
- AUTOMATIC TRANSFER SWITCH (RATINGS AS INDICATED)
- AUTOMATIC TRANSFER SWITCH WITH BYPASS (RATINGS AS INDICATED)
- GENERATOR (RATINGS AS INDICATED)
  - NON-SEPARATELY DERIVED SOURCE
  - OR
  - SEPARATELY DERIVED SOURCE
- SWITCHGEAR, SWITCHBOARD AND/OR DISTRIBUTION PANELBOARD (TYPE, RATING, DEVICES AND ACCESSORIES AS INDICATED)
- COMBINATION DIGITAL VOLT METER/AMMETER
- CIRCUIT IDENTIFICATION (REFER TO CIRCUIT SCHEDULE)
- GROUND FAULT RELAY
- PHASE FAILURE RELAY
- KIRK-KEY INTERLOCK (# INDICATES KEY PAIR)
- SHUNT TRIP
- AMMETER (RANGE AS SPECIFIED OR REQUIRED)
- VOLTMETER (RANGE AS SPECIFIED OR REQUIRED)
- UTILITY METER (AS REQUIRED BY UTILITY)
- AMMETER SWITCH
- VOLTMETER SWITCH
- WATT-HOUR METER, "D" DENOTES DEMAND REGISTER, "15" DENOTES MINUTES OF DEMAND INTERVAL
- CURRENT TRANSFORMER RATING AS SPECIFIED OR REQUIRED
- POTENTIAL TRANSFORMER RATING AS SPECIFIED OR REQUIRED
- SURGE-PROTECTIVE DEVICE
- GROUND CONNECTION
- GROUND CONNECTION WITH TEST WELL
- GROUND ROD
- LIGHTNING ARRESTER
- CAPACITOR
- CONTACT (OPEN OR CLOSED)
- HEATER
- MOTOR
- BLOCK LOAD KW OR KVA
- FAULT POINT REFERENCED IN SHORT CIRCUIT CURRENT AND VOLTAGE DROP SPREADSHEET

ELECTRICAL GENERAL NOTES

1. PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS. AS APPLICABLE, REVIEW THE LANDLORD CRITERIA, SPECIFICATIONS, GENERAL NOTES AND ALL OTHER TRADE PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT AND ENGINEER OF ANY CONFLICTS OR DISCREPANCIES PRIOR TO SUBMITTING BID.

2. ALL WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES AS WELL AS APPLICABLE INDUSTRY STANDARDS. ALL EQUIPMENT SHALL BEAR LABELS FOR THE USE INTENDED BY AN AHJ ACCEPTED NATIONALLY RECOGNIZED TESTING LABORATORY, NRTL, (SUCH AS UL OR ETL). THE FINAL ELECTRICAL INSTALLATION OF THE FACILITY OCCUPIED BY TENANT SHALL BE FREE FROM ELECTRICAL DEFECTS TO THE SATISFACTION OF THE AHJ, TENANT, ARCHITECT AND ENGINEER.

3. COORDINATE EXACT LOCATIONS OF ALL LIGHT FIXTURES AND ELECTRICAL DEVICES WITH ARCHITECTURAL PLANS AND OTHER TRADES PRIOR TO ROUGH-IN. ALL LIGHT FIXTURES, ELECTRICAL DEVICES AND ELECTRICAL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACE AVAILABLE, AND WITHOUT INTERFERENCES.

4. ELECTRICAL PLANS ARE DIAGRAMMATIC/SCHEMATIC IN NATURE AND REPRESENT THE GENERAL SCOPE OF WORK. IT IS NOT WITHIN THE SCOPE OF THE ELECTRICAL PLANS TO SHOW ALL NECESSARY RACEWAY ROUTING, BENDS, OFFSETS, PULL BOXES AND OBSTRUCTIONS. CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF EQUIPMENT AND WIRING DEVICES WITH OTHER TRADES PRIOR TO INSTALLATION AND INSTALL ALL WORK TO CONFORM TO THE TENANT REQUIREMENTS.

5. ALL CONDUIT AND CONDUCTOR LENGTHS SHOWN IN THESE DESIGN DOCUMENTS ARE INTENDED SOLELY FOR USE IN THE DESIGN CALCULATIONS BY THE DESIGN PROFESSIONAL. LENGTHS SHOWN SHALL NOT BE USED TO ASSIST IN THE BIDDING TAKEOFF PROCESS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MATERIAL QUANTITIES REQUIRED TO BID AND CONSTRUCT THE COMPLETE PROJECT.

6. PROVIDE PROPER FIRE PROOFING AND SEALANT FOR PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. THE FIRE STOPPING METHOD, MATERIAL AND ITS APPLICATION SHALL NRTL LISTED, CODE COMPLIANT AND APPROVED BY AHJ.

7. PROVIDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR FOR ALL LINE-VOLTAGE CIRCUITS. PROVIDE ALL NECESSARY LINE VOLTAGE WIRING, CIRCUITRY AND CONDUITS FOR PROPER EQUIPMENT OPERATION. ALL ELECTRICAL EQUIPMENT, LIGHT FIXTURES AND DEVICES SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.

8. PROVIDE DEDICATED NEUTRAL AND ISOLATED/INSULATED GROUND CONDUCTOR FOR ALL ISOLATED GROUND CIRCUITS.

9. ALL 120V RECEPTACLES 50A OR LESS, 208V AND 240V RECEPTACLES 100A OR LESS, SHALL BE GFCI PROTECTED IN LOCATIONS REQUIRED BY CODE; THIS INCLUDES BATHROOMS, KITCHENS/FOOD PREP AREAS, EXTERIOR LOCATIONS AND RECEPTACLES WITHIN 6' OF A SINK. GFCI RECEPTACLES SHALL BE READILY ACCESSIBLE AND SHALL NOT BE LOCATED BEHIND STATIONARY EQUIPMENT. GFCI PROTECTION MAY BE VIA A GFCI CIRCUIT BREAKER OR GFCI RECEPTACLE, UNO. WHERE NECESSARY, GFCI PROTECTION MAY BE ACHIEVED VIA A BLANK FACE GFCI DEVICE LOCATED IN A READILY ACCESSIBLE LOCATION NEAR RECEPTACLE BEING PROTECTED.

10. PROVIDE TAMPER-RESISTANT, (TR), TYPE RECEPTACLES AT ALL CODE REQUIRED LOCATIONS, INCLUDING THOSE ACCESSIBLE BY CHILDREN/CUSTOMERS/PUBLIC MOUNTED LESS THAN 5'-6" AFF, UNO.

11. FLEXIBLE CONDUIT IS ONLY PERMITTED FOR SHORT FINAL CONNECTIONS TO LIGHT FIXTURES AND EQUIPMENT IN LENGTHS OF 6'-0" OR LESS. FLEXIBLE CONDUIT IS NOT PERMITTED WITHIN WALLS, UNO.

12. ALL EMPTY CONDUIT/RACEWAY SHALL BE INSTALLED WITH PULL STRINGS. TERMINATE CONDUIT STUB-UP WITH A BUSHING.

13. CONDUITS/RACEWAYS SHALL BE CONCEALED FROM VIEW WHEREVER PRACTICABLE, UNO. ROUTE CONDUITS SERVING ROOFTOP EQUIPMENT CONCEALED INSIDE EQUIPMENT CURB AND MINIMIZE ROOF PENETRATIONS AND EXTERIOR CONDUITS RUNS WHERE PRACTICABLE. SUPPORT RACEWAY FROM STRUCTURE, NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING RACEWAY. DO NOT ROUTE CONDUITS ACROSS SKYLIGHTS, UNO. ROUTE ALL EXPOSED NON-FLEXIBLE CONDUITS TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN STRUT OR CABLE/PIPE TRAY WHERE PRACTICABLE. INSTALL CONDUITS PLUMB/LEVEL WHERE EXPOSED TO VIEW. COORDINATE RACEWAY ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN.

14. CONTRACTOR'S BID SHALL INCLUDE PROVISIONS TO PROVIDE ALL SERVICES RELATED TO BUILDING SYSTEMS COMMISSIONING INCLUDING, FUNCTIONAL TESTING, RELATED DOCUMENTATION, REPORTS AND OWNER TRAINING. COORDINATE ALL REQUIREMENTS WITH THE DESIGNATED COMMISSIONING AGENT. CONTRACTOR SHALL COMPLETE ALL REQUIRED COMMISSIONING ACTIVITIES PRIOR TO FINAL INSPECTIONS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS, COMMISSIONING PLAN, APPLICABLE CODE AND MANUFACTURER'S INSTRUCTIONS.

ELECTRICAL SHEET INDEX

E001	ELECTRICAL GENERAL INFORMATION
E010	ELECTRICAL SITE POWER PLAN
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E102	LOW VOLTAGE SYSTEMS PLAN
E120	ELECTRICAL LIGHTING PLAN
E150	ELECTRICAL ROOF POWER PLAN
E501	ELECTRICAL DETAILS
E590	ELECTRICAL SPECIFICATIONS
E591	ELECTRICAL SPECIFICATIONS
E601	ELECTRICAL ONE-LINE DIAGRAM
E602	ELECTRICAL SCHEDULES
E620	ELECTRICAL LIGHTING SCHEDULES
E630	ELECTRICAL ENERGY CODE COMPLIANCE

HENDERSON ENGINEERS
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LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL. CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED PROFESSIONAL ENGINEER
DEAN WAY
CHANDLER
062.069925
OF ILLINOIS
EXPIRATION DATE: 11/30/21

Nov 23 2020

Drawing Title
ELECTRICAL GENERAL INFORMATION

Job No.	Drawn
204461	ELT
Scale	Date
N.T.S.	11/09/20

Sheet No.
E001

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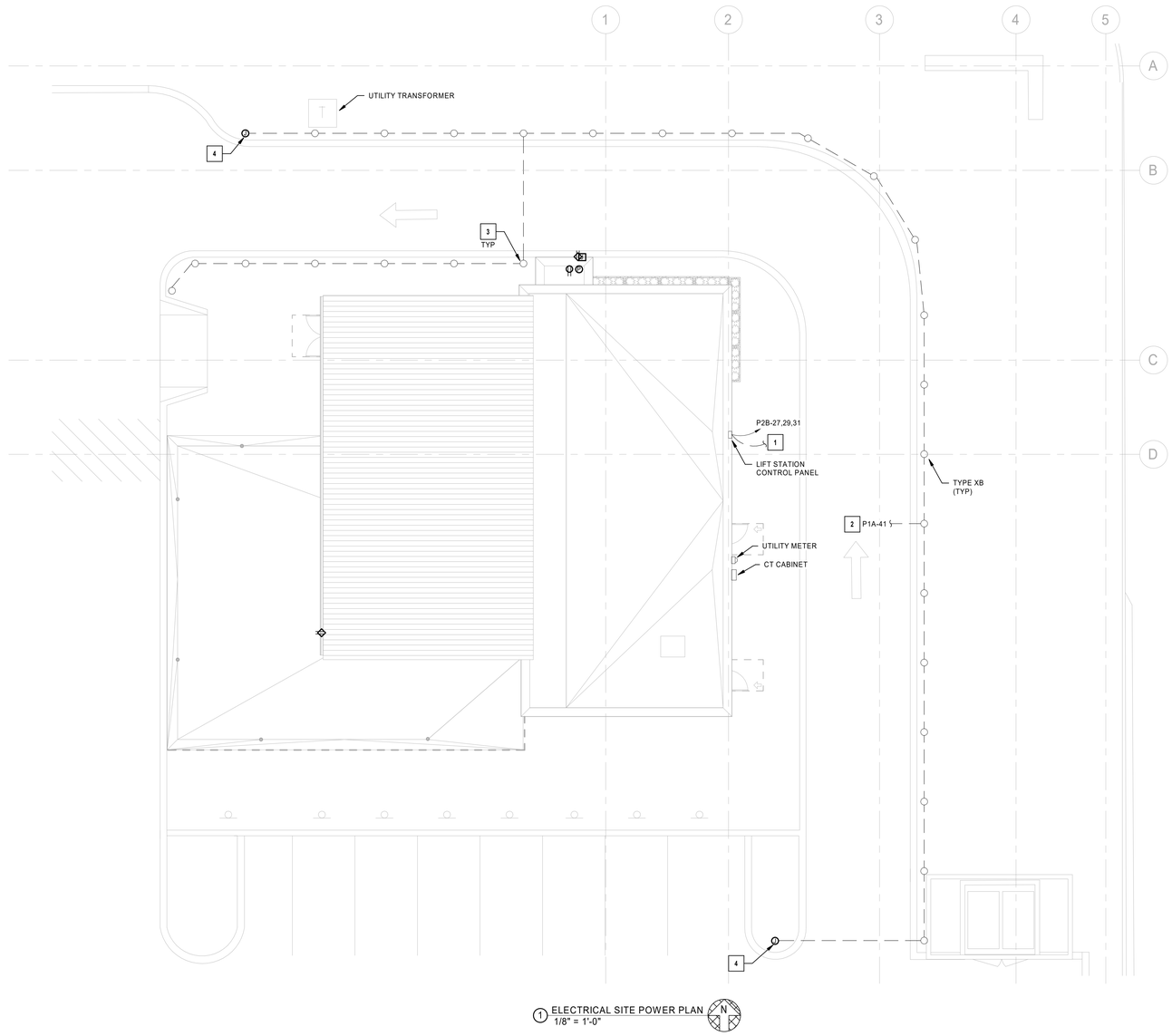
DEAN W. CHANDLER

ELECTRICAL SITE PLAN NOTES:

1. PROVIDE CONNECTION FROM LIFT STATION CONTROL PANEL TO LIFT STATION. VERIFY EXACT LOCATION AND REQUIREMENTS WITH OTHER DISCIPLINES AND ARCHITECT PRIOR TO ROUGH-IN. REFER TO CIVIL PLANS FOR MORE INFORMATION.
2. ROUTE THROUGH LUTRON VIVE CONTROL MODULE FOR EXTERIOR LIGHTING. REFER TO SHEET E120 FOR CONTINUATION.
3. PROVIDE CONNECTION TO LIT BOLLARD (LIGHT FIXTURE TYPE "XB"). VERIFY EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
4. PROVIDE CONNECTION TO LIT DRIVE-THRU DIRECTIONAL SIGNAGE. VERIFY EXACT LOCATION AND REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-IN.



1 ELECTRICAL SITE POWER PLAN
1/8" = 1'-0"

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EXPIRATION DATE: 11/30/21

LICENSED PROFESSIONAL ENGINEER
DEAN WAY CHANDLER
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Nov 23 2020

Drawing Title
ELECTRICAL SITE POWER PLAN

Job No.	Drawn
204461	ELT

Scale	Date
1/8" = 1'-0"	11/09/20

Sheet No.
E010

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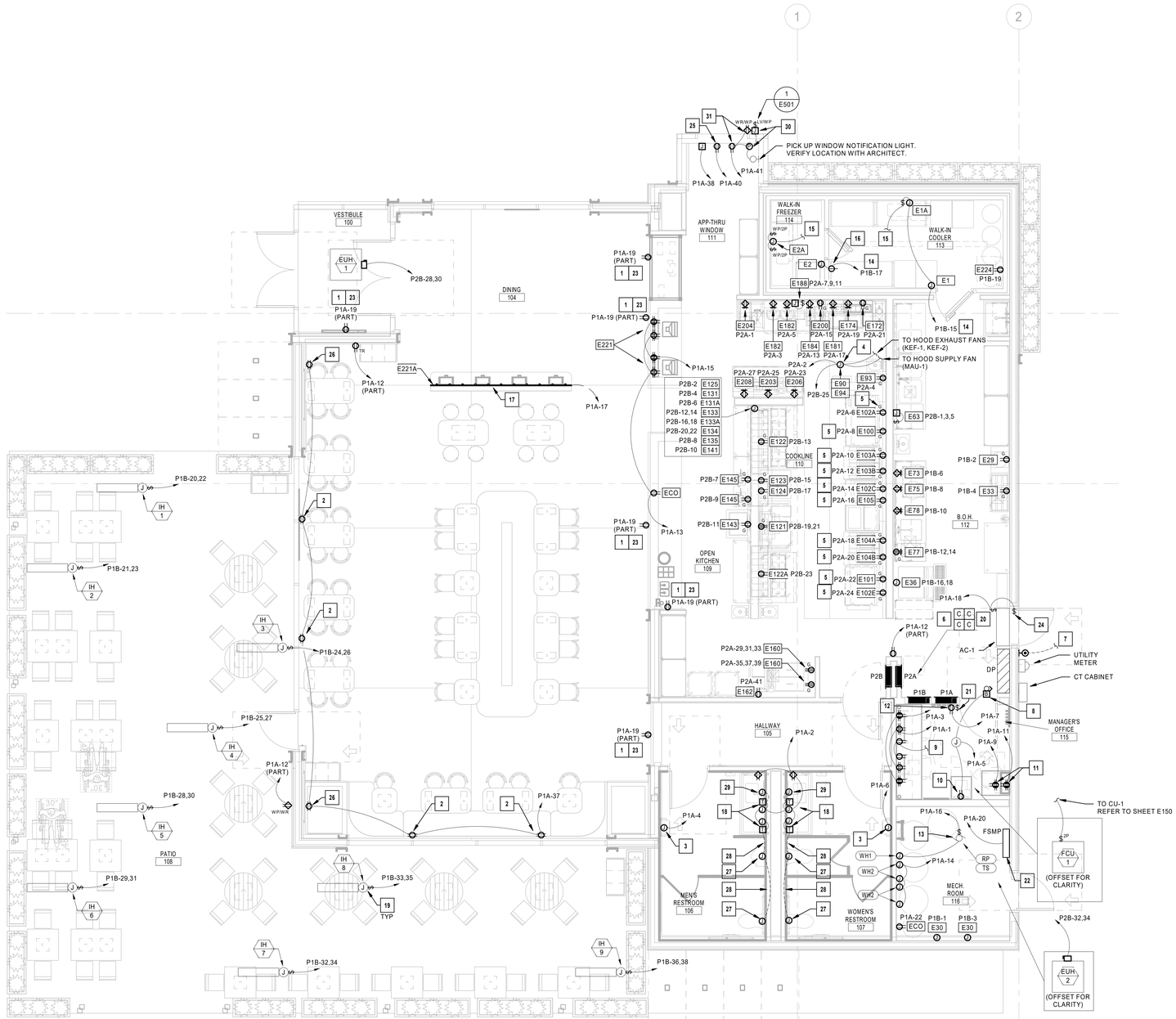

1 ELECTRICAL POWER PLAN
1/4" = 1'-0"

GENERAL POWER NOTES:

1. REFER TO KITCHEN EQUIPMENT CONSULTANT DRAWINGS FOR EXACT ROUGH-IN LOCATIONS, MOUNTING HEIGHTS AND ADDITIONAL REQUIREMENTS FOR ALL EQUIPMENT TAGS SHOWN ON THIS SHEET, INCLUDING KITCHEN EQUIPMENT CONNECTIONS, KDS EQUIPMENT AND POS OUTLET LOCATIONS.
2. REFER TO ELECTRICAL KITCHEN EQUIPMENT CONNECTION SCHEDULE, SHEET E602 FOR EQUIPMENT CONNECTION INFORMATION FOR ALL EQUIPMENT WITH TAGS SHOWN IN RECTANGLES ON THIS SHEET
3. REFER TO SHEET E102 FOR LOW VOLTAGE SYSTEMS, CABLING, AND CONDUIT REQUIREMENTS.
4. ALL EXPOSED POWER AND COMMUNICATION/DATA CONDUIT SHALL BE RIGID TYPE CONDUIT AND ROUTED PARALLEL TO BUILDING LINES. INSTALL ALL CONDUITS PLUMB AND LEVEL WHERE EXPOSED TO VIEW.
5. ALL 120V RECEPTACLES 50A OR LESS, 208V AND 240V RECEPTACLES 100A OR LESS, SHALL BE GFCI PROTECTED IN LOCATIONS REQUIRED BY CODE; THIS INCLUDES BATHROOMS, KITCHENS/FOOD PREP AREAS, EXTERIOR LOCATIONS AND RECEPTACLES WITHIN 6' OF A SINK. GFCI RECEPTACLES SHALL BE READILY ACCESSIBLE AND SHALL NOT BE LOCATED BEHIND STATIONARY EQUIPMENT. GFCI PROTECTION MAY BE VIA A GFCI CIRCUIT BREAKER OR GFCI RECEPTACLE, UNO. WHERE NECESSARY, GFCI PROTECTION MAY BE ACHIEVED VIA A BLANK FACE GFCI DEVICE LOCATED IN A READILY ACCESSIBLE LOCATION NEAR RECEPTACLE BEING PROTECTED.
6. INSTALL CONDUITS FOR WALK-IN COOLER/FREEZER LIGHTS AND EVAPORATOR COILS ABOVE THE WALK-IN BOXES AND CONNECT TO EACH DEVICE FROM ABOVE. SEAL CONDUIT PENETRATIONS WITH SILICON SEALANT AND SEAL-OFF INTERIOR OF CONDUITS WITH EXPANDING FOAM SEALANT.

ELECTRICAL POWER PLAN NOTES:

1. PROVIDE RECESSED CLOCK RECEPTACLE FOR INTERIOR ILLUMINATED DECOR. SIGNAGE. REFER TO INTERIOR ELEVATIONS ON SHEET A210/A211 FOR EXACT LOCATION AND MOUNTING HEIGHT.
2. PROVIDE RECEPTACLE WITHIN 18" OF TOP OF WINDOW FOR EACH 12 LINEAR FEET OF WINDOW IN ACCORDANCE WITH NEC 210.62. MOUNT RECEPTACLE ON WALL OR CEILING AS APPLICABLE. COORDINATE EXACT LOCATION WITH OTHER TRADES PRIOR TO ROUGH-IN.
3. PROVIDE CONNECTION TO ELECTRIC HAND DRYER. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION AND MOUNTING HEIGHT.
4. PROVIDE CONNECTION TO KITCHEN EXHAUST HOOD CONTROL PANEL. REFERENCE MANUFACTURER'S WIRING DIAGRAMS FOR CONNECTIONS TO: HOOD LIGHTS AND CONTROLS, EXHAUST AND SUPPLY FANS, GAS SOLENOID SHUTOFF, SHUNT TRIP CIRCUIT BREAKERS AND HOOD FIRE SUPPRESSION SYSTEM.
5. ROUTE COOK LINE RECEPTACLE CIRCUITS THROUGH SHUNT TRIP CONTACTOR NEAR PANELBOARDS. SEE NOTE 6.
6. PROVIDE (2) SQUARE D 8903 SERIES, OR EQUIVALENT, ELECTRICALLY HELD, NORMALLY CLOSED, 8-POLE CONTACTORS WITH 30A RATED CONTACTS AND 120V CONTROL COILS IN AN ENCLOSURE ABOVE CEILING. CONNECT CONTACTOR COILS TO SHUNT TRIP TERMINALS IN HOOD CONTROL PANEL FOR AUTOMATIC SHUT-DOWN OF COOK-LINE RECEPTACLE CIRCUITS ON FIRE CONDITION. LABEL CONTACTOR ENCLOSURE "SHUNT TRIP CONTACTORS"
7. PROVIDE WEATHERPROOF PUSHBUTTON FOR DELIVERIES. FIELD VERIFY EXACT LOCATION AND CONNECT PUSHBUTTON TO LOW VOLTAGE TRANSFORMER AND BELL OUTSIDE OF MANAGER'S OFFICE.
8. PROVIDE LOW VOLTAGE TRANSFORMER AND BELL ABOVE DOOR. CONNECT TO PUSHBUTTON AT RECEIVING DOOR.
9. PROVIDE RECEPTACLES FOR UNDER-CABINET LIGHTS INSTALLED IMMEDIATELY BELOW LOWEST SHELF. CONNECT TO ROOM LIGHTING CIRCUIT DOWNSTREAM OF OCCUPANCY SENSOR FOR CONTROL. REFER TO OFFICE ELEVATIONS ON SHEET A401 FOR LOCATIONS AND MOUNTING HEIGHTS.
10. PROVIDE RECEPTACLE AT 48" AFF AND ALIGNED WITH ADJACENT DATA OUTLET FOR PRINTER ON SAFE. REFER TO OFFICE ELEVATIONS ON SHEET A401 FOR LOCATION.
11. PROVIDE (2) DOUBLE DUPLEX IG RECEPTACLES STACKED VERTICALLY FOR THE IT RACK AT +72" AND +80". SEE OFFICE ELEVATIONS ON SHEET A401.
12. PROVIDE RECEPTACLE +72" AND ALIGNED WITH ADJACENT DATA OUTLET FOR SECURITY ALARM PANEL. REFER TO OFFICE ELEVATIONS ON SHEET A401 FOR LOCATION.
13. PROVIDE CONNECTIONS TO HOT WATER RECIRCULATION PUMP AND RELATED EQUIPMENT INCLUDING AQUASTATS AND TIME SWITCH FURNISHED BY PLUMBING CONTRACTOR.
14. PROVIDE CONNECTION TO JUNCTION BOX ON WALK-IN COOLER/FREEZER FOR LIGHTS, DOOR HEATER, AND VENT HEATER AS REQUIRED. INSTALL LIGHT FIXTURES SHIPPED LOOSE WITH COOLER/FREEZER AND CONNECT COMPLETE.
15. COORDINATE INTERCONNECTION AND CONTROL CABLING REQUIREMENTS BETWEEN CONDENSER AND EVAPORATOR WITH EQUIPMENT SUPPLIER.
16. PROVIDE SIMPLEX RECEPTACLE IN WEATHERPROOF CAST ALUMINUM BOX FOR WALK-IN FREEZER CONDENSATE PIPING HEAT TAPE. COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR.
17. PROVIDE 6'-0" METAL PLUG-STRIP(S) WITH 20 AMP RECEPTACLES 6" ON CENTER. HUBBELL #HBL24GBX06GY OR APPROVED EQUIVALENT AND INSTALL CONCEALED TO UNDERNEATH OF KIOSK TABLE. RUN CONDUIT UNDERGROUND FROM NEAREST FULL HEIGHT WALL AND ALIGN WITH UNDERSIDE OF KIOSK TABLE FOR CONNECTION. CONCEAL ALL CONDUIT AND PLUG STRIPS BELOW KIOSK TABLE.
18. PROVIDE JUNCTION BOX AND TOGGLE DISCONNECT SWITCH ABOVE CEILING IN ACCESSIBLE LOCATION, AND INSTALL LOW-VOLTAGE TRANSFORMER, FURNISHED BY PLUMBING CONTRACTOR WITH EQUIPMENT FOR ELECTRONIC ACTUATED FLUSH VALVES AND FAUCETS. COORDINATE EXACT LOCATION OF JUNCTION BOXES WITH PLUMBING CONTRAACTOR PRIOR TO ROUGH-IN.
19. PROVIDE WEATHERPROOF OUTLET BOX WITH 30A/2P ON/OFF SWITCH, WEATHERPROOF SWITCH COVER, AND LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FOR CONNECTION TO INFRARED PATIO HEATERS. ROUTE CIRCUITS THROUGH CONTACTOR FOR CONTROL. SEE NOTE 20, THIS SHEET.
20. PROVIDE 2 MECHANICALLY HELD 12-POLE CONTACTORS WITH 30A RATED CONTACTS AND 2-WIRE CONTROL INTERFACE FOR CONTROL OF PATIO HEATER CIRCUITS. LOCATE CONTACTORS IN A NEMA 1 ENCLOSURE ABOVE ACCESSIBLE CEILING. CONNECT CONTACTOR TO TIMER SWITCH IN MANAGER'S OFFICE FOR HEATER CONTROL. SEE NOTE 21, THIS SHEET.
21. PROVIDE INTERMATIC #FF12HC OR EQUIVALENT 0-12 HOUR COUNTDOWN TIMER WITHOUT HOLD FEATURE FOR CONTROL OF PATIO HEATER CONTACTOR. LOCATE PATIO HEATER TIMER SWITCH ADJACENT TO PATIO FAN SWITCH AND PROVIDE SWITCH PLATE WITH PRINTED LABEL TO READ "PATIO HEATERS" SEE NOTES 19 AND 20, THIS SHEET.
22. PROVIDE CONNECTION TO FIRE SPRINKLER SYSTEM MONITORING PANEL. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH FIRE SPRINKLER SYSTEM SUBMITTAL DRAWINGS AND FIRE SPRINKLER SYSTEM INSTALLER.
23. ROUTE INTERIOR SIGNAGE RECEPTACLES THROUGH LUTRON VIVE CONTROLLER. REFER TO SHEET E120 FOR MORE INFORMATION.
24. PROVIDE DOOR SWITCH AND INTERLOCK WITH AIR CURTAIN FOR ON/OFF CONTROL. PROVIDE WITH SINGLE POLE TOGGLE SWITCH FOR LOCAL DISCONNECT. AIR CURTAIN SHALL OPERATE WHEN DOOR IS OPEN. REFER TO AIR CURTAIN SCHEDULE ON SHEET M601 FOR MORE INFORMATION.
25. PROVIDE RECEPTACLE FOR PICK UP WINDOW AIR CURTAIN. VERIFY REQUIREMENTS WITH ARCHITECT PRIOR TO ROUGH-IN.
26. PROVIDE RECEPTACLE ALIGNED WITH ADJACENT DATA OUTLET FOR TELEVISION. REFER TO LOW VOLTAGE SYSTEMS PLAN SHEET E102 AND INTERIOR ELEVATIONS ON SHEET A210/A211 FOR EXACT LOCATION AND MOUNTING HEIGHT.
27. PROVIDE WALL MOUNTED JUNCTION BOX FOR SOLENOID AND SENSORS ASSOCIATED WITH AUTOMATIC OPERATION OF PLUMBING FIXTURES. PROVIDE WALL MOUNTED JUNCTION BOX FOR EACH WATER CLOSET (WC) AND URINAL (UR). VERIFY EXACT LOCATIONS AND FULLY COORDINATE INSTALLATION WITH PLUMBING CONTRACTOR PER PLUMBING FIXTURE EQUIPMENT INSTALLATION GUIDELINES PRIOR TO ROUGH-IN.
28. PROVIDE 1/2" CONDUIT AND LOW VOLTAGE (6V) WIRE FOR AUTOMATIC OPERATION OF PLUMBING FIXTURES. CONNECT TO EACH (WC) AND (UR) IN EACH RESTROOM. COORDINATE EXACT LOCATIONS WITH PLUMBING CONTRACTOR. REFER TO PLUMBING DRAWINGS FOR MORE INFORMATION.
29. PROVIDE UNDERCOUNTER WALL MOUNTED JUNCTION BOX FOR LAVATORY (LAV) AND INSTALL TRANSFORMER FURNISHED BY PLUMBING CONTRACTOR. VERIFY EXACT LOCATIONS AND FULLY COORDINATE INSTALLATION WITH PLUMBING CONTRACTOR PER PLUMBING FIXTURE EQUIPMENT INSTALLATION GUIDELINES PRIOR TO ROUGH-IN.
30. PROVIDE EXTERIOR LOW VOLTAGE VEHICLE SENSOR SWITCH, POWER SUPPLY, AND NOTIFICATION LIGHT FOR PICK-UP WINDOW NOTIFICATION SYSTEM. REFER TO DETAIL 1, SHEET E501.
31. PROVIDE RECEPTACLES +96" AFF FOR FUTURE INTERIOR AND EXTERIOR DIGITAL DISPLAYS. COORDINATE EXACT LOCATIONS WITH SHAKE SHACK CONSTRUCTION MANAGER PRIOR TO ROUGH-IN.

E#### NOTE:
REFER TO KITCHEN EQUIPMENT ELECTRICAL ROUGH-IN PLAN, SHEET KE101, FOR DIMENSIONED ROUGH-IN LOCATIONS, MOUNTING HEIGHTS, AND ADDITIONAL REQUIREMENTS FOR ALL DEVICE TAGS SHOWN ON THIS SHEET, INCLUDING KITCHEN EQUIPMENT POWER AND LOW VOLTAGE OUTLET LOCATIONS.

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Nov 23 2020

Drawing Title
ELECTRICAL POWER PLAN

Job No.	Drawn
204461	ELT
Scale	Date
1/4" = 1'-0"	11/09/20

Sheet No.
E101

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LOW VOLTAGE DEVICE COLOR SCHEDULE

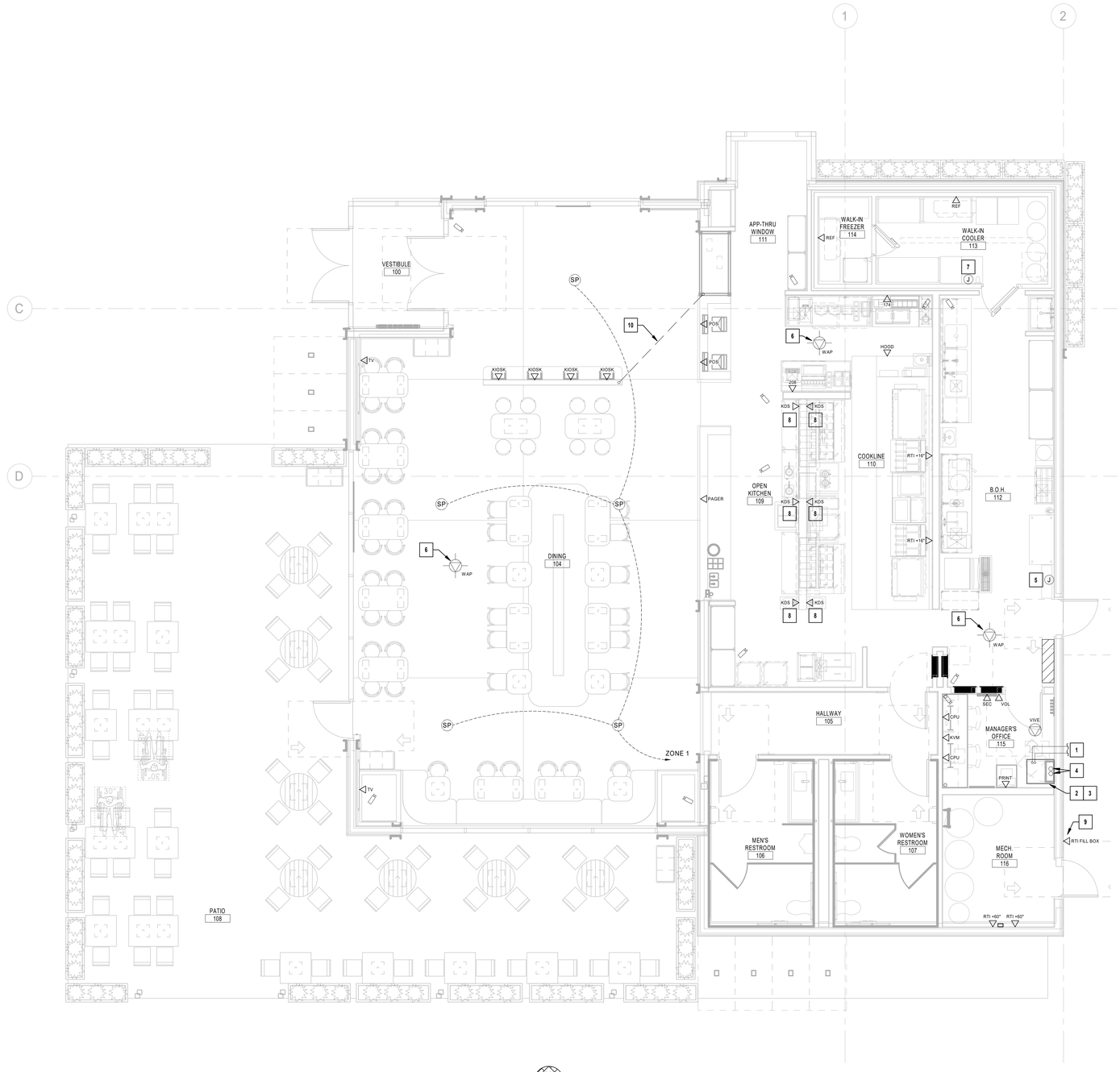
AREA	CAMERAS	SPEAKERS
BACK OF HOUSE/KITCHEN (WHITE CEILING)	WHITE	WHITE
FRONT OF HOUSE/DINING (LIGHT CEILING)	WHITE	WHITE

GENERAL NOTES:
A. EXPOSED LOW VOLTAGE CABLING SHALL MATCH THE DEVICE COLORS SPECIFIED ABOVE.

CAMERA WIRING LEGEND

SYMBOL	CABLE REQUIREMENTS			ADDITIONAL	NOTES
TYPE	QTY	TYPE	ORIGIN	INFORMATION	
▭X	1	CAT 5E	IT RACK		

GENERAL NOTES:
A. VERIFY FINAL LOCATIONS AND AIMING OF ALL CAMERAS WITH TENANT.
B. PROVIDE SERVICE LOOPS SPOOLED AND HUNG NEATLY AT BOTH ENDS OF EACH CABLE 15'-0" AT CAMERA LOCATION AND 5'-0" AT THE IT RACK.
C. SUSPENDED INTERIOR CAMERAS TO 10'-0" AFF IN AREAS OPEN TO STRUCTURE.
D. INSTALL EXTEIOR CAMERAS AT 11'-0" AFG UNLESS NOTED OTHERWISE.
E. PROVIDE WP JUNCTION BOX WITH 3/4" CONDUIT STUBBED INTO TENANT SPACE FOR ALL EXTERIOR CAMERAS.



1 LOW VOLTAGE SYSTEMS PLAN
1/4" = 1'-0"

LOW VOLTAGE OUTLET LEGEND

SYMBOL	CABLE REQUIREMENTS			ADDITIONAL	NOTES
TYPE	QTY	TYPE	ORIGIN	INFORMATION	
174 ▽	2	CAT 5E	IT RACK	+60" AFF FOR ITEM #174 KDS	1
208 ▽	2	CAT 5E	IT RACK	+60" AFF FOR ITEM #208 KDS	1
CPU ▽	4	CAT 5E	IT RACK	+18" AFF FOR WORKSTATION	3
HOOD ▽	1	CAT 5E	IT RACK	IN HOOD CONTROL CABINET	
KDS ▽	2	CAT 5E	IT RACK	IN OVERSHELF FOR KDS SYSTEM	2
KVM ▽	2	CAT 5E	IT RACK	+42" AFF FOR KVM SWITCH	3
KIOSK ▽	2	CAT 5E	IT RACK	+26" AFF FOR KIOSK	3
PAGER ▽	2	CAT 5E	IT RACK	+26" AFF FOR PAGER SYSTEM	2
POS ▽	4	CAT 5E	IT RACK	+26" AFF FOR POS SYSTEM	2
PRINT ▽	2	CAT 5E	IT RACK	+48" FOR PRINTER ON SAFE	3
REF ▽	1	CAT 5E	IT RACK	AT EVAPORATOR FOR MONITORING	
RTI ▽	-	-	-	AS NOTED FOR RTI SYSTEM	6
SEC ▽	1	CAT 5E	IT RACK	+72" FOR SECURITY ALARM PANEL	3
TV ▽	2	CAT 5E	IT RACK	+96" AFF FOR WALL MOUNT TV	3
	1	COAX			
VIVE ▽	1	CAT 5E	IT RACK	AT CEILING FOR LUTRON VIVE	3
VOL ▽	1	CAT 5E	IT RACK	+48" FOR VOLUME CONTROL	3
WAP ▽	2	CAT 5E	IT RACK	AT CEILING FOR WIRELESS	5

GENERAL NOTES:
A. PROVIDE 4" SQUARE BOX WITH SINGLE GANG PLASTER RING AND 3/4" EMT TO ACCESSIBLE CEILING AREA FOR ALL LOW VOLTAGE WALL OUTLETS UNO.
B. PROVIDE 4" OCTAGON BOX FOR ALL LOW VOLTAGE CEILING OUTLETS UNO.

SCHEDULED NOTES:
1. REFER TO KITCHEN EQUIPMENT ROUGH-IN PLANS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF LOW VOLTAGE OUTLETS FOR KITCHEN DATA SYSTEM.
2. LOW VOLTAGE OUTLET TO BE INSTALLED IN KITCHEN OVERSHELF ABOVE CHEF'S COUNTER. REFER TO KEC SHOP DRAWINGS FOR OUTLET LOCATIONS. PROVIDE 15' OF EXCESS CABLE FOR ALL DATA OUTLETS IN OVERSHELF.
3. REFER TO ARCHITECTURAL INTERIOR ELEVATIONS FOR EXACT LOCATION AND MOUNTING HEIGHTS OF LOW VOLTAGE OUTLETS FOR OFFICE EQUIPMENT AND TELEVISIONS.
4. PROVIDE DATA OUTLET AT STRUCTURE ABOVE FOR CEILING MOUNTED TELEVISION. ROUTE CABLES CONCEALED DOWN INSIDE OF TELEVISION SUPPORT TUBE TO TELEVISION.
5. PROVIDE DATA OUTLET FOR WIRELESS ACCESS POINT AT SAME ELEVATION AS LIGHTING FIXTURES.
6. CABLING PROVIDED BY OWNER'S VENDOR. PROVIDE OUTLET BOX WITH BLANK COVER PLATE, CONDUIT, AND PULL STRING TO ACCESSIBLE CEILING AREA PER GENERAL NOTE 'A'.

GENERAL LOW VOLTAGE SYSTEMS NOTES:

1. REFER TO ARCHITECTURAL PLAN FOR RESPONSIBILITY SCHEDULE
2. FURNISH AND INSTALL (PULL) ALL CABLE, NO TERMINATIONS REQUIRED
3. ALL LOW VOLTAGE CABLES TO BE CAT5E PLENUM-RATED. CABLE SHOULD NOT BE IN CONDUIT UNLESS REQUIRED BY CODE
4. ALL SPEAKER WIRE TO BE 16-GAUGE AWG. CABLE SHOULD NOT BE IN CONDUIT UNLESS REQUIRED BY CODE.
5. PROVIDE BACK BOXES AND STUB UPS TO ABOVE THE CEILING FOR EACH DATA LOCATION
6. ALL DATA CABLES TO BE HOME RUNS FROM THE DEVICE TO THE MANAGER'S OFFICE, WITH THE EXCEPTION OF SPEAKERS THAT SHOULD BE DAISY-CHAINED TOGETHER AS SHOWN ON THE PLAN.
7. PROVIDE SERVICE LOOPS SPOOLED AND HUNG NEATLY AT BOTH ENDS OF EACH CABLE: 3'-0" AT THE FINAL DEVICE HEIGHT AND 5'-0" AT THE IT RACK, UNLESS NOTED OTHERWISE
8. ALL LOW VOLTAGE CABLES TO BE TAGGED AND CLEARLY LABELED ON BOTH ENDS WITH A P-TOUCH OR OTHER PRINTED LABEL
9. GENERAL CONTRACTOR RESPONSIBLE FOR COORDINATING CONDUIT/ INFRASTRUCTURE WORK FOR PATHWAYS FROM BASE BUILDING IT CLOSET TO SHAKE SHACK'S MANAGER OFFICE.
10. WHEN RIGID CONDUIT IS REQUIRED, ALL EXPOSED CONDUIT SHALL BE RIGID TYPE CONDUIT AND ROUTED PARALLEL TO BUILDING LINES. INSTALL ALL CONDUITS PLUMB AND LEVEL WHERE EXPOSED TO VIEW.
11. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS OF ALL THERMOSTATS, TEMPERATURE, AND HUMIDITY SENSORS. PROVIDE CONDUIT AND BACK BOX SIZE AS REQUIRED FOR ALL HVAC CONTROLS. CONDUIT FOR LOW VOLTAGE CONTROLS SHALL TERMINATE AT STRUCTURE ABOVE WITH BUSHING. CONDUIT SYSTEM FOR LINE VOLTAGE CONTROLS SHALL ROUTE CONTINUOUS TO EQUIPMENT SERVED.
12. PROVIDE (1) 3/4" SLEEVE FOR EACH EXTERIOR DEVICE TO INSIDE OF SPACE
13. PROVIDE (1) 1" EMT CONDUIT FROM ABOVE THE IT RACK TO ROOF FOR SATELLITE DISH, IF REQUIRED. VERIFY WITH SHAKE SHACK IF REQUIRED.
14. PROVIDE ALL EMPTY CONDUITS WITH PULL STRINGS.
15. CONSULT DOCUMENTATION FOR FINAL INSTALLATION REQUIREMENTS. VERIFY WITH ARCHITECT AND SHAKE SHACK FOR CONFLICTS.
16. PROVIDE CONDUIT, BUSHINGS, SLEEVES, AND PROTECTIVE GROMMETS FOR ALL DATA CABLING AS REQUIRED.
17. PROVIDE ALL-THREAD AT EACH CAMERA AND SPEAKER LOCATION SHOWN ON PLAN FROM CEILING DECK TO 1'-0" BELOW LIGHT TRACK HEIGHT (REFER TO ARCHITECTURAL PLANS FOR LIGHT TRACK HEIGHT). AT CAMERA LOCATIONS, PROVIDE (1) 4" ROUND / OCTAGON JUNCTION BOX ATTACHED TO BOTTOM OF ALL-THREAD.

LOW VOLTAGE SYSTEMS PLAN NOTES:

1. PROVIDE (2) 2" CONDUITS FOR TELEPHONE AND CABLE TV FROM UTILITY POINT OF CONNECTION AT UTILITY POLE OR PEDESTAL TO MANAGER'S OFFICE, UNLESS PROVIDED BY LANDLORD (REFER TO FINAL LANDLORD WORK LETTER).
2. PROVIDE TELEPHONE 66 BLOCK FOR NEW TENANT SERVICE MOUNTED IN THE MANAGER'S OFFICE NEAR THE IT RACK. LEVITON #40066 SERIES, WHITE WITH ORANGE COVER OR EQUIVALENT.
3. PROVIDE, INSTALL, AND TERMINATE 25-PAIR CABLE AT BOTH ENDS, INCLUDING AT THE 66 BLOCK IN THE MANAGER'S OFFICE. TESTED & VERIFY.
4. PROVIDE (2) 3" CONDUITS ABOVE THE IT RACK TO ABOVE THE CEILING FOR CABLE MANAGEMENT. ROUTE ALL DATA CABLES THROUGH ONE OF THE 3" CONDUITS AND ALL OTHER CABLES THROUGH THE OTHER 3" CONDUITS. PROVIDE SLEEVES THOUGH WALL ABOVE CEILINGS AT FULL-HEIGHT WALLS.
5. PROVIDE FLUSH MOUNT OCTAGON BOX AT 48" AFF WITH 1" CONDUIT ABOVE ACCESSIBLE CEILING FOR HOOD FIRE SUPPRESSION SYSTEM CONTRACTOR.
6. PROVIDE DATA OUTLET FLUSH IN CEILING FOR WIRELESS ACCESS POINT. REFER TO PLANS FOR LOCATION.
7. PROVIDE JUNCTION BOX SURFACE MOUNTED INSIDE THE WALK-IN COOLER AT 6" AFF FOR ALARM PANIC BUTTON. ROUTE 3/4" EMT WITH PULL-WIRE TO ABOVE CEILING IN THE MANAGER'S OFFICE FOR ALARM CABLING BY OTHERS.
8. ROUTE DATA CABLES FOR CHEF'S COUNTER DOWN FULL HEIGHT CHASE WALL. COORDINATE LOCATIONS OF DATA OUTLETS AT CHEF'S COUNTER WITH KITCHEN EQUIPMENT AND PULL CABLES THROUGH CHEF'S COUNTER TO FINAL LOCATION.
9. PROVIDE 3" CONDUIT WITH PULL-STRING FROM RTI FILL BOX TO ACCESSIBLE CEILING AREA FOR RTI CABLING BY OWNER'S VENDOR. FIELD VERIFY FINAL LOCATION OF RTI FILL BOX PRIOR TO CONDUIT INSTALLATION.
10. PROVIDE 1-1/4" CONDUIT UNDERGROUND FROM KIOSK TABLE TO NEAREST FULL HEIGHT WALL FOR DATA CABLES.

NOTE:
REFER TO KITCHEN EQUIPMENT ELECTRICAL ROUGH-IN PLAN, SHEET KE101, FOR DIMENSIONED ROUGH-IN LOCATIONS, MOUNTING HEIGHTS, AND ADDITIONAL REQUIREMENTS FOR LOW VOLTAGE OUTLETS LOCATED IN THE KITCHEN AND FOOD SERVICE AREAS.

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DEAN WAY CHANDLER
062.069925
OF ILLINOIS

Nov 23 2020

Drawing Title
LOW VOLTAGE SYSTEMS PLAN

Job No.	Drawn
204461	ELT
Scale	**Date**
1/4" = 1'-0"	11/09/20

Sheet No.
E102

DEAN W. CHANDLER
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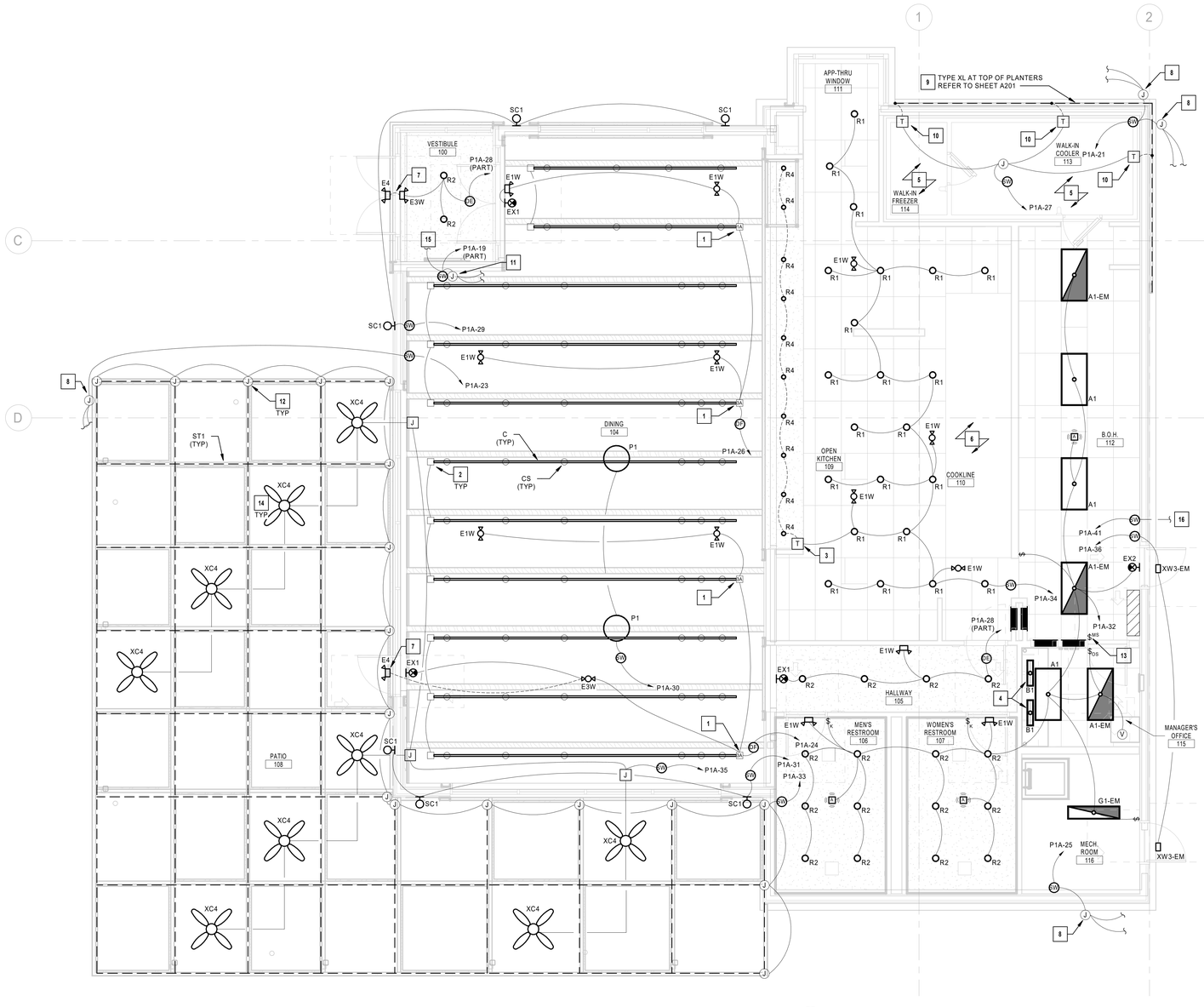

1 ELECTRICAL LIGHTING PLAN
1/4" = 1'-0"

GENERAL LIGHTING NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS AND ELEVATIONS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF ALL LIGHT FIXTURES. COORDINATE DIMMER/SWITCH BANK LOCATIONS WITH ARCHITECT PRIOR TO ROUGH IN.
2. PROVIDE AIMING OF ALL ADJUSTABLE LIGHT FIXTURES AFTER SETUP IS COMPLETE TO EVENLY ILLUMINATE TABLE SURFACES, SIGNAGE, DECOR, AND EMERGENCY EGRESS PATHS. COORDINATE AIMING OF NORMAL FIXTURES WITH ARCHITECT. REFER TO ARCHITECTURAL EGRESS PATH PLAN ON SHEET A002 FOR AIMING OF EMERGENCY LIGHT FIXTURES.
3. REFER TO LIGHT FIXTURE SCHEDULE ON SHEET E620 FOR LIGHT FIXTURE TYPES AND REQUIREMENTS.
4. REFER TO LIGHTING CONTROL DEVICE SCHEDULE ON SHEET E620 FOR OCCUPANCY SENSOR TYPES AND CONTROL INFORMATION.
5. CONNECT ALL EXIT SIGNS AND EMERGENCY LIGHTING UNITS TO THE INDICATED CIRCUIT WITH A SEPARATE AND UN-SWITCHED CONDUCTOR BYPASSING ALL CONTROLS AND CONTACTORS. REFER TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS FOR PROPER INSTALLATION AND TESTING.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT COORDINATION AND CONFLICT ISSUES BE RESOLVED BY THE ARCHITECT AND CONTRACTOR PRIOR TO INSTALLATION OF LIGHT FIXTURES. CONTRACTOR SHALL BE HELD FINANCIALLY RESPONSIBLE FOR COMPLYING WITH REQUEST THAT THE ARCHITECT BE CONTACTED IN CASE OF CONFLICT WITH LIGHTING POSITIONS AS INDICATED ON THIS SHEET AND WITH ANY OTHER TRADES.
7. ROUTE ALL EXPOSED, RIGID CONDUIT TIGHT TO STRUCTURE, PARALLEL TO BUILDING LINES AND IN UNISTRUT CABLE/PIPE TRAY WHERE POSSIBLE. COORDINATE CONDUIT ROUTING AND INSTALLATION WITH OTHER TRADES PRIOR TO ROUGH-IN. SUPPORT CONDUIT FROM STRUCTURE NOT ROOF DECK. MAINTAIN 2" MIN SPACING FROM BOTTOM OF ROOF DECK TO PREVENT ROOFING SCREWS FROM PENETRATING CONDUITS. DO NOT ROUTE CONDUIT/RACEWAY ACROSS SKYLIGHTS.
8. THROUGH WIRING OF RECESSED LIGHT FIXTURES, IN SUSPENDED CEILINGS, IS NOT PERMITTED. CONNECT EACH LIGHT FIXTURE BY A WHIP TO A JUNCTION BOX. PROVIDE CABLE WHIPS OF SUFFICIENT LENGTHS TO ALLOW FOR RELOCATING EACH LIGHT FIXTURE WITHIN A 5-FOOT RADIUS OF ITS INSTALLED LOCATION, BUT NOT EXCEEDING 6 FEET IN UNSUPPORTED LENGTHS.
9. ALL LIGHT FIXTURES OVER KITCHEN AND FOOD PREP AREAS SHALL BE PROVIDED WITH PROTECT-A-LAMP COVERS OR EQUIVALENT SHIELDED OR SHATTERPROOF LAMPS. CONTRACTOR SHALL VERIFY THAT ALL AREAS ARE PROPERLY PROTECTED AFTER STORE SET-UP IS COMPLETE.
10. ALL INTERNALLY ILLUMINATED SIGNS SHALL BE PROVIDED WITH AN ACCESSIBLE DISCONNECTING MEANS. VERIFY EACH SIGN IS FURNISHED WITH AN INTEGRAL DISCONNECT SWITCH. PROVIDE WEATHERPROOF DISCONNECT SWITCHES WITHIN SITE OF ALL SIGNS AS REQUIRED.
11. PROVIDE FUNCTIONAL TESTING OF LIGHTING CONTROL DEVICES INCLUDING OCCUPANCY SENSORS, AUTOMATIC TIME OF DAY CONTROLS, AND DAY-LIT AREA CONTROLS. LIGHTING CONTROLS SHALL BE TESTED IN ACCORDANCE WITH IECC C408.

LIGHTING PLAN NOTES:

1. PROVIDE LIGHTING TRACK POWER END FEED CURRENT LIMITER DEVICE WITH RATING AS SHOWN. REFER TO LIGHT FIXTURE SCHEDULE, SHEET E620 FOR COMPLETE MODEL NUMBER.
2. PROVIDE LIGHTING TRACK POWER END FEEDS WITH APPROPRIATE POLARITY TO CONNECT NON-ADJOINING TRACK LIGHTING SECTIONS AS SHOWN.
3. PROVIDE REMOTE LED DRIVER ABOVE ACCESSIBLE CEILING FOR LOW VOLTAGE LIGHT FIXTURES, REFER TO LIGHT FIXTURE SCHEDULE, SHEET E620.
4. PROVIDE UNDER CABINET LIGHT FIXTURES WITH CORD AND PLUG CONNECTIONS. REFER TO POWER PLANS FOR RECEPTACLE LOCATIONS.
5. INSTALL LIGHT FIXTURES SHIPPED LOOSE WITH WALK-IN COOLER. REFER TO POWER PLANS FOR CIRCUIT CONTINUATION.
6. LIGHT FIXTURES FURNISHED WITH EXHAUST HOOD. EQUIPMENT MANUFACTURER SHALL BE RESPONSIBLE FOR PROVIDING SUFFICIENT ILLUMINATION TO COMPLY WITH LOCAL REQUIREMENTS. REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR CONNECTION INFORMATION AND CONNECT COMPLETE.
7. CONNECT EXTERIOR EMERGENCY LIGHTING REMOTE HEADS TO INTERIOR EMERGENCY LIGHTING BATTERY UNIT INDICATED.
8. PROVIDE JUNCTION BOX AND CONDUIT AT ACCESSIBLE LOCATION AS DIRECTED BY OWNER, FOR CONNECTION OF STOREFRONT SIGNAGE. COORDINATE REQUIREMENTS WITH OWNER AND SIGN INSTALLER PRIOR TO ROUGH-IN AND ADJUST ELECTRICAL PROVISIONS AS NECESSARY. PROVIDE CONCEALED CONDUIT THRU WALL FOR CONNECTION TO SIGN AND CONCEAL CONDUIT FROM CUSTOMER VIEW.
9. PROVIDE LINEAR LED TAPE LIGHTING AT TOP OF PLANTERS. INSTALL LED TAPE LIGHTING IN PROTECTIVE ALUMINUM CHANNEL AND END TO END FOR CONTINUOUS ILLUMINATION BUT WIRE EACH STRIP SEPARATELY TO DRIVER PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. REFER TO SIGNAGE PACKAGE FOR INSTALLATION DETAILS. WIRING OF LINEAR LED TAPE LIGHTING SHALL OCCUR AFTER SIGN BAND LETTERS AND BACKER PLATE ARE INSTALLED. PROVIDE END FEED CABLES AND ALL REQUIRED CONNECTORS AND SECURE ALL CABLING CONCEALED FROM VIEW.
10. PROVIDE REMOTE LED DRIVER FOR LINEAR LED LIGHTING. CONNECT EACH LENGTH OF LED STRIP IN PARALLEL TO REMOTE DRIVER PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE ALL REQUIRED CONNECTORS AND SECURE ALL LOW VOLTAGE CABLING CONCEALED FROM VIEW. PROVIDE WATERPROOF ENCLOSURES FOR LED DRIVERS INSTALLED OUTSIDE AND COORDINATE EXACT LOCATIONS OF LED LIGHTING CHANNEL AND REMOTE DRIVERS WITH ARCHITECT.
11. PROVIDE JUNCTION BOX FOR CONNECTION TO NEON SIGN POWER SUPPLY. PROVIDE (2) 1/2" FLEXIBLE METAL CONDUITS CONCEALED IN WALL FROM NEON SIGN TRANSFORMER TO SIGN TERMINATION PLATES FOR GTO-15 WIRING. MAXIMUM CONDUIT/CABLE LENGTH IS 15'.
12. PROVIDE WEATHERPROOF JUNCTION BOX FOR CONNECTION TO PATIO STRING LIGHTS.
13. PROVIDE LUTRON VIVE MASTER CONTROL SWITCH. VERIFY REQUIREMENTS WITH OWNER AND ARCHITECT PRIOR TO BID. REFER TO SHEET E620 FOR MORE INFORMATION.
14. PROVIDE EXTERIOR WET LOCATION CEILING FAN, SEE LIGHT FIXTURE SCHEDULE ON SHEET E620 FOR MORE INFORMATION. COORDINATE EXACT LOCATIONS, MOUNTING DETAILS, AND CONDUIT ROUTING WITH OWNER PRIOR TO ROUGH-IN. INSTALL CONDUIT CONCEALED FROM VIEW AS MUCH AS PRACTICAL.
15. CONNECT TO INTERIOR SIGNAGE RECEPTACLES. REFER TO SHEET E101.
16. CONNECT TO EXTERIOR DRIVE THRU SIGNAGE AND LIT BOLLARDS. REFER TO SHEET E010 FOR CONTINUATION OF CIRCUIT.

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8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL. CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

EXPIRATION DATE: 11/30/21

LICENSED PROFESSIONAL ENGINEER
DEAN WAY
CHANDLER
062.069925
OF ILLINOIS

Nov 23 2020

Drawing Title
ELECTRICAL LIGHTING PLAN

Job No.	Drawn
204461	ELT

Scale	Date
1/4" = 1'-0"	11/09/20

Sheet No.
E120

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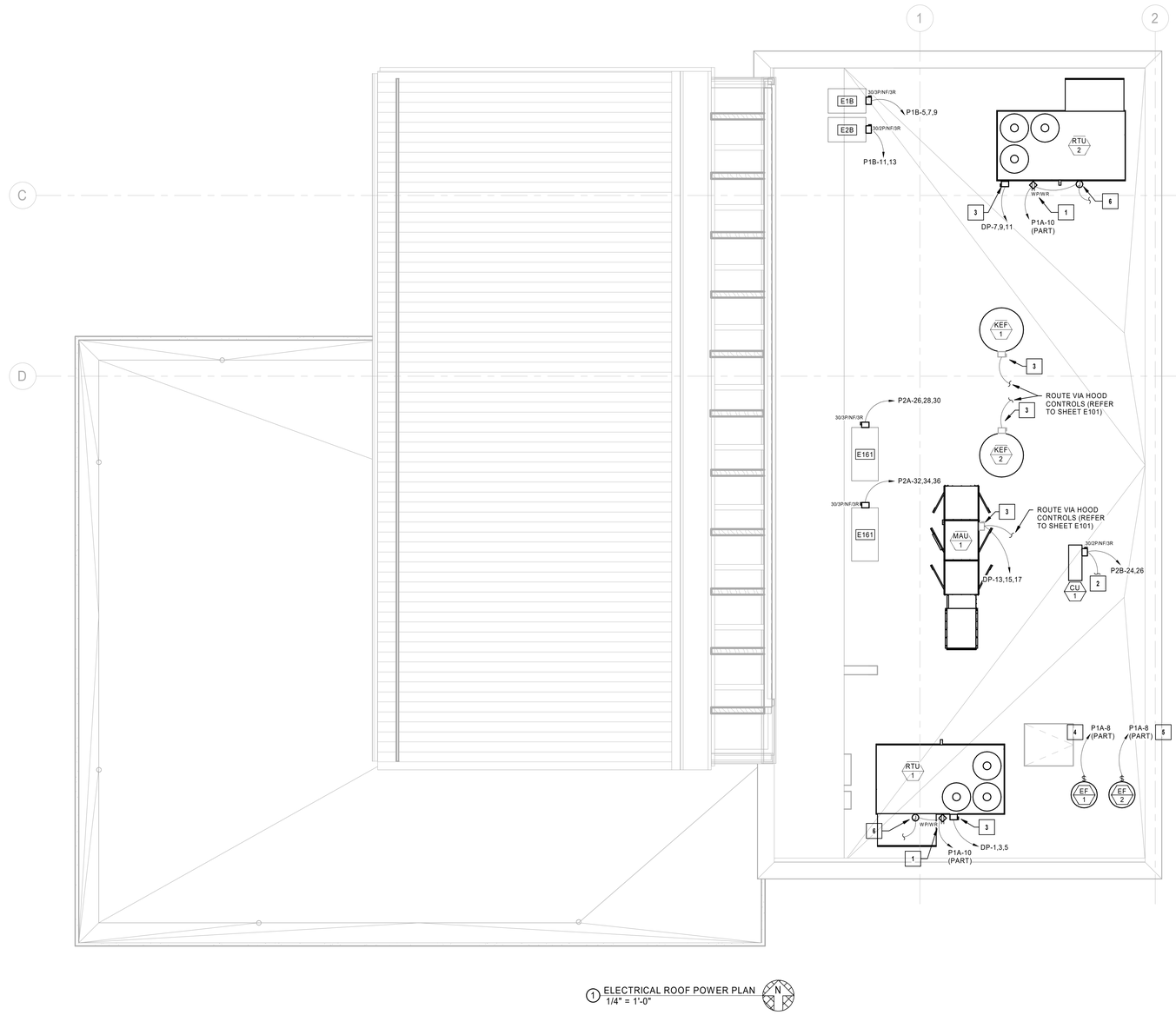
DEAN W. CHANDLER

GENERAL ELECTRICAL ROOF PLAN NOTES:

1. MECHANICAL EQUIPMENT LOCATIONS ON THIS SHEET HAVE BEEN ADJUSTED FOR CLARITY. REFER TO MECHANICAL ROOF PLAN, SHEET M150 AND TO ARCHITECTURAL ROOF PLAN, SHEET A150 FOR EQUIPMENT LOCATIONS.
2. COORDINATE ALL ROOF PENETRATIONS WITH REFRIGERATION PIPING. REFER TO ARCHITECTURAL ROOF PLAN, SHEET A150 FOR ADDITIONAL REQUIREMENTS.

[#] ELECTRICAL ROOF PLAN NOTES:

1. PROVIDE CONNECTION TO FACTORY INSTALLED RTU MAINTENANCE RECEPTACLE AND ANY RELATED ACCESSORIES.
2. CONNECT TO INDOOR UNIT BELOW. REFER TO MANUFACTURER'S WIRING DIAGRAMS FOR CONNECTION. REFER TO SHEET M101 FOR INDOOR UNIT LOCATION.
3. EQUIPMENT PROVIDED WITH FACTORY INSTALLED DISCONNECT.
4. CONNECT TO TIME SWITCH FOR CONTROL. REFER TO SHEET M101 FOR LOCATION.
5. ROUTE EXHAUST FAN THROUGH THERMOSTAT IN MECHANICAL ROOM FOR CONTROL. REFER TO SHEET M101 FOR LOCATION.
6. PROVIDE CONNECTION FOR UV STERILIZATION LIGHT TRANSFORMER. COORDINATE REQUIREMENTS WITH MANUFACTURER PRIOR TO ROUGH-IN.



1 ELECTRICAL ROOF POWER PLAN
1/4" = 1'-0"

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LICENSED PROFESSIONAL ENGINEER
DEAN WAY CHANDLER
062.069925
OF ILLINOIS

Nov 23 2020

Drawing Title
ELECTRICAL ROOF PLAN

Job No.	Drawn
204461	ELT
Scale	Date
1/4" = 1'-0"	11/09/20

Sheet No.
E150

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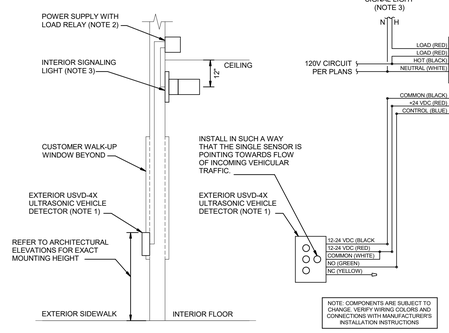

DETAIL VIEW | **SCHEMATIC DIAGRAM**

NOTES:

1. EXTERIOR ULTRASONIC VEHICLE DETECTOR: EMX INDUSTRIES, INC. USVD-4X OR APPROVED EQUIVALENT: NEMA 4 OR NEMA 4X RATED,12-24 VDC, VEHICLE DETECTOR WITH PRESENCE SENSING AND DELAY CAPABILITY. OPERATING RANGE 1FT TO 5FT. CONFIGURE SENSOR AS FOLLOWS:
   - DIP SWITCH SETTING TO: PRESENCE WITH 4 SEC DELAY
2. POWER SUPPLY WITH LOAD RELAY: WATTSTOPPER #BZ-150 OR APPROVED EQUIVALENT SENSOR POWER PACK WITH 24 VDC OUTPUT FOR EXTERIOR ULTRASONIC VEHICLE DETECTOR AND 20A, 120/277V LOAD CONTACTS FOR INTERIOR SIGNAL LIGHT. INSTALL POWER SUPPLY ABOVE ACCESSIBLE CEILING AND CONNECT TO EXTERIOR SENSOR AND INTERIOR LIGHT AS SHOWN. CONFIGURE POWER PACK AS FOLLOWS:
   - SET ON MODE TO: AUTO
3. INTERIOR SIGNALING LIGHT: TECH LIGHTING #700FMSPR CC S LED930 SOPRA FLUSH MOUNT WITH SATIN NICKEL FINISH.

NOTES AND SPECIFICATIONS

1 PICK UP WINDOW VEHICLE SENSOR DETAIL
NTS

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LICENSED PROFESSIONAL ENGINEER
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Nov 23 2020

Drawing Title
ELECTRICAL DETAILS

Job No.	Drawn
204461	ELT

Scale	Date
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Sheet No.
E501

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Division 26: GENERAL ELECTRICAL REQUIREMENTS

1. GENERAL INSTRUCTIONS

A. GENERAL REQUIREMENTS

All requirements under Division 01 and the general and supplementary conditions of these specifications apply to this section and division. Where the requirements of this section and division exceed those of Division 01, this section and division take precedence. Become thoroughly familiar with all its contents as to requirements that affect this division, section, or both. Work required under this division includes all material, equipment, appliances, transportation, services, and labor required to complete the entire system as required by the drawings and specifications, or reasonably inferred to be necessary to facilitate the function of each system as implied by the design and the equipment specified.

The specifications and drawings for the project are complementary, and any portion of work described in one shall be provided as if described in both. In the event of discrepancies, notify the Engineer and request clarification prior to proceeding with the Work involved.

Drawings are graphic representations of the work upon which the contract is based. They show the materials and their relationship to one another, including sizes, shapes, locations, and connections. They convey the scope of work, indicating the intended general arrangement of the systems without showing all of the exact details as to elevations, offsets, control lines, and other installation requirements. Use the drawings as a guide when laying out the work and to verify that materials and equipment will fit into the designated spaces, and which when installed per manufacturers' requirements, will ensure a complete, coordinated, satisfactory, and properly operating system.

B. DEFINITIONS

Division: References contained in this specification follow the numbering system defined in the Construction Specifications Institute (CSI) MasterFormat 2004 Edition. Specification Divisions 01 through 13 provided with this project may reference the CSI MasterFormat 1995 Edition. The corresponding division references between the 2004 Edition and 1995 Edition are as follows:

2004 Edition	1995 Edition
1. Division 21 - Fire Suppression	Division 15
2. Division 22 - Plumbing	Division 15
3. Division 23 - HVAC	Division 15
4. Division 26 - Electrical	Division 16
5. Division 27 - Communications	Division 16
6. Division 28 - Electronic Safety and Security	Division 16

Furnish: "to supply and deliver to the project site, ready for unloading, unpacking, assembling, installing, and similar operations."

Install: "to perform all operations at the project site including, but not limited to, the actual unloading, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, testing, commissioning, starting up and similar operations, complete, and ready for the intended use."

Provide: "to furnish and install."

Furnished by Owner (or Owner-Furnished) or Furnished by Others: "an item furnished by the Owner or under other divisions or contracts, and installed under the requirements of this division, complete, and ready for the intended use, including all items and services incidental to the work necessary for proper installation and operation. Include the installation under the warranty required by this division.

Engineer: Where referenced in this Division, "Engineer" is the Engineer of Record and the Design Professional for the work under this division, and is a consultant to, and an authorized representative of the Architect, as defined in the General and/or Supplementary Conditions. When used in this division, Engineer means increased involvement by and obligations to the Engineer, in addition to involvement by and obligations to the Architect.

AHJ: The local code and/or inspection agency (Authority) Having Jurisdiction over the Work.

CLCATT: Certified Lighting Controls Acceptance Test Technician. A professional certified to perform acceptance tests and complete the documentation required for nonresidential acceptance tests as required by the California Building Energy Efficiency Standards. Technician shall be certified by an authorized lighting controls acceptance test technician certification provider.

NRTL: Nationally Recognized Testing Laboratory, as defined and listed by OSHA in 29 CFR 1910.7 (e.g., UL, ETL, CSA), and acceptable to the AHJ over this project. Nationally recognized testing laboratories and standards listed are used only to represent the characteristics required and are not intended to restrict the use of other NRTLs that are acceptable to the AHJ and standards that meet the specified criteria.

Homerun: That portion of an electrical circuit originating at a junction box, termination box, receptacle, or switch with termination at an electrical panelboard. Note: Where MC cable is utilized for receptacle and/or lighting branch circuiting loads, the originating point of the homerun shall be at the first load in the circuit or at a junction box located in an accessible ceiling space as close as possible to the first load.

Substitution: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor. Substitutions include Value Engineering proposals.
1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

The terms "approved equal", "equivalent", or "equal" are used synonymously and shall mean "accepted by or acceptable to the Engineer as equivalent to the item or manufacturer specified". The term "approved" shall mean labeled, listed, certified, or all three, by an NRTL, and acceptable to the AHJ over this project.

C. PRE-BID SITE VISIT

Prior to submitting bid, visit the site of the proposed work and become fully informed as to the conditions under which the work is to be done. Failure to comply with this requirement shall not be considered sufficient justification to request or obtain extra compensation over and above the contract price.

D. MATERIAL AND WORKMANSHIP

Provide new material, equipment, and apparatus under this contract unless otherwise stated herein, of best quality normally used for the purpose in good commercial practice, and free from defects. Model numbers listed in the specifications or shown on the drawings are not necessarily intended to designate the required trim, written descriptions of the trim govern model numbers.

Provide markings or a nameplate for all material and equipment identifying the manufacturer and providing sufficient reference to establish quality, size, and capacity. All workmanship shall be of the finest possible by experienced mechanics of the proper trade. In general, provide the following quality grade(s) for all materials and equipment.

Commercial specification grade:

Provide all hoists, scaffolds, staging, runways, tools, machinery, and equipment required for the performance of the electrical work. Store and maintain material and equipment in clean condition, and protected from weather, moisture, and physical damage.

Furnish only material and equipment that are listed, labeled, certified, or all three, by an NRTL whenever any listing or labeling exists for the types of material and equipment specified.

At a minimum, general work practices for electrical construction shall be in accordance with NECA 1 (latest edition), "Standard Practices for Good Workmanship in Electrical Construction".

E. MANUFACTURERS

In other articles where lists of manufacturers are introduced, subject to compliance with requirements, provide products by one of the manufacturers specified.

Where a list is provided, manufacturers are listed alphabetically and not in accordance with any ranking or preference.

Where manufacturers are not listed, provide products subject to compliance with requirements from manufacturers that have been actively involved in manufacturing the specified product for no less than 5 years.

F. COORDINATION

Coordinate all work with other divisions and trades so that various components of the systems are installed at the proper time, fit the available space, and allow proper service access to those items requiring maintenance. Components which are installed without regard to the above shall be relocated at no additional cost to the Owner.

Unless otherwise indicated, the General Contractor shall provide chases and openings in building construction required for installation of the systems specified herein. Contractor shall furnish the General Contractor with information where chases and openings are required. Contractor shall keep informed as to the work of other trades engaged in the construction of the project and shall execute work in a manner as to not interfere with or delay the work of other trades.

Figured dimensions shall be taken in preference to scale dimensions. Contractor shall take his own measurements at the building, as variations may occur. Contractor shall be held responsible for errors that could have been avoided by proper checking and inspection.

Provide materials with trim that will properly fit the types of ceiling, wall, or floor finishes actually installed. Model numbers listed in the specifications or shown on the drawings are not intended to designate the required trim.

Make all offsets required to clear equipment, beams, and other structural members, and to facilitate concealing raceways in the manner anticipated in the design. Provide materials with trim that will fit properly the types of ceiling, wall, or floor finishes actually installed.

G. ORDINANCES AND CODES

Work performed under this contract shall, at a minimum, be in conformance with applicable national, state and local codes having jurisdiction. Equipment furnished and associated installation work performed under this contract shall be in strict compliance with current applicable codes adopted by the local AHJ, including any amendments and standards as set forth by the following:
1. National Fire Protection Association (NFPA)
2. Underwriters Laboratories (UL)
3. Occupational Safety and Health Administration (OSHA)
4. American National Standards Institute (ANSI)
5. American Society of Testing Materials (ASTM)
6. Rules and regulations of public utilities and municipal departments affected by connection of services.
7. Other national standards and codes where applicable.

Where the contract documents exceed the requirements of the referenced codes, standards, etc., the contract documents shall take precedence. Where conflicts between various codes, ordinances, rules, and regulations exist, comply with the most stringent.

Promptly bring all conflicts observed between codes, ordinances, rules, regulations, referenced standards, and these documents to the attention of the Architect and Engineer for final resolution. Contractor will be held responsible for any violation of the law.

Procure and pay for permits and licenses required for the accomplishment of the work herein described. Where required, obtain, pay for, and furnish certificates of inspection to Owner. Provide all safety lights, guards, and warning signs required for the performance of the work and for the safety of the public.

H. PROTECTION OF EQUIPMENT AND MATERIALS

Store and protect from damage equipment and materials delivered to job site. For materials and equipment susceptible to changing weather conditions, dampness, or temperature variations, store inside in conditioned spaces. For materials and equipment not susceptible to these conditions, cover with waterproof, tear-resistant, heavy tarp or polyethylene plastic as required to protect from plaster, dirt, paint, water, or physical damage. Equipment and material damaged by construction activities shall be rejected, and Contractor shall furnish new equipment and material of a like kind at his own expense.

Keep premises broom clean of foreign material created during work performed under this contract. Conduit, equipment, etc. shall have a neat and clean appearance at the termination of the work.

Plug or cap open ends of conduits while stored and installed during construction when not in use to prevent the entrance of debris into the systems.

I. SUBSTITUTIONS

Materials, products, equipment, and systems described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by the proposed substitution. The base bid shall include only the products from manufacturers specifically named in the drawings and specifications. To request a substitution, request the Substitution Request Form from the Architect or Engineer. Complete and send the Substitution Request From for each material, product, equipment, or system that is proposed to be substituted. The burden of proof of the merit of the proposed substitution is upon the proposer.

Unless stated otherwise in writing to the Engineer by the Contractor, Contractor warrants to the Engineer, Architect, and Owner the following:
1. Proposed substitution has been fully investigated and determined to meet or exceed the specified Work in all respects unless stated otherwise in the substitution request.
2. Proposed substitution is consistent with the Contract Documents and will produce indicated results, including functional clearances, maintenance service, and sourcing of replacement parts.
3. Proposed substitution has received necessary approvals of authorities having jurisdiction.
4. Same warranty will be furnished for proposed substitution as for specified Work.
5. If accepted substitution fails to perform as required, Contractor shall replace substitute material or system with that originally specified and bear costs incurred thereby.
6. Coordination, installation and changes in the Work as necessary for accepted substitution will be complete in all respects.

No substitutions will be considered unless the Substitution Request Form is completed and attached with the appropriate substitution documentation. No substitution will be considered prior to receipt of bids unless written request for approval to bid has been received by the Engineer at least ten (10) calendar days prior to the date for receipt of bids.

If the proposed substitution is approved prior to receipt of bids, such approval will be stated in an addendum. Bidders shall not rely upon approvals made in any other way. Verbal approval will not be given. No substitutions will be considered after the contract is awarded unless specifically provided in the contract documents.

Provide factory generated point-by-point calculations for all exterior light fixtures (photometric files supplied so the engineer can generate a point-by-point do not suffice for the point-by-point calculations). Provide interior point-by-point calculations at the discretion of the engineer.

J. SUBMITTALS

Assemble and submit for review shop drawings, material lists, manufacturer product literature for equipment to be furnished, and items requiring coordination between contractors under this contract. Provide submittals in sufficient detail so as to demonstrate compliance with these Contract Documents and the design concept. Prior to transmitting submittals, verify that the equipment submitted is mutually compatible with and suitable for the intended use, will fit the available space, and maintain manufacturer recommended service clearances. If the size of equipment furnished makes necessary any change in location or configuration, submit a shop drawing showing the proposed layout.

Transmit submittals as early as required to support the project schedule. Allow two weeks for Engineer review time, plus to/from mailing time via the Architect, plus a duplication of this time for resubmittals, if required. Only resubmit those sections requested for resubmittal.

Submittals shall contain the project name, applicable specification section, submittal data, equipment identifications acronym as used on the drawings, and the Contractor's stamp. The stamp shall certify that the submittal has been checked by the Contractor, complies with the drawings and specifications, and is coordinated with other trades. Manufacturer product literature shall include shop drawings, product data, performance sheets, samples, and other submittals required by this division. Highlight, mark, list, or indicate the materials, performance criteria, and accessories that are being proposed. General product catalog data not specifically noted to be part of the specified product will be rejected and returned without review.

Submittals and shop drawings shall not contain firm name, logo, the seal, or signature of the Engineer. They shall not be copies of the work product of the Engineer. If the Contractor desires to use elements of such product, refer to paragraph "Electronic Drawing Files" for procedures to be used.

Separate submittals according to individual specification sections. Illegible submittals will be rejected and returned without review. Catalog data shall be properly bound, identified, indexed and tabbed in a 3-ring binder. Each item or model number shall be clearly marked and accessories indicated. Label the catalog data with the equipment identification acronym or number as used on the drawings and include performance curves, capacities, sizes, weights, materials, finishes, wiring diagrams, electrical requirements and deviations from specified equipment or materials. Mark out inapplicable items. Shop drawings will be returned without review if the above mentioned requirements are not met.
Provide the quantity of submittals required by Division 01. If not indicated and hard-copy sets are provided, submit a minimum of six (6) copies. Refer to Division 01 for acceptance of electronic submittals for this project. For electronic submittals, Contractor shall submit the documents in accordance with the procedures specified in Division 01. Contractor shall notify the Architect and Engineer that the submittals have been posted. If electronic submittal procedures are not defined in Division 01, Contractor shall include the website, user name, and password information needed to access the submittals. For submittals sent by e-mail, Contractor shall copy the designated representatives of the Architect and Engineer. Contractor shall allow for the Engineer review time as specified above in the construction schedule. Contractor shall submit only the documents required to purchase the materials and/or equipment in the submittal.

The checking and subsequent acceptance of submittals by the Engineer and/or Architect shall not relieve the Contractor from responsibility for deviations from the drawings and specifications, errors in dimensions, details, sizes of equipment, or quantities, omissions of components or fittings, coordination of electrical requirements, and not coordinating items with actual building conditions and adjacent work. Contractor shall request and secure written acceptance from the Engineer and Architect prior to implementing any deviation.

K. ELECTRONIC DRAWING FILES

In preparation of shop drawings or record drawings, Contractor may request electronic drawing files in AutoCAD or DXF format via. Contact the Architect for written authorization and Engineer for the necessary agreement form. Release agreement form from the Engineer must be received before electronic drawing files will be sent.

L. RECORD DRAWINGS (AS-BUILT DRAWINGS)

During progress of the work in this division, Contractor shall maintain an accurate record of all changes made during the installation of the system. Upon completion of the work, accurately transfer all record information to three identical sets of the approved shop drawings. Insert one set into each copy of the manual described below.

See Division 01 and General Conditions for additional information.

M. OPERATION AND MAINTENANCE INSTRUCTIONS

During the course of construction, collect and compile a complete brochure of equipment furnished and installed on this project. Include operational and maintenance instructions, manufacturer's catalog sheets, wiring diagrams, parts lists, approved submittals and shop drawings, warranties, and descriptive literature as furnished by the equipment manufacturer. Include an inside cover sheet that lists the project name, date, Owner, Architect, Engineer, General Contractor, Sub-Contractor, and an index of contents.

Submit three copies of literature bound in approved binders with index and tabs separating equipment types to the Architect, for Engineer's review, at the termination of the work. Paper clips, staples, rubber bands, loose-leaf binding, and mailing envelopes are not considered approved binders. Final approval of systems installed under this contract shall be withheld until this equipment brochure is received and deemed complete by the Architect and Engineer. Instruct workmen to save required literature shipped with the equipment itself for inclusion in this brochure.

Include Record Drawings as described above.

Refer to Division 01 for acceptance of electronic manuals for this project. For electronic manuals, refer to paragraph "Submittals" for requirements.

N. TRAINING

At a time mutually agreed upon between the Owner and Contractor, provide the services of a factory trained and authorized representative to train Owner's designated personnel on the operation and maintenance of the equipment provided for this project.

Provide training to include, but not be limited to, an overview of the system and/or equipment as it relates to the facility as a whole; operation and maintenance procedures and schedules related to startup and shutdown, troubleshooting, servicing, preventive maintenance and appropriate operator intervention; and review of data included in the operation and maintenance manuals.

Submit a certification letter to the Architect stating that the Owner's designated representative has been trained as specified herein. Letter shall include date, time, attendees and subject of training. The Contractor and the Owner's representative shall sign the certification letter indicating agreement that the training has been provided.

Schedule training with Owner with at least 7 days advance notice.

O. WARRANTIES

Warrant each system and each element thereof against all defects due to faulty workmanship, design, or material for a period of 12 months from date of Substantial Completion, unless specific items are noted to carry a longer warranty in these construction documents or manufacturer's standard warranty exceeds 12 months. Remedy all defects occurring within the warranty period(s) as stated in the General Conditions and Division 01.

Warranties shall include labor and material, including travel expenses. Make repairs or replacements without any additional costs to the Owner, and to the satisfaction of the Owner, Architect, and Engineer.

Perform the remedial work promptly, upon written notice from the Engineer or Owner.

Also warrant the following additional items:
1. All raceways are free from obstructions, holes, crushing, or breaks of any nature.
2. All raceway seals are effective.
3. The entire electrical system is free from all short circuits and unwanted open circuits and grounds.

At the time of Substantial Completion, deliver to the Owner all warranties, in writing and properly executed, including term limits for warranties extending beyond the one year period and any actions the Owner must take in order to maintain warranty status. Each warranty instrument shall be addressed to the Owner and state the commencement date and term.

2. GENERAL MATERIALS AND INSTALLATION

A. BUILDING OPERATION

Comply with the schedule of operations as outlined in the architectural portions of this specification. Accomplish work requiring interruption of building operation at a time when the building is not in operation and only with written approval of building Owner and/or tenant. Coordinate interruption of building operation with the Owner and/or tenant a minimum of seven (7) days in advance of work.

B. EXISTING EQUIPMENT REUSE AND REMOVAL

Provide all demolition of existing electrical systems and new electrical system modifications required because of building remodeling, as noted on the Drawings, or necessary for proper operation and new construction. Remove all abandoned cables and wiring and conduit above accessible ceilings and ventilation shafts.

Remove all existing wiring, light fixtures, exposed conduits, and other electrical installations not reused prior to substantial completion of the work.

Existing raceways may be reused if their points of terminations are suitable; if they are clean inside with no evidence of rust or burrs; if free from cracks, flattened sections, or sharp bends; and, if suitably located to avoid conflicts with other trades or installations. Carefully "fish" all existing conduits reused under this contract to remove all debris and obstructions, and swab until all moisture is removed.

Cut, patch, and repair where required for new electrical installations, and patch and repair all surface damage resulting from this work. Cut flush with the floor and plug at both ends raceways stubbed above the floor and not used at substantial completion of the work.

Relocate all existing electrical systems required to be in operation at substantial completion of the contract, if required, as a result of work included under this contract, even if not specifically indicated in the drawings or specifications.

Existing service entrance conductors and feeder conductors may be reused if all of the following conditions are met:
1. Conductor sizes meet or exceed the sizes specified on the drawings.
2. Conductor insulation is in good or better condition.
3. Conductor insulation is the correct type for the conditions.

C. EXCAVATION AND BACKFILLING

Perform excavation and backfill required for installation of underground work under this contract. Trenches shall be of sufficient width. Crib or brace trenches to prevent cave-in or settlement. Do not excavate trenches close to columns and walls of new building without prior consultation with the Architect. Use pumping equipment if required to keep trenches free of water. Backfill trenches in maximum 6-inch layers of well tamped dry earth in a manner to prevent future settlement.

Excavation as specified herein shall be classified as common excavation. Common excavation shall comprise the satisfactory removal and disposition of material of whatever substances and of every description encountered, including rock, if any, within the limits of the work as specified and shown on the drawings. Excavation shall be performed to the lines and grades indicated on the drawings. Dispose of excavated materials that are considered unsuitable for backfill, and surplus of excavated material, which is not required for backfill, all to the satisfaction of the Engineer.

D. COINCIDENTAL DAMAGE

Repair streets, sidewalks, drives, paving, walls, finishes, and other facilities damaged in the course of this Work. Repair materials shall match existing construction. Repair work shall meet all requirements of the Owner, local authorities having jurisdiction, and meet the satisfaction of the Architect. Repair work shall be thoroughly first class.

E. CUTTING AND PATCHING

Conform to the requirements in Division 01. Cut walls, floors, ceilings, and other portions of the facility as required to install work under this division. Obtain permission of the Architect prior to cutting. Do not cut or disturb structural members without prior approval from the Architect. Cut holes as small as possible. Patch walls, floors, and other portions of the facility as required by work under this division. Patching shall match the original material and construction including fire ratings, if applicable. Repair and refinish areas disturbed by work to the condition of adjoining surfaces in a manner satisfactory to the Architect.

F. ROUGH-IN

Coordinate without delay all roughing-in with other divisions. Conceal all conduit and raceways except in unfinished areas and where otherwise indicated on the drawings.

G. CONCRETE BASES

Provide concrete bases (e.g., housekeeping pads) for equipment where indicated on the drawings and as specified herein. Concrete bases shall have chamfered edges. Size of base shall be a minimum of 4 inches greater than the footprint of the equipment that it is supporting and shall have a minimum height of 3-1/2 inches.

Construct equipment bases of a minimum 28-day, 4000-psi concrete conforming to American Concrete Institute Standard Building Code for Reinforced Concrete (ACI 318) and the latest applicable recommendations of the ACI standard practice manual. Concrete shall be composed of cement conforming to ASTM C 150 Type I, aggregate conforming to ASTM C33, and potable water. Exposed exterior concrete shall contain 5 to 7 percent air entrainment.

Unless otherwise specified or shown on the structural drawings, reinforce equipment bases with No. 4 reinforcing bars conforming to ASTM A615 or 6x6 - W2.9 x W2.9 welded wire mesh conforming to ASTM A185. Place reinforcing bars 24 inches on center with a minimum of two bars each direction.

Provide galvanized anchor bolts for equipment placed on concrete bases or on concrete slabs. Anchor bolts size, number, and placement shall be as recommended by the manufacturer of the equipment.

H. SUPPORT SYSTEMS

Steel Slotted Support Systems (Slotted Channel): Comply with MFMA-3, factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch.

Finishes:
1. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-3.

Aluminum Slotted Support Systems (Slotted Channel): Comply with MFMA-3, Type 6063-T6, per ASTM B221; factory-fabricated components for field assembly; 12-gauge, 1-5/8-inch by 1-5/8-inch.

Manufacturers: Cooper B-Line, ERICO International, Hilti, Power-Strut, Thomas and Betts, or Unistrut.

Field Fabrication:

Where field cutting of standard lengths of channel are required, make cuts straight and perpendicular to manufactured surfaces.

For field-cut or damaged surfaces of coated channels, dress cut ends, damaged surfaces, or both, with an abrasive material (e.g., file, grinding stone, or similar) and cleanser to remove oils, rust, sharp edges, and shards.

For channel with a factory-applied coating, re-finish cut edges with a coating compatible with the factory finish and as recommended by the manufacturer (e.g., manufacturer's touch-up paint or zinc-rich cold-galvanizing compound, as applicable).

I. ACCESS DOORS

Provide access doors for all concealed equipment where indicated or as required, except where above lay-in ceilings. Access doors shall be adequately sized for the devices served with a minimum size of 18 inches x 18 inches. Access doors must be of the proper construction for the type of construction in which it is installed. Obtain Architect's approval of type, size, location and color before ordering. Provide factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation, concealed hinges, flush screwdriver-operated cam lock, and anchor straps. Provide access doors manufactured by: Bar-Co, J.L. Industries, Karp Associates, Milcor, Nystrom Building Products, Wade, or Zum.

J. PENETRATIONS

Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 07 section "Through-Penetration Firestop Systems."

Roofs:
1. Coordinate all roof penetrations with Engineer, Owner, and as applicable, the roofing contractor providing a roof warranty.

2. Keep all raceway penetrations within mechanical equipment curbs wherever possible. Coordinate with Division 01.

3. Flash and counterflash all openings through roof, and/or provide pre-fabricated molded seals compatible with the roof construction installed, or as required by the Engineer, Owner, or roofing contractor. All roof penetrations shall be leaktight at the termination of the work and shall not void any new or existing roof warranties.

Walls and Floors:
1. Steel Pipe Sleeves for Raceways and Cables: ASTM A53/A53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends, and drip rings.

2. Cast-Iron Pipe Sleeves for Raceways and Cables: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

3. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052 inch thickness and of length to suit application.

K. FIRESTOPPING

Sealants and accessories shall have fire-resistance ratings indicated, as established by testing identical assemblies in accordance with UL 2079 or ASTM E 814, or other NRTL acceptable to AHJ.

Manufacturers: Hilti, RectorSeal, Specified Technologies Inc., United States Gypsum Company, or 3M corp.

Through and Membrane Penetration Firestopping Systems Product Schedule: Provide UL listing, location, wall or floor rating, and installation drawing for each penetration fire stop system.

Where project conditions require modification to qualified testing and inspecting agency's illustrations for a particular firestopping condition, submit illustration, with modifications marked, approved by penetration firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Include qualifications data for testing agency.

L. EQUIPMENT FURNISHED BY OTHERS

Provide necessary equipment and accessories that are not provided by the equipment supplier or Owner to complete installation of equipment furnished by others in locations as indicated on the drawings, specified herein, or both. Equipment and accessories not provided by the equipment supplier may include, but not be limited to, flexible cords and plugs as required for proper operation of the complete system, in accordance with the manufacturers' instructions.

Contractor shall be responsible for correct rough-in dimensions, and verify them with Architect and/or equipment supplier prior to rough-in and service installations.

M. SYSTEM TESTING AND ADJUSTING

Adjust, align, and test all electrical equipment on this project provided under this division and all electrical equipment furnished by others for installation or wiring under this division for proper operation.

Test all systems and equipment according to the requirements in NETA ATS (latest edition) and all additional requirements specified in following sections.

Maintain the following on the project premises at all times: a true RMS reading voltmeter, a true RMS reading ammeter, and a megohmmeter insulation resistance tester. Provide test data readings as requested or as required by the Engineer.

O. EQUIPMENT IDENTIFICATION

Provide equipment identification nameplates on all switchboards, panelboards, electrical equipment enclosures, access doors, transformers, disconnect switches, enclosed circuit breakers, motor starters, feeder devices in switchboards, distribution panelboards, and motor control centers and where indicated on the drawings.

Nameplates:
1. Engraved, contrasting color, three-layer, laminated plastic, indicating the name of the equipment, load, or circuit as designated on the drawings and in the specifications:
2. Field-applied permanent epoxy adhesive, compatible with the equipment finish.

Attachment method shall be acceptable to the manufacturers of the equipment to which the nameplates are being applied.

Nameplate Color:
1. Black background with white letters for Normal Power;
2. Red background with white letters for Emergency Power.
Letter height: 3/8-inch minimum.

P. SYSTEM START UP

Perform the following prior to starting up the electrical systems:
1. Check all components and devices and lubricate items accordingly.
2. Tighten screws and bolts for connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
3. Adjust taps on each transformer for rated secondary voltage when the transformer is at minimum load.
4. Check and record building's service entrance voltage, grounding conditions, grounding resistance, and proper phasing.
5. Replace all burned-out lamps and lamps used for temporary construction lighting in permanent light fixtures.
6. After all systems have been inspected and adjusted, confirm all operating features required by the drawings and specifications and make final adjustments as necessary.

SEE NEXT PAGE FOR CONTINUATION

WIRING DEVICE AND COVER PLATE SCHEDULE

AREA	WIRING DEVICE	COVER PLATE
FRONT OF HOUSE - Dining Area - Customer Restrooms - Queing Area/Vestibule	Black (Commercial Grade)	Black Matte (Nylon)
KITCHEN/BACK OF HOUSE - Areas w/ Stainless Steel Finish	Grey (Industrial Grade)	Stainless Steel
KITCHEN/BACK OF HOUSE - Areas w/ FRP Wall Finish	White (Industrial Grade)	White (Nylon)
KITCHEN COOKLINE - Locations Below Cooking Hood	Grey (Industrial Grade/ Water Resistant)	Greyexpandable (Weatherproof)
OTHER AREAS - Manager's Office	White (Commercial Grade)	White (Nylon)

WIRING DEVICE SPECIFICATIONS

TYPE OF DEVICE	HUBBELL	PASS AND SEYMOUR	LEVITON	COPPER WIRING DEVICES
DUPLEX RECEPTACLES - COMMERCIAL GRADE				
Duplex Receptacle	BR20	CR20	CR20	CR20
Duplex Receptacle - Tamper Resistant	BR20TR	TR20	TBR20	TRCR20
Duplex Receptacle - Weather Resistant	BR20WR	WR20TRW	WBR20	WRBR20
Isolated Ground (IG) Receptacle	IG20CR	IG5362	5362-IG	IG5362
DUPLEX RECEPTACLES - INDUSTRIAL GRADE				
Duplex Receptacle	5352A	5362	5352	AH5352
Duplex Receptacle - Tamper Resistant	HBL8300SGA	TR5362	8300-SCG	AHTR5362
Duplex Receptacle - Weather Resistant	5362WR	WR5862	WBR20	TWR270
Isolated Ground (IG) Receptacle	IG5352	IG5362	5362-IG	AHIG5362
OTHER RECEPTACLES				
GFCI Receptacle	GF20LA	2095	7899-H	VGF20
GFCI Receptacle - Weather Resistant	GFTR20	2095TRWR	W7899	WRVGF20
Blank Face GFCI	GFBF20	2085	7590	VGFD20
Clock Receptacle	HBL5325	S3733	5361-CH	TR775
USB Charging - Tamper Resistant	USB20X2	TR5362USB	T5832	TR7756
SWITCHES				
Single Pole Switch	DS120	CS20AC1	CSB1-20	CSB120
Double Pole Switch	DS220	-	CSB2-20	CSB220
Three-Way Switch	DS230	CS20AC3	CSB3-20	CSB320
Lighted Handle Switch	HBL1221IL	PS20AC1-XPL	1221-LH	AH1221LT
Key Switch	HBL1221L	PS20AC-L	1221-2KL	1221L
COVER PLATES				
Standard Cover Plates	Satin stainless steel or colored nylon as indicated above.			
Weatherproof Cover Plates	Hubbell TayMac #ML500G weatherproof expandable outlet cover.			

General Notes:
1. Colors and finishes specified above shall be applicable to all devices including low voltage outlets unless noted otherwise.
2. Isolated ground receptacles shall be orange in color.
3. Refer to Electrical Symbols Legend and Electrical Kitchen Equipment Connection Schedule for additional information and requirements.

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EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

EXPIRATION DATE: 11/30/21
LICENSED PROFESSIONAL ENGINEER
DEAN WAY CHANDLER
062.069925
OF ILLINOIS

Nov 23 2020

Drawing Title
ELECTRICAL SPECIFICATIONS

Job No.	Drawn
204461	ELT
Scale	Date
N.T.S.	11/09/20

Sheet No.
E590

DEAN W. CHANDLER
11/23/2020 3:26:05 PM C:\Revit\Projects\20500001105 MEP v21_evan.talbot_20201123132837.rvt

Division 26: BASIC ELECTRICAL MATERIALS AND METHODS

1. RACEWAYS

A. METALLIC CONDUIT AND TUBING

Electrical Metallic Tubing, Couplings, and Fittings (EMT): ANSI C80.3, UL 797. Only steel products allowed. Reduced wall EMT is not allowed.

Flexible Metal Conduit (FMC): Zinc-coated steel or aluminum, UL 1. Reduced-wall FMC is not allowed.

Intermediate Metal Conduit (IMC): Hot-dip Galvanized Rigid Steel Conduit, ANSI C80.6, UL 1242.

Liquidtight Flexible Metal Conduit (LFMC): Flexible steel conduit with PVC jacket, UL 360; fittings: NEMA FB 1.

Rigid Metal Conduit (RMC):
1. Hot-dip Galvanized Rigid Steel Conduit (GRS): ANSI C80.1, UL 6.
2. Rigid Aluminum Conduit (RAC): ANSI C80.5, UL 6A.
Plastic-Coated IMC, RMC, and Fittings: NEMA RN 1, NRTL listed. Coating thickness of 0.04 inches minimum.

IMC and RMC Fittings: NEMA FB 1; compatible with conduit type and material, NRTL listed.

Manufacturers: AFC Cable, Alflex, Anamet Electrical, Electri-Flex, Indalex, Manhattan/CDT/Cole-Flex, O-Z/Gedney, Republic Raceway, Tyco International, Western Tube and Conduit, or Wheatland Tube.

B. NON-METALLIC CONDUIT AND TUBING

Rigid Nonmetallic Conduit (RNC): Schedule 40 PVC, 90 deg C rated, NEMA TC-2, UL 651

Fittings: NEMA TC 3, TC 6; UL 651, compatible with conduit/tubing type and material, NRTL listed.

Manufacturers: AFC Cable, American International, Anamet Electrical, Amco, Cantex, Certainteed, Condux International, Elecsys, Electri-Flex, Lamson and Sessions, Manhattan/CDT/Cole-Flex, Prime Conduit, Raco, Spiralduct, Superflex Ltd, or Thomas and Betts.

2. RACEWAY INSTALLATION

A. GENERAL RACEWAY INSTALLATION REQUIREMENTS

Install raceways parallel and perpendicular to building lines.

Install raceways to requirements of structure, to requirements of all other work on the project, and to clear all openings, depressions, pipes, ducts, reinforcing steel, and other immovable obstacles.

Install raceways set in forms for concrete structure in such a manner that installation will not affect the strength of the structure.

Except where approved in writing by the Engineer, install no raceway in a slab-on-grade. Locate raceway below granular fill below slabs-on-grade.

Install raceways continuous between connections to outlets, boxes, and cabinets with a minimum possible number of bends and not more than the equivalent of four 90-degree bends between connections. Use manufactured elbows for all 45- and 90-degree bends, unless approved by the Engineer in advance. Make other bends smooth and even and without flattening raceway or flaking galvanizing or enamel. Radii of bends shall be as long as possible and never shorter than the corresponding trade elbow.

Use long radius elbows for all underground installations, where necessary, or where otherwise indicated.

Securely fasten raceways in place with approved straps, hangers, and steel supports as required. Attach raceway supports to the building structure. Hang single raceways for feeders with malleable split ring hangers with rod and turnbuckle suspension from inserts spaced not over 10 feet apart in construction above. Clamp groups of horizontal feeder raceways to steel channels that are suspended from inserts spaced not over 10 feet apart in construction above. Securely clamp vertical feeder raceways to structural steel members attached to structure. Install cable clamps for support of vertical feeders where required. Add raceway supports within 12 inches of all bends, on both sides of the bends. Do not support raceways from suspended ceiling components.

Ream raceway ends, thoroughly clean raceways before installation, and keep clean after installation. Plug or cover openings and boxes as required to keep raceways clean during construction and fish all raceways clear of obstructions before pulling conductor wires. Provide raceways of ample size for pulling of wire, not smaller than code requirements and not less than 1/2-inch in size, unless indicated otherwise on Drawings. Homeruns containing more than one branch circuit shall not be less than 3/4-inch in size.

Protect all raceway installations against damage during construction. Repair all raceways damaged or moved out of line after roughing-in to meet Engineer's approval without additional cost to the Owner.

Align and install true and plumb all raceway terminations at panelboards, switchboards, motor control equipment, and junction boxes.

Install approved expansion/deflection fittings where raceways pass through (if embedded) or across (if exposed) expansion joints, and when using RNC or RAC in exposed environments in accordance with NFPA 70 and expansion/contraction properties of RNC or RAC.

Install a pull wire in each empty raceway that is left for installation of conductors or cables under other divisions or contracts. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 24 inches of slack at each end of pull wire.

Make all joints and connections in a manner that will ensure mechanical strength and electrical continuity.

For raceways penetrating freezer and cooler walls, effectively seal raceways by installing a conduit fitting at the boundary of the two spaces and filling it with an approved pliable material after conductors or cables have been installed. Provide fitting whenever raceways pass from non-cooled to cooled spaces, raceways transition from outside a facility or enclosure to inside, or whether buried or exposed.

B. ABOVE GROUND RACEWAY USE:

Install all circular raceways concealed above suspended ceilings or concealed in walls or floors wherever possible except where otherwise indicated. Provide GRS for all conduits exposed to weather or other hazardous conditions.

Unless noted otherwise, all other raceway may be EMT where approved by local code. Use compression type fittings for EMT, with all fittings NRTL listed for the environment in which they are used. Unless noted otherwise, set-screw type fittings are not allowed.

C. UNDERGROUND RACEWAY USE:

Provide GRS installed below grade with a corrosion-resistant bonded-plastic or approved mastic coating. This shall include the 90-degree elbow below grade and the entire vertical transition to above grade.

RNC conduit may be used underground where permitted by local code and where not specifically restricted by these documents. When used, provide plastic-coated GRS, as specified above, for all bends greater than 30 degrees, including the 90-degree elbows below grade and the entire vertical risers for transitions from below to above grade or above slab.

D. EQUIPMENT CONNECTIONS

Use FMC for final connection to each motor, transformer, and any device that would otherwise transmit motion, vibration, or noise. Use LFMC where exposed to liquids, vapors, or sunlight, and to connect to kitchen and food service equipment. Provide all FMC and LFMC with an insulated bonding conductor.

Use only metal raceways for all power wiring from the output of variable frequency drives to their respective motors.

3. BUSHINGS AND LOCKNUTS

Rigidly terminate conduits entering sheet metal enclosures to the enclosure with a bushing and locknut on the inside and a locknut or an approved hub on the outside. Conduit shall enter the enclosure squarely.

Provide bushings and locknuts made of galvanized malleable iron with sharp, clean-cut threads.

Where EMT enters a box, provide approved EMT compression connectors.

Use insulated, grounding, or combination bushings wherever connection is subject to vibration or moisture, when required by NFPA 70 , or both.

4. CONDUCTORS AND CABLES

Annealed (soft) copper complying with ICEA S-95-658/NEMA WC70 and UL standards 44 or 83 as applicable.

Aluminum conductor option:
Compact stranded, aluminum alloy (AA-8000 series), complying with ICEA S-95-658/NEMA WC70; No. 1/0 AWG or larger only.

Terminations: Tinned, compression type only; NRTL-listed for copper and aluminum conductors at 75 degrees C minimum.

Increase the raceway size as required, at no additional cost to the Owner, to accommodate the increased size of the aluminum Conductors.

Aluminum conductor size shall meet or exceed the ampere rating of the scheduled copper conductors at 75 degrees C.

Option applies only for the following feeders or services No. 2 AWG and larger (based on copper conductors):
1. Service entrance conductors.
2. Feeders to switchboards.
3. Feeders to panelboards. Exception: Apartment unit load center feeder conductors shall be copper; aluminum is not acceptable.
4. Feeders to motor control centers.
5. Feeders to transformers

Where aluminum conductors terminate existing panelboards, switchboards or switchgear that utilize compression connections use hydraulic-compression type connectors with a zinc base, anti_oxidizing compound. Use compression tools of the type that will not release unless the correct pressure has been applied.

Measure the temperature of all aluminum conductors at all splices and terminations. Make each test under typical building load Conditions after the building is occupied and in operation for a minimum of two weeks. Replace all joints or splices indicating excessive heating.

Take measurements with a non_contact type infrared thermometer, with target size not exceeding one inch at five feet and an accuracy of two percent or better. Submit the meter specifications and calibration date with the test results.

Aluminum Conductor Manufacturer: General Cable or approved equal.

Conductor Insulation Types: 90-degree C-rated, Type THHN/THWN-2 or XHHW-2 complying with ICEA S-95-658/NEMA WC70.

Sizes of conductors and cables indicated or specified are in American Wire Gage (AWG - Brown and Sharpe).

All feeder and branch circuit conductors No. 8 AWG and larger: Stranded.

All conductors, No. 10 AWG and smaller: Solid copper.

All Branch Circuit Wiring: Not smaller than No. 12 AWG. If no conductor size is indicated on the Drawings for a branch circuit, provide conductors and conduit sized per NFPA 70 and based on the indicated branch circuit overcurrent protective device (OCPD) rating and number of poles. Where no circuit size (i.e., conductors and OCPD) is indicated on the drawings for a branch circuit, provide three No. 12 AWG conductors, in 3/4-inch raceway, and a 20A circuit breaker.

Control Wiring: Stranded copper conductors, 600V insulation, of the proper type, size, and number as required to accomplish specified function. Minimum size: No. 14 AWG, unless noted otherwise.

Flexible Cords and Cables: Stranded copper conductors for all, unless noted otherwise.

Special Purpose Conductors And Cables, Such As Low Voltage Control And Shielded Instrument Wiring: As recommended by the system equipment manufacturer unless indicated otherwise.

Copper Conductor Manufacturers: Advance Wire and Cable, AFC Cable, Alan Wire, Alflex, American Insulated Wire, Encore Wire, Northern Cables, Okonite, or Southwire.

Connections: Apply a zinc based anti_oxidizing compound to connections. Do not use terminals on wiring devices to feed through to the next device..

5. CONDUCTORS AND CABLES INSTALLATION

Install all wiring in approved raceway and enclosures, except
where specified or indicated for low-voltage wiring, where specified or indicated for direct-buried cables, or where type MC cable is indicated or specified as acceptable.

Install all conductors and cables in raceways continuous without taps or splices. Splice or tap only in approved boxes and enclosures with approved solderless connectors, or crimp connectors and terminal blocks for control wiring, and keep to the minimum required. Insulate all splices, taps, and joints as required by codes.

All materials used to terminate, splice, or tap conductors: designed for, properly sized for, and NRTL listed for the specific application and conductors involved, and installed in strict accordance with the manufacturer's recommendations, using the manufacturer's recommended tools.

Where wiring is indicated as installed, but the connection is indicated "FUTURE" or "BY OTHER DIVISION, TRADES, OR CONTRACTS", leave a minimum 3-foot "Pigtail" at the box, tape the ends of the conductors, and cover the box.

In general, the direction of branch circuit "home run" routing is indicated on the drawings, complete with circuit numbers and panelboard designation. Continue all such "home run" wiring to the designated panelboard, as though "circuit runs" were indicated in their entirety.

The number of conductors in a specific raceway "home run" is indicated with cross lines (tick marks) on each "circuit run" on the drawings.

Common or shared neutrals are not allowed unless shown on the drawings to be used or specifically noted to be allowed.

Where multi-wire branch circuits (i.e., shared neutral) are allowed, they shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point the branch circuit originates. Multi-pole breakers or 3 single-pole breakers with a handle tie are two examples.

When multiple home runs are combined into a single raceway such that the number of conductors exceeds four (conductor count is made up of any combination of phase and neutral conductors), the following restrictions apply, which are in addition to those in NFPA 70 :

Normal or Non-Essential circuits:

1. Maximum of 16 conductors in a single raceway. For up to eight conductors in a raceway, minimum raceway size: 3/4-inch. For greater than eight conductors, minimum raceway size: 1-inch. Do not install any other type of circuit in this raceway.

2. Minimum wire size for all conductors in this raceway: No. 10 AWG.

3. Only 15A and 20A branch circuit homeruns may be combined into one raceway.

GFCI circuits:

1. Do not use multi-conductor circuits, with a shared neutral, for any GFCI circuit breaker or receptacle circuit.

For branch circuits fed from GFCI circuit breakers, limit the one-way conductor length to 100 feet between the panelboard and the most remote receptacle or load on the GFCI circuit.

Properly identify all terminal blocks and wire terminals for control wiring with vinyl stick-on markers or equivalent. Provide Engineer with a list of proposed identifying numbers for review prior to installing markers.

Provide an equipment-grounding conductor or bonding jumper, as applicable, in all feeders and branch circuits, sized in accordance with NFPA 70 Tables 250.66 or 250.122 , as applicable, unless indicated as larger on the drawings.

Wiring shall have insulation of the proper color to match color code system in the table below unless there is a color system currently in use by the facility, in which case the colors are to match the existing system. In larger sizes where properly colored insulation is not available, use vinyl plastic electrical tape of the appropriate color around each conductor at all termination points, junctions, and pull boxes.

System Voltage:

240V and under, including 208Y/120, 120/240, 120/208, and 240D/120 systems:
1. Phase A: Black.
2. Phase B: Red.
3. Phase C: Blue.
4. Neutral: White.
5. Equipment Ground: Green.
6. Isolated Ground: Green with yellow stripe.

6. MC CABLE

A. CABLE SPECIFICATIONS

Metal-clad cable (MC Cable) : 600V, unjacketed; UL Standard 83, 1569, and 1685; NFPA 70 Article 330 ; aluminum or galvanized steel interlocked armor; THHN- or XHHW-insulated conductors; color code: ICEA Method 1, with green insulated grounding conductor; listed for use in UL 1, 2, and 3 hour through-penetration firestop systems. MC Cable manufacturers: AFC Cable Systems, Encore Wire Corporation, Kaf-Tech, or Southwire.

B. APPLICATIONS OF MC CABLE

1. In lieu of flexible conduit and wiring from light fixtures located in accessible ceilings to junction boxes attached to building structure directly above the ceiling. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5 foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

2. For vertical drops in stud walls.

3. In lieu of EMT, only for 15A and 20A branch circuits (with up to four (4) conductors, not including ground conductor), and only in dry concealed locations above grade, except where specifically not permitted by NFPA 70, owner, landlord, AHJ, or noted in list below.

C. PROHIBITED USE OF MC CABLE [AC90 CABLE] UNLESS NOTED ABOVE

Examples of those uses include, but are not limited to the following:
1. Homeruns to panelboards (refer to Section 26: Definitions).
2. Where exposed to view.
3. Where exposed to damage.
4. Hazardous locations.
5. Wet locations.
6. When restricted otherwise.
7. When specifically disallowed by the local AHJ.
8. When specifically disallowed by the landlord.
9. Circuits supplied by an emergency or standby power source.

7. MC CABLE INSTALLATION

Secure and support cable per NFPA 70 Article 330 . Secure cable within 12 inches of every box or fitting. Securing and supporting intervals shall not exceed six feet. Maintain consistent spacing to avoid derating due to bundling per NFPA 70 Section 310.15 . Utilize steel cable hangers, Arlington SMC series or equivalent, to support wherever possible so cables can be routed in a neat and workmanship like manner.

8. JUNCTION BOXES, PULL BOXES, CABINETS, AND WIREWAYS

Provide junction boxes, pull boxes, cabinets, and wireways wherever necessary for proper installation of various electrical systems according to NFPA 70 and where indicated on the drawings. Size as required for the specific function or as required by NFPA 70 , whichever is larger. Construction shall be of a NEMA design suitable for the environment installed.

Junction boxes installed behind wall cases and in or on other store fixtures, except where otherwise specified, shall be 4 inches square or larger with galvanized covers.

Horizontally mount junction boxes under center fixtures (and cases), handy boxes or 4-inch square boxes with tops of boxes not more than 3-1/2 inches above the floor. Size junction boxes to adequately contain all required conductors and splices.

9. OUTLET BOXES

All outlets including light fixture, switch, receptacle, and similar outlets: galvanized steel knockout boxes, suitable in design to the purpose they serve and the space they occupy. Size as required for the specific function or as required by NFPA 70 , whichever is larger. Set all outlet boxes in walls, columns, floors, or ceilings so they are flush with the finished surface, accurately set, and rigidly secured in position. Provide plaster rings, extension rings and/or masonry rings as required for flush mounting. Provide approved cast outlet boxes with hubs and weatherproof covers in all areas subject to damp, wet, or harsh conditions.

Manufacturers: Appleton, Cooper, Erikson Electrical, Hoffman, Killark Electric, O-Z/Gedney, Raco, Robroy Industries, Scott Fetzer, Spring City Electrical, Thomas and Betts, Walker Systems, or Woodhead.

10. OUTLET LOCATIONS

Coordinate locations of outlet boxes. Outlets are only approximately located on the small scale drawings. Use great care in the actual location by consulting the various large scale detailed drawings used by other division trades, and by securing definite locations from the Architect .

11. MOUNTING HEIGHTS

Unless noted otherwise, install wiring devices vertically aligned at height indicated on construction drawings.

A. RECEPTACLES

Unless indicated otherwise, install vertically with the ground slot mounted at the top.

Where installed horizontally, install with the neutral slot mounted at the top.

B. SWITCHES

General: All switches shall be mounted at the same height throughout the project unless noted otherwise.

12. WIRING DEVICES

The catalog numbers listed for wiring devices are generally for 20A rated devices. Where 15A rated devices are indicated on the drawings or required for circuit rating limitations, provide wiring devices equivalent to those specified for 20A, but rated for 15A.

All receptacles located outdoors or in damp or wet locations: Listed as 'weather Resistant', designated by a 'WR' on the faceplate.

Minor changes relative to the location of electrical equipment may be made to comply with structural and building requirements as determined in the course of construction. Provide all wiring devices of the same manufacturer and not mixed on the project, to the maximum extent possible. Provide colors of wiring devices as indicated on the drawings.

Manufacturers: Refer to Wiring Device & Cover Plate Schedule, this sheet.

13. SWITCH AND OUTLET COVER PLATES

Switch and Outlet Plates: colored, smooth nylon or satin stainless steel as indicated on the drawings; by the same manufacturer as the wiring devices, wherever possible. Verify desired materials and colors with Architect before installation. Switch plates in unfinished rooms and spaces: Stamped steel, cadmium plated. Install groups of switches under one ganged-plate, usually horizontally; or, where required by details, vertically. Set all cover plates plumb, parallel, and finished flush with the wall.

14. WEATHERPROOF COVER PLATES

All areas noted for weatherproof covers: Nema 3R, Extra Duty rated, weatherproof while in use, expandable outlet cover with grey paintable polycarbonate housing, clear viewing window and neoprene rubber expandable gasket that expands from 1" to 3". Suitable for both horizontal and vertical mounting configurations.

Manufacturers: Refer to Wiring Device & Cover Plate Schedule, sheet E590.

15. ELECTRICAL SERVICE AND GROUNDING

A. ELECTRICAL SERVICE

See drawings for type, size, voltage, phase, and other requirements.

Provide, or arrange with the serving utility for installation to provide, a recording voltmeter at the service point, on the first day the facility is open for business, for a 24-hour voltage test. If voltage and regulation are not within acceptable limits, arrange with the utility for proper voltage. Submit to the Owner a report of maximum and minimum voltage and a copy of the recording voltmeter chart.

B. CONNECTION TO SERVING UTILITIES

Provide raceways, terminations, metering provisions, and miscellaneous equipment as required for electrical and telephone services for connection by the serving utility, in strict compliance with the requirements of all applicable codes and of the serving utility involved. Verify all service terminations and connection points in the field and work in conjunction with the utility involved in the installation of all services. Provide all materials and equipment required for complete utility connection but not furnished by the serving utility. Notify the utility companies involved within two weeks after notice to proceed of all required information necessary for the utility to supply the project without delay. Pay all charges of the serving utility for the electrical service(s).

C. GROUNDING

Permanently and effectively ground and bond the electrical installation in a thorough and efficient manner, and in conformance, at a minimum, with NFPA 70 , or these documents, where they exceed code requirements. Use bare or insulated conductors as specified herein, and other materials indicated on the Drawings.

16. DISTRIBUTION AND CONTROL EQUIPMENT

A. POWER DISTRIBUTION PANELBOARDS:

Panelboards: Dead-front distribution panelboards with number and sizes of circuit breakers as indicated on the drawings; where installed as service entrance equipment, permanently label as suitable for use as service entrance equipment; fully- or series- rated for the available fault current indicated on the drawings; hinged, lockable front door that covers the circuit breaker handles. Circuit breakers: Quick-make, quick-break, indicating type; engraved nameplates for circuit identification of each circuit breaker. Provide a typewritten card directory indicating exactly what each circuit breaker controls on the inside face of the door for circuit identification.

Manufacturers: Square D Type I-Line, Eaton type Pow-R-Line 4, G.E. types CCB or AV-1, or Siemens types S4 or S5.

B. LIGHTING AND APPLIANCE PANELBOARDS

Panelboards: Complete with bolt-on thermal magnetic, molded case circuit breakers assembled in a dead-front finished cabinet containing a typewritten card directory indicating exactly what each circuit breaker controls; fully- or series- rated and with the integrated short circuit current ratings indicated on the drawings. Plug-in type breakers will not be acceptable. All two- and three-pole breakers: Common trip type.

1. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip). Use as indicated on drawings.

2. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip). Use as indicated on drawings.

3. Handle Clamp: Loose attachment for holding circuit breaker handle in "on" position. Use for all circuits containing emergency lighting loads, fire alarm loads, and as indicated on drawings. Breakers serving fire alarm loads must have a permanently-affixed red label stating "FA" in white letters adjacent to the circuit breaker.

4. Handle padlocking device: fixed attachment for locking circuit breaker handle in "on" or "off" position. Use as indicated on drawings.

Manufacturers: Square D Type NQOD or NF (as applicable, based on voltage and ampere ratings and required short-circuit interrupting ratings as scheduled on the drawings) or approved equal by Eaton, G.E., or Siemens.

C. CIRCUIT BREAKERS IN EXISTING PANELBOARDS /SWITCHBOARDS

Provide new circuit breakers for installation in existing panelboards/switchboards, of the same manufacturer and type as the existing panelboard/switchboard circuit breakers. Short circuit current interrupting rating of any new breaker shall be the larger of the existing panel rating or the available fault current indicated on the drawings.

D. SERIES RATINGS ON SWITCHBOARDS AND PANELBOARDS

Label switchboards and panelboards with a NRTL integrated short circuit current rating.

When series ratings are applied with integral or remote upstream devices, provide labels complying with NFPA 70 Articles 240.86 and 110.22 . In addition to the warning label, include, at a minimum, the following conditions of the UL 67 series ratings:

1. Size and type of upstream device.
2. Branch devices that can be used.
3. NRTL series short circuit current rating.

When there is not enough room in the equipment to show all the legitimate series rated combinations, reference a bulletin supplied with the panelboard, per UL 67.

Series ratings shall cover all trip ratings of installed frames.

E. DISCONNECT (SAFETY) SWITCHES

Disconnect (Safety) Switches: Heavy-duty, fused or non-fused (as indicated on drawings or required) NEMA KS1, externally operated, visible-blade safety switches; NEMA enclosure type indicated on the drawings or suitable for the environment in which installed. based on fusible switch and fuse sizes indicated, include Class R, J, or L fuse provisions as applicable.

Where indicated, provide fusible switches permanently labeled as suitable for use as service entrance equipment, with integral and separate neutral and ground assemblies, suitable for the sizes of conductors indicated. Do not double-lug any terminations not specifically listed as suitable for more than one conductor.

Provide switches where not furnished with the starting equipment, at all other points required by NFPA 70, and where indicated on the drawings.

Manufacturers: Eaton, G.E., Siemens, or Square D.

F. SURGE-PROTECTIVE DEVICES (SPD)

Provide SPD labeled in accordance with the latest editions of UL 1283 and 1449, including the highest fault current of Section 37.3 (NRTL Recognized for SPD integral to panelboard) that meets or exceeds the following criteria:

Maximum surge current capability (single pulse rated) per phase:

1. Service entrance switchboards, switchgear: 240kA.
2. Distribution panelboards, panelboards used for service entrance & MCC: 120kA.
3. Branch Panelboards: 80kA (non-modular is acceptable).

SPD shall have a minimum EMI/RFI filtering of -50dB at 100kHz.

Indicators: The SPD shall use LED indicators that provide indication of suppression component failure in all protection modes including N-G, as well as optically isolated N/C dry contacts for remote monitoring.

Transient Counter: A transient voltage surge counter shall be included to totalize transient voltage surges which deviate from the sine wave envelope by more than 125V. The readout shall be at least a six digit LCD located on the unit's hinged front cover. The counter shall be equipped with a battery back-up to retain memory when power is not present. A push-button switch on the display's face-plate shall be provided for manual counter reset.

Switchboard, Switchgear, Panelboard, and MCC internally mounted SPD: Factory installed and NRTL labeled by and at the facility of the electrical distribution equipment manufacturer.

Externally mounted SPD (only allowed where noted on the construction documents): Install with conductors as short and straight as possible. Twist the SPD input conductors together to reduce input conductor inductance. Follow the SPD manufacturer's recommended installation practices and comply with all applicable codes.

Warranty: The manufacturer shall provide a minimum full five year parts, labor, and travel warranty from date of substantial completion against any part failure, excluding breakers, when installed in compliance with manufacturer's written instructions, NRTL listing requirements, and all applicable national or local electrical codes. Manufacturer shall make available local, national field engineering service support. Where direct factory employed service engineers are not locally available, travel time from the factory or nearest dispatch center shall be stated.

Thoroughly factory test the specified system before shipment. Testing of each system shall include, but shall not be limited to, quality control checks, dielectric voltage withstand tests at twice rated voltage plus 1000V per NRTL requirements, and operational and calibration tests.

Manufacturers: ABB USA, AC Data Solutions, APT, Atlantic Scientific, Current Technology, Danaher Power Solutions, Eaton, G.E., Intermatic, Lea International, Leviton, Liebert, Northern Technologies, Siemens, Square D, or Surge Suppression Incorporated.

G. FUSES

Provide each circuit and set of fuse clips throughout the work with sizes and types as required or indicated. All fuses larger than 600A: UL Class L, similar to type KRP-C Bussmann Low Peak or equal. Fuses used to protect motors: UL Class RK5, Bussmann Fusetron or equal. Fuses used to protect all other electrical equipment: UL Class RK1, dual element, Bussmann LPS/LPN or equal. All fused devices shall be labeled as to type and size of fuse required.

Furnish three spare fuses of each size and type used on the project (except for main switch fuses, furnish one spare), neatly contained in a properly labeled cabinet.

Manufacturers: Bussmann, Edison Fuse, Mersen/Ferraz Shawmut, or Littlefuse.

H. MOTOR STARTING SWITCHES

Motor starting switches shall consist of a toggle operated two- or three-pole switch. Contacts shall be double break silver alloy, visible from both sides of the switch, and shall have a direct linkage to the operator for positive break. Provide flush mounted units in finished areas and surface mounted units in unfinished areas. Starters shall have NEMA I general purpose enclosure, unless otherwise indicated, and be rated for the motor horsepower required. Provide handle guard with locking provisions.

Manufacturers: Square D Class 2510 Type K, Eaton 9115 series, G.E. TC2000 series, Siemens MS series, or Westinghouse MST series.

17. LIGHT FIXTURES, LAMPS AND BALLASTS

A. LIGHT FIXTURE LOCATIONS

Light fixtures shown on the drawings represent general arrangements only. Refer to architectural drawings for more exact locations. Coordinate location with all other trades before installation to avoid conflicts. Coordinate light fixture locations in mechanical rooms with final installed piping and ductwork layouts.

B. LIGHT FIXTURES

Provide light fixtures as scheduled on drawings, including all lamps, all necessary accessories, material and labor to securely hang, clean, and make light fixtures completely ready for use. Provide all hangers, supports, and miscellaneous hardware required to install light fixtures, proper trim to fit each ceiling condition actually encountered, and additional tie wires connected to structure to conform to seismic requirements where required by the applicable building code.

Through-wiring of recessed light fixtures in suspended ceilings is not permitted. Connect each light fixture by a whip to a junction box. Provide cable whips of sufficient lengths to allow for relocating each light fixture within a 5-foot radius of its installed location, but not exceeding 6 feet in unsupported lengths.

C. EMERGENCY LIGHTING UNITS AND EXIT SIGNS

Description: Self-contained units complying with UL 924.

Battery: Sealed, maintenance-free, lead-acid type. The batteries shall be of suitable rating and capacity to supply and maintain at not less than 87-1/2 percent of the nominal battery voltage for the total lamp load associated with the unit for a period of at least 1-1/2 hours, or the unit equipment shall supply and maintain not less than 60 percent of the initial emergency illumination for a period of at least 1-1/2 hours.

Charger: Fully automatic, solid-state type with sealed transfer relay.

Operation: Relay automatically turns lamp on when power supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.

Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power, and demonstrates unit operability.

LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge, and bright glow indicates charging at end of discharge cycle.

D. LAMPS

Provide lamps and color temperatures as indicated on the drawings for all light fixtures; or, if not indicated, per the Architect and/or lighting designer. Lamps shall be by the same manufacturer for color consistency. Lamps shall be compatible with the specified light fixture.

E. DIMMABLE LIGHT FIXTURES

For dimmable light fixtures provide both control and power wiring between light fixture and control device and between light fixtures. Quantity of low voltage and line voltage wiring and wire type shall be per manufacturer's recommendations. Coordinate light fixture and control device dimming types for compatibility.

18. MISCELLANEOUS ELECTRICAL

A. WIRING OF MECHANICAL EQUIPMENT

Provide all raceways and power wiring for all Division 23 equipment requiring electrical connections, including but not limited to pumps, water heaters, and HVAC equipment, and all line-voltage control and interlock wiring not provided under Division 23. Connect per manufacturers' wiring diagrams. Coordinate with Division 23 for disconnects and variable frequency drives (VFD) furnished with equipment, and provide all disconnect switches and final connections as required. If VFD is separate or does not have an integral disconnect feature, provide disconnect switch with auxiliary contact such that motor will be turned off if switch is off. provide VFD cable, Belden or approved equivalent, for connection of VFD to motor when required. After installing wiring, verify that each motor load has the correct phase rotation.

Verify the actual "Maximum Overcurrent Protection" (MOCP) device ratings and "Minimum Circuit Ampacity" (MCA) conductor sizing for mechanical equipment from the equipment nameplate. Base electrical installations on actual required amperages, which may vary somewhat from the conductor and equipment sizes shown on the drawings; however, in no case, reduce the size of conductors indicated on the drawings without authorization from the Engineer. Provide properly sized electrical wiring and equipment without extra cost to the Owner. Notify the Engineer of all changes required in the electrical installation due to equipment variances so that the effects on feeders, branch circuits, panelboards, fuses and circuit breakers can be checked prior to purchasing and installation. Be responsible for coordinating with Division 23 to verify the actual ampacities and correct sizes of all conductors and overcurrent protective devices for all equipment, and correct overload heaters for all motors, when starters are provided under Division 26.

B. WIRING OF THERMOSTATS, TIME AND TEMPERATURE CONTROLS

Provide all raceways, power wiring, and line-voltage control and interlock wiring not provided under Division 23, for all thermostats, temperature control devices, and controls, including, but not limited to, night-stats, water heater interlocks, time switches and override timers. See mechanical drawings for locations and temperature control diagrams. Low-voltage conductors for thermostats and temperature control system may be run exposed above finished accessible ceilings, if approved and listed for this purpose, but shall be installed in conduit within walls and where exposed in the work areas.

C. TELEPHONE SYSTEM PROVISIONS

Provide incoming telephone service raceways as indicated on drawings or as required by the serving telephone company. Provide 3/4-inch thick plywood board, fire-retardant-treated and stamped FRT, securely anchored to the wall, at the location and of the size as indicated on the drawings. Provide flush mounted telephone outlet boxes with 1 inch conduit stub-up with pull-string concealed to accessible ceiling space at locations as indicated on the drawings.

D. DATA SYSTEM PROVISIONS

Provide flush mounted data outlet boxes with 1 inch conduit stub-up with pull-string concealed to accessible ceiling space at locations as indicated on the drawings.

E. TIME SWITCHES

Manufacturers: Intermatic, Paragon, or Tork.

Time switches: with manual bypass switch, NEMA enclosure suitable for the environment installed; number and types of contacts, sequence, and voltage as indicated on the drawings, or as required, based on the time switch function and the number of branch circuits or contactors controlled. Provide wiring to photocells, contactors, relays or other control points as required.

F. LIGHTING CONTACTORS

Industrial duty type; silver alloy, double break contacts, convertible with N.O. and N.C. indicators; capable of adding poles in the field; number and rating of poles as indicated on the drawings or required by the load controlled; typed directory affixed to the inside of the enclosure door listing all branch circuits switched and the control power branch circuit; complying with NEMA ICS 2 and UL 508.

Short Circuit Current Rating: 22,000A at 240V maximum.

Enclosures: NEMA 1.

Coil Voltage: 120V AC or as indicated on the drawings.

Mechanically-held type, control interface shall be 2-wire input module with 3-wire output; Square D Class 8903 LX or equivalent of G.E., Siemens, Cutler Hammer, or ASCO.

G. SIGNALING SYSTEM

Provide a complete and functioning 24V signaling system for loading door signals, and others as indicated on the drawings. Low-voltage conductors for signaling system may be run exposed above finished ceilings, but shall be installed in conduit within walls and where exposed in the work areas.

Signal bell units shall be 4-inch, single-stroke type, Edwards Signaling and Security Systems (Edwards) No. 332-4G5 or equal, for 24Vac operation, installed on a standard single-gang box. Transformers shall be Edwards 590 Series or equal, having adequate capacity for the connected load plus 10-percent at 24Vac, and mounted in a standard two-gang box. Exterior push button shall be Edwards No. 1786-C with solid brass cap.

H. MISCELLANEOUS EQUIPMENT AND CONNECTIONS

Provide wiring of fire extinguishing system for exhaust hoods, including but not limited to electrical interlock of automatic fuel shut-off valves and/or provision of shunt trip breakers for shut-off of electrical equipment under hoods.

All wiring and connections for refrigerated cases and boxes including lighting, superstructure lighting, and control cable and wiring as required by refrigeration wiring diagrams.

All wiring and connections to illuminated cases.

All wiring and connections to equipment furnished by others, including but not limited to kitchen equipment, exhaust hood fire extinguishing system, etc.

All raceways, wiring, and connections of devices to energy management system that are not the responsibility of Division 23.

All wiring and connections of exit door alarms.

END OF SECTION 26

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EXPIRES 4/30/2021

SHAKE SHACK
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SHACK #1345

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

EXPIRATION DATE: 11/30/21

LICENSED PROFESSIONAL ENGINEER
DEAN WAY CHANDLER
062.069925
OF ILLINOIS

Nov 23 2020

Drawing Title
ELECTRICAL SPECIFICATIONS

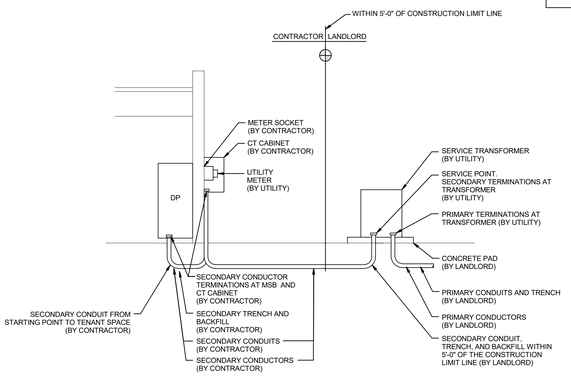
Job No.	Drawn
204461	ELT

Scale	Date
N.T.S.	11/09/20

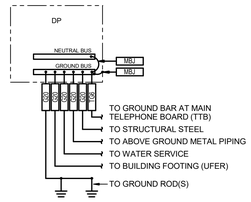
Sheet No.
E591

DEAN W. CHANDLER
11/23/2020 3:26:08 PM C:\Revit\Projects\2050001105 MEP -r21_ evan.tabol_20201123132837.rvt

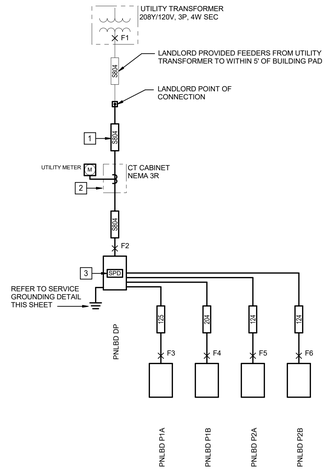
FAULT CURRENT GENERAL NOTE (ESTIMATED VALUE):
THE MAXIMUM AVAILABLE 3-PHASE SYMMETRICAL FAULT CURRENT VALUE AT THE UTILITY TRANSFORMER SECONDARY/POINT OF SERVICE COULD NOT BE DETERMINED AT THE TIME OF THIS SUBMITTAL. THE ESTIMATED WORST CASE VALUE OF 19,827A IS BASED ON AN INFINITE BUS CALCULATION AT THE UTILITY TRANSFORMER. CONTRACTOR SHALL VERIFY ACTUAL AVAILABLE FAULT CURRENT VALUE WITH UTILITY. NOTIFY ENGINEER IF ACTUAL VALUE EXCEEDS ESTIMATED CALCULATED VALUE. ESTIMATED DESIGN VALUE IS BASED ON THE FOLLOWING:
UTILITY TRANSFORMER SECONDARY VOLTAGE: 208Y/120V, 3P, 4W
UTILITY TRANSFORMER SIZE: 150KVA, Z=2.1%



1 UTILITY COORDINATION DETAIL
NO SCALE



2 SERVICE GROUNDING DETAIL
NO SCALE



3 ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

ONE-LINE DIAGRAM NOTES:

1. PROVIDE SECONDARY CONDUITS AND CONDUCTORS FROM LANDLORD PROVIDED POINT OF CONNECTION TO BUILDING PER UTILITY SERVICE STANDARDS. REFER TO FINAL WORK-LETTER AND CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.
2. COORDINATE METERING REQUIREMENTS WITH UTILITY COMPANY AND PROVIDE UTILITY CT CABINET WITH REMOTE METER BASE OR CT CABINET WITH INTEGRAL METER BASE AS DIRECTED BY UTILITY.
3. PROVIDE INTERNALLY MOUNTED SURGE SUPPRESSION DEVICE FOR PANELBOARD. REFER TO SPECIFICATIONS, SHEET E591 FOR REQUIREMENTS.

FEEDER SCHEDULE:

SIZES ARE BASED ON COPPER (CU) THHN/THWN-2 INSULATION, UNO. NUMBER DESIGNATIONS PRECEDED BY "A" INDICATE THAT THE SIZE IS BASED ON ALUMINUM (AL) WIRE. AL CONDUCTOR SIZES ARE BASED ON XHHW-2 INSULATION, UNO. ALL CONDUCTOR SIZES ARE BASED ON 75 DEG C RATED TERMINATIONS, UNO. CONDUIT SIZES SHOWN ARE APPROPRIATE FOR SCHEDULE 40 PVC, EMT, GRS, IMC AND RMC; ADJUST SIZE AS NEEDED FOR OTHER RACEWAY TYPES. FOR ANY OTHER CONDITIONS MODIFY SIZES PER CODE. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

124	125A, (4)#1, (1)#6G, 1-1/2" C
125	125A, (4)#1, (1)#6G, (1)#6 IG, 1-1/2" C
204	200A, (4)#3/0, (1)#6G, 2" C
020	GND, #2/0 COPPER GROUND, 3/4" C
MBJ	MAIN BONDING JUMPER; #2/0 AWG COPPER
5804	800A, (3) 3" C, EACH W/ (4)-300kcmil
TGB	COMM GND, #6 COPPER GROUND, 3/4" C

ONE-LINE DIAGRAM GENERAL NOTES:

1. THE INFORMATION SHOWN IN THE SHORT-CIRCUIT AND VOLTAGE DROP CALCULATION SCHEDULE IS SHOWN FOR CALCULATION PURPOSES ONLY. CONTRACTOR SHALL NOT USE THE CONDUIT TYPES, CONDUCTOR TYPES, SIZES, QUANTITIES OR LENGTHS FOR TAKEOFFS OR BIDDING PURPOSES. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN THIS SCHEDULE AND OTHER PORTIONS OF THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL NOTIFY ENGINEER OF AS-BUILT CONDITIONS THAT CONSTITUTE A CHANGE FROM WHAT IS SHOWN; THIS INCLUDES CONDUCTOR LENGTHS DIFFERING BY MORE THAN 10%.
2. COORDINATE ALL REQUIREMENTS FOR ELECTRICAL SERVICE WITH LANDLORD AND ELECTRIC UTILITY. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS
3. PROVIDE (4) EMPTY 1" CONDUITS WITH PULL STRINGS FROM EACH RECESSED PANELBOARD UP TO ACCESSIBLE CEILING SPACE. CAP AND LABEL CONDUITS FOR FUTURE USE.
4. PROVIDE A PERMANENT LABEL TO FRONT OF EQUIPMENT ENCLOSURE; REFER TO SPECIFICATIONS FOR LABEL REQUIREMENTS. LABEL SHALL READ AS FOLLOWS (INCLUDE RESPECTIVE NAMES IN BLANKS):

   SERVICE EQUIPMENT LABEL:
   LINE 1: NOMINAL VOLTAGE AND FREQUENCY IN HERTZ
   LINE 2: SERVICE EQUIPMENT BUS RATING IN AMPS
   LINE 3: SCCR OF SERVICE EQUIPMENT IN AMPS
   LINE 4: MAXIMUM AVAILABLE FAULT CURRENT IN AMPS
   LINE 5: DATE CALCULATED

   EXAMPLE:
   208Y/120V, 60HZ
   400A
   SCCR = 65,000A
   MAX AVAILABLE FAULT CURRENT = 58,815A
   CALCULATED: 01/01/2020

   PANELBOARD/SWITCHBOARD LABEL:
   LINE 1: PANELBOARD "_____" SUPPLIED BY UPSTREAM
   LINE 2: PANELBOARD/SWITCHBOARD "_____"
   LINE 3: LOCATED IN "_____"
   LINE 5: PANELBOARD(S) "_____"
5. ROOM NAMES/NUMBERS SHOWN IN PANELBOARD SCHEDULES ARE PER ARCHITECTURAL FLOOR PLANS. CONTRACTOR SHALL PROVIDE FINALIZED PANEL BOARD SCHEDULES AT THE COMPLETION OF THE PROJECT MATCHING ACTUAL INSTALLED ROOM NUMBERS AND NAMES. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
6. PROVIDE TYPED FINAL CIRCUIT DIRECTORY FOR ALL PANELBOARDS TO REFLECT ACTUAL AS-BUILT CONDITIONS. CIRCUIT DESCRIPTIONS SHALL BE PER CODE AND SHALL BE DISTINGUISHABLE FROM ALL OTHERS.
7. THE INFORMATION SHOWN IN THE SHORT-CIRCUIT AND VOLTAGE DROP CALCULATIONS SCHEDULE IS SHOWN FOR CALCULATION PURPOSES ONLY. CONTRACTOR SHALL NOT USE THE INFORMATION SHOWN IN THIS SCHEDULE FOR TAKEOFFS OR BIDDING. THIS INCLUDES CONDUIT/ CONDUCTOR TYPES, SIZES, QUANTITIES AND LENGTHS. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN THIS SCHEDULE AND OTHER PORTIONS OF THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL NOTIFY ENGINEER OF AS-BUILT CONDITIONS THAT CONSTITUTE A CHANGE FROM WHAT IS SHOWN BELOW; THIS INCLUDES CONDUCTOR LENGTHS DIFFERING BY MORE THAN 10%.

Short-Circuit and Voltage Drop Calculations

Distances are for calculation purposes only and shall not be used for contractor takeoffs nor bidding - Contractor shall notify Engineer of any field condition that results in a change of 10% or greater circuit distance

The following calculations are based on the "Point-by-Point" method where:
ISC (2) = ISC(1) x M(1) M= 1/(1+f)
ISC (1) = short circuit current at fault point 1
ISC (2) = short circuit current at fault point 2

Feeder: f (3Ø) = 1.732 x L x Isc / C x E
Feeder: f (1Ø)= 2 x L x Isc / C x E
XFMR: f (3Ø) = IP(sca)x Vp x 1.73 x %Z / 100,000 x KVA
XFMR: f (1Ø)= IP(sca)x Vp x %Z / 100,000 x KVA
IS(sca)= Vp x M x IP(sca) / Vs

VOLTAGE DROP (3Ø):
%VD= ((R x cos(arccos(pf)) + X x sin (arccos(pf))) x L/# x I x 1.73) / E
VOLTAGE DROP (1Ø):
%VD= ((R x cos(arccos(pf)) + X x sin(arccos(pf))) x 2 x L/# x I) / E

IP = Primary short circuit current
Vp = Primary voltage
IS= Secondary short circuit current
Vs= Secondary voltage
L = Length of circuit E = Line to line volts
C = "C" Factor from Bussman table where "C" = 1 / impedance per linear foot
Feeder Types =
NM - Non Magnetic Conduit, M - Magnetic Conduit, FB - Feeder Busway, PB - Plug-in Busway, TX - Transformer

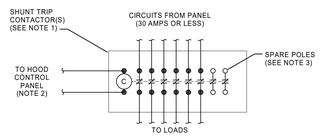
%VD CUM= Cumulative Voltage Drop from Fault Point 1 to Fault Point #
R= resistance in ohms per LF
X= reactances in ohms per LF

Fault Point (F#)	Bus/Feeder Description	Source (Fault Point)	Phase	Source Isc (amps)	Feeder: Conduit Type/ TX	Material	Quantity of Parallel Sets and Bus/ Phase & Neutral Size	Conductor 'C' Value	Busway 'C' Value	L-L Voltage (E)	Circuit Length (L)	Load Power Factor (pf)	Circuit Load (Amperage)	Conductor: Resistance (R)	Reactance (X)	Arccos (pf) (Radians)	Transformer: Type	Degree Rise	kVA	New Xfmr Z	Existing Xfmr Z	Secondary Voltage	Tap Setting	f	M	Fault Current (amps)	Voltage Drop (%VD)	Cumulative Voltage Drop (%VD)	Fault Point (F#)
1	Utility Service Point			19,827 at the secondary of the utility transformer																			Source Isc + 6X Motor Contribution =		21267				1
	Motor Contribution			240 The connected full load motor amps (includes compressors) on the system																									
2	DP	1	3	21267	NM	CU	3 Set(s) of 300 kcmil	20868	--	208	140	0.9	500	0.000044	0.000041	0.451027								0.396	0.72	15234	-1.12%	-1.12%	2
3	P1A	2	3	15234	M	CU	1 Set(s) of 1 AWG	7293	--	208	30	0.9	80	0.000160	0.000057	0.451027								0.522	0.66	10010	-0.34%	-1.45%	3
4	P1B	2	3	15234	M	CU	1 Set(s) of 3/0 AWG	12844	--	208	30	0.9	150	0.000079	0.000052	0.451027								0.296	0.77	11752	-0.35%	-1.47%	4
5	P2A	2	3	15234	M	CU	1 Set(s) of 1 AWG	7293	--	208	30	0.9	70	0.000160	0.000057	0.451027								0.522	0.66	10010	-0.30%	-1.41%	5
6	P2B	2	3	15234	M	CU	1 Set(s) of 1 AWG	7293	--	208	30	0.9	90	0.000160	0.000057	0.451027								0.522	0.66	10010	-0.38%	-1.50%	6
7	RTU-1	2	3	15234	M	CU	1 Set(s) of 4 AWG	3806	--	208	60	0.85	60	0.000310	0.000060	0.554811								2.000	0.33	5078	-0.88%	-2.00%	7
8	RTU-2	2	3	15234	M	CU	1 Set(s) of 4 AWG	3806	--	208	55	0.85	60	0.000310	0.000060	0.554811								1.833	0.35	5377	-0.81%	-1.93%	8

BUILDING ELECTRICAL SERVICE LOAD SUMMARY

BUILDING OCCUPANCY TYPE:	A	SERVICE DESCRIPTION:
BUILDING SQUARE FOOTAGE:	± 3,300	208Y/120V, 3PH

LOAD DESCRIPTION	Connected KVA	Demand FACTOR	Demand KVA
HVAC - SUMMER	29.78	100%	29.78
HVAC - WINTER	26.00	100%	0.00
LIGHTING (PER NEC-220)	6.60	125%	8.25
RECEPTACLES	8.30	100%;50%	8.30
KITCHEN EQUIPMENT	72.30	65%	47.00
MOTOR LOADS	9.82	100%	9.82
LARGEST MOTOR LOAD	3.96	125%	4.95
SUPPLEMENTAL ELECTRIC HEAT	21.80	100%	21.80
MISCELLANEOUS EQUIPMENT	7.34	100%	7.34
REFRIGERATION EQUIPMENT	11.24	100%	11.24
DISPLAY CASE/SIGNAGE	6.00	125%	7.50
SHOW WINDOW / TRACK LIGHTING	17.92	PER NEC	21.92
EXTERIOR LIGHTING	0.85	125%	1.06
TOTAL LOAD	221.92	KVA	178.96
TOTAL AMPACITY	616	AMPS	497
SERVICE AMPACITY	800	AMPS	800
SPARE CAPACITY		AMPS	303



NOTES:
1. SHUNT TRIP CONTACTOR(S) SHALL BE SQUARE D 8903 SERIES, TYPE 'L' OR APPROVED EQUIVALENT, ELECTRICALLY HELD, NORMALLY CLOSED, WITH 30A RATED CONTACTS AND 120V CONTROL COILS. INSTALL ALL CONTACTORS IN AN ENCLOSURE ABOVE ACCESSIBLE CEILING UNLESS NOTED OTHERWISE. LABEL CONTACTOR ENCLOSURE "SHUNT TRIP CONTACTORS"
2. CONNECT CONTACTOR COILS TO SHUNT TRIP TERMINALS IN HOOD CONTROL PANEL FOR AUTOMATIC SHUT-DOWN OF COOK-LINE EQUIPMENT CIRCUITS ON FIRE CONDITION. REFER TO THE HOOD MANUFACTURER'S WIRING DIAGRAMS FOR CONNECTION AND FIELD VERIFY THAT HOOD PROVIDES 120V MAINTAINED OUTPUT UPON ACTIVATION OF FIRE SUPPRESSION SYSTEM.
3. PROVIDE WITH NUMBER OF POLES AS REQUIRED OR NOTED ON PLANS. PROVIDE A MINIMUM OF (2) SPARE POLES FOR FUTURE EQUIPMENT.

4 SHUNT TRIP CONTACTOR
NO SCALE

HENDERSON ENGINEERS
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
2050001105
IL CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

LICENSED PROFESSIONAL ENGINEER
DEAN WAY CHANDLER
062.069925
OF ILLINOIS
EXPIRATION DATE: 4/30/21

Nov 23 2020

Drawing Title: ELECTRICAL ONE-LINE DIAGRAM

Job No.	Drawn
204461	ELT

Scale	Date
N.T.S.	11/09/20

Sheet No.: E601

DEAN W. CHANDLER
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ELECTRICAL KITCHEN EQUIPMENT CONNECTION SCHEDULE

TAG	DESCRIPTION	AMPS	VOLTS	PHASE	TERMINATION	NOTES
E1	WALK-IN COOLER LTS	1.0	120	1	JUNCTION BOX ON TOP OF WALK-IN BOX	4, 6
E1A	WALK-IN COOLER EVAPORATOR	2.7	120	1	WP MOTOR RATED DISCONNECT SWITCH	4, 7
E1B	WALK-IN COOLER CONDENSER	9.3	208	3	NEMA 3R DISCONNECT SWITCH AT UNIT, SIZE AS REQUIRED	4, 7
E2	WALK-IN FREEZER LTS	1.0	120	1	JUNCTION BOX ON TOP OF WALK-IN BOX	4, 6
E2A	WALK-IN FREEZER EVAPORATOR	TBD	TBD	1	WP MOTOR RATED DISCONNECT SWITCH	4, 7
E2B	WALK-IN FREEZER CONDENSER	9.3	208	1	NEMA 3R DISCONNECT SWITCH AT UNIT, SIZE AS REQUIRED	4, 7
E29	NITROGEN GENERATOR	10.0	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E30	RTI OIL RECYCLING TANKS	15.0	120	1	NEMA 5-20R RECEPTACLE	1
E33	SODA B.I.B. SYSTEM	6.5	120	1	NEMA 5-20R RECEPTACLE	1
E36	ICE MACHINE	13.5	208	1	NEMA L14-20R OR L6-20R TWIST-LOCK PER EQUIPMENT REQUIREMENTS	3
E63	UC DISHWASHER	29.0	120/208	3	40A/3P TOGGLE DISCONNECT ABOVE COUNTER AND JUNCTION BOX BELOW	5
E73	FOOD PROCESSOR	12.0	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	
E75	IMMERSION BLENDER	2.3	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E77	RETHERMALIZER	24.0	208	1	NEMA 6-30R RECEPTACLE	1
E78	FOOD PROCESSOR	5.0	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E90	COOKING HOOD	TBD	120	1	PROVIDE CONNECTION TO HOOD	6, 8
E91	HOOD EXHAUST FAN	6.6	208	3	PROVIDE CONNECTION TO EXHAUST FAN	8
E92	HOOD SUPPLY FAN	11.2	120	1	PROVIDE CONNECTION TO MAKE UP AIR UNIT	8
E93	GREASE COLLECTOR	7.1	120	1	NEMA 5-20R RECEPTACLE	1
E94	HOOD FIRE SUPPRESSION	TBD	120	1	PROVIDE CONNECTION TO HOOD	6, 8
E100	GAS GRIDDLE	2.0	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E101	GAS GRIDDLE	2.0	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E102A	REFRIGERATED BASE	8.7	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E102C	REFRIGERATED BASE	8.7	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E102E	REFRIGERATED BASE	8.7	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E103A	GAS FRYER	0.7	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E103B	FRYER FILTER WITH PUMP	10.0	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E104A	GAS FRYER	6.1	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E104B	FRYER FILTER WITH PUMP	10.0	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E105	FRY DUMP WITH WARMER	9.1	120	1	NEMA 5-20R RECEPTACLE WITH WP IN-USE COVER	1
E121	CONVEYOR TOASTER	13.4	208	1	NEMA 6-20R RECEPTACLE	1
E122	REFRIGERATED PREP UNIT	9.0	120	1	NEMA 5-20R RECEPTACLE	1
E122A	REFRIGERATED PREP UNIT	9.0	120	1	NEMA 5-20R RECEPTACLE	1
E123	WORK TOP FREEZER	4.8	120	1	NEMA 5-20R RECEPTACLE	1
E124	TOPPING DISPENSER	8.3	120	1	NEMA 5-20R RECEPTACLE	1
E125	KDS SCREEN	1.0	120	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E131	HEATED SHELF	7.9	120	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E131A	HEATED SHELF	6.4	120	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E133	60" HEAT LAMP	14.9	120/208	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E133A	48" HEAT LAMP	11.7	120/208	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E134	24" HEAT LAMP	8.2	120/208	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E135	HEATED SHELF	3.5	120	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E141	KDS SYSTEM	1.0	120	1	PROVIDE DIRECT CONNECTION TO PRE-WIRED OVERSHELF	4
E143	CURVED LID DISPLAY FREEZER	2.3	120	1	NEMA 5-20R RECEPTACLE	1
E145	TOPPING DISPENSER	4.3	120	1	NEMA 5-20R RECEPTACLE	1
E160	CUSTARD MACHINE MIXER MOTORS	3.3	208	3	(2) NEMA L15-20R TWIST-LOCK RECEPTACLE	3
E161	CUSTARD MACHINE REMOTE COND.	14.0	208	3	NEMA 3R 30A/3P DISCONNECT SWITCH	4, 7
E162	CUSTARD MOBILE FREEZER	6.0	120	1	NEMA 5-20R RECEPTACLE	1
E172	CUSTARD DIPPING CABINET	6.5	120	1	NEMA 5-20R RECEPTACLE	1
E174	KDS SCREEN	1.5	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E181	COLD BEVERAGE DISPENSER	3.8	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E182	THREE SPINDLE MIXER	7.5	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E184	CONCRETE MIXER	6.4	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E188	UC DISHWASHER	29.0	120/208	3	40A/3P TOGGLE DISCONNECT ABOVE COUNTER AND JUNCTION BOX BELOW	5
E200	WORK TOP REFRIGERATOR	7.3	120	1	NEMA 5-20R RECEPTACLE	1
E203	SODA DISPENSER	5.0	120	1	NEMA 5-20R RECEPTACLE	1
E204	ICE TEA BREWER	14.4	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E206	LEMONADE DISPENSER	5.5	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	1
E208	KDS SCREEN	1.5	120	1	NEMA 5-20R RECEPTACLE	1
E221	POS EQUIPMENT	1.5	120	1	NEMA 5-20R IG AND 5-20R GFCI RECEPTACLES	1
E221A	KIOSK TERMINAL	1.5	120	1	NEMA 5-20R IG AND 5-20R GFCI RECEPTACLES	1
E224	BEER SYSTEM	12.0	120	1	NEMA 5-20R RECEPTACLE	1
ECO	CONVENIENCE RECEPTACLE	1.5	120	1	NEMA 5-20R GFCI PROTECTED RECEPTACLE	

GENERAL NOTES:

A EQUIPMENT SCHEDULE BASED ON ORIGINAL EQUIPMENT SELECTIONS AVAILABLE AT THE TIME OF THIS DESIGN. VERIFY EQUIPMENT SELECTIONS AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT BEING PURCHASED WITH EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN AND ADJUST ELECTRICAL PROVISIONS AS NECESSARY PER EQUIPMENT MANUFACTURER'S INSTALLATION REQUIREMENTS
B REFER TO FOOD SERVICE DRAWINGS FOR EXACT LOCATIONS, MOUNTING HEIGHTS, AND ADDITIONAL REQUIREMENTS FOR ALL KITCHEN EQUIPMENT.
C ALL WP COVERS SHALL BE WEATHER PROOF WHILE IN-USE TYPE UNLESS NOTED OTHERWISE.
D PROVIDE PRINTED LABELS FOR ALL DISCONNECT SWITCHES INDICATING THE LOAD SERVED

SCHEDULED NOTES:

1. EQUIPMENT SUPPLIED WITH FACTORY INSTALLED CORD AND PLUG
2. EQUIPMENT SUPPLIED WITH CORD AND PLUG SHIPPED LOOSE. INSTALL CORD SET AND CONNECT COMPLETE
3. PROVIDE HEAVY DUTY CORD AND MATCHING PLUG AS SCHEDULED
4. PROVIDE LIQUID-TIGHT FLEXIBLE CONDUIT CONNECTION TO ALLOW FOR LOCATION ADJUSTMENTS.
5. PROVIDE INDUSTRIAL GRADE TOGGLE DISCONNECT FLUSH IN WALL ABOVE COUNTER; LEVITON #MS403 40A/3P WITH #84001-LOK COVER OR EQUAL.
6. EQUIPMENT MAY BE SEPARATED FOR SHIPPING. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CONNECT COMPLETE.
7. PROVIDE ALL INTERCONNECTIONS TO REMOTE CONDENSING UNIT. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS AND CONNECT COMPLETE.
8. ROUTE CIRCUIT THROUGH HOOD CONTROL PANEL FOR CONTROL

SSE 2019.1

PANELBOARD: DP

BUS AMPS: 800A
MAIN SIZE/TYPE: 800A MCB
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1
FED FROM: UTILITY METER
AIC RATING: FCA +10% MINIMUM FULLY RATED
SERVES: SHAKE SHACK
MOUNTING: SURFACE
LOCATION: MECHANICAL ROOM
EQUIPMENT GROUND BUS
SERVICE ENTRANCE RATED

	CKT NO.	DESCRIPTION	A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	A	B	C	DESCRIPTION	CKT NO.
	1		5,894									8,431				2
	3	RTU-1		5,894		4	70	3	3	125	OL		8,543		PNLBD P1A	4
	5				5,894									9,447		6
	7		5,894									20,744				8
	9	RTU-2		5,894		4	70	3	3	200	OL		17,226		PNLBD P1B	10
	11				5,894									19,418		12
	13		800									11,496				14
LCK	15	MAU-1 (1.5 HP)		800		12	20	3	3	125	OL		11,252		PNLBD P2A	16
	17				800									11,282		18
	19											14,726				20
	21	SURGE SUPRESSOR				10	30	3	3	125	OL		15,163		PNLBD P2B	22
	23													13,137		24
		SUBTOTAL	12,589	12,589	12,589							55,397	52,184	53,284	SUBTOTAL	

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	67,986	COOLING	29,780	1.00	REFRIG	11,240	1.00	
AMPS	567	HEATING	26,000	0	SIGN/DISP	6,000	1.25	
TOTAL PHASE B - VA	64,773	LIGHTING	7,445	1.25	KITCHEN	72,304	0.65	
AMPS	540	RECEPTACLES	8,300	1.0/.5	EXISTING		1.00	
TOTAL PHASE C - VA	65,873	MOTORS	13,786	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	549	SUPP HEAT	21,800	1.00	SHOW WNDW	16,000	1.25	177,970 VA
TOTAL PNLBD - VA	198,631	MISC EQUIP	7,340	1.00	LTG TRACK	1,920	1.00	494 A
AMPS	551							

LIGHTING DEMAND BASED ON NEC-220
SIGN/DISPLAY - SIGNAGE & DISPLAY CASE

PANELBOARD LEGEND

ABBREVIATIONS V1.00

- AF ARC FAULT CIRCUIT INTERRUPTER.
- C# CIRCUIT VIA LIGHTING CONTACTOR #.
- CL CIRCUIT VIA CURRENT LIMITING DEVICE.
- D DISCONNECT CIRCUITRY FOR REMOVED LOAD, UPDATE CIRCUIT DIRECTORY TO SPARE AND TURN OFF.
- EM EMERGENCY LIGHTING HANDLE-ON CLAMP.
- EX EXISTING.
- F FUTURE LOAD; NOTE AS SPARE AND TURN OFF.
- FA RED/HANDLE-ON CLAMP.
- GF GROUND-FAULT CIRCUIT INTERRUPTER TYPE CIRCUIT BREAKER (5 mA).
- GFEP GROUND FAULT EQUIPMENT PROTECTION BREAKER (30 mA).
- HT PROVIDE HANDLE-TIE FOR MULTI-WIRE BRANCH CIRCUIT PER CODE.
- IG ISOLATED GROUND CIRCUIT.
- L# LIGHTING CONTROL SCHEME NUMBER.
- LCK HANDLE PADLOCKABLE-OFF DEVICE.
- LO HANDLE-ON CLAMP.
- N PROVIDE NEW CIRCUIT BREAKER.
- OL REFER TO ELECTRICAL ONE-LINE/RISER DIAGRAM.
- PS POWER-SWITCHING CIRCUIT BREAKER.
- PSE EMERGENCY POWER-SWITCHING CIRCUIT BREAKER.
- R REUSE EXISTING CIRCUIT BREAKER FOR NEW/REVISED LOAD.
- RP CIRCUIT VIA RELAY PANEL.
- ST SHUNT TRIP CIRCUIT BREAKER.
- STC ROUTE VIA SHUNT TRIP CONTACTOR
- V VERIFY EXISTING LOAD AND UPDATE DIRECTORY, IF UNUSED, NOTE AS SPARE AND TURN OFF.
- VD BRANCH CIRCUITRY HAS BEEN UPSIZED TO REDUCE VOLTAGE DROP. ADJUST GROUND WIRE SIZE PER CODE. PROVIDE LUG ADAPTORS IF REQUIRED.
- Z CORRECT/REPAIR EXISTING HAZARD TO MAKE CODE COMPLIANT INSTALLATION.

NOT ALL ABBREVIATIONS ARE USED.

PANELBOARD: P1A

BUS AMPS: 225A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1
FED FROM: PNLBD DP
AIC RATING: FCA +10% MINIMUM SERIES RATED
SERVES: SHAKE SHACK
MOUNTING: RECESSED
LOCATION: BACK OF HOUSE
EQUIPMENT GROUND BUS
ISOLATED GROUND BUS

	CKT NO.	DESCRIPTION	A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	A	B	C	DESCRIPTION	CKT NO.	
	1	MGR OFFICE DESK RCPTS	720			12	20	1	1	20	12	660			RESTROOM RCPTS	2	
IG	3	MGR OFFICE DESK IG RCPTS		720		12	20	1	1	20	12		1,440		HAND DRYER - MEN'S RR	4	LCK
	5	MGR OFFICE RCPTS/BELL			900	12	20	1	1	20	12			1,440	HAND DRYER - WOMEN'S RR	6	LCK
LO	7	MGR OFFICE SECURITY PANEL	180			12	20	1	1	20	12	600			EF-1 + EF-2	8	
IG	9	MGR OFFICE IT RACK 1		1,000		12	20	1	1	20	12		360		ROOF RCPTS	10	
IG	11	MGR OFFICE IT RACK 2			1,000	12	20	1	1	20	12			540	CONV RCPTS	12	
GF	13	ORDER COUNTER GEN RCPTS	720			12	20	1	1	20	12	510			WH-1+RP	14	LCK
IG/GF	15	ORDER COUNTER IG RCPTS		720		12	20	1	1	20	12		1,440		WH-2	16	LCK
	17	ORDER KIOSK PLUGMOLD			720	12	20	1	1	20	12			500	AC-1	18	
	19	INTERIOR SIGNAGE RCPTS	1,200			12	20	1	1	20	12	200			FSMP	20	FA
	21	EXTERIOR SIGNAGE 1		1,200		12	20	1	1	20	12		180		CO/CO2 DETECTOR	22	
	23	EXTERIOR SIGNAGE 2			1,200	12	20	1	1	20	12			720	INTERIOR TRACK LIGHTING 1+EM	24	EM
	25	EXTERIOR SIGNAGE 3	1,200			12	20	1	1	20	12	600			INTERIOR TRACK LIGHTING 2+EM	26	EM
	27	SIGN BAND LED STRIP		102		12	20	1	1	20			72		VESTIBULE+RR HALL LTG+EM	28	EM
	29	NORTH WALL SCONCES			27	12	20	1	1	20	12			200	DINING AREA PENDANTS	30	
	31	SOUTH WALL SCONCES	27			12	20	1	1	20	12	434			BOH/OFC/RR LTS+EM LTG	32	EM
	33	PATIO STRING LIGHTS		419		12	20	1	1	20	12		530		KITCHEN DOWNLIGHTS+EM	34	EM
	35	PATIO FANS			450	12	20	1	1	20	12			200	EXTERIOR WALL PACK LTG	36	
	37	SHOW WINDOW + TV RCPTS	1,080			12	20	1	1	20	12	300			PICKUP WINDOW	38	
	39	SPARE (OFF)					20	1	1	20	12		360		PICKUP AIRCURTAIN	40	
	41	DRIVE THRU SIGNS + BOLLARDS			1,270	12	20	1	1	20	12			280	PICKUP MENU+VEHICLE SENSOR	42	
		SUBTOTAL	5,127	4,161	5,567							3,304	4,382	3,880	SUBTOTAL		

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	8,431	COOLING		1.00	REFRIG		1.00	
AMPS	70	HEATING		0	SIGN/DISP	6,000	1.25	
TOTAL PHASE B - VA	8,543	LIGHTING	3,401	1.25	KITCHEN		1.00	
AMPS	71	RECEPTACLES	8,300	1.0/.5	EXISTING		1.00	
TOTAL PHASE C - VA	9,447	MOTORS	2,000	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	79	SUPP HEAT	1,800	1.00	SHOW WNDW	1,080	1.25	30,001 VA
TOTAL PNLBD - VA	26,421	MISC EQUIP	3,840	1.00	LTG TRACK	960	1.00	83 A
AMPS	73							

LTG TRACK - TRACK LENGTH
SIGN/DISPLAY - SIGNAGE & DISPLAY CASE

PANELBOARD: P1B

BUS AMPS: 225A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1
FED FROM: PNLBD DP
AIC RATING: FCA +10% MINIMUM SERIES RATED
SERVES: SHAKE SHACK
MOUNTING: RECESSED
LOCATION: BACK OF HOUSE
EQUIPMENT GROUND BUS

	CKT NO.	DESCRIPTION	A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	A	B	C	DESCRIPTION	CKT NO.	
GF	1	(E30) OIL RECYCLING TANK	1,440			12	20	1	1	20	12	1,440			(E29) NITROGEN GENERATOR	2	GF
GF	3	(E30) OIL RECYCLING TANK		1,440		12	20	1	1	20	12		780		(E33) BAG-IN-BOX RCPT	4	GF
	5				816				1	20	12			1,440	(E73) FOOD PROCESSOR RCPT	6	
	7	(E1B) WALK-IN CLR CONDENSER	816			12	20	3	1	20	12	276			(E75) IMMERSION BLENDER	8	
	9	208/3		816					1	20	12		600		(E78) FOOD PROCESSOR RCPT	10	
	11	(E2B) WALK-IN FZR CONDENSER			1,072	12	20	2	2	30	10			2,500	(E77) RETHERMALIZER RCPT	12	GF
	13	208/1	1,072									2,500			208/1	14	
	15	(E1) WALK-IN CLR LTS/EVAP		240		12	20	1	2	20	12		1,350		(E36) ICE MACHINE RCPT	16	GF
GFEP	17	(E2) WALK-IN FZR LTS/HEAT TAPE			240	12	20	1						1,350	208/1	18	
	19	(E224) BEER SYSTEM RCPT	1,200			12	20	1	2	25	10	2,000			IH-1	20	
	21	IH-2		2,000		10	25	2					2,000			22	
	23				2,000				2	25	10			2,000	IH-3	24	
	25	IH-4	2,000			10	25	2				2,000				26	
	27			2,000					2	25	10		2,000		IH-5	28	
	29	IH-6			2,000	10	25	2						2,000		30	
	31		2,000						2	25	10	2,000			IH-7	32	
	33	IH-8		2,000		10	25	2					2,000			34	
	35				2,000				2	25	10			2,000	IH-9	36	
	37	SPACE						1				2,000				38	
	39	SPACE						1	1						SPACE	40	
	41	SPACE						1	1						SPACE	42	
		SUBTOTAL	8,528	8,496	8,128							12,216	8,730	11,290	SUBTOTAL		

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	20,744	COOLING		0	REFRIG	6,272	1.00	
AMPS	173	HEATING	16,000	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	17,226	LIGHTING		1.25	KITCHEN	15,116	0.65	
AMPS	144	RECEPTACLES		1.0/.5	EXISTING		1.00	
TOTAL PHASE C - VA	19,418	MOTORS		1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	162	SUPP HEAT	20,000	1.00	SHOW WNDW		1.25	53,057 VA
TOTAL PNLBD - VA	57,388	MISC EQUIP		1.00	LTG TRACK	960	1.00	147 A
AMPS	159							

LTG TRACK - TRACK LENGTH

PANELBOARD: P2A

BUS AMPS: 225A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1
FED FROM: PNLBD DP
AIC RATING: FCA +10% MINIMUM SERIES RATED
SERVES: SHAKE SHACK
MOUNTING: RECESSED
LOCATION: BACK OF HOUSE
EQUIPMENT GROUND BUS

	CKT NO.	DESCRIPTION	A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	A	B	C	DESCRIPTION	CKT NO.	
	1	(E204) ICED TEA BREWER RCPT	1,700			12	20	1	1	15	12	500			(E90/E94) HOOD CTRL/ANSUL	2	LO
	3	(E182) DRINK MIXER RCPT 1		900		12	20	1	1	20	12		852		(E93) RTI GRILL GREASE RCPT	4	GF/STC
	5	(E182) DRINK MIXER RCPT 2			900	12	20	1	1	20	12			720	(E102A) REFRIG BASE RCPT 1	6	GF/STC
	7		3,500						1	20	12	240			(E100) GRIDDLE RCPT 1	8	GF/STC
	9	(E188) DISHWASHER		3,500		8	35	3	1	20	12		204		(E103A) FRYER RCPT 1	10	GF/STC
	11	120/208/3			3,500				1	20	12			840	(E103B) FRYER RCPT 2	12	GF/STC
	13	(E184) DRINK MIXER RCPT	768			12	20	1	1	20	12	720			(E102C) REFRIG BASE RCPT 2	14	GF/STC
GF	15	(E200) WORK TOP REFRIG RCPT		876		12	20	1	1	20	12		1,092		(E105) FRY WARMER RCPT	16	GF/STC
	17	(E181) BEVERAGE DISP RCPT			450	12	20	1	1	20	12			204	(E104A) FRYER RCPT 1	18	GF/STC
	19	(E174) KDS SYSTEM RCPT	180			12	20	1	1	20	12	840			(E104B) FRYER RCPT 2	20	GF/STC
GF	21	(E172) CUSTARD CABINET RCPT		780		12	20	1	1	20	12		240		(E101) GRIDDLE RCPT 2	22	GF/STC
	23	(E206) BEVERAGE DISP RCPT			720	12	20	1	1	20	12			720	(E102E) REFRIG BASE RCPT 3	24	GF/STC
	25	(E203) SODA DISPENSER	600			12	20	1				828				26	
	27	(E208) KDS SCREEN RCPT		360		12	20	1	3	20	12		828		(E161) CUSTARD CONDENSER 1	28	
	29				396									828	208/3	30	
GF	31	(E160) CUSTARD MACHINE 1	396			12	20	3				828				32	
	33	208/3		396					3	20	12		828		(E161) CUSTARD CONDENSER 2	34	
	35				396									828	208/3	36	
GF	37	(E160) CUSTARD MACHINE 2	396			12	20	3	1						SPACE	38	
	39	208/3		396					1						SPACE	40	
	41	(E162) CUSTARD MOBILE FZR			780	12	20	1	1						SPACE	42	
		SUBTOTAL	7,540	7,208	7,142							3,956	4,044	4,140	SUBTOTAL		

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	11,496	COOLING		1.00	REFRIG	4,968	1.00	
AMPS	96	HEATING		0	SIGN/DISP		1.25	
TOTAL PHASE B - VA	11,252	LIGHTING		1.25	KITCHEN	28,562	0.65	
AMPS	94	RECEPTACLES		1.0/.5	EXISTING		1.00	
TOTAL PHASE C - VA	11,282	MOTORS		1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	94	SUPP HEAT		1.00	SHOW WNDW		1.25	24,033 VA
TOTAL PNLBD - VA	34,030	MISC EQUIP	500	1.00	LTG TRACK		1.00	67 A
AMPS	94							

PANELBOARD: P2B

BUS AMPS: 225A
MAIN SIZE/TYPE: MLO
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1
FED FROM: PNLBD DP
AIC RATING: FCA +10% MINIMUM SERIES RATED
SERVES: SHAKE SHACK
MOUNTING: RECESSED
LOCATION: BACK OF HOUSE
EQUIPMENT GROUND BUS

	CKT NO.	DESCRIPTION	A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	A	B	C	DESCRIPTION	CKT NO.	
	1		3,500						1	20	12	200			(E125) KDS DISPLAYS (PW)	2	GF
	3	(E63) DISHWASHER		3,500		8	35	3	1	20	12		950		(E131) HEATED SHELF (PW)	4	GF
	5	120/208/3			3,500				1	20	12			770	(E131A) HEATED SHELF (PW)	6	GF
GF	7	(E145) TOPPING DISP RCPT 1	156			12	20	1	1	20	12	420			(E135) HEATED SHELF (PW)	8	GF
GF	9	(E145) TOPPING DISP RCPT 2		517		12	20	1	1	20	12		200		(E141) KDS DISPLAYS (PW)	10	GF
GF	11	(E143) DISPLAY FREEZER			517	12	20	1	2	20	12			1,550	(E133) HEAT LAMP (PW)	12	
GF	13	(E122) PREP REFRIG RCPT	1,800			12	15	1				1,550			120/208/1	14	
GF	15	(E123) WORK TOP FZR RCPT		576		12	20	1	2	20	12		1,220		(E133A) HEAT LAMP (PW)	16	
GF	17	(E124) TOPPING DISP RCPT			1,000	12	20	1						1,220	120/208/1	18	
GF	19	(E121) CONVEYOR TOASTER	1,390			12	20	2	2	20	12	810			(E134) HEAT LAMP (PW)	20	
	21			1,390									810		120/208/1	22	
GF	23	(E122A) PREP REFRIG RCPT			1,080	12	20	1	2	25	10			1,200	OFFICE HVAC UNIT	24	
	25	KEF-1 + KEF-2 (VIA HOOD CTRL PNL)	1,400			12	20	1				1,200			(CU-1)	26	
	27			1,000					2	30	10		2,500		VESTIBULE HEATER	28	
	29	LIFT STATION CONTROL PANEL			1,000	12	20	3						2,500	(EUH-1)	30	
	31	(2 HP)	1,000						2	30	10	2,500			MECHANICAL ROOM HEATER	32	
	33	SPARE (OFF)					20	1					2,500		(EUH-2)	34	
	35	SPARE (OFF)					20	1	1	20					SPARE (OFF)	36	
	37	SPARE (OFF)					20	1	1	20					SPARE (OFF)	38	
	39	SPACE						1	1						SPACE	40	
	41	SPACE						1	1						SPACE	42	
		SUBTOTAL	9,246	6,983	7,097							6,680	8,180	7,240	SUBTOTAL		

		LOAD	CONN. VA	DF	LOAD	CONN. VA	DF	
TOTAL PHASE A - VA	15,926	COOLING	2,400	0	REFRIG		1.00	
AMPS	133	HEATING	10,000	1.00	SIGN/DISP		1.25	
TOTAL PHASE B - VA	15,163	LIGHTING		1.25	KITCHEN	28,626	0.65	
AMPS	126	RECEPTACLES		1.0/.5	EXISTING		1.00	
TOTAL PHASE C - VA	14,337	MOTORS	1,400	1.00	LRG MOTOR		1.25	TOTAL DEMAND
AMPS	119	SUPP HEAT		1.00	SHOW WNDW		1.25	33,007 VA
TOTAL PNLBD - VA	45,426	MISC EQUIP	3,000	1.00	LTG TRACK		1.00	92 A
AMPS	126							

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EXPIRES 4/30/2021

SHAKE SHACK
4071 W. 95TH ST., OAK LAWN, IL 60453
SHACK #1345

NO.	DATE	REMARKS
	11/23/20	ISSUE FOR PERMIT / BID
	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

EXPIRATION DATE: 11/30/21
LICENSED PROFESSIONAL ENGINEER DEAN WAY CHANDLER 062.069925 OF ILLINOIS

Nov 23 2020

Drawing Title: ELECTRICAL SCHEDULES
Job No.: 204461
Drawn: ELT
Scale: N.T.S.
Date: 11/09/20
Sheet No.: E602

DEAN W. CHANDLER
11/23/2020 3:28:28 PM C:\Revit\Projects\2050001105 MEP v21_evan.talbot_20201123132837.rvt

LIGHTING CONTROL DEVICE SCHEDULE

LINE-VOLTAGE WALL SWITCH OCCUPANCY SENSORS

SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	VOLTAGE	NOTES
$^{OS}	EATON ONW-P-1001-SP	ACUITY, COOPER HUBBELL, LEVITON LUTRON	WALL MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR. INTEGRAL MANUAL OVERRIDE SWITCH. SINGLE RELAY. LINE VOLTAGE. LOAD: 120V=800W, 277V=1200W.	PIR MAJOR 30' x 35' PIR MINOR 15' x 20' ULT MAJOR 20' x 20' ULT MINOR 15' x 15'	120/ 277	

LINE-VOLTAGE OCCUPANCY SENSORS

SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	VOLTAGE	NOTES
(A)	LEGRAND DT-355	ACUITY, COOPER HUBBELL, LEVITON	CEILING MOUNT DUAL TECHNOLOGY OCCUPANCY SENSOR. 360 DEGREE COVERAGE. LINE VOLTAGE. LOAD: 120V=800W, 277V=1200W.	PIR MAJOR 44' Ø PIR MINOR 25' Ø ULT MAJOR 40' x 40' ULT MINOR 30' x 30'	120/ 277	

LUTRON VIVE CONTROLLERS

NETWORK CONTROLLERS

SYMBOL TAG	MANUFACTURER MODEL/SERIES	ALTERNATE MANUFACTURER	DEVICE DESCRIPTION	COVERAGE (W X D)	VOLTAGE	NOTES
(V)	LUTRON VIVE HJS-0-FM	N/A	LUTRON VIVE WIRELESS CONTROL HUB, FLUSH-MOUNT ADAPTER, AND POWER SUPPLY.	N/A	120	
$^{MS}	LUTRON VIVE CONTROL STATION	N/A	LUTRON VIVE MASTER SWITCH BANK.	N/A	120	
(SW)	LUTRON VIVE RMJS-16R	N/A	LUTRON VIVE 16 AMP SWITCHING POWERPAK MODULE.	N/A	120	
(DF)	LUTRON VIVE MRF2S-6ND	N/A	LUTRON VIVE FORWARD PHASE DIMMING CONTROLLER MODULE.	N/A	120	
(DE)	LUTRON VIVE MRF2S-6ELV	N/A	LUTRON VIVE REVERSE PHASE (ELV) DIMMING CONTROLLER MODULE.	N/A	120	

GENERAL NOTES:

A. OCCUPANCY SENSOR LAYOUT DESIGNED FROM BASIS-OF-DESIGN COVERAGE PATTERNS. IF SUBMITTING ALTERNATE PER 'EQUIVALENT MANUFACTURER' COLUMN, ADJUST SENSOR QUANTITIES AND LOCATIONS PER MANUFACTURER-SPECIFIC SPACING CRITERIA.

B. PROVIDE SHOP DRAWINGS FOR ENGINEER AND ARCHITECT REVIEW THAT INCLUDE PRODUCT CUTSHEETS AND PROJECT-SPECIFIC LAYOUTS. LAYOUTS MUST INCLUDE SENSOR LOCATIONS, HEIGHTS, ORIENTATION, AND COVERAGE AREAS. SHOW COORDINATION WITH ALL OTHER CEILING DEVICES INCLUDING BUT NOT LIMITED TO HVAC SUPPLY AND RETURN GRILLES, SPRINKLERS, LIGHT FIXTURES, AND OTHER OWNER-PROVIDED CEILING MOUNTED DEVICES SUCH AS SPEAKERS, SECURITY CAMERAS, PROJECTORS, ETC. (SENSORS MAY BE ADVERSELY AFFECTED IF LOCATED TOO CLOSE TO OTHER CEILING MOUNTED DEVICES). ALSO PROVIDE SCHEMATICS AND SCHEDULES WHEN APPLICABLE.

C. LIGHTING CONTROLS PRICING SHALL BE COMPLETELY SEPARATE OF ANY LIGHT FIXTURE PRICING.

D. VERIFY COLOR(S) FOR ALL WALL AND CEILING MOUNTED DEVICES WITH THE ARCHITECT.

E. ALL WALL SWITCH AND CEILING SENSORS SHALL HAVE AN ADJUSTABLE TIME DELAY RANGE OF 0-30 MIN, UNO. CONFIRM SENSOR SETTINGS WITH SEQUENCE OF OPERATIONS AND OWNER PRIOR TO SYSTEM COMMISSIONING.

F. PROVIDE COPIES OF OPERATION AND MAINTENANCE INSTRUCTIONS FOR ALL DEVICES TO OWNER.

G. PROVIDE A NEUTRAL CONDUCTOR TO ALL WALL SWITCH LOCATIONS PER NEC REQUIREMENTS.

H. DO NOT SHARE NEUTRAL CONDUCTOR ON LOAD SIDE OF DIMMERS.

NOTES:

1. INSTALL CEILING SENSORS WITH CLEAR LINE OF SIGHT TO DOORWAY OPENINGS.

VERSION 4

LIGHT FIXTURE SCHEDULE*

TYPE	MANUFACTURER/MODEL #	LAMPS NO.	LAMPS TYPE	INPUT WATTS	INPUT VA	INPUT VOLTS	DESCRIPTION
A1	TOPAZ F-L24 38 840 D HP-75	-	INTEGRAL LED 80 CRI, 4000°K 4350 LUMENS	38	38.0	120/277	2'X4' RECESSED LED PANEL FOR GRID CEILINGS WITH EXTRUDED ALUMINUM BODY AND POLYCARBONATE LENS. PROVIDE WITH CABLE SUSPENSION KIT WHERE REQUIRED. 0-10V DIMMABLE LED DRIVER
A1-EM	TOPAZ F-L24 38 840 D HP-75 PROVIDE WITH: 8.5W EM DRIVER	-	INTEGRAL LED 80 CRI, 4000°K 4350 LUMENS	44	44.0	120/277	SIMILAR TO TYPE A1 EXCEPT WITH EMERGENCY LED DRIVER CAPABLE OF OPERATING FIXTURE IN EMERGENCY MODE AT 935 INITIAL LUMENS FOR 90 MINUTES.
B1	BEST LIGHTING PRODUCTS LEDUC-E24-3K WITH CORDPLUG-WHT-6C3P	-	INTEGRAL LED 80 CRI, 3000°K 865 LUMENS	10	9.7	120	LINEAR UNDER CABINET LED TASK LIGHT WITH INTEGRAL ON/OFF SWITCH AND WHITE CORD FOR PLUG-IN CONNECTION.
C	JUNO #R541BL TRACK HEAD WITH TRAC-MASTER 1-CIRCUIT TRACK LIGHTING SYSTEM PROVIDE CURRENT LIMITING DEVICE PER PLANS 1A=TCL1BL, 2A=TCL2BL, 3A=TCL3BL, 4A=TCL4BL	1	TCP #LED12P30D27KNFLB 80 CRI, 2700°K 850 LUMENS, 25° NFL	10.5	12.0	120	NOMINAL 1-3/8" W BY 3/4" H, 1-CIRCUIT LIGHTING TRACK WITH TRACK HEADS AS SHOWN FURNISH IN LENGTHS AS SHOWN WITH ALL REQUIRED CONNECTORS AND HARDWARE PROVIDE CURRENT LIMITING END FEED DEVICE AND CHANNEL STRUT SUSPENDED FROM STRUCTURE ABOVE FOR MOUNTING. TRACK AND FIXTURES SHALL HAVE BLACK FINISH.
CS (BLACK)	JUNO #R552BL TRACK HEAD WITH TRAC-MASTER 1-CIRCUIT TRACK LIGHTING SYSTEM PROVIDE CURRENT LIMITING DEVICE PER PLANS 1A=TCL1BL, 2A=TCL2BL, 3A=TCL3BL, 4A=TCL4BL	1	TCP #LED12P30D27KNFLB 80 CRI, 2700°K 850 LUMENS, 25° NFL	10.5	12.0	120	NOMINAL 1-3/8" W BY 3/4" H, 1-CIRCUIT LIGHTING TRACK WITH TRACK HEADS AS SHOWN FURNISH IN LENGTHS AS SHOWN WITH ALL REQUIRED CONNECTORS AND HARDWARE PROVIDE CURRENT LIMITING END FEED DEVICE AND CHANNEL STRUT SUSPENDED FROM STRUCTURE ABOVE FOR MOUNTING. TRACK AND FIXTURES SHALL HAVE BLACK FINISH.
E1W	BEST LIGHTING #R-16-LED (WHITE HOUSING)	2	3.3W LED 219 LUMENS (INCLUDED)	4	4.0	120/277	SELF CONTAINED EMERGENCY LIGHTING UNIT WITH WHITE THERMOPLASTIC HOUSING (2) 6 VOLT, 3.3 WATT LED HEADS AND SEALED MAINTENANCE FREE LEAD ACID BATTERY TO POWER HEADS FOR MINIMUM 90 MINUTES.
E3W	BEST LIGHTING #R-16-HO-LED (WHITE HOUSING)	2	3.3W LED 219 LUMENS (INCLUDED)	4	4.0	120/277	SELF CONTAINED EMERGENCY LIGHTING UNIT WITH WHITE THERMOPLASTIC HOUSING (2) 6 VOLT, 3.3 WATT LED HEADS AND SEALED MAINTENANCE FREE LEAD ACID BATTERY WITH REMOTE CAPACITY TO POWER INTEGRAL AND REMOTE HEADS FOR MIN. 90 MINUTES.
E4	BEST LIGHTING #RHLED-2-WP-MV-B (BLACK HOUSING)	2	1W LED (INCLUDED)	N/A	N/A	6V	EXTERIOR REMOTE HEADS ACCESSORY WITH (2) 6V 1W LED HEADS. CONNECT TO INTERIOR EMERGENCY FIXTURE INDICATED.
EX1	BEST LIGHTING #ELZXTU-01-G-C-A-EM (FRONT OF HOUSE - SURFACE MOUNT)	-	GREEN LEDS (INCLUDED)	4	3.8	120/277	SURFACE CEILING/WALL MOUNT EDGE LIT LED EXIT SIGN WITH CLEAR PANEL, GREEN LETTERS AND BRUSHED ALUMINUM FINISH. INTEGRAL NI-CAD BATTERY CAPABLE OF 90 MINUTES OF EMERGENCY OPERATION. UL 924 COMPLIANT. REFER TO PLANS FOR CEILING OR WALL MOUNT, CHEVRON ARROWS AND NUMBER OF FACES REQUIRED.
EX2	BEST LIGHTING #ELXTEU X R W W EM SDT (BACK OF HOUSE AND EMPLOYEE AREAS ONLY)	-	RED LEDS (INCLUDED)	4	3.6	120/277	UNIVERSAL MOUNT LED EXIT SIGN WITH RED LETTERS, WHITE THERMOPLASTIC HOUSING. NiMH BATTERY CAPABLE OF 90 MINUTES OF EMERGENCY OPERATION. UL 924 COMPLIANT. REFER TO PLANS FOR CHEVRON ARROWS AND NUMBER OF FACES REQUIRED.
G1-EM	LITHONIA #ZL1D-L48-SMR-3000LM-FST-MVOLT-30K-80CRI-E7W-WH	-	INTEGRAL LED 80 CRI, 3000°K 3000 LUMENS	30	35	120	4'-0" LINEAR LED FIXTURE WITH STEEL HOUSING AND POLYCARBONATE LENS WITH EMERGENCY BATTERY CAPABLE OF OPERATING FIXTURE IN EMERGENCY MODE AT 700 INITIAL LUMENS FOR 90 MINUTES.
P1	DECORATIVE PENDANT FIXTURE - SPEC TBD		TBD	100W (MAX)	100W (MAX)	120	DECORATIVE PENDANT FIXTURES ARE PROJECT SPECIFIC (REFER TO DD PACKAGE AND CONFIRM FIXTURE SPEC WITH PROJECT ARCHITECT)
R1	JUNO #IC1422LEDG4 27K 1 WITH 24W-WH TRIM	-	INTEGRAL LED 90 CRI, 2700°K 1400 LUMENS	20	20.4	120	RECESSED 6" LED DOWN LIGHT WITH IC HOUSING, CONICAL WHITE BAFFLE AND TRIM RING UL LISTED FOR THROUGH-BRANCH WIRING AND DAMP LOCATIONS ELV DIMMABLE LED DRIVER
R2	JUNO #IC4AL 07LM 27K 90CRI FL 120 FRPC WITH 4ZL PTSC TRIM AND DIFF 200 LENS	-	INTEGRAL LED 90 CRI, 2700°K 700 LUMENS	10.5	12.0	120	RECESSED 4" ADJUSTABLE LED DOWN LIGHT WITH IC HOUSING, AND SATIN CHROME TRIM RING. UL LISTED FOR THROUGH-BRANCH WIRING AND DAMP LOCATIONS ELV DIMMABLE LED DRIVER
R4	JUNO MG1LG2-27K-80 CRI-NFL-SN WITH TL602E-60-WH REMOTE 60W 120/12 VOLT TRANSFORMER	-	INTEGRAL LED 80 CRI, 2700°K 287 LUMENS, 24° NFL	5	5.0	120/12	RECESSED 2" LED DOWNLIGHT WITH MINIATURE GIMBAL HOUSING AND SATIN NICKEL FINISH. PROVIDE WITH REMOTE MOUNTED 120/12 VOLT POWER SUPPLY ELV DIMMABLE LED DRIVER (REMOTE)
SC1	LANTERA 9004 9004-W1-DOWN-RW-LED3090-W-BK-L2-UNV-WRS	-	INTEGRAL LED 90 CRI, 3000°K 287 LUMENS	20	20.0	120/277	WALL MOUNTED LED CYLINDER SCONCE.
ST1	AMERICAN LIGHTING LS-M-S24	X	ARCHIPELAGO LTS14C15024MB 2400°K 150 LUMENS	0.8/FT	0.8/FT	120	EXTERIOR COMMERCIAL GRADE PATIO STRING LIGHTS WITH WEATHER RESISTANT LAMP HOLDERS 24" OC FIELD CUTABLE PLUG CONNECTION. PROVIDE ALL SPANS EXCEEDING 20' WITH A PROPOER SUPPORT CABLE AND SECURED WITH CABLE TIES.
XB	SELUX INULA LED BOLLARD IBLS-2-4QD-3000K-SV-04	-	INTEGRAL LED 3000°K 205 LUMENS	2.5	2.5	120	EXTERIOR 2' LED BOLLARD.
XL	DIODE LED DI-12V-0160 BLAZE LED TAPE PROVIDE WITH REMOTE POWER SUPPLY	-	INTEGRAL LED 70 CRI, 3000°K 240 LUMENS/FT	3/LF	3/LF	12VDC	EXTERIOR LINEAR FLEXIBLE LED TAPE LIGHTING. PROVIDE WITH REMOTE LED DRIVERS AND CONNECT WITH LOW VOLTAGE CABLING TO START OF EACH RUN AS REQUIRED PROVIDE WITH ALL REQUIRED CONNECTORS AND MOUNTING HARDWARE.
XW3-EM	LUMARK XTOR9A-N-CBP	-	INTEGRAL LED 70 CRI, 3500°K 6468 LUMENS	110	116.4	120	EXTERIOR LED SECURITY WALL PACK WITH CAST ALUMINUM HOUSING. INTEGRAL EMERGENCY BATTERY CAPABLE OF OPERATING FIXTURE IN EMERGENCY MODE AT 468 INITIAL LUMENS FOR 90 MINUTES.
XC4	MONDO MND54FB3	-	N/A	47	50.4	120	EXTERIOR WET LOCATION 54" CEILING FAN WITH 3 BLADES AND WET LOCATION HOUSING.

***LIGHT FIXTURES AND LAMPS SHALL BE OBTAINED THOUGH SHAKE SHACK NATIONAL ACCOUNT. REFER TO SHEET T002 / NATIONAL ACCOUNTS LIST FOR MORE INFORMATION.**

LIGHT FIXTURE SCHEDULE NOTES:

1. CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER WITH CATALOG NUMBERS ONLY. FIRST READ THE COMPLETE DESCRIPTION, NOTES, AND SPECIFICATIONS IN CONJUNCTION WITH THE CATALOG NUMBER TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING ALL FIXTURES OF DEBRIS, INCLUDING THE INTERIOR OF REFLECTORS TO REMOVE FINGERPRINTS.
3. REFER TO LIGHTING PLANS AND ARCHITECTURAL DRAWINGS AND DETAILS FOR EXACT LOCATIONS, MOUNTING HEIGHTS, TRACK LENGTH AND ADDITIONAL MOUNTING INFORMATION PRIOR TO INSTALLATION. COORDINATE EXACT LOCATIONS OF ALL LIGHT FIXTURES WITH ARCHITECT PRIOR TO ROUGH-IN.
4. CONTRACTOR SHALL SUPPLY A COMPLETE AND OPERATIONAL SYSTEM TO COMPLY WITH DESIGN INTENT.
5. ALL LIGHT FIXTURES IN FOOD PREP AREAS SHALL BE PROVIDED WITH PROTECT-A-LAMP COVERS OR EQUIVALENT SHIELDED OR SHATTERPROOF LAMPS. CONTRACTOR SHALL VERIFY THAT ALL AREAS ARE PROPERLY PROTECTED AFTER SET-UP IS COMPLETE.
6. PROVIDE FACTORY-INSTALLED MAXIMUM WATTAGE LABEL ON MEDIUM SCREW BASE LIGHT FIXTURES THAT CORRESPONDS TO THE MAXIMUM WATTAGE INDICATED IN THE LIGHT FIXTURE SCHEDULE.
7. PROVIDE NOT LESS THAN (10) SPARE LAMPS OF EACH TYPE USED ON THE PROJECT TO THE OWNER AT PROJECT TURNOVER.

SSE 2019.5

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IL. CORPORATE NO: 184-002965
EXPIRES 4/30/2021

SHAKE SHACK

4071 W. 95TH ST., OAK LAWN, IL 60453

SHACK #1345

NO.	DATE	REMARKS
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	11/09/20	ISSUE FOR LL REVIEW

REVISIONS

EXPIRATION DATE: 11/30/21

LICENSED PROFESSIONAL ENGINEER
DEAN WAY CHANDLER
062.069925
OF ILLINOIS

Nov 23 2020

Drawing Title
ELECTRICAL LIGHTING SCHEDULES

Job No. 204461 | Drawn ELT

Scale N.T.S. | Date 11/09/20

Sheet No.
E620

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COM*check* Software Version 4.1.4.1

Interior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: Shake Shack
Project Type: New Construction

Construction Site:
W 95th St/US TRE 12-20
Oak Lawn, IL 60453

Owner/Agent:
SHAKE SHACK

Designer/Contractor:
Henderson Engineers
8345 Lenexa Dr
Suite 300
Lenexa, KS 66214

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-DINING (Common Space Types:Dining Area - Cafeteria/Fast Food)	1481	0.57	844
Allowance: Decorative Appearance (not lobbies) / Fix. ID: P1	1481 (a)	0.75	200 (b)
2-BOH/KITCHEN (Common Space Types:Food Preparation)	975	0.95	926
Allowance: Decorative Appearance (not lobbies) / Fix. ID: R4	934 (a)	0.75	60 (b)
3-RR CORRIDOR (Common Space Types:Corridor/Transition <8 ft wide)	97	0.59	57
4-MECH CLOSET (Common Space Types:Electrical/Mechanical)	96	0.39	37
5-OFFICE (Common Space Types:Office - Enclosed)	68	0.84	57
6-WOMENS RR (Common Space Types:Restrooms)	114	0.77	88
7-MENS RR (Common Space Types:Restrooms)	115	0.77	89
8-VESTIBULE (Common Space Types:Corridor/Transition >=8 ft wide)	79	0.59	47
		Total Allowed Watts =	2405

(a) Area claimed must not exceed the illuminated area permitted for this allowance type.
(b) Allowance is (B x C) or the actual wattage of the fixtures given in Section 2, whichever is less.

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-DINING (Common Space Types:Dining Area - Cafeteria/Fast Food)				
C/CS: C/CS: TRACK LIGHTING: Wattage based on current limiting device capacity	0	0	1200	1200
P1: P1: LED PENDANT: Other:	1	2	100	200
2-BOH/KITCHEN (Common Space Types:Food Preparation)				
A1/A1-EM: A1/A1-EM: 2x4 LED TROFFER: Other:	1	4	38	152
R1: R1: LED DOWNLIGHT: Other:	1	22	20	440
R4: R4: 60W LED DRIVER: Other:	1	1	60	60
3-RR CORRIDOR (Common Space Types:Corridor/Transition <8 ft wide)				
R2: R2: LED DOWNLIGHT: Other:	1	4	10	42
4-MECH CLOSET (Common Space Types:Electrical/Mechanical)				
G1: G1: 1x4 LINEAR LED: Other:	1	1	30	30

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
5-OFFICE (Common Space Types:Office - Enclosed)				
A1/A1-EM copy 1: A1/A1-EM: 2x4 LED TROFFER: Other:	1	2	38	76
B1: B1: UNDER COUNTER LTG: Other: Exemption:Furniture-mounted supplemental task lighting	1	2	10	Exempt
6-WOMENS RR (Common Space Types:Restrooms)				
R2 copy 1: R2: LED DOWNLIGHT: Other:	1	6	10	63
7-MENS RR (Common Space Types:Restrooms)				
R2 copy 2: R2: LED DOWNLIGHT: Other:	1	6	10	63
8-VESTIBULE (Common Space Types:Corridor/Transition >=8 ft wide)				
R2 copy 3: R2: LED DOWNLIGHT: Other:	1	2	10	21
			Total Proposed Watts =	2347

Interior Lighting PASSES: Design 2% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2018 IECC requirements in COM*check* Version 4.1.4.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

EVAN TALBOT - ELECTRICAL DESIGNER — Name - Title
Signature
11/20/2020 — Date

COM*check* Software Version 4.1.4.1

Exterior Lighting Compliance Certificate

Project Information

Energy Code: 2018 IECC
Project Title: Shake Shack
Project Type: New Construction
Exterior Lighting Zone 2 (Neighborhood business district)

Construction Site:
W 95th St/US TRE 12-20
Oak Lawn, IL 60453

Owner/Agent:
SHAKE SHACK

Designer/Contractor:
Henderson Engineers
8345 Lenexa Dr
Suite 300
Lenexa, KS 66214

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
DINING CANOPY (Dining area)	1431 ft2	0.65	Yes	930
ADJACENT VESTIBULE (Walkway < 10 feet wide)	8 ft of	0.5	Yes	4
NORTH WALL (Walkway < 10 feet wide)	20 ft of	0.5	Yes	10
MECH EXIT (Illuminated area of facade wall or surface)	10 ft2	0.07	No	1
BOH EXIT (Illuminated area of facade wall or surface)	10 ft2	0.07	No	1
		Total Tradable Watts (a) =		944
		Total Allowed Watts =		946
		Total Allowed Supplemental Watts (b) =		400

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 400 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
DINING CANOPY (Dining area 1431 ft2): Tradable Wattage				
LED 1: ST1: LED STRING LIGHTS: Other:	1	1	379	379
ADJACENT VESTIBULE (Walkway < 10 feet wide 8 ft of walkway length): Tradable Wattage				
LED 1 copy 1: SC1: WALL SCONCE: Other:	1	1	20	20
NORTH WALL (Walkway < 10 feet wide 20 ft of walkway length): Tradable Wattage				
LED 1 copy 2: SC1: WALL SCONCE: Other:	1	2	20	40
MECH EXIT (Illuminated area of facade wall or surface 10 ft2): Non-tradable Wattage				
LED 4: XW3: LED SEC WALL PACK: Other:	1	1	110	110
BOH EXIT (Illuminated area of facade wall or surface 10 ft2): Non-tradable Wattage				
LED 4 copy 1: XW3: LED SEC WALL PACK: Other:	1	1	110	110
			Total Tradable Proposed Watts =	439

Exterior Lighting PASSES: Design 61% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2018 IECC requirements in COM*check* Version 4.1.4.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

EVAN TALBOT - ELECTRICAL DESIGNER — Name - Title
Signature
11/20/2020 — Date

COM*check* Software Version 4.1.4.1

Inspection Checklist

Energy Code: 2018 IECC

Requirements: 98.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C103.2 [PR8][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C406 [PR9][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.2.2 [EL22][1]	Spaces required to have light-reduction controls have a manual control that allows the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern >= 50 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.1, C405.2.1.1 [EL18][1]	Occupancy sensors installed in classrooms/lecture/training rooms, conference/meeting/multipurpose rooms, copy/print rooms, lounges/breakrooms, enclosed offices, open plan office areas, restrooms, storage rooms, locker rooms, warehouse storage areas, and other spaces <= 300 sqft that are enclosed by floor-to-ceiling height partitions. Reference section language C405.2.1.2 for control function in warehouses and section C405.2.1.3 for open plan office spaces.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.1.2 [EL19][1]	Occupancy sensors control function in warehouses: In warehouses, the lighting in aisleways and open areas is controlled with occupant sensors that automatically reduce lighting power by 50% or more when the areas are unoccupied. The occupant sensors control lighting in each aisleway independently and do not control lighting beyond the aisleway being controlled by the sensor.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.1.3 [EL20][1]	Occupant sensor control function in open plan office areas: Occupant sensor controls in open office spaces >= 300 sq.ft. have controls 1) configured so that general lighting can be controlled separately in control zones with floor areas <= 600 sq.ft. within the space, 2) automatically turn off general lighting in all control zones within 20 minutes after all occupants have left the space, 3) are configured so that general lighting power in each control zone is reduced by >= 80% of the full zone general lighting power within 20 minutes of all occupants leaving that control zone, and 4) are configured such that any daylight responsive control will activate space general lighting or control zone general lighting only when occupancy for the same area is detected.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.2.2.1, C405.2.2.2 [EL21][2]	Each area not served by occupancy sensors (per C405.2.1) have time-switch controls and functions detailed in sections C405.2.2.1 and C405.2.2.2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.3, C405.2.3.1, C405.2.3.2 [EL23][2]	Daylight zones provided with individual controls that control the lights independent of general area lighting. See code section C405.2.3 Daylight-responsive controls for applicable spaces, C405.2.3.1 Daylight responsive control function and section C405.2.3.2 Sidelit zone.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Sidelit zones on first floor in Group A-2 and M occupancies.
C405.2.4 [EL26][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.4 [EL27][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.2.5 [EL28]null	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.3 [EL6][1]	Exit signs do not exceed 5 watts per face.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.6 [EL26][2]	Low-voltage dry-type distribution electric transformers meet the minimum efficiency requirements of Table C405.6.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.7 [EL27][2]	Electric motors meet the minimum efficiency requirements of Tables C405.7(1) through C405.7(4). Efficiency verified through certification under an approved certification program or the equipment efficiency ratings shall be provided by motor manufacturer (where certification programs do not exist).	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C405.8.2, C405.8.2.1 [EL28][2]	Escalators and moving walks comply with ASME A17.1/CSA B44 and have automatic controls configured to reduce speed to the minimum permitted speed in accordance with ASME A17.1/CSA B44 or applicable local code when not conveying passengers.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
C405.9 [EL29][2]	Total voltage drop across the combination of feeders and branch circuits <= 5%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C303.3, C408.2.5.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Applicable	Requirement will be met.
C405.4.1 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
C405.5.1 [FI19][3]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*
C408.1.1 [FI57][3]	Building operations and maintenance documents will be provided to the owner. Documents will cover manufacturers' information, specifications, programming procedures and means of illustrating to owner how building, equipment and systems are intended to be installed, maintained, and operated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.2.5.1 [FI16][3]	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
C408.3 [FI33][3]	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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