

ABBREVIATIONS

A ANCHOR BOLT
ACC ACCORDING/ACCORDION
ACOUS ACUSTICAL
ACT ACUSTICAL CEILING TILE
AD AREA DRAIN
ADD ADDENDUM
ADJ ADJUSTABLE/ADJACENT
AFF ABOVE FINISHED FLOOR
AGG AGGREGATE
AHJ AUTHORITY HAVING JURISDICTION
AHU AIR-HANDLING UNIT
AL ALUMINUM
ALT ALTERNATE/ALTERATION
AND AND
AP ACCESS PANEL/APRON PANEL
APPROX APPROXIMATE
APT APARTMENT
ARCH ARCHITECT/ARCHITECTURAL
ASPH ASPHALT
AVE AVENUE
AVG AVERAGE
AWP ACOUSTIC WALL PANEL

B BOTTOM OF CURB
BD BOARD
BITUM BITUMINOUS
BL BUILDING LINE
BLDG BUILDING
BLKG BLOCKING
BLVD BOULEVARD
BMB BEAM/BENCH MARK
BOT BOTTOM
BP BUILDING PAPER
BRG BEARING
BSMT BASEMENT
BTWN BETWEEN
BUR BUILT-UP ROOF
BV BOTTOM OF WALL

C CELSIUS/CENTIGRADE
CAB CABINET
CAP CAPACITY
CARP CARPET
CB CATCH BASIN/CHALKBOARD
CD CEILING DIFFUSER
CEM CEMENT
CEM PL CEMENT PLASTER
CER CERAMIC
CG CORNER GUARD
CGG CORNER GUARD
COH COAT HOOK
CHRL CHAIR RAIL
CI CAST IRON
CIP CAST IN PLACE
CJ CONTROL JOINT
CL CENTER LINE
CLG CEILING
CLKG CAULKING
CLO CLOSET
CLR CLEAR
CLSR CLOSER
CMU CONCRETE MASONRY UNITS
CO CLEAN OUT
COL COLUMN
COMP COMPOSITE/COMPOSITION
CONC CONCRETE
COND CONDITION
CONN CONNECT/CONNECTION
CONST CONSTRUCTION
CONT CONTINUOUS
COORD COORDINATE
CORR CORRIDOR
CRR COLD ROLLED
CT CERAMIC TILE/CURTAIN TRACK
CTR CENTER
CSK COUNTERSUNK
CU CUBIC
CW COLD WATER

D PENNY (NAILS)
DB DECIBEL
D CLOTHES DRYER
DBL DOUBLE
DECID DECIDUOUS
DEPT DETAIL
DF DRINKING FOUNTAIN/DOUGLAS FIR
DIA DIAMETER
DIAG DIAGONAL
DICA DRILLED IN CONCRETE ANCHOR
DIM DIMENSION
DISP DISPOSAL
DL DEAD LOAD
DN DOWN
DR DOOR/DRAIN
DS DOWN SPOUT
DSP DRY STAND PIPE
DW DISHWASHER
DWG DRAWING
DWR DRAWER

E EAST
EA EACH
EB EXPANSION BOLT
EJ EXPANSION JOINT
EL ELEVATION
ELEC ELECTRICAL
ELEV ELEVATOR
EMERG EMERGENCY
ENAM ENAMEL
ENR ENTRANCE
EP ELECTRICAL PANELBOARD/END PANEL
EQ EQUAL/EARTHQUAKE
EQJ EARTHQUAKE JOINT
EQUIP EQUIPMENT
ETR EXISTING TO REMAIN
EWC ELECTRIC WATER COOLER
EXC EXCAVATE/EXCAVATION
EXH EXHAUST
EXP EXPANSION
EXST(E) EXISTING
EXT EXTERIOR

F FAHRENHEIT
FA FIRE ALARM/FORCED AIR
FAB FABRICATE
FB FLAT BAR
FBD FIBER BOARD
FBO FURNISHED BY OWNER
FD FLOOR DRAIN
FDN FOUNDATION
FE FIRE EXTINGUISHER
FEC FIRE EXTINGUISHER CAB
FF FACTORY FINISH
FG FLOAT GLASS
FH FLATHEAD
FHC FIRE HOSE CABINET
FHMS FLATHEAD MACHINE SCREW
FIC FINISH
FIC FURNISHED AND INSTALLED BY CONTRACTOR
FIN FINISH
FIC FURNISHED AND INSTALLED BY OWNER
FIT FIT
FL FLOOR
FLASH FLASHING
FLOUR FLOUR
FM FROM/FACILITY MUTUAL RESEARCH CORPORATION
FMB FACE OF BRICK
FOC FACE OF CONCRETE
FOF FACE OF FINISH
FOC FURNISHED BY OWNER INSTALLED BY CONTRACTOR
FOV FURNISHED BY OWNER INSTALLED BY VENDOR
FOW FACE OF MASONRY
FOS FACE OF STUDS
FP FIREPROOF(ING)
FR FREEZER/FIRE RESTARDANT
FS FULL-SIZE/FLOOR SINK
FT FOOT OR FEET
FTG FOOTING
FURN FURNACE/FURNISH
FURR FURRING
FLT FUTURE
QVP FLAT WALL PAINT

G GAS
GALV GALVANIZED
GB GRAB BAR
GC GENERAL CONTRACTOR
GDIS GARBAGE DISPOSAL
GFRG GLASS FIBER REINFORCED CONCRETE
GFRG GLASS FIBER REINFORCED GYPSUM
GRFP GLASS FIBER REINFORCED PLASTER
GL GLASS/GLAZING/GLAZED
GLAM GLUE-LAMINATED WOOD
GWB GYPSUM WALLBOARD
GYP GYPSUM

H HINGE/HIGH
HB HOSE BID
HC HANDICAP/HOLLOW CORE
HCW HOT AND COLD WATER/HOLLOW-CORE WOOD
HDBD HARDBOARD
HDBR HARDENER
HDR HEADER
HDWD HARDWOOD
HDWE HARDWARE
HM HOLLOW METAL
HORIZ HORIZONTAL
HPSR HORSEPOWER/HIGH POINT/HEAT PUMP
HR HOUR/HANDRALL
HT HEATING
HTG HEATING
HW ROT WATER
HWR HOT WATER RETURN

ID INSIDE DIAMETER/INSIDE DIMENSION
IE INVERT ELEVATION
IG INSULATING GLASS
IND INDICATED
INSP INSPECTION
INST INSTALLATION
INSUL INSULATION
INT INTERIOR

J JANITOR
JST JOIST
JT JOINT

K KITCHEN
KO KNOCK OUT
KP KICK PLATE

L LEFT/LENGTH
LAB LABORATORY
LAM LAMINATED
LAV LAVATORY
LH LEFT HAND
LHR LEFT-HAND REVERSE
LKR LOCKER
LL LIVE LOAD
LP LOW POINT
LSG LAMINATED SAFETY GLASS
LT LIGHT
LTWT LIGHTWEIGHT
M/M S MIRROR WITH SHELF
MACH MACHINE
MAINT MAINTENANCE/MAINTAIN
MAS MASONRY
MAT MATERIAL
MAX MAXIMUM
MCW MINERAL CORE WOOD
MDF MEDIUM-DENSITY FIBERBOARD
MDO MEDIUM-DENSITY OVERLAY
MECH MECHANICAL
MEMB MEMBRANE
MT ENTRY MAT CARPET TILE
MUL METAL
MEZZ MEZZANINE
MFR MANUFACTURER/MANUFACTURING
MG MIRROR GLASS
MH MANHOLE
MIR MIRROR
MO MASONRY OPENING
MOD MODIFY
MS MIRROR WITH SHELF/MACHINE SCREW
MUL MOUNTED
MUL MULLION

N NORTH
NO.# NUMBER
NOM NOMINAL
NTS NOT-TO-SCALE
O OVER
OA OVERALL
OC ON-CENTER
OD OUTSIDE DIAMETER
ODF OVERFLOW DRAIN
OPNG OPENING
OPP OPPOSITE
OSB ORIENTED STRAND BOARD

P PAINT/POWER
PB PEGBOARD
PBB PLASTER BASEBOARD
PBB PARTICLESBOARD
PC PRECAST
PCD PAPER CUP DISPENSER
PERF PERFORATED
PERP PERPENDICULAR
PG PLATE GLASS
PH PHASE
PL PLASTIC LAMINATE
PLF PLASTIC FLOORING
PLAS PLASTER
PLYW PLYWOOD
PNL PANEL
PNT PAINT
POL POLISH
PP PUSH PLATE
PAIR PAIR
PRE FAB PREFABRICATE
PT PRESERVATIVE TREATED/POINT/POST-TENSIONED
PTD PAPER TOWEL DISPENSER
PTDW PAPER TOWEL DISPENSER & WASTE RECEPTACLE
PTN PARTITION
PMT PAVEMENT

QT QUARRY TILE
QR QUARTER

R RISER
R&S BACKER ROD AND SEALANT
RAD RADIUS
RB RUBBER-BASE
RCP REFLECTED CEILING PLAN
RD ROOF DRAIN
RECEP RECEPTION
RECEPT RECEPTACLE
RECT RECTANGULAR
REF REFERENCE/REFRIGERATOR
REINF REINFORCED
REQ REQUIRED
RES RESILIENT
RET RETAINING/RETURN
REV REVISION
RH ROBE HOOK/ROUND HEAD/RIGHT-HAND
RM ROOM
RO ROUGH OPENING
ROW RIGHT OF WAY
RP RADIUS POINT
RR RUB RAIL
RT RUBBER TILE
RWL RAINWATER LEADER

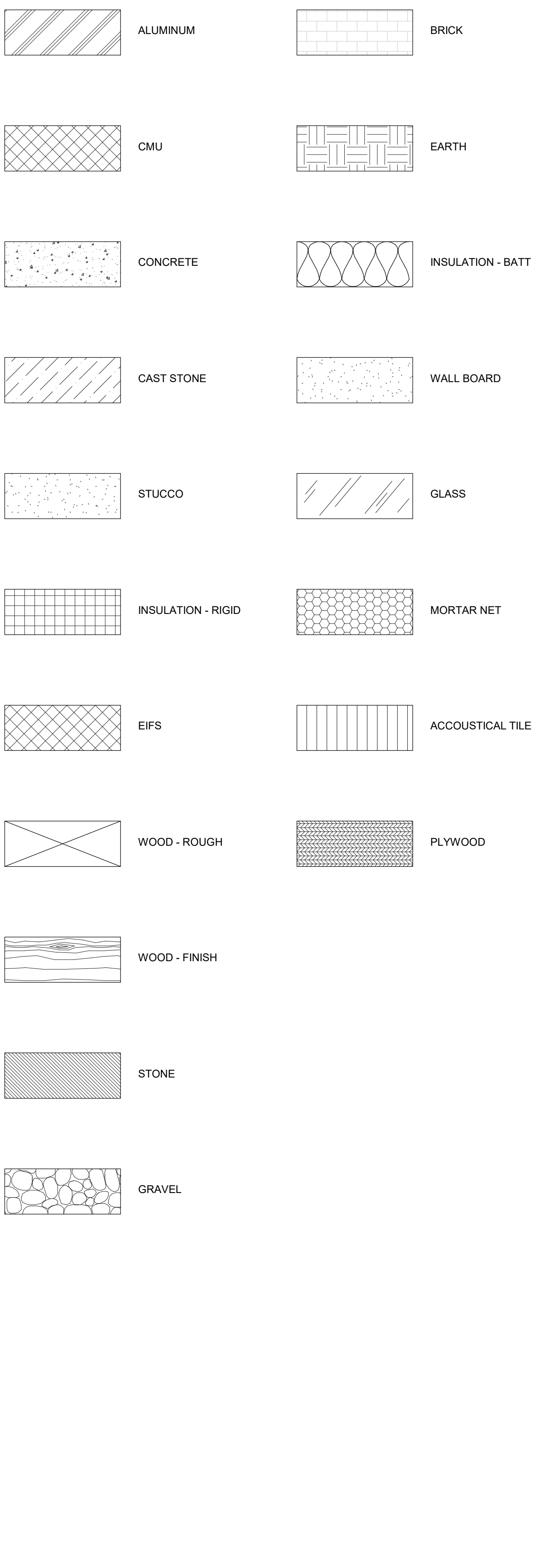
S SOUTH/SHELF
S&R SHELF AND ROD
SAN SANITARY
SC SOLID CORE
SCD SEAT COVER DISPENSER
SCHED SCHEDULE
SCHW SOLID CORE WOOD
SD SOAP DISH/SOAP DISPENSER
SEC SECOND
SECT SECTION
SF SQUARE FEET
SFC SPECIAL FLOOR COATING
SCEN SEMI-GLOSS ENAMEL
SHR SHOWER
SHT SHEET
SHTG SHEATHING
SHV SHEET VINYL
SLR SEALER
SMR SHEET METAL RACEWAY
SMS SHEET-METAL SCREWS
SND SANITARY NAPKIN DISPENSER
SNW SANITARY NAPKIN WASTE RECEPTACLE
SQ SQUARE
SS SERVICE SINK
SST STAINLESS STEEL
ST STONE
STC SOUND-TRANSMISSION CLASS
STD STANDARD
STL STEEL
STOR STORAGE
SUBFL SUBFLOOR
SURF SURFACE
SUSP SUSPENDED
SYM SYMMETRICAL

T TOP/THRESHOLD/TREAD/TOILET
T&B TOP & BOTTOM
T&G TONGUE & GROOVE
TB TOWEL BARRACK BOARD
TCC TOP OF CURB/TOP OF CONCRETE
TD TOWEL DISPENSER
TDW TOWEL DISPENSER & WASTE
TEL TELEPHONE
TEMP TEMPERED/TEMPORARY/TEMPERATURE
TER TERRAZZO
TF TOP OF FOOTING
TG TEMPERED GLASS
THK THICK
THR THRESHOLD
TOD TOP OF DECK
TOIL TOILET
TOL TOLERANCE
TOP TOP OF PAVEMENT
TOP TOP OF STEEL
TOW TOP OF WALL
TPD TOILET PAPER DISPENSER
TYP TYPICAL

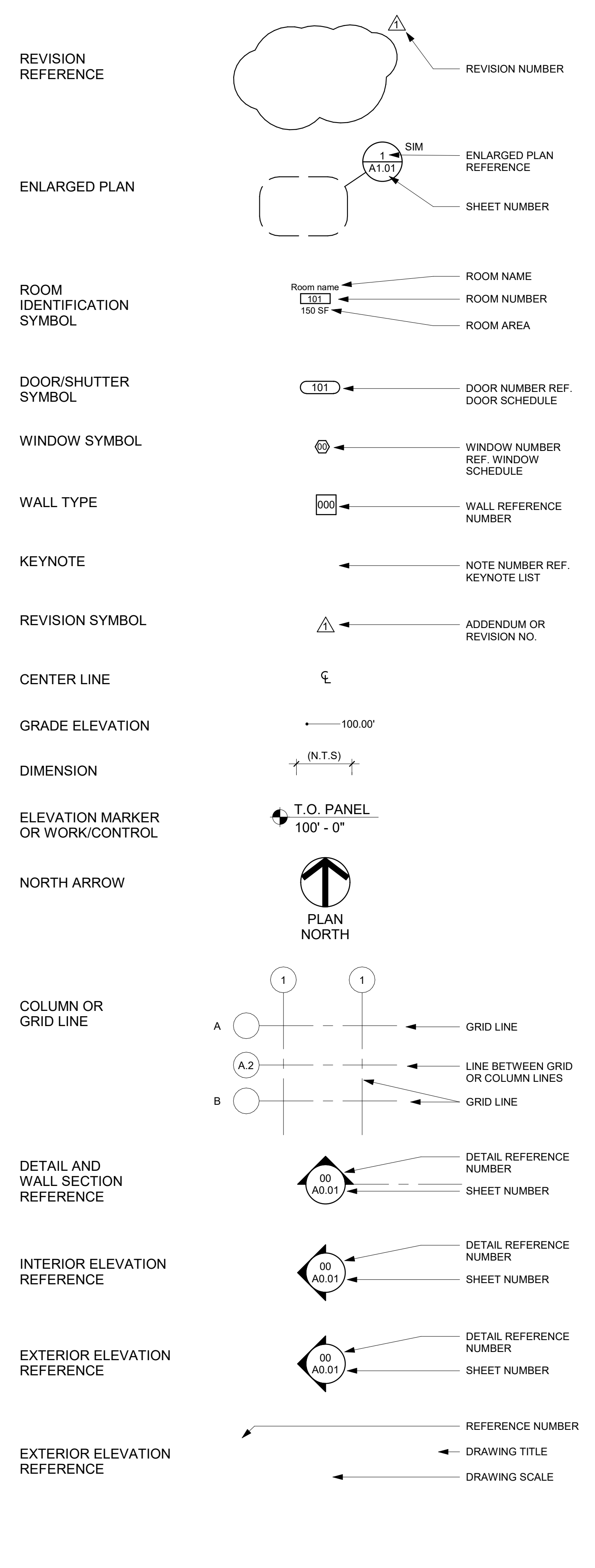
U UNIFORM BUILDING CODE
UC UNDER COUNTER/UNDERCUT
UNFIN UNFINISHED
UNO UNLESS NOTED OTHERWISE
UR URINAL
UTIL UTILITY
V VARIABLE/VARNISH/VARIES
VCT VINYL COMPOSITION TILE
VERT VERTICAL
V.I.F. VERIFY IN FIELD
VOL VOLUME
VP VENEER PLASTER
VT VINYL TILE
VWC VINYL WALL COVERING

W WEST/WATER/CLOTHES WASHER/WATT
W/WIT WITHOUT
W/ WITH
W/WAIN WAINSCOT
WC WATER CLOSET
WD WOOD
W/DW WINDOW
WF WIDE FLANGE
WG WIRE GLASS/WIRE GAUGE
WH WATER HEATER
WP WORK POINT/WATERPROOF
WR WASTE RECEPTACLE
WT WEIGHT

MATERIAL INDICATIONS



SYMBOLS



OPTYM

3401 OLYMPUS BLVD.
SUITE 500
DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

PROJECT MANAGER
BILLINGSLEY COMPANY
1722 ROUTH ST., STE 770
DALLAS, TX 75201
(972) 820-2236

TENANT
OPTYM
7600 NW 5 PI
GAINESVILLE, FL 32607
(352) 870-8401

ARCHITECT
O'BRIEN ARCHITECTS
5310 HARVEST HILL ROAD
SUITE 100, LB 161
DALLAS, TX 75230
(972) 788-1010

MEP
PURDY-MCGUIRE, INC.
17300 DALLAS PARKWAY
SUITE 3000
DALLAS, TX 75248
(972) 239-5357

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972.788.1010
www.obrienarch.com



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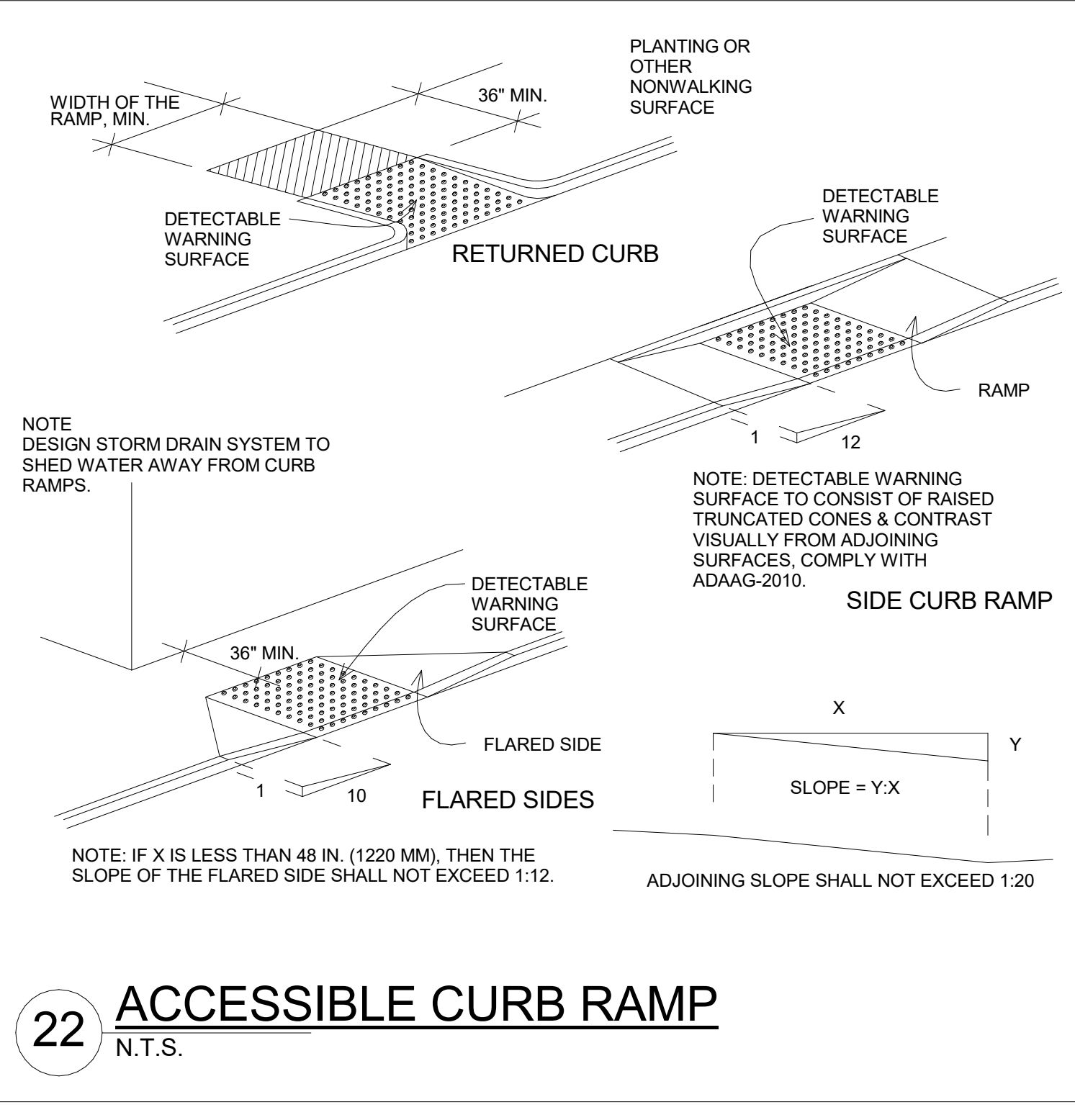
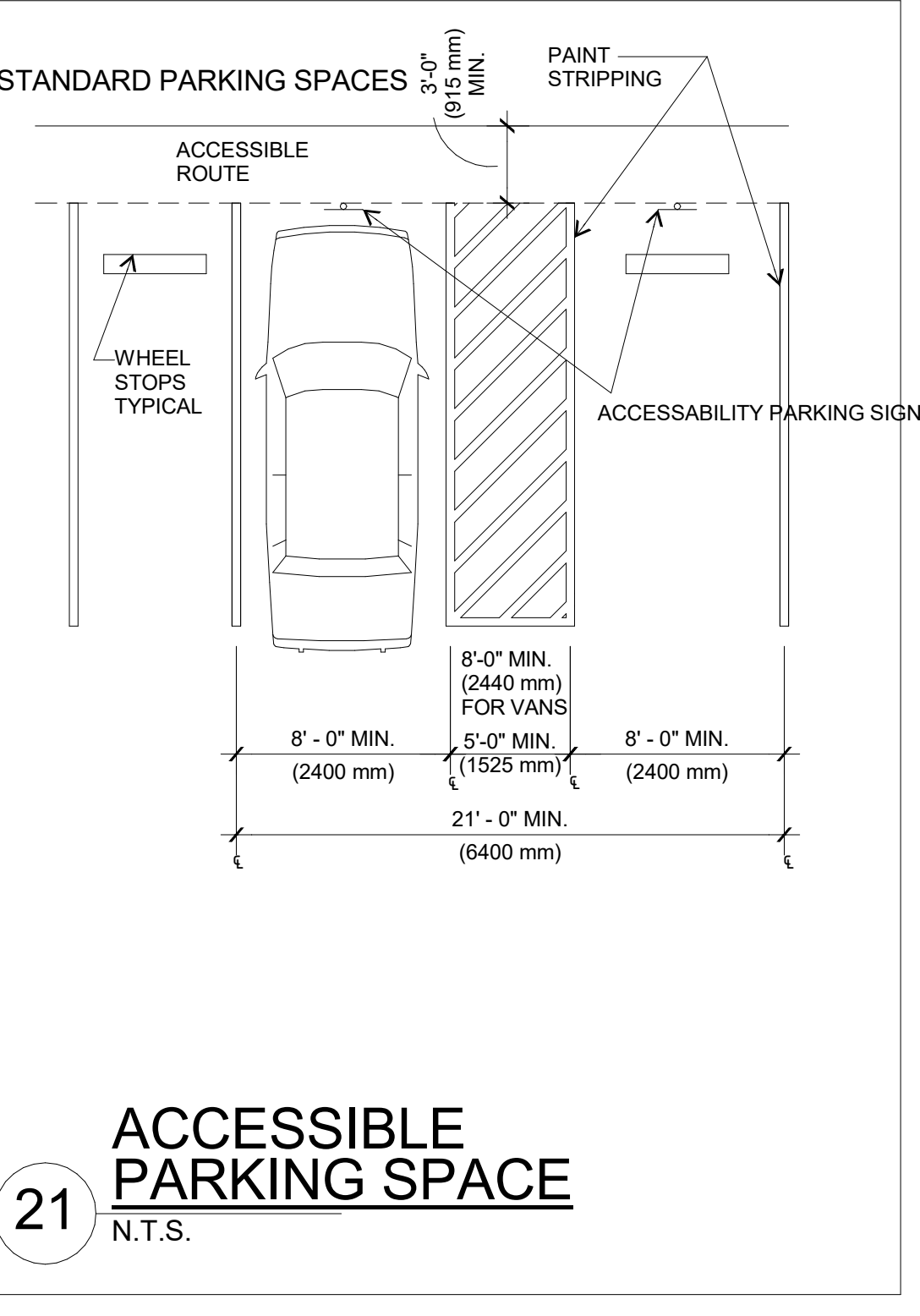
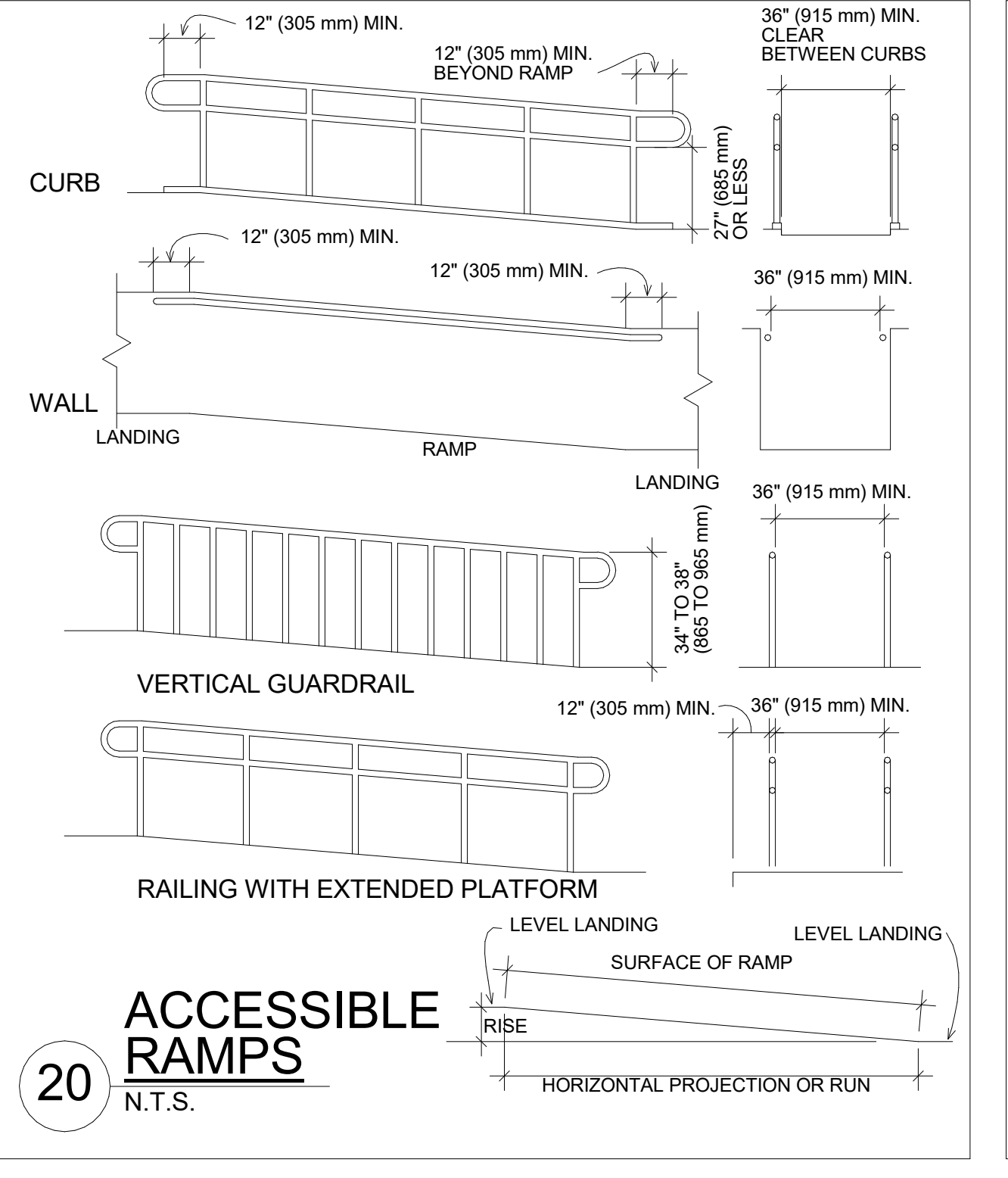
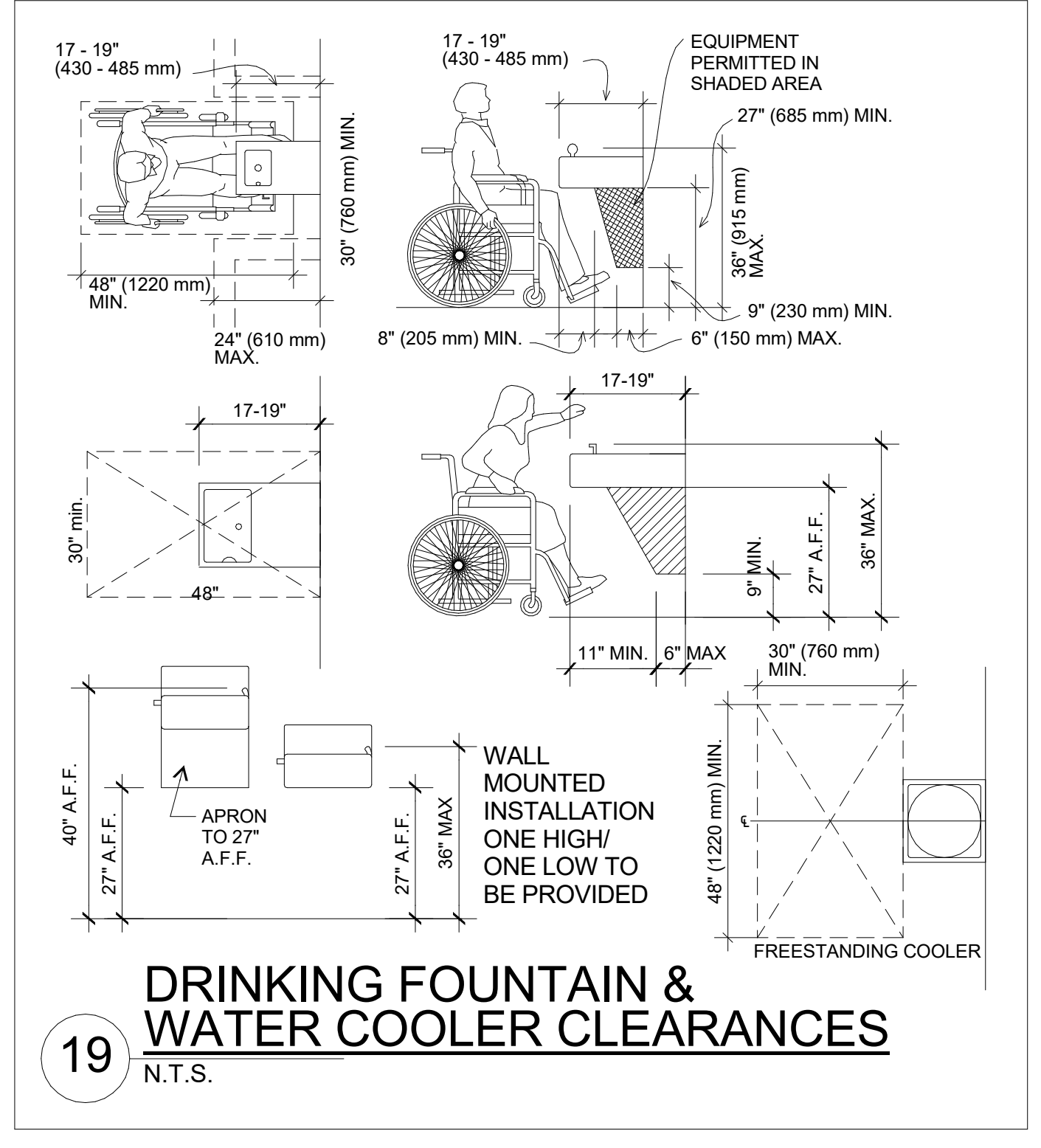
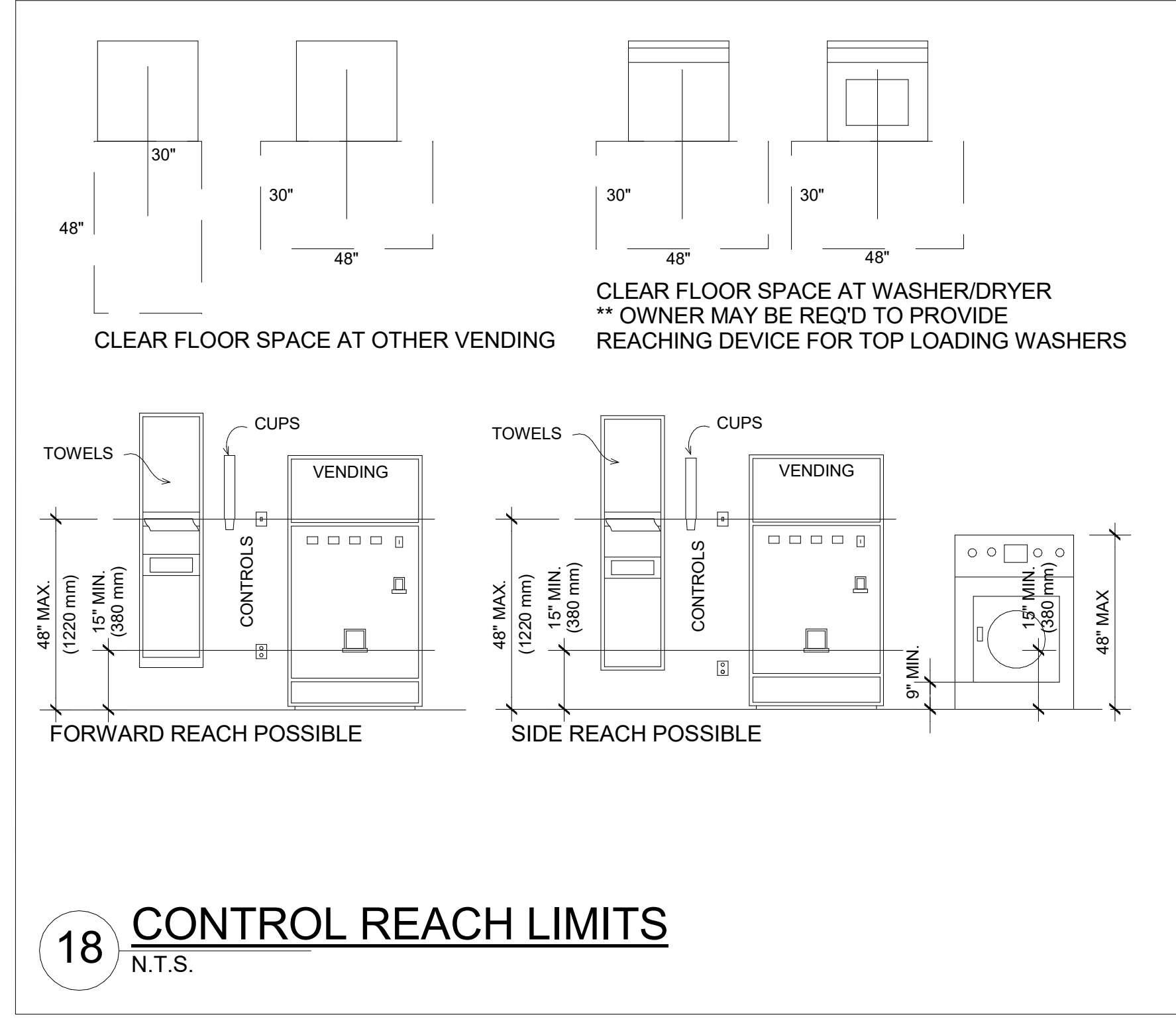
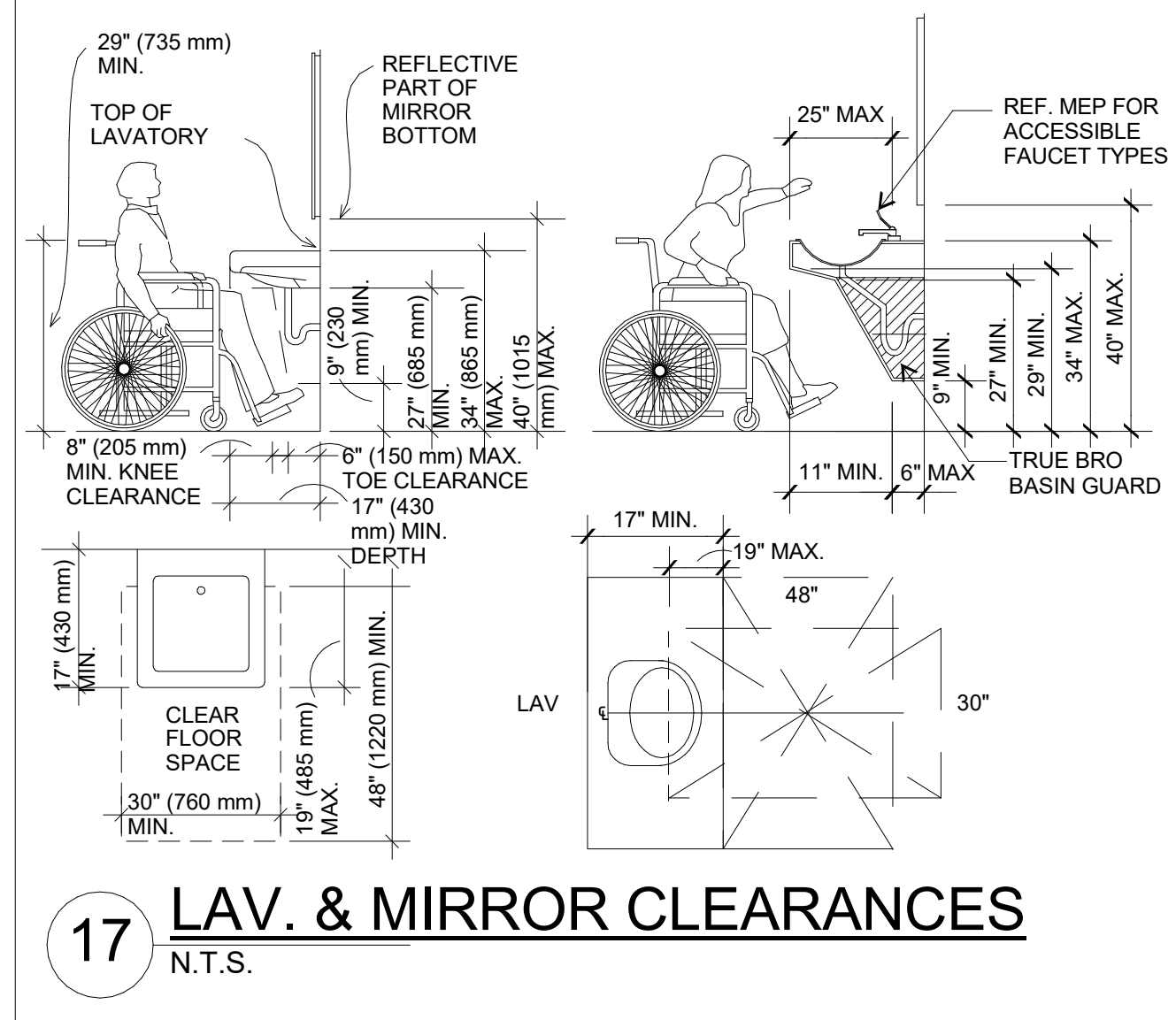
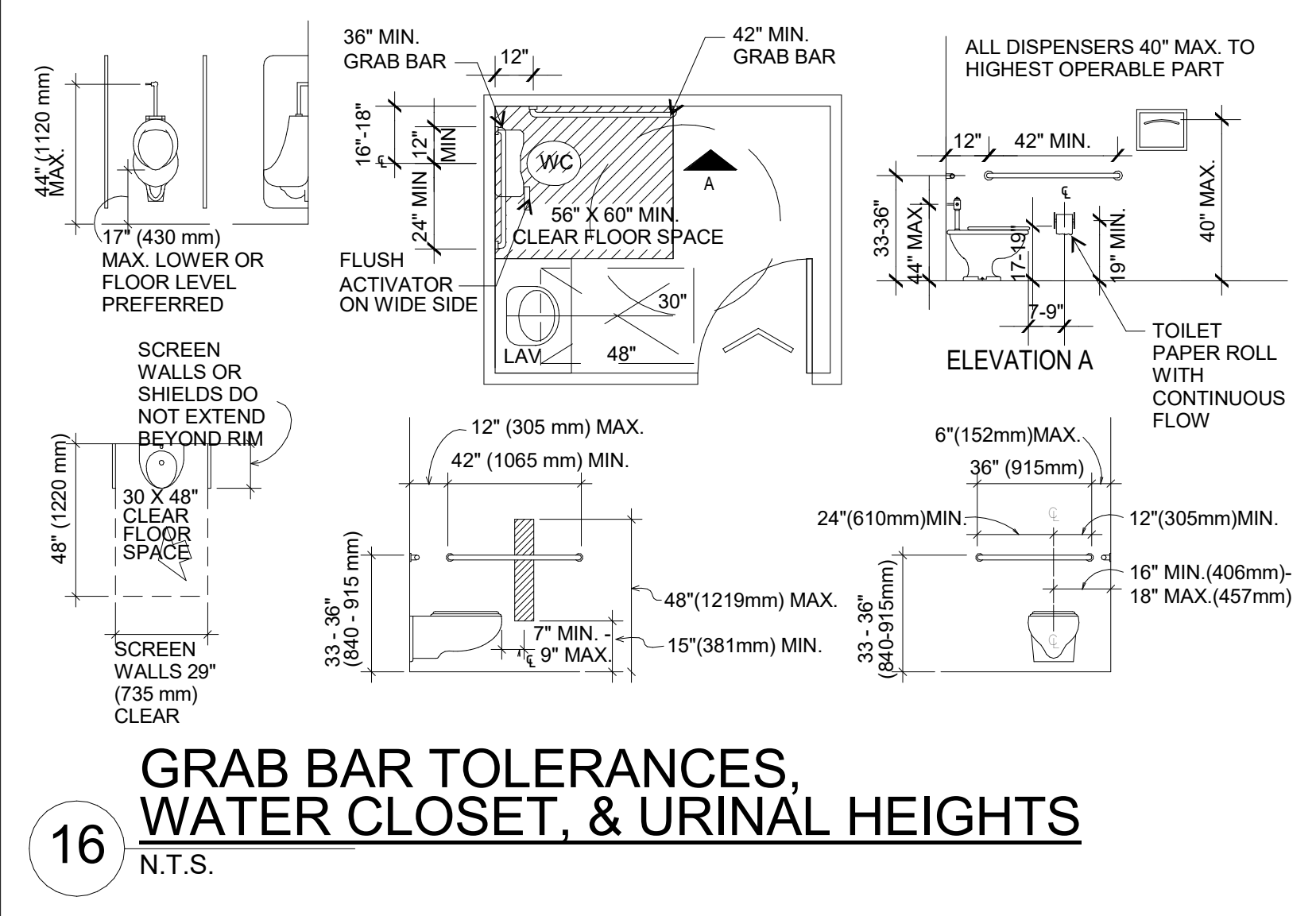
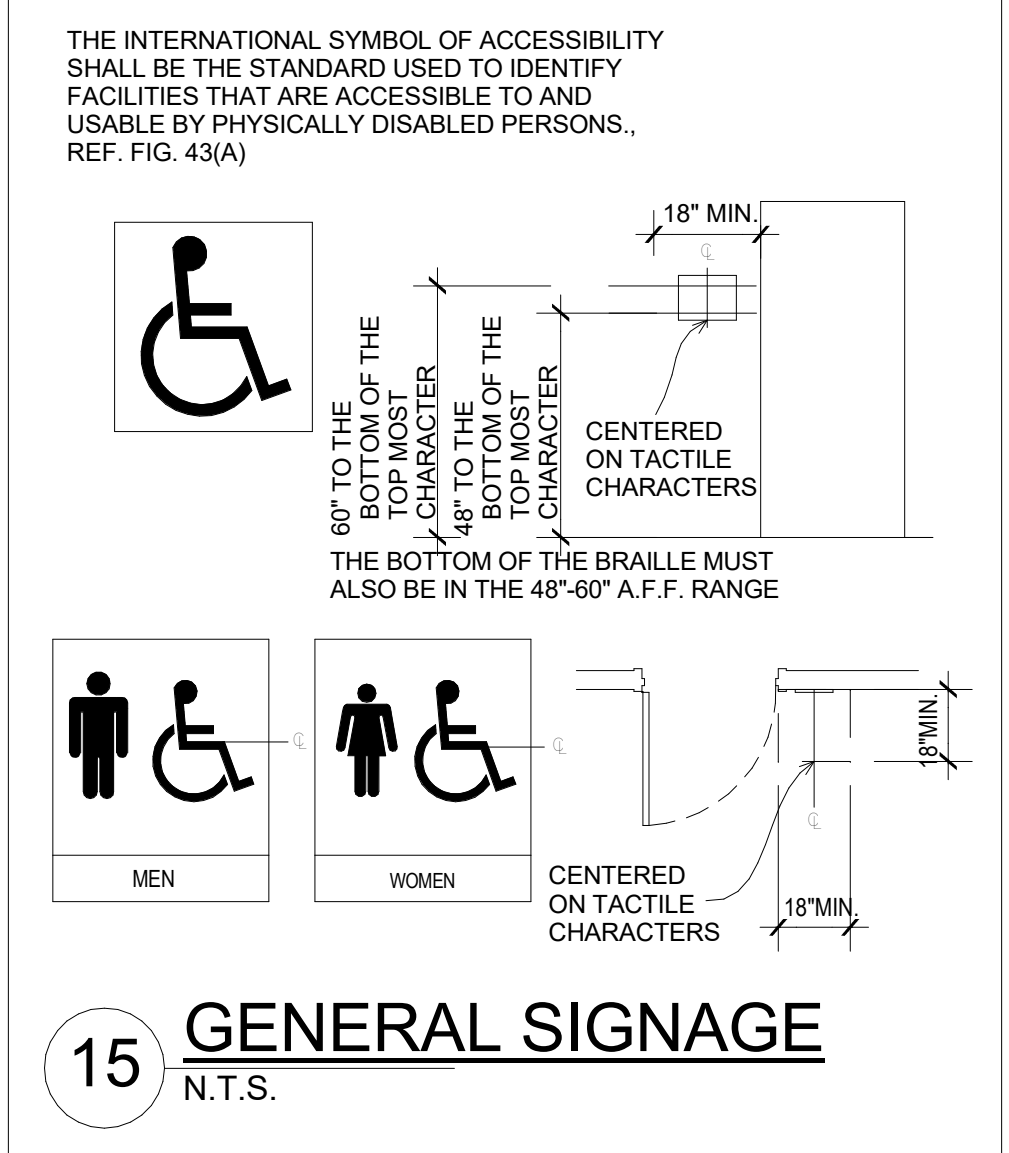
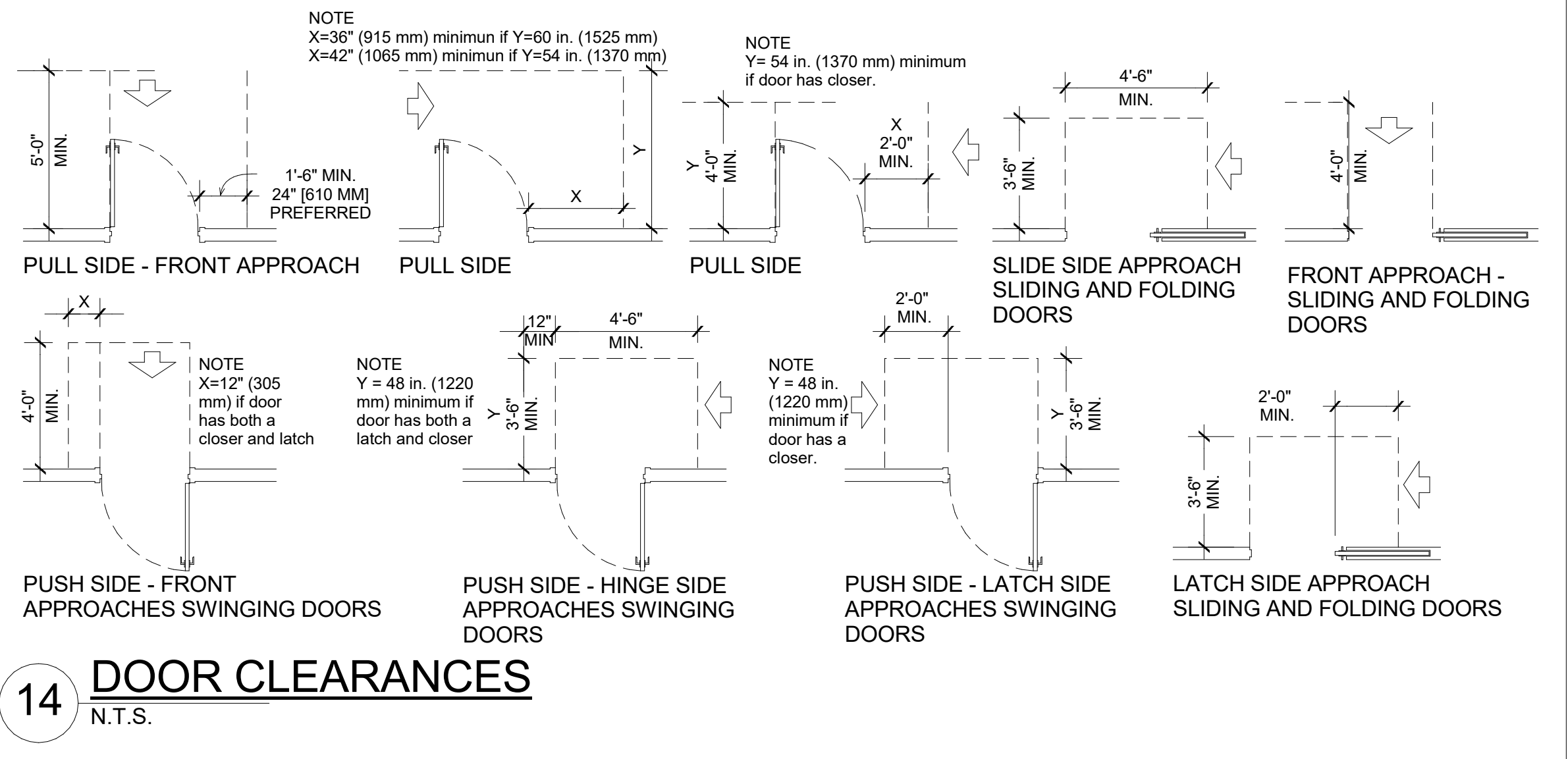
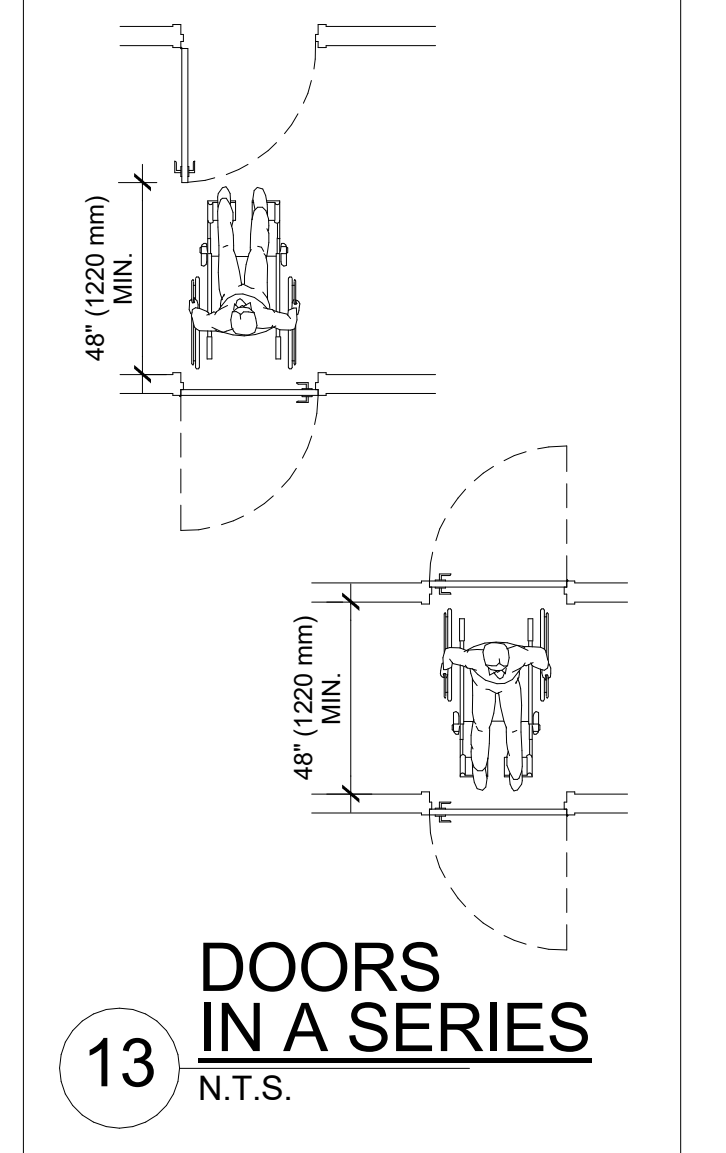
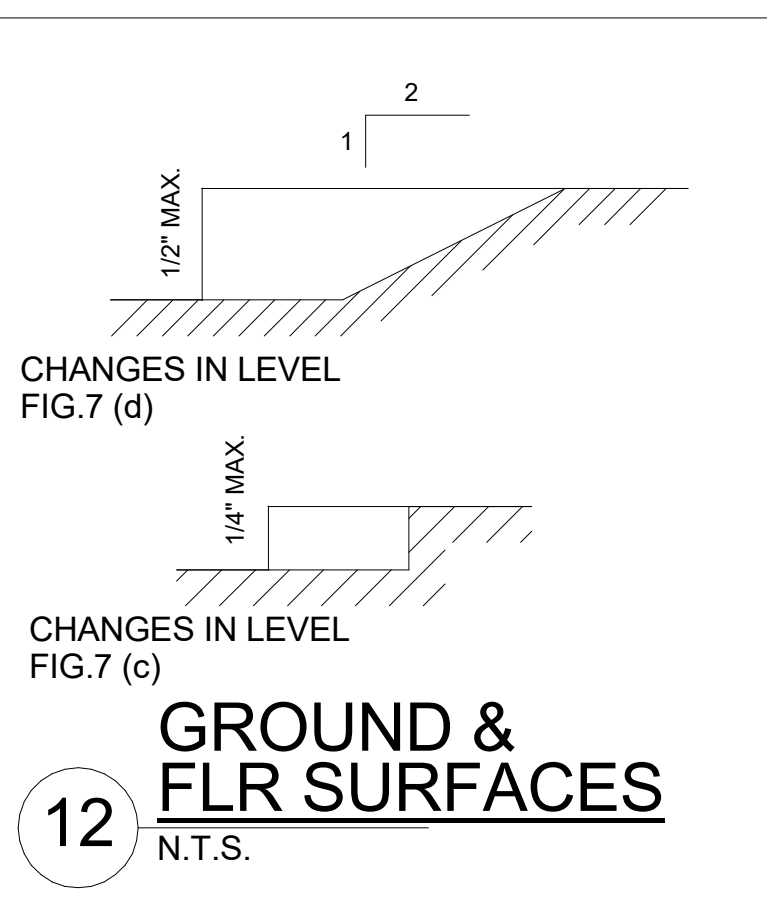
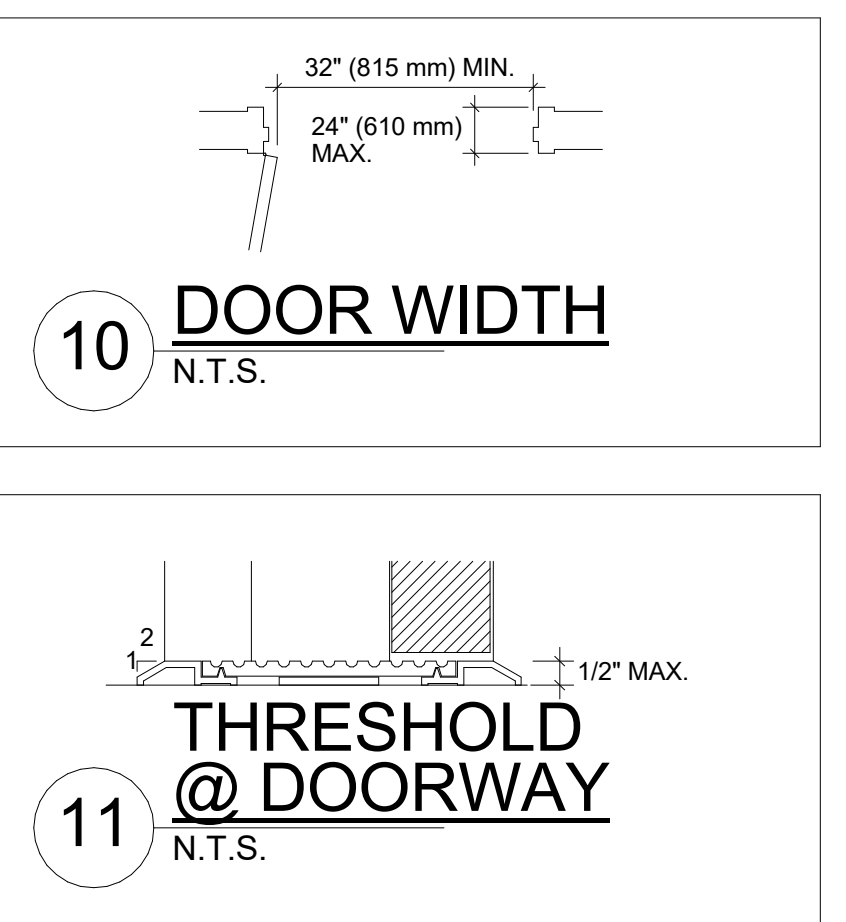
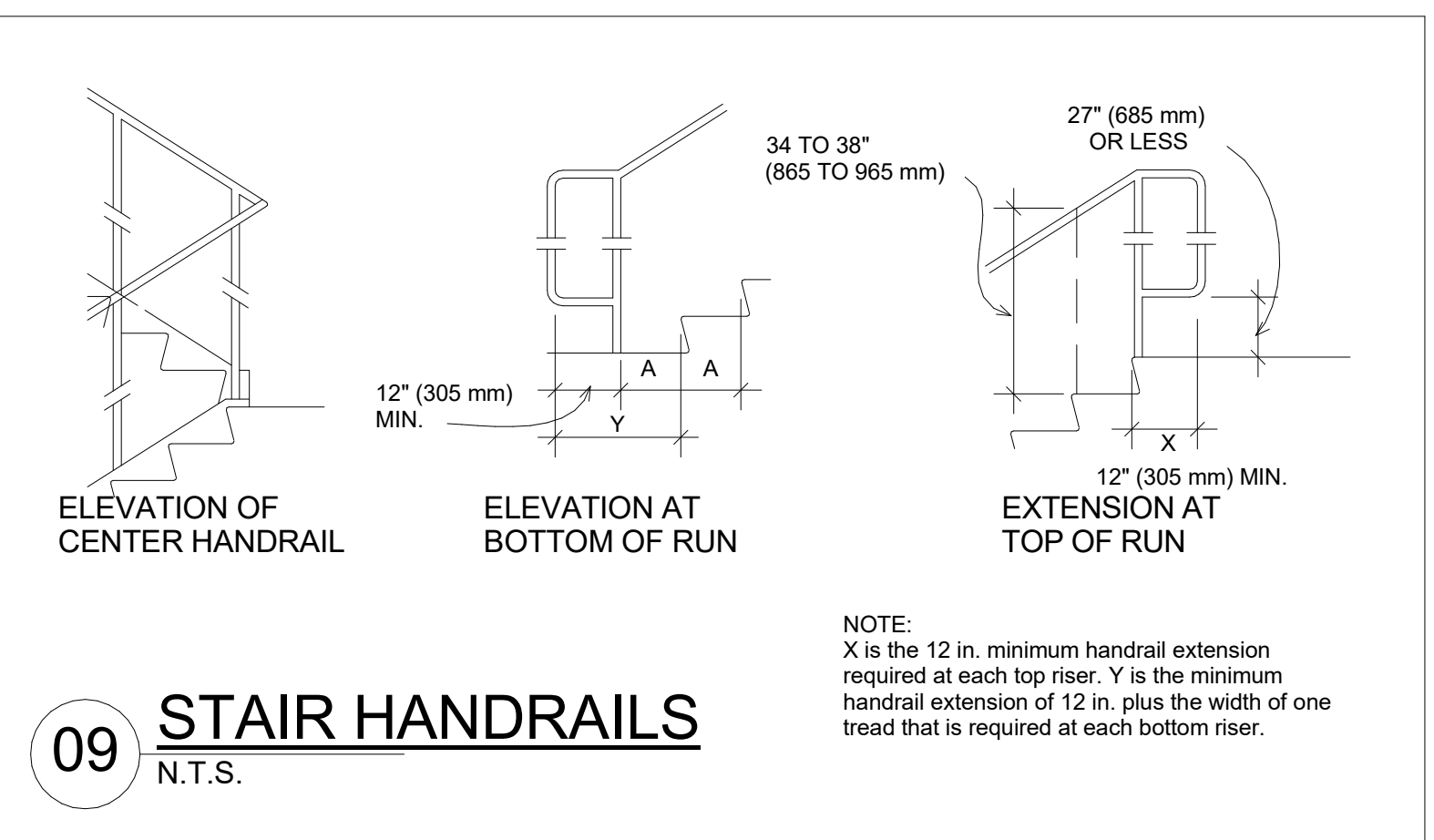
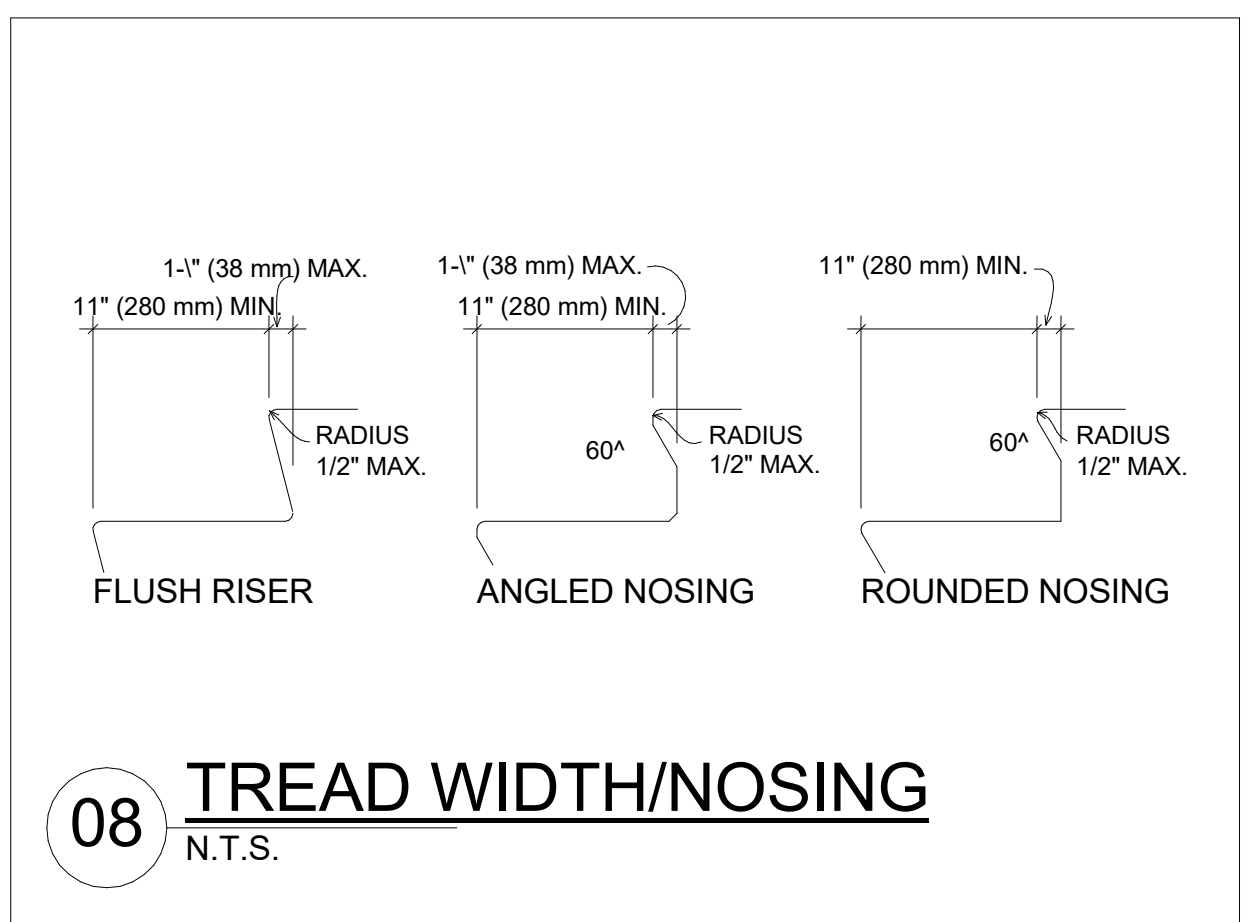
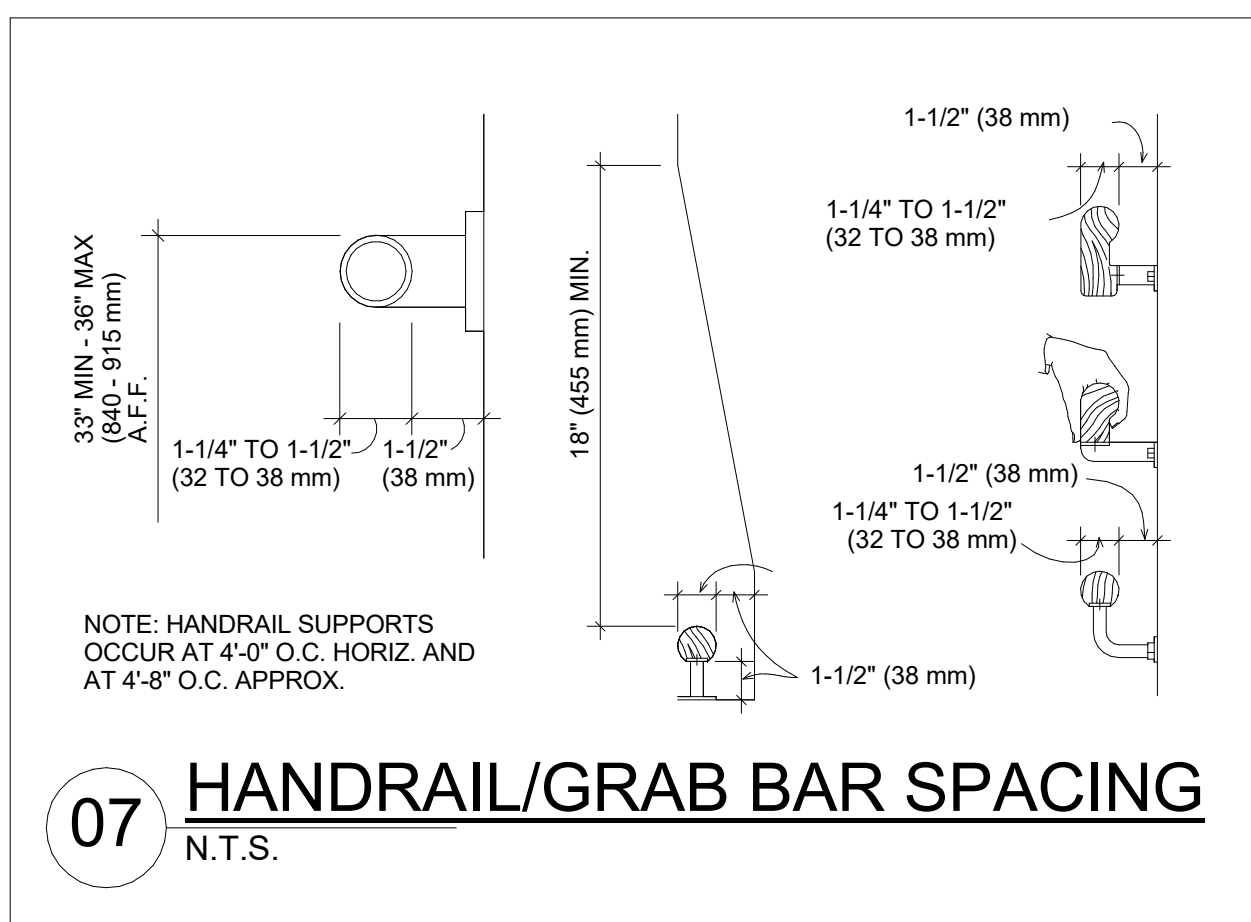
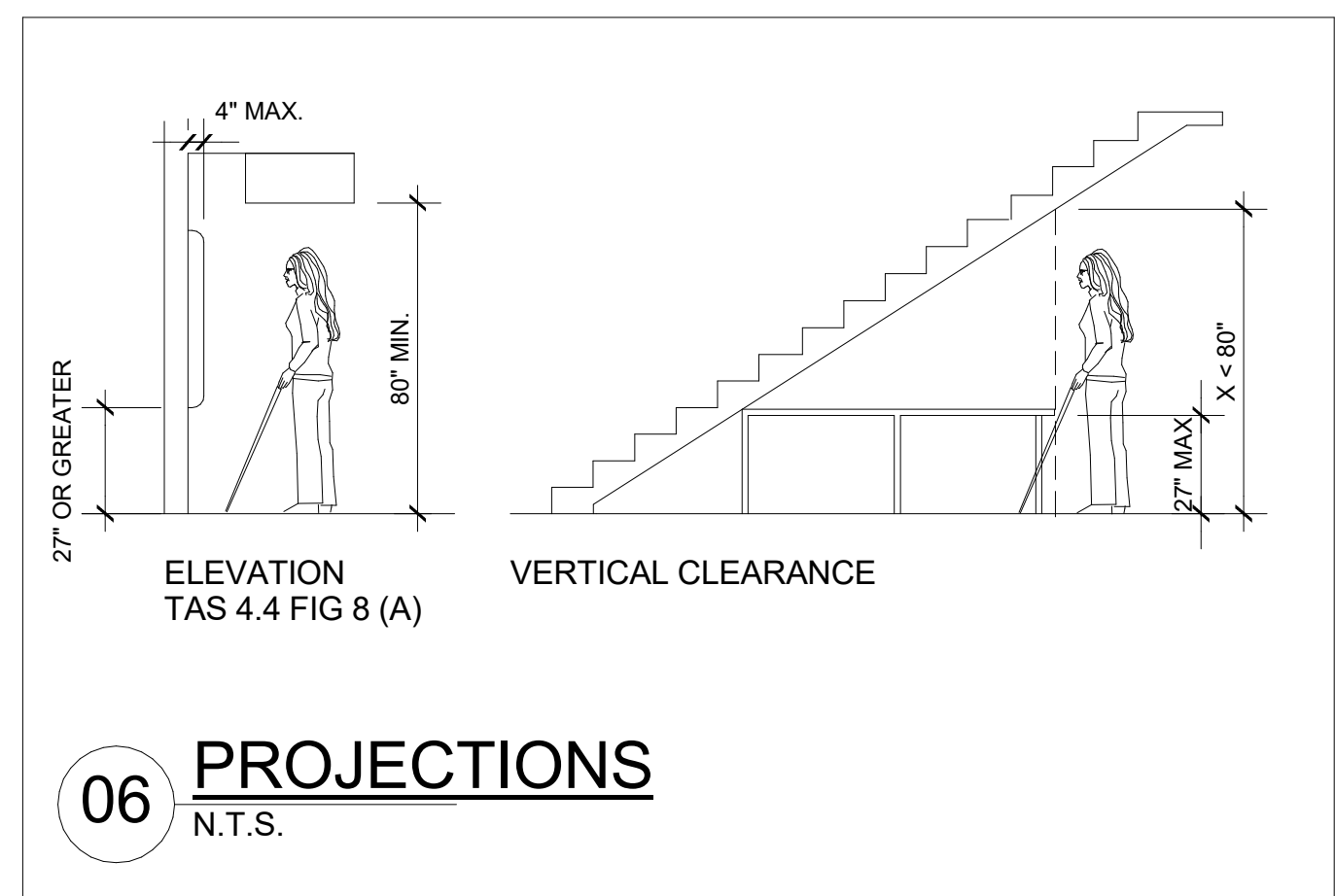
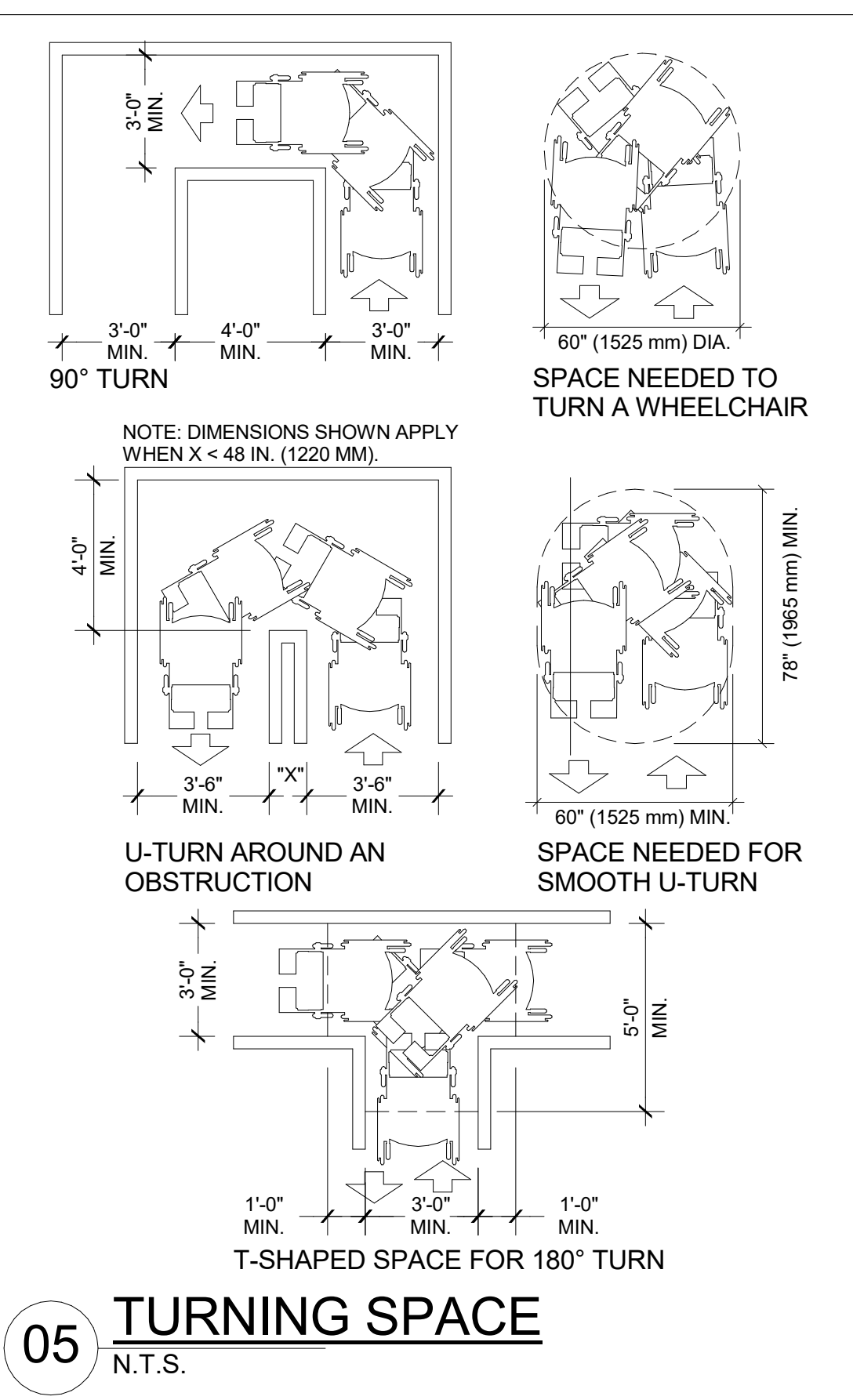
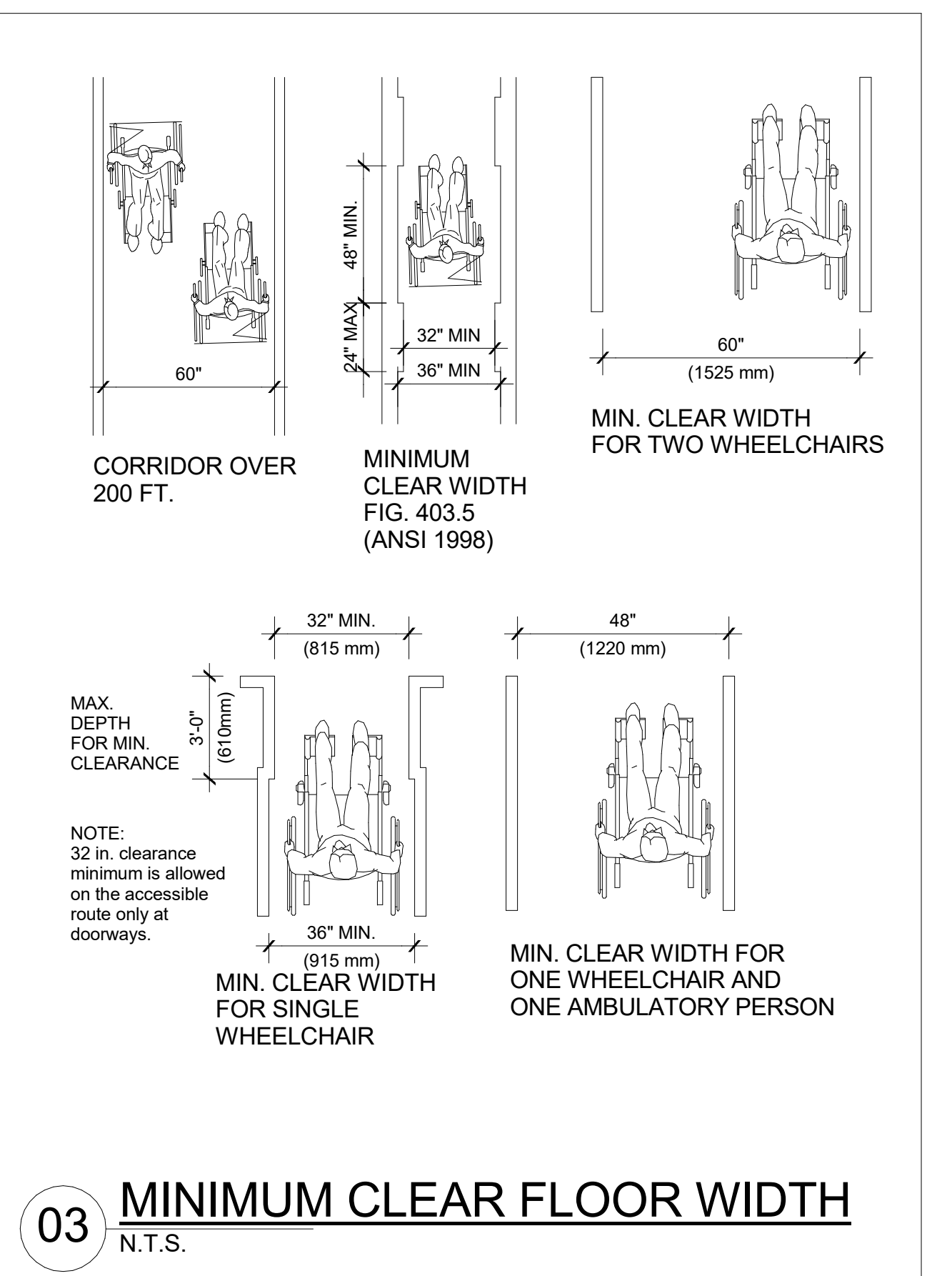
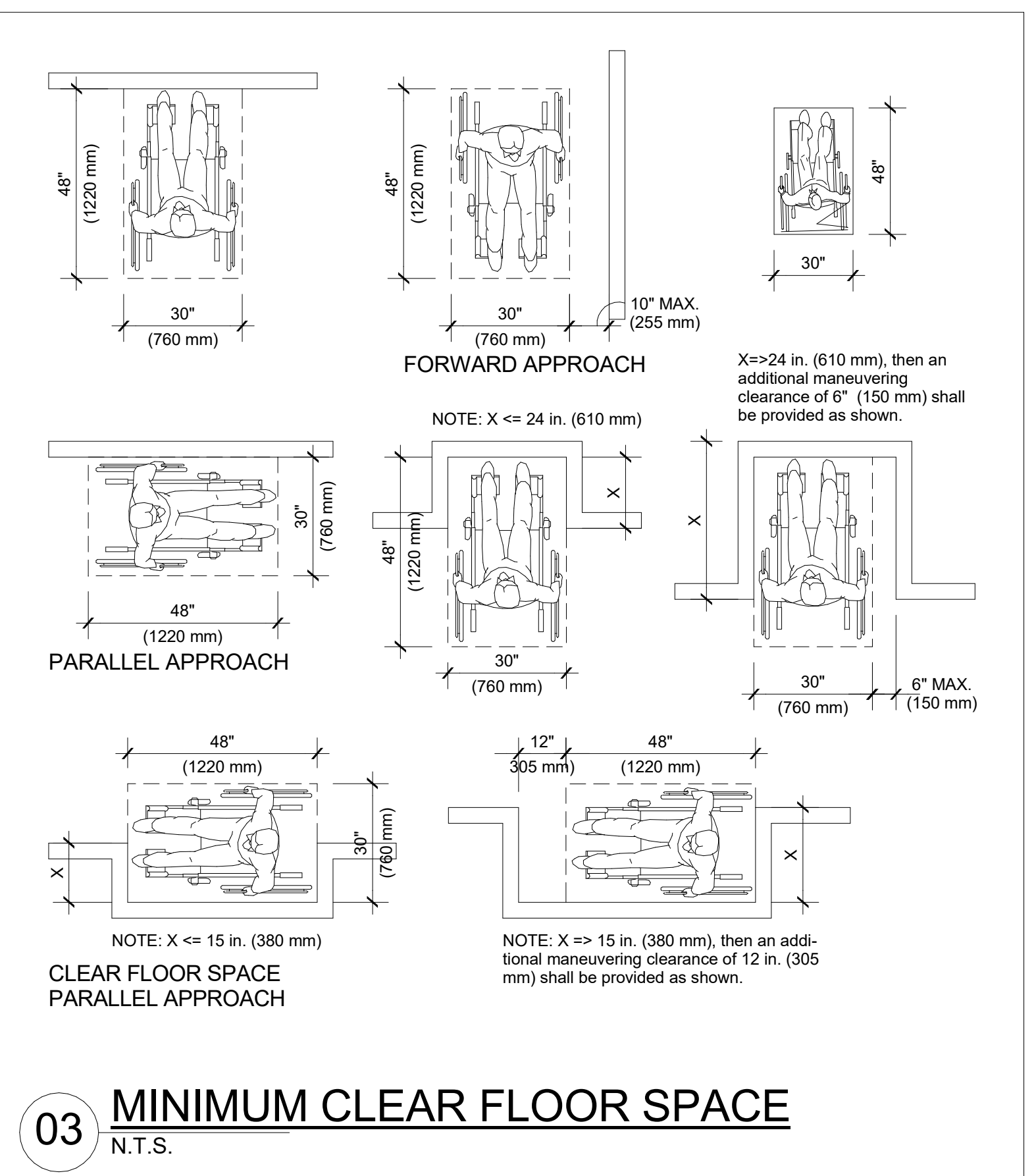
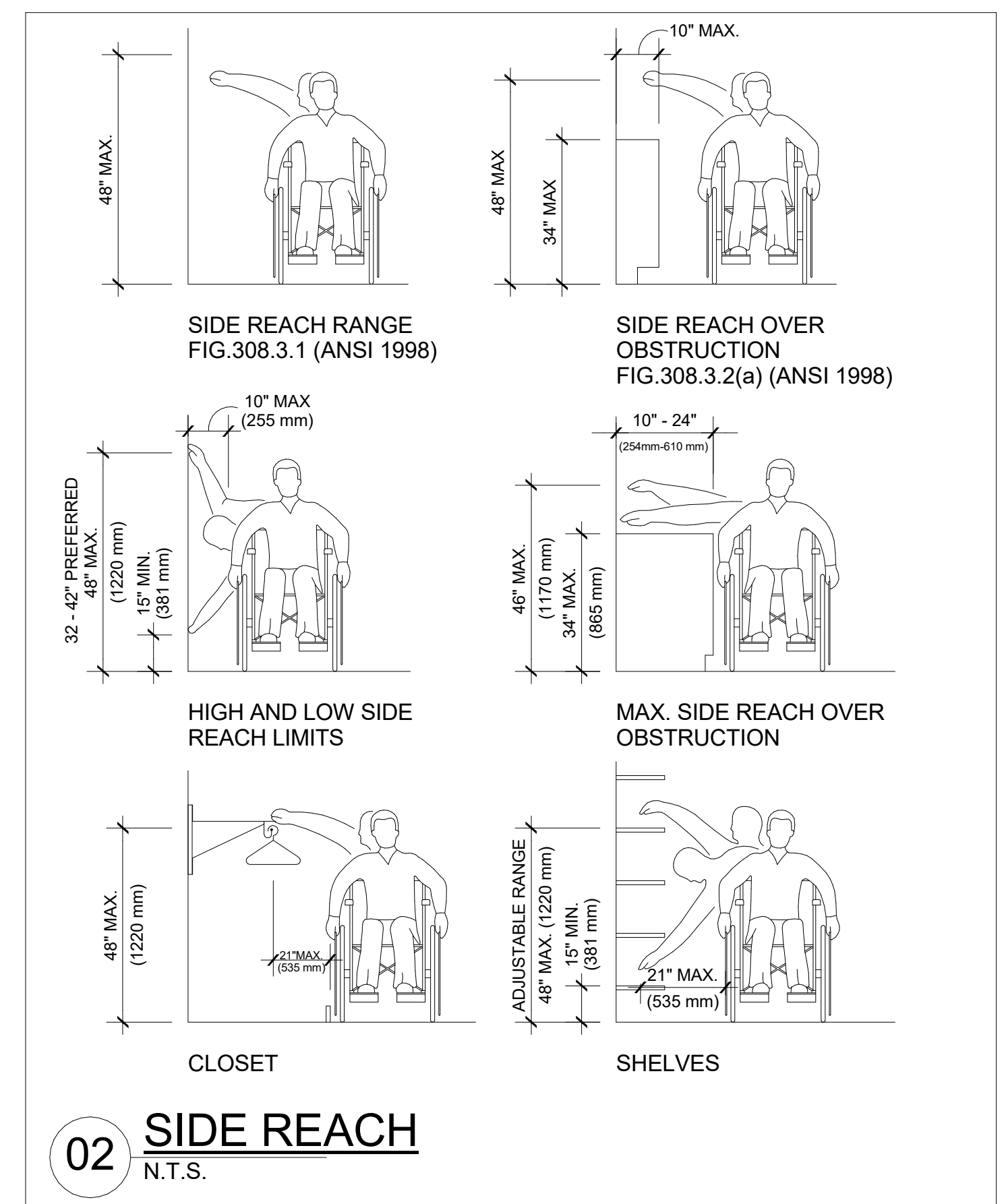
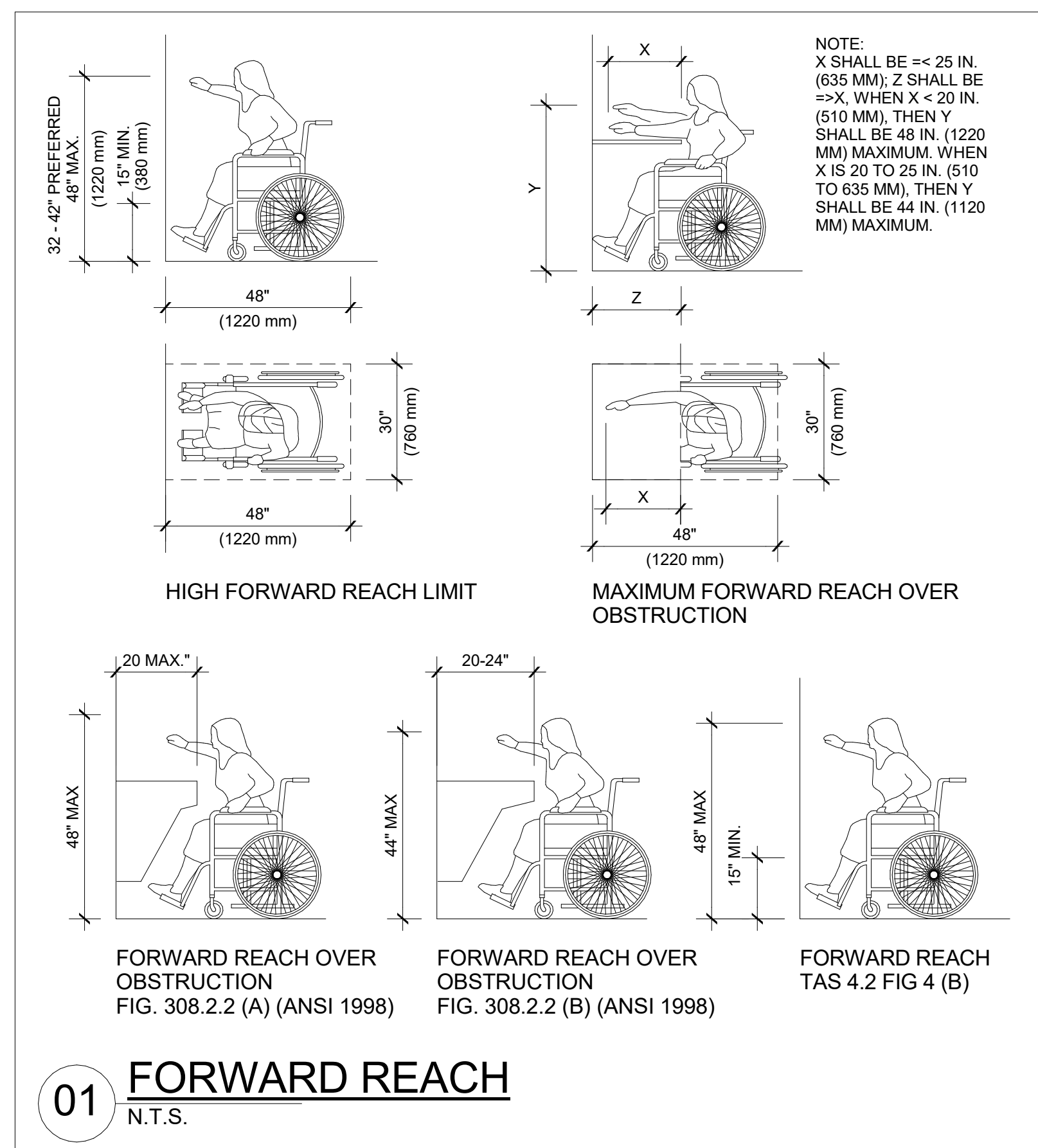
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3401 OLYMPUS BLVD. SUITE 500 DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

PROJECT MANAGER
BILLINGSLEY COMPANY
1722 ROUTH ST., STE 770
DALLAS, TX 75201
(972) 820-2236

TENANT
OPTYM
7600 NW 5 PI
GAINESVILLE, FL 32607
(352) 870-8401

ARCHITECT
O'BRIEN ARCHITECTS
5310 HARVEST HILL ROAD
SUITE 100, LB 161
DALLAS, TX 75230
(972) 788-1010

MEP
PURDY-MCGUIRE, INC.
17300 DALLAS PARKWAY
SUITE 3000
DALLAS, TX 75248
(972) 239-5377

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ACCESSIBILITY STANDARDS

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LIFE SAFETY PLAN GENERAL NOTES

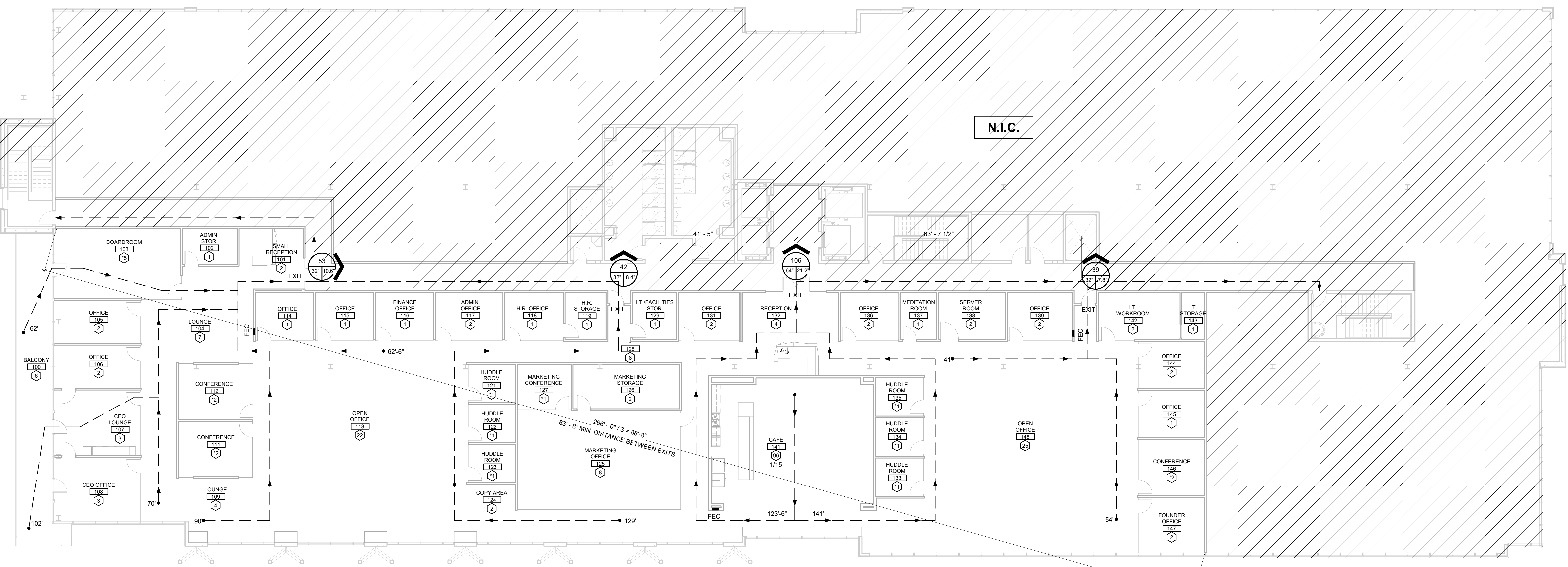
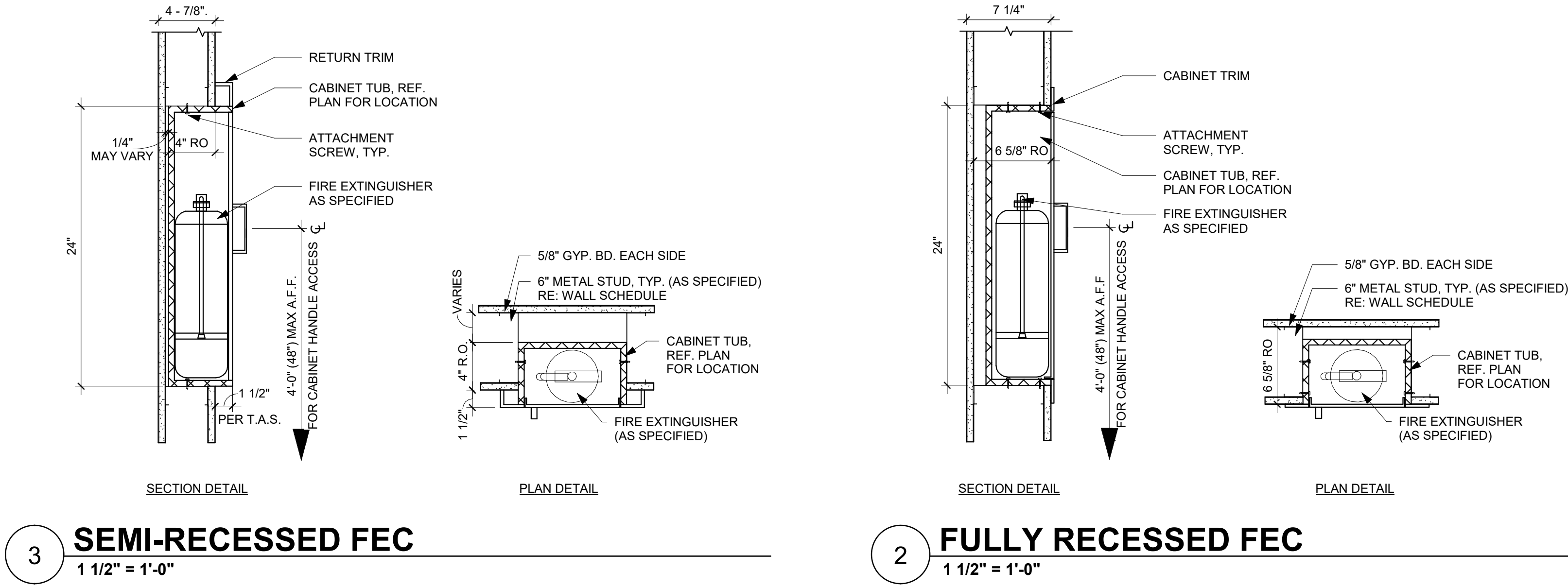
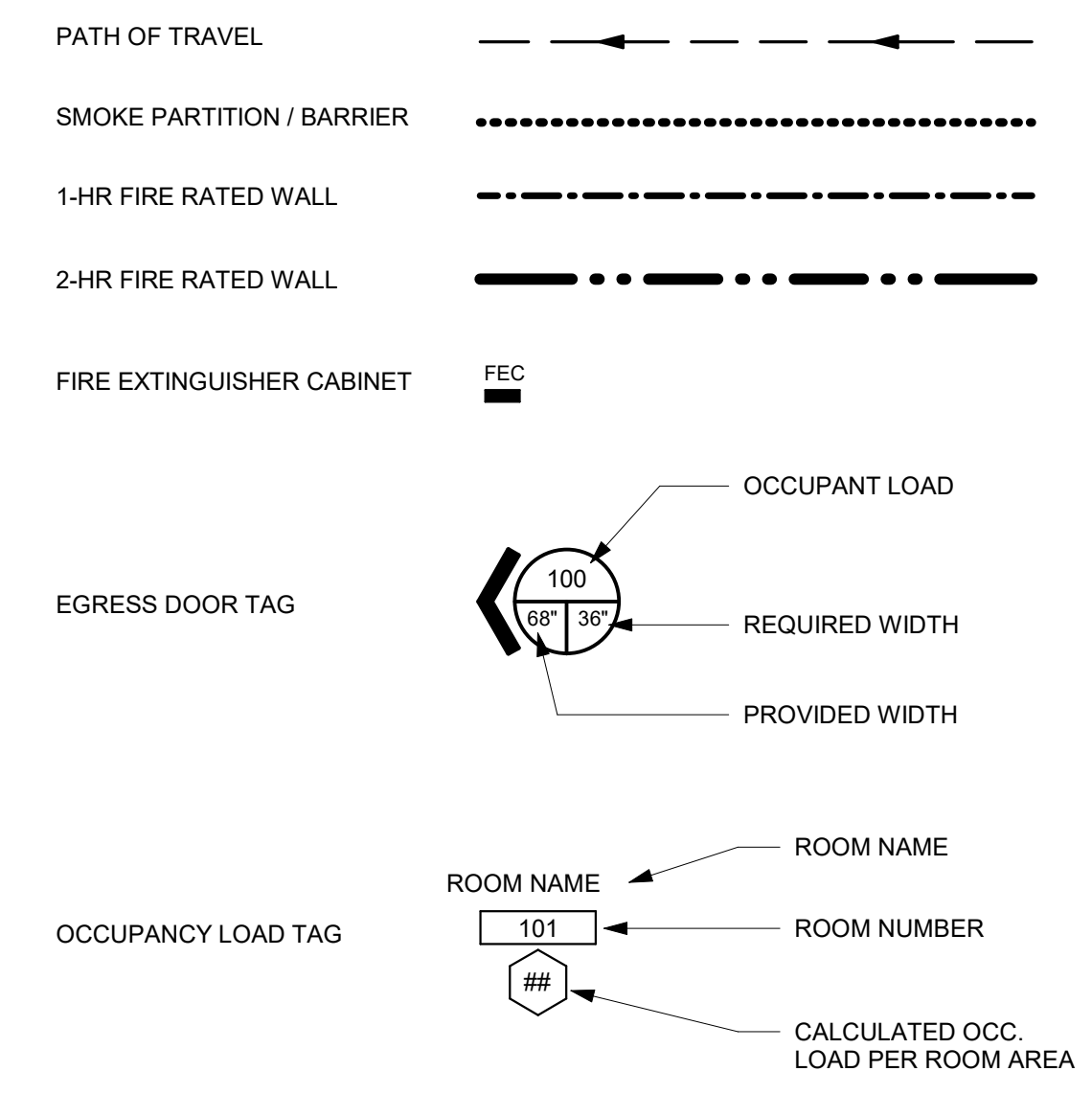
- 1. * INDICATES ASSEMBLY USE THAT IS LESS THAN 750 SF IN AN AREA THAT IS ACCESSORY TO ANOTHER OCCUPANCY THEREFORE CLASSIFIED AS GROUP B OCCUPANCY AS PER SECTION 303.1.2
- 2. ** INDICATED ASSEMBLY USE THAT IS LESS THAN 50 PERSONS AND IS THEREFORE CLASSIFIED AS GROUP B OCCUPANCY PER SECTION 303.1.2
- 3. ALL ROOM OCCUPANCIES HAVE BEEN CALCULATED AT (1) OCCUPANT PER (100) SF, UNLESS NOTED OTHERWISE ON PLAN.
- 4. FOR EGRESS COMPONENTS, A FACTOR OF .2 INCHES PER PERSON X OCCUPANCY LOAD = REQUIRED WIDTH OF EXIST DOOR (PER 1005.3.2). BUILDING IS EQUIPPED THROUGHOUT WITH AUTOMATIC SPRINKLER SYSTEM.
- 5. REQUIRED EXIT WIDTHS, NUMBER OF DOORS, AND EGRESS CAPACITIES ARE SHOWN FOR EACH EXIT.
- 6. EGRESS DOORS SHALL BE READILY OPERABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
- 7. ALL ASSEMBLY ROOMS WITHOUT FIXED SEATING SHALL HAVE THE ROOM'S MAXIMUM OCCUPANCY LOAD POSTED ON A SIGN NEAR THE MAIN EXIT FROM THE ROOM.
- 8. PROVIDE AN APPROVED AUTOMATIC FIRE EXTINGUISHING SYSTEM. SUBMIT PLANS TO AUTHORITY HAVING JURISDICTION AND OBTAIN APPROVAL PRIOR TO INSTALLATION.

OCCUPANT LOAD CALCULATIONS

OFFICE OCCUPANCY
BUSINESS (OFFICE): 13,768 / 100 = 138 OCCUPANTS
BUSINESS (BALCONY): 585 / 100 = 6 OCCUPANTS
ASSEMBLY A2: 1,437 / 15 = 96 OCCUPANTS
240 OCCUPANTS

TOTAL OCCUPANTS
EGRESS WIDTH REQUIRED: 240 X 2 = 48" REQUIRED
DOORWAY EGRESS WIDTH PROVIDED: (5) DOORS @ 32" = 160" PROVIDED

LIFE SAFETY PLAN LEGEND



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LIFE SAFETY PLAN

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SUITE 500
DALLAS, TX 75019

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PROJECT MANAGER
BILLINGSLEY COMPANY
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(972) 820-2236

TENANT
OPTYM
7600 NW 5 PI
GAINESVILLE, FL 32607
(352) 870-8401

ARCHITECT
O'BRIEN ARCHITECTS
5310 HARVEST HILL ROAD
SUITE 100, LB 161
DALLAS, TX 75230
(972) 788-1010

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FLOOR PLAN

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FLOOR PLAN GENERAL NOTES

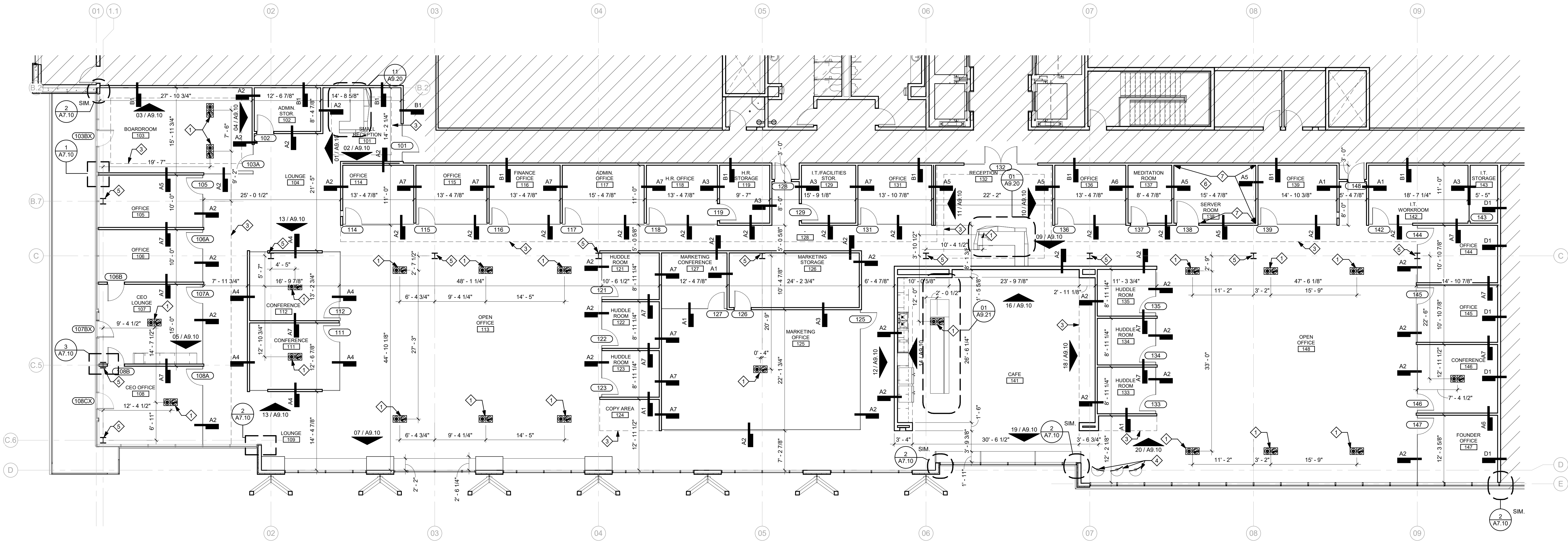
- ALL INTERIOR DIMENSIONS ARE TO FACE OF FINISH OR COLUMN CENTERLINES, U.N.O.
- PROVIDE FIRE PROTECTION AS REQUIRED. ALL DEVICES WHICH ARE AUDIBLE MUST ALSO BE VISUAL TO MEET ADA/TAS REQUIREMENTS. ALL DEVICES TO BE CEILING MOUNTED.
- GC TO PROVIDE FIRE EXTINGUISHER CABINETS PER CODE REQUIREMENTS.
- PROVIDE BLACK NEOPRENE SPACER GLUED BETWEEN END WALL STUDS AND WINDOW MULLIONS TYPICAL. DO NOT SCREW THROUGH WINDOW MULLIONS. SOUND SEAL CONDITION BETWEEN SPACER AND ADJACENT DRYWALL.
- VERIFY / COMPLY WITH ALL CONSTRUCTION PROCEDURES, REGULATIONS, AND INSURANCE REQUIREMENTS OF BUILDING MANAGEMENT.
- CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE CONSTRUCTION AND ENERGY CODES.
- STORAGE AND HANDLING OF MATERIAL TO COMPLY WITH MANUFACTURER'S INSTRUCTIONS.
- CONSTRUCTION PHASE MOISTURE CONTROL - MATERIALS SHALL BE PROTECTED FROM MOISTURE.
- REF. A9 SERIES SHEETS FOR FINISHES, FINISH SCHEDULE, AND INTERIOR ELEVATIONS.
- REF. A10.03 FOR WALL TYPE SCHEDULE.
- REF. A2.02 FOR POWER / EQUIPMENT PLAN.
- PREP / LEVEL FLOOR AS REQUIRED TO RECEIVE NEW FINISHES.
- ALL PARTITIONS AT THE WINDOW WALL ARE CENTERED ON EITHER COLUMNS OR WINDOW MULLIONS, U.N.O.
- COORDINATE AND PROVIDE BLOCKING FOR MILLWORK AND ITEMS ATTACHED OR MOUNTED TO PARTITIONS OR CEILINGS. IN ADDITION TO MILLWORK OVERHEADS IN SUPPORT ROOMS ASSUME ALL OFFICES HAVE WALL MOUNTED BINDER STORAGE BINS.
- PROVIDE NEW WINDOW COVERINGS ON ALL WINDOWS, U.N.O. REFERENCE A9.00 FOR PRODUCT INFORMATION.
- PROVIDE CASING / CORNER BEADS ON ALL EXPOSED DRYWALL TERMINATIONS / TRANSITIONS, TAPE / FLOAT / SAND.
- GC SHALL PROVIDE BLOCKING AROUND AND EXTEND ALL OUTLETS, SWITCHES, TSTATS, ETC., TO FLUSH WITH FINISH FACE OF WALLS. ALL IN WALL DEVICES TO ALIGN ON WALL SURFACE WHERE NECESSARY OR ADJACENT TO OTHER DEVICES.

FLOOR PLAN KEYNOTES

- ◊ ELEC / VOICE / DATA INSTALLED FLUSH IN FLOOR. GC TO CONFIRM LOCATION W/ ARCHITECT AND TENANT PRIOR TO PLACEMENT
- ⊠ NOT USED
- LINE OF CEILING / SOFFIT ABOVE.
- ⊠ SUSPENDED CHAIRS. CHAIRS PROVIDED BY TENANT, INSTALLED BY GC. GC TO CONFIRM AND INSTALL NECESSARY SUPPORTS.
- ⊠ EXISTING COLUMNS TO BE PAINTED. PROVIDE SHERWIN WILLIAMS SEMI-GLOSS, COLOR TO MATCH ADJACENT WALLS.
- ⊠ PROVIDE DRY FIRE SUPPRESSION SYSTEM IN THIS ROOM. NO WATER OR POWDER TO BE USED.
- ⊠ GC TO PROVIDE 3/4" PLYWOOD ON FULL WIDTH OF WALLS INDICATED FROM 4' A.F.F. TO 8' A.F.F. PAINT TO MATCH ADJACENT WALL COLOR. REF. A9.01 FINISH PLAN. PROVIDE BLOCKING FULL WALL BLOCKING BEHIND PLAYWOOD. GC TO COORDINATE LOCATION OF EQUIPMENT W/ TENANT. REF. MEP DRAWINGS.

FLOOR PLAN SYMBOLS

- 000 → WALL TYPE
- 101 → DOOR NUMBER
- # → WINDOW TYPE
- # → KEYNOTE
- ROOM NAME
- XXXX → ROOM NUMBER
- 5'-0" DIAMETER TURNING RADIUS
- 30" X 48" CLEAR FLOORSPACE
- NO WORK, NOT IN CONTRACT, U.N.O.
- 00 / A0.0A → INTERIOR ELEVATION
- 00 / A0.0A → DETAIL
- QUAD POWER & TELE/DATA FLOOR RECEPTACLE, FLUSH MOUNTED
- DOOR ACCESS CLEARANCES
FRONT APPROACH:
24" MIN. CLR. @ EXTERIOR DOORS
18" MIN. CLR. @ INTERIOR DOORS
(PROVIDE THIS ADDITIONAL SPACE IF DOOR IS EQUIPPED W/ BOTH A LATCH AND A CLOSER)
- HINGELATCH APPROACH:
36" MIN. @ HINGE APPROACH
44" MIN. @ HINGE APPROACH
54" MIN. @ HINGE APPROACH
24" MIN. @ LATCH APPROACH
NOTE: 48" MIN. IF DOOR HAS BOTH A LATCH AND A CLOSER.



01 FLOOR PLAN
1/8" = 1'-0"
PLAN NORTH

POWER & EQUIPMENT GENERAL NOTES

- 1. ALL OUTLETS TO BE MOUNTED AT 18" TYPICAL, U.N.O.
2. GENERAL CONTRACTOR TO PROVIDE AND INSTALL ALL EQUIPMENT AND FIXTURES.
3. DEVICES SHOWN STACKED ARE TO ALIGN VERTICALLY.
4. INSTALL ABOVE-COUNTER OUTLETS HORIZONTALLY, U.N.O.
5. INSTALL OUTLETS ON OPPOSITE SIDES OF PARTITIONS IN SEPARATE STUD CAVITIES. DO NOT INSTALL BACK-TO-BACK.
6. CONFIRM LOCATIONS OF STROBES AND EXIT SIGNS WITH ARCHITECT PRIOR TO INSTALLATION.
7. CONFIRM DEVICE LOCATIONS WITH ARCHITECT PRIOR TO ROUGH-IN.
8. ALL AV, SECURITY, AND TECHNOLOGY EQUIPMENT WILL BE SUPPLIED AND INSTALLED BY OWNER, U.N.O. GC TO PROVIDE COORDINATION.
9. ALL ACCESS CONTROL DEVICES TO BE SEPARATE PERMIT. PROVIDE POWER AND COORDINATE WITH TENANT'S SECURITY VENDOR.
10. SCOPE OF WORK FOR VOICE/DATA CABLING TO BE PROVIDED AND CONTRACTED BY THE OWNER.
11. SECURITY/FIRE ALARM REQUIREMENTS & PREFERRED VENDOR, IF APPLICABLE, SHALL BE PROVIDED BY TENANT. GC'S SECURITY VENDOR TO FURNISH, INSTALL, AND TEST.
12. PROVIDE WHITE DEVICES AND MATCHING COVER PLATES FOR ALL SWITCHES, ELECTRICAL, TELEPHONE AND DATA OUTLETS, U.N.O. AT ALL LOCATIONS.
13. IDENTIFY DEDICATED OR ISOLATED GROUND ELECTRICAL OUTLETS WITH A RED DOT.
14. VERIFY EQUIPMENT SPECIFICATIONS, POWER AND INSTALLATION REQUIREMENTS WITH MANUFACTURER TO ENSURE PROPER FIT AND FUNCTION.
15. GC TO VERIFY ELECTRICAL PANELS WILL HAVE A POWER BLOCK OR SURGE BAR ATTACHED TO EACH PANEL BOARD.
16. PROVIDE PULL STRINGS IN ALL EMPTY CONDUIT AND J-BOXES.
17. THE CENTERLINE OF ALL OUTLETS, SWITCHES, TSSTATS, AND STROBES SHALL START AT 6" FROM THE NEAREST OUTSIDE OR INSIDE CORNER OR DRYWALL, EDGER OF DOORFRAME OR EDGE OF OPEN DOOR, U.N.O. DEVICE OCCURRING ADJACENT TO EACH OTHER SHALL ALIGN VERTICALLY.
18. PROVIDE DEDICATED POWER AND DATA OUTLETS FOR COPIER/FAX MACHINE.
19. PROVIDE FLOOR POWER TO ALL OPEN OFFICE WORKSTATIONS. EACH TENANT DESK/STATION TO HAVE: 1 PHONE, 1 DATA, AND 2 POWER CONNECTIONS. SCOPE OF WORK FOR VOICE & DATA CABLING TO BE PROVIDED/CONTRACTED BY TENANT.
20. REFER TO MEP DRAWINGS FOR ADDITIONAL NOTES AND INFORMATION. WHERE CONFLICTS OCCUR, ARCHITECTURAL DRAWINGS TAKE PRECEDENCE FOR LOCATION OF DEVICE.
21. COORDINATE ALL THERMOSTAT LOCATIONS WITH FURNITURE LAYOUT PRIOR TO INSTALLATION. REFER TO MEP DRAWINGS. DO NOT LOCATE THERMOSTATS BEHIND FURNITURE PANELS.
22. GC TO FURNISH AND INSTALL ALL FIRE EXTINGUISHERS AND CABINETS.
23. GC TO COORDINATE WITH TENANT HVAC REQUIREMENTS AT SERVER ROOM. GC TO FURNISH EQUIPMENT, U.N.O., INSTALL, AND TEST. REFER TO MEP.
24. PROVIDE ELECTRICAL AND WATER LINES, WHERE APPLICABLE, TO REFRIGERATORS, WATER DISPENSERS, MICROWAVES, DISHWASHERS, COFFEE SERVICES, AND DISPOSALS.
25. PROVIDE WIRE MOLD TO OUTLETS SHOWN AT EXTERIOR WINDOWS AND GLASS PARTITIONS.

ELECTRICAL LEGEND

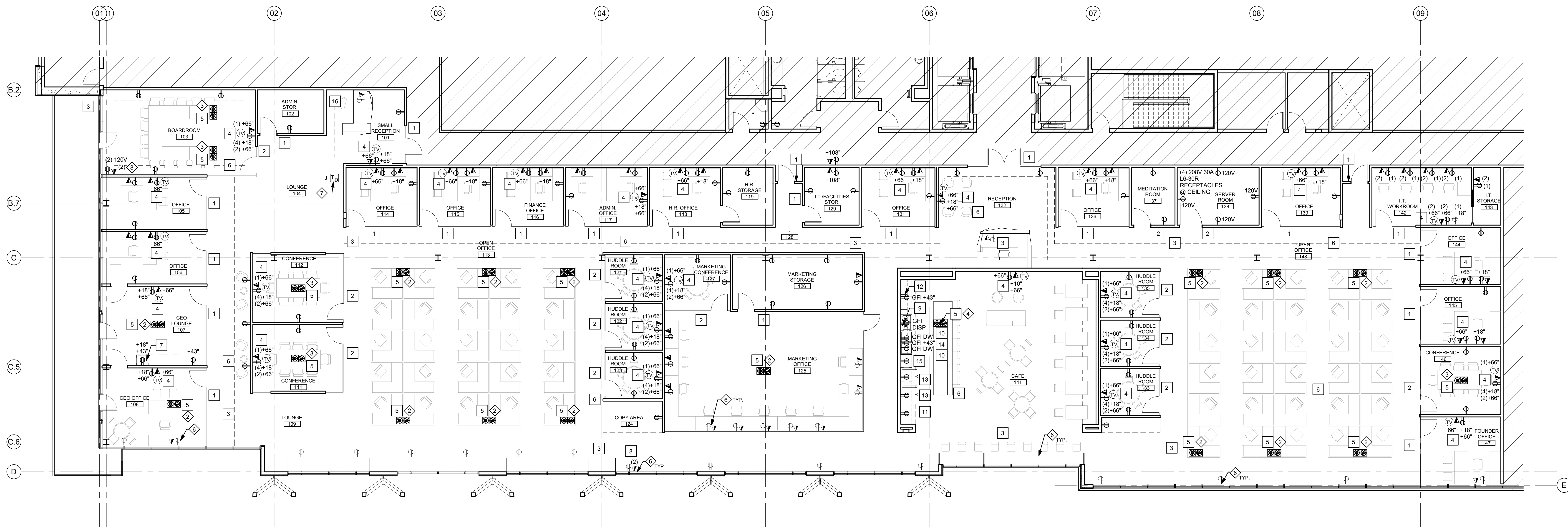
- ▲ COMMUNICATIONS DOUBLE ROUGH IN BOX
⊖ DUPLEX OUTLET
GFI GFI DUPLEX OUTLET
⊖ QUAD OUTLET
⊖ QUAD POWER & COMMUNICATIONS FLOOR RECEPTACLE, FLUSH MTD.
J J WALL MOUNTED POWER, VOICE, DATA
TV CATV WALL OUTLET

POWER & EQUIPMENT KEYNOTES

- ◇ NOT USED
◇ GC TO PROVIDE, INSTALL, AND TEST HIGH CAPACITY POWER AND TEL/DATA FLOOR CORE OUTLET FOR CONNECTION TO SYSTEMS FURNITURE. COORDINATE REQUIREMENTS WITH TENANT & TENANT'S FURNITURE VENDOR.
◇ GC TO PROVIDE, INSTALL, AND TEST HIGH CAPACITY FLOOR CORE OUTLET WITH 1.5" CONDUIT FROM TEL/DATA MONUMENT ROUTED UNDER FLOOR UP THROUGH ADJACENT WALL CAVITY FOR CONNECTION TO TV SCREEN DISPLAY. REF. MEP. COORDINATE REQUIREMENTS WITH TENANT & TENANT'S FURNITURE/MILLWORK VENDOR.
◇ GC TO PROVIDE, INSTALL, AND TEST HIGH CAPACITY POWER AND DATA FLOOR CORE OUTLET FOR CONNECTION TO MILLWORK. COORDINATE REQUIREMENTS WITH TENANT. PROVIDE POP-UP GROMMET AT COUNTER.
◇ GC TO COORDINATE EQUIPMENT POWER REQUIREMENTS WITH TENANT & TENANT'S VENDOR.
◇ GC TO PROVIDE WIRE MOLD AT FLOOR TO HOUSE WIRING.
◇ GC TO PROVIDE POWER AND TEL/DATA CONNECTIONS TO TENANT PROVIDED FURNITURE. COORDINATE FURNITURE REQUIREMENTS WITH TENANT PRIOR TO INSTALLATION.
◇ IT RACK: PROVIDE 1.5" CONDUIT FROM TEL/DATA MONUMENT ROUTED UNDER FLOOR UP THROUGH ADJACENT WALL CAVITY FOR CONNECTION TO TV SCREEN DISPLAY AND RACK. REF. MEP. COORDINATE REQUIREMENTS WITH TENANT & TENANT'S FURNITURE/MILLWORK VENDOR.

EQUIPMENT LEGEND

Table with columns: PROVIDE, INSTALL, TEST, COMMENTS. Lists equipment items like CARD READER, ROOM SCHEDULING SYSTEM, CCTV, etc.



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

ISSUE LOG

Table with columns: DATE, DESCRIPTION, DELTA. Shows issue log entries for 05-01-2020.



5310 HARVEST HILL RD. SUITE 136 DALLAS, TX 75230 972. 788. 1010 www.obrienarch.com



CHRISTOPHER SEAN O'BRIEN ARCHITECT REGISTRATION NO. 24878

DATE SEAL ARCH. PROJ. # SCALE: 05-01-2020 202015 REF. DRAWING

SHEET NO. A2.02 POWER PLAN

REFLECTED CEILING PLAN GENERAL NOTES

1. PROVIDE LED UNDER CABINET LIGHTING CONTINUOUS AT ALL OVERHEAD CABINETS, U.N.O.
2. PROVIDE RETURN AIR CLOSURES CONTINUOUS BETWEEN SUPPLY BOOTS AT PERIMETER SLOT DIFFUSERS. TYPICAL. PROVIDE SOLID CLOSURE PANELS AT ALL LOCATIONS WHERE PARTITIONS CROSS PERIMETER SLOT DIFFUSERS. PAINT FLAT WHITE, TYPICAL. GC TO INSULATE THE CLOSURES FOR SOUND.
3. CENTER EXIT SIGNS, SMOKE DETECTORS, ETC. IN THE CENTERLINE OF CORRIDORS AND CENTERLINE OF LIGHT FIXTURES, U.N.O. OR VIOLATION OF APPLICABLE CODES WOULD OCCUR. MEP PLANS WILL BE REQ. TO SHOW EXIT LIGHT LOCATIONS.
4. INSTALL REGISTERS AND LIGHT FIXTURES WITHIN GRID LINES. INSTALL SPEAKERS, LIGHT FIXTURES, AND OTHER CEILING ELEMENTS IN THE GEOMETRIC CENTER OF ACOUSTICAL UNITS OR CEILING PANELS, U.N.O.
5. IF IT IS NOT POSSIBLE TO LOCATE SPRINKLER HEADS AS REQUIRED ABOVE FOR ANY REASON, INCLUDING, WITHOUT LIMITATION, CODE REQUIREMENTS, DO NOT PROCEED WITH WORK UNTIL SUCH CONDITIONS HAVE BEEN REVIEWED WITH ARCHITECT.
6. PROVIDE SPRINKLER HEAD LOCATIONS FOR ARCHITECT'S REVIEW FOR AESTHETIC PURPOSES PRIOR TO ANY INSTALLATION, AND PRIOR TO SUBMITTING DRAWINGS FOR PERMIT. CONTRACTOR WILL, OTHERWISE, BE REQUIRED TO RELOCATE HEADS AT ITS EXPENSE.
7. ALL LIGHT SWITCHES SHALL BE MOUNTED AT 4'-0" A.F.F. TYPICAL. ALL LIGHT SWITCHES TO BE OCCUPANCY SENSOR TYPE REQUIRED.
8. ALL MECHANICAL / LIGHT FIXTURE CONFLICTS SHALL BE DOCUMENTED AND BROUGHT TO THE ARCHITECT'S ATTENTION AS SOON AS POSSIBLE.
9. VERIFY ACCESS PANEL LOCATIONS WITH ARCHITECT PRIOR TO LAYOUT OF WORK REQUIRING ACCESS.
10. PROVIDE HVAC MECHANICAL SYSTEM AS REQUIRED BY PLAN AND CEILING CONDITIONS. PROVIDE DUCTWORK GRILLS AND DISTRIBUTION SYSTEM AS REQUIRED. REST AND BALANCE ENTIRE SYSTEM.
11. FINISH HVAC DIFFUSERS, DRAPERY POCKETS, AND SPEAKER GRILLES TO MATCH ADJACENT FINISH, U.N.O.
12. PROVIDE CONCEALED SPRINKLER HEADS WITH CAPS WHICH ARE FACTORY-PAINTED TO MATCH THE CEILING IN ALL DRYWALL CEILINGS. LOCATE ALL HEADS TO ALIGN WITH LIGHT FIXTURES U.N.O.
13. ALL CEILINGS TO BE 10'-0" A.F.F. UNLESS OTHERWISE NOTED.
14. CEILING GRID IS TO BE CENTERED IN EACH ROOM AS SHOWN, U.N.O. NO LESS THAN 1/2 TILE IN EACH DIRECTION.
15. ALL GYPSUM BOARD CEILINGS ARE TO BE PAINTED, U.N.O. REF. FINISH PLAN FOR FINISH.
16. REFLECTED CEILING PLAN INDICATES LOCATIONS FOR LIGHTS. REFER TO MEP DRAWINGS FOR GRILLES, ETC. LOCATIONS AND SPECIFICATIONS ON EACH OF THESE ITEMS.
17. PROVIDE LOCAL SWITCHING AT ALL ROOMS. REFER ELECTRICAL PLANS FOR CIRCUITING.
18. PROVIDE EMERGENCY LIGHTING AND EXIT SIGNAGE AS REQUIRED.
19. COORDINATE MOUNTING HEIGHT OF ALL LIGHT FIXTURES WITH ARCHITECT PRIOR TO INSTALLATION.

REFLECTED CEILING PLAN LEGEND

- X'X'" - CEILING HEIGHT ABOVE FINISH FLOOR
- GYPSUM BOARD CEILING
- 2'X2' ACOUSTICAL CEILING TILE
- 2'X4' LAY-IN LED DIRECT / INDIRECT FIXTURE LITHONIA 2BLT4 OR EQUAL
- RECESSED LED DOWNLIGHT FIXTURE LITHONIA LDN66 OR EQUAL. ALT. #6: PROVIDE ALTERNATE PRICING FOR LITHONIA LDN6 6" ROUND DOWNLIGHT
- LED UNDER CABINET LIGHTS LITHONIA LCEL OR EQUAL
- RECESSED LED LINEAR FIXTURE FINELITE HP-4 OR EQUAL
- RECESSED LED LINEAR WALL WASH FIXTURE FINELITE HP-4 OR EQUAL
- SUSPENDED LED LINEAR FIXTURE FINELITE HP-4 OR EQUAL
- 6" CYLINDER PENDANT MOUNT INDY 6" LED CULINDER OR EQUAL
- PENDANT MOUNT FIXTURE MUUTO UNDER THE BELL 82CM
- PENDANT MOUNT FIXTURE EUROFASE LAVERTON 24"
- PENDANT MOUNT FIXTURE EUROFASE LAVERTON 36"
- PENDANT MOUNT FIXTURE TECH LIGHTING MINA PENDANT
- PENDANT MOUNT FIXTURE MODERN FORMS VELOCE LED CHANDELIER 48" ALT. #7: PROVIDE ALTERNATE PRICING FOR WARMLY-THE INFINITY CHANDELIER. 49" WARM WHITE
- SUSPENDED WOOD PLANK, 2"X6"

REFLECTED CEILING PLAN KEY NOTES

- ◆ PAINTED GYPSUM BOARD CEILING. REFER TO A9 SERIES FOR COLOR AND FINISH INFORMATION.
- ◆ PROVIDE SOUND ATTENUATION BATTS ABOVE CEILING TILE 2'-0" EITHER SIDE OF PARTITIONS.
- ◆ PROVIDE SEPARATE SWITCH FOR THESE FIXTURES. FIXTURES TO HAVE DIMMERS.
- ◆ LED UNDER COUNTER LIGHTING AS SCHEDULED.
- ◆ PROVIDE DIMMERS ON ALL LIGHTS IN THIS ROOM.
- ◆ OPEN TO DECK CEILING. PAINTED. REFER TO A9 SERIES FOR COLOR AND FINISH INFORMATION.
- ◆ TILE SOFFIT, REF. A9 SERIES FOR FINISH INFORMATION.
- ◆ SUSPENDED WOOD PLANKS
- ◆ SUSPENDED CHAIRS. CHAIRS PROVIDED BY TENANT, INSTALLED BY GC. GC TO CONFIRM AND INSTALL NECESSARY SUPPORTS.
- ◆ PROVIDE SOUND BATTS ABOVE CEILING TO EXTEND 2' FROM WALL.

3401 OLYMPUS BLVD.
SUITE 500
DALLAS, TX 75019

A DEVELOPMENT OF:

Billingsley

PROJECT MANAGER
BILLINGSLEY COMPANY
1722 ROUTH ST., STE 770
DALLAS, TX 75201
(972) 820-2236

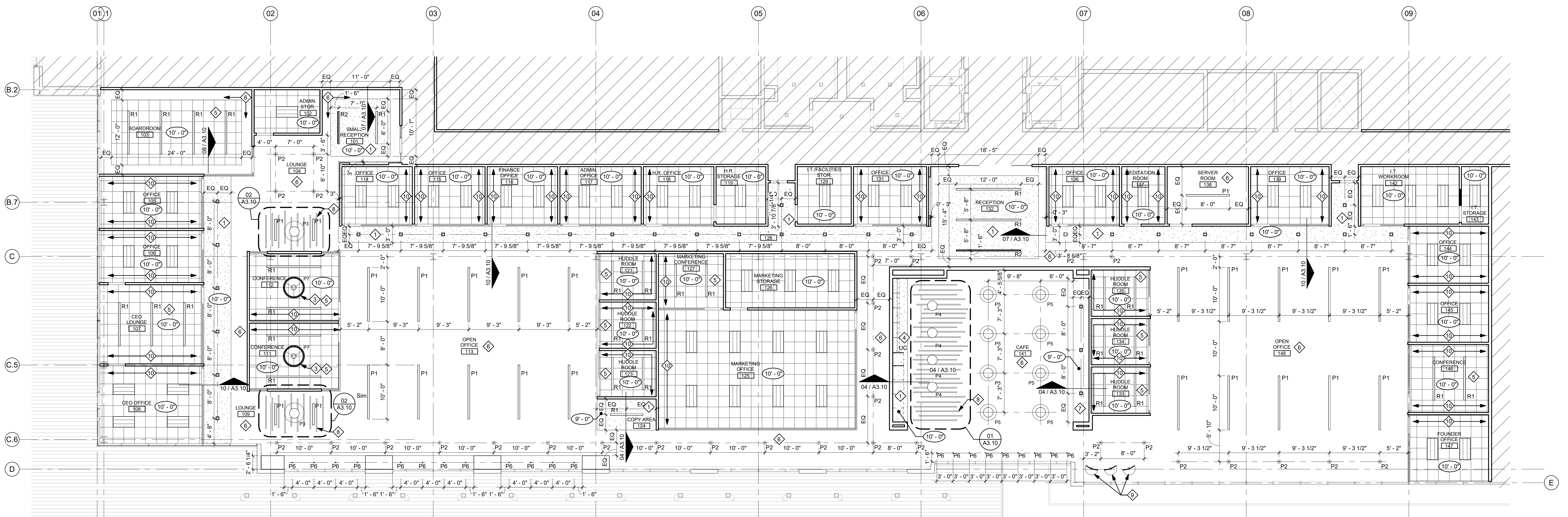
TENANT
OPTYM
7600 NW 5 PI
GAINESVILLE, FL 32607
(352) 870-8401

ARCHITECT
O'BRIEN ARCHITECTS
5310 HARVEST HILL ROAD
SUITE 100, LB 161
DALLAS, TX 75230
(972) 788-1010

MEP
PURDY-MCGUIRE, INC.
17300 DALLAS PARKWAY
SUITE 3000
DALLAS, TX 75248
(972) 239-5357

ISSUE LOG

DATE	DESCRIPTION	DELTA
05-01-2020	ISSUE FOR PERMIT	



01 REFLECTED CEILING PLAN
1/8" = 1'-0"

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SUITE 136
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972.788.1010
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CHRISTOPHER SEAN O'BRIEN
ARCHITECT
REGISTRATION NO. 24878

DATE SEAL	ARCH. PROJ. #	SCALE
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SHEET NO.
A3.01
REFLECTED CEILING PLAN

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ISSUE LOG

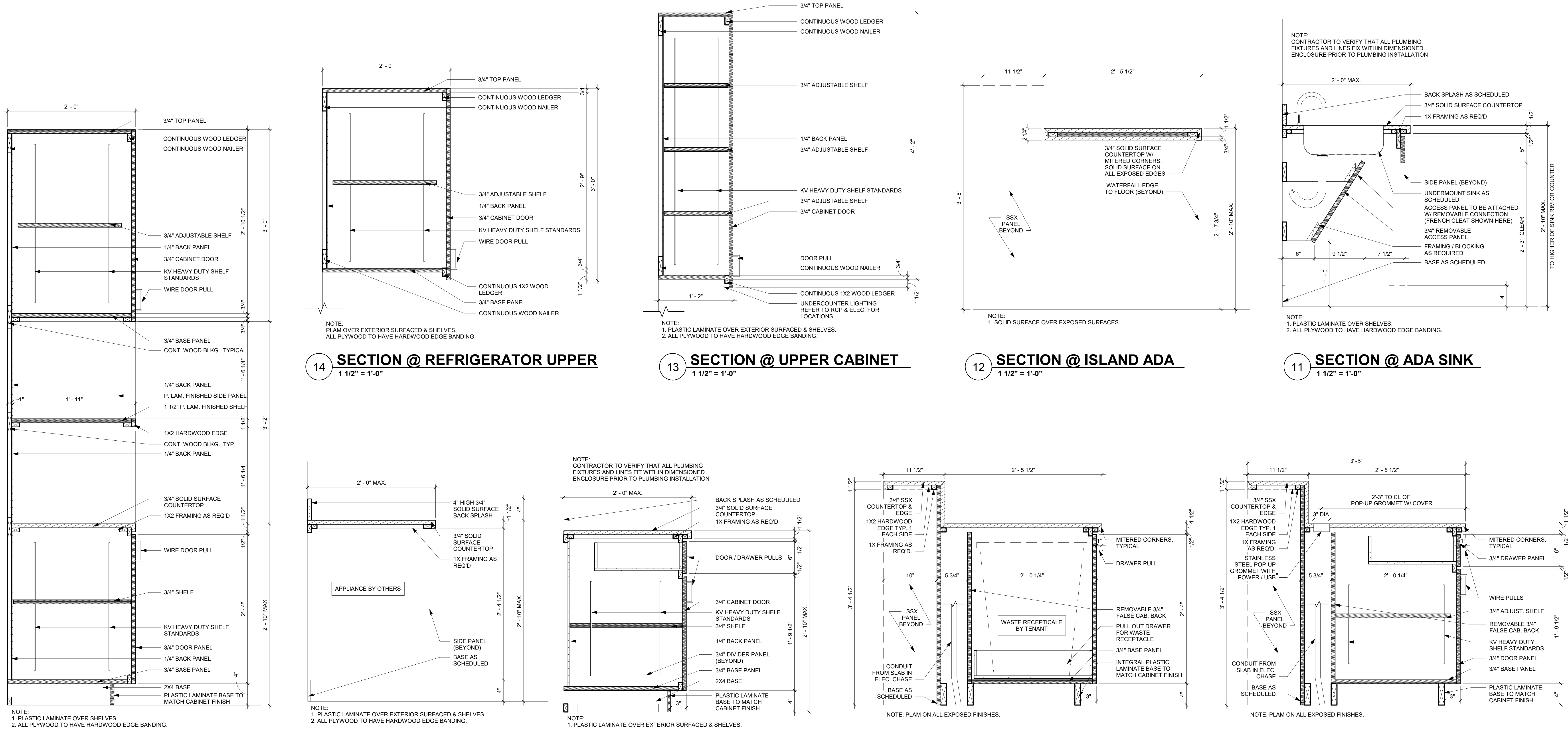
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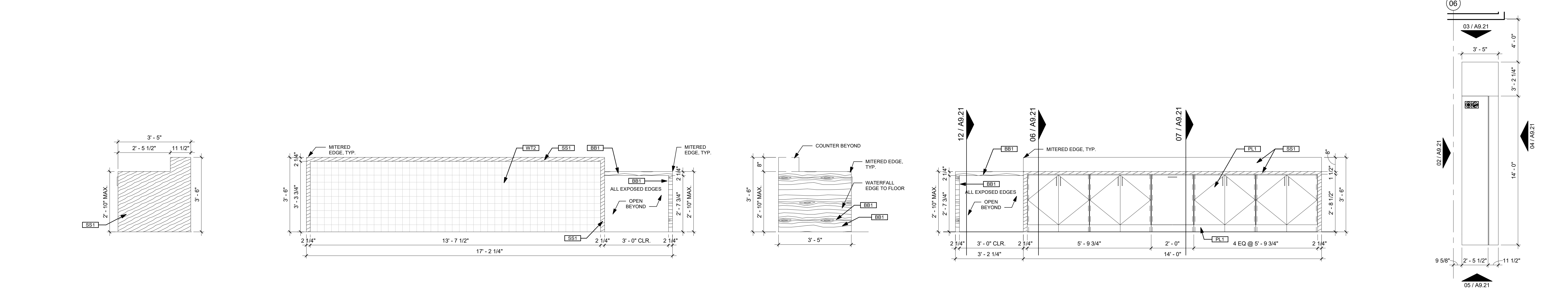


DATE SEAL	ARCH. PROJ. #	SCALE:
05-01-2020	202015	REF. DRAWING

A9.21



14 SECTION @ REFRIGERATOR UPPER 1 1/2" = 1'-0"
13 SECTION @ UPPER CABINET 1 1/2" = 1'-0"
12 SECTION @ ISLAND ADA 1 1/2" = 1'-0"
11 SECTION @ ADA SINK 1 1/2" = 1'-0"
10 SECTION @ MICROWAVE TOWER 1 1/2" = 1'-0"
09 SECTION @ APPLIANCE 1 1/2" = 1'-0"
08 SECTION @ LOWER CABINET 1 1/2" = 1'-0"
07 SECTION @ ISLAND TRASH 1 1/2" = 1'-0"
06 SECTION @ ISLAND CABINET 1 1/2" = 1'-0"



05 ELEV. @ CAFE ISLAND 1/2" = 1'-0"
04 ELEVATION @ CAFE ISLAND 1/2" = 1'-0"
03 ELEV. @ CAFE ISLAND 1/2" = 1'-0"
02 ELEVATION - ISLAND CABINETS 1/2" = 1'-0"
01 PLAN @ CAFE ISLAND 1/4" = 1'-0"

ISSUE LOG

DATE	DESCRIPTION	ISSUE FOR PERMIT	DELTA
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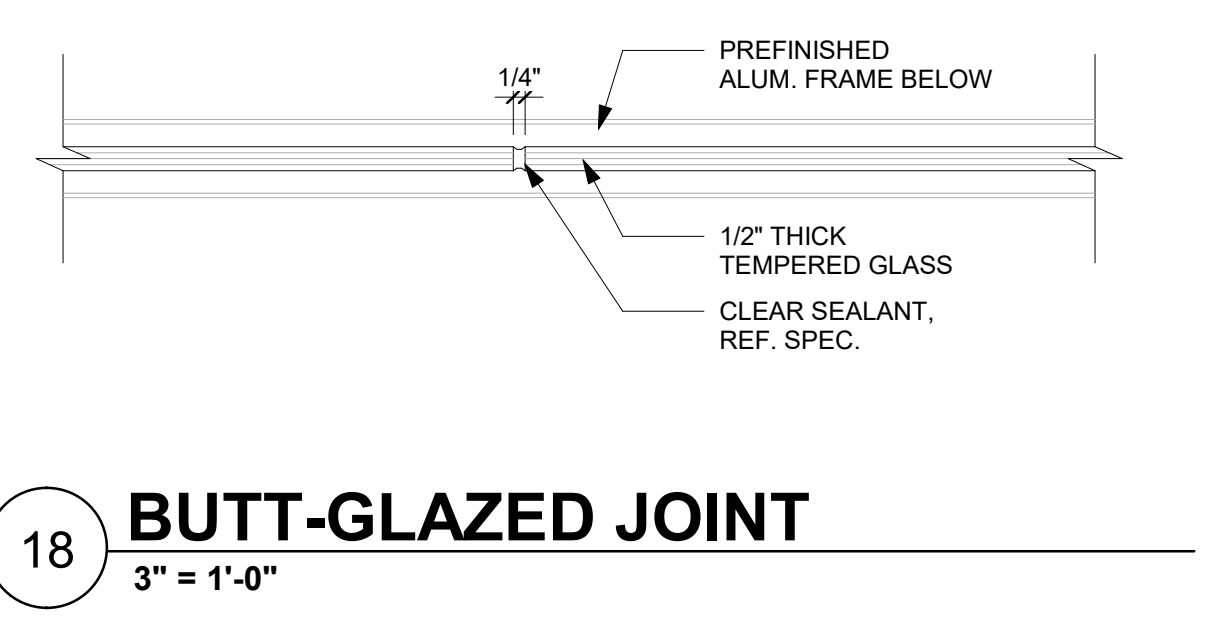
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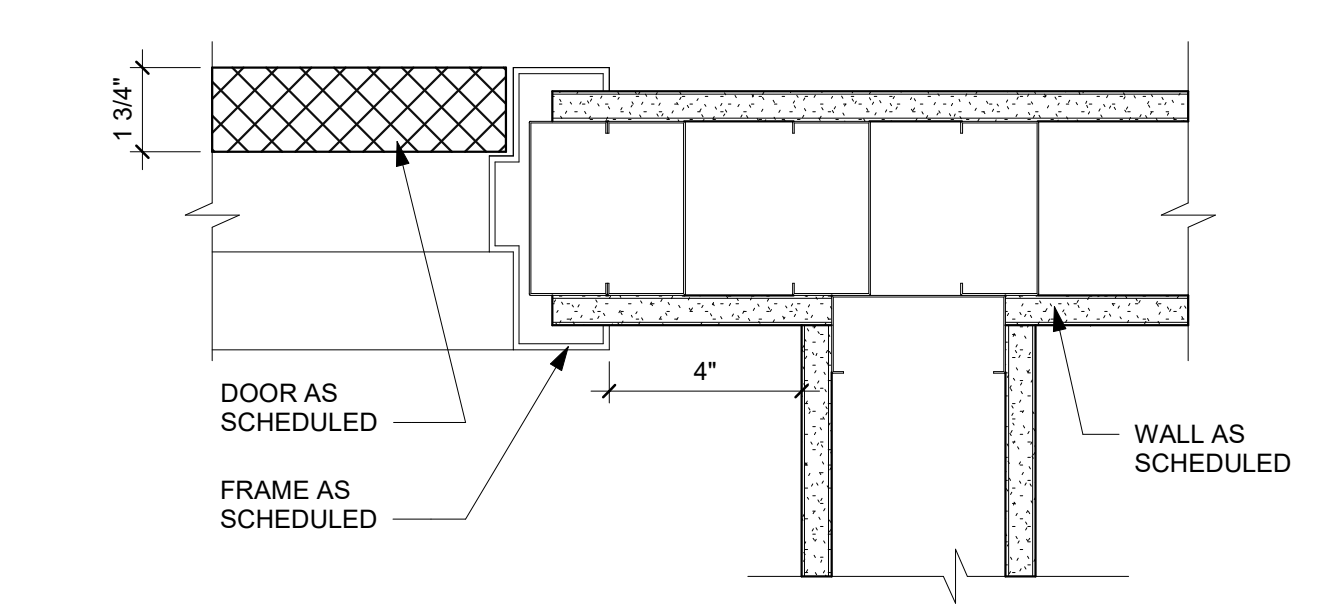
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A10.02

DOOR DETAILS

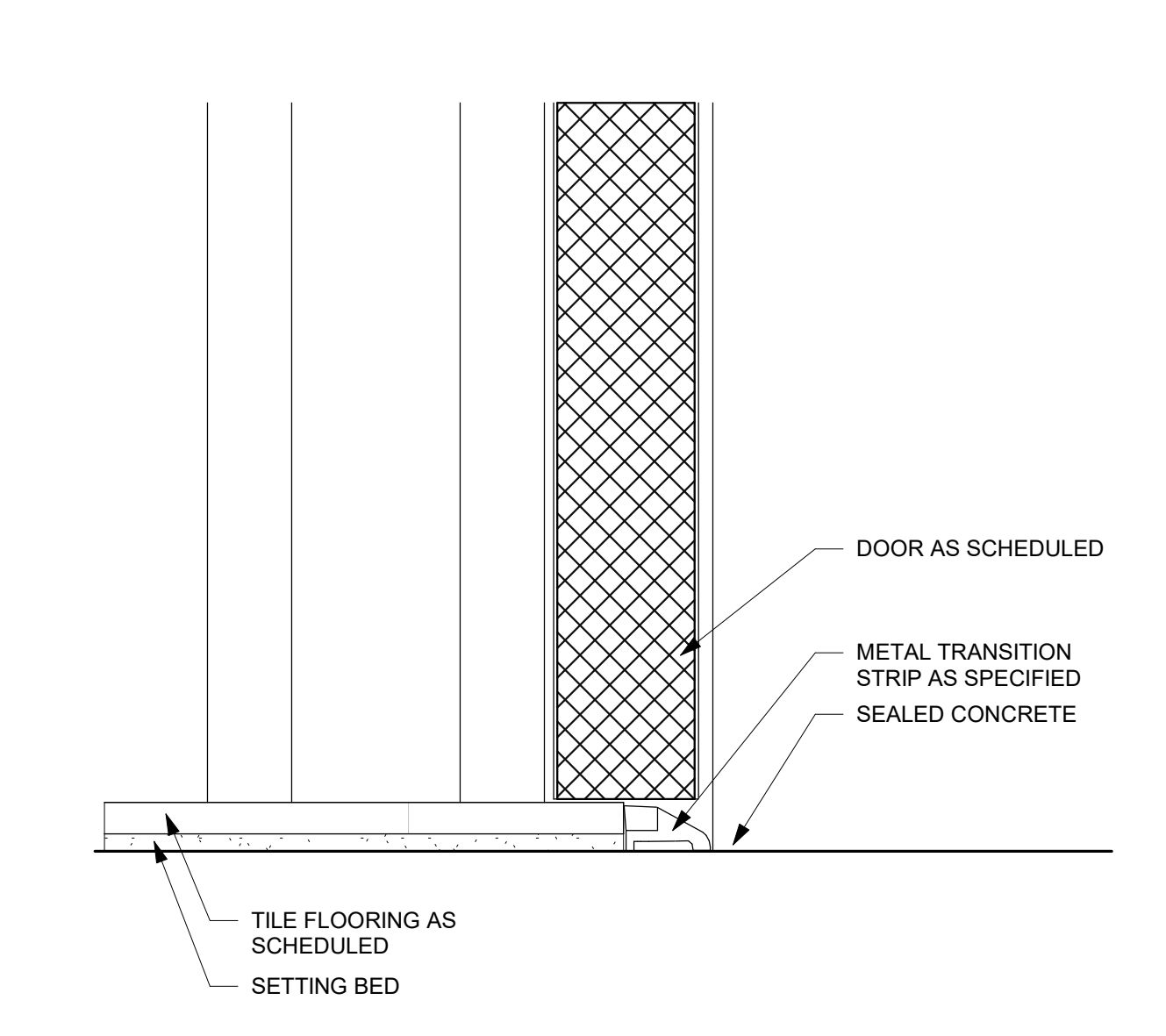
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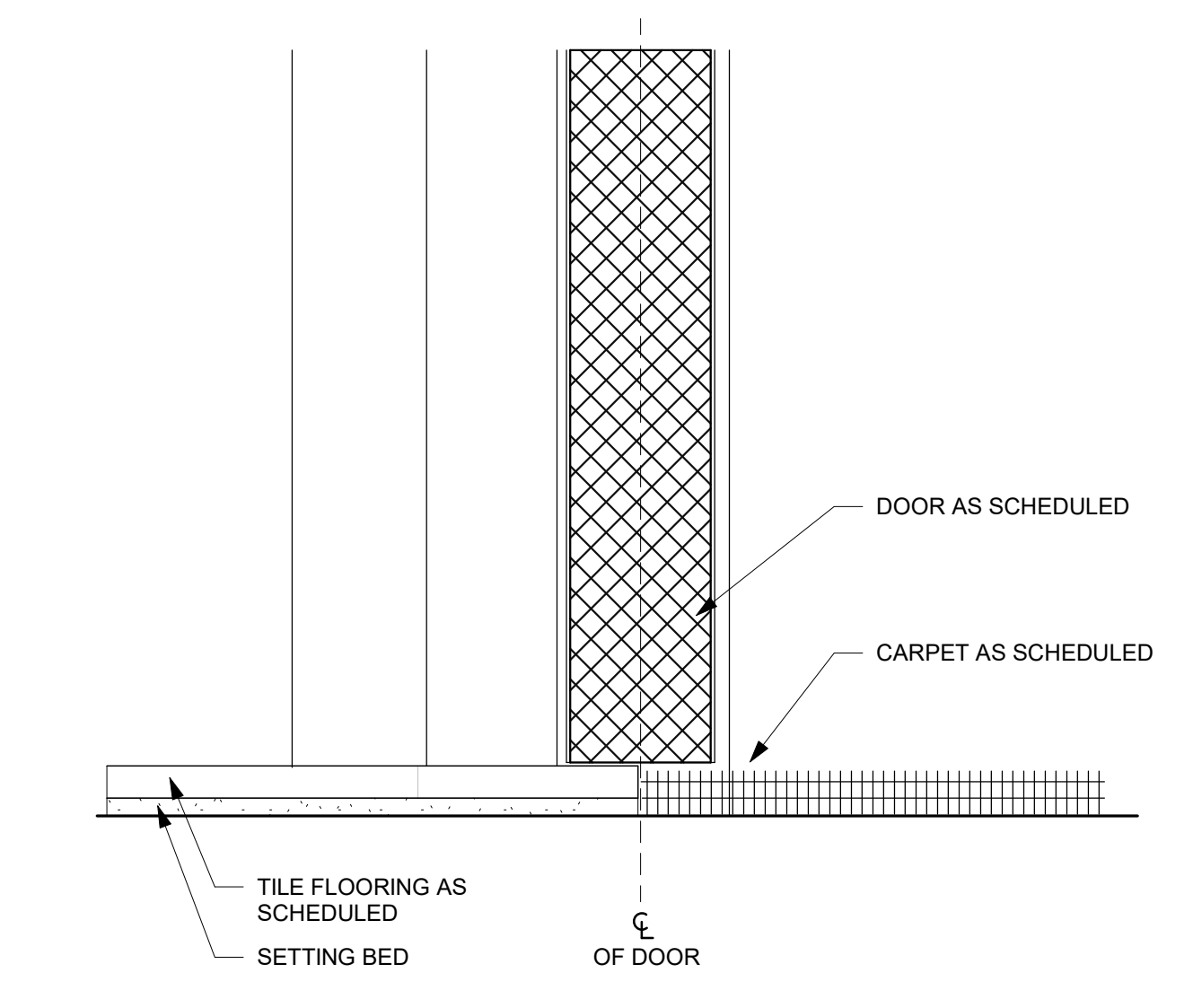
18 **BUTT-GLAZED JOINT**
3" = 1'-0"



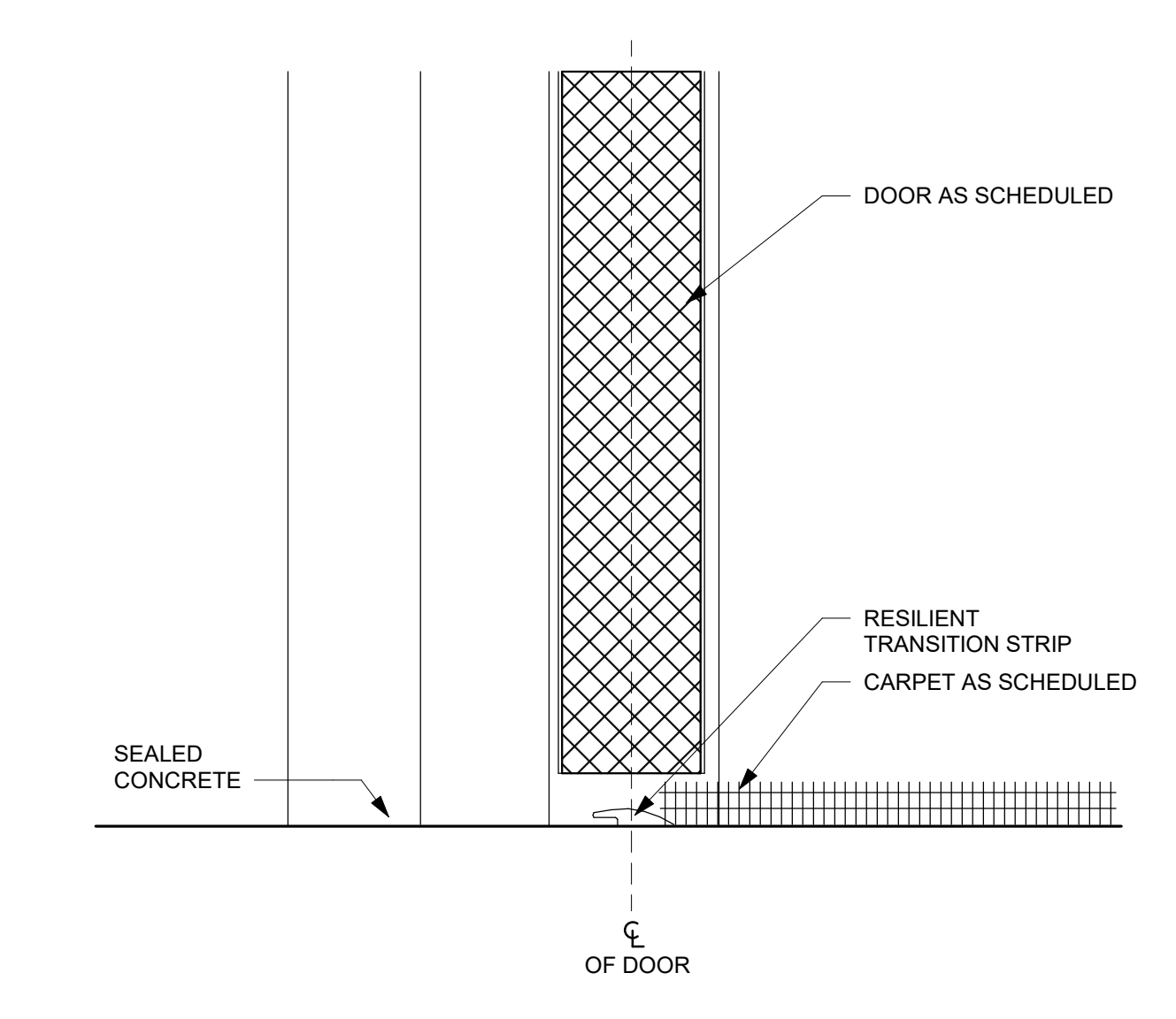
15 **DOOR TYP. LOCATION**
3" = 1'-0"



11 **SILL DETAIL AT TILE TO CONC.**
6" = 1'-0"



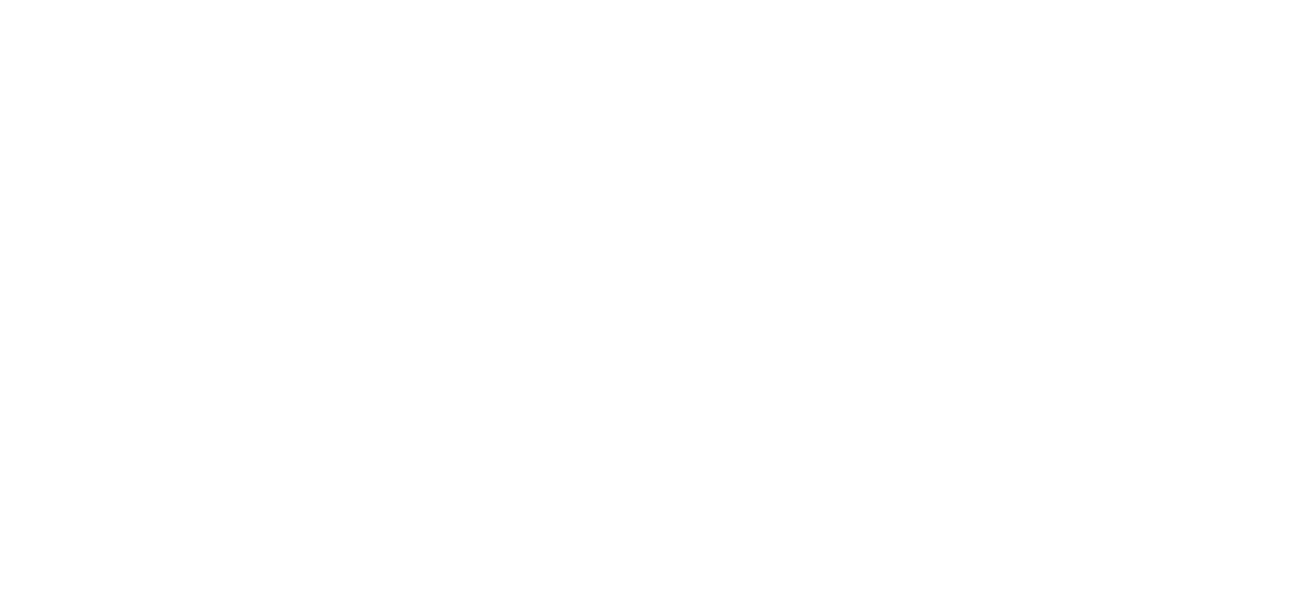
6 **SILL DETAIL AT TILE TO CARPET**
6" = 1'-0"



1 **SILL DETAIL AT CONC. TO CARPET**
6" = 1'-0"



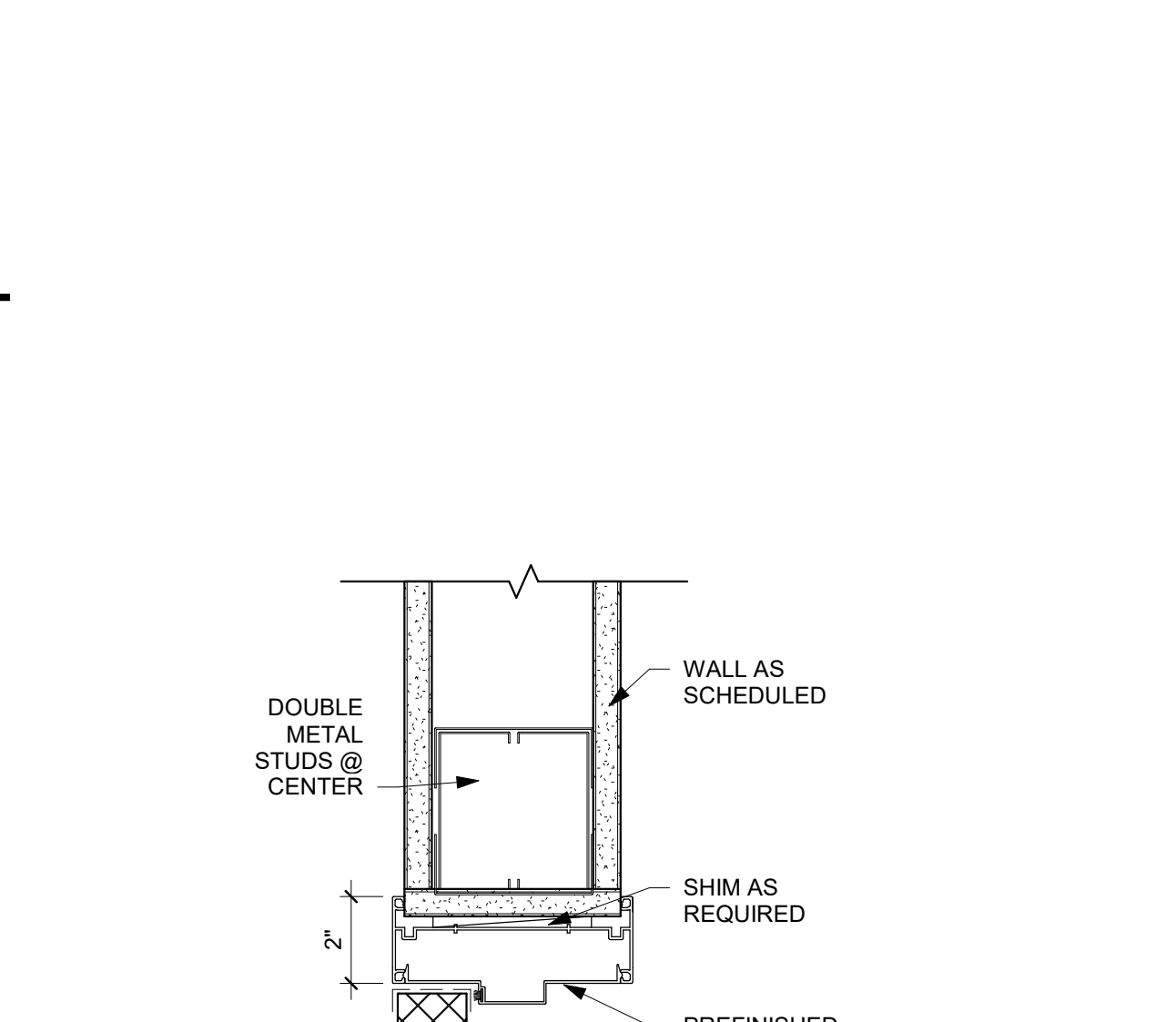
7 **ALUM. FRAME - DOOR HEAD DETAIL**
3" = 1'-0"



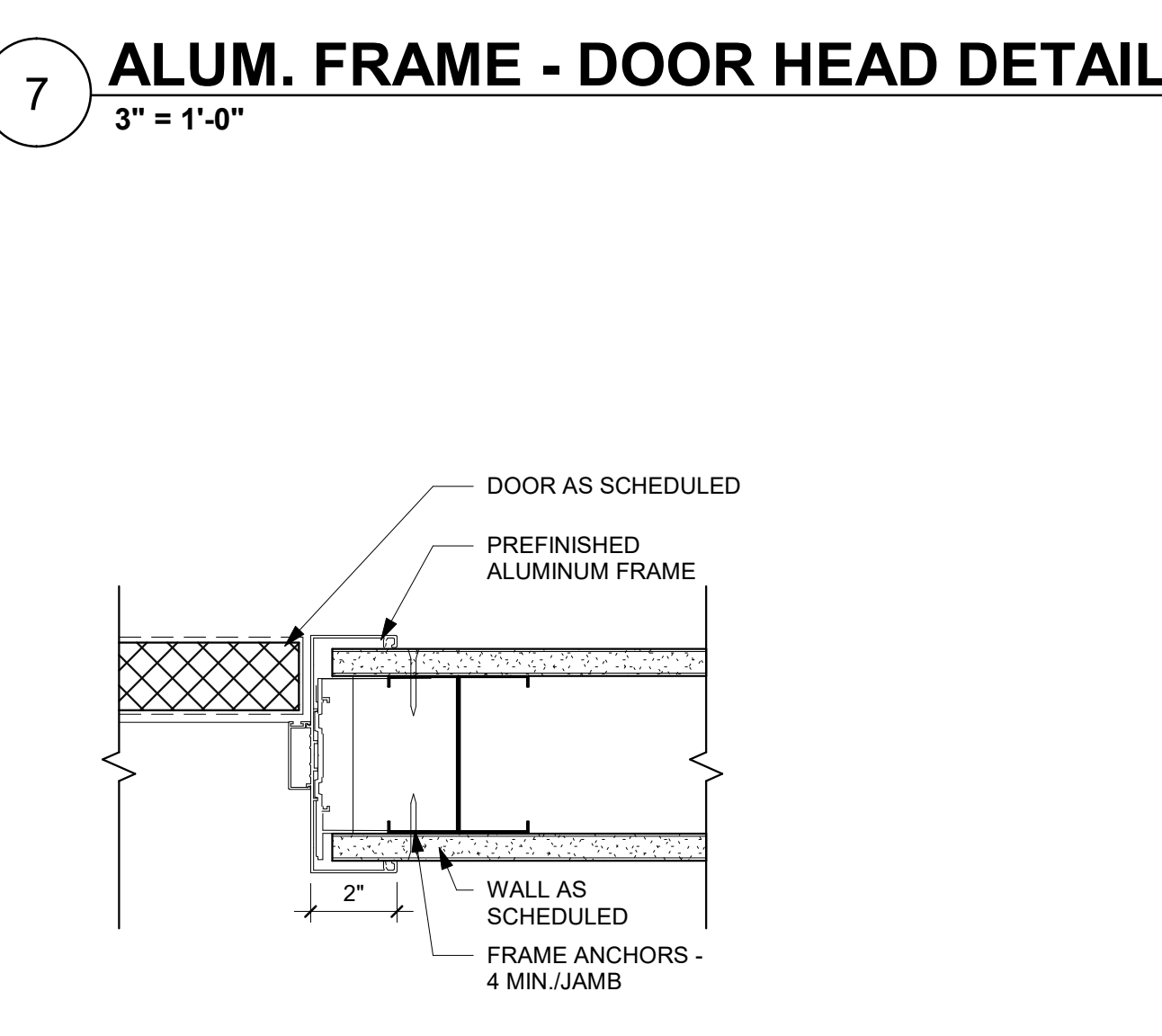
2 **ALUM. FRAME - DOOR JAMB DETAIL**
3" = 1'-0"



8 **STOREFRONT DOOR - TRANSOM DETAIL**
3" = 1'-0"



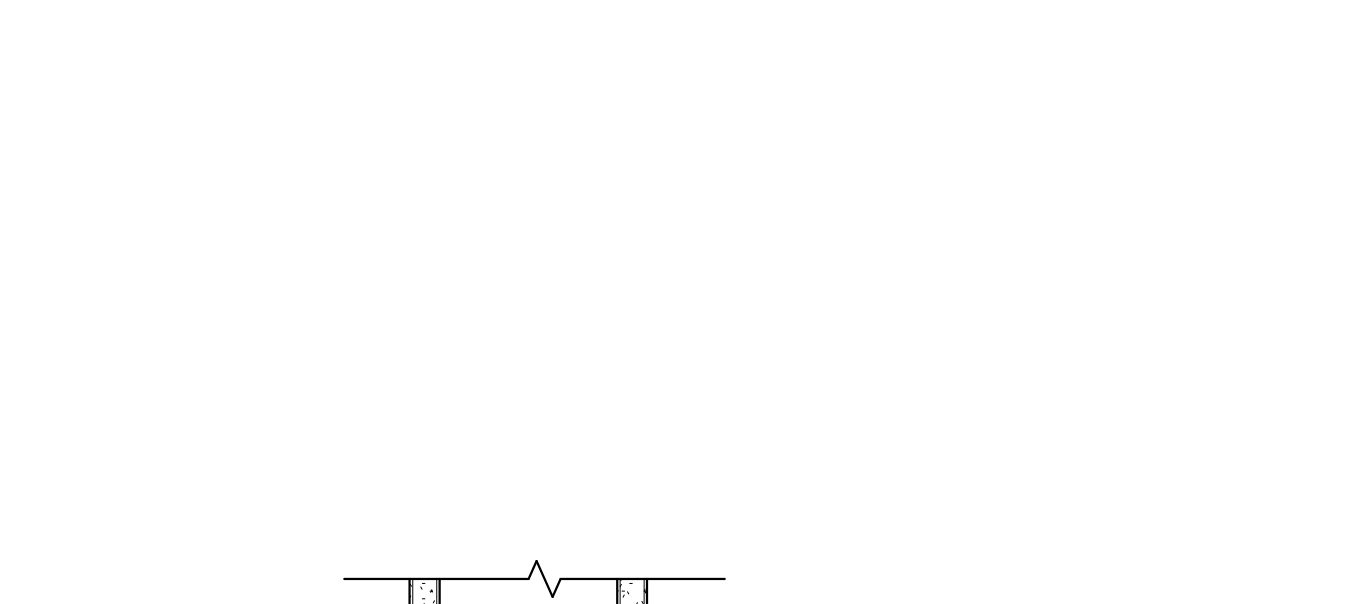
3 **STOREFRONT DOOR - HEAD DETAIL**
3" = 1'-0"



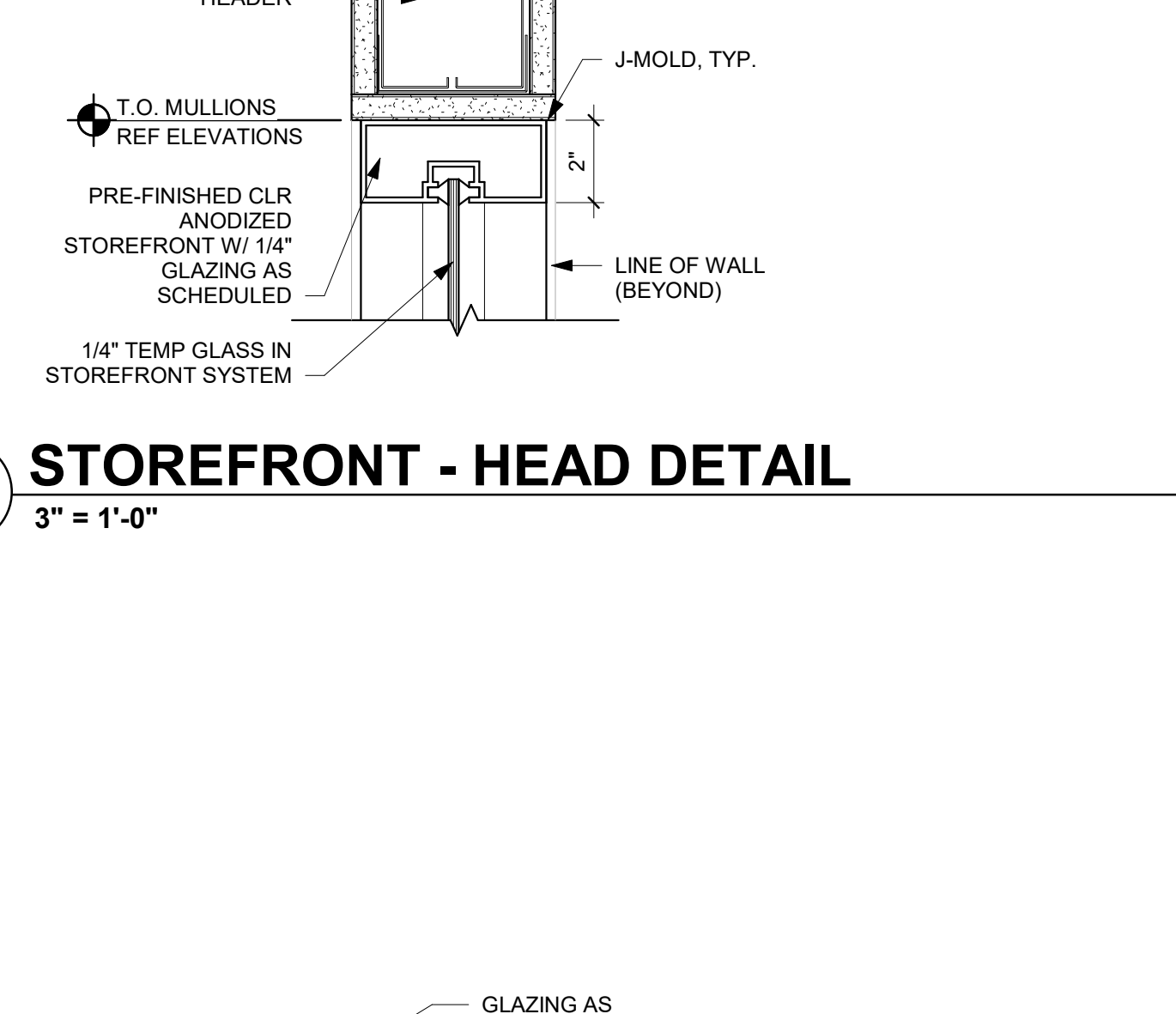
4 **STOREFRONT FRAME - SILL DETAIL**
3" = 1'-0"



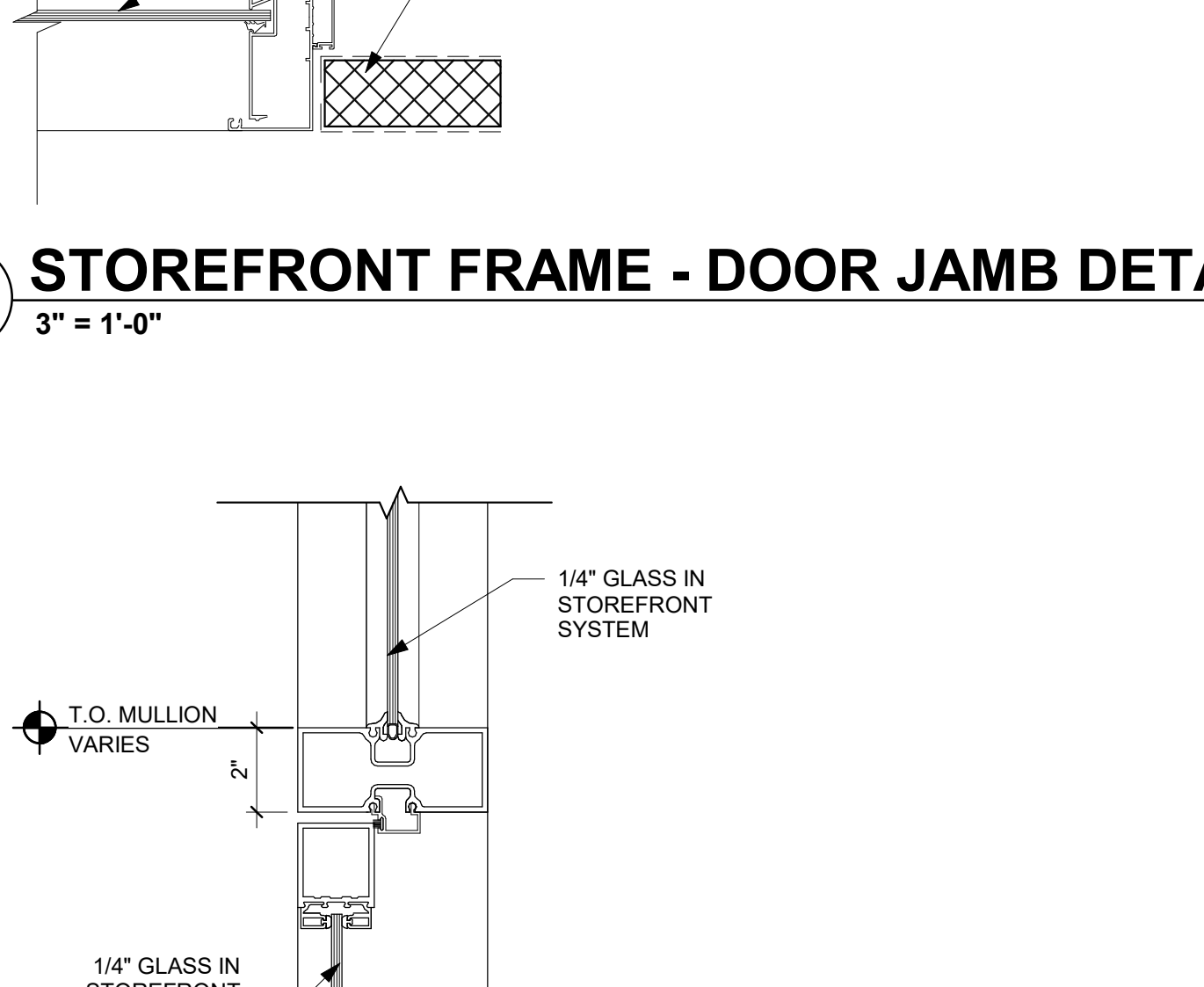
16 **STOREFRONT - HEAD DETAIL**
3" = 1'-0"



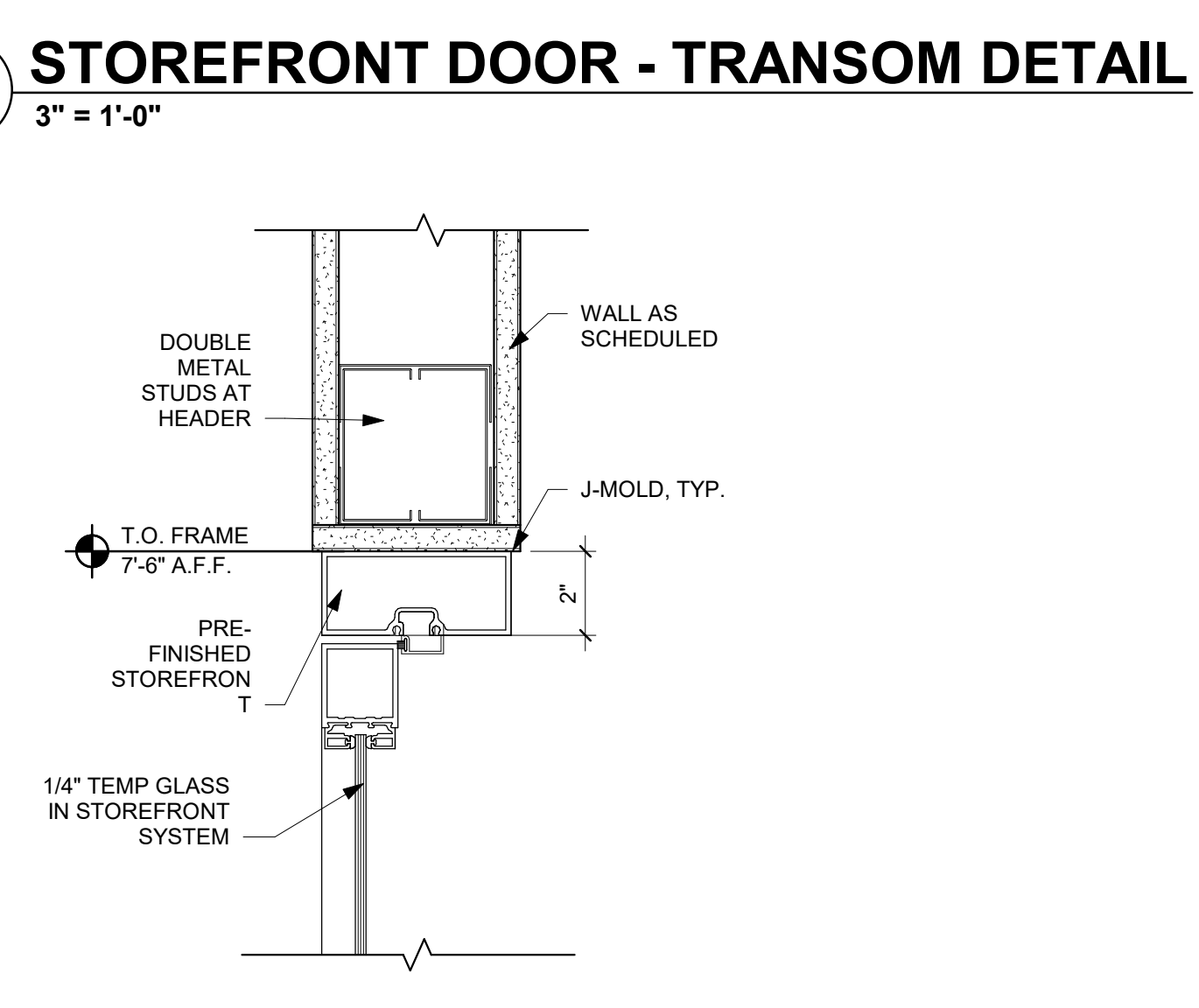
13 **STOREFRONT FRAME - HEAD DETAIL**
3" = 1'-0"



14 **FRAMELESS GLASS DOOR - JAMB DETAIL**
3" = 1'-0"



10 **FRAMELESS GLASS DOOR - SILL DETAIL**
3" = 1'-0"



5 **FRAMELESS GLASS - SILL DETAIL**
3" = 1'-0"



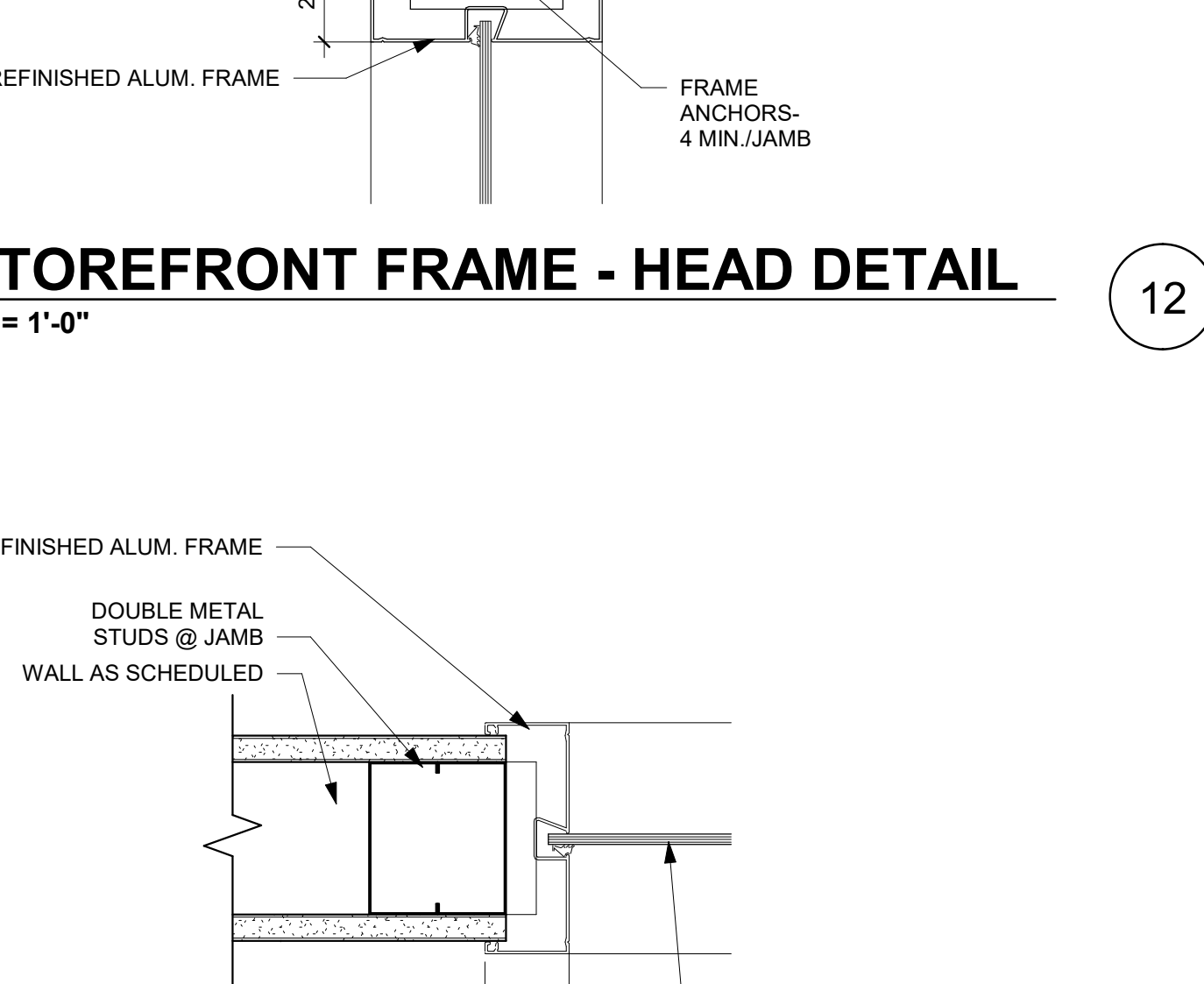
17 **FRAMELESS GLASS - JAMB DETAIL**
3" = 1'-0"



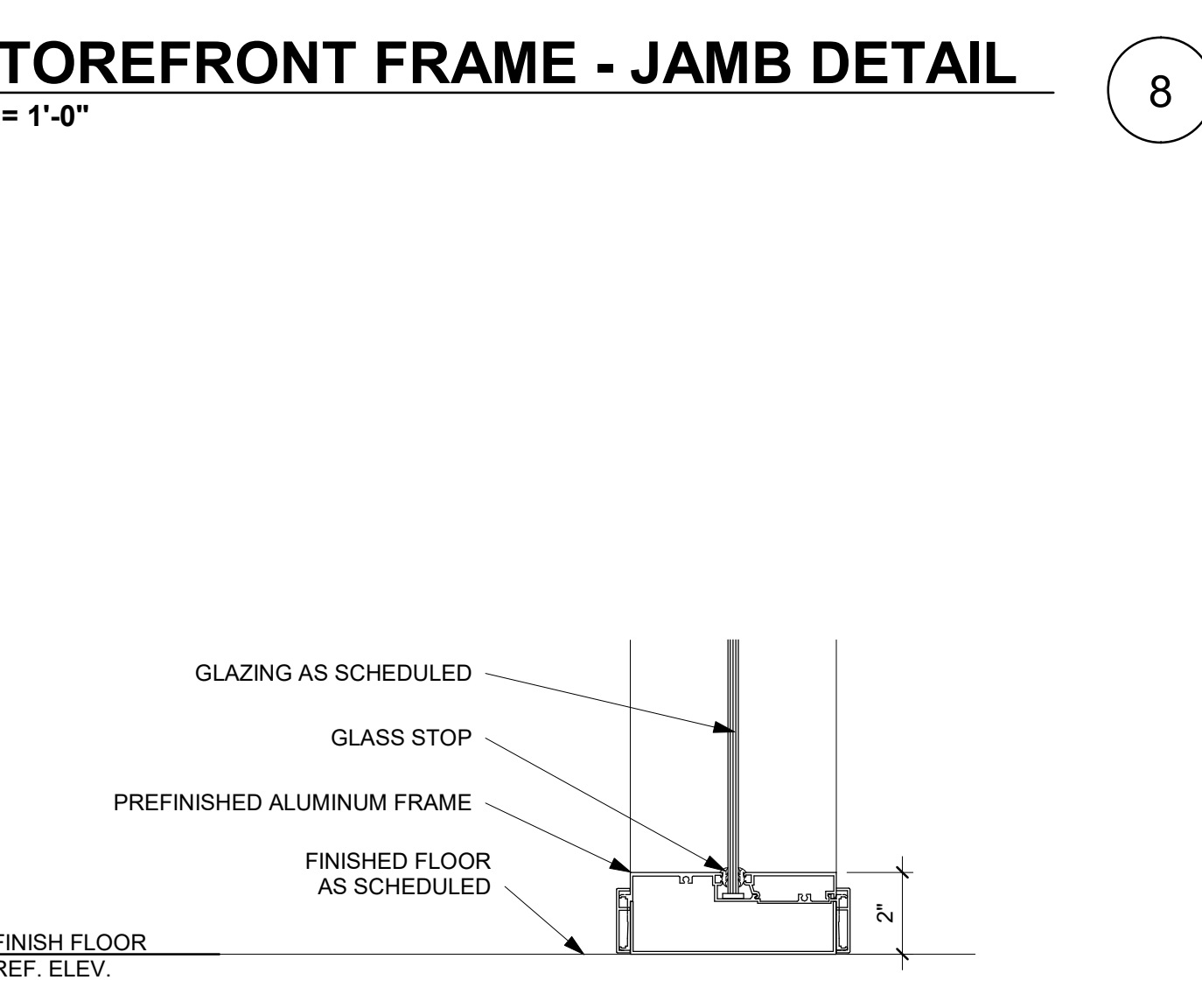
19 **FRAMELESS GLASS - HEAD DETAIL**
3" = 1'-0"



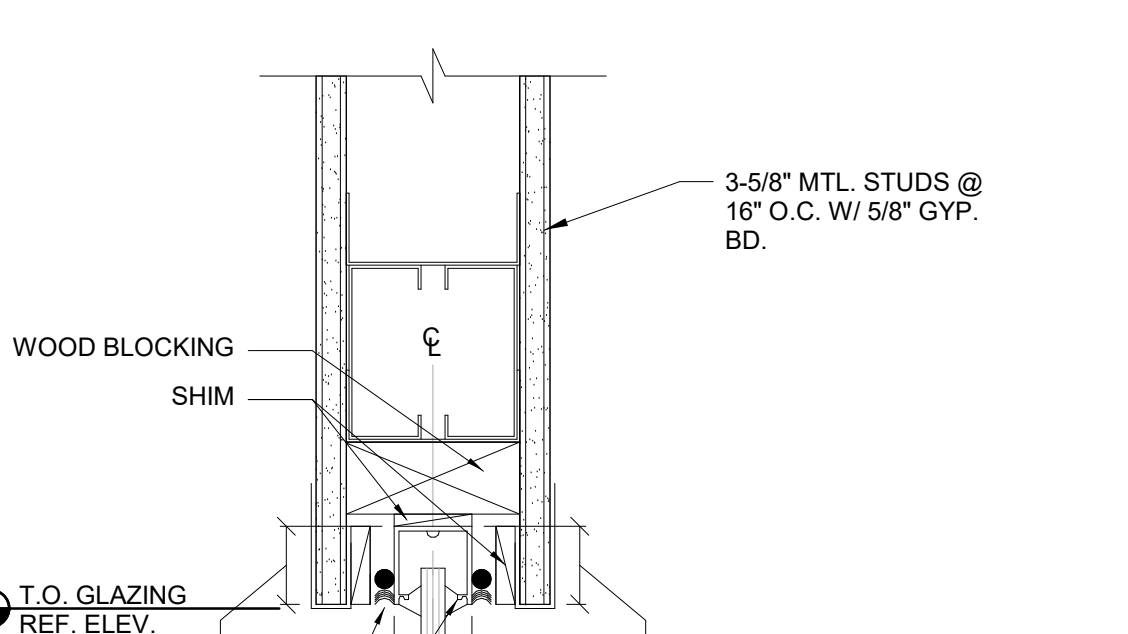
9 **STOREFRONT FRAME - JAMB DETAIL**
3" = 1'-0"



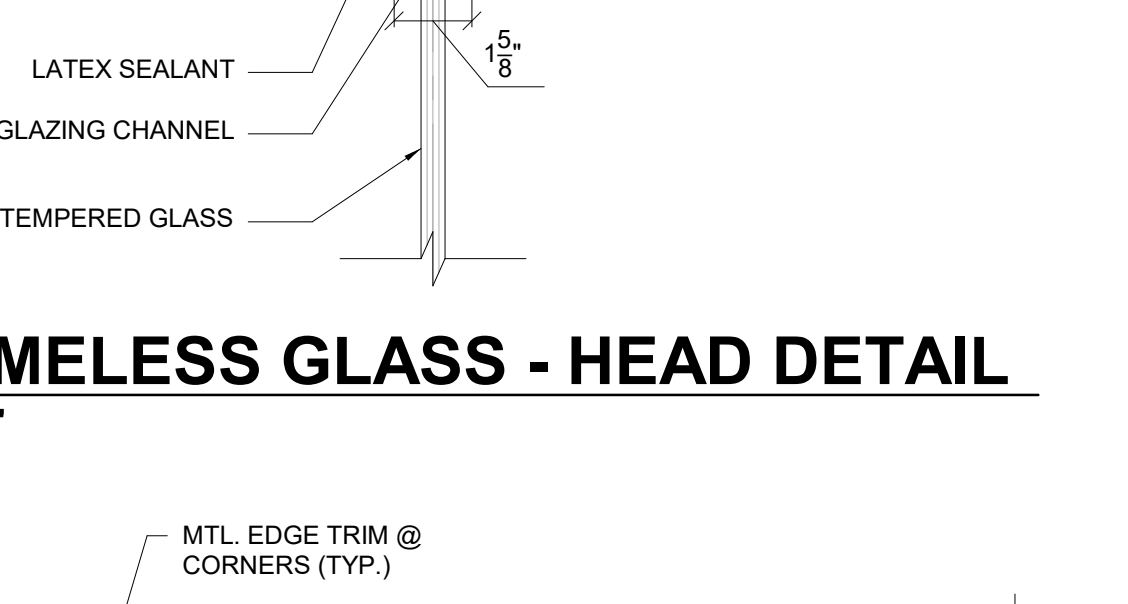
11 **SILL DETAIL AT TILE TO CONC.**
6" = 1'-0"



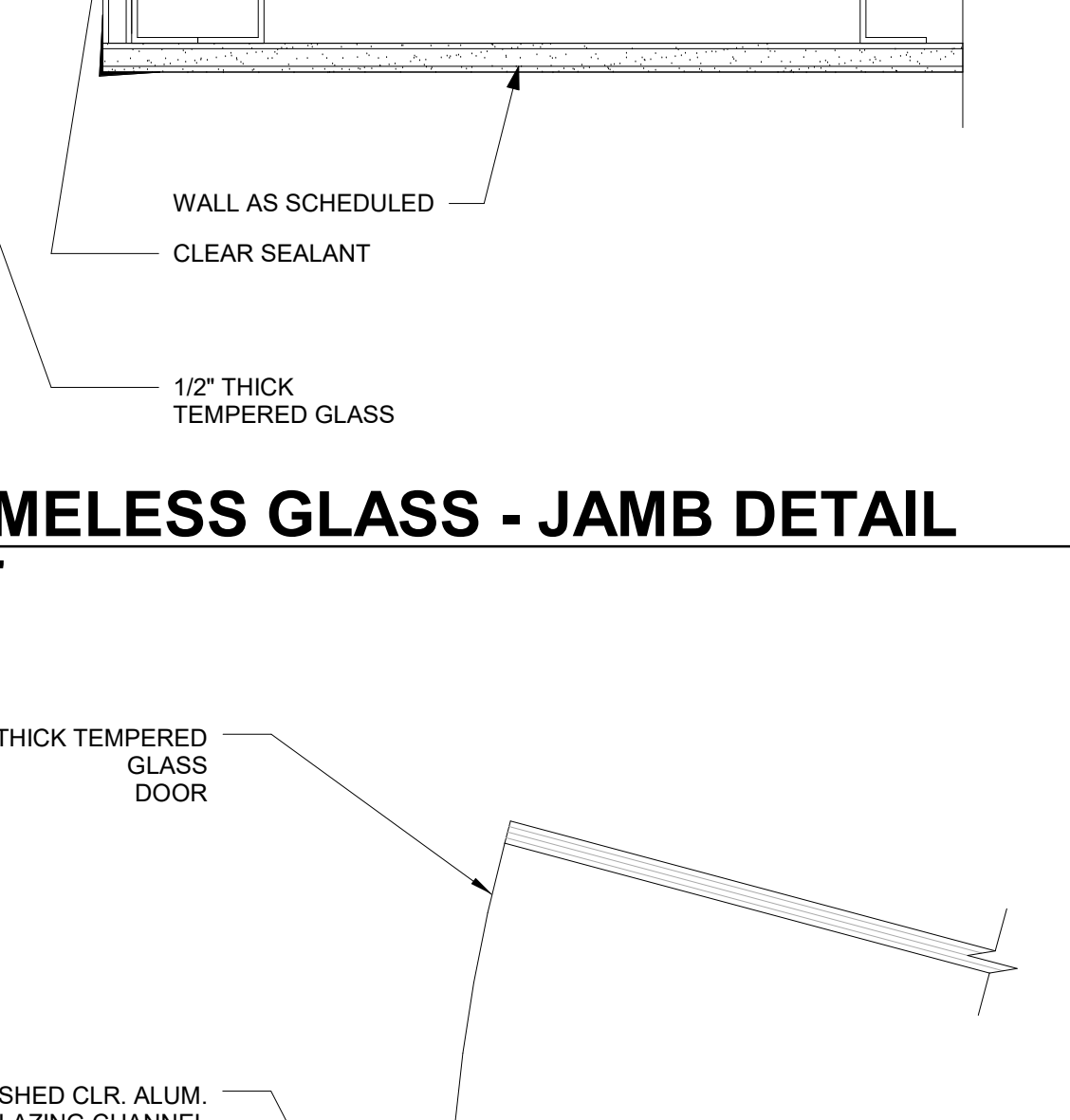
1 **SILL DETAIL AT CONC. TO CARPET**
6" = 1'-0"



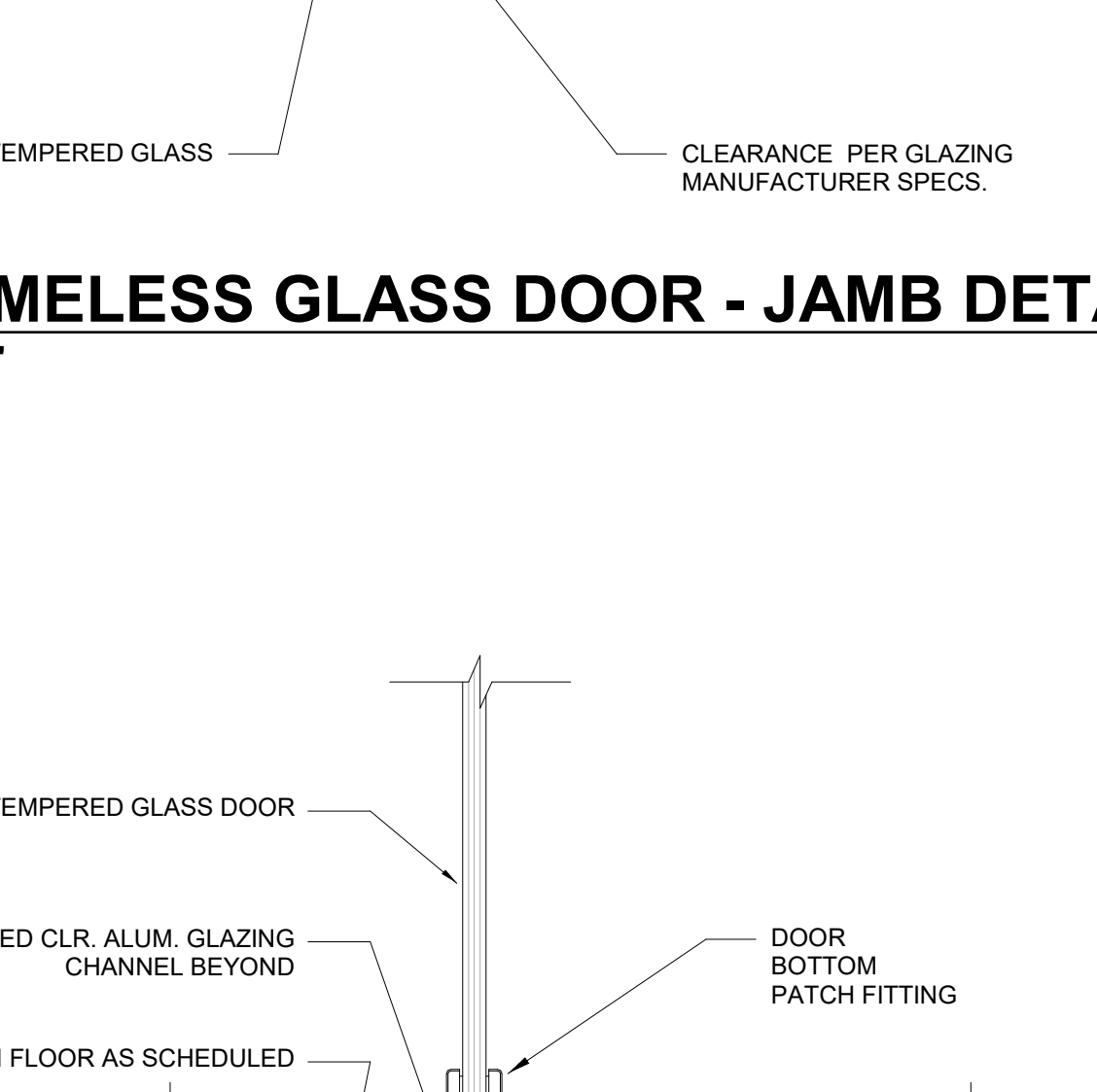
17 **FRAMELESS GLASS - JAMB DETAIL**
3" = 1'-0"



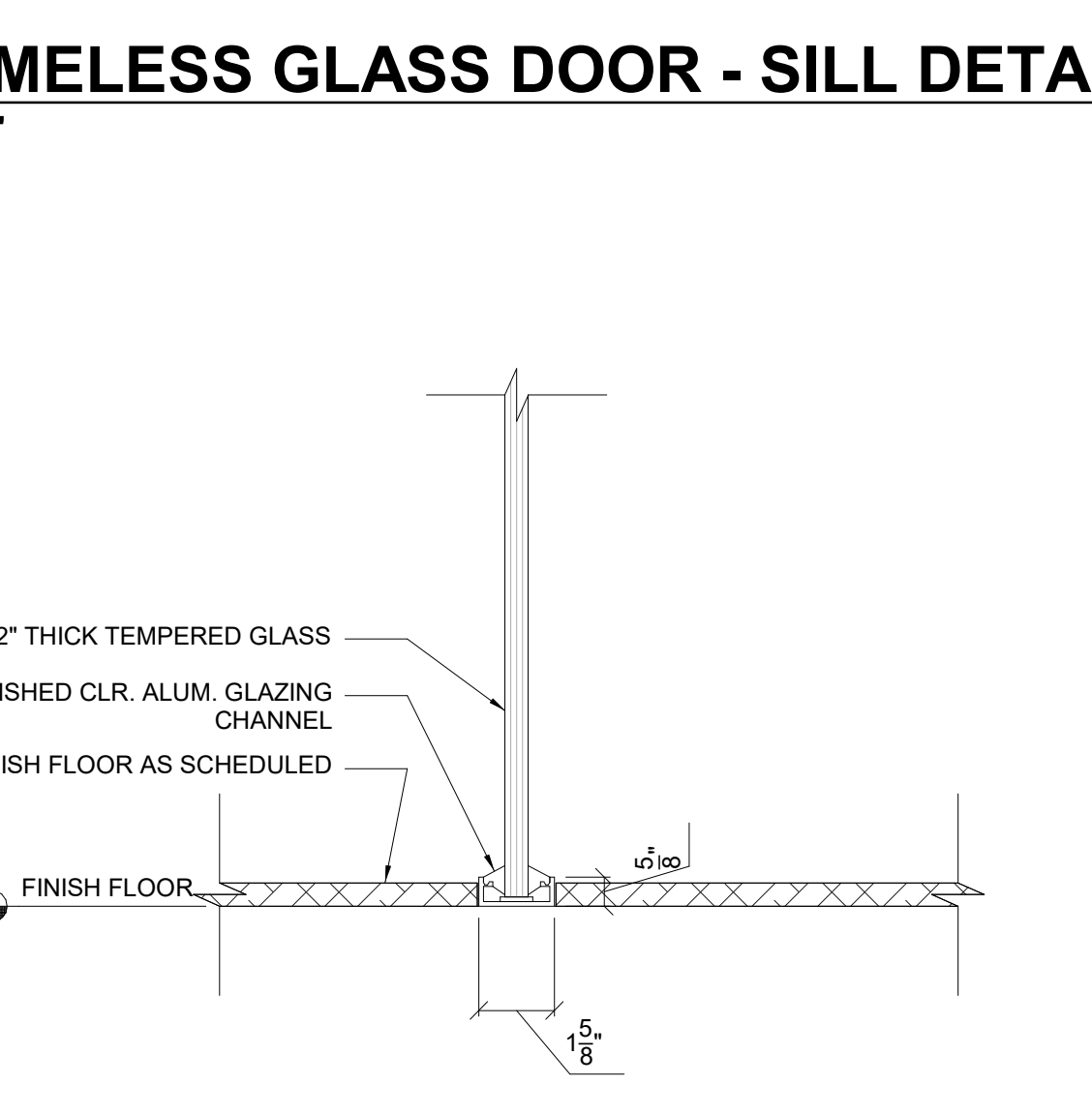
19 **FRAMELESS GLASS - HEAD DETAIL**
3" = 1'-0"



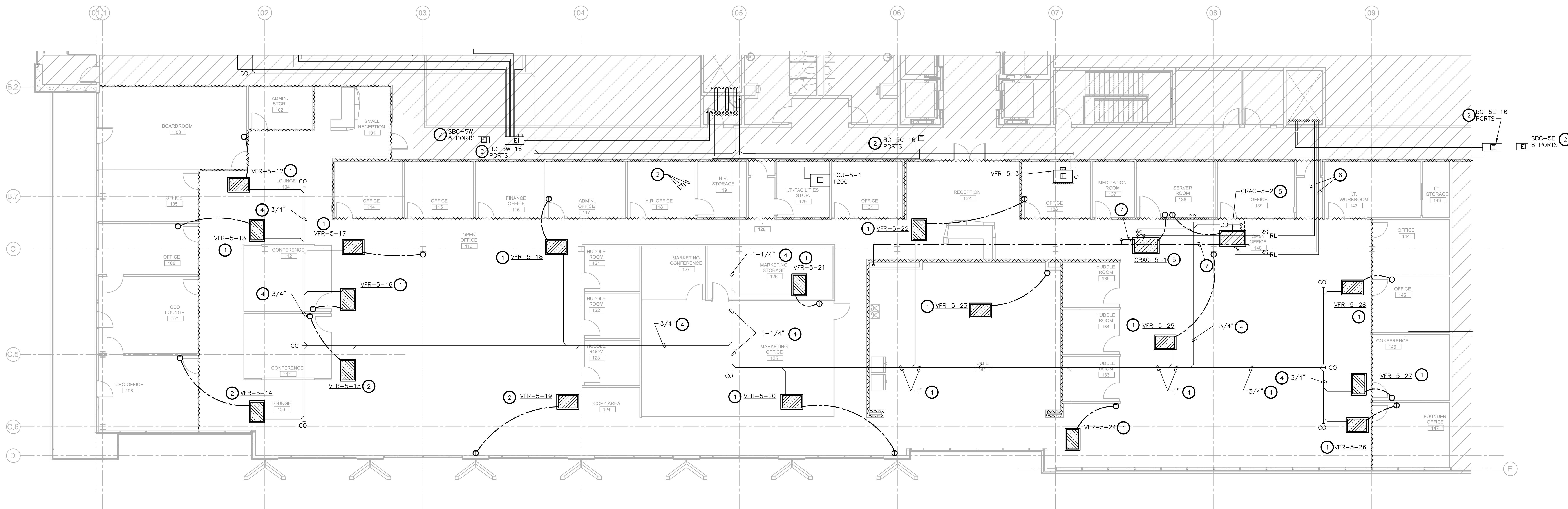
10 **FRAMELESS GLASS DOOR - SILL DETAIL**
3" = 1'-0"



5 **FRAMELESS GLASS - SILL DETAIL**
3" = 1'-0"



1 **SILL DETAIL AT CONC. TO CARPET**
6" = 1'-0"



1 LEVEL 05 MECHANICAL PLAN
SCALE: 1/8"=1'-0"

SEQUENCE OF OPERATION

UPON LEAK DETECTION ALARM, SIGNAL SHALL ALARM AND CLOSE A LINE SIZE 2" POSITION SOLENOID VALVE IN HUMIDIFIER SUPPLY LINE (IF PRESENT IN SCOPE) DOWNSTREAM OF SUPPLY LINE SHUTOFF VALVE.

NOTES BY SYMBOL

- FC UNIT TO BE SUSPENDED FROM STRUCTURE. PROVIDE A GALVANIZED SHEET METAL SECONDARY DRAIN PAN THAT IS A MINIMUM OF 3" LARGER (ON EACH SIDE) THAN ANY DIMENSION OF THE UNIT AND MUST EXTEND UNDER THE CONDENSATE PUMPS.
- EXISTING BRANCH CONTROLLER SUSPENDED FROM STRUCTURE WITH ISOLATION SPRINGS.
- COORDINATE WITH MANUFACTURER'S SPECIFICATIONS FOR REFRIGERANT REQUIREMENTS. COORDINATE ROUTING FROM FC UNIT TO BRANCH CONTROLLER. LOCATION OF FCU SHALL NOT EXCEED 150' OF PIPING BETWEEN UNITS.
- PROVIDE A 3/4" INSULATED CONDENSATE DRAIN AND OVERFLOW PIPING ABOVE CEILING. EXTEND AND DISCHARGE TO NEAREST JANITORS MOP SINK. ALL PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE, AND SLOPED AT 1/8" PER FOOT TOWARDS FLOOR DRAIN. PROVIDE CONDENSATE PUMP CAPABLE OF A MINIMUM OF 10' OF HEAD PRESSURE WITH UNIT IF REQUIRED SLOPE IS UNATTAINABLE.
- AC UNIT TO BE SUSPENDED FROM STRUCTURE WITH ISOLATION SPRINGS. REFER TO PLUMBING SHEET FOR WATER REQUIREMENTS. PROVIDE A GALVANIZED SHEET METAL SECONDARY DRAIN PAN THAT IS A MINIMUM OF 3" LARGER (ON EACH SIDE) THAN ANY DIMENSION OF THE UNIT AND MUST EXTEND UNDER THE CONDENSATE PUMPS.
- INSTALL CONDENSING UNIT ON SUPPORTS EQUAL TO BIGFOOT SYSTEMS IN PITCH PAN ON ROOF. VERIFY EXACT LOCATION WITH ARCHITECT AND BUILDING REPRESENTATIVE. SIZE AND INSTALL REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATION. COORDINATE WITH MANUFACTURER'S SPECIFICATIONS FOR REFRIGERANT REQUIREMENTS. COORDINATE ROUTING FROM AC UNIT TO ROOF WHERE CONDENSING UNIT IS LOCATED. LOCATION OF CU SHALL NOT EXCEED 150' OF PIPING BETWEEN UNITS.
- HUMIDIFIER CONNECTION. REFER TO PLUMBING SHEET FOR WATER REQUIREMENTS. (IF THERE IS NO PLUMBING SHEET; PROVIDE 1/2" COLD WATER WITH SHUTOFF AND SOLENOID VALVE AND EXTEND 1/4" COPPER TUBING TO AHU. PROVIDE REDUCED PRESSURE ZONE ASSEMBLY (RPZ) EQUAL TO WATTS 009 SERIES. EXTEND WATER LINE TO NEAREST DOMESTIC COLD WATER LINE 3/4" OR LARGER. VERIFY ROUTING AT JOB SITE PRIOR TO ROUGH-IN.)

REFER TO SHEET M0.01 FOR GENERAL NOTES, SCHEDULES AND SYMBOLS.

REVISION LOG		
DATE	DESCRIPTION	DELTA



5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972.788.1010
www.obrienarch.com



Purdy - McGuiRE
Mechanical - Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511
Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguiRE.com

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PMI JOB NO. 20039.005
PROJECT MGR. TODD JOHNSON
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DATE SEAL: 05.01.2020 ARCH. PROJ. #: 202015 SCALE: REF. DRAWING

SHEET NO.

M2.15

LEVEL 05
MECHANICAL PLAN -
REFRIGERANT PIPING

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DIVISION 26 - ELECTRICAL.

SECTION 260500 - COMMON WORK RESULTS

- PART 1 - GENERAL**
- 1. GENERAL NOTES**
 - A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 26.
 - B. THE CONTRACTOR FOR THIS DIVISION OF WORK IS REQUIRED TO OBTAIN A COMPLETE SET OF BID DOCUMENTS (DRAWINGS AND SPECIFICATIONS) AND FULLY REVIEW THEM. COORDINATE DIVISION 26 WORK WITH THAT OF ALL OTHER DIVISIONS OF WORK.
 - C. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER. ANY LABOR OR MATERIAL CALLED FOR IN ONE SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY LABOR OR MATERIAL WHICH IS NEITHER SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY REQUIRED TO COMPLETE THE WORK, AND WHICH IS NORMALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS CONTRACT.
 - D. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE COMPLETION AND INSPECTION OF THIS WORK TO COMPLY WITH THE OWNER'S SCHEDULE AND PROJECT COMPLETION DATE.
 - 2. SCOPE OF WORK**
 - A. THE DESCRIPTION OF GENERAL CONDITION WORK IN THIS DIVISION SHALL ALSO APPLY TO DIVISION 28.
 - B. THIS CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE ELECTRICAL AND FIRE ALARM SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED BY JOB CONDITIONS. WORK IS TO BE COMPLETE IN EVERY RESPECT, WHETHER SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS OR NOT.
 - C. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OWNER (BUILDING OWNER, LANDLORD OR TENANT), SHALL BE PROVIDED BY THIS CONTRACTOR.
 - D. THIS WORK, MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:
 - a. A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM INCLUDING THE INSTALLATION OF ELECTRICAL PANELBOARDS, TRANSFORMERS, SAFETY AND DISCONNECT SWITCHES, MOTOR STARTERS, VFDs AND LIGHTING. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO INCLUDE IN HIS BID FOR PROVIDING SERVICE EQUIPMENT NECESSARY FOR THE I-10 TO THE OWNER'S DISTRIBUTION EQUIPMENT. REFER TO ELECTRICAL RISER DIAGRAM FOR ADDITIONAL INFORMATION.
 - b. CONTRACTOR MUST ALSO INCLUDE IN BID ALL NECESSARY MATERIALS REQUIRED TO COMPLETE THE SYSTEM INCLUDING, BUT NOT LIMITED TO, FEEDERS, BRANCH CIRCUITS, JUNCTION BOXES, OUTLET BOXES, WIRING DEVICES, COVER PLATES, CONDUITS, ETC.
 - c. METERING REQUIRED PER DRAWING AND/OR OWNER.
 - d. THE WIRING OF MECHANICAL EQUIPMENT SHALL BE AS OUTLINED ON THE BID SET DRAWINGS AND IN THE SPECIFICATIONS. THE WIRING OF ALL STARTERS, DISCONNECTS, VFDs, AND POWER METERING EQUIPMENT MECHANICAL OR PLUMBING CONTRACTOR WILL REQUEST AN EXTRA, THIS EXTRA SHALL BE PAID BY THE CONTRACTOR PROVIDING THE ALTERNATE EQUIPMENT REQUIRING THE CHANGE.
 - e. ELECTRICAL CONTRACTORS SHALL REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL ELECTRICAL WORK TO BE INCLUDED IN HIS BID.
 - f. ELECTRICAL CONTRACTOR SHALL DO ALL POWER WIRING, LINE VOLTAGE WIRING, AND LINE VOLTAGE CONTROL WIRING INDICATED UNDER THE HEATING, VENTILATION AND AIR CONDITIONING DIVISIONS. THE CONTRACTOR SHALL ALSO DO ALL INTERCONNECTING LINE VOLTAGE WIRING BETWEEN RELAYS AND SWITCHES AS REQUIRED.
 - g. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING CONDUIT FOR HVAC CONTROL WIRING WHERE REQUIRED BY CODE OR SHOWN ON PRINTS TO BE IN CONDUIT. REFER TO PLANS FOR REQUIREMENTS AND SIZES.
 - f. FIRE DAMPERS SHALL BE WIRE BY ELECTRICAL CONTRACTOR. COORDINATE WITH MECHANICAL CONTRACTOR FOR POWER REQUIREMENTS.
 - E. WORK NOT INCLUDED - THE FOLLOWING ITEMS OF ELECTRICAL CONSTRUCTION ARE NOT INCLUDED IN THIS CONTRACT:
 - a. TELEPHONE INSTRUMENTS AND WIRING UNLESS NOTED OTHERWISE.
 - b. DATA CABLE WIRING UNLESS NOTED OTHERWISE.
 - 3. CODES**
 - A. ALL WORK SHALL CONFORM TO THE OWNER'S CRITERIA, STATE, COUNTY, CITY AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THIS CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS. THIS CONTRACTOR SHALL INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS AWARDED, CHANGE ORDERS FOR INCREASED COSTS DUE TO CODE ISSUES WILL NOT BE ACCEPTED UNLESS ALLOWANCES HAVE BEEN PREVIOUSLY AGREED UPON.
 - B. WHERE THE DRAWINGS AND SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODE OR THE OWNER'S CRITERIA, THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS.
 - 4. LICENSES, PERMITS, INSPECTION AND FEES**
 - A. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS AND FEES REQUIRED OR RELATED TO THIS WORK. ALL COSTS ASSOCIATED WITH THESE SHALL BE PAID FOR BY THE CONTRACTOR AND INCLUDED AS PART OF THE BID.
 - B. FURNISH TO THE OWNER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT THE COMPLETION OF THE PROJECT.
 - 5. GUARANTEE**
 - A. ALL MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR PERIOD OF 1 YEAR FROM THE DATE OF ACCEPTANCE/ OFFICIAL DATE IN WRITING OF THE PROJECT. ALL WORK FOUND TO BE DEFECTIVE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
 - B. WHERE SPECIFIC EQUIPMENT IS NOTED TO HAVE EXTENDED WARRANTIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER REGISTRATION SO THE OWNER CAN MAKE ALL APPROPRIATE CLAIMS.
 - 6. RECORD DRAWINGS**
 - A. THIS CONTRACTOR SHALL MAINTAIN ONE SET OF DRAWINGS ON THE JOBSITE, UPDATED WEEKLY, TO RECORD ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS SUCH AS:
 - a. LOCATIONS OF CONDUITS
 - b. PANEL DESCRIPTIONS, CIRCUIT DIRECTORIES AND LABELS
 - c. REVISIONS, ADDENDUMS AND CHANGE ORDERS
 - d. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.
 - B. DELIVER RECORD DRAWINGS TO THE OWNER AT PROJECT COMPLETION.
 - 7. DEMOLITION**
 - A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED BY THE GENERAL CONTRACTOR. COORDINATE WITH THE GENERAL CONTRACTOR ALL EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT.
 - B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL EXISTING CONDUIT, FIRE ALARM SYSTEM, SWITCH GEAR, AND EQUIPMENT, ETC. UNLESS SPECIFICALLY NOTED OTHERWISE. CONTRACTOR MUST VERIFY WITH THE OWNER ALL PRESUMED ABANDONED EQUIPMENT, CONDUIT AND SWITCH GEAR FROM THE REMOVAL OF EQUIPMENT IN THE LOCATION TO BE REMOVED. THE REMOVAL OF BASE BID, CONCRETE, OR OTHERWISE INACCESSIBLE, ARE TO BE CUT OFF AND SEALED BELOW OR WITHIN FLOOR OR WALL LEVEL WHEN THEY ARE NOT TO BE REUSED IN THIS PROJECT. IF REQUIRED BY OWNER OR CODES, ABANDONED CONDUIT MUST BE REMOVED TO POINT OF ORIGIN. CONFIRM EXTENT OF DEMOLITION PRIOR TO BID AND INCLUDE PROPOSAL.
 - 8. TEMPORARY LIGHT AND POWER**
 - A. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL TEMPORARY WIRING AND RELATED GROUND FAULT INTERRUPTION PROTECTION LIGHT AND POWER FOR ALL CONTRACTORS DURING CONSTRUCTION AND IS RESPONSIBLE FOR ITS REMOVAL.

- PART 2 - PRODUCTS**
- 2.1 MATERIALS**
 - A. MATERIALS UTILIZED IN THE CONSTRUCTION OF THIS PROJECT SHALL BE NEW AND CARRY ALL UL LABELS UNLESS APPROVED BY THE OWNER.
 - B. ANY USED EQUIPMENT OR MATERIALS USED SHALL STILL CARRY THE SPECIFIED 1 YEAR GUARANTEE AND APPROVAL OF THE USE OF THIS EQUIPMENT OR MATERIALS DOES NOT RELIEVE THE CONTRACTOR FROM ENSURING EVERYTHING IS OPERATIONAL.
 - 2.2 MANUFACTURERS**
 - A. WHERE TRADE NAMES OR MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE CONSIDERED THE BASIS OF DESIGN. AND USED AS A MINIMUM FOR THE SAME. BID MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS TO THAT SPECIFIED, WILL BE SUBJECT TO APPROVAL IN WRITING BY THE ENGINEER THROUGH THE SHOP DRAWING SUBMITTAL PROCESS. FOR ACCEPTANCE PRIOR TO INSTALLATION, THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE REJECTED AT THE CONTRACTOR'S EXPENSE.
 - 2.3 SLEEVES**
 - A. PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2 INCHES ABOVE THE FLOOR.
 - B. CONTRACTOR SHALL COORDINATE THROUGH THE GENERAL CONTRACTOR AND OWNER ANY CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY WALLS OR CONCRETE FLOORS.
 - C. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND FLOORS SHALL BE FIRE SEALED. REFER TO "FIRE STOPPING".
 - D. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE MINIMUM NO. 22 USG GALVANIZED STEEL.
 - 2.4 FLAME SPREAD PROPERTIES OF MATERIALS**
 - A. MATERIALS USED ON THIS PROJECT SHALL EACH HAVE A FLAME SPREAD RATING OF 25 OR LESS, AND A SMOKE DEVELOPED RATING OF 50 OR LESS, AS DETERMINED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH NFPA-255.
 - 2.5 FIRE STOPPING**
 - A. PROVIDE FIRE STOPPING IN SEALING OF PENETRATIONS IN FIRE-RATED CONSTRUCTION, HORIZONTAL AND VERTICAL, INCLUDING THE FOLLOWING MATERIALS:
 - a. FOAM: DOW CORNING FIRESTOP SILICONE RTV FOAM, CAT #2001 LIQUID COMPONENT PART A (BLACK) AND LIQUID COMPONENT PART B (OFF-WHITE).
 - b. SEALANT: 3M 1000 NS AND 1000 SL SILICONE ADHESIVE SEALANT.
 - c. DAMMING MATERIALS: MINERAL FIBERBOARD, AS SELECTED BY THE APPLICATOR.
 - B. MIXES SHALL CONFORM TO THE MANUFACTURER'S DIRECTIONS.
 - 2.6 FLOOR, CEILING AND WALL PLATES**
 - A. PROVIDE CHROME-PLATED, ONE-PIECE, ESCUTCHEONS ON CONDUITS AND HANGER RODS PENETRATING THE WALLS, FLOORS, AND CEILING IN FINISHED AREAS OF THE BUILDING. SPLIT RING ESCUTCHEONS ARE NOT ACCEPTABLE.
 - 2.7 EQUIPMENT FOUNDATIONS AND SUPPORTS**
 - A. PROVIDE FOUNDATIONS AND SUPPORTS FOR ELECTRICAL EQUIPMENT AS REQUIRED. THESE SHALL INCLUDE REINFORCED CONCRETE HOUSEKEEPING PADS FOR ANY DISTRIBUTION EQUIPMENT INSTALLED INDOORS ON THE FLOOR. PADS SHALL EXTEND A MINIMUM OF 3 INCHES BEYOND EQUIPMENT IN ALL DIRECTIONS.

- PART 3 - EXECUTION**
- 3.1 SPACE AND EQUIPMENT ARRANGEMENT**
 - A. EACH CONTRACTOR SHALL BE RESPONSIBLE TO SEE THAT THEIR PURCHASED EQUIPMENT WILL FIT THE SPACES AVAILABLE. IN CERTAIN INSTANCES HE WILL NOTE THAT THE EQUIPMENT IS NOT AS MENTIONED BY NAME IN THE EQUIPMENT SCHEDULES. IN THESE CASES IT IS THAT EQUIPMENT WHOSE DIMENSIONS AND CONNECTION ARRANGEMENTS HAVE BEEN USED FOR THE PREPARATION OF THE LAYOUTS SHOWN ON THE WORKING DRAWINGS. SHOULD THE USE OF EQUIPMENT BY OTHER APPROVED MANUFACTURERS OR OF OTHER PHYSICAL SHAPE THAN THOSE SHOWN ON THE DRAWINGS BE PROPOSED, THE CONTRACTOR SHALL CONFIRM THE EQUIPMENT WILL FIT WITHIN THE ALLOTTED SPACE WITHOUT ARCHITECTURAL MODIFICATIONS OR IMPACT ON OTHER TRADES.
 - B. ALL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. PROVIDE SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.
 - C. BEFORE STARTING WORK THE CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, FIRE PROTECTION, MECHANICAL, AND PLUMBING PLANS, SHOP DRAWINGS, AND SPECIFICATIONS TO DETERMINE THE LOCATION AND INTEGRATE THE VARIOUS ELEMENTS OF THE ELECTRICAL SYSTEM TO AVOID INTERFERENCES AND CONFLICTS.
 - D. ALL MANUFACTURERS' PUBLISHED DIRECTIONS SHALL BE FOLLOWED IN THE DELIVERY, STORAGE, PROTECTION, INSTALLATION, AND WIRING OF ALL EQUIPMENT AND MATERIAL. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER IN WRITING OF ANY CONFLICT BETWEEN THE MANUFACTURER'S REQUIREMENTS OF THE CONTRACT DOCUMENTS AND THE MANUFACTURER'S DIRECTIONS, AND SHALL OBTAIN INSTRUCTIONS BEFORE PROCEEDING WITH THE WORK. SHOULD THE CONTRACTOR PERFORM ANY WORK BEFORE RECEIVING SUCH INSTRUCTIONS, HE SHALL BEAR ALL COSTS ARISING IN CONNECTIONS WITH THE DEFICIENCIES.

- 3.2 CONSTRUCTION REQUIREMENTS**
- A. THE DRAWINGS AND SPECIFICATIONS SHOW EQUIPMENT CONNECTIONS, CONDUIT, AND WIRE SIZE, GENERAL ROUTING AND LOCATION, AND DESCRIBE THE VARIOUS SYSTEMS. THESE DOCUMENTS DESCRIBE AND SIZE EQUIPMENT, ITS GENERAL LOCATION, USAGE, SUPPORT, AND AUXILIARY REQUIREMENTS. THEY DESCRIBE MOST, BUT NOT ALL OF THE MATERIALS AND THEIR USAGE FOR THIS PROJECT.
 - B. CONTRACT DOCUMENTS DO NOT DETAIL ALL JOB REQUIREMENTS. THEY DO NOT SHOW LAYOUTS, LOCATIONS, OR ELEVATION OF THE EQUIPMENT, SLEEVES, HANGERS, JUNCTION BOXES, OR ACCESS DOORS. THEY DO NOT SHOW FINAL PRECISE LOCATIONS OF EQUIPMENT BY DIMENSIONS IN ALL DIRECTIONS.
 - C. THE EXACT LOCATION OF EACH ITEM SHALL BE DETERMINED BY REFERENCE TO THE PROJECT CONTRACT DRAWINGS, AND TO DETAILS, EQUIPMENT DRAWINGS, AND ROUGH-IN DRAWINGS, BY MEASUREMENTS AT THE BUILDING, AND IN COOPERATION WITH THE VARIOUS TRADES. MINOR RELOCATION NECESSITATED BY THE CONDITIONS AT THE SITE OR DIRECTED BY THE OWNER SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER, WHOSE CONFLICTS OCCUR, WORK IN THE AREA INVOLVED.
 - 3.4 EQUIPMENT FOUNDATIONS, HANGERS AND SUPPORTS**
 - A. FOR FLOOR MOUNTED ELECTRICAL EQUIPMENT, PROVIDE CONCRETE HOUSEKEEPING PADS NOT LESS THAN 3-1/2 INCHES THICK REINFORCED WITH NO. 3 DOWELS AND NO. 3 BARS, 2 FEET-0 INCHES ON CENTER EACH WAY.
 - B. SUSPENDED EQUIPMENT SHALL HAVE SUPPORTS CONSISTING OF MANUFACTURED METAL FRAMING OR HANGERS CONFORMING TO SECTION 260529.
 - 3.5 INSTRUCTIONS TO OWNER'S PERSONNEL**
 - A. PROVIDE THE SERVICES OF COMPETENT ENGINEERS OR TECHNICIANS TO INSTRUCT REPRESENTATIVES OF THE OWNER IN COMPLETE AND DETAILED OPERATION AND MAINTENANCE OF EACH ITEM OF EQUIPMENT AND EACH SYSTEM.
 - B. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROPER MAINTENANCE OF EQUIPMENT AND SYSTEMS UNTIL THE INSTRUCTIONS HAVE BEEN GIVEN TO THE OWNER'S PERSONNEL AND THE LETTER OF RELEASE ACKNOWLEDGED.
 - C. PROVIDE OPERATION & MAINTENANCE MANUALS (3 COPIES), ALONG WITH AS-BUILT SET OF PRINTS PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT.

- 3.6 ELECTRICAL WIRING OF MOTORS**
- A. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL DISCONNECT SWITCHES AND MOTOR CONTROL CIRCUITRY FOR THE PROPER OPERATION OF THE EQUIPMENT. UNLESS SUCH EQUIPMENT IS SPECIFIED TO BE PROVIDED WITH FACTORY MOUNTED DISCONNECT SWITCHES, STARTERS, OR VFD'S, THE ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO EQUIPMENT AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.
 - B. THE MECHANICAL AND PLUMBING DESIGN AND DRAWINGS ARE BASED ON THE EQUIPMENT SCHEDULED AND SHOWN ON THE DRAWINGS. SHOULD ANY CONTRACTOR SUBMIT FOR APPROVAL EQUIPMENT REQUIRING CHANGES TO THE MECHANICAL AND PLUMBING DESIGN, SUCH AS THE MECHANICAL OR PLUMBING CONTRACTOR WILL REQUEST AN EXTRA, THIS EXTRA SHALL BE PAID BY THE CONTRACTOR PROVIDING THE ALTERNATE EQUIPMENT REQUIRING THE CHANGE.
 - C. ELECTRICAL CONTRACTORS SHALL REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL ELECTRICAL WORK TO BE INCLUDED IN HIS BID.
 - D. ELECTRICAL CONTRACTOR SHALL DO ALL POWER WIRING, LINE VOLTAGE WIRING, AND LINE VOLTAGE CONTROL WIRING INDICATED UNDER THE HEATING, VENTILATION AND AIR CONDITIONING DIVISIONS. THE CONTRACTOR SHALL ALSO DO ALL INTERCONNECTING LINE VOLTAGE WIRING BETWEEN RELAYS AND SWITCHES AS REQUIRED.
 - E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING CONDUIT FOR HVAC CONTROL WIRING WHERE REQUIRED BY CODE OR SHOWN ON PRINTS TO BE IN CONDUIT. REFER TO PLANS FOR REQUIREMENTS AND SIZES.
 - F. FIRE DAMPERS SHALL BE WIRE BY ELECTRICAL CONTRACTOR. COORDINATE WITH MECHANICAL CONTRACTOR FOR POWER REQUIREMENTS.

- 3.7 QUIET OPERATION**
- A. THIS WORK SHALL BE INSTALLED IN SUCH A MANNER THAT UNDER ALL CONDITIONS OF LOAD IT SHALL OPERATE WITHOUT SOUND OR VIBRATION, WHICH IS OBJECTABLE IN THE OCCUPIED SPACES IN THE OPINION OF THE OWNER. IN THE CASE OF MOVING MACHINERY, SOUND OR VIBRATION UNUSUALLY NOTICEABLE INSIDE ITS OWN ROOM CAN BE CONSIDERED AS OBJECTABLE. IN ANY CASE, THE SITUATION SHALL BE REMEDIED AT NO COST TO THE OWNER.
- 3.8 CUTTING AND PATCHING**
- A. PROVIDE ALL CUTTING, CHASING AND CHANNELING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL FROM ARCHITECT AND OWNER.
 - B. ALL PATCHING SHALL BE BY THE GENERAL CONTRACTOR AND SHALL MATCH THE SURROUNDING FINISHES.
- 3.9 TESTS**
- A. THE CONTRACTOR INSTALLING THE ELECTRICAL SYSTEMS SHALL FOLLOW ALL TESTS AS REQUIRED TO PROVE COMPLIANCE WITH ALL LOCAL CODES.

SECTION 260519 - CONDUCTORS

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 SINGLE CONDUCTORS**
 - A. CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS SHALL BE COPPER AND THE AWG SIZE AND TYPE AS SHOWN ON DRAWINGS. MINIMUM WIRE SIZE #12 UNLESS NOTED OTHERWISE ON PLAN OR IN GENERAL NOTES FOR VOLTAGE DROP. THE CONDUCTORS SHALL BE 600 VOLT INSULATION, TYPE THW, THWN OR THHN.
 - B. CONDUCTORS MAY BE STRANDED FOR SIZES #10 AWG AND LARGER. CONDUCTOR SIZE #12 SHALL BE SOLID (NOT STRANDED).
 - C. ALL MINIMUM CONDUCTORS ARE NOT PERMITTED. CONTRACTOR MUST OBTAIN WRITTEN PERMISSION FROM GENERAL CONTRACTOR AND ENGINEER WHEN USED.
 - 2.2 MULTICONDUCTOR CABLES**
 - A. PROVIDE TYPE MC MULTICONDUCTOR CABLE IN COMPLIANCE WITH NEMA WC 70, WITH METAL CLAD AND GROUND WIRE.
 - 2.3 CONNECTORS**
 - A. WIRE CONNECTORS SHALL BE EQUAL TO "SCOTCH LOCK" FOR #8 AWG WIRE AND SMALLER. USE TAB-LOCKTIGHT" FOR #6 AWG WIRE AND LARGER.

- PART 3 - EXECUTION**
- 3.1 APPLICATIONS AND INSTALLATION**
 - A. ALL WIRING SHALL BE IN CONDUIT, UNLESS NOTED OTHERWISE (E-LOW VOLTAGE PLENUM RATED WIRE).
 - B. THE USE OF SHARED NEUTRAL IS REQUIRED FOR LIGHTING CIRCUITS AND ALLOWED PER DRAWING NOTES. IT SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AND LOCAL CODES.
 - C. THE USE OF ROMEX, BX, ETC. IS NOT PERMITTED.
 - D. ALL WIRING TO BE COLOR-CODED AS FOLLOWS:

120/208 VOLT SYSTEM
NEUTRAL - WHITE
PHASE A OR L1 - RED
PHASE B OR L2 - RED
PHASE C OR L3 - BLUE
GROUND - GREEN
ISOLATED GROUND - GREEN WITH YELLOW TRACER
 - E. UNLESS NOTED OTHERWISE, MC CABLES ONLY ALLOWED WITHIN PARTITIONS OR MILLWORK AND LOCATIONS DESCRIBED IN SECTION 260533.

SECTION 260526 - GROUNDING

PART 1 - GENERAL

- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.

PART 2 - PRODUCTS

- 2.1 CONDUCTORS AND JUMPERS**
 - A. ALL CONDUIT, INCLUDING FLEXIBLE CONDUIT, SHALL BE GROUNDED WITH A GREEN COPPER GROUNDING CONDUCTOR.
 - B. GROUNDING CONNECTIONS MADE TO THE WATER PIPING SYSTEM SHALL BE COORDINATED WITH THE PLUMBING CONTRACTOR AND A BONDING JUMPERS INSTALLED AROUND WATER METER PER CODES AND AS INDICATED ON DRAWING.
 - C. ALL DEVICES SHALL BE BONDED TO THE CONDUIT SYSTEM. USE A BONDING JUMPER BETWEEN THE OUTLET BOX AND THE DEVICE GROUNDING TERMINAL. METAL-TO-METAL CONTACT BETWEEN THE DEVICE YOE AND THE OUTLET BOX IS NOT ACCEPTABLE AS A BOND FOR EITHER SURFACE MOUNTED BOXES OR FLUSH TYPE BOXES. ALL JUNCTION BOXES, OUTLET BOXES, AND PULL BOXES SHALL BE BONDED TO THE CONDUIT SYSTEM.

PART 3 - EXECUTION

- 3.1 INSTALLATION**
 - A. RUN A SEPARATE ISOLATED GROUNDING CONDUCTOR, #12 AWG MINIMUM, IN EACH CONDUIT FEEDING ISOLATED GROUND RECEPTACLES AND OTHER COMPUTERIZED EQUIPMENT AS SHOWN ON DRAWINGS.
 - B. ALL ENCLOSURES AND NON-CURRENT CARRYING METAL PARTS ARE TO BE GROUNDED. CONDUIT SYSTEMS IS TO BE ELECTRICALLY CONTINUOUS. ALL LOCKNUTS MUST CUT THROUGH ENAMELED OR PAINTED SURFACES ON CONDUIT SYSTEM. USE BONDING JUMPERS WITH APPROVED CLAMPS. ALL GROUND CLAMPS SHALL BE "PEN-UNION" OR EQUAL, SIMILAR TO "GPL" TYPE.

SECTION 260529 - HANGERS AND SUPPORTS

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 STEEL SLOTTED SUPPORTS**
 - A. HOT-DIP GALVANIZED AFTER FABRICATION OF DIMENSIONS REQUIRED FOR THE SIZE OF SUPPORTED ITEMS AND ANTICIPATED LOAD.
 - B. RACEWAY AND CABLE SUPPORTS AS DESCRIBED IN NECA 1 AND 101.
 - C. USE STEEL HANGERS, CLAMPS AND ASSOCIATED FITTINGS, DESIGNED FOR TYPES AND SIZES OF RACEWAYS TO BE SUPPORTED.
- PART 3 - EXECUTION**
- 3.1 INSTALLATION**
 - A. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL, SUCH AS ANGLE IRON, BANDS, C-CLAMPS WITH HOOKS, SADDLES, CHAINNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.
 - B. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO PIPING. HANGING FROM METAL DECK IS NOT PERMITTED. HANGERS MUST BE ATTACHED TO UPPER CHORD OF BARR POST, WHERE INTERFERENCES OCCUR, AND SUPPORT CONDUIT. THE CONTRACTOR SHALL INSTALL TRAPEZIE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO OTHER SYSTEMS AND EQUIPMENT. HANGER TYPES AND INSTALLATION METHODS ARE ALSO SUBJECT TO OWNER'S CRITERIA.
 - C. HANGERS AND PIPING OF DISSIMILAR METALS SHALL BE DI-ELECTRICALLY SEPARATED.

SECTION 260533 - RACEWAYS AND BOXES

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
 - B. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS SERVING ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO LIGHTING, RECEPTACLES, HEATING, AIR CONDITIONING, PLUMBING EQUIPMENT, TELEPHONE, DATA, AUDIOVISUAL, SECURITY, AND ELECTRICAL EQUIPMENT.
- PART 2 - PRODUCTS**
- 2.1 RACEWAYS**
 - A. ALL CONDUITS SHALL BE GALVANIZED IMC, EMT OR MC TYPE UNLESS OTHERWISE SPECIFIED IN SPECIFICATIONS OR ON DRAWINGS. ALL CONDUIT IS TO BE UL LABELED.
 - a. EMT CONDUIT SHALL BE SCHEDULE 40 STEEL COMPRESSION TYPE.
 - b. CONDUIT UNDER SLAB ON GRADE SHALL BE RIGID STEEL, OR SCHEDULE 40 PVC WITH RIGID STEEL ELLS WHERE PERMITTED BY OWNER OR CODE.
 - c. MINIMUM SIZE OF CONDUIT SHALL BE:
 - i. #4 INCH FOR INDIVIDUAL LIGHTING CONNECTIONS OR TO INDIVIDUAL LIGHT SWITCHES AND #4 INCH FOR ALL OTHER LIGHTING AND POWER CIRCUITING.
 - ii. #3 INCH FOR INDIVIDUAL LIGHTING AND POWER CIRCUITING.
 - iii. #2 INCH FOR ALL OTHER LIGHTING AND POWER CIRCUITING.
 - d. IF HVAC CONTROL WIRING IS REQUIRED TO BE RUN IN CONDUIT, IT SHALL BE A MINIMUM OF 3/4 INCH UNLESS NOTED OTHERWISE ON DRAWINGS.
 - B. ALL UNDER FLOOR CONDUIT SHALL BE OF MINIMUM #4 INCH SIZE.
 - 2.2 OUTLET BOXES**
 - A. ALL OUTLET BOXES SHALL BE GALVANIZED PRESSED STEEL OF THE STANDARD KNOCKOUT TYPE. NO ROUND OUTLET BOXES SHALL BE PERMITTED UNLESS INDICATED AND FOR LIGHTING THAT REQUIRE SUCH CONFIGURATION. CONCEALED BOXES SHALL BE NOT BE LESS THAN 4 INCH SQUARE AND 1-1/2 INCH DEEP, WITH PLASTER RINGS.
 - B. ALL KNOCKOUT BOXES, UNLESS LIGHTING FIXTURES ARE TO BE INSTALLED, SHALL BE EQUIPPED WITH 3/8 INCH FIBRE STUDS.
 - 2.3 JUNCTION AND PULL BOXES**
 - A. BOXES AND COVERS SHALL BE GALVANIZED STEEL OF CODE GAUGE AND SIZE.

SECTION 260537 - OVERCURRENT PROTECTION DEVICE COORDINATION STUDY

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 PRODUCTS**
 - A. UTILIZE A SEPARATE COMPUTER-BASED SOFTWARE PROGRAM, MODEL THE PROPOSED DISTRIBUTION SYSTEM, AND CALCULATE THE MAXIMUM AVAILABLE SHORT CIRCUIT THROUGHOUT AND COORDINATE THE SELECTION OF OVERCURRENT PROTECTION DEVICES TO MEET IEEE.
 - B. SUBMIT A FULL REPORT FOR REVIEW AND APPROVAL.

- PART 3 - EXECUTION**
- 3.1 LABELING**
 - A. ALL EQUIPMENT (INCLUDING, BUT NOT LIMITED TO PANELBOARDS, SWITCHBOARDS, DISTRIBUTION BOARDS, UPS, PDUS, MOTORS, TRANSFORMERS, DISCONNECT SWITCHES) SHALL BE LABELED INDICATING EQUIPMENT NAME AND FEEDER SIZE.
 - B. ALL BRANCH CIRCUIT WIRING DEVICES SHALL BE LABELED WITH CIRCUIT NUMBER.
 - C. ALL JUNCTION BOXES ABOVE CEILING AND BELOW RAISED FLOOR SHALL BE LABELED WITH CIRCUIT NUMBER.

- PART 3 - EXECUTION (NOT USED)**
- 3.1 EXECUTION (NOT USED)**

SECTION 262900 - TRANSFORMERS

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 DRY TYPE TRANSFORMERS**
 - A. PROVIDE TRANSFORMERS OF K RATINGS SHOWN ON THE DRAWINGS, WITH COPPER WINDINGS, VENTILATED ENCLOSURE, AND ELECTROSTATIC SHIELDING.
 - B. PROVIDE TWO, 2.5 PERCENT TAPS ABOVE AND TWO, 2.5 PERCENT TAPS BELOW FULL CAPACITY.
- PART 3 - EXECUTION**
- 3.1 INSTALLATION**
 - A. TRANSFORMER SHALL BE PAD MOUNTED OR SHALL BE SECURELY MOUNTED FROM THE BUILDING STRUCTURE, REINFORCED WALLS OR AS NOTED ON DRAWINGS. USE ADDITIONAL VIBRATION ISOLATORS AT POINTS OF MOUNTING TO CUT VIBRATION NOISES. ALL FIXTURES IN LAY-IN CEILING AND OTHER FIXTURES AS REQUIRED BY THE OWNER AND LOCAL CODE OFFICIALS.
 - B. FURNISH AND INSTALL APPLICABLE FIRE RATED DRYWALL BOXES OVER RECESSED FIXTURES IN FIRE RATED CEILING AS REQUIRED BY CODES. FIELD COORDINATE AS REQUIRED TO AVOID CONFLICTS.

SECTION 262416 - PANELBOARDS

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 PANELBOARDS**
 - A. ALL PANELBOARDS SHALL BE FACTORY ASSEMBLED OF THE BOLTED CIRCUIT BREAKER TYPE WITH SOLID COPPER BUSSING, FULL SIZE COPPER NEUTRAL, 100 PERCENT GROUND BUSSING, AND OVERALL HINGED LOCKABLE DOOR. ALL CIRCUIT BREAKERS SHALL BE OF THE QUICK-MAKE AND QUICK-BREAK DESIGN, THERMAL-MAGNETIC TYPE, TRIP FREE AND TRIP-INDICATING. ALL PANELS SHALL BE DEAD FRONT AND FLSH OR SURFACE MOUNTED AS SHOWN.
 - B. PANELBOARDS SHALL HAVE A MINIMUM SHORT CIRCUIT CIRCUIT RATING AND LUG CONNECTIONS AS REQUIRED BY A SHORT CIRCUIT STUDY.
 - C. ALL CONNECTIONS TO BE TO 75 DEGREE C RATED.
 - D. PROVIDE ISOLATED GROUND BUS AND DOUBLE NEUTRAL BUS WHERE INDICATED ON THE DRAWINGS.
- PART 3 - EXECUTION**
- 3.1 INSTALLATION**
 - A. REFER TO DRAWINGS FOR FLUSH OR SURFACE MOUNTING.

SECTION 262726 - WIRING DEVICES

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 SWITCHES AND RECEPTACLES**
 - A. FURNISH AND INSTALL SWITCHES AND RECEPTACLES, UNLESS NOTED OTHERWISE, AS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM. COLOR OF DEVICES AND PLATES SHALL BE SELECTED BY THE ARCHITECT.
 - B. THE DEVICES SHALL BE OF THE TYPES AND RATINGS LISTED, OR EQUALS BY PASS A SEYMOR, HUBBELL, OR LEVITON.
 - a. SINGLE POLE SWITCHES: 20AMP - 120V/270V- LEVITON "DECORA" #5623-X
 - b. THREE WAY SWITCHES: 20AMP - 120V/270V- LEVITON "DECORA" #5623-X
 - c. DUPLEX RECEPTACLES: 20AMP - 125V- LEVITON "DECORA" #1635-X
 - d. ISOLATED GROUND RECEPTACLES: 20AMP - 125V- LEVITON "DECORA" #1635-IIG
 - e. GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLES: 20AMP - 125V- LEVITON "DECORA" #8999
 - C. ALL DEVICE COVER PLATES SHALL BE LEVITON "DECORA" NYLON STYLE.
 - 2.2 WALL-BOX DIMMERS**
 - A. DIMMERS SHALL BE ALL LEVITON "MONET" OR LUTRON "NOVA-T-STAR".
 - 2.3 OCCUPANCY CONTROLS**
 - A. WALL SWITCH SENSORS SHALL BE OF THE PASSIVE INFARED TYPE DESCRIBED ON THE DRAWINGS WITH 10 MINUTE DELAY AND FIELD OF VIEW AND COVERAGE REQUIRED FOR THE INSTALLATION.
 - B. REFER TO THE DRAWINGS FOR PASSIVE INFARED, ULTRASONIC AND DUAL TECHNOLOGY OCCUPANCY SENSORS REQUIRED FOR LARGER SPACES. PROVIDE A COMPLETE SYSTEM INCLUDING SENSORS, POWER SUPPLIES, AND WALL OVERRIDE SWITCHES.
 - 2.4 FLOOR BOXES**
 - A. REFER TO THE DRAWINGS FOR DESCRIPTION OF REQUIRED FLOOR BOXES IN SLAB ON GRADE OR POKE-THRU INSTALLATIONS.
- PART 3 - EXECUTION**
- 3.1 INSTALLATION**
 - A. INSTALL DEVICES PER THE MANUFACTURER'S RECOMMENDATIONS.
 - B. LABEL ALL RECEPTACLES INDICATING PANELBOARD AND CIRCUIT NUMBER. INSTALL CLEAR LABEL WITH BLACK TEXT ON THE FACE OF WALL PLATE.

SECTION 262616 - ENCLOSED SWITCHES

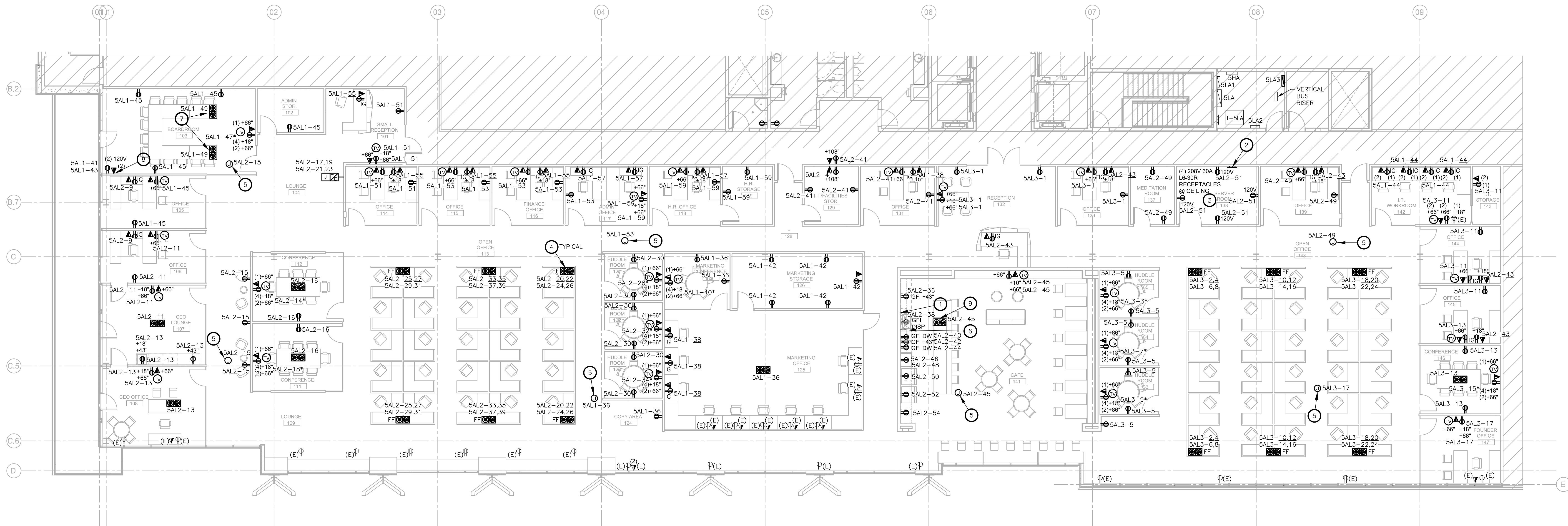
- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 SAFETY SWITCHES**
 - A. SAFETY AND DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE, QUICK-MAKE, QUICK-BREAK FUSED OR FUSED-HUBBL WITH RATINGS AND SIZES AS NOTED ON PLANS AND REQUIRED BY CODES.
 - B. SWITCHES SHALL BE WEATHERPROOF IN OUTDOOR LOCATION OR AS REQUIRED BY LOCAL CODES.
- PART 3 - EXECUTION**
- 3.1 INSTALLATION**
 - A. COORDINATE ALL CONTROL DEVICES WITH MECHANICAL CONTRACTOR. COMBINATION DISCONNECT SWITCHES SHALL CONTAIN FUSIBLE SWITCHES AND ONLY USED WHERE INDICATED ON DRAWINGS.

SECTION 262913 - MOTOR CONTROL

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
- PART 2 - PRODUCTS**
- 2.1 MOTOR STARTERS**
 - A. MAGNETIC MOTOR STARTERS SHALL BE FVNR AND PROVIDED WITH RESET TYPE OVERLOADS THAT CLOSELY MATCH MOTOR NAMEPLATE RATINGS, ELECTRICAL HELD (MINIMUM SIZE #1 IN NEMA 1 ENCLOSURE) AND USED FOR ALL SINGLE PHASE AND THREE PHASE MOTORS RATED ABOVE 1/2 HP THAT ARE ABOVE 150 INCHES FROM FINISHED FLOOR. PROVIDE ADDITIONAL CONTROL DEVICES IN STARTERS AS REQUIRED FOR INTERLOCKS, OR STATED IN THE SEQUENCE OF CONTROL.
 - B. ALL SPEED FREQUENCY DRIVES
 - a. PROVIDE PULSE WIDTH MODULATED VARIABLE FREQUENCY DRIVES IN MOTOR HORSEPOWER SIZES CALLED OUT ON THE DRAWINGS. UNITS SHALL HAVE DOOR MOUNTED STATUS LIGHTS OR READ OUT. MANUAL BY-PASS, DISCONNECTING MEANS AND OUTPUT SIGNAL INTERFACE TO BMS SYSTEM.
- PART 3 - EXECUTION**
- 3.1 INSTALLATION**
 - A. MANUAL MOTOR STARTERS, LESS OVERLOAD PROTECTION HEATERS, ARE TO BE USED AS A DISCONNECTING MEANS ONLY WHERE INDICATED ON DRAWINGS FOR FRACTIONAL HORSEPOWER MOTORS ABOVE 1/2 HP AT 120 VOLTS AND 2 HP AT 240 VOLTS. THAT DO NOT REQUIRE AUXILIARY CONTROL. MOTORS THAT ARE BELOW THE 1/2 HP AT 120 VOLTS AND 2 HP AT 240 VOLTS, WATER HEATER TO BE PROVIDED WITH HUBBELL "HBL-1211 OR 1222" AC SWITCH.

SECTION 264113 - SURGE SUPPRESSION DEVICE

- PART 1 - GENERAL**
- 1.1 SCOPE OF WORK**
 - A. REFER TO SECTION 260500.
 - B. ALL SPDS MUST COMPLY WITH UL 1449 3RD ADDITION.
- PART 2 - PRODUCTS**
- 2.1 SERVICE ENTRANCES**
 - A. PROVIDE CURRENT TECHNOLOGY "TRANSGUARD" OR EQUAL, WITH L-N, L-G, N-G, AND L-L PROTECTION. UNIT SHALL HAVE A SINGLE SURGE CURRENT CAPACITY PER MODE OF 200,000 AMPS, 400,000 AMPS AND BE APPROVED.
 - B. PROVIDE SEPARATE NEMA 1 ENCLOSURES FOR SURFACE MOUNTING NEXT TO MAIN SERVICE EQUIPMENT.
 - 2.2 PANELBOARD PROTECTION**
 - A. PROVIDE CURRENT TECHNOLOGY "TRANSGUARD" OR EQUAL, WITH L-N, L-G, N-G, AND L-L PROTECTION. UNIT SHALL HAVE A SINGLE SURGE CURRENT CAPACITY PER MODE OF 100,000 AMPS, 200,000 AMPS PER PHASE, AND HAVE REPETITIVE SURGE CURRENT CAPACITY PER MODE OF 4,500 IMPULSES.
 - B. PROVIDE SE

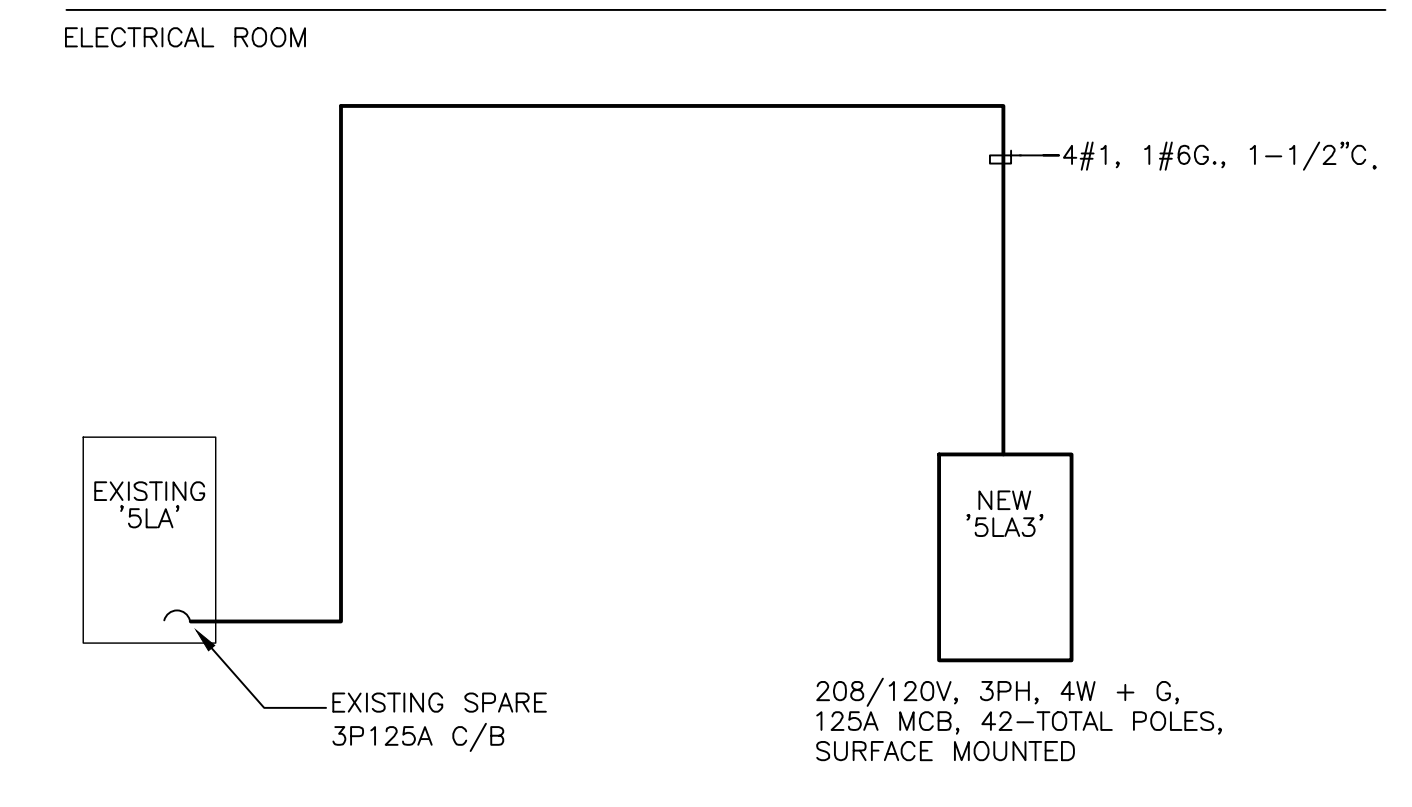


1 LEVEL 05 ELECTRICAL PLAN
SCALE: 1/8"=1'-0"

* INDICATES CIRCUIT SHOWN IS TO SERVICE QUANTITY OF DUPLEXES NOTED.

NOTES BY SYMBOL (X):

- 1. REFER TO MECHANICAL EQUIPMENT POWER SCHEDULE ON SHEET ED.01 FOR POWER TO WATER HEATERS.
- 2. PROVIDE 12"x2"x1/4" COPPER GROUND BUS WALL MOUNTED WITH INSULATING STANDOFFS AT 48" AFF. EXTEND 1#6AWG IN 3/4"C FROM GROUND BUS TO BUILDING GROUND.
- 3. PROVIDE (4) NEMA L6-30R RECEPTACLES IN SERVER ROOM. FEED EACH RECEPTACLE FROM DEDICATED 2P30A, 208V CIRCUITS IN NEW PANEL 'SLA3'. USE SLA3-26/28, SLA3-30/32, SLA3-34/36, SLA3-38/40 USING 2#10, 1#10S, 3/4"C CONFIRM ALL REQUIREMENTS, COORDINATE MOUNTING LOCATIONS AND DETAILS WITH OWNER AND IT VENDOR PRIOR TO ROUGH-IN.
- 4. CONFIRM FURNITURE SYSTEM WIRING CONFIGURATION PRIOR TO INSTALLATION. CIRCUITS SHOWN FOR 2+2 ARE AN ASSUMPTION ONLY. NOTIFY ARCHITECT IF SUPPLIED WORKSTATIONS POWER CONFIGURATION IS NOT 2+2.
- 5. PROVIDE JUNCTION BOX WITH POWER AT WIFI ROUTER CEILING ACCESS POINT. CONTRACTOR TO VERIFY EXACT REQUIREMENTS PRIOR TO ROUGH-IN.
- 6. PROVIDE ON/OFF SWITCH FOR GARBAGE DISPOSAL ABOVE COUNTER AND CONNECT TO GARBAGE DISPOSAL. COORDINATE EXACT LOCATION WITH ARCHITECT.
- 7. PROVIDE CONDUIT ROUTED UNDER FLOOR FROM TELE/DATA CONNECTION UP THROUGH WALL CAVITY FOR CONNECTION TO TV DISPLAY. COORDINATE EXACT REQUIREMENTS WITH TENANT AND TENANT'S VENDOR.
- 8. PROVIDE CONDUIT FROM TELE/DATA AT IT RACK ROUTED UNDER FLOOR AND UP THROUGH ADJACENT WALL CAVITY FOR CONNECTION TO TV DISPLAY. COORDINATE EXACT REQUIREMENTS WITH TENANT AND TENANT'S VENDOR.
- 9. COORDINATE REQUIREMENTS OF FLUSH FLOOR MOUNTED POKE-THRU CONNECTION TO MILLWORK WITH TENANT.



NOTE:
ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION OF OVERCURRENT/SHORT CIRCUIT PROTECTIVE DEVICES BASED ON CALCULATED PROSPECTIVE FAULT ENERGY AT EACH PANELBOARD AND PROVIDE DEVICES MEETING REQUIRED SHORT CIRCUIT INTERRUPTING CAPACITIES (AIC), WHERE THERE ARE TWO (2) OR MORE DEVICES IN SERIES BETWEEN THE SOURCE AND THE LOAD, CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR DETERMINING THE TIME-CURRENT TRIPPING COORDINATION OF SAID DEVICES. THIS MAY BE DONE USING MANUAL METHODS FOR SIMPLE SYSTEMS; HOWEVER, THE USE OF RECOGNIZED COMPUTER PROGRAMS THAT HAVE BEEN VALIDATED SHOULD BE USED FOR LARGER SYSTEMS. THE RESULTS OF THESE COMPUTATIONS AND GRAPHICAL SOLUTIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL AT THE TIME THE PANELBOARDS AND OTHER RELATED DISTRIBUTION EQUIPMENT ARE SUBMITTED.

2 ELECTRICAL RISER DIAGRAM
SCALE: NO SCALE

REVISION LOG table with columns for DATE, DESCRIPTION, and DELTA.



5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972. 788. 1010
www.obrienarch.com



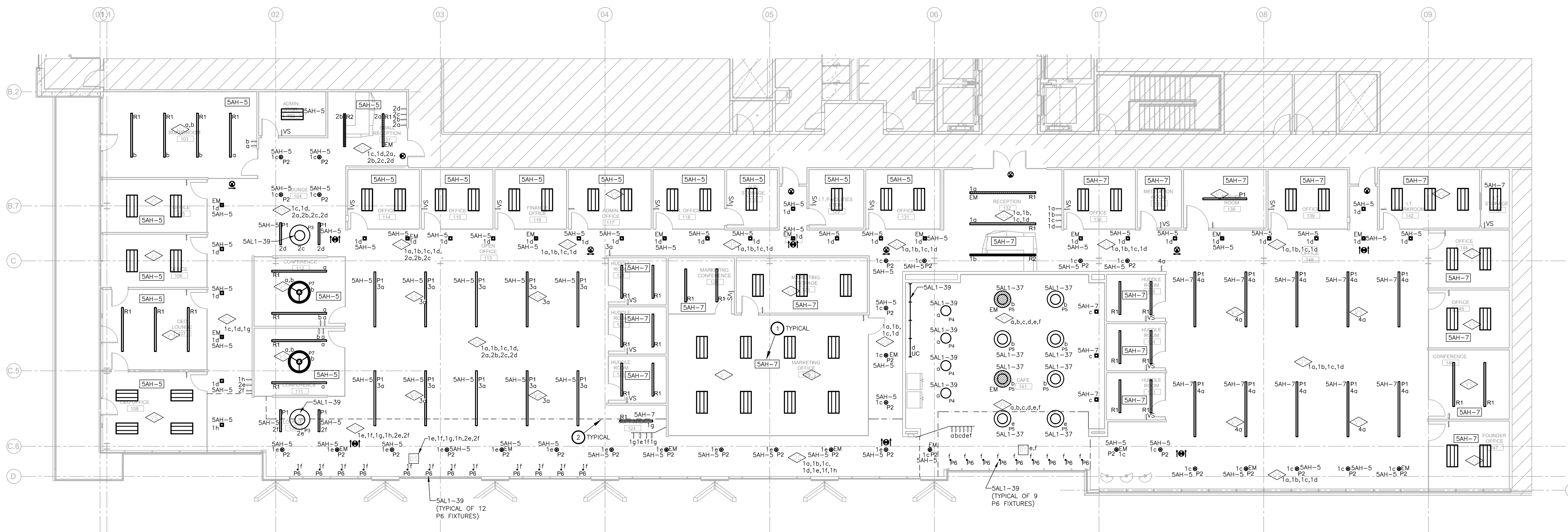
Table with columns: DATE SEAL, ARCH. PROJ. #, SCALE. Values: 05.01.2020, 202015, REF. DRAWING.

SHEET NO.
E2.05

Purdy - McGuire
Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-15111
Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguire.com

PMI JOB NO. 20039.005
PROJECT MGR. TODD JOHNSON
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1 LEVEL 05 LIGHTING PLAN
SCALE: 1/8"=1'-0"

NOTES BY SYMBOL ⊗ :

- 1. INDICATES ALL LIGHTING IN THE ROOM/AREA SHALL BE ON THIS CIRCUIT EXCEPT AS NOTED OTHERWISE.
- 2. LINE INDICATES LIMITS OF DAYLIGHT ZONE REQUIRING DAYLIGHT RESPONSIVE CONTROLS.

REVISION LOG		
DATE	DESCRIPTION	DELTA



5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972.788.1010
www.obrienarch.com



Purdy — McGuire
Mechanical — Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511
Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguire.com

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DATE SEAL: ARCH. PROJ. # SCALE:
05.01.2020 202015 REF. DRAWING

SHEET NO.
E3.05

LEVEL 05
LIGHTING PLAN

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DALLAS GREEN BUILDING REQUIREMENTS:

702.7 HOT AND TEMPERED WATER DISTRIBUTION. WATER SUPPLY PIPING SHALL BE IN ACCORDANCE WITH SECTION 702.7 OR SECTION 702.7.2. THE FLOW RATE THROUGH 1/4-INCH (6.4 MM) TUBING SHALL NOT EXCEED 0.5 GPM (1.9 LPM). THE FLOW RATE THROUGH 5/16-INCH (7.9 MM) TUBING SHALL NOT EXCEED 1 GPM (3.8 LPM). THE FLOW RATE THROUGH 3/8-INCH (9.5 MM) TUBING SHALL NOT EXCEED 1.5 GPM (5.7 LPM).

702.7.1 MAXIMUM ALLOWABLE PIPE LENGTH METHOD. THE MAXIMUM ALLOWABLE PIPE LENGTH FROM THE SOURCE OF HOT OR TEMPERED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE IN ACCORDANCE WITH THE MAXIMUM PIPE LENGTH COLUMNS IN TABLES 702.7.2(2) THROUGH 702.7.2(10), AS APPROPRIATE FOR THE TYPE OF PIPE TO BE INSTALLED. WHERE THE TYPE OF PIPE TO BE INSTALLED IS UNKNOWN OR THE TYPE OF PIPE IS NOT COVERED BY TABLES 702.7.2(2) THROUGH 702.7.2(10), TABLE 702.7.2(1) SHALL BE USED FOR DESIGN PURPOSES. WHERE THE LENGTH CONTAINS MORE THAN ONE SIZE OF PIPE, THE LARGEST SIZE SHALL BE USED FOR DETERMINING THE MAXIMUM ALLOWABLE LENGTH OF THE PIPE IN THE TABLES.

702.7.2 MAXIMUM ALLOWABLE PIPE VOLUME METHOD. THE WATER VOLUME IN THE PIPING SHALL BE CALCULATED IN ACCORDANCE WITH SECTION 702.7.2.1. THE MAXIMUM VOLUME OF HOT OR TEMPERED WATER IN THE PIPING TO PUBLIC LAVATORY FAUCETS, METERING OR NONMETERING, SHALL BE 2 OUNCES (0.06 L). FOR FIXTURES OTHER THAN PUBLIC LAVATORY FAUCETS, THE MAXIMUM VOLUME SHALL BE 64 OUNCES (1.89 L) FOR HOT OR TEMPERED WATER FROM A WATER HEATER OR BOILER, AND 24 OUNCES (0.7 L) FOR HOT OR TEMPERED WATER FROM A CIRCULATION LOOP PIPE OR AN ELECTRICAL HEAT-TRACED PIPE. THE WATER VOLUME IN THE PIPING SHALL BE CALCULATED IN ACCORDANCE WITH SECTION 702.7.2.1.

702.7.2.1 WATER VOLUME DETERMINATION. THE VOLUME SHALL BE THE SUM OF THE INTERNAL VOLUMES OF PIPE, FITTINGS, VALVES, METERS AND MANIFOLDS BETWEEN THE SOURCE OF HOT WATER AND THE TERMINATION OF THE FIXTURE SUPPLY PIPE. THE VOLUME SHALL BE DETERMINED FROM THE LIQUID OUNCES PER FOOT COLUMN OF TABLES 702.7.2(2) THROUGH 702.7.2(10) AS APPROPRIATE FOR THE TYPE OF PIPE. WHERE THE TYPE OF PIPE IS UNKNOWN OR THE TYPE OF PIPE IS NOT COVERED BY TABLES 702.7.2(2) THROUGH 702.7.2(10), TABLE 702.7.2(1) SHALL BE USED TO DETERMINE THE VOLUME. THE VOLUME CONTAINED WITHIN FIXTURE SHUTOFF VALVES, FLEXIBLE WATER SUPPLY CONNECTORS TO A FIXTURE FITTING, OR WITHIN A FIXTURE FITTING SHALL NOT BE INCLUDED IN THE WATER VOLUME DETERMINATION. WHERE HOT OR TEMPERED WATER IS SUPPLIED BY A CIRCULATION LOOP PIPE OR AN ELECTRICAL HEAT-TRACED PIPE, THE VOLUME SHALL INCLUDE THE PORTION OF THE FITTING ON THE SOURCE PIPE THAT SUPPLIES WATER TO THE FIXTURE.

PLUMBING SYMBOLS

SYMBOL	DESCRIPTION
---	SANITARY SEWER
----	VENT
----	DOMESTIC COLD WATER
- - - -	DOMESTIC HOT WATER
---C---	DRAIN PIPING
CO	CLEAN OUT
⇚	PIPING DOWN
⇚⇚	PIPING UP -OR- PIPING UP & DOWN
—┘	CAP ON END OF PIPE
→	DIRECTION OF FLOW
⊕	ASME TEMPERATURE & PRESSURE RELIEF VALVE
⊖	BALL VALVE
⊕⊖	UNION
⊕	CONNECTION TO EXISTING

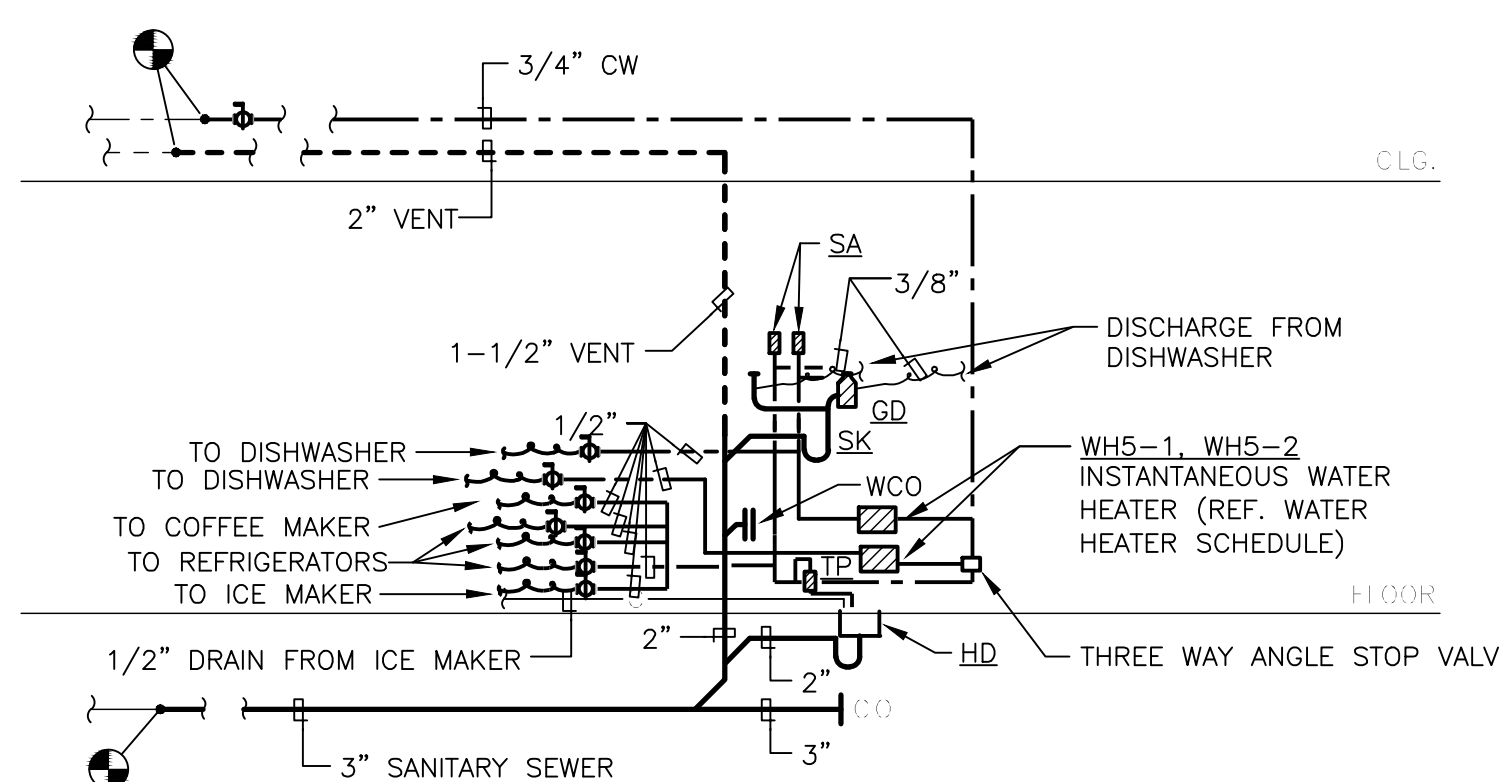
GENERAL NOTES:

- A. ALL WORK SHALL COMPLY WITH APPLICABLE NATIONAL, STATE AND LOCAL CODES, RULES, REGULATIONS AND REQUIREMENTS.
- B. ALL WORK SHALL COMPLY WITH THE BUILDING TENANT CONSTRUCTION GUIDE. COORDINATE WITH BUILDING MANAGEMENT/OWNER FOR ACCESS TO ANY TENANT LEASE SPACES THAT MIGHT BE REQUIRED FOR THE INSTALLATION, UNLESS DIRECTED BY LANDLORD. ALL EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR 1 YEAR.
- C. EXISTING CONDITIONS ARE BASED ON INFORMATION PROVIDED BY PREVIOUS RECORD DRAWINGS DATED 1/18/2019. HOWEVER, IT IS NOT INTENDED TO BE A TRUE REPRESENTATION OF ACTUAL CONDITIONS. CONTRACTOR SHALL VISIT JOB SITE PRIOR TO BIDDING TO ASCERTAIN EXISTING CONDITIONS AND SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES PRIOR TO BID.
- D. PIPING LAYOUT IS SCHEMATIC. EXACT LOCATION OF PIPES TO BE COORDINATED WITH BUILDING STRUCTURE AND WORK OF OTHER CONTRACTORS.
- E. CONTRACTOR SHALL COORDINATE PLUMBING ROUGH-IN WITH ARCHITECTURAL DRAWINGS TO PROVIDE EXACT PLUMBING LOCATION FOR FIXTURES.
- F. COORDINATE EXACT LOCATION OF ALL WATER AND DRAIN CONNECTIONS FOR EQUIPMENT PROVIDED BY OTHERS.
- G. COPPER COLD, HOT AND HOT WATER LINES SHALL BE INSULATED WITH RIGID FIBERGLASS WITH WHITE ALL SERVICE BARRIER. FITTINGS SHALL BE PRE-MOLDED OF THE SAME MATERIAL. REFER TO PLUMBING INSULATION SCHEDULE.
- H. RUN ALL WATER LINES LEVEL.
- I. THIS CONTRACTOR IS TO PROVIDE ALL ADDITIONAL STEEL, HANGER MATERIALS, RODS AND CLAMPS AS REQUIRED FOR COORDINATION WITH WORK OF OTHER TRADES.
- J. SUPPORT CAST IRON SANITARY PIPING NOT IN EARTH, ON 5'-0" CENTERS, ALL STEEL PIPING ON 10'-0" CENTERS AND COPPER PIPING ON 8'-0" CENTERS.
- K. THIS CONTRACTOR IS RESPONSIBLE FOR FIRESTOPPING AT ALL PLUMBING RELATED PENETRATIONS OF FIRE AND SMOKE RATED STRUCTURES, FLOORS AND PARTITIONS. REFER TO ARCHITECTURAL FLOOR PLANS FOR LOCATIONS OF ALL RATED STRUCTURES.
- L. ALL FIXTURES TO BE EQUIPPED WITH STOP VALVES IN ACCESSIBLE LOCATION.
- M. CONTRACTOR SHALL PROVIDE SHUT-OFF VALVE AT EACH BRANCH LINE CONNECTING TO THE MAIN. PROVIDE BRASS VALVE TAGS WITH DOCUMENTATION IN CLEAOUT DOCUMENTS.
- N. MAIN WATER SHUT-OFFS SHALL BE ACCESSIBLE.
- O. PROVIDE ACCESSIBLE CLEAOUTS AT NOT MORE THAN 50 FEET APART IN HORIZONTAL SANITARY DRAINAGE LINES 4" SIZE OR LESS, AND NOT MORE THAN 100 FEET APART FOR LARGER PIPES.
- P. PROVIDE ACCESSIBLE CLEAOUTS AT BASE OF ALL SANITARY STACKS AND OTHER PLACES AS REQUIRED BY CODE.
- Q. WATER HEATER SHALL HAVE BOTH WATER AND ELECTRICAL SHUT-OFFS AT EASILY ACCESSIBLE LOCATIONS.
- R. CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLITION AND REMOVAL OF ALL ABANDONED PLUMBING LINES.
- S. ALL DOMESTIC WATER PIPING SHALL BE TYPE "L" HARD DRAWN SEAMLESS COPPER WATER TUBE CONFORMING TO ASTM B88. JOINED WITH WROUGHT COPPER SWEAT TYPE FITTINGS SHALL CONFORM TO ANSI B16.22. WHERE SOLDERED COPPER PIPING IS CONNECTED TO THREADED BRASS PIPING, A CAST BRASS ADAPTER SHALL BE USED. SOLDERED COPPER JOINTS SHALL BE SOLDERED WITH LEAD FREE ASTM B32 GRADE 95T TIN-ANTIMONY SOLDER. EXPOSED PIPING CONNECTED TO FIXTURES AND EQUIPMENT SHALL BE MADE WITH RED BRASS, GRADE "A". NO FERROUS PIPING OR MATERIALS WILL BE ALLOWED.
- T. ALL SOIL WASTE AND VENT SANITARY DRAINAGE LINES SHALL BE CAST IRON SOIL PIPE AND FITTINGS. COATED INSIDE AND OUTSIDE. MANUFACTURED IN ACCORDANCE WITH ASTM A-74, AND SHALL BE LABELED WITH CAST IRON SOIL PIPE INSTITUTES "MARK OF QUALITY AND PERMANENCE." JOINTS SHALL BE FABRICATED BY THE USE OF "PUSH-ON" TYPE GASKETED JOINTS BELOW GRADE AND "NO-HUB" MECHANICAL JOINTS ABOVE GRADE. PIPING MAY BE PVC ONLY IF ALLOWED PER CODE. (WEIGHT OF PIPE SHALL BE AS REQUIRED BY CODE FOR LOCATION AND DUTY).
- U. CONDENSATE DRAIN AND INDIRECT DRAIN PIPING SHALL BE TYPE "DWV" HARD DRAWN COPPER PIPE, WITH CAST OR WROUGHT COPPER DRAINAGE PATTERN FITTINGS. PIPING SHALL BE EXTENDED FROM UNIT OR FIXTURE TO DRAIN. ALL PIPING IN CEILING PLENUM SHALL BE INSULATED WITH 1/2" ARMAFLEX OR 1/2" FIBERGLASS WITH ALL SERVICE JACKET.
- V. PLUMBING CONTRACTOR SHALL X-RAY SLAB PRIOR TO ANY CORE-DRILLING. COORDINATE WITH BUILDING MANAGEMENT FOR AFTER-HOURS ACCESS TO SPACE.
- W. REFER TO PLUMBING RISER DIAGRAMS FOR PIPING SIZES NOT SHOWN ON PLAN.

WATER HEATER DESIGNATION	SERVES	INPUT	ELECTRICAL			STORAGE GALLONS	RECOVERY GPH/GPM	DEGREE °F RISE	WATER TEMP AVG °F	EQUAL TO MANUFACTURER	NOTES
			VOLTAGE	PHASE	FLA						
WH5-1	BREAK	8310 WATTS	277	1	30.0	NA	1 GPM	57	---	CHRONOMTE INSTA-FLOW MCRO M-30L	NOTE 1
WH5-2	BREAK	8310 WATTS	277	1	30.0	NA	1 GPM	57	---	CHRONOMTE INSTA-FLOW MCRO M-30L	NOTE 1

PLUMBING NOTES:
1. SUPPLY SET-POINT TEMPERATURE SHALL BE 110°F WHICH SHALL BE PRESET AT FACTORY.

DESIGNATION	FIXTURE	MANUFACTURER AND MODEL NO.	DESCRIPTION, TRIM AND NOTES
SK	SINK	ELKAY LUSTERTONE ELUHAD281655 WITH DELTA 9159-DST FAUCET	SINGLE COMPARTMENT UNDERMOUNT, 18 GAUGE TYPE 304 STAINLESS STEEL, 6-3/8" DEEP SINK WITH DRAIN AND CUP STRAINER. PROVIDE SINGLE HANDLE SWIVEL PULL DOWN SPRAYER FAUCET PROVIDING 1.5 GPM. PROVIDE CHROME PLATED CAST P-TRAP WITH CLEANOUT. CHROME PLATED FLEX/SUPPLIES, WALL STOPS AND WALL ESCUTCHEONS. PROVIDE TRUEBRO INSULATION KIT FOR ADA COMPLIANCE.
HD	HUB DRAIN	JOSAM SERIES 88600	OPEN CAST IRON DRAINAGE HUB.
SA	SHOCK ARRESTOR	WATTS DRAINAGE 90 SERIES	WROUGHT COPPER SHELL SIZE AND LOCATE IN ACCORDANCE WITH P.D.I. STANDARDS.
GD	GARBAGE DISPOSER	IN-SINK ERATOR MODEL BADGER 5	1/2 HP, 120V. PROVIDE WITH ALL ASSOCIATED TRIM.
TP	TRAP PRIMER	PRECISION PLUMBING PRODUCTS	ALL BRASS WITH DISTRIBUTION UNIT WHERE REQUIRED.



1 PLUMBING RISER DIAGRAM
SCALE: NOT TO SCALE

FIRE PROTECTION SPECIFICATION:

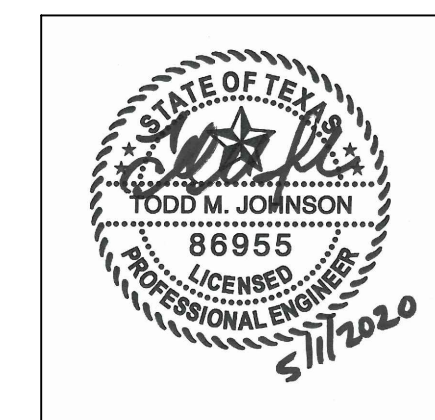
MODIFY THE EXISTING WET PIPE FIRE SPRINKLER SYSTEM AS REQUIRED FOR THE NEW TENANT LAYOUT INCLUDING RELOCATING PIPING TO CLEAR NEW DUCTWORK, ADDING NEW HEADS, RELOCATING EXISTING HEADS, AND LEAVING CERTAIN EXISTING HEADS IN PLACE. THE SPRINKLER DESIGN SHALL COMPLY WITH NFPA 13, THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION AND THE REQUIREMENTS OF THE OWNER'S INSURANCE COMPANY. EXISTING SPRINKLER HEADS TO BE RELOCATED MAY BE REUSED. EXISTING PIPING WHICH IS REMOVED IN THE MODIFICATION WORK SHALL NOT BE REUSED. NEW SPRINKLER PIPING SHALL BE ROUTED AS REQUIRED TO CLEAR NEW DUCTWORK, EXISTING DUCTWORK TO REMAIN, LIGHT FIXTURES, STRUCTURAL INTERFERENCES, ETC. THE NEW SPRINKLER HEADS SHALL MATCH EXISTING SPRINKLER HEADS. ALL PIPING SHALL BE SCHEDULE 40 WITH USA FITTINGS.

IN ALL GYP BOARD CEILING AREA, PROVIDE CONCEALED SPRINKLER HEADS WITH CAPS TO BE FACTORY PAINTED TO MATCH CEILING. ALL SPRINKLER HEADS IN LAY-IN CEILING SHALL BE LOCATED IN CENTER OF TILE AND ALIGNED WITH LIGHT FIXTURES.

SPRINKLER CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF CALCULATIONS AND SPRINKLER HEAD LOCATIONS FOR ARCHITECT TO REVIEW PRIOR TO ANY INSTALLATION. NO EXCEPTION TAKEN.



5310 HARVEST HILL RD.
SUITE 136
DALLAS, TX 75230
972.788.1010
www.obrienarch.com



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05.01.2020 202015 REF. DRAWING

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P0.01

PLUMBING NOTES & SYMBOLS

Purdy & McGuire
Mechanical - Electrical Engineers
17300 North Dallas Parkway
Suite 3000
Dallas, Texas 75248-1147
Firm Registration # F-1511
Tel: 972/239-5357
Fax: 972/239-5231
www.purdy-mcguire.com

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PMI JOB NO. 20039.005
PROJECT MGR. TODD JOHNSON

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DIVISION 22 - PLUMBING

SECTION 220500 - COMMON WORK RESULTS

PART 1 - GENERAL

- 1.1 GENERAL NOTES
- A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND ALL OTHER SPECIFICATION SECTIONS, APPLY TO THIS AND THE OTHER SECTIONS OF DIVISION 22.
- B. THE CONTRACTOR FOR THIS DIVISION OF WORK IS REQUIRED TO OBTAIN A COMPLETE SET OF BID DOCUMENTS (DRAWINGS AND SPECIFICATIONS) AND FULLY REVIEW THEM, COORDINATE DIVISION 22 WORK WITH THAT OF ALL OTHER DIVISIONS OF WORK.
- C. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER. ANY LABOR OR MATERIAL CALLED FOR IN ONE SHALL BE FURNISHED AND INSTALLED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY LABOR OR MATERIAL WHICH IS NEITHER SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY REQUIRED TO COMPLETE THE WORK, AND WHICH IS NORMALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE FURNISHED AND INSTALLED AS PART OF THIS CONTRACT.
- D. THE CONTRACTOR IS RESPONSIBLE FOR SCHEDULING THE COMPLETION AND INSPECTION OF THIS WORK TO COMPLY WITH THE OWNER'S SCHEDULE AND PROJECT COMPLETION DATE.

1.2 SCOPE OF WORK

- A. THE DESCRIPTION OF GENERAL CONDITION WORK IN THIS DIVISION SHALL ALSO APPLY TO DIVISIONS 21 AND 23.
- B. THIS CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILED NECESSARY TO PROVIDE A COMPLETE FIRE PROTECTION, PLUMBING AND HVAC SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED BY JOB CONDITIONS. WORK IS TO BE COMPLETE IN EVERY RESPECT, WHETHER SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS OR NOT.
- C. ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OWNER (BUILDING OWNER, LANDLORD OR TENANT), SHALL BE PROVIDED BY THIS CONTRACTOR.
- D. THIS WORK, MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:
 - a. FIRE PROTECTION MODIFICATIONS AND ADDITIONS INCLUDING, BUT LIMITED TO PIPING, SPRINKLER HEADS AND CONTROL VALVES.
 - b. PLUMBING WORK INCLUDING, BUT NOT LIMITED TO WASTE AND VENT PIPING, DOMESTIC WATER SERVICE AND DISTRIBUTION, PLUMBING FIXTURES, WATER HEATERS AND ROUGH-IN CONNECTION TO EQUIPMENT FURNISHED BY THE OWNER OR OTHER SECTIONS OF THE SPECIFICATIONS.
 - c. HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS INCLUDING, BUT NOT LIMITED TO HEATING AND COOLING UNITS, VENTILATING SYSTEMS, COMPLETE DUCT SYSTEMS, GRILLES REGISTERS AND DIFFUSERS, INSULATION, ACCESSORIES AND TEMPERATURE CONTROL SYSTEMS.

1.3 CODES

- A. ALL WORK SHALL CONFORM TO THE OWNER'S CRITERIA, STATE, COUNTY, CITY AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH THY CODES, NFPA CODES, ENERGY CODES AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. THIS CONTRACTOR SHALL INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES AND REGULATIONS. THIS CONTRACTOR SHALL INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS AWARDED, CHANGE ORDERS FOR INCREASED COSTS DUE TO CODE ISSUES WILL NOT BE ACCEPTED UNLESS ALLOWANCES HAVE BEEN PREVIOUSLY AGREED UPON.
- B. WHERE THE DRAWINGS AND SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODE OR THE OWNER'S CRITERIA, THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS.

1.4 LICENSES, PERMITS, INSPECTIONS AND FEES

- A. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS AND FEES REQUIRED OR RELATED TO THIS WORK. ALL COSTS ASSOCIATED WITH THESE SHALL BE PAID FOR BY THE CONTRACTOR AND INCLUDED AS PART OF THE BID.
- B. FURNISH TO THE OWNER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT THE COMPLETION OF THE PROJECT.

1.5 GUARANTEE

- A. ALL MATERIALS, EQUIPMENT AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF 1 YEAR FROM THE DATE OF ACCEPTANCE (OFFICIAL DATE IN WRITING) OF THIS PROJECT. ALL WORK FOUND TO BE DEFECTIVE SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
- B. WHERE SPECIFIC EQUIPMENT IS NOTED TO HAVE EXTENDED WARRANTIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER REGISTRATION SO THE OWNER CAN MAKE ALL APPROPRIATE CLAIMS.

1.6 RECORD DRAWINGS

- A. THIS CONTRACTOR SHALL MAINTAIN ONE SET OF DRAWINGS ON THE JOBSITE, UPDATED WEEKLY, TO RECORD ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS SUCH AS:
 - a. LOCATIONS OF CONCEALED PIPING AND DUCTS
 - b. REVISIONS, ADDENDUMS AND CHANGE ORDERS
 - c. SIGNIFICANT DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.
- B. DELIVER RECORD DRAWINGS TO THE OWNER AT PROJECT COMPLETION.

1.7 DEMOLITION

- A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE DEMOLITION OF EXISTING WORK AND THE DEMOLITION PROVIDED BY THE GENERAL CONTRACTOR. COORDINATE WITH THE GENERAL CONTRACTOR ALL EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT.
- B. THIS CONTRACTOR SHALL INCLUDE AND BE RESPONSIBLE FOR THE REMOVAL OF ALL FIRE PROTECTION, PLUMBING AND HVAC SYSTEMS NOTED ON THE DRAWINGS OR REQUIRED TO ACCOMPLISH THE STATED WORK.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. MATERIALS UTILIZED IN THE CONSTRUCTION OF THIS PROJECT SHALL BE NEW AND CARRY UL LABELS WHERE APPLICABLE, UNLESS APPROVED BY THE OWNER.
- B. ANY USED EQUIPMENT OR MATERIALS USED SHALL STILL CARRY THE SPECIFIED 1 YEAR GUARANTEE AND APPROVAL OF THE USE OF THIS EQUIPMENT OR MATERIALS DOES NOT RELIEVE THE CONTRACTOR FROM ENSURING EVERYTHING IS OPERATIONAL.

2.2 MANUFACTURERS

- A. WHERE TRADE NAMES OR MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE CONSIDERED THE BASIS OF DESIGN AND USED AS A MINIMUM FOR THE BASE BID. MANUFACTURERS CONSIDERED AS AN EQUAL OR BETTER IN ALL ASPECTS, WILL BE SUBJECT TO APPROVAL IN WRITING BY THE ENGINEER THROUGH THE SHOP DRAWING SUBMITTAL PROCESS, FOR ACCEPTANCE PRIOR TO INSTALLATION. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

2.3 SLEEVES

- A. PROVIDE SLEEVES TO PROTECT EQUIPMENT OR FACILITIES IN THE INSTALLATION. EACH SLEEVE SHALL EXTEND THROUGH ITS RESPECTIVE FLOOR, WALL OR PARTITION AND SHALL BE CUT FLUSH WITH EACH SURFACE EXCEPT SLEEVES THAT PENETRATE THE FLOOR, WHICH SHALL EXTEND 2 INCHES ABOVE THE FLOOR.
- B. CONTRACTOR SHALL COORDINATE THROUGH THE GENERAL CONTRACTOR AND OWNER ANY CORE DRILLING OR CUTTING OF OPENINGS IN MASONRY WALLS OR CONCRETE FLOORS.
- C. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND FLOORS SHALL BE FIRED SEALED. REFER TO "FIRE STOPPING."
- D. SLEEVES IN BEARING AND MASONRY WALLS, FLOORS AND PARTITIONS SHALL BE STANDARD WEIGHT STEEL PIPE FINISHED WITH SMOOTH EDGES. FOR OTHER THAN MASONRY PARTITIONS, THROUGH SUSPENDED CEILINGS, OR FOR CONCEALED VERTICAL PIPING, SLEEVES SHALL BE MINIMUM NO. 22 USG GALVANIZED STEEL.

2.4 FLAME SPREAD PROPERTIES OF MATERIALS

- A. MATERIALS USED ON THIS PROJECT SHALL EACH HAVE A FLAME SPREAD RATING OF 25 OR LESS, AND A SMOKE DEVELOPED RATING OF 50 OR LESS, AS DETERMINED BY AN INDEPENDENT TESTING LABORATORY IN ACCORDANCE WITH NFPA-255.

2.5 FIRE STOPPING

- A. PROVIDE FIRE STOPPING IN SEALING OF PENETRATIONS IN FIRE-RATED CONSTRUCTION, HORIZONTAL AND VERTICAL, INCLUDING THE FOLLOWING MATERIALS:
 - a. FOAM-IN-PLACE FIRESTOP SILICONE RTV FOAM, CAT #2001 LIQUID COMPONENT PART A (BLACK) AND LIQUID COMPONENT PART B (OFF-WHITE).
 - b. SEALANT: 3M 1000 NS AND 1003 SL SILICONE ADHESIVE SEALANT.
 - c. DAMMING MATERIALS, MINERAL FIBERBOARD, MINERAL FIBER MATTING, MINERAL FIBER PUTTY, PLYWOOD OR PARTICLE BOARD, AS SELECTED BY THE APPLICATOR.
- B. MIXES SHALL CONFORM TO THE MANUFACTURER'S DIRECTIONS.

2.6 FLOOR, CEILING AND WALL PLATES

- A. PROVIDE CHROME-PLATED, ONE-PIECE, ESCUTCHEONS ON PIPES AND HANGER RODS PENETRATING WALLS, FLOORS AND CEILING IN FINISHED AREAS OF THE BUILDING. SPLIT RING ESCUTCHEONS ARE NOT ACCEPTABLE.

2.7 DIELECTRIC CONNECTIONS

- A. CONNECTIONS BETWEEN FERROUS AND NON-FERROUS PIPING SYSTEMS, AND BETWEEN FERROUS PIPING SYSTEMS AND NON-FERROUS CONNECTIONS TO EQUIPMENT SHALL BE MADE BY THE USE OF DIELECTRIC UNIONS, COUPLINGS OR FLANGES.

2.8 EQUIPMENT FOUNDATIONS AND SUPPORTS

- A. PROVIDE FOUNDATIONS AND SUPPORTS FOR MECHANICAL EQUIPMENT AS REQUIRED. THESE SHALL INCLUDE REINFORCED CONCRETE HOUSEKEEPING PADS FOR ANY PUMPS OR AIR HANDLING UNITS INSTALLED INDOORS ON THE FLOOR. PADS SHALL EXTEND A MINIMUM OF 3 INCHES BEYOND EQUIPMENT IN ALL DIRECTIONS.

PART 3 - EXECUTION

3.1 SPACE AND EQUIPMENT ARRANGEMENT

- A. EACH CONTRACTOR SHALL BE RESPONSIBLE TO SEE THAT THEIR PURCHASED EQUIPMENT WILL FIT THE SPACES AVAILABLE. IN CERTAIN INSTANCES NOTE THAT THE EQUIPMENT IS MENTIONED BY NAME IN THE EQUIPMENT SCHEDULES. IN THESE CASES IT IS THAT EQUIPMENT WHOSE DIMENSIONS AND CONNECTION ARRANGEMENTS HAVE BEEN USED FOR THE PREPARATION OF THE LAYOUTS SHOWN ON THE WORKING DRAWINGS. SHOULD THE USE OF EQUIPMENT BY OTHER APPROVED MANUFACTURERS OR OF OTHER PHYSICAL SHAPES THAN THOSE SHOWN ON THE DRAWINGS BE PROPOSED, THE CONTRACTOR SHALL CONFIRM THE EQUIPMENT WILL FIT WITHIN THE ALLOTTED SPACE WITHOUT ARCHITECTURAL MODIFICATIONS OR IMPACT ON OTHER TRADES.
- B. ALL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING, AND REPAIRING. PROVIDE SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.
- C. BEFORE STARTING WORK THIS CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, STRUCTURAL, POWER, LIGHTING AND FIRE ALARM PLANS, SHOP DRAWINGS AND SPECIFICATIONS TO SEQUENCE, COORDINATE AND INTEGRATE THE VARIOUS ELEMENTS OF THE MECHANICAL SYSTEMS TO AVOID INTERFERENCES AND CONFLICTS.
- 3.2 MANUFACTURER'S DIRECTIONS
- A. THE MANUFACTURER'S PUBLISHED DIRECTIONS SHALL BE FOLLOWED IN THE DELIVERY, STORAGE, PROTECTION, INSTALLATION, PIPING AND WIRING OF ALL EQUIPMENT AND MATERIAL. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE OWNER IN WRITING OF ANY CONFLICT BETWEEN THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND THE MANUFACTURER'S DIRECTIONS, AND SHALL OBTAIN INSTRUCTIONS BEFORE PROCEEDING WITH THE WORK. SHOULD THE CONTRACTOR PERFORM ANY WORK BEFORE RECEIVING SUCH INSTRUCTIONS, HE SHALL BEAR ALL COSTS ARISING IN CONNECTION WITH THE DEFICIENCIES.

3.3 CONSTRUCTION REQUIREMENTS

- A. THE DRAWINGS AND SPECIFICATIONS SHOW PIPE AND DUCT SIZES, GENERAL ROUTING AND LOCATION, AND DESCRIBE THE VARIOUS SYSTEMS. THESE DOCUMENTS DESCRIBE AND SIZE EQUIPMENT, ITS GENERAL LOCATION, USAGE, SUPPORT AND AUXILIARY REQUIREMENTS. THEY DESCRIBE MOST, BUT NOT ALL OF THE MATERIALS AND THEIR USAGE FOR THIS PROJECT.
- B. CONTRACT DOCUMENTS DO NOT DETAIL ALL JOB REQUIREMENTS. THEY DO NOT SHOW LAYOUTS, LOCATIONS OR ELEVATIONS OF DUCTS, ANCHORS, SLEEVES, HANGERS, UNDERFLOOR DRAINS, OR ACCESS DOORS. THEY DO NOT SHOW FINAL PRECISE LOCATIONS OF EQUIPMENT BY DIMENSIONS IN ALL INSTANCES.
- C. THE EXACT LOCATION OF EACH ITEM SHALL BE DETERMINED BY REFERENCE TO THE PROJECT CONTRACT DRAWINGS, AND TO DETAILS, EQUIPMENT DRAWINGS, AND ROUGH-IN DRAWINGS, BY MEASUREMENTS AT THE BUILDING, AND IN COOPERATION WITH THE VARIOUS TRADES. MINOR RELOCATION NECESSITATED BY THE CONDITIONS AT THE SITE OR DIRECTED BY THE OWNER SHALL BE MADE WITHOUT ADDITIONAL COST TO THE OWNER. WHERE CONFLICTS OCCUR, WORK WITH ALL INVOLVED TRADES AND RESOLVE THE CONFLICT PRIOR TO ERECTION OF ANY WORK IN THE AREA INVOLVED.

3.4 FABRICATION OF PIPE

- A. PIPING SHALL FOLLOW AS CLOSELY AS POSSIBLE THE ROUTES SHOWN ON THE DRAWINGS, TAKING INTO CONSIDERATION CONDITIONS TO BE MET AT THE SITE.
- B. SHOULD ANY UNFORESEEN CONDITIONS ARISE, PIPING SHALL BE CHANGED OR REROUTED AS REQUIRED AFTER PROPER APPROVAL HAS BEEN OBTAINED BY OWNER.
- C. PIPING SHALL BE CLEANED WHEN IT IS INSTALLED, BEFORE INSTALLATION IT SHALL BE CHECKED, UNENDED, SWABBED IF NECESSARY, AND ANY RUST AND DIRT REMOVED.

3.5 EQUIPMENT FOUNDATIONS, HANGERS AND SUPPORTS

- A. FOR FLOOR MOUNTED MECHANICAL EQUIPMENT, PROVIDE CONCRETE HOUSEKEEPING PADS NOT LESS THAN 3/4 INCH THICK REINFORCED WITH NO. 3 DOWELS AND NO. 3 BARS, 2 FEET-0 INCHES ON CENTER EACH WAY.
- B. SUSPENDED EQUIPMENT SHALL HAVE SUPPORTS CONSISTING OF MANUFACTURED METAL FRAMING OR HANGERS CONFORMING TO SECTION 220529.

3.6 INSTRUCTIONS OF OWNER'S PERSONNEL

- A. PROVIDE THE SERVICES OF COMPETENT ENGINEERS OR TECHNICIANS TO INSTRUCT REPRESENTATIVES OF THE OWNER IN COMPLETE AND DETAILED OPERATION AND MAINTENANCE OF EACH ITEM OF EQUIPMENT AND EACH SYSTEM.
- B. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR PROPER MAINTENANCE OF EQUIPMENT AND SYSTEMS UNTIL THE INSTRUCTIONS HAVE BEEN GIVEN TO THE OWNER'S PERSONNEL AND THE LETTER OF RELEASE ACKNOWLEDGED.
- C. PROVIDE OPERATION & MAINTENANCE MANUALS (COPIES), ALONG WITH AS-BUILT SET OF PRINTS PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT.

3.7 ELECTRIC WIRING OF MOTORS AND EQUIPMENT

- A. LOW VOLTAGE HVAC CONTROL WIRING WILL BE INSTALLED BY THE HVAC CONTRACTOR WITH FINAL CONNECTION TO THE HVAC EQUIPMENT BY THE HVAC CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL DISCONNECT SWITCHES AS REQUIRED FOR THE PROPER OPERATION OF THE EQUIPMENT UNLESS SUCH EQUIPMENT IS SPECIFIED TO BE PROVIDED WITH FACTORY MOUNTED DISCONNECT SWITCHES.
- B. THE ELECTRICAL DESIGN AND DRAWINGS ARE BASED ON THE EQUIPMENT SCHEDULED AND SHOWN ON THE DRAWINGS, SHOULD ANY CONTRACTOR SUBMIT FOR APPROVAL EQUIPMENT REQUIRING CHANGES TO THE ELECTRICAL DESIGN FOR WHICH THE ELECTRICAL CONTRACTOR WILL REQUEST AN EXTRA, THIS EXTRA SHALL BE PAID BY THE CONTRACTOR PROVIDING THE ALTERNATE EQUIPMENT REQUIRING THE CHANGE.

3.8 QUIET OPERATION

- A. THIS WORK SHALL BE INSTALLED IN SUCH A MANNER THAT UNDER ALL CONDITIONS OF LOAD IT SHALL OPERATE WITHOUT SOUND OR VIBRATION, WHICH IS OBJECTIONABLE IN THE OCCUPIED SPACES IN THE OPINION OF THE OWNER. IN THE CASE OF MOVING MACHINERY, SOUND OR VIBRATION ANNOYINGLY NOTICEABLE INSIDE ITS OWN ROOM CAN BE CONSIDERED AS OBJECTIONABLE. IN ANY CASE, SITUATION SHALL BE REMEDIATED AT NOT COST TO THE OWNER.

3.9 CUTTING AND PATCHING

- A. PROVIDE ALL CUTTING, CHASING AND CHANNELING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL FROM ARCHITECT AND OWNER.
- B. ALL PATCHING SHALL BE BY GENERAL CONTRACTOR AND SHALL MATCH THE SURROUNDING SURFACES.

3.10 TESTS

- A. THE CONTRACTOR INSTALLING THE PLUMBING SYSTEMS SHALL FOLLOW ALL TESTS AS REQUIRED TO PROVE COMPLIANCE WITH ALL LOCAL CODES. TESTS PERFORMED SHALL BE EQUAL TO OR EXCEED THAT HERENAFTER SPECIFIED. ALL PIPING SYSTEMS SHALL BE TESTED BEFORE THEY ARE COVERED OR MADE UNAVAILABLE FOR THE COMPLETE INSPECTION OF ALL JOINTS. IN ADDITION TO THE ABOVE, EACH AND EVERY SYSTEM TO BE INSTALLED SHALL BE THOROUGHLY TESTED BEFORE THE INSTALLATION IS APPLIED.
- B. DOMESTIC WATER PIPING SYSTEM. UPON COMPLETION OF A SECTION OF THE ENTIRE WATER SUPPLY SYSTEM, IT SHALL BE TESTED AND PROVED TIGHT UNDER A WATER PRESSURE OF 125 PSIG, BUT NOT LESS THAN 10 PERCENT IN EXCESS OF THE WORKING PRESSURE UNDER WHICH IT IS TO BE USED. THE WATER USED FOR TESTS SHALL BE OBTAINED FROM A POTABLE SOURCE OF SUPPLY.
- C. SANITARY SYSTEMS. ALL SANITARY SEWER SYSTEMS SHALL BE TESTED EITHER IN SECTIONS OR IN THEIR ENTIRETY IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL PLUMBING CODE AND TO THE SATISFACTION OF THE LOCAL PLUMBING INSPECTOR. THESE TESTS SHALL BE EXAMINED IF DESIRED BY THE ARCHITECT OR HIS REPRESENTATIVE DURING THE TEST PERIOD AND AMPLIFIED NOTICE OF PERFORMANCE OF THESE TESTS SHALL BE GIVEN.

END OF SECTION.

SECTION 220523 - GENERAL DUTY VALVES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500.

PART 2 - PRODUCTS

- 2.1 WATER SYSTEM VALVES
- A. DOMESTIC, CHILLED, HOT, AND CONDENSER WATER SYSTEMS. PROVIDE VALVES, WHERE SHOWN ON THE DRAWINGS AND ELSEWHERE AS SPECIFIED OR REQUIRED, TO PROVIDE ISOLATION OF EQUIPMENT AND FIXTURES AND TO PROVIDE DRAINAGE OF LOW POINTS IN WATER LINES. VALVES SHALL BE IN ACCORDANCE WITH THE FOLLOWING DETAILED SPECIFICATIONS:
 - a. SIZES 2 INCH AND SMALLER: BALL VALVE; NIBCO 555-70, FULL PORT, BRONZE BODY WITH STAINLESS STEEL TRIM.
 - b. SIZES 2 INCH AND SMALLER: CHECK VALVE; NIBCO S-433 CLASS 150, BRONZE.
 - c. SIZES 2-1/2 INCH AND LARGER: BUTTERFLY VALVE; NIBCO LC2000 LUG STYLE, CAST IRON, 200 PSIG WITH STAINLESS STEEL TRIM AND EPDM SEAT.
 - d. SIZES 2-1/2 INCH AND LARGER: CHECK VALVE; NIBCO F-918-B CAST IRON, FLANGED, 200 PSIG WITH BRONZE TRIM.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. VALVES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND IN SUCH MANNER AS TO PERMIT DISASSEMBLY, REMOVAL, REASSEMBLY AND REPLACEMENT.

END OF SECTION.

SECTION 220529 - HANGERS AND SUPPORTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500.

PART 2 - PRODUCTS

- 2.1 GENERAL
- A. PIPE HANGERS AND SUPPORTS SHALL CONFORM TO THE RECOMMENDATIONS OF ASHRAE, ASPE, ANSI AND MSS.
- B. PROVIDE FACTORY-FABRICATED PIPE HANGERS AND SUPPORTS IN WHICH MATERIALS, DESIGN AND MANUFACTURE COMPLY WITH ANS/MSS SP-88. SELECT AND APPLY PIPE HANGERS AND SUPPORTS IN COMPLIANCE WITH MSS SP-69, AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. FABRICATE AND INSTALL PIPE HANGERS AND SUPPORTS IN COMPLIANCE WITH MSS SP-69.
- C. USE ONLY ONE TYPE OF HANGER AND SUPPORT, BY ONE MANUFACTURER, FOR EACH PIPING SERVICE.
- D. PROVIDE COPPER-PLATED HANGERS AND SUPPORTS FOR COPPER PIPING SYSTEMS WHERE HANGERS ARE IN CONTACT WITH BARE PIPE.
- E. PROVIDE PROTECTIVE COATINGS ON HANGERS AND SUPPORTS WHEN LOCATED IN OUTDOOR AND/OR CORROSIVE ENVIRONMENTS. PROTECTIVE COATINGS SHALL BE AS RECOMMENDED BY THE COATING MANUFACTURER'S REQUIREMENTS.
- 2.2 HORIZONTAL PIPING HANGERS AND SUPPORTS
- A. SELECT SIZE OF HANGERS AND SUPPORTS TO EXACTLY FIT PIPE SIZE FOR BARE PIPING, AND AROUND PIPING INSULATION WITH SADDLE OR SHIELD FOR INSULATED PIPING.
- 2.3 HANGER ROD ATTACHMENTS
- A. SELECT SIZE OF HANGER ROD ATTACHMENTS TO SUIT HANGER RODS.
- 2.4 BUILDING ATTACHMENTS
- A. SELECT SIZE AND TYPE OF BUILDING ATTACHMENTS TO SUIT HANGER RODS AND STRUCTURE.
- 2.5 PIPE INSULATION HANGER SHIELD INSERTS AND SHIELDS
- A. THERMAL HANGER INSERTS SHALL BE DESIGNED TO PREVENT INSULATION FROM BEING CRUSHED BY THE WEIGHT OF THE PIPING AND CONTENTS.
- B. SHIELDS SHALL BE FIELD OR FACTORY FABRICATED OF GALVANIZED SHEET METAL.

PART 3 - EXECUTION

3.1 PREPARATION

- A. PROCEED WITH INSTALLATION OF HANGERS, SUPPORTS AND ANCHORS ONLY AFTER REQUIRED BUILDING STRUCTURAL WORK HAS BEEN COMPLETED IN AREAS WHERE THE WORK IS TO BE INSTALLED.
- 3.2 INSTALLATION OF BUILDING ATTACHMENTS
- A. INSTALL BUILDING ATTACHMENTS AT REQUIRED LOCATIONS, ON STRUCTURE FOR PROPER SUPPORT. SPACE ATTACHMENTS WITHIN MAXIMUM PIPING SPAN LENGTH SPECIFIED IN THIS SECTION. INSTALL ADDITIONAL BUILDING ATTACHMENTS WHERE SUPPORT IS REQUIRED FOR ADDITIONAL CONCENTRATED LOADS, INCLUDING VALVES, FLANGES, GUIDES, STRAINERS AND EXPANSION JOINTS. ALSO PROVIDE ATTACHMENTS AT CHANGES IN DIRECTION OF PIPING AND WHERE REQUIRED BY A LIMITED CARRYING CAPACITY OF THE STRUCTURE.

3.3 INSTALLATION OF HANGERS AND SUPPORTS

- A. INSTALL HANGERS, SUPPORTS, CLAMPS AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE IN COMPLIANCE WITH MSS SP-69. ARRANGE THE GROUPING OF PARALLEL RIGID RUNS OF HORIZONTAL PIPING TO BE SUPPORTED TOGETHER IN TRAPEZOIDAL HANGERS WHERE POSSIBLE. WHERE PIPING OF VARIOUS SIZES ARE TO BE SUPPORTED TOGETHER BY TRAPEZOIDAL HANGERS, SPACE HANGERS FOR SMALLEST PIPE SIZE OR INSTALL INTERMEDIATE SUPPORTS FOR SMALL DIAMETER PIPE. DO NOT USE WIRE OR PERFORATED METAL TO SUPPORT PIPING, AND DO NOT SUPPORT PIPING FROM OTHER PIPING.
- B. INSTALL HANGER AND SUPPORTS COMPLETE WITH NECESSARY BOLTS, RODS, NUT WASHERS AND OTHER ACCESSORIES. EXCEPT AS OTHERWISE INDICATED FOR EXPOSED CONTINUOUS PIPE RUNS, INSTALL HANGERS AND SUPPORTS OF SAME TYPE AND STYLE AS INSTALLED FOR ADJACENT SIMILAR PIPING.
- C. SUPPORT FIRE PROTECTION WATER PIPING INDEPENDENTLY OF OTHER PIPING.

3.4 PROVISIONS FOR MOVEMENT

- A. INSTALL HANGERS AND SUPPORTS TO ALLOW MOVEMENT OF PIPING SYSTEMS AND TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, AND TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, OFFSETS, EXPANSION BENDS AND SIMILAR UNITS.
- B. INSTALL HANGERS AND SUPPORTS SO THAT PIPING, LOADING, AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.
- 3.5 INSULATED PIPING REQUIREMENTS
- A. HANGERS FOR INSULATED COLD PIPING SHALL BE PLACED AROUND THE OUTSIDE OF THE INSULATION AND VAPOR BARRIER.
 - a. PROVIDE A 180 DEGREE THERMAL INSERT ON THE BOTTOM OF THE PIPE. EXTEND VAPOR BARRIER ON TOP OF INSERT AND INSULATION AND PROVIDE INSULATION SHIELD BETWEEN INSERT AND HANGER.
- B. HANGERS FOR OTHER INSULATED PIPING MAY BE PLACED DIRECTLY AGAINST THE PIPING WITH INSULATION CARRIED COMPLETELY OVER AND AROUND HANGER AND ROD.

3.6 HANGER SPACING AND ROD SIZES

- A. HANGERS SHALL BE SPACED SO AS TO SUPPORT PIPING PROPERLY. CAST IRON SOIL PIPES SHALL BE SUPPORTED ON HANGERS SPACED NOT MORE THAN PIPE LENGTH BEING EMPLOYED. HANGERS FOR ALL OTHER COPPER OR STEEL PIPING SHALL BE SPACED ACCORDING TO THE FOLLOWING SCHEDULE:

PIPE SIZE	MAXIMUM HANGER SPACING	MINIMUM ROD SIZE
1/2 INCH	5 FEET	3/8 INCH
3/4 INCH	5 FEET	3/8 INCH
1 INCH	5 FEET	3/8 INCH
1-1/4 INCH	6 FEET	3/8 INCH
1-1/2 INCH	8 FEET	3/8 INCH
2 INCH AND LARGER	8 FEET	1/2 INCH

- C. AT NO TIME SHALL ANY SECTION OF PIPE HAVE LESS THAN TWO SUPPORTS.

END OF SECTION.

SECTION 220531 - IDENTIFICATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500.
- B. LABEL ALL NEW EQUIPMENT AND PIPING SYSTEMS.

PART 2 - PRODUCTS

2.1 PIPE LABELS

- A. PRETENSION PIPE LABELS OF SEMI-RIGID PLASTIC FORMED TO COVER THE FULL CIRCUMFERENCE OF PIPE.
- B. IDENTIFY THE SERVICE AND DIRECTION OF FLOW. LABELS SHALL CONTAIN AT LEAST 1/2 INCH HIGH LETTERING AND BE PLACED SO THEY ARE EASY TO READ.
- 2.2 VALVE TAGS
- A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND CHAIN FOR ATTACHMENT TO VALVE.
- 2.3 EQUIPMENT LABELS
- A. MULTILAYER, MULTICOLOR PLASTIC LABELS WITH MECHANICAL ENGRAVING AND HOLES FOR ATTACHMENT TO EQUIPMENT.

PART 3 - EXECUTION

3.1 PIPE LABELS

- A. INSTALL PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE AN ACCESSIBLE CEILING AT MAXIMUM 20 FT. CENTERS.

3.2 VALVE TAGS

- A. ATTACH TAGS TO VALVES USING CHAIN. PROVIDE A VALVE SCHEDULE FOR MOUNTING IN THE MECHANICAL ROOM.

3.3 EQUIPMENT LABELS

- A. PERMANENTLY ATTACH LABELS TO EQUIPMENT. LOCATE WHERE LABEL CAN BE EASILY SEEN AND READ.

END OF SECTION.

SECTION 220700 - INSULATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. REFER TO SECTION 220500.

PART 2 - PRODUCTS

- 2.1 INSULATION SCHEDULE AND INSTALLATION
- A. ALL DOMESTIC HOT AND COLD WATER PIPING:
 - FOR PIPING 1-1/4 INCH AND SMALLER PROVIDE 1/2 INCH THICK RIGID FIBERGLASS, TYPE I WITH WHITE ALL-SERVICE JACKET AND VAPOR BARRIER. PIPING 1-1/2 INCH AND GREATER REQUIRES 1 INCH THICK INSULATION; FITTINGS SHALL BE PRE-MOLDED OF THE SAME MATERIAL.
- B. ALL CHILLED, HOT AND CONDENSER WATER PIPING: 1/2 INCH THICK RIGID FIBERGLASS, TYPE I WITH WHITE ALL-SERVICE JACKET AND VAPOR BARRIER.
- C. AIR CONDITIONING COOLING COIL CONDENSATE DRAINS: 1/2 INCH THICK ARMAFLEX WITH FITTINGS OF PRE-MOLDED MATERIAL.
- D. REFRIGERANT SUCTION AND HOT-GAS LINES: 1/2 INCH THICK ARMAFLEX WITH FITTINGS OF PRE-MOLDED MATERIAL.
- E. CONCEALED SUPPLY AIR AND MAKE-UP AIR DUCTWORK (INCLUDES EXPOSED DUCT IN MECHANICAL ROOMS): 2 INCH THICK FLEXIBLE FIBERGLASS WITH REINFORCED FOLK KRAFT JACKET AND VAPOR BARRIER. MINIMUM R VALUE SHALL BE 5.0.
- F. EXPOSED RECTANGULAR SUPPLY DUCT IN PUBLIC AREAS: 2 INCH THICK, 3 LB/CU FT DENSITY, MINERAL FIBER BOARD WITH FSK JACKET. MINIMUM R VALUE SHALL BE 5.0.
- G. DUCTLINED FOR TRANSFER AIR DUCTS: 1 INCH ACOUSTICAL DUCT LINING IN ACCORDANCE WITH SMACNA STANDARDS, OWENS-CORNING FIBERGLASS "AEROFLEX" NO. 200, OR EQUAL.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- B. DUCT LINER SHALL BE APPLIED TO THE INSIDE OF THE DUCT WITH HEAVY-DENSITY SIDE TO THE AIR STREAM AND SHALL BE SECURED TO THE DUCT WITH INSUL-COUSTIC NO. 225 OR EQUAL, NONFLAMMABLE, UL LISTED ADHESIVE COMPLETELY COATING THE CLEAN SHEET METAL. THE LINER SHALL BE FURTHER SECURE WITH GRIPWALL OR DIAPHRAGM MECHANICAL FASTENERS. METAL NOSSINGS SHALL BE INSTALLED TO SECURE LINER AT UP-STREAM TRAVERSE EDGES. CLIPS SHALL BE POINTED UP WITH ADHESIVE. DIMENSIONS GIVEN ON THE DRAWINGS ARE NET INTERNAL. SHEETMETAL DIMENSIONS SHALL BE INCREASED TO ALLOW FOR THE THICKNESS OF THE DUCT LINER.

END OF SECTION.

SECTION 221116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

- 1.1 SCOPE OF WORK</

