DIVISION 15 & 16 GENERAL PROVISIONS

1.0 DESCRIPTION:

A. Division 15 and 16 shall be governed by all applicable provisions of the Contract Document.

B. The Contractor shall furnish, install and connect all materials, equipment, apparatuses, and incidentals required for a complete and working installation. For all systems shown and required, the Contractor shall supply all necessary labor, equipment, tools, insurance, and tax services, and shall assume full responsibility for all obligations associated with completion of work as provided by the Contract Documents.

2.0 STANDARDS, REGULATIONS AND CODES:

A. Work shall comply with the edition of the applicable standards, regulations and codes currently in force of all Federal, State and local authorities having jurisdiction. Where quantities, sizes, or other requirements indicated on the drawings or herein specified are in excess of the standard or code requirements, the specifications and/or drawings shall govern. In the absence of other applicable local codes, acceptable to the Architect/Engineer, the International Set of Codes and the National Electrical Code shall apply to this work.

B. The Contractor shall comply with rules and regulations of public utilities and municipal departments affected by connections of services. The Contractor shall pay all fees associated there with.

C. The Contractor shall be licensed to perform associated work in the municipality in which the project is located.

D. All products and types of construction shall meet or exceed the latest edition of applicable standards of manufacturer, testing, performance and installation.

E. Where indicated or required, comply with all provisions of the ADA and/or the ABA Accessibility Guidelines.

F. Where indicated or required, comply with all applicable provisions of energy and ventilation codes in force at the local jurisdiction.

3.0 LOCAL CONDITIONS:

A. The Contractor shall carefully examine the local conditions and existing installations and shall become thoroughly familiar with all existing conditions which may affect associated work. The Contractor shall locate all existing utilities and protect them during the execution of the work

B. The Contractor shall examine all project drawings and specifications to become familiar with the type of construction, materials, and equipment, to be used for all work and how it will affect the installation of this contract.

C. By the act of submitting a bid, the Contractor will be deemed to have made such examination, to have accepted such conditions, to have made allowance therefore, and included all costs in his proposal. Failure to determine existing conditions will not be considered a basis for the granting of additional compensation.

4.0 WORKMANSHIP:

A. All work performed under this Contract shall provide a neat and "workmanlike" appearance when completed, to the satisfaction of the Owner's Representative. The complete installation shall function as designed and intended with respect to efficiency, capacity, and noise level, etc.

5.0 CUTTING AND PATCHING:

A. All necessary cutting, drilling and patching shall be provided by this Contractor Structural members shall not be disturbed without prior approval of the Owner's Representative. All areas disturbed by work performed under this Contract shall be neatly repaired and refinished to the condition of adjoining surfaces in a manner suitable to the Owner's Representative.

6.0 OPERATION DURING CONSTRUCTION:

A. The Contractor is responsible for the installation and operation, service and maintenance of all new equipment during construction and prior to acceptance by the Owner of the completed project. Warranty periods shall not commence until final acceptance by the Owner or Owner Representative.

B. The Contractor shall provide, at his own expense, all temporary utilities required to provide for and protect the work and as necessary to maintain an adequate work force.

7.0 SAFETY REGULATIONS:

A. All work shall be performed in compliance with all applicable governing safety regulations, including OSHA regulations. Provide safety lights, guards and signs required.

8.0 HOUSEKEEPING:

A. The Contractor shall be responsible for keeping stocks of material and equipment stored on the premises in a neat and orderly manner.

B. The Contactor shall clean and maintain their specific portions of the work as specified in the General Conditions.

C. The Contractor shall remove from the premises all waste material present as a result of his work.

9.0 CONNECTION AND ALTERATION TO EXISTING SYSTEMS:

A. Connection to the existing building systems must be accomplished under this contract. System "downtime" due to connection shall be kept to an absolute minimum. The Owner's Representative shall judge if at what time, and for what length of time a shut-down can be tolerated.

B. Provide all temporary systems required during construction in order to keep all existing systems functioning.

C. Demolition, cutting and patching to restore surfaces to original condition as necessitated for access to work performed by the Contractor or his subcontractors shall be the responsibility of the Contractor.

10.0 GRAPHIC REPRESENTATION AND JOB CONDITIONS:

A. The Drawings shall serve as working drawings for the general layout of the various items of equipment; are diagrammatic unless specifically dimensioned, and do not necessarily indicate every required item.

B. Architectural and Structural drawings take precedence over all other drawings in the representation of the general construction work; any conflicts shall be resolved prior to commencing work. Failure to do so shall not be considered a basis for the granting of additional compensation.

C. Arrange work in a neat, well organized manner. Coordinate work with other trades involved, prior to commencing work.

11.0 GUARANTEES/WARRANTY:

A. Contractor shall guarantee/warranty all work performed, including labor, materials and equipment furnished under this contract, against defects in materials and workmanship for a period of one year from the date of the Owner's Representative Final Acceptance of the work, or as noted in each section.

12.0 SUBSTITUTIONS:

A. Materials, products and equipment described in the Bidding Documents established a standard of quality to be met by any proposed substitution.

B. Contractor's bids shall be based on the material mentioned or specified, and any proposals for substitution shall be made in wiring to the Architect/Engineer allowing adequate time for appropriate action. The products of other manufacturers may be accepted, if in the opinion of the Owner's Representative, the substitute material is of quality as good or better than the material specified, and will serve with equal efficiency and dependability, the purpose for which the items specified were intended. The burden of proof of equality is upon the proposer.

C. Refer to Division 1 requirements for additional substitution procedures.

D. Wherever substitutions alter the design or space requirements, the Contractor shall be responsible for and include all associated cost items of the revised design and or construction work required by his or other trades affected by the proposed substitution.

13.0 SHOP DRAWINGS AND PRODUCT DATA:

A. The checking of shop drawings is a gratuitous assistance and in no way relieves the Contractor of responsibility for deviations from the Contract Documents.

B. Shop drawings and catalog data on all major items of equipment and apparatus, and such other illustrative materials as may be considered necessary by the Owner's Representative shall be submitted by the Contractor in adequate time to prevent delay and changes during construction.

14.0 OPERATING AND MAINTENANCE BROCHURE:

A. On completion of the project, the Contractor shall provide manuals electronically (PDF format unless otherwise instructed) containing operating, service and lubrication instructions, and parts lists for all major equipment and manufacturer's guaranties or warranties.

15.0 RECORD DRAWINGS:

A. On completion of the project, the Contractor shall provide record drawings electronically in PDF or AutoCAD.dwg format (unless otherwise instructed) with all field changes neatly noted.

16.0 FOUNDATIONS AND SUPPORTS:

A. The Contractor shall provide concrete bases, hangers and foundations for all machinery and equipment specified or shown in this contract, including fans, air conditioning units, pumps, motors, electrical gear, etc., unless specifically noted otherwise.

B. All hangers, brackets, clamps, etc., shall be of standard weight steel. Perforated strap hangers shall not be used in any work. When two (2) or more pipes or conduits are run parallel, or where ducts interfere with the proper location of hangers, they may be supported on trapeze hangers. Other hangers shall be hinged ring malleable iron, by Grinnell or Fee and Mason or approved equal with rods and hanger adjusters for adequate size to carry the loads imposed. All pipes, ductwork and conduit shall be independently supported form each other and from equipment so that no weight is born by equipment.

C. The Contractor shall take all precautions against excessive noise or vibration by isolating the various items of equipment from the building structure. Provide flexible connectors where indicated and at all rotating equipment and for equipment mounted on vibration isolators.

17.0 MOTORS AND CONTROLS:

A. All motors furnished under this specification shall be from a recognized manufacturer and of adequate capacity for the loads involved. All motors shall conform to the standards of manufacturer and performance of the National Electrical Manufacturers Associates as shown in their latest publications.

B. All motors 3/4 hp and above shall be high efficiency. Disconnects and motor starters for equipment shall be furnished by the trade supplying the equipment unless otherwise indicated. Installation shall be by the Electrical Contractor unless integral with equipment. Provide manual or magnetic starters with necessary auxiliary contacts for the specified or required sequence of operation.

C. If no sequence of operation is included, submit a proposed sequence to the Engineer for approval.

D. All temperature controls unless noted otherwise shall be the responsibility of the Mechanical Contractor.

E. All fire alarm devices including duct smoke detector and shut down/interlock wiring shall be the responsibility of the Electrical Contractor.

18.0 EXCAVATION AND BACKFILLING:

A. The Contractor shall do all necessary excavating and backfilling for the installation of associated work. After the pipe has been installed, tested and approved, the trenches shall be backfilled to grade with compacted sand, gravel or AB-3 material or other material as required by local authorities. Compact to 85% density for unpaved areas, 95% density for paved area or under slabs.

B. Roads, alleys, street, sidewalks and utilities damaged during this work shall be restored to the satisfaction of Owner's Representative and authorities having jurisdiction.

C. Where subsidence is measurable or observable at excavation during general project warranty period, remove surface, add backfill material, compact, and replace surface treatment. Restore appearance of surface to match adjacent work.

19.0 SLEEVES AND ESCUTCHEONS:

A. Penetrations thru walls and floors shall be as detailed.

B. Where not otherwise shown, penetrations shall conform to the following:

1. Where pipes or conduits pass through walls, steel pipe or galvanized sheet iron sleeves shall be used.
2. Where pipes or conduits pass thru floors, beams, outside walls, or structural members, cast iron or steel pipe sleeves shall be used.

C. Sleeves through interior non-rated walls, including walls indicated as sound partitions, shall be packed with fiberglass or mineral wool and caulked.

D. Sleeves below grade or in exterior walls shall have lead and oakum or mechanical link seals, Thunder line or acceptable equivalent.

E. Sleeves through fire rated structure shall be fire barrier caulked with putty strip or sheet by 3M, Hilti or acceptable equivalent.

F. Provide steel (dry locations) or brass (damp locations) escutcheons to completely cover pipe penetration hole in floors, walls, or ceilings. Provide pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish for unoccupied areas, brass for exterior.

20.0 PIPING IN ELECTRICAL ROOMS:

A. No piping except specifically noted otherwise will be permitted in electrical rooms. In rooms, where piping is indicated over electrical equipment, a suitable galvanized sheet metal pan or gutter piped to the drainage system shall be provided.

END OF SECTION DIVISION 15 AND 16

SECTION 15100 - HEATING, VENTILATION AND AIR CONDITIONING

1.0 SCOPE:

A. The work included under this contract consists of providing all labor, materials, tools, transportation, services, etc., necessary to complete the installation of the heating, ventilating, and air conditioning systems and other items herein listed and as described in these specifications, as illustrated in the accompanying drawings or as directed by the Architect/Engineer.

2.0 SHEET METAL:

A. Provide ductwork shown with necessary dampers and other duct accessories. Ducts shall be new prime grade galvanized steel sheets constructed per ASHRAE and SMACNA Standards. Duct system(s) installation shall be in accordance with SMACNA Duct Construction Standards Manual and industry standards. Provide round or rectangular duct as indicated.

B. Fabricate for the pressure and SMACNA seal class required by the application.

Leakage class minimum requirements are:

1. Up thru 2" WG pressure - rectangular - Class 24, round - Class 12.

Seal class minimum requirements are:

1. Up thru 2" WG pressure - class A for all duct joints.

Spiral lock seams and gasketed duct joints are exempted from sealant requirements.

Ductwork that is indicated or required to be field painted shall have paint grip finish.

C. Spiral duct shall be factory built of galvanized steel or contractor fabricated, suitable for pressure class required or indicated. Fittings shall have 1.5 times diameter centerline radius. Semco or acceptable equal by McGill Airflow or Lindab.

1. Single wall, 2.0" WG minimum.

D. Flexible duct and accessories shall be UL-181 class 1 compliant, 25/50 smoke and flame plenum rated. Maximum length shall be 5' - 0". Flexible duct shall have ends banded and insulation ends sealed. Attach with duct strap ties. Provide Thermaflex or equivalent flex tie supports. Supply air and return air flexible ducts and boots shall be insulated. Exhaust flexible duct shall not be insulated.

1. Flexible ducts shall be Thermaflex or acceptable equal by ATCO or Flexmaster.

E. Branch take-offs to air terminals shall be high efficiency type.

F. All duct sizes shown are free area size and do not include liner.

G. Duct System(s), including all components such as dampers, turning vanes and takeoffs, etc., shall be fabricated and installed for maximum efficiency and to minimize pressure drops and objectionable sound.

3.0 GRILLES, REGISTERS, INLETS AND OUTLETS:

A. All supply, return and exhaust grilles, registers and diffusers shall be as scheduled on the drawings. Commercial quality - E.H. Price or acceptable equal by Titus, Carnes, Krueger or Nailor. All air distribution devices shall be selected for throw and low noise (25 NC or less) performance characteristics unless otherwise indicated. Provide integral volume damper where duct mounted damper would not be accessible. Ceiling supply diffuser connection shall be made with hard elbow or flex duct with Thermaflex flex flow elbow support.

B. Louvers shall be Greenheck ESD-403, 4" deep AMCA rated extruded aluminum drainable blade with birdscreen, finish as noted on drawings or acceptable equal by Ruskin, Carnes, American Warming and Ventilating, Louvers and Dampers, Nailor.

4.0 DUCTWORK ACCESSORIES:

A. Provide single thickness turning vanes in all supply duct turns.

B. Provide hinged duct access doors for all internal mounted equipment.

C. Provide 45° take-off or conical fittings for all round takeoffs to diffusers. Provide locking quadrant volume damper at take-offs in accessible ceilings, unless shown otherwise. Extractors and scoops are not permitted

D. Duct splits, elbows and reducing fittings shall be fabricated per SMACNA standards. "Ductmate" or acceptable equal flanged and gasketed joint systems are approved.

E. Provide dampers where shown and required. Balance and control dampers shall be opposed blade except air mixing dampers shall be parallel blade. Fire and smoke dampers to have sleeves and retaining angles by manufacturer or as detailed. Dampers shall be by Greenheck or acceptable equal by Ruskin, American Warming & Ventilating, Carnes, Krueger, Nailor.

1. Manual Damper Rectangular:
   Greenheck MBD-15, Galv. Steel formed blade, manual locking quadrant actuator, 4" WG, 2000 fpm.
2. Manual Damper Round:
   Greenheck MBDR-50, Galv. Steel formed blade, manual locking quadrant actuator, 1" WG, 2000 fpm.
3. Fire Dampers (Dynamic - Ducted):
   Greenheck DFD-150, Type B, C, CO, CR, Galv. Steel, 1 ½ hr, UL555.
4. Fire Dampers (Static - Non Ducted):
   Greenheck FD- 150, Type B, C, CO, CR, Galv. Steel, 1 ½ hr, UL555.

5.0 HEATING AND AIR CONDITIONING UNITS:

A. Air conditioning units shall be as scheduled or by acceptable equal. Units shall be standard catalogued products with the appropriate approval or certification by AGA, ARI and UL. Efficiencies shall conform to ASHRAE 90 standards.

B. Air Handling Unit: Provide air handling unit with chilled water coil, heating hot water preheat coil and plenum direct drive fan. Air handling unit shall be per air handling unit schedule on drawings.

C. Fan Coil Unit: Provide fan coil unit with chilled water coil, heating hot water preheat coil and forward curved fan. Fan coil unit shall be per fan coil unit schedule on drawings.

D. Provide units with manufacturer's standard control package. Controls to include factory wired terminals with overload devices and transformers as required. Unit safety control to include high-low pressure switches, fan relays, short cycle safety and internal pressure relief, gas controls with hi limit and anti cycle protection.

E. Provide unit accessories as noted on drawings and as required for a complete operating system.

F. Mount units to provide the required service, access and airflow space.

6.0 FANS:

A. Fans shall be as scheduled with all required accessories. Commercial quality fans shall be AMCA rated by Greenheck or acceptable equal by Cook, Acme, Carnes, Penn Barry.

7.0 FILTERS:

A. Provide filters in air intake to each units A/C system with size and number of filters standard with air unit manufacturer. Provide 2" thick, hi-velocity, throw-a-way MERV 8 filters, Farr 30/30 or acceptable equal by American Air Filter, Airguard, Air Filters, Inc, Purolator. Filters shall be new and clean at time of Owner's acceptance. Supply extra set of filters for each unit.

8.0 VIBRATION ISOLATION:

A. Duct flexible connection shall be Durodyne non-combustible, 22 ounce (minimum) polymer coated woven fabric or acceptable equal. Piping flexible connection shall be Flexonics 401H stainless steel braided hose or Hyspan Series 5500 bellows pump connector or acceptable equals. Provide flexible connections at all motor driven equipment, where shown and where required to hold transmitted noise and vibration to an acceptable minimum at piping and duct connections.

B. Foundations: Provide fabricated supports for all equipment. Mount on 4" concrete housekeeping pads where indicated.

C. Vibration Isolation: All motor driven equipment shall be furnished with isolating mountings. Motors shall be mounted on resilient bases, spring or rubber supports as recommended by the manufacturer. Isolators shall be Amber Booth or acceptable equal by Kinetics, Mason Industries, Vibration Eliminator Co.

9.0 CONTROLS AND LOW VOLTAGE SYSTEMS:

A. Provide control installation to accomplish the indicated or required sequence of operation including thermostats/ sensors, controllers, actuators, wiring, software, graphics and other components as required for a complete operating system.

B. All occupant adjustable devices shall be mounted in accordance with ADA and ADAAG requirements.

C. All cable ties for controls and other cable systems located in plenums utilized for air movement that are not installed in conduit shall be 25/50 flame and smoke rated, Hellermann Tyton T50R2C2UL or equivalent.

10.0 PIPE, FITTINGS AND VALVES:

A. Provide escutcheons at all piping penetrations of finished wall, floor or ceiling construction. Escutcheons shall be chrome plated brass or as noted otherwise.

B. Drain Piping:

1. PVC Pipe - Schedule 40 with solvent cement joints. PVC not permitted in plenums used for supply or return air.
2. Type "L" Copper Pipe -- Provide with wrought copper fittings, 50/50 solder joints.
3. Provide with plugged tee cleanouts unless otherwise accessible for cleaning. Trap all air unit condensate drains with deep traps.

C. Chilled, Heating Hot Water:

1. Piping -- Schedule 40 black steel, malleable iron fittings with threaded, flanged or welded joints for piping 2-1/2" and larger. Drawn- temper copper tubing type L with wrought-copper fittings with 95/5 solder or brazed joints for piping 2" and smaller. At contractor option and subject to Owner approval, Victaulic Mechanical, roll groove, mechanical joint system with EPDM gaskets may be used or Viega MegaPress compression joint and fitting system.
2. Valves.
   a. Service - 1/4 turn, 1/2" - 2", Nibco 585-70 full port brass with chrome plated ball, 2-1/2" - 8", Nibco LD-3010 ductile iron butterfly with nickel plated disc.
   b. Balance- Bell & Gossett circuit setter "RF".
   c. Check - 1/2" - 2",Nibco 413Y, 125 PSIG bronze Y pattern, swing, 2-1/2" - 8", Nibco F918B, 125 PSIG cast iron with bronze trim, swing.
   d. Pump suction/ discharge check- 1" - 2", Mueller, 101 MBP, class 150 bronze guided silent wafer, 2-1/2" - 8" - Mueller 101 MAP, class 125 cast iron guided silent wafer.
3. Provide dielectric fittings at joints of dissimilar metals.

11.0 INSULATION:

A. Line low velocity rectangular supply ductwork and return ducts in ducted systems with mat faced 3 lb. density fiberglass or textile liner with anti-microbial coating. Liner to be 1/2" thick Manville Linacoustic rotary liner for supply ductwork. Liner to be 1" thick Manville Linacoustic rotary liner for return ductwork. Apply with mastic and pins with erosion protection on all exposed edges. Line sheetmetal return air boots with 1" thick 3 lb. density liner.

A. Spiral or snap-lock (round) low pressure duct run-outs to supply grilles, registers, and diffusers shall have 1-1/2" thick, 0.75 lb. Density fiberglass wrap with vapor barrier.

B. Wrap all concealed round low velocity air conditioning supply air ducts with 1-1/2" thick 0.75 lb. density flexible fiberglass ductwork insulation with laminated jacket of bonded aluminum foil and Kraft paper with a glass fiber reinforcing FSK).

C. Condensate drain piping: Insulate interior metallic condensate drain lines with 1/2" thick of Armaflex AP slip on type insulation. Do not split.

D. Hot water piping: Insulate with 1" fiberglass with all service paper jacket with reinforced scrim (ASJ) for pipe sizes up thru 1-1/2", 1-1/2" for pipe sizes 2" and larger.

E. Chilled water piping: Insulate with 1"fiberglass with all service paper jacket with reinforced scrim (ASJ) for all pipe sizes.

F. Provide aluminum jacket for all exterior hydronic piping. Rated to ASTM B 209, 3003 Alloy, H-14 temper.

12.0 CLEANING:

A. Clean air system by operating at least three hours prior to final acceptance with temporary filters. Remove all filters and replace with clean.

B. All cleaning shall be completed prior to test and balance work.

13.0 TESTING AND ADJUSTING:

A. Contractor shall operate and test the air conditioning and ventilation systems and instruct the Owner in its operation. Perform a series of general capacity and operating tests. The tests shall demonstrate the specified capacities of various pieces of equipment.

B. The entire temperature controls systems shall be adjusted and balanced and put in operating condition to cause the equipment to maintain the temperatures in accordance with the intent of these specifications. Operate and test equipment during summer and winter seasonal startup under this contract.

C. Test condensate drain piping by filling with water to the drain pan connection(s) for a period of 2 hours with no observable leaks.

D. Submit the complete test and balance report for review to the Architect/Engineer in triplicate. Test procedure and report shall conform to NEBB standards. The report shall be signed by the responsible individual.

END OF SECTION 15100

GastingerWalker&
Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates
1730 Walnut Street Kansas City, Missouri 64108
1915 Frederick Avenue, St. Joseph, Missouri 64501
7007 College Boulevard Suite 450, Overland Park, Kansas 66211
Phone: 816.221.1411 | Fax: 816.221.1429
LANKFORD | FENDLER + ASSOCIATES, CONSULTING ENGINEERS, INC.

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS.

ISSUED FOR:

Review	22 December 2016
Construction	17 February 2017

Drawn By	DMB
Checked By	BLH

Specifications

MEP100

Project Number: 2015.399

DWG FILE: P:\5400\5416_Mission Hills Country Club Renovation-Mechanical & Plumbing\Drawings\5416MEP100-MEP101.dwg USER: David PLOT DATE/TIME: 2/17/2017-10:07am

SECTION 15200 - PLUMBING

1.0 SCOPE:

A. The work included under this contract consists of providing all labor, materials, tools, transportation, services, etc., necessary to complete the installation and to provide complete working systems of the Plumbing Systems, including hot and cold water, waste and vent, storm drainage, fixtures, equipment and other items described in these Specifications, as illustrated in the accompanying drawings, or as directed by the Architect/Engineer.

B. Extend piping systems as indicated on contract documents or to point of connection as follows:
1. Points of connection within the existing building.

2.0 PIPING, FITTINGS AND VALVES:

A. Domestic cold water underground --
1. Pipes, copper -- type "K", soft temper, wrought copper fittings, silver solder joints, 1/2" through 3".

B. Domestic water, interior, above ground -
1. Pipe, copper tube - type "L" hard temper, wrought or cast copper fittings, Lead free 95/5 or Eagle Hard Silvabrite or "CB" solder or roll grooved mechanical joints, pressure seal joint fittings with EPDM O-ring seals, 2" and Smaller.
2. Valves - Service - 1/4 turn, 1/2" - 2" Nibco 585-66-LF lead free, 600 PSIG, full port, stainless steel ball and stem.
3. Securely anchor, with adequate provisions for expansion and contraction. Grade lines, free of traps, to low point at cut-off and drain valve. Provide valves where indicated on the drawings, where required by code or required for service.
4. Hot and cold supply lines to have manufactured pre-charged piston type water hammer arrestors at each and every fixture or group or battery of fixtures to prevent water hammer, sized as shown or per manufacturers recommendation. An arrestor shall be required at each solenoid actuated quick closing valve. Sioux Chief, JR Smith or equal. Provide access panel where required.

C. Natural Gas --
1. Pipe above ground:
   a. Schedule 40 black steel with threaded or welded fittings.
2. Valves & Connectors:
   a. Iron plug cocks, Nordstrum 142 or 143.
   b. Solenoid, ASCO RED HAT II 8210, brass body stainless steel core, normally closed, directed or reverse acting per application, UL listed for gas service with explosion proof diaphragm actuated operator, voltage as indicated or required.
   c. Regulator, Fisher type S.
   d. Flex Connectors, Flexonics 360.
3. Natural gas piping in return air plenum, where permitted shall be either installed in vented fabricated enclosure; sleeved and vented; or welded or one piece.

D. Sanitary sewer, vent, interior --
1. Pipe -- Cast iron hubless with no-hub mechanical joint; solid wall schedule 40 PVC, ABS with solvent cement joints; vents may be galvanized malleable iron.
2. Plastic piping shall not be allowed in return air plenums.
3. Hub drains, where shown, shall be of material compatible with piping system, 2" minimum size. Hub drains shall be fitted with trap guards. Floor mounted hub drains shall extend 2" above finish floor.
4. All drainage shall be graded per code, with piping 3" and 4" not less than 1/4" per foot unless noted otherwise. Larger piping may be sloped at 1/8" per foot.

E. Sanitary sewer, vent, below grade --
1. Pipe -- Cast iron hubless with no-hub mechanical joint; solid wall schedule 40 PVC, ABS with solvent cement joints.
2. All drainage shall be graded per code, with piping 3" and 4" not less than 1/4" per foot unless noted otherwise. Larger piping may be sloped at 1/8" per foot.

3.0 CLEANOUTS AND TRAP SEALS:

A. Provide cleanout at the base of each stack or riser, at ends of runs greater than 10', each 135 degree aggregate change of direction in horizontal piping, where indicated on the drawings or as required by code. Plugs, extra heavy cast brass, screwed. Scoriated tops in unfinished areas, carpet markets in carpet floors, tile top in tile floors, stainless steel cover in finished walls. Cleanouts same size as pipe up to 4" diameter, 4" cleanouts for larger pipe unless otherwise noted.

B. Where trap primers are not specified provide all floor and hub drains with trap seal with EPDM diaphragm, Rectorseal SS series, Provent Proset or acceptable equal.

4.0 UNIONS:

A. Provide between each item of equipment and its service valve. Copper to ferrous pipe connections shall have isolation coupling or union.

5.0 CROSS- CONNECTIONS AND INTERCONNECTIONS:

A. No plumbing device or piping shall be installed which will provide cross-connection or interconnection between a distributing supply or waste so as to make possible the backflow or back-siphonage of polluted water into the potable water supply system. Where the possibility of back-siphonage exists, water supply to the fixture shall be introduced through a suitable vacuum breaker in non-pressurized systems and a reduced pressure type back-flow preventer in pressurized systems or as otherwise required by the authority having jurisdiction. Installed backflow preventers must be approved through the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research.

6.0 PLUMBING EQUIPMENT:

A. Water heaters, pumps, expansion tanks and other equipment shall be as scheduled or by acceptable equivalent by one of the following:

Water Heaters,Tankless Electric: Rheem, Steibel Eltron, Eemax.

B. Provide accessories including but not limited to operating controls, limit switches, oil sensors, timers, aquastats, energy management system interface, etc. as indicated on drawings and as required for a complete operating system.

C. All cable ties for controls and other cable systems located in plenums utilized for air movement that are not installed in conduit shall be 25/50 flame and smoke rated, Hellermann Tyton T50R2C2UL or equivalent.

7.0 INSULATION:

A. Insulate all hot water, cold water, and hot water recirculating piping above the ground, Owens Corning or acceptable equal.

B. Cold water piping insulation: 1" fiber glass sectional pipe covering with all service vapor barrier paper jacket with reinforced scrim (ASJ).

C. Hot Water piping insulation: 1" fiber glass sectional pipe covering with all service vapor barrier paper jacket with reinforced scrim (ASJ).

D. Seal all joints on cold water insulation to maintain vapor barrier.

E. Insulation shall run continuously thru hangers and supports without interruption.

F. At Contractor's option, use Armstrong AP with 25/50 flame and smoke rating or acceptable equal with equivalent thermal performance.

G. Pipe insulation shall conform to the International Energy Conservation Code.

8.0 PIPE SUPPORTS:

A. Provide adjustable hangers, inserts, brackets, rolls, clamps, guides, flexible connectors, supplementary steel, etc., as required for proper support of all pipe lines. Unistrut may be used for support of multiple pipes. Hangers shall be designed to allow for expansion and contraction of pipe lines and shall be of adequate size to permit covering when required. Provide protective saddles and blocking where supporting insulated piping to prevent crushing insulation. Install building attachment at required locations for proper piping support. Space attachment within maximum piping span length indicated in MSS SP-69.

B. Piping shall be independently supported such that no weight of piping is borne by the equipment.

C. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes, and so that maximum pipe deflections allowed by ANSI B31 are not exceeded.

9.0 TEST AND ADJUSTMENTS:

A. Soil, waste and vent piping:
1. Fill with water to the top of the highest vent line extending through roof, and allow to remain for a period of two hours.

B. Water and gas lines:
1. Water piping shall be tested under 1-1/2 times the operating pressure or 150 PSIG, minimum pressure for a period of 2 hours with no measurable pressure drop.
2. Natural gas lines shall be blown out with compressed air to purge of debris and tested under 150 PSIG. air pressure for a period of two hours with no measurable pressure drop.

C. After successful testing, sterilize water system with an approved solution in accordance with local health officials. Blow out compressed air and natural gas lines with either compressed air or nitrogen.

D. Contractor to submit all test data and other documentation for record.

10.0 MANUFACTURERS:

A. Fixtures, equipment and accessories are specified by manufacturer's numbers as to the type and quality required. Specified manufacturers and approved equal manufacturers are as follows:

FIXTURE, ITEM OR EQUIPMENT	SPECIFIED MANUFACTURER	APPROVED EQUAL MANUFACTURER
Mixing Valves, point of use	Leonard	Delta Zurn Wilkins Watts
Water Fountains and Coolers	Elkay	Halsey-Taylor Haws
Waste Fittings	McGuire	Dearborn Brass ProFlo Jones Stephens Watts
Stops & Supplies	BrassCraft	McGuire ProFlo Watts Jones Stephens
Hydrants	Woodford	J R Smith Josam Zurn
Drains and Drainage Products	J R Smith	Josam Wade Watts Zurn

11.0 FIXTURE BRANCHES:

A. Size as shown on drawings and diagrams, but not less than the following:

	WASTE	VENT	COLD	HOT
1. Drinking Fountain	1-1/2"	1-1/2"	1/2"	----
2. Wall Hydrant/Hose Bibb	----	----3/4"	----	
3. Floor or Equipment Drain	2"	1-1/2"	----	----
4. Floor Sink	3"	2"----	----	
5. Hub Drain	2"	1-1/2"	----	----

Minimum waste or vent size below slab on grade shall be 2".

12.0 PLUMBING FIXTURES:

A. "DF-1" Drinking Fountain, Bi-level Cabinet (ADA Compliant)
Elkay model EZSTL8SC ADA barrier-free Bi-Level cooler, 8.0 G.P.H. (50° F water with 90° F air temperature), front and side push bars, stainless steel cooler top, heavy gauge stainless steel shroud, 120V/1ph/60hz.
Accessories: 17 GA. semi-cast brass p-trap with cleanout, chrome-plated supply and stop, J.R. Smith floor mounted type support with "Pro-Set" uprights.
Note: Mount with lower level spout 35" above finish floor.

B. "S-1" Sink, Single (ADA Compliant)
Elkay LRAD-1918 single compartment self rimming sink, 18 GA, type 304 stainless steel, 6-1/2" deep bowl.
Faucet: Chicago Faucets model 786-GR2E35V317XKAB deck mounted faucet with ceramic operating cartridge, 4" wrist blade handles, rigid/swing gooseneck spout modified with E35VPJKABCP vandal resistant 1.5 gpm aerator.
Accessories: Elkay LK-35 strainer with 1-1/2" tailpiece, 1-1/2" 17 GA. semi-cast brass p-trap with cleanout, chrome-plated risers with loose key angle stops.

C. "FS-1" Sanitary Floor Sink, Medium Capacity
J.R.Smith 3100Y medium duty 8½"x8½" DUCO cast iron body, acid resistant coated interior, aluminum dome strainer, anchor flange, no hub outlet, nickel bronze grate. Provide 3/4 top where drain receives indirect waste.

D. "WH-1" Wall Hydrant, Exposed
Woodford 67 freezeless wall hydrant, chrome plated brass, 3/4" inlet and hose connection, integral ASSE double check backflow preventer, loose key, stem length as required.

END OF SECTION 15200

GastingerWalker&
Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates
1730 Walnut Street Kansas City, Missouri 64108
1915 Frederick Avenue, St. Joseph, Missouri 64501
7007 College Boulevard Suite 450, Overland Park, Kansas 66211
Phone: 816.221.1411 | Fax: 816.221.1429
LANKFORD | FENDLER + ASSOCIATES, CONSULTING ENGINEERS, INC.
COPYRIGHT © 2016 Project No. 5416

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS

ISSUED FOR:

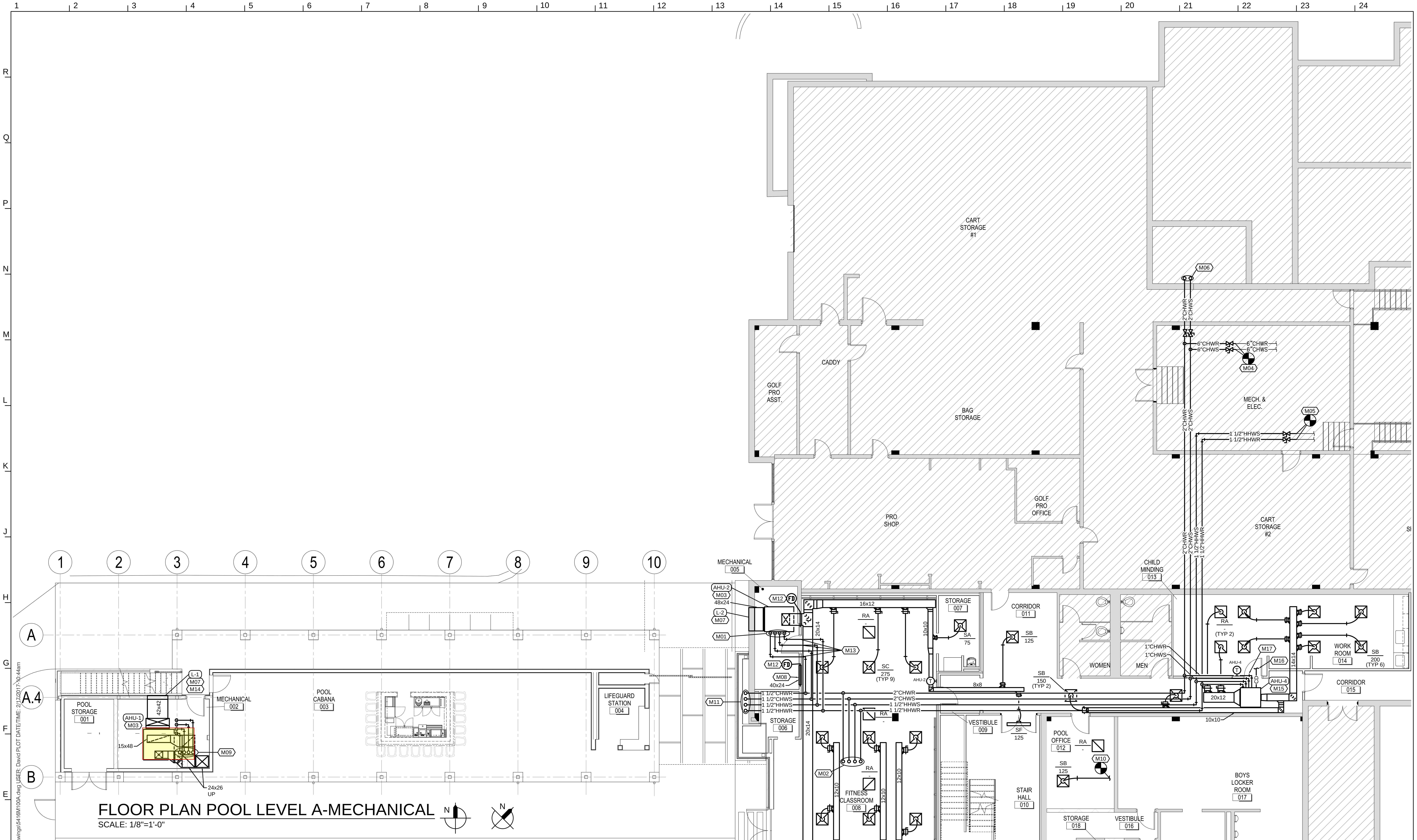
Review	22 December 2016
Construction	17 February 2017

Drawn By DMB
Checked By BLH

Specifications

MEP101

Project Number: 2015.399



FLOOR PLAN POOL LEVEL A-MECHANICAL

SCALE: 1/8"=1'-0"

PROJECT NORTH

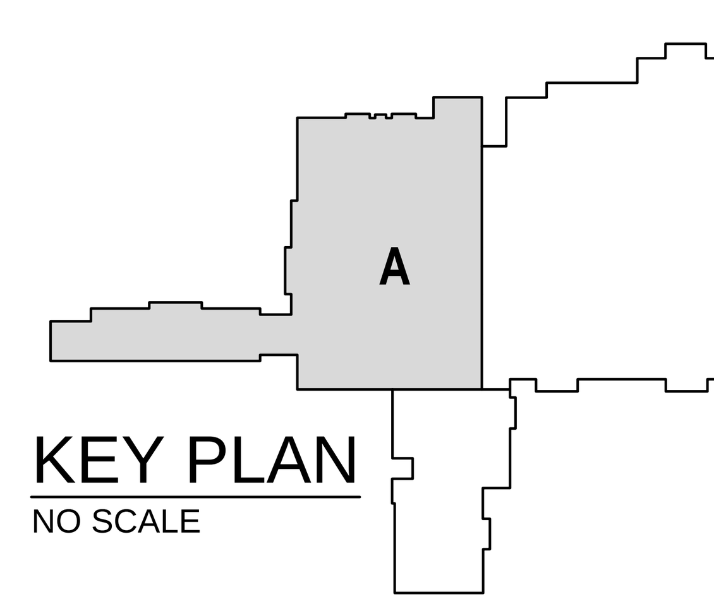
TRUE NORTH

FLOOR PLAN NOTES

1. 1 1/4"CHWS, 1 1/4"CHWR, 1 1/4"HHWS, AND 1 1/4"HHWR TO AHU-2.
2. 1"CHWS, 1"CHWR, 1"HHWS, AND 1"HHWR UP TO AHU-3. FIRE CAULK PIPING PENETRATIONS AT FLOOR.
3. PROVIDE AIR HANDLING UNIT MOUNTED ON 4" HOUSEKEEPING PAD PROVIDED BY OTHERS, INSTALL AIR HANDLING UNIT PER MANUFACTURER RECOMMENDATIONS. PROVIDE FLEXIBLE CONNECTORS ON ALL DUCTWORK CONNECTIONS. INSTALL PER DETAIL. PROVIDE CONDENSATE TRAP PER DETAIL. ROUTE 1" CONDENSATE PIPING TO FLOOR DRAIN BY OTHERS. PROVIDE CONNECTIONS TO CHILLED AND HOT WATER PIPING. PROVIDE PROGRAMMABLE 7-DAY COMPATIBLE THERMOSTAT.
4. EXTEND NEW CHILLED WATER SUPPLY AND RETURN PIPING TO EXISTING PIPING. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING PIPING PRIOR TO CONSTRUCTION. MODIFY EXISTING PIPING AS REQUIRED FOR CONNECTIONS.
5. EXTEND NEW HEATING HOT WATER SUPPLY AND RETURN PIPING TO EXISTING PIPING. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING PIPING PRIOR TO CONSTRUCTION. MODIFY EXISTING PIPING AS REQUIRED FOR CONNECTIONS.
6. 2" CHWS & 2" CHWR UP TO MECHANICAL AREAWAY. COORDINATE FINAL LOCATION OF PIPING PENETRATIONS WITH OTHER TRADES AS REQUIRED. FIRE CAULK PIPING PENETRATIONS AT FLOOR.
7. PROVIDE LOUVER INSTALLED PER MANUFACTURER RECOMMENDATIONS. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES AS REQUIRED. INSTALL PER DETAIL.
8. PROVIDE RETURN AIR OPENING ABOVE CEILING SIZED AS INDICATED.
9. 1 1/2"CHWR, 1 1/2"CHWS, 1 1/2"HHWS, AND 1 1/2"HHWR DOWN FROM FLOOR ABOVE TO AHU-1. FIRE CAULK PIPING PENETRATIONS AT FLOOR.
10. CONNECT INTO EXISTING 8" ROUND DUCTWORK. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING DUCTWORK PRIOR TO CONSTRUCTION, MODIFY EXISTING DUCTWORK AS REQUIRED.
11. 1 1/2"CHWR, 1 1/2"CHWS, 1 1/2"HHWS, AND 1 1/2"HHWR UP TO FLOOR ABOVE. FIRE CAULK PIPING PENETRATIONS AT FLOOR.
12. PROVIDE VERTICAL FIRE DAMPER INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
13. FIRE CAULK ALL PIPING PENETRATIONS.
14. CENTER LOUVER HORIZONTALLY IN PRECAST PANEL. COORDINATE TOP OF LOUVER HEIGHT WITH STRUCTURE.
15. PROVIDE AIR HANDLING UNIT SUSPENDED FROM STRUCTURE UTILIZING ALL THREAD RODS INSTALLED PER MANUFACTURER RECOMMENDATIONS, MOUNT ON RUBBER VIBRATION ISOLATORS.

PROVIDE FLEXIBLE CONNECTORS ON ALL DUCTWORK CONNECTIONS. PROVIDE 1" SLOT FOR FILTER.

16. ROUTE CONDENSATE PIPING TO EXISTING FLOOR DRAIN, CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING FLOOR DRAIN PRIOR TO CONSTRUCTION.
17. PROVIDE FRAMED OPENING IN WALL ADJACENT TO AIR HANDLING UNIT SIZED AS REQUIRED TO PROVIDE ACCESS FOR MAINTENANCE OF AIR HANDLING UNIT. COORDINATE OPENING DIMENSIONS AND LOCATION WITH OTHER TRADES AS REQUIRED



KEY PLAN

NO SCALE

GastingerWalker&

Architects | Interior Designers | Construction Managers

817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS.

ISSUED FOR:

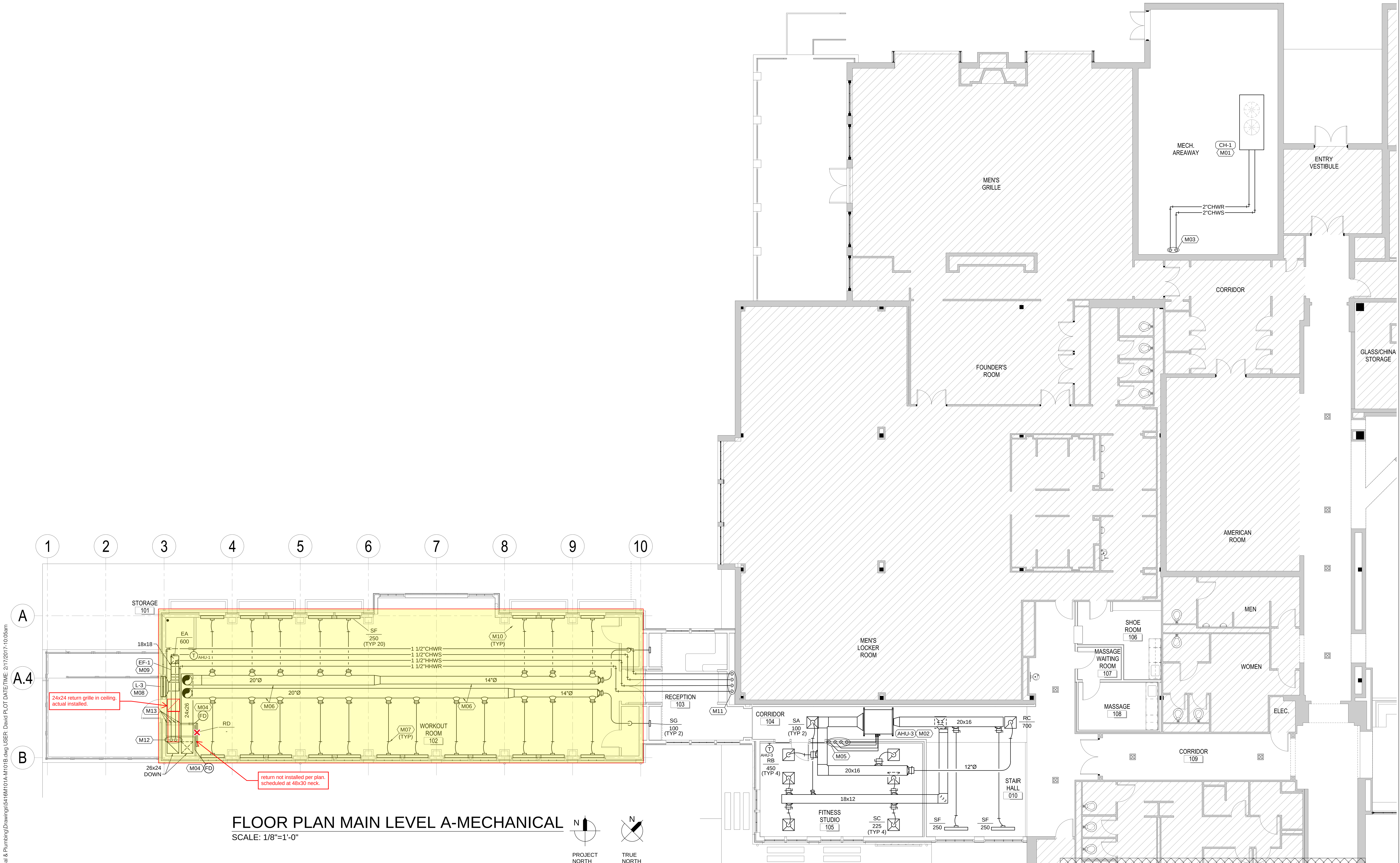
Review	22 December 2016
Construction	17 February 2017

Drawn By DMB
Checked By BLH

Floor Plan Pool Level A - Mechanical

M100A

Project Number: 2015.399



FLOOR PLAN MAIN LEVEL A-MECHANICAL

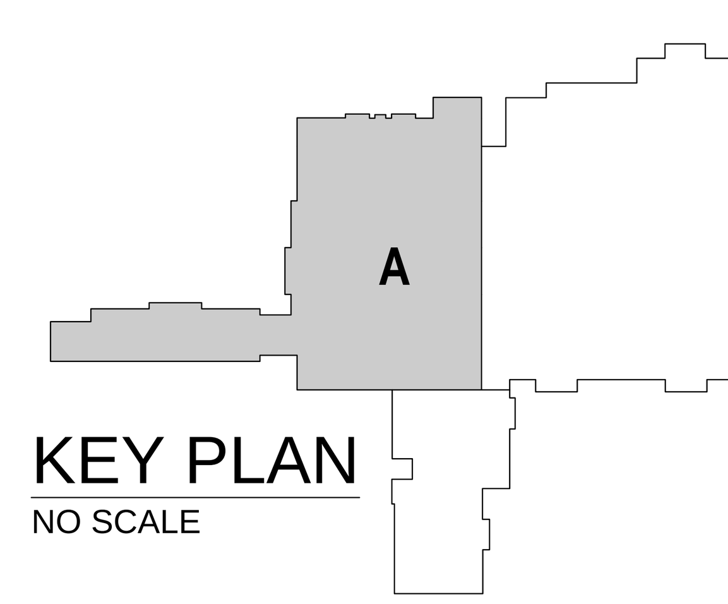
SCALE: 1/8"=1'-0"

PROJECT NORTH

TRUE NORTH

M## FLOOR PLAN NOTES

1. PROVIDE AIR COOLED CHILLER INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. INSTALL ON 4" CONCRETE HOUSEKEEPING PAD PROVIDED BY OTHERS.
2. PROVIDE AIR HANDLING UNIT SUSPENDED FROM STRUCTURE UTILIZING ALL THREAD RODS INSTALLED PER MANUFACTURER RECOMMENDATIONS, MOUNT ON RUBBER VIBRATION ISOLATORS. PROVIDE FLEXIBLE CONNECTORS ON ALL DUCTWORK CONNECTIONS. PROVIDE 1" SLOT FOR FILTER. ROUTE 1" CONDENSATE OVER AND DOWN NEAR HYDRONIC PIPE FLOOR PENETRATIONS AND TO FLOOR DRAIN ON LOWER LEVEL, CONTRACTOR TO FIELD VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION.
3. 2" CHWS & 2" CHWR DOWN, COORDINATE FINAL LOCATION WITH OTHER TRADES AS REQUIRED.
4. PROVIDE VERTICAL FIRE DAMPER INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND PER DETAIL.
5. 1" CHWS, 1" CHWR, 1" HHWS & 1" HHWR DOWN TO FLOOR BELOW. COORDINATE FINAL LOCATION WITH OTHER TRADES AS REQUIRED. FIRE CAULK PIPING PENETRATIONS AT FLOOR
6. DUCTWORK ROUTED ABOVE CEILING.
7. FLEXIBLE DUCTWORK DOWN TO CUSTOM PLENUM, COORDINATE WITH ARCHITECT AS REQUIRED.
8. PROVIDE LOUVER INSTALLED PER MANUFACTURER RECOMMENDATIONS. COORDINATE FINAL LOCATION WITH ARCHITECT AND OTHER TRADES AS REQUIRED. LOUVER TO FIT BETWEEN VERTICAL TRIM ON EXTERIOR OF BUILDING, COORDINATE WITH ARCH.
9. PROVIDE INLINE EXHAUST FAN INSTALLED ON RUBBER VIBRATION ISOLATORS SUSPENDED FROM STRUCTURE UTILIZING ALL THREAD RODS.
10. PROVIDE BLANK OFFS FOR CONTINUOUS APPEARANCE OF SLOT PLENUM. COORDINATE WITH OTHER TRADES AS REQUIRED.
11. 1 1/2"CHWS, 1 1/2"CHWR, 1 1/2"HHWS, AND 1 1/2"HHWR UP FROM FLOOR BELOW. FIRE CAULK PIPING PENETRATIONS AT FLOOR.
12. 1 1/2"CHWR, 1 1/2"CHWS, 1 1/2"HHWS, AND 1 1/2"HHWR UP TO FLOOR ABOVE. FIRE CAULK PIPING PENETRATIONS AT FLOOR.
13. FIRE CAULK ALL PIPING PENETRATIONS.



KEY PLAN
NO SCALE

DWG FILE: P:\5400\5416_Mission Hills Country Club Renovation-Mechanical & Plumbing\Drawings\5416M101A-M101B.dwg USER: David PLOT DATE/TIME: 2/17/2017-10:05am

GastingerWalker&

Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS

ISSUED FOR:

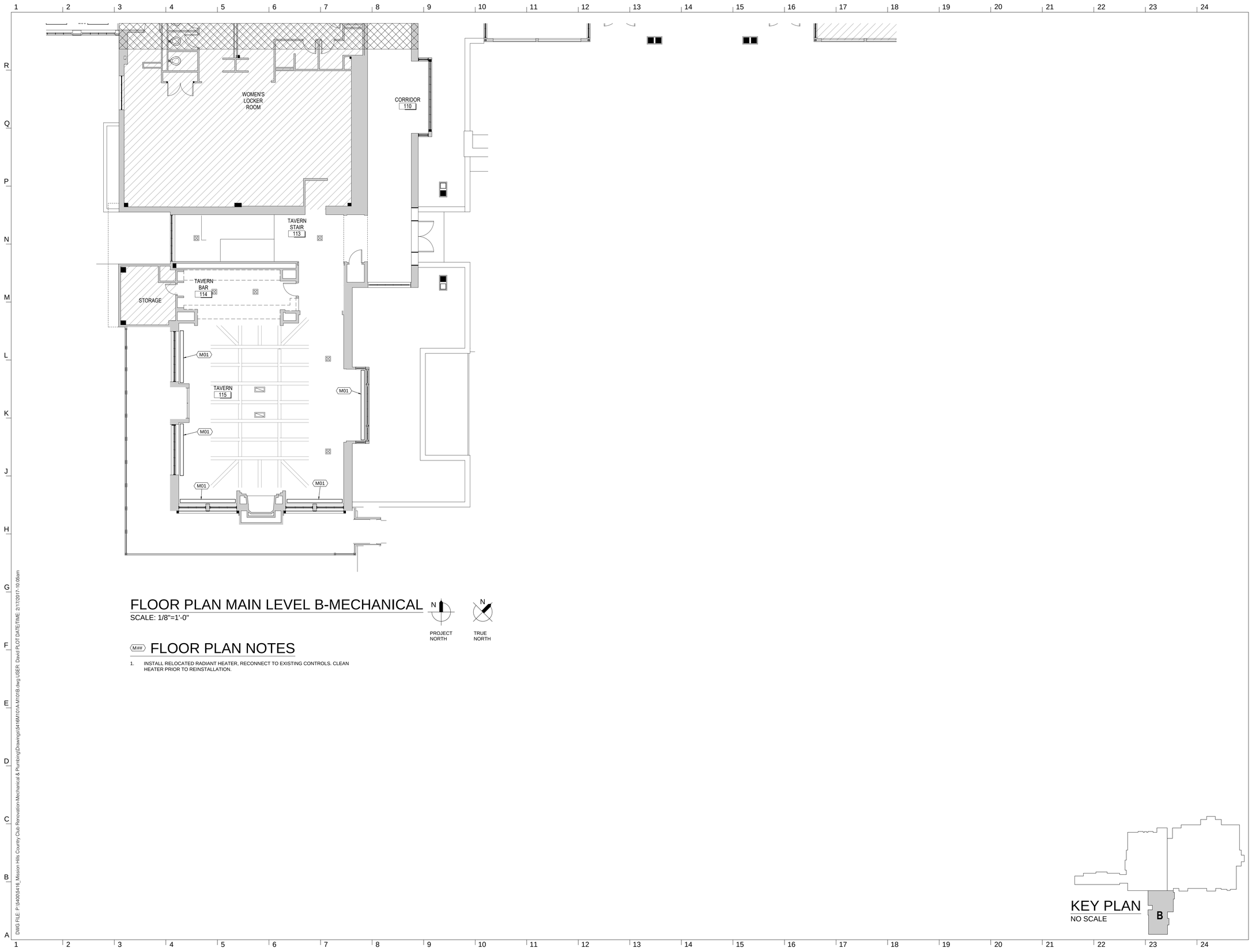
Review	22 December 2016
Construction	17 February 2017

Drawn By	DMB
Checked By	BLH

Floor Plan Main Level A - Mechanical

M101A

Project Number: 2015.399



FLOOR PLAN MAIN LEVEL B-MECHANICAL

SCALE: 1/8"=1'-0"

PROJECT NORTH

TRUE NORTH

M## FLOOR PLAN NOTES

1. INSTALL RELOCATED RADIANT HEATER, RECONNECT TO EXISTING CONTROLS. CLEAN HEATER PRIOR TO REINSTALLATION.

DWG FILE: P:\5400\5416_Mission Hills Country Club Renovation-Mechanical & Plumbing\Drawings\5416M101A-M101B.dwg USER: David PLOT DATE/TIME: 2/17/2017-10:05am

GastingerWalker &

Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates
7701 College Boulevard Suite 490, Overland Park, Kansas 66211
Phone: 816.221.1411 | Fax: 816.221.1429
LANKFORD | FENDLER + ASSOCIATES, CONSULTING ENGINEERS, INC.

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS

ISSUED FOR:

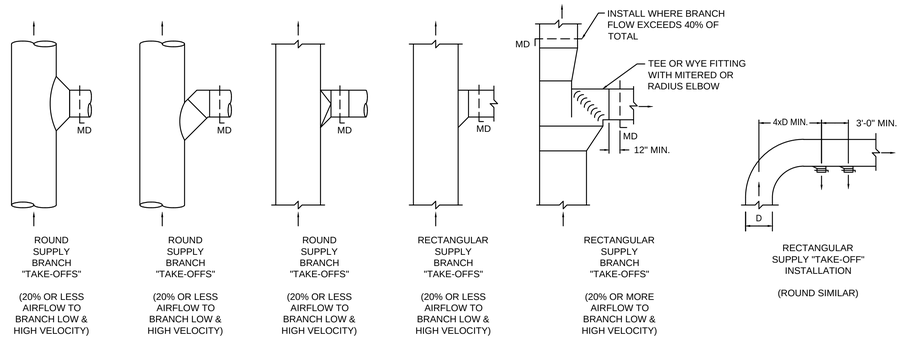
Review	22 December 2016
Construction	17 February 2017

Drawn By DMB
Checked By BLH

Floor Plan Main Level B - Mechanical

M101B

Project Number: 2015.399



ROUND SUPPLY BRANCH "TAKE-OFFS" (20% OR LESS AIRFLOW TO BRANCH LOW & HIGH VELOCITY)

ROUND SUPPLY BRANCH "TAKE-OFFS" (20% OR LESS AIRFLOW TO BRANCH LOW & HIGH VELOCITY)

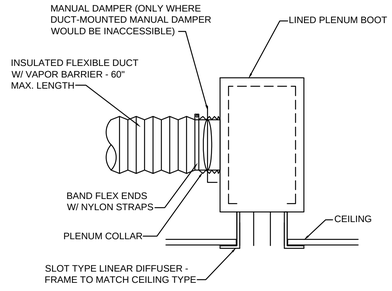
ROUND SUPPLY BRANCH "TAKE-OFFS" (20% OR LESS AIRFLOW TO BRANCH LOW & HIGH VELOCITY)

RECTANGULAR SUPPLY BRANCH "TAKE-OFFS" (20% OR LESS AIRFLOW TO BRANCH LOW & HIGH VELOCITY)

RECTANGULAR SUPPLY BRANCH "TAKE-OFFS" (20% OR MORE AIRFLOW TO BRANCH LOW & HIGH VELOCITY)

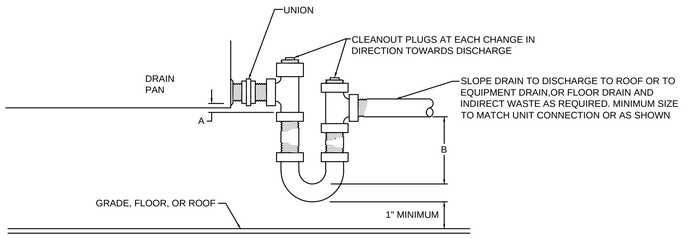
RECTANGULAR SUPPLY "TAKE-OFF" INSTALLATION (ROUND SIMILAR)

1 DUCT STANDARDS
NO SCALE



2 LINEAR DIFFUSER DETAIL
NO SCALE

03-06-2015

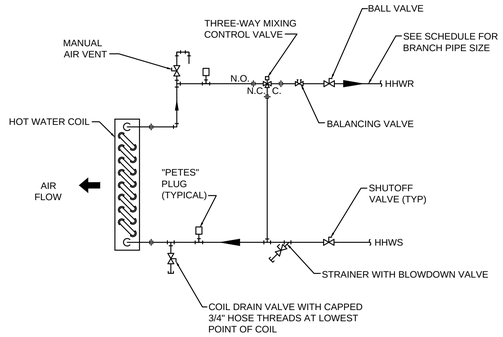


DIM. 'A'	DIM. 'A'	DIM. 'B'
BLOW THRU COIL	1"	FAN DISCHARGE STATIC PRESSURE + 1"
DRAW THRU COIL	FAN SUCTION STATIC PRESSURE + 1"	2-1/2"

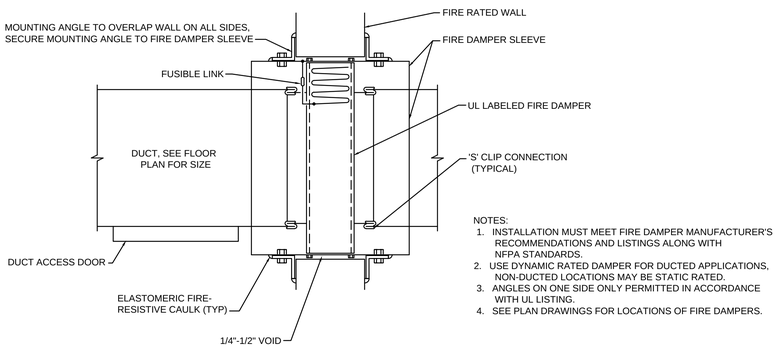
NOTE: MINIMUM 'A' OR 'B' DIMENSION SHALL BE NOT LESS THAN 1".

3 HVAC CONDENSATE TRAP DETAIL
NO SCALE

NOTES:
1. PROVIDE DIELECTRIC UNIONS OR FLANGES WHERE PIPING AND APPENDAGE MATERIALS DIFFER
2. INSTALL CONTROL VALVE BETWEEN UNIONS OR FLANGES AS REQUIRED
3. INSTALL CONCENTRIC REDUCERS BOTH SIDES OF CONTROL AND BALANCE VALVE IF REQUIRED AS SHOWN
4. NORMALLY USE MANUAL AIR VENT; AUTOMATIC VENT ACCEPTABLE ONLY WITH BLADDER COMPRESSION TANK
5. WHEN TAPPED INTO TOP OF MAINS, AIR VENT REQUIRED
6. ARRANGEMENT SHOWN FOR HOT WATER COIL WITH FULL FLOW THROUGH COIL ON FAILURE

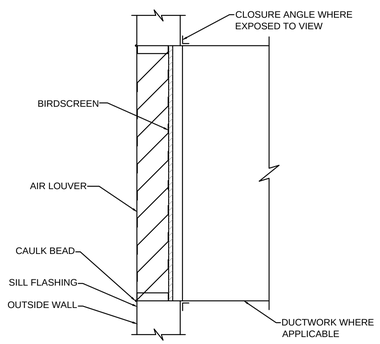


4 3-WAY HOT WATER COIL PIPING DETAIL
NO SCALE



NOTES:
1. INSTALLATION MUST MEET FIRE DAMPER MANUFACTURER'S RECOMMENDATIONS AND LISTINGS ALONG WITH NFPA STANDARDS.
2. USE DYNAMIC RATED DAMPER FOR DUCTED APPLICATIONS, NON-DUCTED LOCATIONS MAY BE STATIC RATED.
3. ANGLES ON ONE SIDE ONLY PERMITTED IN ACCORDANCE WITH UL LISTING.
4. SEE PLAN DRAWINGS FOR LOCATIONS OF FIRE DAMPERS.

5 FIRE DAMPER DETAIL
NO SCALE



6 LOUVER DETAIL
NO SCALE

GastingerWalker &
Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS

ISSUED FOR:

Review	22 December 2016
Construction	17 February 2017

Drawn By: DMB
Checked By: BLH

Mechanical Details

M200

Project Number: 2015.399

AIR HANDLING UNIT SCHEDULE

MARK NO.	MANUFACTURER	MODEL	ARRANGEMENT	AIRFLOW CFM	MIN O.A. CFM	FAN TYPE	FAN SIZE	FAN RPM	EXT. S.P. (IN W.G.)	TOTAL S.P. (IN W.G.)	COOLING COIL E.D.B. (°F)	E.W.B. (°F)	L.D.B. (°F)	L.W.B. (°F)	GPM	E.W.T. (°F)	L.W.T. (°F)	W.P.D. (FT.)	TOTAL MBH	SENS. MBH	HEATING COIL E.D.B. (°F)	L.D.B. (°F)	GPM	E.W.T. (°F)	L.W.T. (°F)	W.P.D. (FT.)	TOTAL MBH	ELECTRICAL VOLT	Ø	HZ	NOTES
AHU-1	TRANE	UCCAD10	VERTICAL	5000	1000	FC	5.0	1350.0	1.3	2.8	80	67.0	57.3	56.6	33	44	54	4.7	164.2	125.5	60	99.6	21.5	180	160	2.9	214.6	208	3	60	1
AHU-2	TRANE	UCCAD08	VERTICAL	3400	680	FC	5.0	1600.0	1.5	3	80	67.0	58.4	57.9	20	44	54	1.7	99.2	80.8	60	93.2	18	180	160	1.9	180.1	208	3	60	1
AHU-3	TRANE	UCCAA06	HORIZONTAL	3000	600	FC	3.0	1500.0	1.5	3.2	80	67.0	59.7	58.9	16	44	54	1.2	77.6	67.2	60	94.4	13	180	160	1.3	126.7	208	3	60	1
AHU-4	TRANE	BCVD054	HORIZONTAL	1500	150	FC	0.5	880.0	0.5	1	80	67.0	58.5	57.9	8.6	44	54	1.1	43.2	35.5	60	103	7.5	180	160	0.7	71.2	480	3	60	-

NOTES: 1. PROVIDE FACTORY MOUNTED VARIABLE FREQUENCY DRIVE.

FAN SCHEDULE

MARK NO.	MANUFACTURER	SERVES	MODEL	TYPE	AIRFLOW (CFM)	S.P. (IN W.G.)	RPM	NOISE (SONES)	DRIVE	WEIGHT (LBS.)	ELECTRICAL VOLT	Ø	HZ	HP/ WATTS	NOTES
EF-1	COOK	FITNESS ROOM	100SQN12D	INLINE	600	0.3	1500	5.9	DIRECT	100	120	1	60	1/6	1

NOTES: 1. PROVIDE WITH DISCONNECT SWITCH, SPEED CONTROLLER AND BACK DRAFT DAMPER.

AIR COOLED CHILLER SCHEDULE

MARK NO.	MANUFACTURER	MODEL	TOTAL (TONS)	E.W.T. (°F)	L.W.T. (°F)	W.P.D. (FT.)	GPM	AMB. (°F)	SAT. SUCTION TEMP (°F)	STAGES	EER	ELECTRICAL VOLT	Ø	HZ	NOTES
CH-1	TRANE	CGAM026A2	26.0	54.0	44.0	15.3	60.0	95	126	2	9.80	208	3	60	1

NOTES: 1. PROVIDE WITH FACTORY MOUNTED DISCONNECT.

LOUVER SCHEDULE

MARK NO.	MANUFACTURER	MODEL	AIRFLOW (CFM)	WIDTH (IN.)	HEIGHT (IN.)	FREE AREA (FT.)	MAXIMUM S.P. DROP	NOTES
L-1	GREENHECK	ESD-403	5000	42	42	6.09	0.08	1,2,3
L-2	GREENHECK	ESD-403	3400	48	24	3.78	0.08	1,2,3
L-3	GREENHECK	ESD-403	600	42	12	1.95	0.08	1,2,3

NOTES: 1. PROVIDE WITH BIRDSCREEN.
2 COORDINATE LOUVER SIZE AND JAMB WITH ARCHITECT. CONTRACTOR TO VERIFY SIZE OF OPENINGS AND FIELD MEASURE PRIOR TO ORDERING LOUVERS.
3 COLOR AND FINISH TO BE SELECTED BY ARCHITECT.

DIFFUSER SCHEDULE

MARK NO.	MANUFACTURER	MODEL	FACE SIZE (IN.)	NECK SIZE (IN.)	FRAME TYPE*	FINISH	NOTES
SA	PRICE	SCD	24x24	6"Ø	SURFACE	WHITE	-
SB	PRICE	SCD	24x24	8"Ø	LAY-IN	WHITE	-
SC	PRICE	SCD	24x24	10"Ø	LAY-IN	WHITE	-
SD	PRICE	SCD	24x24	8"Ø	SURFACE	WHITE	-
SE	PRICE	SCD	24x24	10"Ø	SURFACE	WHITE	-
SF	PRICE	TBD3100	48x4	10"Ø	SURFACE	WHITE	2
SG	PRICE	520	8x8	6x6	SURFACE	WHITE	1
RA	PRICE	PDDR	24x24	22x22	LAY-IN	WHITE	-
RB	PRICE	PDDR	24x24	14"Ø	LAY-IN	WHITE	-
RC	PRICE	PDDR	24x24	16"Ø	SURFACE	WHITE	-
RD	PRICE	60	50x32	48x30	SURFACE	WHITE	-
EA	PRICE	60	18x16	16x14	SURFACE	WHITE	1

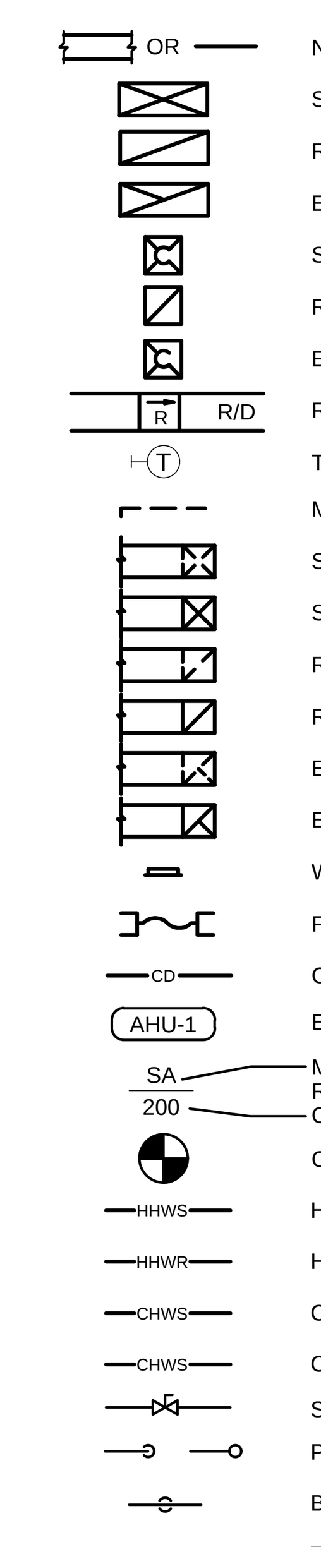
NOTES: 1. PROVIDE WITH OPPOSED BLADE DAMPERS.
2. SLOT DIFFUSER WITH CUSTOM PLENUM, COORDINATE WITH OTHER TRADES.

*CONTRACTOR SHALL VERIFY CEILING TYPE PRIOR TO ORDERING DIFFUSERS.

GENERAL NOTES (TYPICAL ALL SHEETS)

- MECHANICAL CONTRACTOR IS RESPONSIBLE TO SEE THAT WORK MEETS AND IS IN ACCORDANCE WITH ALL REQUIREMENTS OF FEDERAL, STATE, AND LOCAL LAWS AND CODES AND/OR REQUIREMENTS, INCLUDING HEALTH CODES AND BUILDING OWNER.
- ALL EXISTING DUCTWORK SHOWN ON DRAWINGS IS SCHEMATIC AND IS BASED ON EXISTING RECORD DRAWINGS PROVIDED BY THE OWNER AND DO NOT REFLECT EXACT EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXACT DEPTH AND/OR LOCATIONS ON JOB SITE. CONTRACTOR SHALL REROUTE NEW WORK TO ACCOMMODATE EXACT LOCATIONS OF EXISTING UTILITIES, STUBOUTS AND/OR CONNECTIONS.
- CUTTING AND PATCHING OF FLOORS, WALLS, CEILING, ETC., REQUIRED IN STRICT ACCORDANCE WITH THE RULES AND REGULATIONS OF THE ARCHITECT'S AND/OR BUILDING OWNER REQUIREMENTS.
- COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION TO AVOID ROUTING CONFLICTS.
- ANY MATERIAL REMOVED THAT OWNER DOES NOT WISH TO RETAIN SHALL BE REMOVED FROM PROJECT SITE AND DISPOSED OF BY CONTRACTOR.
- MECHANICAL CONTRACTOR SHALL AIR BALANCE ALL GRILLES TO CFM'S SHOWN ON PLANS.
- ALL THERMOSTATS SHALL BE MOUNTED TO MATCH BUILDING STANDARDS UNLESS OTHERWISE NOTED. COORDINATE FINAL LOCATION OF THERMOSTATS AND LIGHT SWITCHES WITH ELECTRICIAN, ALIGN ALL WALL MOUNTED DEVICES.
- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND RETAINING ALL TEMPERATURE CONTROLS FROM EXISTING FAN POWERED BOXES AND VAV BOXES FOR REINSTALLATION UNDER NEW WORK. UPON REINSTALLATION, CONTRACTOR SHALL VERIFY PROPER OPERATION AND NOTIFY THE OWNER'S REPRESENTATIVE IN WRITING IF PROBLEMS ARE FOUND.
- ALL DUCTWORK, DIFFUSERS, TERMINAL UNITS, ETC. ARE EXISTING TO REMAIN, UNLESS NOTED OTHERWISE.
- INSTALL ELASTOMERIC JOINT SEALER AROUND ALL DUCTS, PIPES, ETC. PASSING THRU INTERIOR NON-RATED CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS. FOR FIRE RATED INTERIOR CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS SEAL ALL DUCTS, PIPES, ETC. INSTALL FIRESTOP MATERIALS IN ALL GAPS PRIOR TO SEALANT APPLICATION. INSTALL SEALER ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
- MECHANICAL CONTRACTOR SHALL BID AND SCHEDULE ALL CORE DRILLING AND HAMMER DRILLING FOR AFTER BUSINESS HOURS.
- MECHANICAL CONTRACTOR SHALL SCAN FLOOR UTILIZING GROUND PENETRATING RADAR PRIOR TO ANY CORE DRILLING OR SAW CUTTING OF SLAB AND SHALL VERIFY PLACEMENT WITH BUILDING OWNER'S REPRESENTATIVE PRIOR TO DRILLING.
- MECHANICAL CONTRACTOR SHALL COORDINATE ALL TEMPERATURE CONTROL WORK WITH BUILDING OWNER. BUILDING SYSTEM SHALL REMAIN OPERATIONAL AT ALL TIMES.
- ALL CABLE TIES FOR LOW VOLTAGE SYSTEMS LOCATED IN PLENUMS UTILIZED FOR AIR MOVEMENT THAT ARE NOT INSTALLED IN CONDUIT SHALL BE 25/50 FLAME AND SMOKE RATED, HELLERMANN TYTON T50R2C2UL OR EQUIVALENT.

MECHANICAL SYMBOLS



NEW DUCTWORK
SUPPLY DUCT
RETURN DUCT
EXHAUST DUCT
SUPPLY DIFFUSER
RETURN GRILLE
EXHAUST GRILLE
RISE OR DROP IN DUCT
THERMOSTAT
MANUAL VOLUME DAMPER
SUPPLY DUCT DOWN
SUPPLY DUCT UP
RETURN DUCT DOWN
RETURN DUCT UP
EXHAUST DUCT DOWN
EXHAUST DUCT UP
WALL MOUNTED DIFFUSER/GRILLE
FLEXIBLE DUCT CONNECTION
CONDENSATE DRAIN
EQUIPMENT TYPE AND DESIGNATION
MARK NO. SUPPLY (S_), RETURN (R_), EXHAUST (E_)
CFM
CONNECT TO EXISTING
HEATING HOT WATER SUPPLY
HEATING HOT WATER RETURN
CHILLED WATER SUPPLY
CHILLED WATER RETURN
SHUT OFF VALVE
PIPE DROP/PIPE RISE
BOTTOM OUTLET TEE
TOP OUTLET TEE

GastingerWalker&
Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates
1730 Walnut Street Kansas City, Missouri 64108
1915 Frederick Avenue, St. Joseph, Missouri 64501
7007 College Boulevard Suite 450, Overland Park, Kansas 66211
Phone: 816.221.1411 | Fax: 816.221.1429
LANKFORD | FENDLER + ASSOCIATES, CONSULTING ENGINEERS, INC.

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS.

ISSUED FOR:

Review	22 December 2016
Construction	17 February 2017

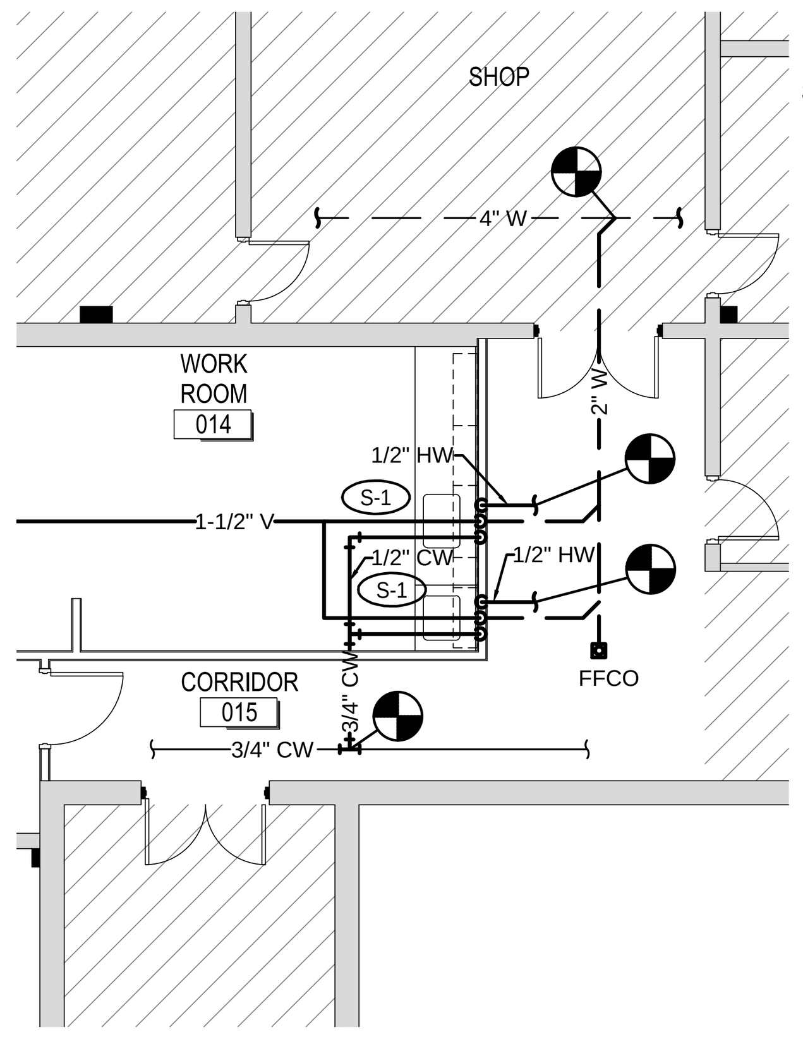
Drawn By DMB
Checked By BLH

Mechanical Schedules, Notes, and Symbols

M201

Project Number: 2015.399

DWG FILE: P:\5400\5416_Mission Hills Country Club Renovation-Mechanical & Plumbing\Drawings\5416M200-M201.dwg USER: David PLOT DATE/TIME: 2/17/2017-10:16am

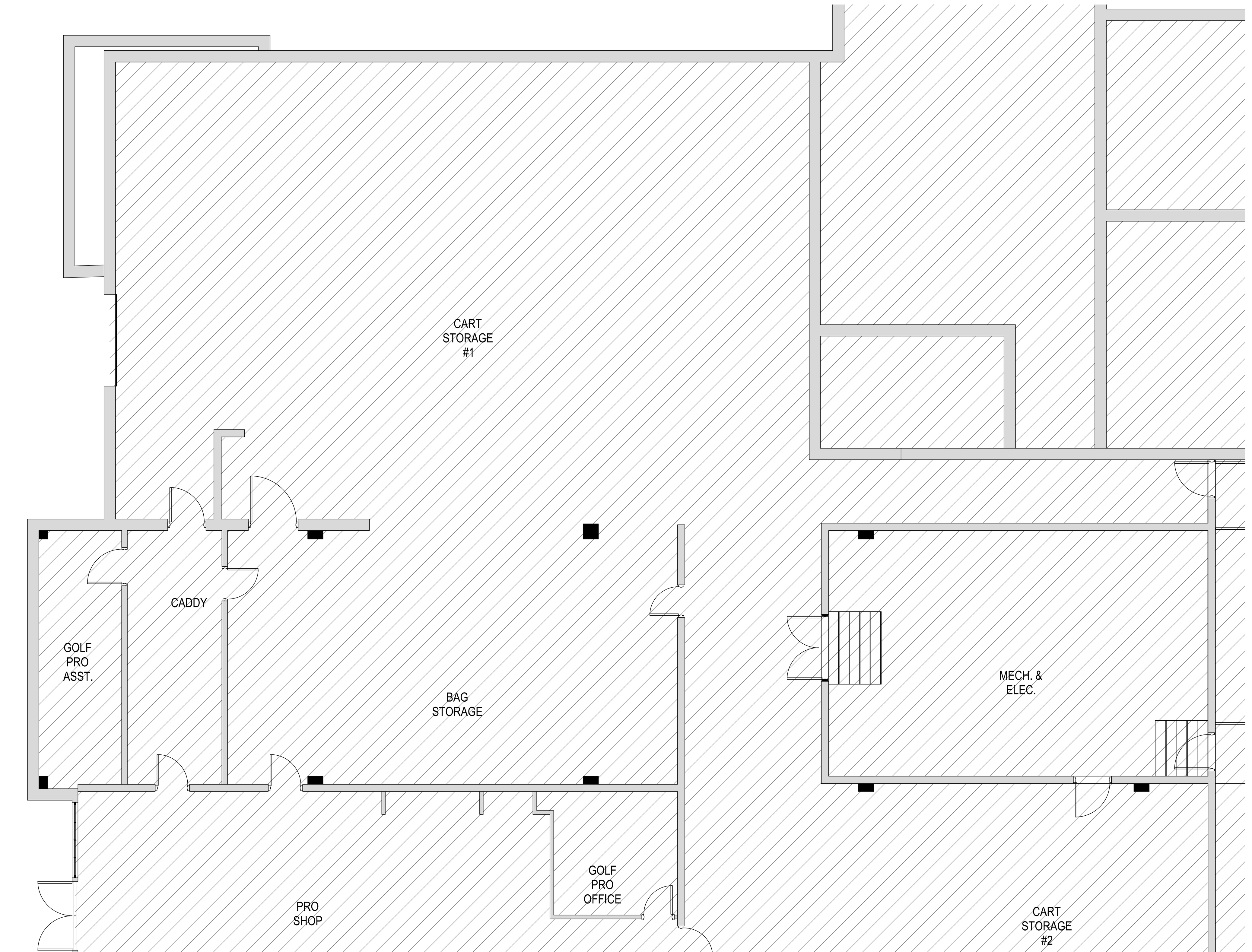
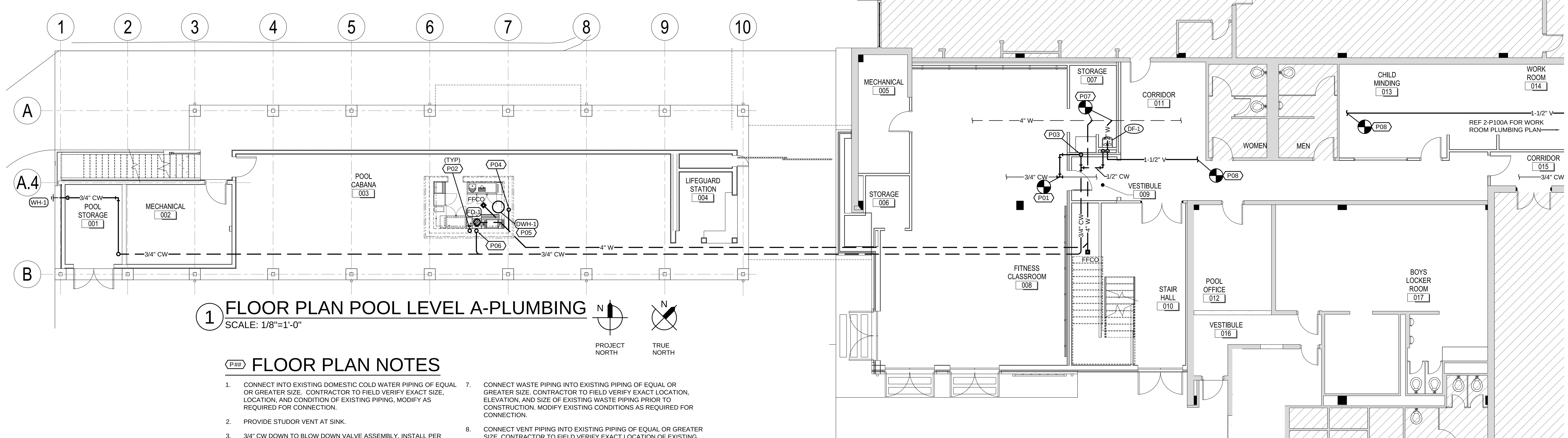


2 FLOOR PLAN-WORK ROOM

SCALE: 1/8"=1'-0"

N PROJECT

N TRUE

1 FLOOR PLAN POOL LEVEL A-PLUMBING

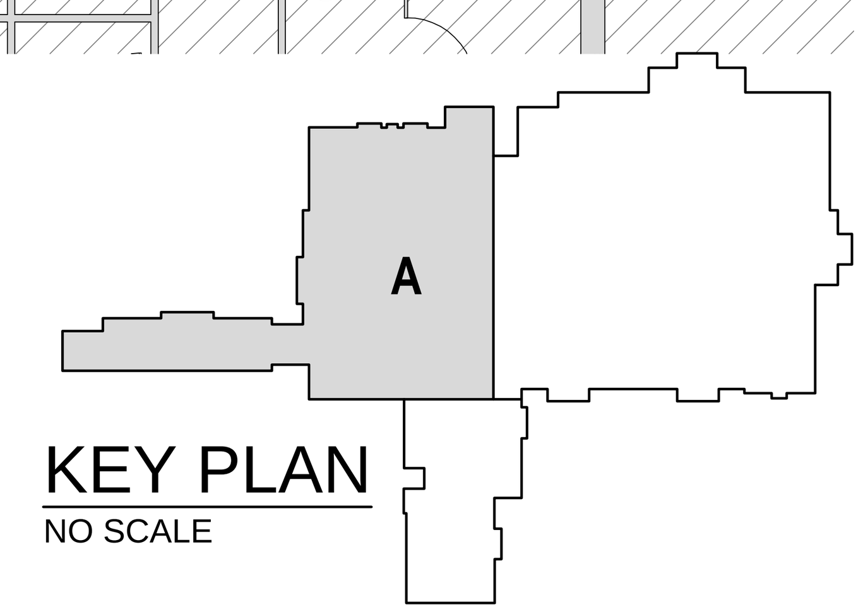
SCALE: 1/8"=1'-0"

N PROJECT NORTH

N TRUE NORTH

P## FLOOR PLAN NOTES

1. CONNECT INTO EXISTING DOMESTIC COLD WATER PIPING OF EQUAL OR GREATER SIZE. CONTRACTOR TO FIELD VERIFY EXACT SIZE, LOCATION, AND CONDITION OF EXISTING PIPING, MODIFY AS REQUIRED FOR CONNECTION.
2. PROVIDE STUDOR VENT AT SINK.
3. 3/4" CW DOWN TO BLOW DOWN VALVE ASSEMBLY, INSTALL PER DETAIL. PROVIDE ACCESS PANEL BEHIND CABINETS FOR SHUT OFF VALVE AND BLOW DOWN VALVE.
4. PROVIDE 4" WASTE STUB-UP AT LOCATION SHOWN. PROVIDE DRAINAGE AS REQUIRED AT BAR EQUIPMENT ABOVE GRADE AND ROUTE TO STUBUP LOCATION AS HIGH AS POSSIBLE.
5. NEW TANK TYPE WATER HEATER, RE: DETAIL. COORDINATE FINAL LOCATION AND MOUNTING METHOD WITH ARCHITECT AND FINAL EQUIPMENT LAYOUT AS REQUIRED. ROUTE WASTE FROM T&P AND DRAIN VALVE TO HUB DRAIN AND INDIRECT WASTE.
6. 3/4" COLD WATER UP FROM BELOW SLAB. ROUTE 3/4" COLD WATER BEHIND BAR EQUIPMENT AND CONNECT 1/2" COLD WATER TO EACH FAUCET AND ICE MAKER PER MANUFACTURER'S RECOMMENDATIONS. ROUTE 1/2" COLD WATER TO WATER HEATER. ROUTE 1/2" HOT WATER FROM WATER HEATER TO EACH FAUCET AS REQUIRED.
7. CONNECT WASTE PIPING INTO EXISTING PIPING OF EQUAL OR GREATER SIZE. CONTRACTOR TO FIELD VERIFY EXACT LOCATION, ELEVATION, AND SIZE OF EXISTING WASTE PIPING PRIOR TO CONSTRUCTION. MODIFY EXISTING CONDITIONS AS REQUIRED FOR CONNECTION.
8. CONNECT VENT PIPING INTO EXISTING PIPING OF EQUAL OR GREATER SIZE. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING PIPING PRIOR TO CONSTRUCTION. MODIFY EXISTING CONDITIONS AS REQUIRED FOR CONNECTION.
9. CONNECT HOT WATER PIPING INTO EXISTING HOT WATER PIPING, CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING PIPING PRIOR TO CONSTRUCTION. MODIFY EXISTING CONDITIONS AS REQUIRED FOR CONNECTION.



KEY PLAN

NO SCALE

GastingerWalker&
Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates
1730 Walnut Street Kansas City, Missouri 64108
1915 Frederick Avenue, St. Joseph, Missouri 64501
7007 College Boulevard Suite 450, Overland Park, Kansas 66211
Phone: 816.221.1411 | Fax: 816.221.1429
LANKFORD | FENDLER + ASSOCIATES, CONSULTING ENGINEERS, INC.

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS

ISSUED FOR:

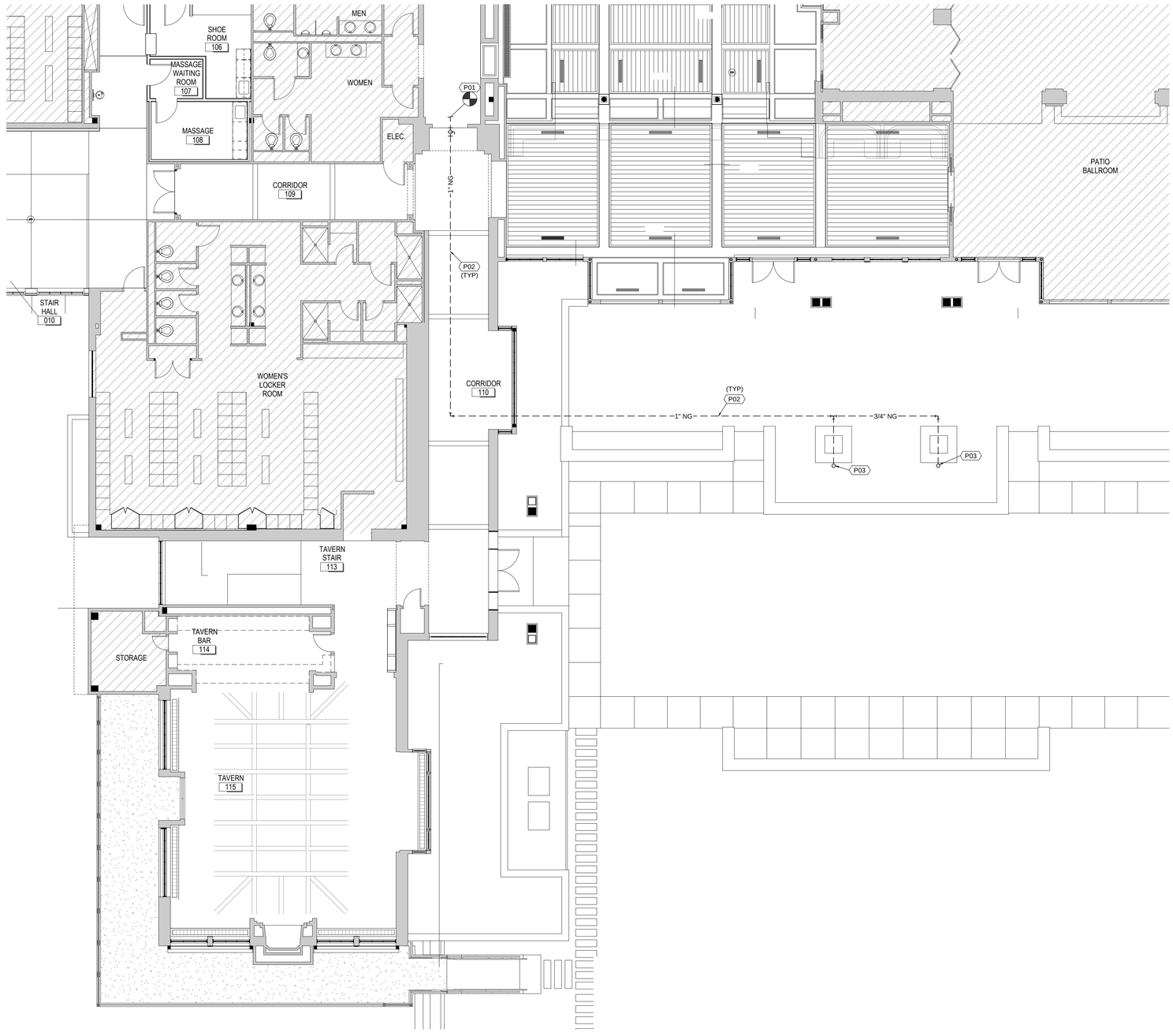
Review	22 December 2016
Construction	17 February 2017

Drawn By	DMB
Checked By	BLH

Floor Plan Pool Level A - Plumbing

P100A

Project Number: 2015.399



FLOOR PLAN MAIN LEVEL B-PLUMBING

SCALE: 1/8"=1'-0"

N PROJECT NORTH

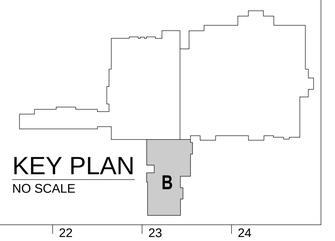
N TRUE NORTH

P## FLOOR PLAN NOTES

1. CONNECT NEW NATURAL GAS PIPING TO EXISTING NATURAL GAS PIPING. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE OF EXISTING PIPING PRIOR TO CONSTRUCTION. MODIFY EXISTING PIPING AS REQUIRED FOR CONNECTION.
2. GAS PIPING TO BE ROUTED IN TUNNELS BELOW, FIELD VERIFY EXACT LOCATION AND ROUTING.
3. PROVIDE 3/4" NATURAL GAS UP TO FIREPLACE. PROVIDE GAS COCK, DIRT LEG AND UNION AT CONNECTION. COORDINATE FINAL LOCATION OF FIREPLACE WITH ARCHITECT.

KEY PLAN

NO SCALE



GastingerWalker &
Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford + Fendler + associates
1770 Walnut Street Kansas City, Missouri 64108
Phone: 816.221.1411 | Fax: 816.221.1429
LANKFORD | FENDLER + ASSOCIATES CONSULTING ENGINEERS, INC.

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS

ISSUED FOR:

Review	22 December 2016
Construction	17 February 2017

Drawn By DMB
Checked By BLH

Floor Plan Main Level B - Plumbing

P101B

Project Number: 2015.399

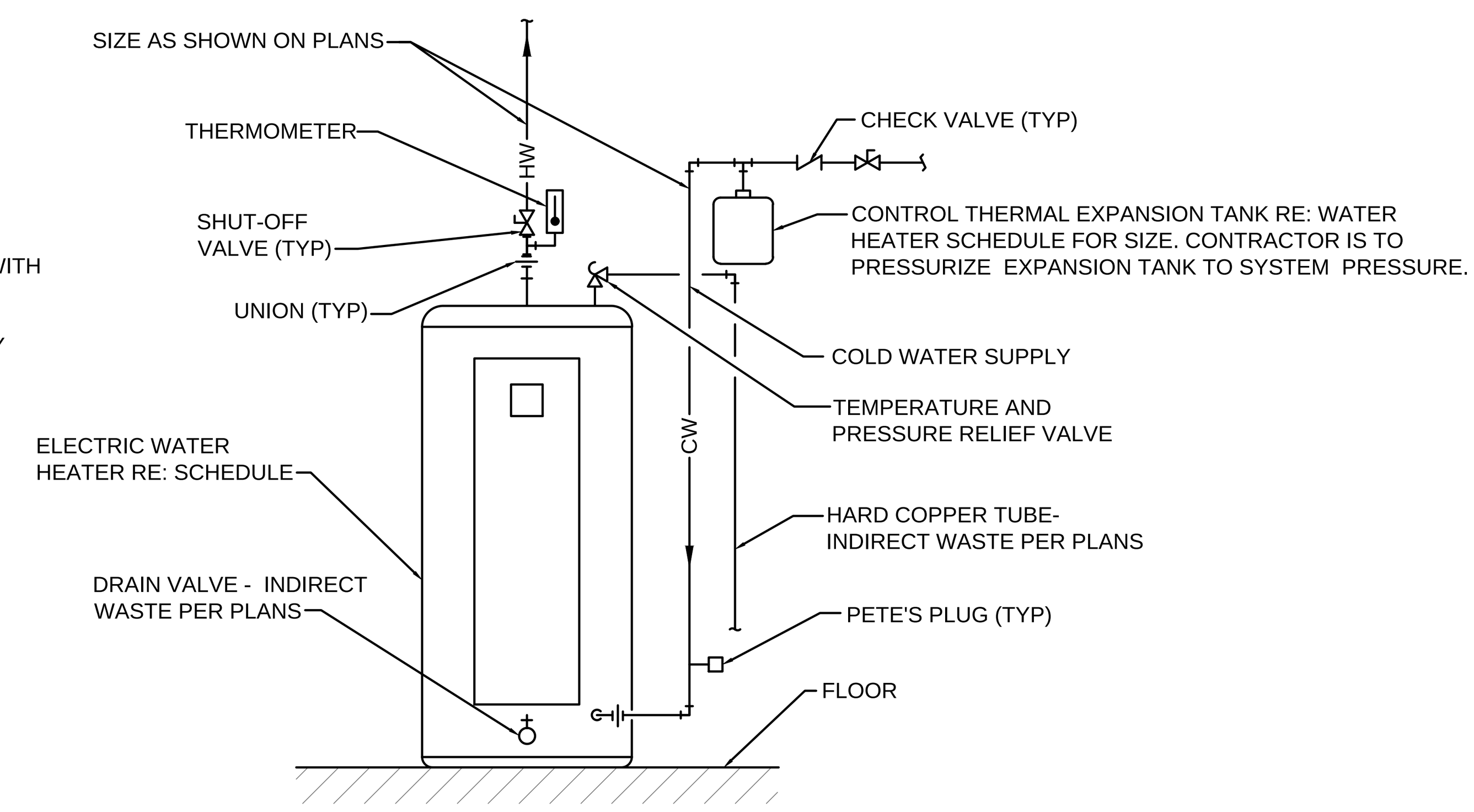
WATER HEATER SCHEDULE (ELECTRIC)

MARK NO.	MANUFACTURER	MODEL NO.	TANK LINING	TANK CAPACITY (GAL)	RECOVERY (GPH @ 80 F)	INPUT (KW)	THERMAL EXPANSION TANK MODEL NO.	ELECTRICAL VOLT	ELECTRICAL Ø	ELECTRICAL HZ	NOTES
DWH-1	AO SMITH	DEL-20	GLASS	20	30	6	ST-5	120	1	60	1,2

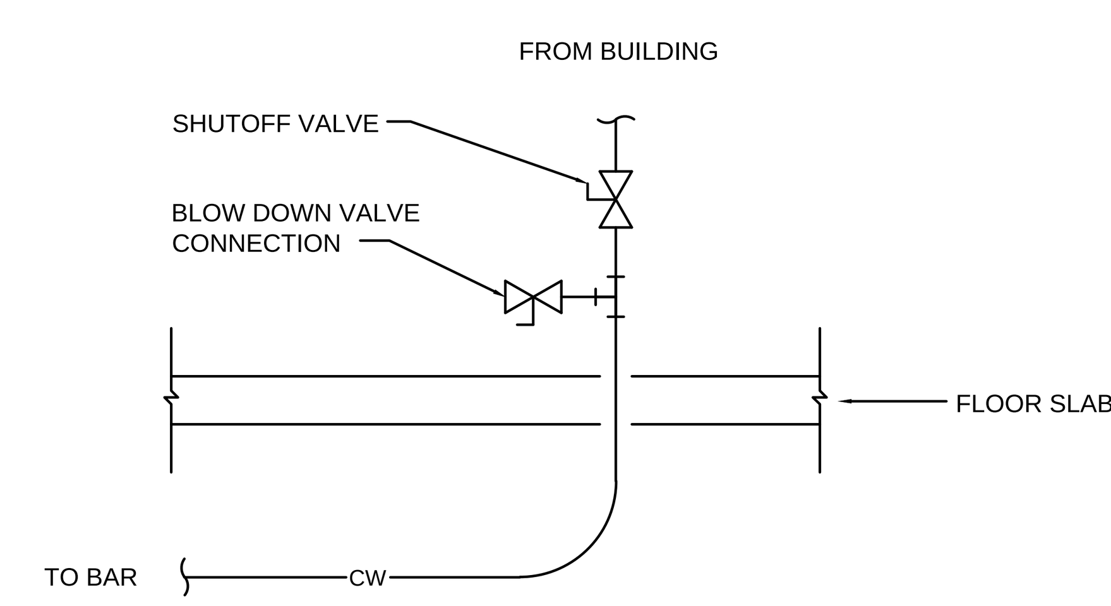
NOTES:
1. PROVIDE WITH TEMPERATURE AND PRESSURE RELIEF VALVE AND DRAIN.
2. PROVIDE WITH CONTROL THERMAL EXPANSION TANK, WATTS MODEL SCHEDULED WITH WATTS SCV SERVICE CHECK VALVE.

*HEATING KW IS NET CAPACITY AT VOLTAGE AND PHASE INDICATED.

NOTES:
1. CONTRACTOR TO INSTALL WHERE INDICATED ON PLANS IN ACCESSIBLE LOCATION.
2. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
3. WATER HEATERS THAT ARE NOT RECIRCULATED SHALL BE EQUIPPED WITH AN INLET AND OUTLET HEAT TRAP, WHETHER INTEGRAL OR EXTERNAL, IN ACCORDANCE WITH THE IECC ENERGY CODE.



1 ELECTRIC WATER HEATER DETAIL
NO SCALE



2 BLOW DOWN VALVE DIAGRAM
NO SCALE

GENERAL NOTES (TYPICAL ALL SHEETS)

- PLUMBING CONTRACTOR IS RESPONSIBLE TO SEE THAT WORK MEETS AND IS IN ACCORDANCE WITH ALL REQUIREMENTS OF FEDERAL, STATE, AND LOCAL LAWS AND CODES AND/OR REQUIREMENTS, INCLUDING HEALTH CODES AND BUILDING OWNER.
- ALL EXISTING PIPING SHOWN ON DRAWINGS IS SCHEMATIC AND IS BASED ON EXISTING RECORD DRAWINGS PROVIDED BY THE OWNER AND DO NOT REFLECT EXACT EXISTING CONDITIONS. CONTRACTOR TO FIELD VERIFY EXACT DEPTH AND/OR LOCATIONS ON JOB SITE. CONTRACTOR SHALL REROUTE NEW WORK TO ACCOMMODATE EXACT LOCATIONS OF EXISTING UTILITIES, STUBOUTS AND/OR CONNECTIONS.
- CUTTING AND PATCHING OF FLOORS, WALLS, CEILING, ETC., REQUIRED IN STRICT ACCORDANCE WITH THE RULES AND REGULATIONS OF THE ARCHITECT'S AND/OR BUILDING OWNER REQUIREMENTS.
- COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION TO AVOID ROUTING CONFLICTS.
- ANY MATERIAL REMOVED THAT OWNER DOES NOT WISH TO RETAIN SHALL BE REMOVED FROM PROJECT SITE AND DISPOSED OF BY CONTRACTOR.
- INSTALL ELASTOMERIC JOINT SEALER AROUND ALL PIPES PASSING THRU INTERIOR NON-RATED CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS. FOR FIRE RATED INTERIOR CONCRETE AND MASONRY WALLS, GYPSUM-BOARD PARTITIONS, AND CONCRETE FLOOR/ROOF SLABS SEAL ALL PIPES. INSTALL FIRESTOP MATERIALS IN ALL GAPS PRIOR TO SEALANT APPLICATION. INSTALL SEALER ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.
- PLUMBING CONTRACTOR SHALL MAKE FINAL CONNECTION TO ALL EQUIPMENT BY OTHERS. VERIFY CONNECTIONS SIZES AND REQUIREMENTS.
- PIPING ROUTED BELOW COUNTER IN CABINETS SHALL BE ROUTED AS NOTED. NOT TO INTERFERE WITH DRAWERS, SHELVES, EQUIPMENT, ETC., AND SUPPORT FROM BACK WALL OF CABINET.
- PLUMBING CONTRACTOR SHALL SCAN FLOOR UTILIZING GROUND PENETRATING RADAR PRIOR TO ANY CORE DRILLING OR SAW CUTTING OF SLAB AND SHALL VERIFY PLACEMENT WITH BUILDING OWNER'S REPRESENTATIVE PRIOR TO DRILLING.
- PLUMBING CONTRACTOR SHALL PROVIDE PRO-SET SYSTEMS 'TRAP GUARD' IN ALL FLOOR DRAIN TRAPS WITHIN PROJECT SCOPE OF WORK.
- PLUMBING CONTRACTOR SHALL VERIFY WALL THICKNESS WITH ARCHITECT PRIOR TO ORDERING FREEZE PROOF WALL HYDRANTS.
- ALL CABLE TIES FOR LOW VOLTAGE SYSTEMS LOCATED IN PLENUMS UTILIZED FOR AIR MOVEMENT THAT ARE NOT INSTALLED IN CONDUIT SHALL BE 25/50 FLAME AND SMOKE RATED, HELLERMANN TYTON T50 R2C2UL OR EQUIVALENT.

PLUMBING SYMBOLS

Symbol	Description
	EXISTING TO REMAIN
	NEW PIPING
	FLOW ARROW
CW	COLD WATER
HW	HOT WATER
NG	NATURAL GAS
V	SANITARY VENT ABOVE GROUND/FLOOR
W	SANITARY WASTE ABOVE GROUND/FLOOR
W	SANITARY WASTE BELOW GROUND/FLOOR
	GAS SHUT-OFF COCK
	SHUT OFF VALVE
OR	FLOOR DRAIN OR EQMT FLOOR DRAIN
	PIPE DROP/PIPE RISE
	BOTTOM OUTLET TEE
	TOP OUTLET TEE
WH	WALL HYDRANT
CO	CLEAN OUT
WCO	WALL CLEAN OUT
FFCO	FINISHED FLOOR CLEANOUT
DWH-1	EQUIPMENT TYPE AND DESIGNATION
	PLUMBING FIXTURE DESIGNATION
	CONNECT TO EXISTING

GastingerWalker&
Architects | Interior Designers | Construction Managers
817 Wyandotte Kansas City Missouri 64105 816.421.8200 gastingerwalker.com

CONSTRUCTION MANAGER
Centric Projects
1814 Main Street
Kansas City, MO 64108
(816) 389 - 8300

STRUCTURAL
Bob D. Campbell & Co., Inc.
4338 Belleview
Kansas City, MO 64111
(816) 531 - 4144

CIVIL
Phelps Engineering Inc.
1270 N. Winchester
Olathe, KS 66062
(913) 393 - 1155

LIGHTING
LightWorks, Inc.
361B Main Street
Weston, MO 64098
(816) 640 - 9948

Lankford Fendler + associates

Mission Hills Country Club

Addition and Renovation

5400 Mission Drive
Mission Hills, KS
66208

MMC CONTRACTORS

ISSUED FOR:

Review	22 December 2016
Construction	17 February 2017

Drawn By DMB
Checked By BLH

Plumbing Symbols & General Notes

P200

Project Number: 2015.399

DWG FILE: P:\5400\5416_Mission Hills Country Club Renovation-Mechanical & Plumbing\Drawings\5416P200-P201.dwg USER: David PLOT DATE/TIME: 2/17/2017-10:06am