

EXPLORE PARK

FLEX POD "A" BATHHOUSE

CHESTNUT RIDGE ROAD

TAX MAP # 080.00-05-24.00-0000

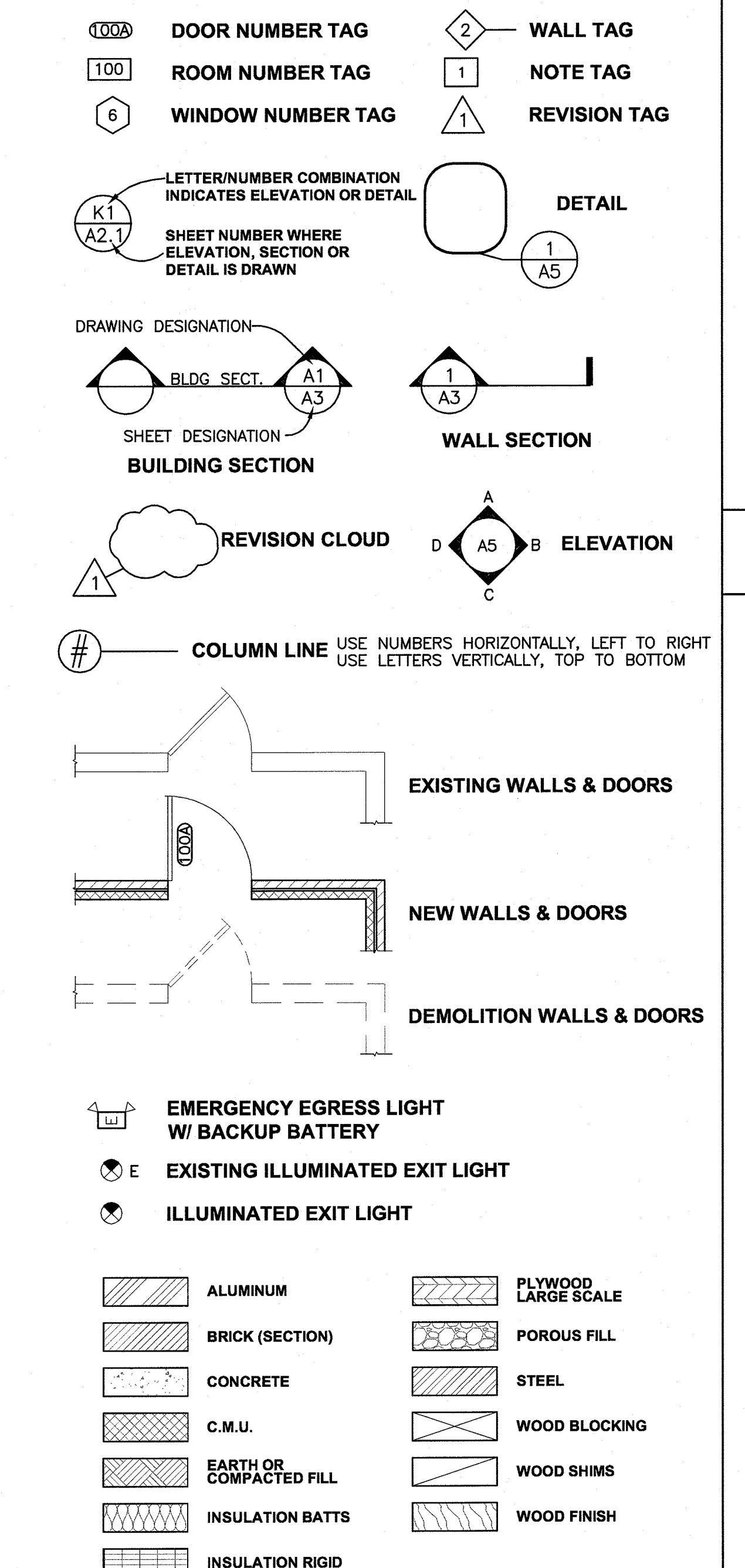
ROANOKE COUNTY, VIRGINIA

BALZER PROJECT NO. 04180001.00

DRAWING ABBREVIATIONS

AFF	ABOVE FINISH FLOOR
AP	ACCESS PANEL
ACT	ACOUSTIC TILING
ACPL	ACOUSTICAL PLASTER
A/C	AIR CONDITIONING
ALUM	ALUMINUM
AB	ANCHOR BOLT
ANOD	ANODIZED
APPROX	APPROXIMATELY
AD	AREA DRAIN
ASPH	ASPHALT (URAL)
BP	BASE PLATE
BSMT	BASEMENT
BM	BEAM
BRG	BUSHING
BIT	BITUMINOUS
BLDG	BLOCKING
BLDG	BUILDING
BLDG	BUILDING
CPT	CARPET
CO	CASED OPENING
CSMT	CASING
C/H	CEILING HEIGHT
CT	CEMENT TILE
CR	CHROME
CLR	CLEARANCE
CLST	CLOSET
COL	COLUMN
CONC	CONCRETE
CMU	CMU, MASONRY UNIT
CONST	CONSTRUCTION
CONT	CONTINUOUS
CJ	CONTROL JOINT
CTR	CONTROLLER
CRS	COURSE
DEM	DEMOLITION
DEPT	DEPARTMENT
DAD	DAD
DIA	DIA
DIA	DIA
DIM	DIMENSION
DT	DTT
DIV	DIVISION
DR	DRUG
DH	DOUBLE HUNG
DS	DOWN SPOUT
DR	DRUM
DT	DRAIN TILE
DW	DRAWING
ELEC	ELECTRIC
EVCC	ELECTRICAL WATER COOLER
EP	ELECTRICAL PANEL BOARD
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSE, ENCLOSURE
ENG	ENGINEERING
ENTR	ENTRANCE
EQ	EQUAL
EQUIP	EQUIPMENT
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION BOLT
EJ	EXPANSION JOINT
EXT	EXTERIOR
FB	FACE BRICK
FOB	FACE OF BRICK
FT	FEET
FT	FOOT
FN	FENCE
FIN	FINISH
FIN FL	FINISH FLOOR
FEC	FEW EXTINGUISHER CABINET
FHC	FIRE HYDRANT CABINET
FPL	FIREPLACE
FLD	FLOORING
FLD	FLOORING
FLUOR	FLUORESCENT
FTG	FOOTING
FTN	FOOTNOTATION
FRN	FRESH AIR
FBD	FURNISHED BY OTHERS
GA	GAGE, GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GL	GLASS
GLB	GLASS BLOCK
GD	GRADE, GRADING
GWT	GYPSUM WALL BOARD
HO	HANDICAP
HWD	HARDWOOD
HWD	HARDWOOD
HWD	HARDWOOD
HWT	HEAVY
HVAC	HEATING/VENTING/AIR CONDITIONING
HOT	HOT
HOTC	HOLLOW CORE
HORZ	HORIZONTAL
HB	HOT BIB
HW	HOT WATER HEATER
ID	INSIDE DIAMETER
INCL	INCLINATION
INSUL	INSULATE
INT	INTERIOR
JAR	JANITOR'S CLOSET
KIT	KITCHEN
KD	KNOCK DOWN
KO	KNOCKOUT
LBL	LABEL
LAM	LAMINATED
LAV	LAVATORY
LH	LEFT HAND
LO	LIGHTING
LW	LIGHTWEIGHT
LTL	LINTEL
LL	LIVE LOAD
LVR	LOADER

SYMBOLS & MATERIALS



PROJECT DIRECTORY

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CODE ANALYSIS

THIS PROJECT IS A NEW BUILDING DESIGNED UNDER THE 2012 VIRGINIA CONSTRUCTION CODE (VCC).

CODE EDITION: 2012 Virginia Construction Code (VCC)
(2012 IBC w/ Virginia Amendments)

USE GROUPS: U (bathhouse/restroom building)
CONSTRUCTION TYPE: VB ("SB")
TABULAR ALLOWABLE AREA: 5,500 S.F.
SPRINKLER INCREASE: N/A
TOTAL ALLOWABLE AREA: 5,500 S.F.
DESIGNED BUILDING AREA: 1,350 S.F. (under roof area)

TABULAR ALLOWABLE BLDG. HEIGHT: 2 ST. 40" over IBC Table 503
DESIGNED BUILDING HEIGHT: 1 ST. J ±20"

FIRE PROTECTION SYSTEM (VCC/IBC Chapter 9):
A. Automatic Fire Sprinkler System NOT REQUIRED per VCC Section 903 (no requirement for U-use).
B. Fire Alarm/Detection System NOT REQUIRED per VCC Section 907.2.2 (no requirement for U-use).

OCCUPANT LOAD (VCC/IBC TABLE 1004.1.1): 1,350 S.F. @ 1:100= 14 Occupants

EXIT REQUIREMENTS (VCC/IBC Chapter 10):
Minimum Building Exits Required: 1 exit req. per VCC 1015.1 and 1014.3. (1 exit provided from ea room)
Minimum Egress Width (VCC Table 1005.1): 33" for doors (33" clear doors provided)
Maximum Exit Travel (VCC Table 1014.3): 75' (20' max. provided to outside of structure roof)
Exit Access Corridors (VCC Table 1018.1): Fire-rated corridors not required (no corridors).
Exit Remoteness: N/A (single exit required from each occupied space)

ACCESSIBILITY (IBC Chapter 11):

- Accessible route provided to building, see site plan.
- Accessible parking provided, see site plan.
- Passenger Loading Area not required; no accessible passenger loading area provided.
- Accessible entry provided to each restroom space.
- Accessible bathing rooms/restrooms provided.
- Accessible showers provided in accessible bathing rooms, utilizing an "Alternate Roll-in Shower" per 2012 ANSI A117.1, Section 608.2.3
- Accessible signage to be provided in locations required by VCC/IBC 1110, including the following:
 - 1. Accessible parking spaces.
 - 2. Accessible toilet rooms.
 - 3. Accessible entrances.

PLUMBING FIXTURE REQUIREMENTS (VCC Table 2902.1 & VCC Section 2902.2):
Building is designed for bathing and toilet facilities for the campground. As such, there are no specific toilet/avatory requirements specific to the building use for Table 2902.1.

ENERGY CODE/BUILDING ENVELOPE REQUIREMENTS:
2012 Virginia Energy Conservation Code (VECC)

For Climate Zone 4 (Virginia), the following minimum requirements for building envelope elements shall be used or exceeded per VECC Table C402.2:
Above Grade CMU Walls= R-5.7 continuous + core-fill in cmu cells
Wood-Frame Attic Roof= R-3.8
Slab= R-10 (perimeter insulation)
Doors= 0.61 U-factor

REQUIRED FIRE RATING OF BUILDING ELEMENTS (TABLE 601):

STRUCTURAL FRAME: 0 HOURS
EXTERIOR WALLS: 0 HOURS (0 hours required for fire separation distance)
NONBEARING WALLS AND PARTITIONS: 0 HOURS
EXIT ACCESS CORRIDORS: 0 HOURS
FLOOR CONSTRUCTION: N/A
ROOF CONSTRUCTION: 0 HOURS

STRUCTURAL LOADS:
SEE STRUCTURAL DRAWINGS FOR ALL STRUCTURAL LOADS.

GENERAL CODE NOTES:

1. PROVIDE EMERGENCY EGRESS LIGHTING PER VCC 1006. MAINTAIN MINIMUM 1FC LIGHT LEVELS IN ALL SPACES PROVIDED EXIT ACCESS, PER VCC 1006.2.
2. PROVIDE EMERGENCY EXIT SIGNS PER VCC 1014.1. EXIT SIGNAGE SHALL BE INTERNALLY LIGHTED PER VCC 1014.5, AND SHALL BE CONNECTED TO AN EMERGENCY BACKUP POWER SOURCE PER VCC 1014.6.3.
3. INTERIOR FINISH MATERIALS SHALL BE CLASS C OR BETTER IN ROOMS AND CLASS B OR BETTER IN EXIT ACCESS CORRIDORS AND OTHER EXITWAYS PER VCC TABLE 803.9.
4. ALL LOCKS AND LATCHES SHALL COMPLY WITH VCC 1008.1.9. ALL DOORS TO BE EQUIPPED WITH LEVER HANDLES AS REQUIRED PER VCC. (SEE SCHEDULE)
5. ALL NEW PIPING (PLUMBING, GAS, ETC.) USED IN THIS PROJECT SHALL BE LABELED ON SITE IN ACCORDANCE WITH ALL 2012 IBC, IMC & IPC APPLICABLE PROVISIONS.
6. ALL INTERIOR OCCUPIED SPACES SHALL BE PROVIDED WITH EITHER NATURAL OR MECHANICAL VENTILATION IN ACCORDANCE WITH VCC 1203.1.

DRAWING INDEX

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DATE	
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DIVISION 1 – GENERAL:
 1. In case of conflict between the general notes, specifications, and drawings regarding structural issues, the most stringent requirements shall govern.
 2. Structural drawings shall be used in conjunction with the architectural, mechanical, electrical, & plumbing drawings, as well as any additional drawings provided by material & equipment suppliers. Contractor shall be responsible for coordinating the work of all trades with the structural engineer.
 3. This structure is considered unstable until all structural components are in place, fastened, plumbed, true and in accordance with these signed and sealed drawings. Contractor shall be responsible for furnishing, erecting, and removing any temporary shoring and bracing during construction.
 4. Contractor shall strictly adhere to all safety regulations. The architect/ engineer shall not be responsible for construction means, methods, or procedures for safety precautions in connection with the work.
 5. Construction materials, equipment, or other heavy loads shall not be placed upon structural components in concentrated areas. construction material or equipment staging shall not import loads to the structure greater than that shown in the design load schedule.
 6. Work not indicated on a part of the drawings, but reasonably implied to be similar to that shown at corresponding pieces, shall be repeated.
 7. Temporary bracing, sheeting, shoring, etc., required to ensure the structural integrity/stability of the existing buildings, sidewalks, utilities, etc. during construction is the Contractor's responsibility and shall be designed by a Professional Engineer licensed in the Commonwealth of Virginia.
 8. Shop Drawings:
 • Shop drawings for materials shall be submitted to the Architect for review prior to the start of fabrication or commencement of work.
 • No portion of the contract drawings may be reproduced for submittal as shop drawings unless authorized by Balzer and Associates, Inc. in writing. Violation of this provision will result in the rejection of the shop drawings and will be returned without being reviewed by the Architect or Structural Engineer.
 • Shop drawings shall bear the General Contractor's stamp of approval, which shall constitute certification that he has verified all field measurements, construction criteria, materials, and similar data and has checked each drawing for completeness, coordination, and compliance with the contract documents. Shop drawings not reviewed by the General Contractor prior to submittal will be rejected.
 • Changes to shop drawings that are re-submitted must be clearly indicated or otherwise clearly indicate the changes that have been made to a previously issued and reviewed drawing.
 • The Contractor shall provide the Architect or Structural Engineer with written notice of deviations of any type from the requirements of the Construction Documents. The notice must be received prior to shop drawing submittal. The Contractor remains liable for any deviation unless reviewed by the Architect or Structural Engineer and acknowledged in writing, prior to receipt of the shop drawings.
 • Shop Drawings will be returned not later than 10 working days after receipt by the Architect or Structural Engineer.
 • Architect/Engineer shall not be liable for work performed without approved shop drawings.

DIVISION 2 – FOUNDATION & SITE PREPARATION:
 1. Foundation design has been completed for an assumed bearing capacity of 1,500 psf. Owner/Contractor shall verify on site soils are suitable for building and meet or exceed the design capacity. Owner shall make any other investigations he deems necessary at his cost.
 2. The surface of the exposed sub-grade shall be inspected by probing or testing to check for pockets of soft or unsuitable material. All fill and unsuitable foundation material shall be removed and footings shall rest on undisturbed soil or engineered fill. All footing excavations, site stripping, undercutting and control fill operations shall be done under the supervision of an independent testing laboratory, under the direction of a professional engineer licensed in the Commonwealth of Virginia.
 3. Reference plan notes on foundation plan for additional notes and requirements.
 4. Clear site and remove all vegetation, trees, roots, decaying material and other obstructions from areas occupied by utilities and structures, etc; strip top soil to a depth of 5" or deeper as required; debris is to be completely removed from site or disposed of and is not to be deposited in fills.
 5. Strip all topsoil from areas to be covered by structures or pavement and fill with an approved controlled fill, compacted to 95% or better of maximum dry density as determined by Standard Proctor (ASTM D698).
 6. Foundations are not to be excavated until building fill is placed and compacted.
 7. Center footings under walls and columns unless noted otherwise.
 8. Footing elevations shown represent the minimum depth to which footings shall be carried and shall be lowered as required to obtain suitable bearing.
 9. All footings shall project at least 1"-0" into undisturbed natural soil or compacted controlled fill having a bearing value at least equal to that specified above. Place bottoms of all exterior footings at least 2"-0" below finished grade. Earth cuts may be used as forms for pouring concrete. Drain all bearing strata adequately before placing foundation concrete. Do not place concrete on frozen soil.
 10. Proper site drainage shall be maintained in order to protect the site from excess surface moisture during construction. Protection of the site shall include the construction of temporary ditches, berms or other surface water diversion devices in order to divert surface water from and not across the site.
 11. Where, due to site conditions, earth fill requirements will differ from elevations shown on plans, slopes and columns shall be increased, decreased, added or eliminated following intent of these drawings and specifications.
 12. Footing step locations indicated on the foundation plans are approximate; actual locations may vary from that shown based upon existing conditions at the site. Contractor shall locate footing steps in field as required by finish grade and localized soil conditions.
 13. Except where unbalanced fill on foundation walls is less than 4"-0" (or as otherwise stated on drawings), backfill shall not be placed against concrete or masonry foundation walls unless the walls have attained full design strength and the top of these walls are braced against overturning in a manner satisfactory to the engineer.
 14. Excavations at retaining walls shall be sloped. Temporary slopes should be constructed on a slope of one horizontal to one vertical or flatter.
 15. All walls shall be adequately braced to resist all horizontal loads from wind, earth, and construction loads during installation and until such time as permanent anchorage is in place. Heavy compaction equipment will not be allowed within a distance subtended by a 45° angle between the surface of the ground and any footing.
 16. Contractor shall include in his bid all civil engineering and site work including landscaping, seeding and straw placement at denuded/disturbed areas, as well as temporary erosion control as required by the governing jurisdiction(s).
 17. All underground utilities shall be referenced from site, mechanical, electrical, and plumbing drawings and connections shall be made prior to placing foundation concrete. Architect / Structural Engineer is not responsible for locating and coordinating utility interactions with building.
 18. Roof drain pipes serving the structure shall tie into underground perimeter foundation drain pipes and be taken to an appropriate point of discharge. Contractor to coordinate with civil drawings for daylight or underground tie-in information.
 19. All concrete sidewalks shall receive a broom finish unless otherwise specified on architectural or landscape drawings.

DIVISION 3 – CONCRETE:
 1. Materials for concrete construction shall be in accordance with the following specifications:
 a) Unit weight: Normal weight (145-150pcf)
 b) Portland cement: ASTM C150 Type 1
 c) Coarse and Fine Aggregate: ASTM C33 max size 3/4"
 d) Water: ASTM C1602 potable
 e) Cementitious Admixtures: ASTM C618 Flyash
 f) Chemical Admixtures: ASTM C988 Ground granulated blast furnace slag
 g) Reinforcing steel: ASTM C490 Plasticizers, Water Reducers, High Early Strength, etc.
 h) Embedded fiber reinforcing: ASTM A185 Welded Wire Reinforcement using ASTM A82 wire
 i) Adhesive anchoring: ASTM A616 7-wire steel strand for prestressed concrete (270ksi)
 j) Concrete screws: ASTM C1116 Standard spec for fiber reinforced concrete
 k) Heavy duty screw anchors: ASTM C1620 Steel fibers
 l) Expansion/wedge anchors: ASTM C1436
 m) Other agents, components, admixtures, and/or embedded items as approved by Engineer
 2. All concrete materials, processes, and work shall be in accordance with ACI 318-14 "Building Code Requirements for Structural Concrete", ACI 301-10 "Specifications for Structural Concrete", and ASTM C94, unless otherwise noted or detailed on the contract drawings.
 3. All exterior concrete slabs exposed to traffic shall be 4000 psi. All concrete slabs, on-grade or on suspended metal deck, shall be 3500 psi. Footings for walls and columns, and all other concrete, shall be 3000 psi. Refer to structural drawings for additional notes and use highest strength mix where discrepancies occur.
 4. All concrete exposed to freezing and thawing shall have an entrained air content of 6% ($\pm 1.5\%$).
 5. Refer to Table 19.3.2.1 "Requirements for Concrete by Exposure Class" and referenced exposure class definitions for maximum water / cementitious materials (w/c) ratio, minimum design strength, entrained air contents, and other constituent restrictions for this project.
 6. Contractor shall submit a concrete mix design for each type of concrete to the project Architect for approval prior to the placement of concrete.
 7. Contractor to provide a mockup sample of all exposed architectural concrete elements as directed by the Architect.
 8. All reinforcing steel shall be deformed bars of new billet steel conforming to specification listed above. Rebar splices shall be as per ACI 318. All reinforcing marked continuous (cont.) on the plans and details shall be lapped 48x bar diameters at splices unless otherwise noted.
 9. Welded wire fabric shall be lapped a minimum of one full wire space plus 2" when spliced.
 10. Detail, fabricate and place reinforcement in accordance with ACI 318 unless otherwise shown. Concrete protection for reinforcing steel reinforcing steel shall be in accordance with ACI 318-14.
 11. All reinforcing steel shall be held securely in place to prevent dislocation during the placing operation. Slab reinforcing bars shall be supported on high chairs and bar spacers of suitable design.
 12. Reinforcing steel shall be clean of mud, debris, loose rust, cement grout, or any other material which may inhibit the bond between the steel and the concrete. Do not field bend reinforcement. In no case may bars be heated to facilitate bending.
 13. No concrete shall be placed until all embedded items have been installed, tested and inspected.
 14. Contractor shall gain approval from Structural Engineer for post-installing any column anchor rods.
 15. Follow manufacturer's written installation procedures for installation of all post-installed anchors in concrete work. Control silica dust per OSHA requirements and prepare hole for receiving adhesive in accordance with manufacturer's requirements. Where required, contractor shall receive certification from manufacturer for conformance to installation procedures.
 16. Concrete slabs on ground specified as fiber reinforced concrete shall be reinforced at minimum with micropolymer fibers to control plastic shrinkage cracking. At the contractor's option, steel or macroscopic fibers may be added to control random cracking upon the concrete reaching its hardened state. Micropolymer fibers shall be added in continuous concrete mix at a minimum rate of 0.1% by volume (1.5 lbs per cubic yard of concrete), or as suggested by material supplier.
 17. Sufficient time should be allowed before cutting saw joints in fiber reinforced concrete slabs to ensure that the saw blade cuts the fiber reinforcement without pulling the fibers out of the concrete.
 18. Floor depressions and openings to be provided where equipment or floor finishes require them, whether or not indicated on structural drawings. It shall be the contractor's responsibility to coordinate his work with architectural and mechanical drawings and specifications and provide depressions and openings as required.
 19. Concrete for all floor slabs shall be wet-cured with wet burlap, plastic film, waterproof paper or misting.
 20. Refer to structural plans for additional notes regarding concrete slabs and walls.
 21. Construction and control joints shall be located where indicated on the drawings. See typical details for additional reinforcing at construction joints.
 22. Unless otherwise required, provide 3" chamfer on all concrete corners exposed to view.
 23. Top of plumbing pipes must be at least 12" below bottom of wall footings or above. Otherwise footings must be lowered below pipe invert. Pipes shall not pass through footings. See mechanical drawings for location of pipe sleeves and openings. Prior approval required for cutting and bending of reinforcing to accommodate sleeves and in no case shall major reinforcing be cut or bent.
 24. All structural members shall be poured for their full depth in one operation. Construction joints, such as day's pour joints, shall not be located in the middle third of any span or over intermediate supports of continuous multi-span members. The reinforcement shall extend through the joint in both faces. Where, in either face, no reinforcement is called for, provide #4 dowels at 12" on center. Joint shall be roughened by use of an approved surface retarder in accordance with manufacturer's directions, to expose aggregate. Depth of etch shall be 1/8" minimum. Apply a chemical bonding agent per manufacturer's specifications prior to finishing the concrete placement.
 25. The concrete contractor shall cooperate with other contractors and, where required, install all built-in work, sleeves, inserts, brick ties, etc., including framework for chases, reglets and other provisions for built-in work to complete the job (see specifications).
 26. Electrical contractor shall confer with architect and structural engineer before placing any conduits in concrete construction in order to agree on permissible arrangements of conduits.
 27. Electrical contractor shall prevent placing conduits in concrete that will impair concrete strengths.
 28. Only conduits having outside diameters no larger than one-third of the slab thickness may be installed. For slabs on steel deck, slab thickness shall be considered as thickness of concrete above upper deck flutes.
 29. Conduits are to be spaced so as to provide no less than three (3) conduit diameters, center-to-center. Wherever possible, larger spacings are preferred.
 30. Continuous rows of conduits are not to be placed immediately along bearing ends of slabs.
 31. Aluminum conduits are not allowed.
 32. Conduits are not allowed in concrete slabs less than 4" thick.
 33. Contractor shall include in his bid all civil engineering and site work including landscaping, seeding and straw placement at denuded/disturbed areas, as well as temporary erosion control as required by the governing jurisdiction(s).
 34. All underground utilities shall be referenced from site, mechanical, electrical, and plumbing drawings and connections shall be made prior to placing foundation concrete. Architect / Structural Engineer is not responsible for locating and coordinating utility interactions with building.
 35. Roof drain pipes serving the structure shall tie into underground perimeter foundation drain pipes and be taken to an appropriate point of discharge. Contractor to coordinate with civil drawings for daylight or underground tie-in information.
 36. All concrete sidewalks shall receive a broom finish unless otherwise specified on architectural or landscape drawings.

DIVISION 4 – MASONRY:
 1. Materials for concrete masonry walls shall be in accordance with the following specifications:
 a) Hollow load bearing units: ASTM C90 Type 1, Grade N, 1,350 psi on the net area.
 b) Grout: maximum weight 32 lbs per 8" x 8" x 16" unit,
 c) Mortar: 47 lbs per 12" x 8" x 16" unit
 d) Reinforcing steel: ASTM C476, f'c = 2000 psi
 e) Adhesive anchoring: ASTM C270, Type M (below grade), S (structural), or N (veneer, non-structural).
 f) Wire ties and reinforcing: ASTM A1064 or ASTM A153 (galvanized) or ASTM A580 (stainless)
 g) Masonry screws: Hilti HIT-HY 70 or Simpson AT-XP or SET-XP or approved equal
 h) Heavy duty screw anchors: Hilti KWIK Con II+ or Simpson Titen HD
 i) Expansion/wedge anchors: Hilti KWIK HUS-EZ or Simpson Titen HD
 j) Expansion/wedge anchors: Hilti KWIK Bolt 3 or Simpson Wedge Bolt 1 or approved equal
 2. All concrete masonry work shall be in accordance with ACI 530-11 "Building Code Requirements for Masonry Structures".
 3. All engineered concrete masonry shown on the contract drawings has been designed based on full allowable stresses. Special inspection by a qualified inspector shall be required.
 4. All masonry shall be laid in running bond unless otherwise noted on the architectural drawings. Build all masonry level, square, plumb and true. Provide standard 9 ga. galvanized steel staves type horizontal joint reinforcing for masonry walls greater than 4" thick, see drawings for vertical reinforcement.
 5. Provide vertical control joints at a maximum of 25' o.c. spacing in all masonry walls unless noted. See architectural elevations for control joint locations.
 6. See architectural drawings for all notes, specifications, and details regarding flashing and weeps.
 7. Provide rebar dowels of the same size and spacing as vertical reinforcing from wall and spread footings. Dowels shall have standard ACI hooks and shall lap, unless noted otherwise, 48x bar diameter with first lift of vertical reinforcing.
 8. All poured or pumped grout shall be fine grout, with slump 8"-10". Grouting to be placed in lifts not to exceed the limitations stated in ACI 530. Grouting processes to be fully monitored and inspected by special inspections engineer. Provide inspection ports at bottom of each grout lift over 5"-4" in height as required on the outside face of the CMU. Stop grout for each lift 1" below top of last CMU course, with the exception of the top course of the CMU wall. Each grouted cell shall be mechanically consolidated, either by using a mechanical "pencil" vibrator for a maximum of two seconds or by rodding with a separate piece of reinforcing steel bar of length sufficient to reach to the bottom of the grout lift. Grout shall be re-consolidated upon water loss by similar means.
 9. All hollow masonry walls that change in thickness or number of wythes shall have a course of solid or grouted filled units at the transition.
 10. Walls shall be grouted as soon as possible to prevent shrinkage cracking. Masonry shall be allowed to cure a minimum of 24 hours prior to grout placement.
 11. The top of unfinished masonry work and all stored masonry materials shall be covered to protect the masonry from the weather.
 12. Masonry shall not be supported by wood girders or other form of wood construction. Provide steel lintels bearing on solid masonry above all openings.
 13. Completed masonry work to be brushed and washed with warm clean water, and free of excess mortar. Clean all other work affected by mortar spills and washing.
 14. Loose steel angle lintels shall conform to ASTM A36 for steel. All lintels to have 8" minimum bearing on one course of solid or grouted masonry units, unless noted otherwise. All loose lintels to be provided by structural steel contractor.
 15. Provide angle 1.5x3/2" x 1/16" for each 4" of masonry wall thickness over grilles, louvers, panel boxes, ducts and other non-structural openings not listed in schedule.
 16. Use two courses of solid grouted CMU under all joists bearing into masonry walls.
 17. Follow manufacturer's written installation procedures for installation of all post-installed anchors in masonry walls. For adhesive anchoring into hollow walls use appropriately sized screen tube in oversized hole. Control silica dust per OSHA requirements and prepare hole for receiving adhesive in accordance with manufacturer's requirements. Where required, contractor shall receive certification from manufacturer for conformance to installation procedures.

DIVISION 6 – WOOD CONSTRUCTION:
 1. Wood materials for use in construction shall be in accordance with the following specifications:
 a) Dimensional lumber, 2x8 or larger:
 2x8 or smaller: Southern Yellow Pine (SYP) #2 or greater
 b) Engineered lumber, I-joints:
 As specified on plans
 Beams and girders: 2.0E, min. f_b = 2,600 psi
 Columns and posts: 1.8E, min. f_b = 2,400 psi
 c) Glue-laminated lumber, Beams and girders: 1.8E, min. f_b = 2,400 psi
 Columns and posts: 1.8E, min. f_b = 2,400 psi
 d) Nails specified on structural drawings to be common wire nails unless noted otherwise
 (refer to NDS for sizes other than listed)
 8d: 0.131" x 2 1/2"
 10d: 0.148" x 3"
 16d: 0.162" x 3 1/2"
 30d: 0.207" x 4 1/2"
 Simpson, FastenMaster LOK, USP
 (various types and applications, others available subject to approval of engineer)
 e) Wood screw manufacturers:
 Manufactured to ANSI B18.2.1
 ASTM A307 with common or plate washer under nut and head
 Simpson Strong-Tie or USP
 min. 0.145" x 2 1/2" max. length w/ washer
 f) Log screws:
 ASTM A307 with common or plate washer under nut and head
 g) Bolts:
 Simpson Strong-Tie or USP
 min. 0.145" x 2 1/2" max. length w/ washer
 h) Proprietary metal clips:
 ASTM A307 with common or plate washer under nut and head
 i) Power driven fasteners for sill plates:
 min. 0.145" x 2 1/2" max. length w/ washer
 j) Wood construction shall conform to the requirements of the American Institute of Timber Construction and the 2012 "National Design Specification for Wood Construction" from the National Forest Products Association.
 k) Unless otherwise noted, all connections shall conform to the "Fastening Schedule", Table 2304.9.1 of the International Building Code (IBC 2012).
 l) Contractor shall install permanent bridging or solid blocking spaced at 8'-0" o.c. maximum between wood joists unless noted otherwise.
 m) Sheathing: shall conform to APA specifications. End joints shall occur over supports. Panels shall be staggered on half panel length from adjacent panels. Provide 1/8" space at panel ends. Wall sheathing shall be minimum 1/8", and roof sheathing shall be minimum 1/8", "APA rated sheathing", 24/16 panel span rating, exposure 1. All panels shall be nailed as indicated on structural drawings.
 n) All dimensions are to outside face of sheathing unless otherwise noted. See architectural drawings for dimensions not shown on structural drawings.
 o) Provide double joists under all partitions which run parallel with joists.
 p) All dimensional lumber to be surfaced dry and used at 19% maximum moisture content or equal.
 q) All members exposed to the weather, or in contact with masonry or concrete, shall be pressure-treated. See structural drawings for additional notes and requirements.
 r) See architectural drawings for all fire blocking, draft stopping, and other miscellaneous blocking requirements.
 s) Bolts connecting wood members shall be ASTM A307 common steel bolts of a diameter shown on the structural drawings. Common washers shall be used under each bolt head and nut. Bolt holes shall be carefully centered and drilled not more than 1/8" larger than the bolt diameters.
 t) All wood framing shall be continuous unless otherwise indicated. All splices shall be only as shown on plans.
 u) Connection details shown are typical unless otherwise noted or submitted.
 v) Wood bearing under wood beams shall be solid and bearing parallel to grain, continuous through floors from beam bearing to concrete slab.
 w) Interior stud walls bearing on concrete slabs may be anchored by powder actuated fasteners at 24" on center (max).
 x) Fasteners for preservative treated and fire retardant-treated wood shall be hot-dipped zinc coated galvanized steel, stainless steel, silicon bronze, or copper per IBC 2304.9.5.

METAL PLATE-CONNECTED WOOD TRUSSES:
 1. Wood trusses shall be designed by the manufacturer to support the live and dead loads shown on these drawings. Design shall comply with the Truss Plate Institute publication, ANSI/TP1-2014. Each unit shall bear the trademark of the fabricator. Trusses shall have panel type connections with steel tooth plates assembled with press jigs.
 2. Complete shop drawings for all roof trusses showing dimensions, member sizes, material properties allowable stresses in compression, tension, bending, connection details and design loadings shall be submitted to the engineer for approval. Shop drawings shall bear the seal of a professional engineer registered in the Commonwealth of Virginia.
 3. Contractor shall assume complete responsibility for the erection and handling of the wood trusses. Handling, erection, and bracing shall be in accordance with recommendations in the Truss Plate Institute / Wood Truss Council of America publication BCSI "Guide to Handling, Restraining, and Bracing Wood Trusses", 2013 Edition.
 4. The contractor shall provide all temporary and permanent bracing and bridging as required per truss manufacturer's recommendations. Refer to BCSI Summary sheets B1, B3, B7, and/or B10 as applicable.
 5. Provide permanent lateral bracing between roof trusses where indicated on roof framing plan in addition to any bracing required by the truss manufacturer. Bracing shall consist of 2x4 "X" bracing, and shall span from the truss top chords to a subsequent truss bottom chord at a 45° angle. Provide continuous 2x4 horizontal blocking at truss top and bottom chords at "X" bracing locations. Attach bracing to each truss with a minimum of (2) 10d nails.
 6. Contractor shall provide permanent web compression member bracing where indicated on truss manufacturer's drawings. Bracing shall consist of continuous 2x4 bracing, spliced a minimum of 2'-0", with 45° diagonal bracing spaced @ 20'-0" on center.
 7. Secondary bending stresses in truss top and bottom chords due to dead and live loads shall be considered in the design.
 8. Schematic truss profiles are shown. The truss manufacturer is responsible for the design and configuration of truss web members. Shop drawings shall include diagrams for truss member layout and connection information.
 9. Trusses are shown on framing plan for clarity only. Actual truss layout shall be as specified by the manufacturer and the design shall be certified by manufacturer's registered engineer.
 10. Trusses shall be fabricated in accordance with truss design criteria.
 11. All members shall be certified in writing by the fabricators as meeting the above requirements and are fabricated from stress grade lumber.
 12. Maximum live load deflection for all roof trusses shall be L/360, where 'L' is the span length.
 13. All prefabricated trusses which cannot be shipped as a whole and, therefore, must require a field connection shall be designed and detailed by the truss manufacturer's registered engineer.

DESIGN LOAD SCHEDULE (2012 IBC)	
DESIGN ALLOWABLE SOIL BEARING CAPACITY:	1500 psf
DEAD LOADS:	20 psf
UNREDUCED LIVE LOADS:	100 psf</

COLUMN SCHEDULE

MARK	SIZE	BASE	ANCHORS	REMARKS
C1	5 1/4" x 5 1/4" P.T. SYP#2	SIMPSON ABW66	1/2" Ø X 8" EMBED. A307	ALL METAL TO BE GALV. @ EXTERIOR

FOOTING SCHEDULE

MARK	SIZE (W x L x D)	LONG. REINF.	TRANSV. REINF.	REMARKS
TD1.5	1'-6" x CONT. x 2'-0" (MIN.)	(2) #5's CONT. @ BOTTOM	---	TURNDOWN CONT. FOOTING.
WF2.0	2'-0" x CONT. x 1'-0"	(3) #5's CONT. @ BOTTOM	#4's 12" O.C. @ BOTTOM	CONT. FOOTING

GENERAL FOUNDATION NOTES:

- SEE SITE PLAN FOR EXACT WALKWAY/CURB, ETC. LOCATIONS AND FOR CONTINUATION REQUIREMENTS.
- FOOTING SIZES BASED ON AN ASSUMED 1,500 psf BEARING CAPACITY. OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ON SITE SOILS ARE SUITABLE FOR BUILDING MEET OR EXCEED THIS DESIGN CAPACITY.
- FOOTING ELEVATIONS SHOWN ARE APPROXIMATE ONLY. ACTUAL FOOTING STEP LOCATIONS SHALL BE AS REQUIRED IN FIELD TO MAINTAIN DEPTH BELOW FINISH GRADE. ADDITIONAL STEPS MAY BE REQUIRED TO OBTAIN SUITABLE BEARING.
- ALL EARTHWORK CUT AND FILL OPERATIONS SHALL BE OBSERVED BY A LICENSED GEOTECHNICAL ENGINEER AS STIPULATED IN THE PROJECT STATEMENT OF SPECIAL INSPECTIONS. NOTIFY ENGINEER OF RECORD OF ANY ADVERSE SOIL CONDITIONS DISCOVERED THAT MAY AFFECT THE DESIGN OF ANY FOUNDATION ELEMENTS.

ONSITE SOILS MAY BE USED FOR STRUCTURAL BACKFILLING OPERATIONS WHEN STATED IN THE PROJECT GEOTECHNICAL ENGINEER'S REPORT. SUITABLE SOILS MUST BE CLASSIFIED AS CL, ML, SC, SM, SP, SW, GC, GM, GP, OR GW PER ASTM D2487. BACKFILL MUST BE PLACED AT OPTIMUM MOISTURE CONTENT AND IN 8" MAXIMUM LIFT INCREMENTS AND COMPACTED TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY PER ASTM D698. ALL BACKFILLING OPERATIONS AND FOUNDATION TRENCHES ARE TO BE OBSERVED BY AND PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.

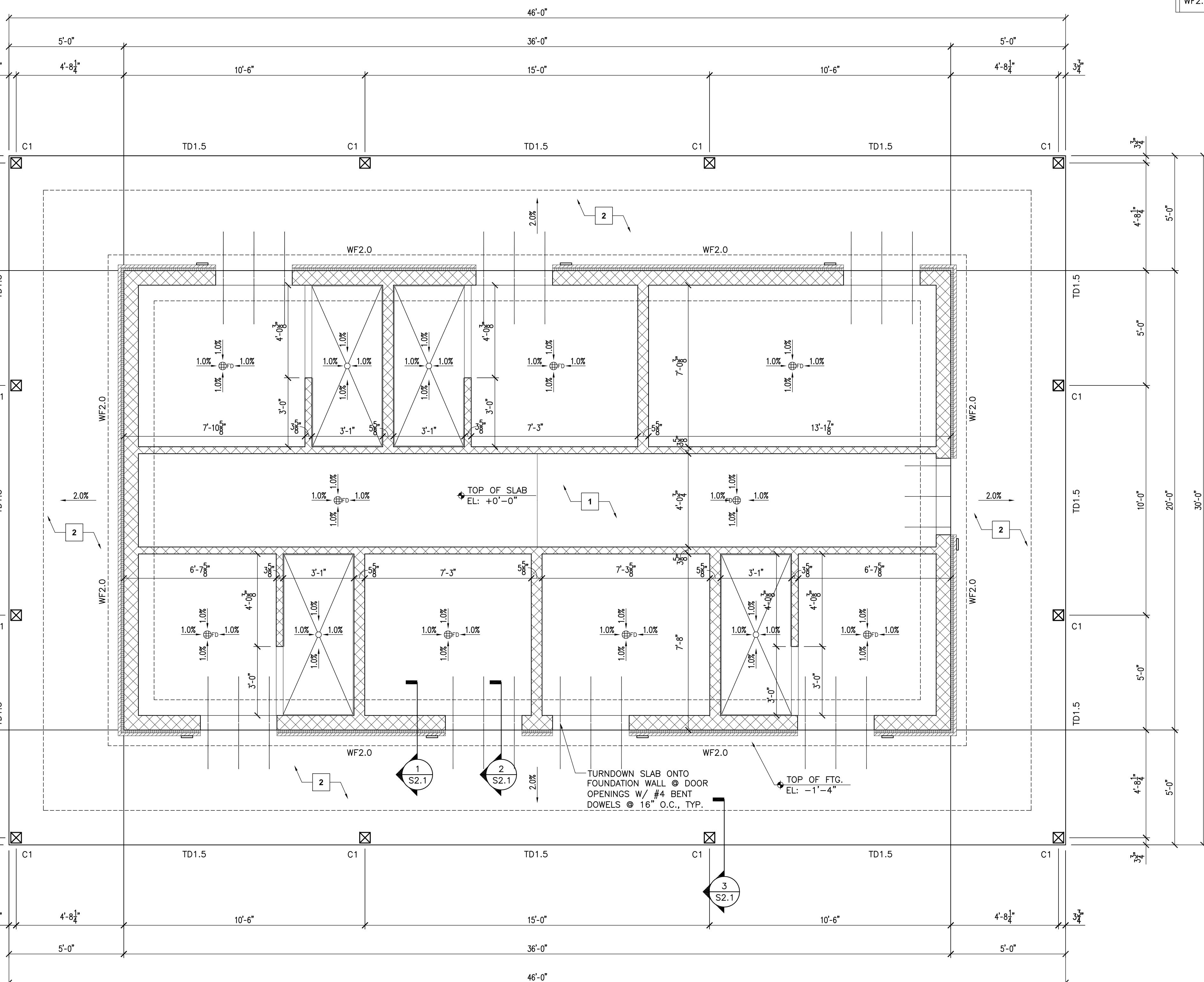
CONCRETE SLAB NOTES:

- SUB-BASE GRADE FOR GROUND FLOOR SLAB SHALL BE PROOF-ROLLED IN CONSULTATION WITH THE GEOTECH ENGINEER. SLABS SHALL OVERLAY A MINIMUM 4" SUCH LAYER. FILL MAY CONSIST OF VDOT #57, #21A, STONE SCREENINGS, RECYCLED CONCRETE, OR OTHER SUITABLE MATERIAL SUBJECT TO APPROVAL OF GEOTECH ENGINEER.
- INTERIOR CONCRETE FLOOR SLAB SHALL BE A MINIMUM THICKNESS AS NOTED ON THE PLAN AND BELOW. CONCRETE FOR SLABS ON GRADE SHALL BE REINFORCED WITH WELDED WIRE FABRIC OR EMBEDDED FIBER REINFORCEMENT FOR SHRINKAGE CRACK CONTROL AND RESIDUAL STRENGTH. SLABS SHALL BE PROPERLY CURED TO PREVENT EXCESSIVE SHRINKAGE AS WELL AS EDGE CURLING AND OTHER FIELD ISSUES. A 7-DAY WET CURE IS RECOMMENDED. SLABS SHALL BE SUITABLY FLAT AND LEVEL FOR THE INTENDED USE AS ACCEPTABLE TO THE OWNER.
- SLOPE ALL INTERIOR CONCRETE SLABS 1% TO FLOOR DRAINS.
- SAW CUT CONTROL JOINTS SHALL BE PROVIDED IN THE SLAB PRIOR TO CURING IN A REGULAR RECTANGULAR GRID, AS BEST AS POSSIBLE. JOINTS SHALL BEGIN AT COLUMN ISOLATION JOINTS AND/OR RE-ENTRANT CORNERS AND SHALL PANELIZE THE SLAB IN RECTANGULAR SEGMENTS APPROXIMATELY 2:1 OR SQUarer IN LENGTH/WIDTH RATIO. JOINTS SHALL BE SPACED NO FURTHER THAN 36X SLAB THICKNESS. ADJUST ACTUAL SPACING OF JOINTS AS NECESSARY BASED UPON SELECTED PERFORMANCE CRITERIA AND FIBER REINFORCEMENT DOSAGE RATE.
- SEE PLAN FOR GROUND FLOOR SLAB ELEVATIONS AND STEPS. COORDINATE WITH ARCHITECTURAL AND MEP DRAWINGS FOR SLAB CUTOUTS, DEPRESSIONS, AND PENETRATIONS NOT SHOWN ON FOUNDATION PLAN. STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR COORDINATION OF OTHER TRADES WITH THE CONCRETE.
- SEE ARCHITECTURAL DRAWINGS FOR SLAB FINISHES, COVERINGS, AND/OR TOPPINGS. FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS FOR COVERINGS AND TOPPINGS WITH REGARDS TO SLAB THICKNESS, SLOPE, FLATNESS/LEVELNESS, MOISTURE, PERMEABILITY, HARDNESS, JOINT SPACING, AND ANY OTHER COMPATIBILITY ISSUE. STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR COORDINATION OF FINISH REQUIREMENTS.

CONCRETE SLABS TYPES:

[1] INTERIOR SLAB: 4" 3000 PSI CONCRETE SLAB ON GRADE W/ 4x4-W2.0XW2.0 REINFORCEMENT OVER VAPOR RETARDER OVER 4" COMPACTED STONE FILL. SLOPE TO DRAINS.

[2] EXTERIOR SLAB: 4" 4000 PSI AIR-ENTRAINED CONCRETE SLAB ON GRADE W/ 4x4-W2.0XW2.0 REINFORCEMENT OVER 4" COMPACTED STONE FILL. SLOPE 2% AWAY FROM BUILDING.

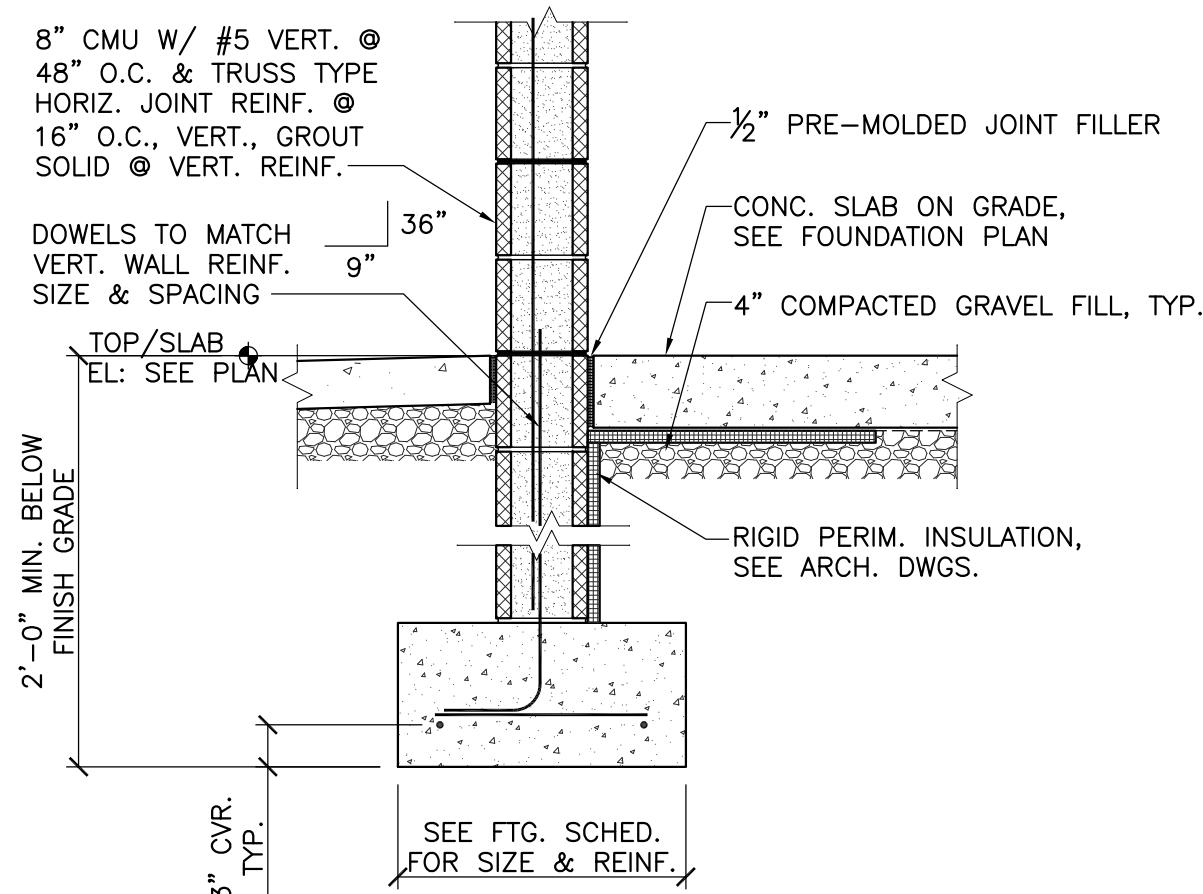


FOUNDATION PLAN

1
S1.1

SCALE: 3/8"=1'-0"

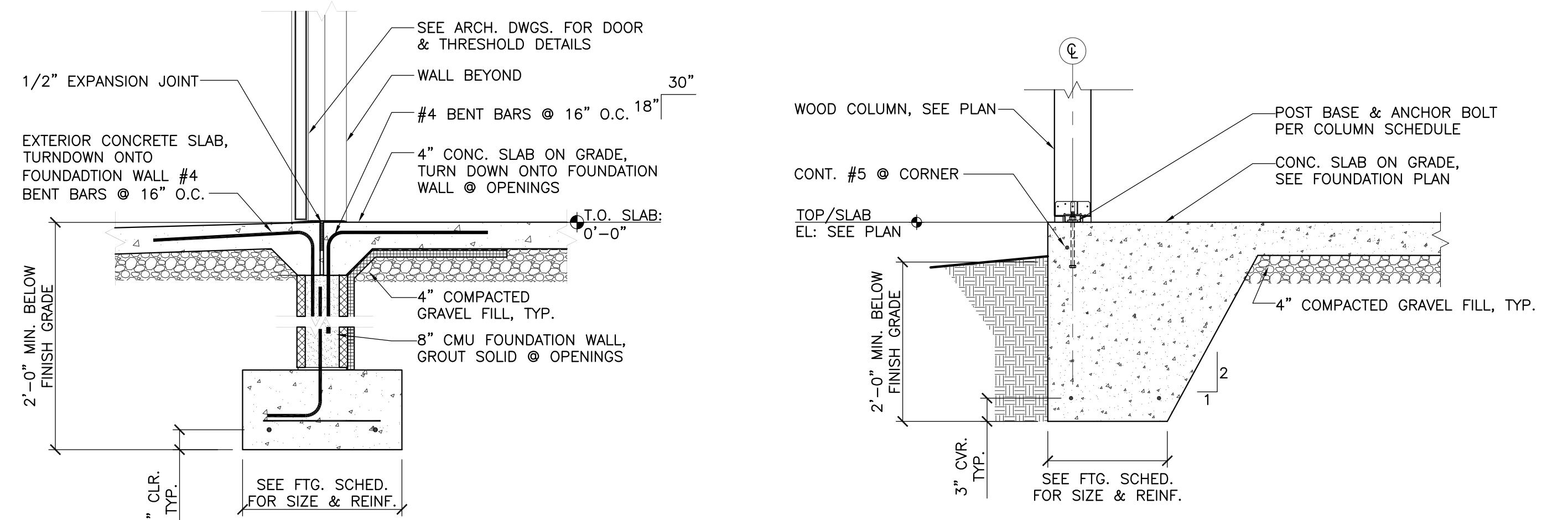
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21



EXTERIOR WALL FOUNDATION

1
S2.1

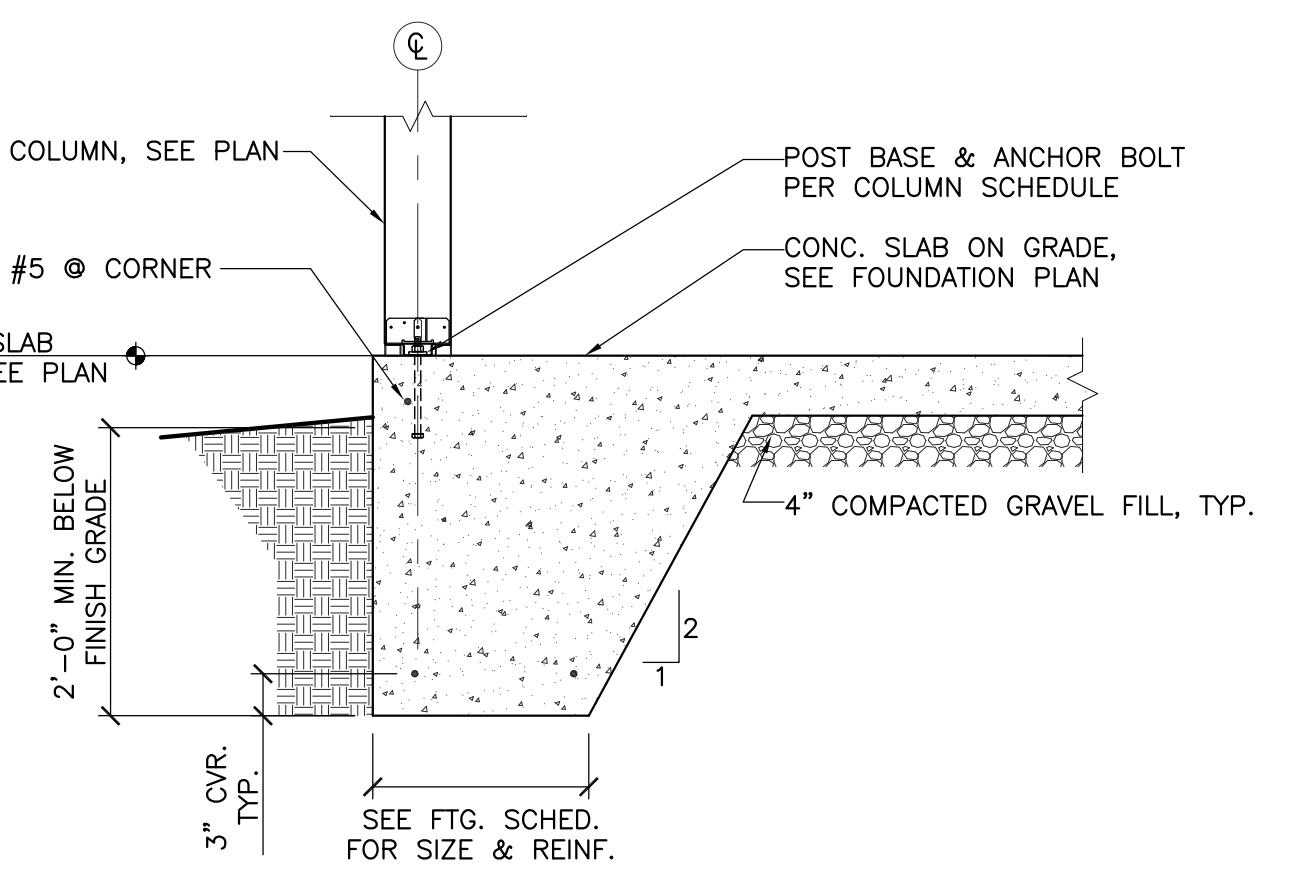
SCALE = 3/4"=1'-0"



WALL FOUNDATION @ DOOR

2
S2.1

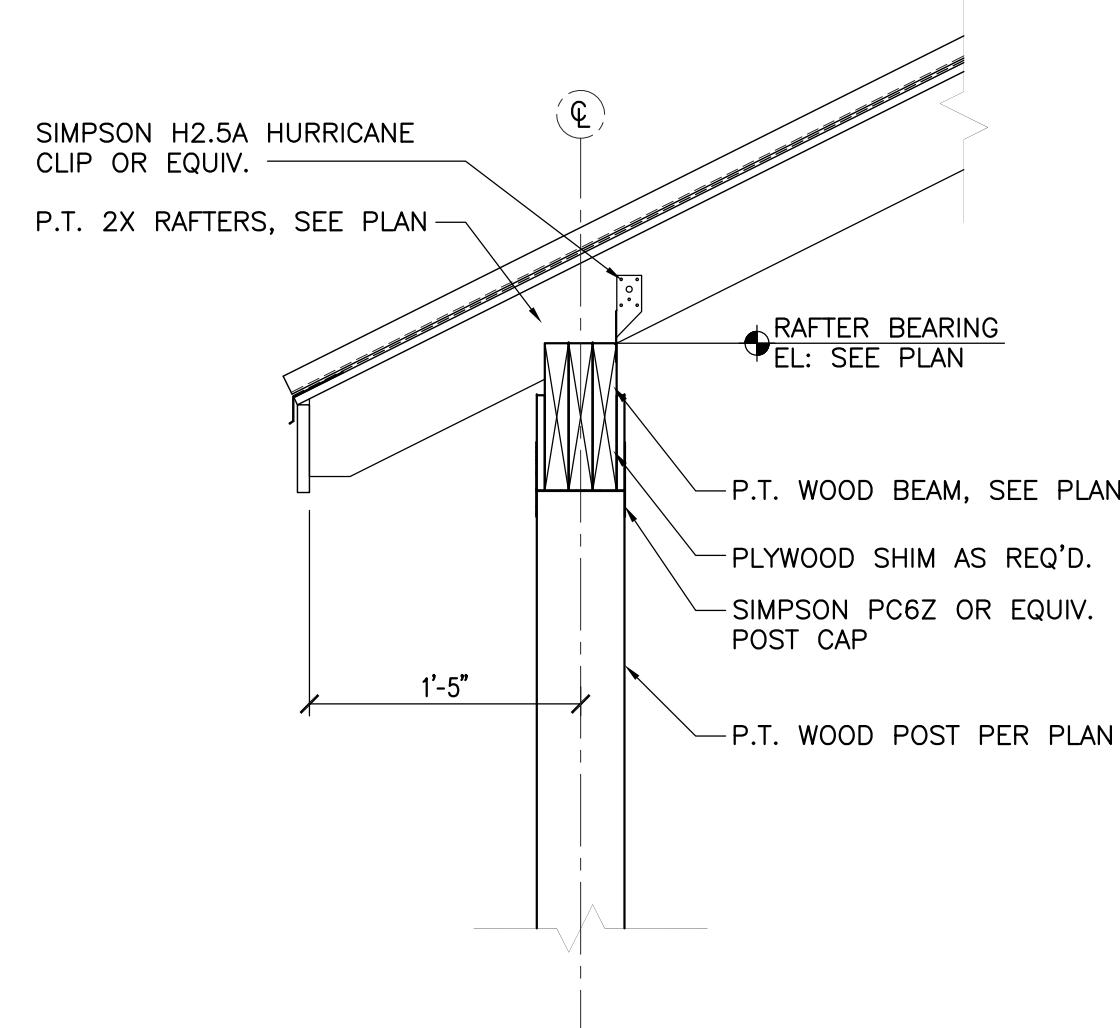
SCALE = 3/4"=1'-0"



EXTERIOR WALL FOUNDATION

3
S2.1

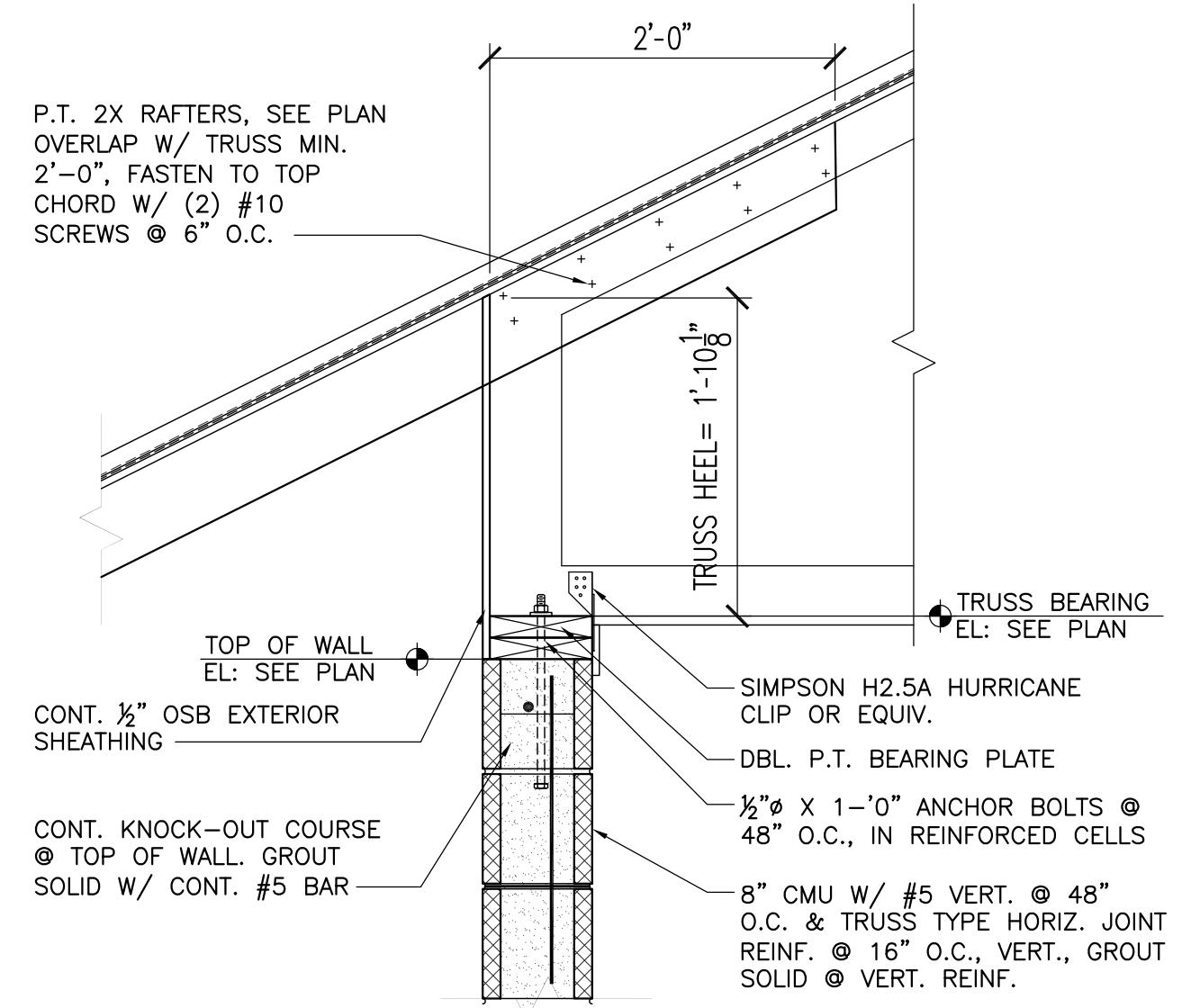
SCALE = 3/4"=1'-0"



RAFTER BEARING

4
S2.1

SCALE = 1"=1'-0"



TRUSS BEARING

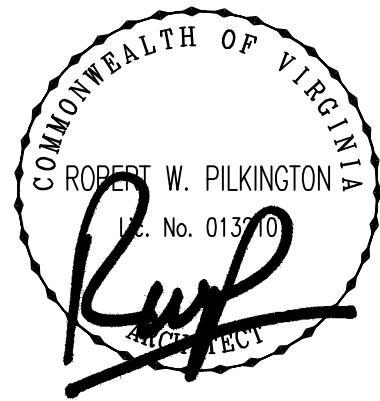
5
S2.1

SCALE = 1"=1'-0"

DRAWN BY MJF
DESIGNED BY MJF
CHECKED BY RWT
DATE 05/10/2018
SCALE
REVISIONS:

SHEET NO.
S2.1

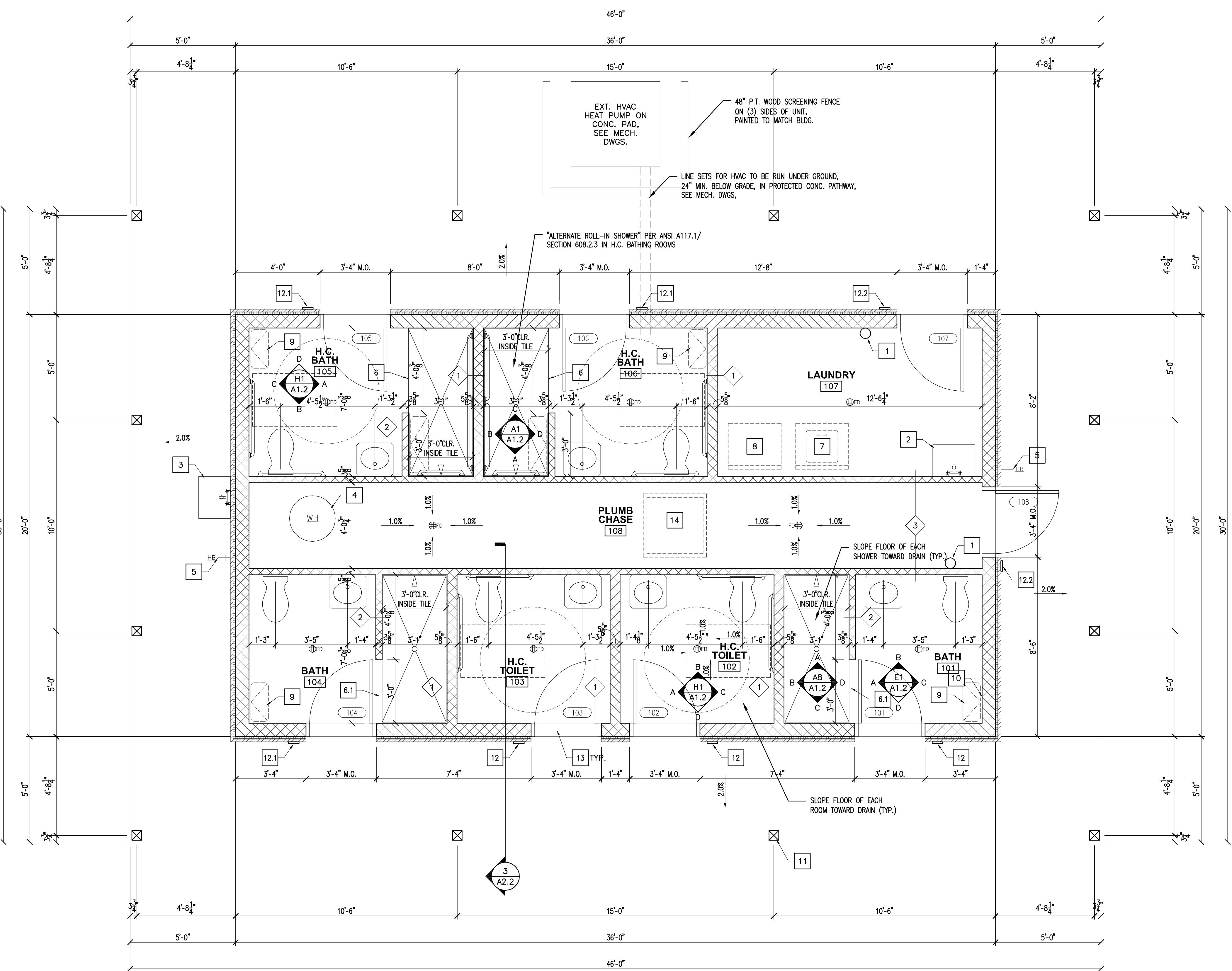
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**EXPLORE PARK
FLEX POD "A" BATHHOUSE
BUILDING PLAN**

EXPLORE PARK
COUNTY OF ROANOKE, VIRGINIA

PLAN KEYNOTES	
1	MULTI-PURPOSE FIRE EXTINGUISHER, DRY CHEMICAL TYPE, UL RATED 4-A:60-B:C, 10# NOMINAL CAPACITY IN ENAMELED STEEL CONTAINER, WALL MOUNTED
2	INTERIOR UTILITY SINK, SEE PLUMBING DWGS.
3	EXTERIOR UTILITY SINK, SEE PLUMBING DWGS.
4	WATER HEATER, SEE PLUMBING DWGS.
5	EXTERIOR FROST-PROOF HOSE BIBB, SEE PLUMBING DWGS.
6	FLUSH TRANSITION @ SHOWER ENTRY (1/2" OR LESS TOTAL VERT. THRESHOLD) @ H.C. BATHING ROOMS
6.1	1"X4" MARBLE SHOWER THRESHOLD @ NON-H.C. BATHING ROOMS
7	COMMERCIAL WASHER PROVIDED/INSTALLED BY TENANT/OWNER, G.C. PROVIDE REQUIRED MECH./PLUMBING/ELEC. CONNECTIONS
8	COMMERCIAL DRYER PROVIDED/INSTALLED BY TENANT/OWNER, G.C. PROVIDE REQUIRED MECH./ ELEC. CONNECTIONS
9	WALL-MOUNTED FOLDING BENCH, SEE SPECS ON SHEET A1.2
10	WALL-MOUNTED HANGER HOOKS BY OWNER (N.I.C.)
11	P.T. 6X6 WOOD POST, SEE STRUCT. DWGS. & SHEET A2.2 FOR NOTES
12	ACCESSIBLE RESTROOM SIGNAGE, SEE ELEVATION/DETAILS ON SHEET A1.2
12.1	SIGNAGE MARKING NON-ACCESSIBLE RESTROOM (TO MATCH SIGNAGE UNDER ITEM 12 ABOVE)
12.2	SIGNAGE MARKING NON-ACCESSIBLE ROOM (TO MATCH SIGNAGE UNDER ITEM 12 ABOVE)
13	H.C. THRESHOLD @ DOOR, NO STEP FROM BLDG. FLOOR TO SIDEWALK.
14	MIN. 32"X32" ATTIC ACCESS HATCH ABOVE, G.C. COORDINATE SIZE AND INSTALL W/ ROOF TRUSS MFR.



BUILDING PLAN

1 A1.1

SCALE : 3/8"=1'-0"

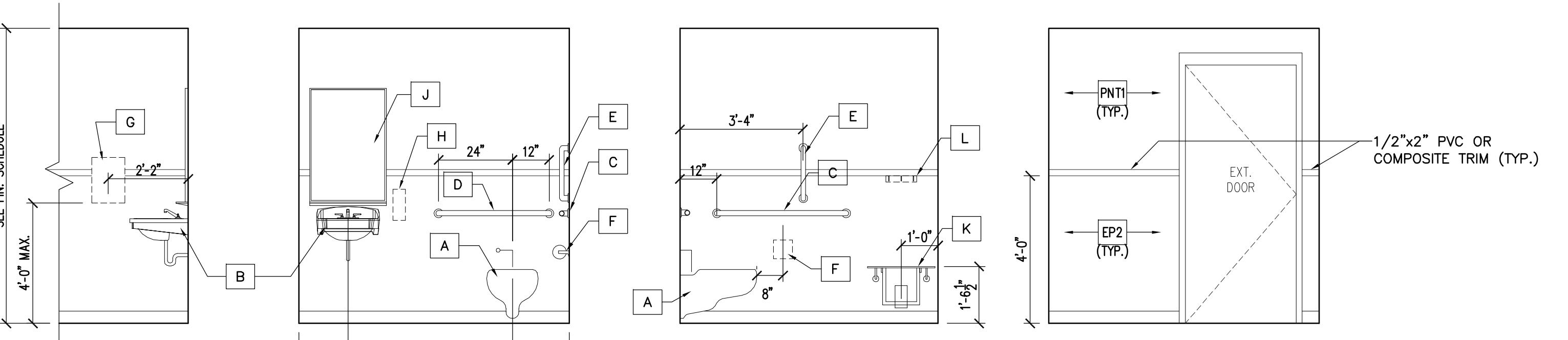
A1.1

JOB NO. 04180001.00

RESTROOM ACCESSORY SCHEDULE

ID.	DESCRIPTION	MANUFACTURER	MODEL	NOTES	MOUNTING HEIGHT
A	WATER CLOSET- HANDICAP	SEE PLUMBING DWG	SEE PLUMBING DWGS	WHITE W/ SEAT	SEAT 17" A.F.F.
A-1	WATER CLOSET- STANDARD	SEE PLUMBING DWG	SEE PLUMBING DWGS	WHITE W/ SEAT	SEAT 14" A.F.F.
B	LAVATORY (WALL HUNG)	SEE PLUMBING DWG	SEE PLUMBING DWGS	WHITE W/ ADA FAUCET	34" A.F.F. TO TOP OF SINK RIM
C	1-1/2" DIAMETER 42" GRAB BAR	BOBRICK	B-6206.99 X 42	REINFORCED WALL	34.5" A.F.F. TO CENTER OF BAR
D	1-1/2" DIAMETER 36" GRAB BAR	BOBRICK	B-6206.99 X 36	REINFORCED WALL	34.5" A.F.F. TO CENTER OF BAR
D-1	1-1/2" DIAMETER 24" GRAB BAR	BOBRICK	B-6206.99 X 24	REINFORCED WALL	34.5" A.F.F. TO CENTER OF BAR
E	1-1/2" DIAMETER 18" GRAB BAR	BOBRICK	B-6206.99 X 18	REINFORCED WALL	40" A.F.F. TO BOTTOM OF BAR
F	SURFACE-MOUNT T.P. DISPENSER	SUPPLIED & INSTALLED BY OWNER (NIC)	STAINLESS STEEL	24" A.F.F.	
G	SURFACE-MOUNT P.T. DISPENSER	SUPPLIED & INSTALLED BY OWNER (NIC)	STAINLESS STEEL	48" A.F.F. TO CENTER	
H	WALL-MOUNTED SOAP DISPENSER	SUPPLIED & INSTALLED BY OWNER (NIC)	STAINLESS STEEL	44" A.F.F. TO BOTTOM OF DISPENSER	
J	MIRROR/SHELF COMBO 24"x36"	BOBRICK	B166-2436	STAINLESS STEEL	
K	22" FOLDING SEAT	BOBRICK	B-5192	WALL-MOUNTED	18.5" TO TOP OF SEAT
K-1	33" FOLDING SEAT	BOBRICK	B-5181	WALL-MOUNTED	18.5" TO TOP OF SEAT
L	HANGING HOOKS	SUPPLIED & INSTALLED BY OWNER (NIC)	WALL-MOUNTED	48" IN H.C. BATHS; 60" IN STD. BATHS	
M	ADJUSTABLE HANDHELD SHOWER BAR	SEE PLUMBING DWG	SEE PLUMBING DWGS	WALL-MOUNTED	54" TO CENTER OF WALL SUPPLY OUTLET

RESTROOM NOTES:
1. INSULATE ALL EXPOSED H.W. SUPPLY AND DRAIN PIPES.
2. ALL SUBSTITUTE FIXTURES SHALL BE ADA COMPLIANT.
3. TOILET LEVER SHALL BE TO WIDE SIDE OF ROOM OR STALL.
4. PROVIDE SOLID GROUTED CMU FOR MOUNTING GRAB BARS AND WALL-MOUNTED FOLDING SEATS.
5. PROVIDE VENTILATION FANS TO OUTSIDE FOR ALL TOILETS, OPERATION TO ACTIVATE WHEN LIGHT IS SWITCHED.
6. ANY VENT PIPE (OR OTHER) PENETRATIONS THROUGH ROOF SHALL BE INSPECTED & VERIFIED BY ROOF INSTALLER OR MANUFACTURER TO INSURE CONTINUANCE OF ROOF WEATHERTIGHTNESS WARRANTY.
7. WATER TEMPERING DEVICE SHALL BE INSTALLED ON ALL LAVATORIES AS REQUIRED PER VPC/IPC 416.5.
8. G.C. REVIEW RESTROOM ACCESSORIES W/ OWNER AND PROVIDE ALTERNATIVE ACCESSORIES IF REQUESTED. COORDINATE W/ OWNER FOR ANY OWNER-SUPPLIED ACCESSORIES.



H.C. RESTROOM SIGN

NOT TO SCALE

SEE FIN. SCHEDULE

1. (1-1/2) PAIR HINGES
(1) CLOSER
ADA THRESHOLD
WEATHERSTRIPPING



DOOR HARDWARE SETS

DR. NO.	SIZE (WIDTH X HEIGHT X THICKNESS)	DOOR MATERIAL	DOOR TYPE	LABEL (MIN.)	Glass	THR.	FRAME TYPE	CLOSER	HDWR SET #	REMARKS
101	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
102	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
103	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
104	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
105	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
106	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
107	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
108	2'-8"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR

DOOR SCHEDULE

DR. NO.	SIZE (WIDTH X HEIGHT X THICKNESS)	DOOR MATERIAL	DOOR TYPE	LABEL (MIN.)	Glass	THR.	FRAME TYPE	CLOSER	HDWR SET #	REMARKS
101	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
102	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
103	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
104	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
105	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
106	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
107	3'-0"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR
108	2'-8"x7'-0"x1-3/4"	MTL	FLUSH	-	-	YES	HM	YES	1	INSULATED MTL. DOOR

GENERAL DOOR NOTES

1. ALL EXTERIOR DOOR THRESHOLDS SHALL BE 1/4" OFFSET, ADA ACCESSIBLE.
2. PROVIDE WEATHERSTRIPPING FOR ALL EXTERIOR DOORS.
3. "MTL" DENOTES HOLLOW CORE METAL DOORS. SEE SPECIFICATIONS ON SHEET T1.2 FOR METAL DOOR REQUIREMENTS.
4. DOOR FRAMES SHALL BE 16 GAGE HOLLOW METAL FRAMES, WELDED CORNERS W/ 2" Wide JAMB AND 4" HEAD, AND SHALL BE FACTORY PRIMED AND FIELD-PAINTED, CONSULT OWNER FOR COLORS. GROUT DOOR FRAMES SOLID WITH CMU.
5. ALL GLAZING USED IN DOOR ASSEMBLIES SHALL BE TEMPERED PER VCC/IBC CHAPTER 24.
6. DOOR FRAMES SHALL BE FIRE-RATED TO MATCH DOOR FIRE-RATING IF REQUIRED PER SCHEDULE.
7. DOORS SHALL "161 PREP" FOR FUTURE HARDWARE INSTALLATION. DOOR LATCH/LOCK HARDWARE SHALL BE PROVIDED AND INSTALLED BY OWNER (N.I.C.).

SPACE NO.	ROOM	FLOOR	BASE	TRIM	WALLS	CEILING	REMARKS
101	BATH	EP1	-	NOTE 11	CMU EP2/PNT1 GWB	PNT2 9'-6" EP2 4'-0" UP WALLS, PNT1 ABOVE	
101a	SHOWER	T1	-	NOTE 11	T2/CMU T2/PNT1 GWB	PNT2 9'-6"	
102	HANDICAP TOILET	EP1	-	NOTE 11	CMU EP2/PNT1 GWB	PNT2 9'-6" EP2 4'-0" UP WALLS, PNT1 ABOVE	
103	HANDICAP TOILET	EP1	-	NOTE 11	CMU EP2/PNT1 GWB	PNT2 9'-6" EP2 4'-0" UP WALLS, PNT1 ABOVE	
104	BATH	EP1	-	NOTE 11	CMU EP2/PNT1 GWB	PNT2 9'-6" EP2 4'-0" UP WALLS, PNT1 ABOVE	
104a	SHOWER	T1	-	NOTE 11	T2/CMU T2/PNT1 GWB	PNT2 9'-6"	
105	HANDICAP BATH	EP1	-	NOTE 11	CMU EP2/PNT1 GWB	PNT2 9'-6" EP2 4'-0" UP WALLS, PNT1 ABOVE	
105a	SHOWER	T1	-	NOTE 11	T2/CMU T2/PNT1 GWB	PNT2 9'-6"	
106	HANDICAP BATH	EP1	-	NOTE 11	CMU EP2/PNT1 GWB	PNT2 9'-6" EP2 4'-0" UP WALLS, PNT1 ABOVE	
106a	SHOWER	T1	-	NOTE 11	T2/CMU T2/PNT1 GWB	PNT2 9'-6"	
107	LAUNDRY	EP1	-	NOTE 11	CMU EP2/PNT1 GWB	PNT2 9'-6" EP2 4'-0" UP WALLS, PNT1 ABOVE	
108	PLUMBING CHASE	CONC	-	NOTE 11	CMU PNT1 GWB	PNT2 9'-6"	

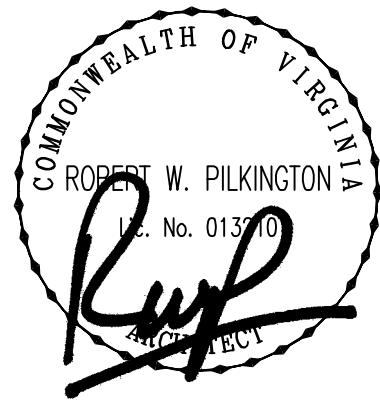
FINISH NOTES

1. ALL INTERIOR FINISHES SHALL MEET THE MINIMUM REQUIREMENTS SET FORTH IN IBC CHAPTER 8.
2. ALL WALL AND CEILING FINISHES SHALL BE AT LEAST CLASS C (FLAME SPREAD 76-200, SMOKE DEVELOPMENT 0-450) IN ENCLOSED ROOMS AND CLASS B (FLAME SPREAD 26-75, SMOKE DEVELOPMENT 0-450) IN CORRIDORS PER IBC TABLE 803.5.
3. FINISHES SHOWN HEREIN ARE SCHEMATIC. CONSULT OWNER FOR ADDITIONAL DETAILS REGARDING INTERIOR FINISHES.
4. ALL CLOSETS & AUXILIARY SPACES SHALL HAVE SAME FLOOR AND WALL FINISHES AS ROOMS THEY ARE LOCATED IN, U.N.O. SEE CEILING PLAN FOR CLOSET CEILING FINISHES AND HEIGHTS.
5. PROVIDE MOISTURE-RESISTANT GWB FOR ALL CEILINGS.
6. SUBSTITUTIONS FOR SPECIFIED PRODUCTS SHALL BE EQUAL TO THOSE SPECIFIED IN COMPOSITION, PHYSICAL PROPERTIES, COLOR/TEXTURE/APPEARANCE, AND ENVIRONMENTAL QUALITIES. ANY ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE OWNER WITH BIDS.
7. "PAINT" DENOTES INTERIOR PAINTED SURFACES UTILIZING PAINT MATERIALS CONTAINING 0% VOC's (VOLATILE ORGANIC COMPOUNDS), CONSISTING OF (1) COAT INTERIOR LATEX PRIMER AND (2) COATS LATEX FINISH. INCLUDE BLOCK FILLER ON CMU SURFACES. PAINT FINISH SELECTIONS (COLOR, FINISH, ETC.) TO BE CHOSEN BY OWNER.
8. "CONC" UNDER THE HEADING "FLOOR" DENOTES EXPOSED CONCRETE SLAB, TO BE GROUTED SMOOTH AND COATED W/ SEALER.
9. ALL TRANSITIONS BETWEEN DIFFERENT TYPES OF FLOORING SHALL BE ADA COMPLIANT.
10. EPOXY FLOOR COATING SHALL BE "CHEMPRO POLYMERS PERMACOAT 4000", INSTALLED IN TWO COATS. COLOR TO BE SELECTED BY OWNER FROM MANUFACTURER'S STANDARD COLOR RANGE.
11. 1X1 PVC OR COMPOSITE TRIM @ TOP OF WALL, PAINTED.

EP1= EPOXY COATING OVER CONCRETE SLAB
EP2= EPOXY PAINT ON CMU WALLS
T1= PORCELAIN TILE SHOWER FLOORING, 1"x1"
T2= PORCELAIN TILE ON SHOWER WALLS, 4"x4"
PNT1= PAINT 1
PNT2= PAINT 2

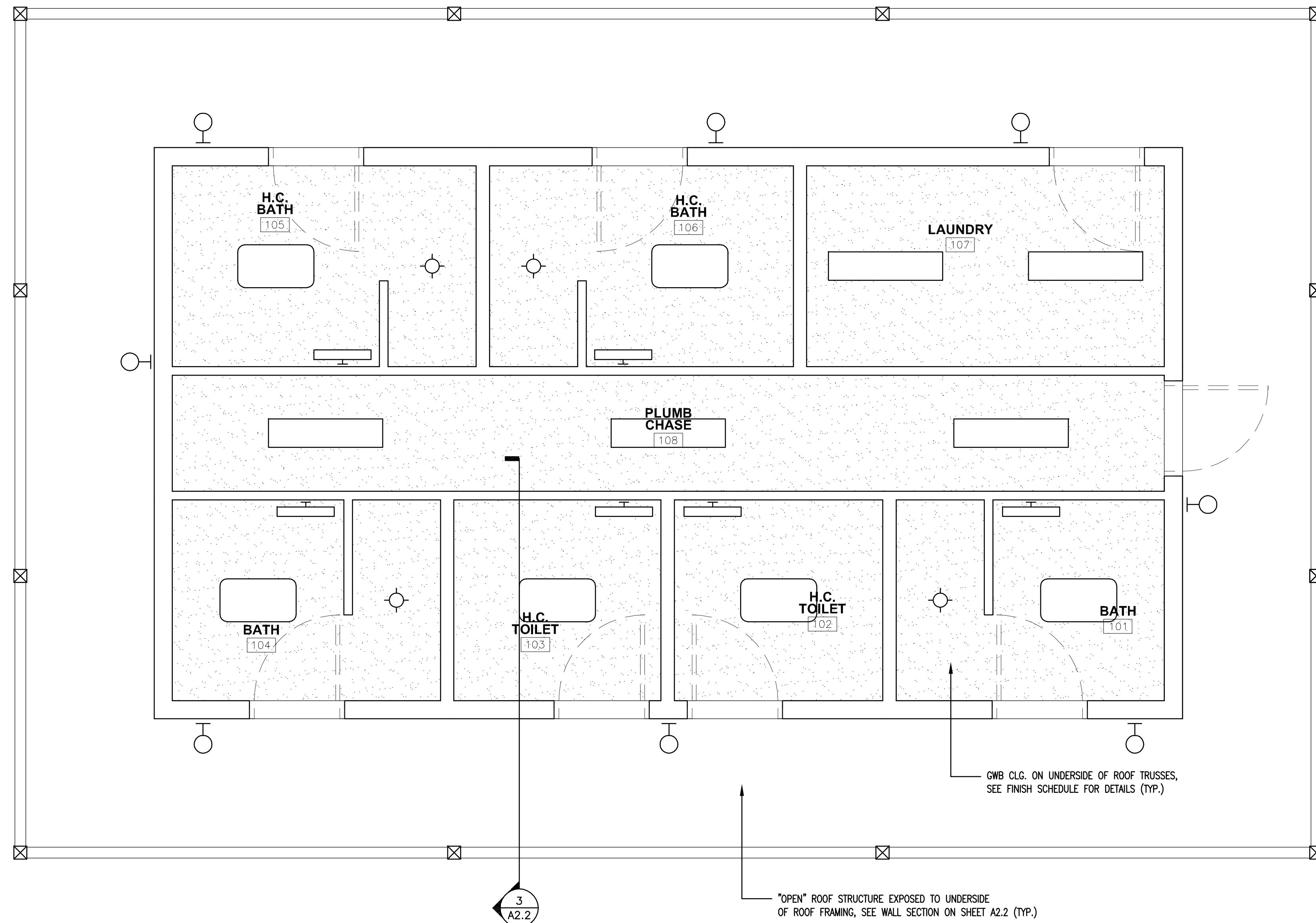
INTERIOR PARTITION SCHEDULE

TYPE	DESCRIPTION	RATING (HOURS)	UL DESIGN NO.	HEIGHT
1	6" CMU W/ HORIZ. JOINT REINF., SEE STRUCT. DWGS. PROVIDE P.T. (2)2X6 PLATE ON TOP W/ 3/8"x8" ANCHOR			



**EXPLORE PARK
FLEX POD "A" BATHHOUSE
REFLECTED CEILING PLAN**

EXPLORE PARK
COUNTY OF ROANOKE, VIRGINIA



REFLECTED CEILING PLAN

1
A1.3 / SCALE : 3/8"=1'-0"

CEILING/LIGHTING LEGEND

ITEM	DESCRIPTION
<input type="checkbox"/>	SURFACE-MOUNTED FIXTURE W/ LED LAMP(S)
<input checked="" type="checkbox"/>	RECESSED CAN LIGHT W/ LED LAMP (I.C. RATED FOR CONTACT W/ INSULATION, SEALED FOR USE IN WET LOCATIONS)
<input type="checkbox"/>	WALL MOUNTED EXTERIOR LIGHT FIXTURE
<input type="checkbox"/>	WALL-MOUNTED DECORATIVE VANITY LIGHT
<input type="checkbox"/>	1X4 SURFACE-MOUNT FIXTURE W/ LED LAMPS
<input type="checkbox"/>	WALL-MOUNTED EMERGENCY EGRESS LIGHT W/ BATTERY BACKUP, HARDWIRED TO BLDG. ELEC. SYSTEM
<input checked="" type="checkbox"/>	RESTROOM EXHAUST FAN

GENERAL CEILING/LIGHTING/ELECTRICAL NOTES:

1. ALL ELECTRICAL DESIGNS, CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL PROVISIONS OF THE 2012 VCC/IBC, AND THE CURRENT NATIONAL ELECTRIC CODE (NEC) AS A MINIMUM LEVEL OF CONSTRUCTION DETAIL AND QUALITY.
2. ALL LIGHTING LAYOUTS SHOWN HERE ARE SCHEMATIC ONLY. SEE ELECTRICAL DRAWINGS FOR EXACT LAYOUT.
3. SEE ELECTRICAL DRAWINGS FOR REQUIREMENTS FOR EMERGENCY LIGHTING.
4. COORDINATE LOCATIONS OF LIGHTS WITH HVAC GRILLES & DUCTWORK AS REQUIRED.
5. G.C. COORDINATE LIGHT SWITCHING REQUIREMENTS (SWITCH LOCATIONS, DUAL SWITCHING IN ROOMS, ETC.) W/ OWNER.
6. LIGHTING IN RESTROOMS TO BE 20fc MINIMUM @ 30" ABOVE THE FLOOR. LIGHTING FOR OFFICE SPACES SHALL BE DESIGNED TO PROVIDE MINIMUM 30 f.c. @ 2'-6" A.F.F.

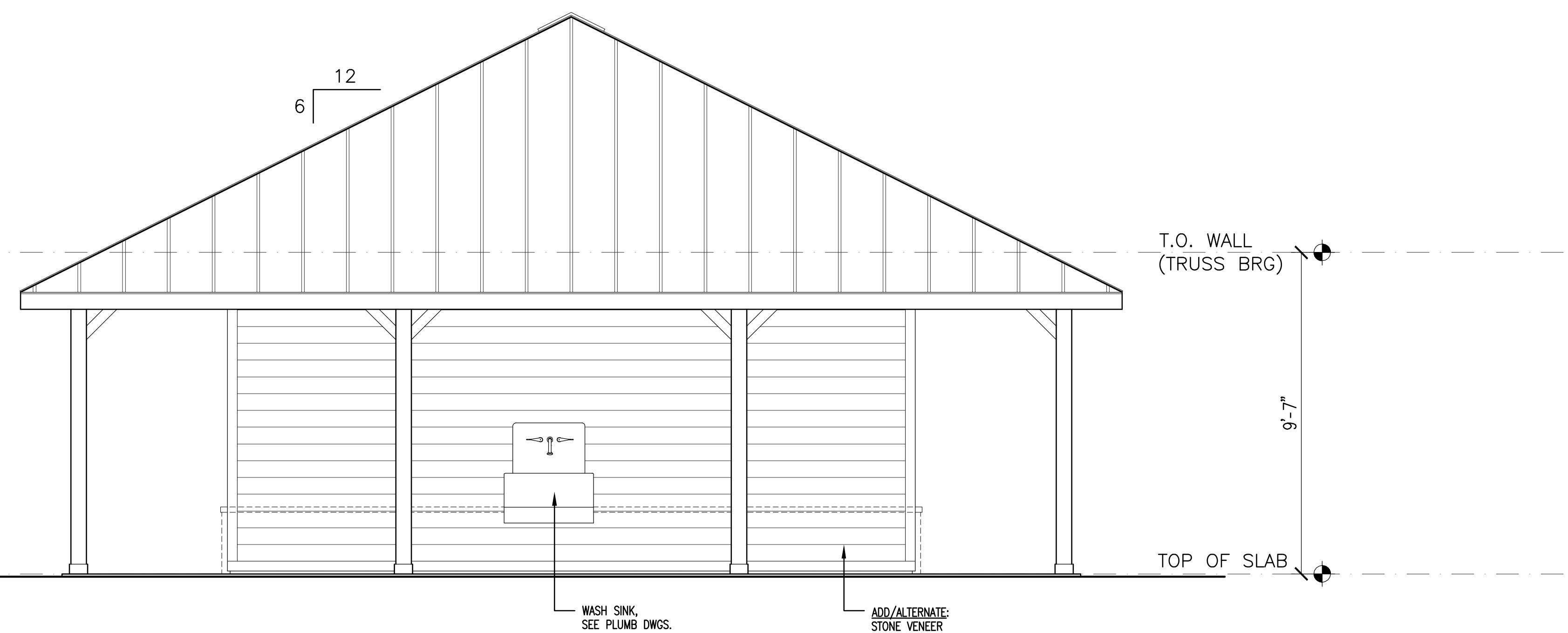
DRAWN BY RWP
DESIGNED BY RWP
CHECKED BY ---
DATE 05/10/2018
SCALE ---
REVISIONS: ---

SHEET NO. **A1.3**
JOB NO. 04180001.00

LEFT END ELEVATION

2
2.1 SCALE : 3/8"=1'-0"

2.1 SCALE : 3/8"=1'-0"



GENERAL EXTERIOR FINISH NOTES:

GENERAL EXTERIOR FINISH NOTES:

1. ALL EXTERIOR FINISHES/COLORS/TEXTURES/MANUFACTURERS SHOWN HEREIN SHALL BE VERIFIED W/ OWNER PRIOR TO CONSTRUCTION.
2. EXTERIOR SIDING TO BE CEMENTITIOUS SIDING, PAINTED, SEE SPECIFICATIONS. OWNER SHALL SELECT PAINT COLOR FROM MANUFACTURER'S FULL RANGE. G.C. G.C. SHALL PROVIDE ALL REQUIRED FLASHINGS, WEATHER BARRIER AND INSTALLATION ACCESSORIES AS REQUIRED TO PROVIDE A COMPLETE AND WEATHERTIGHT INSTALLATION.
3. **NOTE:** SIDING INSTALLATION SHALL BE PER JAMES HARDIE'S TECHNICAL BULLETIN #19 "APPLYING JAMES HARDIE SIDING OVER CONTINUOUS INSULATION AND NON-NAILABLE SUBSTRATES", DATED JANUARY 2018, UTILIZING "METHOD 2" FOR RIGID INSULATION GREATER THAN 1" THICK.
4. EXTERIOR TRIM (WINDOW/DOOR CASING, EXTERIOR FASCIA BD., RAKE BD., ETC.) SHALL BE CEMENTITIOUS, 3/4" THICK.
5. SEALANTS USED ON EXTERIOR SHALL MATCH ADJACENT MATERIALS; SEALANTS USED AROUND DOOR AND WINDOW OPENINGS SHALL MATCH DOOR OR WINDOW FRAMES.
6. GUTTERS AND DOWNSPOUTS NOT SHOWN. ALL GUTTERS TO BE "K" STYLE PRE-FINISHED SEAMLESS ALUM. W/ RECTANGULAR ALUMINUM DOWNSPOUTS; CONNECT TO BELOW GRADE PIPING. COLOR TO BE SELECTED BY OWNER. (TYP.)
7. PAINTING SHALL CONSIST OF (1) COAT PRIMER/SEALER AND (2) COATS OF FACTORY-FORMULATED ALKYD ENAMEL, SEMI-GLOSS FINISH, LABELED FOR EXTERIOR APPLICATIONS. USE ONLY PAINT LISTED BY MANUFACTURER FOR INTENDED SUBSTRATES.
8. CONSULT OWNER FOR ALL REQUIRED PAINT AND MATERIAL COLORS IF NOT SPECIFICALLY SHOWN HEREIN.
9. MASK ANY EXTERIOR ELEMENTS (LIGHTS, WINDOWS, DOORS, ETC.) WHICH ARE NOT TO BE PAINTED PRIOR TO PAINTING. REMOVE ANY SPILLS OR EXCESS PAINT BEFORE PAINT DRIES.
10. PAINT ALL EXPOSED UTILITY JUNCTION BOXES/METERS & ASSOCIATED CONDUIT TO MATCH BLDG. MASONRY.
11. METAL ROOFING SHALL BE INSTALLED OVER #15 ROOF FELT AND ROSIN-SIZED SLIP SHEET; PROVIDE SNOW GUARDS AS REQUIRED. COLOR TO BE FROM MFR. STANDARD FULL RANGE. INSTALL PER MFR. INSTRUCTIONS. (TYP.)
12. **ADD/ALTERNATE BID:**
SIMULATED STONE VENEER SHALL BE 2" CAST CONC., 24" TOTAL HEIGHT, EXTERIOR GRADE, TO BE SUBMITTED WITH BID AND APPROVED BY OWNER PRIOR TO CONSTRUCTION. G.C. SHALL PROVIDE ALL REQUIRED FLASHINGS, WEATHER BARRIER, SCRATCH COAT(S), LATHING, ADHESIVES AND MORTAR AS REQUIRED BY MANUFACTURER TO PROVIDE A COMPLETE/FINISHED AND WEATHERTIGHT INSTALLATION.

LEFT END ELEVATION

2
A2.1
SCALE : 3/8"=1'-0"

FOREST GREEN
5V METAL ROOFING (TYP.)

CONT. RIDGE VENT (TYP.)

ALUM. GUTTER (TYP. ALL SIDES)
(NOT SHOWN FOR CLARITY)

P.T. 4X4 WOOD DIAG. BRACKET,
LAG SCREWED W/ (2) 3" SCREWS
INTO COL. & BEAM (TYP.)

T.O. WALL
(TRUSS BRG)

6'-8" MIN.

9'-7"

TOP OF SLAB

CEMENTITIOUS HORIZ.
LAP SIDING (TYP.)

ROOM SIGNAGE,
SEE SHEET A1.1

PAINTED MTL. DOOR (TYP.)

P.T. 6X6 WOOD POSTS (TYP.)

ADD/ALTERNATE:
STONE VENEER

EXPOSED PARK
FLEX POD A BATHHOUSE
EXTERIOR ELEVATIONS

COUNTY EXPLORE PARK, ROANOKE, VIRGINIA

DRAWN BY RWP
DESIGNED BY RWP
CHECKED BY ---
DATE 05/10/2018
SCALE:
REVISION:

1 FRONT ELEVATION

2.1) SCALE : 3/8"=1'-0"

SHEET NO.

A2 1

A2

AIR DEVICE SCHEDULE

MARK	SERVICE	MOUNTING	FINISH	BASIS OF DESIGN
A	SUPPLY	SURFACE	WHITE	PRICE, 600 - SINGLE DEFLECTION, ALUMINUM.
B	EXHAUST	SURFACE	WHITE	PRICE, 600 - SINGLE DEFLECTION, ALUMINUM.

HEATER SCHEDULE

MARK	HEATING CAPACITY		ELECTRICAL		BASIS OF DESIGN
	KW	MBH	V / PH	AMPS	
UH-1	3.3	11.2	208 / 1	15.9	MARKEL MODEL F1F5103N, HORIZONTAL UNIT HEATER

NOTES:

1. PROVIDE WITH WALL MOUNTED T-STAT. SET TO 55°F.

EXHAUST FAN SCHEDULE

MARK	AIR FLOW (CFM)	ESP	NOM HP	DRIVE TYPE	V/FREQ./PH	BASIS OF DESIGN
F-1	460	0.4"	1/10	DIRECT	120/60/1	GREENHECK, G-085-VG
F-2	365	0.4"	1/10	DIRECT	120/60/1	GREENHECK, G-085-VG

NOTES:

1. INTERLOCK BOTH EXHAUST FANS WITH AHU-1 SUPPLY AIR FAN.
2. PROVIDE WITH 12" ROOF CURB AND GRAVITY BACKDRAFT DAMPER.

REMOTE OUTDOOR CONDENSER SCHEDULE (OUTDOOR UNIT)

MARK	COOLING		ELECTRICAL			UNIT WEIGHT (LBS)	BASIS OF DESIGN
	AIRFLOW (CFM)	FAN HP / #	V / PH / HZ	MCA	MOCP		
CU-1	11,400	1.5 / 1	208 / 1 / 60	5.9	15	305	ABOVE AIR MODEL# WP1-108D-1-00-OA-V-P66

NOTES:

1. UNIT SHALL BE PROVIDED WITH 1 YEAR PARTS ONLY WARRANTY.
2. CAPACITIES BASED ON 95°F OUTDOOR AIR TEMPERATURE.
3. PROVIDE CONCRETE PAD FOR OUTDOOR UNIT TO BE MOUNTED ON.

AIR HANDLER UNIT SCHEDULE

MARK	SUPPLY FAN					HEATING			COOLING			HOT GAS REHEAT			ELECTRICAL			UNIT WEIGHT (LBS)	BASIS OF DESIGN	
	TOTAL AIRFLOW (CFM)	OUTDOOR AIRFLOW (CFM)	EXT. S.P. (IN. W.C.)	FAN MOTOR (BHP)	FAN MOTOR (HP)	HEATING CAPACITY (KW)	V / PH / HZ	EAT/LAT (DB, °F)	GROSS TOTAL CAPACITY (MBH)	GROSS SENSIBLE CAPACITY (MBH)	EAT (DB/WB, °F)	LAT (DB/WB, °F)	EAT (DB/WB, °F)	LAT (DB/WB, °F)	CONTROL	V / PH / HZ	MCA	MOCP		
AHU-1	1,000	1,000	0.5	0.35	0.5	24.0	208 / 1 / 60	16 / 91.4	81.2	43.5	95 / 78	55 / 54.8	53.2	74.0	2-POS ON/OFF	208 / 1 / 60	45.5	60	800	ABOVE AIR MODEL# AEC-072D-1-HGO-00-OA-SF-D1-B

NOTES:

1. DUCT MOUNTED ELECTRIC HEATER TO BE SEPARATELY POWERED. PROVIDE WITH MODULATING SCR CONTROLS.
2. PROVIDE 2" PLEATED DISPOSABLE MERV 8 AIR FILTERS.
3. LEAD COMPRESSOR TO BE DIGITAL SCROLL COMPRESSOR.
3. UNIT SHALL BE PROVIDED WITH 1 YEAR PARTS ONLY WARRANTY FOR ENTIRE UNIT, 5 YEAR COMPRESSOR PARTS WARRANTY.

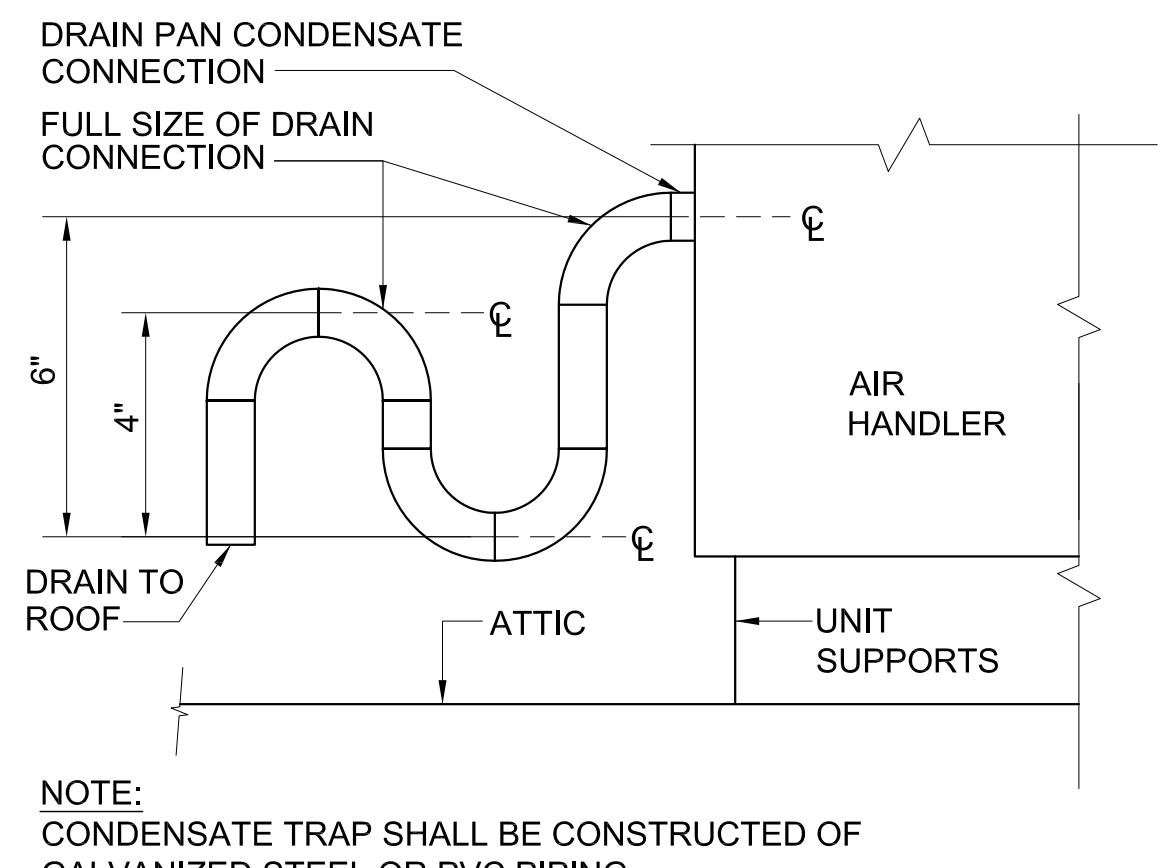
GENERAL MECHANICAL NOTES:

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE, ALL FEDERAL, STATE, AND CITY CODES, ORDINANCES, AND STANDARDS.
2. IT IS THE INTENT OF THESE DOCUMENTS THAT THE CONTRACTOR PROVIDE ALL LABOR, MATERIAL, EQUIPMENT AND TOOLS FOR THE COMPLETE INSTALLATION OF ALL WORK SHOWN ON THE PLANS AND/OR DESCRIBED HEREIN, INCLUDING ALL DEVICES AND CONTROLS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM.
3. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE. NOT ALL FITTINGS, OFFSETS, VENTS, OR DRAINS ARE SHOWN. THE CONTRACTOR SHALL INCLUDE ALL OFFSETS, VENTS, AND DRAINS AS REQUIRED FOR A FULLY FUNCTIONING SYSTEM.
4. IN AREAS WITH UNFINISHED CEILINGS, DUCTWORK AND PIPING SHALL BE ROUTED AS TIGHT TO THE STRUCTURE AS POSSIBLE.
5. ENSURE MECHANICAL EQUIPMENT IS INSTALLED TO PROVIDE SUFFICIENT CLEARANCE FOR COIL PULL, AND MINIMUM MANUFACTURER RECOMMENDED MAINTENANCE ACCESS TO EQUIPMENT.
6. ALL SUPPLY AIR DIFFUSERS, RETURN, AND EXHAUST GRILLES SHALL BE INSTALLED WITH BALANCING DAMPER LOCATED IN DUCT RUN OUT. DIFFUSERS AND GRILLES SHALL HAVE AN OPPOSED BLADE DAMPER ONLY WHEN DUCT DAMPERS ARE INACCESSIBLE.
7. ALL PIPING SHALL BE LABELED FOR ITS USAGE. ALL EQUIPMENT SHALL BE PROVIDED WITH AN ENGRAVED EQUIPMENT TAG.
8. ALL DUCTWORK CONSTRUCTION AND INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF THE SMACNA DUCT CONSTRUCTION HANDBOOK.
9. SUPPLY AIR DUCT INSULATION SHALL BE IN COMPLIANCE WITH THE 2012 IECC STANDARDS.
10. ANY SUBSTITUTIONS FOR MATERIALS AND EQUIPMENT MUST BE SUBMITTED WITH BID.

HVAC LEGEND

DUCTWORK

	SUPPLY AIR DUCT, (RECTANGULAR)
	RETURN AIR DUCT, (RECTANGULAR)
	THERMOSTAT/ COMBINATION TEMPERATURE AND HUMIDITY SENSOR
	RECTANGULAR DUCTWORK (1ST FIG. SIDE SHOWN, 2ND SIDE NOT SHOWN)
	ROUND DUCTWORK
	FIRE DAMPER, (FD)
	SMOKE DAMPER, (SD)
	BACKDRAFT DAMPER, (BD)
	FLEXIBLE DUCT, (ROUND)
	CEILING DIFFUSER (RECTANGULAR) 0 ARROWS=4 WAY THROW, 3 ARROWS=3 WAY THROW, 2 ARROWS=2 WAY THROW,
	DUCT TRANSITION, RECTANGULAR OR ROUND
	REFRIGERANT PIPING
	AIR DEVICE TAG 100 12 - A INLET SIZE - TAG
	CONNECT TO EXISTING MVD, MANUAL VOLUME DAMPER
	MOTORIZED CONTROL DAMPER



CONDENSATE DRAIN DETAIL

1
M1.1
SCALE = N/A

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
GENERAL SPECIFICATIONS																				
1. SCOPE: PROVIDE ALL MATERIALS, LABOR, TOOLS AND INCIDENTALS NECESSARY TO INSTALL AND MAKE READY FOR OWNER'S USE COMPLETE SYSTEMS OF HEATING, VENTILATION, AIR CONDITIONING (HVAC), PLUMBING, FOR THE PROPOSED WORK AND BUILDING RENOVATIONS AS SHOWN ON THE DRAWINGS AND CALLED FOR IN THESE SPECIFICATIONS. VISIT THE SITE TO OBTAIN DIMENSIONS, EXISTING LAYOUTS AND LOCATIONS AND EXISTING CONSTRUCTION DETAILS NOT SHOWN ON THESE DRAWINGS.																				
THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION WITH OTHER DIVISIONS OF WORK FOR THE FULL EXTENT OF THE SCOPE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ALL ASPECTS, COMPONENTS, SYSTEMS, ETC. AND ACCOMMODATE THE PERFORMANCE INTENT OF THE CONSTRUCTION DOCUMENTS THROUGHOUT THE PROJECT SCOPE.																				
2. BIDDERS RESPONSIBILITY: EXAMINE THE DRAWINGS AND SPECIFICATIONS AND VISIT THE WORK SITE. BECOME FAMILIAR WITH THE CHARACTER OF THE WORK, THE COORDINATION WITH OTHER TRADES REQUIRED, AND ANY OTHER CONDITIONS THAT AFFECT THE COMPLETION OF THIS WORK. GENERAL CONTRACTOR SHALL BE REQUIRED TO COORDINATE WORK WITH TENANT FINISH CONTRACTOR IN A SIDE BY SIDE SCENARIO.																				
3. PERMITS, CODES AND LAWS: APPLY FOR ALL PERMITS AND PAY ALL FEES.																				
ALL WORK SHALL BE IN ACCORDANCE WITH LATEST EDITIONS OF THE FOLLOWING RULES AND REGULATIONS, HEREIN REFERRED TO AS "CODES": THE LATEST OR ADOPTED EDITION OF THE APPLICABLE LOCAL, STATE, AND FEDERAL BUILDING, MECHANICAL, SANITATION, PLUMBING, ETC. CODES.																				
UNDERWRITER'S LABORATORIES, INC. (U.L.) NATIONAL FIRE PROTECTION ASSOCIATION (N.F.P.A.) OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (O.S.H.A.) WHERE ANY OF THESE CODES ARE AT VARIANCE WITH THE DRAWINGS AND SPECIFICATIONS, THEIR REQUIREMENTS SHALL TAKE PRECEDENCE, UNLESS THE DRAWINGS AND SPECIFICATIONS REQUIREMENTS EXCEED THESE CODES. INCLUDE ANY COST NECESSARY TO MEET THESE CODES IN THE BID PRICE.																				
4. MECHANICAL PLANS: THE MECHANICAL PLANS ARE DIAGRAMMATIC AND BASED ON ONE MANUFACTURER'S EQUIPMENT.																				
THEY ARE NOT INTENDED TO SHOW EVERY ITEM IN ITS EXACT LOCATION, THE EXACT DIMENSIONS, OR ALL THE DETAILS OF THE EQUIPMENT. VERIFY THE ACTUAL DIMENSIONS OF THE EQUIPMENT PROPOSED TO BE USED.																				
INSTALLATION SHALL BE WITHIN THE LIMITATIONS IMPOSED BY THE ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, AND PLUMBING REQUIREMENTS WITH ADEQUATE SPACE FOR MAINTENANCE.																				
5. QUESTIONS AND CLARIFICATIONS OF BID DOCUMENTS: BIDDERS SHALL NOT RELY ON ANY ORAL CLARIFICATION OF THE DRAWINGS OR SPECIFICATIONS. ANY QUESTIONS OR CLARIFICATIONS SHALL BE REFERRED IN WRITING TO THE ARCHITECT.																				
6. GUARANTEES: ALL EQUIPMENT, MATERIALS, AND WORKMANSHIP SHALL BE GUARANTEED IN WRITING FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE. WARRANTIES SHALL BE IN WRITING AND SHALL INCLUDE FACTORY WARRANTIES FOR EACH PIECE OF EQUIPMENT. PROVIDE A CERTIFICATE FOR EACH PIECE OF EQUIPMENT. CLEARLY INDICATE ON EACH WARRANTY CERTIFICATE THE MODEL NO., SERIAL NO., LOCATION, AND OWNER'S NAME.																				
7. COMPLETE SYSTEM: ALL PRODUCTS, MATERIALS AND ACCESSORIES SHALL BE FURNISHED AND INSTALLED AS REQUIRED FOR A COMPLETE SYSTEM READY FOR OWNER'S BENEFICIAL USE.																				
8. WORKMANSHIP: ALL WORK SHALL BE PERFORMED BY COMPETENT MECHANICS USING PROPER TOOLS AND EQUIPMENT TO PRODUCE FIRST QUALITY WORK. ALL WORK SHALL BE NEATLY INSTALLED, ACCESSIBLE FOR MAINTENANCE, AND COMPLETE WITH ALL ACCESSORIES REQUIRED.																				
9. ACCESSIBILITY: INSTALL ALL EQUIPMENT AND THEIR APPURTENANCES SUCH AS, BUT NOT LIMITED TO, VALVES, COILS, DRAIN PANS, DRAINS, DAMPERS, CONTROLS, MOTORS, CONTROLLERS, ETC., SO THAT THEY CAN BE SERVICED, RESET, REPLACED OR RECALIBRATED, ETC. INSTALL ALL NECESSARY ACCESS PANELS AND BUILDING ACCESS DOORS, AS BELOW, WHERE REQUIRED TO ACCOMPLISH THIS. IF ANY EQUIPMENT OR COMPONENTS DO NOT FIT WHERE INTENDED, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IN WRITING, REQUESTING FURTHER GUIDANCE.																				
PROVIDE BUILDING ACCESS DOORS FOR ALL MECHANICAL EQUIPMENT REQUIRING SERVICE, INCLUDING BUT NOT LIMITED TO, AHU'S, FANS, DAMPERS, DUCT ACCESS PANELS, CONTROLS, PIPING, VALVES, REGULATORS, TRAPS, ETC., INSTALLED ABOVE HARD CEILINGS, BEHIND WALLS, AND BELOW FLOORS, FOR INSTALLATION BY OTHER DIVISIONS OF THE WORK. BUILDING ACCESS DOORS ARE NOT REQUIRED WHERE THE MECHANICAL EQUIPMENT IS INSTALLED ABOVE LAY-IN AND ACCESSIBLE SPLINE CEILINGS. OTHER TYPES OF SPLINE CEILINGS REQUIRE BUILDING ACCESS DOORS.																				
SIZE THE BUILDING ACCESS DOORS FOR THE USE INTENDED, BUT NOT LESS THAN 12 INCHES BY 12 INCHES. WHERE HUMAN ACCESS IS REQUIRED, PROVIDE 24 INCHES BY 24 INCHES, OR LARGER. WHERE BUILDING ACCESS DOORS CANNOT BE INSTALLED FOR STRUCTURAL OR ARCHITECTURAL REASONS, NOTIFY THE ARCHITECT.																				
PRIME COAT BUILDING ACCESS DOORS IN PAINTED AREAS WITH FINISH PAINTING AS SPECIFIED IN OTHER DIVISIONS.																				
IN WET AREAS, TOILET ROOMS, OR AREAS WITH CERAMIC TILE FLOORS OR WALLS, PROVIDE STAINLESS STEEL BUILDING ACCESS DOORS.																				
PROVIDE BUILDING ACCESS DOORS WITH A CONCEALED KEY OPERATED LOCK AND CONCEALED HINGES. ALL LOCKS SHALL BE KEYED ALIKE.																				
PROVIDE BUILDING ACCESS DOORS AS SPECIFIED IN OTHER DIVISIONS OF THE WORK OR PROVIDE MILCOR DOORS, OR EQUIVALENT, SUITABLE FOR THE INSTALLATION INTENDED. PROVIDE FIRE RATED DOORS FOR ALL FIRE RATED WALLS, PARTITIONS, AND CEILINGS.																				
10. WORK BY OTHER TRADES: FURNISH ALL SLEEVE FRAMES, BUILDING ACCESS DOORS, PREFABRICATED EQUIPMENT CURBS, ROOF CURBS, ETC. FOR INSTALLATION BY OTHER TRADES.																				
INSTALL ALL MOTORS AND FURNISH THE STARTING EQUIPMENT AND DISCONNECTS TO THE DIVISION 26000 SUBCONTRACTOR FOR INSTALLATION. CONTROL WIRING, INCLUDING SWITCHES, THERMOSTATS, INTERLOCKS, ETC. SHALL BE FURNISHED BY DIVISION 23000. ENSURE THAT THE ELECTRICAL EQUIPMENT MOUNTED NEAR THE MECHANICAL EQUIPMENT DOES NOT BLOCK ACCESS TO SERVICE AREAS OF THE MECHANICAL EQUIPMENT. DO NOT ALLOW ANY EQUIPMENT TO BE INSTALLED ON THE HVAC EQUIPMENT ENCLOSURES.																				
11. FIRE STOPPING: ALL PENETRATIONS OF FLOORS AND OTHER FIRE-RATED ASSEMBLIES SHALL BE FIRE AND SMOKE-STOPPED IN STRICT ACCORDANCE WITH THE APPLICABLE CODES.																				
12. FOUNDATIONS AND SPECIAL SUPPORTS:																				
FURNISH AND INSTALL ALL SPECIAL FOUNDATIONS AND SUPPORTS REQUIRED FOR EQUIPMENT INSTALLED UNDER THIS SECTION, UNLESS THEY ARE A PART OF THE BUILDING STRUCTURE AND ARE SHOWN IN OTHER SECTIONS.																				
13. CLEANING AND PAINTING: THOROUGHLY CLEAN ALL EQUIPMENT AND REMOVE ALL TRASH, CARTONS, ETC. MAKE ANY NECESSARY CORRECTIONS OR REPAIR/REPLACE ANY DAMAGED MATERIALS OR EQUIPMENT. LEAVE THE ENTIRE SYSTEM IN A THOROUGHLY CLEAN AND ORDERLY MANNER.																				
14. FINISHED SURFACES THAT HAVE BEEN SCRATCHED OR DISCOLORED SHALL BE TOUCHED-UP OR PAINTED BREAK TO BREAK WITH PAINT TO MATCH THE ORIGINAL COLOR. TOUCH UP PAINTED SURFACES OR PAINT THE ENTIRE PAINTED SURFACE IF TOUCH UP IS UNACCEPTABLE. SEE ARCHITECTURAL PAINTING SPECIFICATIONS.																				
15. AS-BUILT DRAWINGS: MAINTAIN ALL UPDATED DRAWINGS SHOWING DEVIATIONS FROM CONSTRUCTION DOCUMENTS. AT THE END OF THE PROJECT, PROFESSIONALLY PREPARE AS-BUILT DRAWINGS AND SUBMIT THREE COPIES, ONE REPRODUCIBLE.																				
16. OPERATION AND MAINTENANCE MANUALS: UPON COMPLETION OF THE PROJECT, SUBMIT THREE COPIES OF ALL OPERATION AND MAINTENANCE MANUALS, WARRANTIES, SPARE PARTS LIST, AS-BUILT DRAWINGS, TEST AND BALANCE REPORTS, AND LETTER OF GUARANTEE ALL BOUND IN THREE RING BINDERS, CLEARLY SHOWING WHICH EQUIPMENT WAS SUPPLIED TO THE JOB.																				
17. PROJECT COMPLETION: BEFORE STARTING AND TESTING ANY SYSTEM, HVAC, OR PLUMBING, TO PREVENT INADVERTENT OPERATION OF THE MECHANICAL EQUIPMENT BEFORE THE MANUFACTURER'S INSPECTION AND TESTING, THE CONTRACTOR SHALL:																				
VERIFY THAT ALL ELECTRICAL POWER IS OFF TO ALL MECHANICAL EQUIPMENT, INCLUDING THE AHU'S, ACCU'S, BOOSTER PUMPS, FIRE PUMPS, ETC.																				
UPON COMPLETION OF THE INSTALLATION, BUT NOT BEFORE, AND BEFORE ACCEPTANCE, THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, PIPING, DUCTWORK, INSULATION JACKETS, ETC., REMOVING ALL STICKERS, LABELS, MARKING, WRITING, FABRICATION MARKINGS, IDENTIFICATION, ADHESIVE, SEALER, GLUE, RUST, CORROSION, ETC., FROM THEIR EXTERIOR SURFACES.																				
18. DUCT MOUNTED ACCESS PANELS: INSTALL ACCESS PANELS AS FOLLOWS:																				
AT INLET OF EACH DUCT MOUNTED FIRE AND MOTORIZED DAMPER.																				
FOR DUCT MOUNTED CONTROLS.																				
AS REQUIRED AND DIRECTED BY THE TEST AND BALANCE CONTRACTOR.																				
WHERE REQUIRED FOR DUCT INSPECTION, MAINTENANCE, AND CLEANING.																				
ACCESS PANELS SHALL BE 18 INCHES X 18 INCHES OR LARGEST DUCT WILL ALLOW. NORMALLY CENTER THE ACCESS PANEL IN THE BOTTOM OF THE DUCT AS CLOSE AS POSSIBLE TO THE DUCT MOUNTED DEVICE. ACCESS PANELS MAY BE INSTALLED ON THE SIDE OF THE DUCT, WHERE NECESSARY.																				
ACCESS PANELS SHALL BE DOUBLE WALL INSULATED HINGED WITH NEOPRENE GASKETS AND CAM LOCKS ON EACH UNHINGED SIDE. WHERE REQUIRED BECAUSE OF PANEL OPENING CLEARANCE, SUBSTITUTE UNHINGED ACCESS PANELS WITH CAM LOCKS ON EACH SIDE AND CAPTIVE CHAIN. ACCESS PANELS SHALL BE FLEXMASTER "TBSM-TAB DOOR" GREENHECK MODEL "HAD-10", OR EQUIVALENT.																				
28. REFRIGERANT PIPING: REFRIGERANT PIPING SHALL CONFORM TO THE REQUIREMENTS OF THE SAFETY CODES FOR MECHANICAL REFRIGERATION AND REFRIGERANT PIPING AND THE MANUFACTURER REQUIREMENTS.																				
RUN ALL PIPING SQUARE TO BUILDING LINES WHEREVER POSSIBLE. FIELD ROUTE PIPING IN ORDER TO PROVIDE FOR EASE OF ACCESS TO VALVES AND OTHER APPURTENANCES.																				
SUPPORT INTERIOR PIPING FROM THE BUILDING STRUCTURE USING COPPER OR PVC COATED HANGERS. SUPPORT REFRIGERANT PIPING 4 FOOT ON CENTER AND AT EACH CHANGE OF DIRECTION. PROVIDE 4" WIDE INSULATION SADDLES.																				
SUBMIT REFRIGERANT LAYOUT SHOP DRAWINGS FOR EACH UNIQUE SYSTEM, REVIEWED AND APPROVED BY THE MANUFACTURER, IN WRITING. SHOW ALL FILTERS, DRIERS, SIGHT-GLASSES, VALVES, ETC. AS REQUIRED BY THE MANUFACTURER.																				
USE REFRIGERANT GRADE, TYPE "K" HARD DRAWN COPPER PIPE WITH LONG RADIUS ELBOWS. NO CAST FITTINGS ARE ACCEPTABLE.																				
INSTALL FILTER DRIER EQUIVALENT TO SPORLAN CATCH-ALL.																				
INSTALL SIGHT GLASSES WITH MOISTURE INDICATORS COVERED BY A PROTECTIVE CAP. LOCATE THE SIGHT GLASSES INSIDE THE BUILDINGS, CLOSE TO THE FAN COIL IN THEIR RESPECTIVE MECHANICAL CLOSETS.																				
PROVIDE EXTERNAL FRONT SEALED BRASS SERVICE VALVES WITH SWEAT CONNECTIONS, WITH SERVICE PORTS FOR CHECKING OPERATING REFRIGERANT PRESSURES.																				
COPPER SHALL BE CLEANED AND SHINED BEFORE BRAZING. BRAZE USING J.W. HARRIS "DYNALLOW" 6% SILVER BRAZING ALLOY.																				
PIPING SHALL BE PURGED WITH DRY NITROGEN WHILE BRAZING TO PREVENT OXIDATION. UPON COMPLETION OF A WELD, THE WELD SHALL BE WIPE WITH A DAMP RAG																				

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32. SYSTEMS TEST AND BALANCE:
THE REQUIRED TEST & BALANCE OF THE HVAC SYSTEM SHALL BE PERFORMED BY AN APPROVED INDEPENDENT TESTING AGENCY AS SPECIFIED BELOW.

AGENCY QUALIFICATIONS:
TEST & BALANCE AGENCY (TBA) SHALL BE PERFORMED BY AN INDEPENDENT AGENCY ENGAGED SOLELY IN TEST AND BALANCE WORK. AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) AND NATIONAL ENVIRONMENTAL BALANCING BUREAU, (NEBB).

SUBMIT A WRITTEN REPORT WITHIN 30 DAYS OF COMMENCING WORK, WITH ANY RECOMMENDED CHANGES TO INSURE BALANCING CAPABILITY.

SUBMIT A DETAILED TEST PLAN TO THE ARCHITECT ILLUSTRATING ALL FORMATS, DRAWINGS, AND TEST PROCEDURE TO BE USED FOR TESTING THE COMPLETED SYSTEM. THE APPROVED PLAN WILL BE USED FOR TESTING THE SYSTEMS.

PROCEDURES SHALL INCLUDE REQUIREMENTS LISTED IN AABC/NEBB STANDARDS, LATEST EDITION AND ANY SPECIAL REQUIREMENTS FOR THIS PROJECT.

MAKE PROJECT VISITS AS REQUIRED DURING CONSTRUCTION PERIOD INSPECTING FOR PROPER INSTALLATION OF THE SYSTEM AND RELATED BALANCING DEVICES. PROJECT VISIT REPORTS SHALL BE MADE TO THE ARCHITECT IN WRITING.

CONTRACTORS REQUIREMENTS PRIOR TO TEST & BALANCE:
THE CONTRACTOR SHALL PERFORM ALL REQUIRED PRELIMINARY TESTS AND OTHER PREPARATORY WORK, INCLUDING BUT NOT LIMITED TO:

MAKE SURE ALL FANS ARE OPERATING, CHECK ROTATION, RPM, AND AMPS. CHECK ALL DAMPERS FOR OPERATION.

PUT ALL HVAC EQUIPMENT IN FULL OPERATION INCLUDING AIR UNITS, ACCU'S AND FANS. MAKE SURE ALL HVAC CONTROLS ARE INSTALLED AND FULLY OPERATIONAL. CLEAN/REPLACE FILTERS JUST PRIOR TO TESTING.

PROVIDE ALL BALANCING DEVICES AND DRIVE CHANGES THAT ARE DEEMED NECESSARY BY T&B AGENCY FOR BALANCE AT NO ADDITIONAL COST TO THE OWNER.

TEST & BALANCE AGENCY SHALL BALANCE ALL AIR SYSTEMS FOR OPERATION WITHIN DESIGN CRITERIA. PRIME MOVERS SHALL BE WITHIN 5% OF DESIGN AND TERMINALS WITHIN 10% OF DESIGN.

AIR SYSTEMS SHALL BE BALANCED AS DESCRIBED HEREIN.

TEST REPORT:
THE TBA SHALL PREPARE FIVE (5) COPIES OF A FINAL COMPREHENSIVE TEST REPORT IN THE FOLLOWING FORMAT.

REPORT SHALL BE BOUND 8-1/2 X 11" WITH SUBSTANTIAL COVERS USING APPROVED FORMS. TYPED OR COMPUTER GENERATED REPORTS ARE ACCEPTABLE.

REPORT SHALL BE INDEXED.

TABLE OF CONTENTS SHALL LIST ALL REPORTS.

ALL AIR OUTLETS SHALL BE LOCATED ON CODED DRAWINGS PREPARED BY THE T&B AGENCY. AIR OUTLETS FORMS SHALL BE PREPARED AND CORRELATED TO THE CODED DRAWINGS.

TEST SUMMARY SHALL DESCRIBE FINAL TEST PROCEDURES AND SPECIAL CONDITIONS DURING TESTS (SUCH AS THERMOSTAT OUTSIDE/RETURN AIR RELATIONSHIP), AND DUCT STATIC PRESSURE.

DESCRIBE OTHER DATA THAT MAY ASSIST OPERATING PERSONNEL IN THE CONTINUING OPERATION OF THE SYSTEM.

T&B CONTRACTOR SHALL TAKE AND RECORD ALL NECESSARY READINGS AT THE FINAL BALANCE POINTS, SUCH AS BUT NOT LIMITED TO: AIR QUANTITIES, PRESSURES, SETPOINTS, ENTERING AND LEAVING COIL TEMPERATURES, SPACE INDOOR AND OUTSIDE WET AND DRY BULB TEMPERATURES, OUTDOOR WEATHER CONDITIONS, ELECTRICAL READINGS OF ALL NEW AND EXISTING MOTORS, COMPRESSORS, ETC.

TEST REPORT SHALL CONTAIN TBA CERTIFICATION OF TEST DATA AND SYSTEM CONDITIONS. SUBMIT THE TEST REPORTS, FOR REVIEW, BEFORE SUBSTANTIAL COMPLETION.

END OF MECHANICAL SPECIFICATIONS.

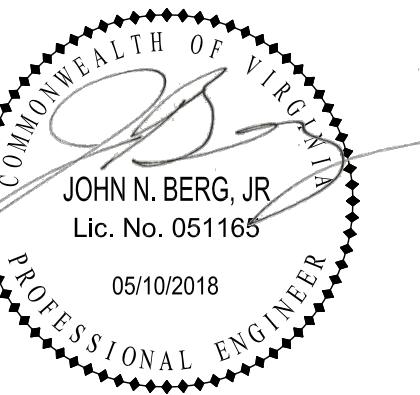


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JOHN N. BERG, JR

Lic. No. 051165

05/10/2018

EXPLORE PARK
FLEX POD "A" BATHHOUSE
MECHANICAL SPECIFICATIONS
COUNTY OF ROANOKE, VIRGINIA

DRAWN BY JNB
DESIGNED BY JNB
CHECKED BY JNB
DATE 05/10/2018
SCALE _____
REVISIONS:

SHEET NO.

M1.3

PLUMBING SPECIFICATIONS

1. GENERAL PROVISIONS

- A. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE VIRGINIA STATEWIDE BUILDING CODE INCLUDING ALL REFERENCED CODES AND STANDARDS AND IN ACCORDANCE WITH MANDATES OF THE LOCAL BUILDING OFFICIALS AND/OR LOCAL AUTHORITY HAVING JURISDICTION.
- B. THE GENERAL ARRANGEMENT AND LOCATIONS OF PIPING, FIXTURES AND EQUIPMENT ARE INDICATED BY THE DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE THEREWITH; WITH THE EXCEPTION OF SUCH CHANGES AS MAY BE REQUIRED ON ACCOUNT OF OTHER TRADES, CONTRACTOR SHALL COORDINATE WORK WITH INSTALLATION OF OTHER SUBCONTRACTORS.
- C. PLUMBING WORK SHALL BE COORDINATED WITH THE CONTRACTOR AS TO SCHEDULING, DIMENSIONING AND LOCATION OF EQUIPMENT.
- D. MAJOR ITEMS ARE SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INCIDENTAL ITEMS REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONAL SYSTEM.
- E. ALL PIPING SYSTEMS SHALL EXTEND 5 FEET BEYOND THE BUILDING LINE UNLESS INDICATED OTHERWISE. REFER TO CIVIL DRAWINGS FOR PIPING OUTSIDE THIS AREA.
- F. TRADE NAMES AND CATALOG NUMBERS SHALL BE INTERPRETED AS ESTABLISHING A GENERAL DESIGN AND STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. UNLESS STATED OTHERWISE, THE CONTRACTOR MAY USE ANY ARTICLE WHICH, IN HIS/JUDGEMENT, AND WITH WRITTEN COMMENT FROM THE ARCHITECT/ENGINEER INDICATING NO OBJECTION, IS EQUAL OR SUPERIOR TO THAT SPECIFIED. DRAWINGS SHOWING CHANGES OR REVISIONS REQUIRED BY THE SUBSTITUTION FOR SPECIFIED ITEMS SHALL BE SUBMITTED WITH THE SHOP DRAWING DATA, AND THE COSTS OF ALL SUCH CHANGES SHALL BE BORNE BY THE CONTRACTOR.
- G. SIMILAR ITEMS SHALL BE PROVIDED BY A SINGLE MANUFACTURER.
- H. ALL REQUIRED WALL OR FLOOR OPENINGS SHALL BE COORDINATED WITH THE CONTRACTOR.
- I. ALL PIPING SHALL BE ABOVE CEILING UNLESS INDICATED OTHERWISE.
- J. ALL EQUIPMENT SHALL BE WIPE CLEAN, REMOVING ALL TRACES OF OIL, DIRT, OR PAINT SPOTS.
- K. PROVIDE SUPPORTS TO RIGIDLY ATTACH ALL EQUIPMENT, APPURTEANCES AND PIPE AS REQUIRED FOR SUPPORT. PRIOR TO INSTALLATION OF HANGERS AND INSERTS, THE CONTRACTOR SHALL COORDINATE LOCATIONS AND REQUIREMENTS TO MINIMIZE CONFLICTS WITH OTHER BUILDING SYSTEMS. INSTALLATION OF PIPE HANGERS AND SUPPORTS SHALL BE IN STRICT ACCORDANCE WITH MSS SP-58, 69 AND 89.
- L. CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO ALL EQUIPMENT INDICATED TO BE FURNISHED BY OTHERS.
- 2. SUBMISSION OF SHOP DRAWINGS, PRODUCT DATA, SAMPLES AND PROJECT INFORMATION
 - A. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS:
 - (1) CLENOOTS
 - (2) FLOOR DRAINS
 - (3) BALL VALVES
 - (4) CHECK VALVES
 - (5) SHOCK ABSORBERS
 - (6) WATER HEATERS
 - (7) PLUMBING FIXTURES
 - (8) ALL ITEMS LISTED ON PLUMBING EQUIPMENT SCHEDULE.
 - B. IDENTIFY ALL PLUMBING SHOP DRAWINGS, PRODUCT DATA AND SAMPLES WITH THE NAME OF THE PROJECT, CLEARLY MARK THE SPECIFIC ITEMS INTENDED FOR USE. SUBMIT ALL RELATED ITEMS AT ONE TIME.
 - C. PRIOR TO SUBSTANTIAL COMPLETION OF THE PROJECT, SUBMIT THE FOLLOWING INFORMATION FOR REVIEW AND APPROVAL.
 - (1) "AS BUILT" DRAWINGS.
 - 3. GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED TO BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF ACCEPTANCE AND CONTRACTOR SHALL MAKE GOOD, WITHOUT ADDITIONAL COST TO THE OWNER, ANY DEFECTS WHICH MAY APPEAR WITHIN THAT PERIOD. MANUFACTURER'S WARRANTIES EXTENDING BEYOND ONE YEAR SHALL BE PROCESSED AND TURNED OVER TO THE OWNER.
 - 4. "AS BUILT" DRAWINGS: CONTRACTOR SHALL KEEP AN ACCURATE RECORD OF THE LOCATION OF ALL CONCEALED PIPING, VALVES, CONTROLS, ETC., BOTH INTERIOR AND EXTERIOR. ON COMPLETION OF THE WORK, ONE PRINT EACH OF THE CONTRACT DRAWINGS WHICH ARE APPLICABLE SHALL BE NEATLY AND CLEARLY MARKED IN COLOR TO SHOW ALL VARIATIONS BETWEEN THE WORK ACTUALLY PROVIDED AND THAT INDICATED ON THE CONTRACT DRAWINGS.
 - 5. ACCESS DOORS: ACCESS DOORS SHALL BE PROVIDED FOR ALL CONCEALED VALVES, CONTROLS, AND ANY OTHER EQUIPMENT OR MATERIALS REQUIRING INSPECTION OR MAINTENANCE. ACCESS DOORS SHALL BE FURNISHED FOR FLOORS, WALLS AND CEILINGS, OF ADEQUATE SIZE SO THAT CONCEALED ITEMS WILL BE READILY ACCESSIBLE FOR SERVICING OR FOR REMOVAL AND REPLACEMENT IF NECESSARY.
 - 6. PIPING SPECIALTIES
 - A. PIPE ESCUTCHEONS: INSTALL PIPE ESCUTCHEONS ON EACH PIPE PENETRATION THRU FLOORS, WALLS PARTITIONS, AND CEILINGS WHERE PENETRATION IS EXPOSED TO VIEW AND ON EXTERIOR OF BUILDING. SECURE ESCUTCHEON TO PIPE OR INSULATION SO ESCUTCHEON COVERS PENETRATION HOLE, AND IS FLUSH WITH ADJOINING SURFACE. PROVIDE SHEET STEEL ESCUTCHEONS, SOLID OR SPLIT HINGED, FOR AREAS WHERE WATER AND CONDENSATION CAN BE EXPECTED TO ACCUMULATE. PROVIDE CAST BRASS OR SHEET BRASS ESCUTCHEONS, SOLID OR SPLIT HINGED.
 - B. PIPE SLEEVES: INSTALL PIPE SLEEVES WHERE PIPING PASSES THROUGH WALLS, FLOORS, CEILINGS, AND ROOFS. DO NOT INSTALL SLEEVES THROUGH STRUCTURAL MEMBERS OF WORK, EXCEPT AS DETAILED ON DRAWINGS, OR AS REVIEWED BY ARCHITECT/ENGINEER. SIZE SLEEVES SO THAT PIPING AND INSULATION (IF ANY) WILL HAVE FREE MOVEMENT IN SLEEVE, INCLUDING ALLOWANCE FOR THERMAL EXPANSION BUT NOT LESS THAN 2 PIPE SIZES LARGER THAN PIPING RUN. INSTALL LENGTH

- O F SLEEVES EQUAL TO THICKNESS OF CONSTRUCTION PENETRATED, AND FINISH FLUSH TO SURFACE; EXCEPT FLOOR SLEEVES. EXTEND FLOOR SLEEVES 1/4 INCH ABOVE LEVEL FLOOR FINISH, AND 3/4 INCH ABOVE FLOOR FINISH SLOPED TO DRAIN. PROVIDE TEMPORARY SUPPORT OF SLEEVES DURING PLACEMENT OF CONCRETE AND OTHER WORK AROUND SLEEVES, AND PROVIDE TEMPORARY CLOSURE TO PREVENT CONCRETE AND OTHER MATERIALS FROM ENTERING SLEEVES.
- 7. INSULATION
 - A. FLAME/SMOKE RATINGS: PROVIDE COMPOSITE PLUMBING INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) WITH FLAME-SPREAD RATING OF 25 OR LESS, AND SMOKE-DEVELOPED RATING OF 50 OR LESS, AS TESTED BY ASTM E84 METHOD. INSULATION SHALL BE LABELED BY THE MANUFACTURER. THE LABEL SHALL INDICATE THE INSULATING VALUE, FLAME SPREAD AND SMOKE-DEVELOPED RATING.
 - B. SUBMITTALS: SUBMIT MANUFACTURER'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR EACH TYPE OF PLUMBING INSULATION. SUBMIT SCHEDULE SHOWING MANUFACTURER'S PRODUCT NUMBER, THICKNESS, AND FURNISHED ACCESSORIES FOR EACH PLUMBING SYSTEM REQUIRING INSULATION.
 - C. INSTALLATION: INSULATION SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING ONLY ADHESIVES, MASTICS AND PLUMBING FASTENERS APPROVED BY THE INSULATION MANUFACTURER. INSULATION SHALL NOT BE APPLIED UNTIL AFTER THE EQUIPMENT HAS BEEN TESTED WITH RESULTS ACCEPTABLE TO THE ARCHITECT/ENGINEER. INSULATION WITH A VAPOR BARRIER JACKET SHALL BE APPLIED WITH A CONTINUOUS, UNBROKEN VAPOR SEAL AND ALL JOINTS SHALL BE SEALED WITH A VAPOR BARRIER ADHESIVE UNLESS OTHERWISE INDICATED. STAPLES, STICK CLIPS AND HANGERS SHALL BE VAPOR SEALED WHERE THEY PUNCTURE VAPOR BARRIER JACKETS.
 - D. MATERIALS:
 - (1) GLASS FIBER PIPE INSULATION: HEAVY DENSITY PREFORMED PIPE INSULATION WITH OPERATING TEMPERATURE RANGE OF -60 DEGREES F TO 350 DEGREES F, THERMAL CONDUCTIVITY "K=0.24 BTU-NUHOUR-SF-DEG F AT 75 DEGREES F. NO JACKET REQUIRED. EQUAL TO ALUMINUM FOIL AND REINFORCED WITH GLASS FIBER YARN. EQUAL TO OWENS-CORNING AS.
 - (2) CELLULAR FOAM PIPE INSULATION: TUBULAR, FLEXIBLE, FIRE RESISTANT INSULATION WITH OPERATING TEMPERATURE RANGE OF -40 DEGREES F TO 220 DEGREES F, THERMAL CONDUCTIVITY "K=0.27 BTU-NUHOUR-SF-DEG F AT 75 DEGREES F. NO JACKET REQUIRED. EQUAL TO ARMSTRONG ARMAFLEX AP.
 - (3) POLYETHYLENE PIPE INSULATION: INSULATION MATERIALS CORPORATION OF AMERICA (IMCOA), FLEXIBLE CLOSED CELL POLYETHYLENE TUBING, ASTM C534, "K=0.24 AT 75 DEGREES F, SERVICE TEMPERATURE -10F TO 210F, NO JACKET REQUIRED.
 - E. PIPE INSULATION
 - (1) INSULATION OMITTED: OMIT INSULATION ON EXPOSED PLUMBING FIXTURE RUNOUTS FROM FACES OF WALL OR FLOOR TO FIXTURE; ON UNIONS, FLANGES, STRAINERS, FLEXIBLE CONNECTIONS, AND EXPANSION JOINTS.
 - (2) COVER VALVES, FITTINGS AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN.
 - (3) EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.
 - (4) INSTALL PROTECTIVE METAL SHIELDS AND INSULATED INSERTS WHEREVER NEEDED TO PREVENT COMPRESSION OF INSULATION.
 - (5) PIPE HANGER INSULATION INSERTS: BUTT PIPE INSULATION AGAINST PIPE INSULATION INSERTS, FOR HOT PIPES, APPLY 3 INCH WIDE VAPOR BARRIER TAPE OR BAND OVER THE BUTT JOINTS. FOR COLD PIPING APPLY WET COAT OF VAPOR BARRIER LATICRETE ON BUTT JOINTS AND SEAL JOINTS WITH 3 INCH WIDE VAPOR BARRIER TAPE OR BAND.
 - (6) DOMESTIC WATER PIPING, ABOVE GROUND: PIPING SHALL BE INSULATED WITH GLASS FIBER PIPE INSULATION. CELLULAR FOAM OR POLYETHYLENE PIPE INSULATION MAY BE USED ON PIPE SIZES 1 INCH AND SMALLER. VAPOR SEAL IS NOT REQUIRED ON HOT WATER PIPING.
- 12. WATER HEATERS
 - A. NSF LABELS: PROVIDE WATER HEATERS WHICH HAVE BEEN LISTED AND LABELED BY THE NATIONAL SANITATION FOUNDATION.
 - B. UL AND NEMA COMPLIANCE: PROVIDE ELECTRIC MOTORS AND ELECTRICAL COMPONENTS REQUIRED AS PART OF PLUMBING EQUIPMENT, WHICH HAVE BEEN LISTED AND LABELED BY UNDERWRITERS LABORATORIES AND COMPLY WITH NEMA STANDARDS.
 - C. NEC COMPLIANCE: COMPLY WITH NATIONAL ELECTRICAL CODE (ANSINFPA 70) AS APPLICABLE TO INSTALLATION AND ELECTRICAL CONNECTIONS OF ANCILLARY ELECTRICAL COMPONENTS OF PLUMBING EQUIPMENT.
 - D. ASHRAE COMPLIANCE: WATER HEATERS SHALL COMPLY WITH ASHRAE STANDARD 90.
 - E. WATER HEATERS SHALL BE FURNISHED WITH ASME RATED TEMPERATURE AND PRESSURE RELIEF VALVE WITH TEST LEVER.
- 13. PLUMBING FIXTURES
 - A. CODES AND STANDARDS: COMPLY WITH APPLICABLE PORTIONS OF NATIONAL STANDARD PLUMBING CODE AND THE VIRGINIA STATEWIDE BUILDING CODE, PERTAINING TO MATERIALS AND INSTALLATION OF PLUMBING FIXTURES.
 - (1) ANSI STANDARDS: COMPLY WITH APPLICABLE ANSI STANDARDS PERTAINING TO PLUMBING FIXTURES AND SYSTEMS.
 - (2) ANSI AND ADA COMPLIANCE: CONSTRUCT AND INSTALL BARRIER FREE PLUMBING FIXTURES IN ACCORDANCE WITH ANSI STANDARD A117.1 SPECIFICATIONS FOR MAKING BUILDINGS AND FACILITIES ACCESSIBLE TO AND USABLE BY PHYSICALLY HANDICAPPED PEOPLE AND WITH THE "AMERICANS WITH DISABILITIES ACT" GUIDELINES.
 - B. ALL EXPOSED FIXTURE SUPPLIES AND WASTE LINES SHALL BE CHROME PLATED, NO EXPOSED COPPER, PVC AND/OR CAST IRON PIPING IS ALLOWED. UTILIZE CHROME NIPPLES AS REQUIRED FOR DOMESTIC ROUGH-IN.
 - C. PLUMBING FIXTURES SHALL BE POSITIVELY VENTED AND TRAPPED IN ACCORDANCE WITH THE VIRGINIA STATEWIDE BUILDING CODE, LATEST EDITION. WET VENTING IS ALLOWED IF WASTE PIPING IS OVERRIDEN AND IN ACCORDANCE WITH CODE PROVISIONS. LOCATION OF VENT SHALL NOT EXCEED MAXIMUM DISTANCES TO THE TRAP AS ESTABLISHED WITHIN THE CODE.

- E. ALL PIPE OF THE SAME SIZE SHALL BE THE SAME MATERIAL.
- F. SLOPE ALL DRAIN LINES 1/4 INCH PER FOOT MINIMUM FOR SIZES LESS THAN 4 INCHES; SLOPE 1/8 INCH PER FOOT FOR SIZES 4 INCHES AND LARGER.
- G. SOIL, WASTE AND VENT PIPING LOCATED BELOW GRADE SHALL BE MINIMUM 2 INCH SIZE.
- H. VENTS SHALL EXTEND 12 INCHES ABOVE THE ROOF. ROOF FLASHING SHALL BE COORDINATED WITH BY THE CONTRACTOR.
- I. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BELOW GRADE WORK IN ACCORDANCE WITH THE FOLLOWING:
 - (1) TRENCHES SHALL BE GRADED TO UNIFORM PITCH AND SHALL NOT BE WIDER THAN NECESSARY AND FREE FROM LOOSE EARTH.
 - (2) CLEAN BACKFILL SHALL BE USED AND THOROUGHLY TAMPED IN LAYERS NOT EXCEEDING 6 INCHES TO A MINIMUM DEPTH OF 1 FOOT ABOVE PIPE.
 - (3) COMPAKED BACKFILL SHALL BE USED FOR ENTIRE DEPTH OF EXCAVATION UNDER SLAB ON GRADE CONSTRUCTION.
- J. DOMESTIC HOT AND COLD WATER PIPING SHALL BE 1/2 INCH SIZE UNLESS INDICATED OTHERWISE.
- 9. CLEANOUTS
 - A. CLEANOUTS SHALL BE THE SAME SIZE AS LINE SERVED, BUT NOT LARGER THAN 4 INCHES, AND SHALL BE PROVIDED AT THE BASE OF EACH SOIL AND WASTE STACK AT ALL POINTS WHERE DIRECTION CHANGE IS MORE THAN 45 DEGREES. AT MINIMUM INTERVALS OF 50 FEET FOR 4 INCH AND SMALLER PIPING, AT MINIMUM INTERVALS OF 100 FEET FOR PIPING LARGER THAN 4 INCHES, AS REQUIRED BY CODE AND AS INDICATED ON THE DRAWINGS. COVERS SHALL BE SET FLUSH WITH FLOOR OR WALL.
- 10. FLOOR DRAINS & FLOOR SINK
 - A. PROVIDE FLOOR DRAINS OF SIZE AND TYPE AS INDICATED ON DRAWINGS. ALL DRAINS CONNECTING TO SANITARY SEWER SYSTEM SHALL BE FURNISHED WITH ELASTOMERIC TRAP SEAL AND P-TRAP. DRAINS SHALL HAVE OUTLET COMPATIBLE WITH PIPING SYSTEM TO WHICH IT IS CONNECTED.
- 11. PLUMBING VALVES
 - A. PROVIDE SHUT-OFF VALVE AND UNION OR EQUIVALENT AT EACH HOT AND COLD WATER EQUIPMENT CONNECTION. PROVIDE SHUT-OFF VALVE ON EACH BRANCH OR RISER THAT SERVES TWO OR MORE PLUMBING FIXTURES.
 - B. GATE VALVES 2-1/2 INCHES AND SMALLER: ALL BRONZE, RISING STEM, SOLID WEDGE DISC. STOCKHAM B-100 OR B-108.
 - C. GLOBE VALVES: ALL BRONZE, RENEWABLE COMPOSITION DISC. STOCKHAM B-16 OR B-14-T.
 - D. CHECK VALVES IN HORIZONTAL PIPES:
 - (1) 2 INCHES AND SMALLER: ALL BRONZE, REGRINDING BRONZE DISC, HORIZONTAL SWING, Y-PATTERN. STOCKHAM B-319R B-309.
 - E. CHECK VALVES IN VERTICAL PIPES AND PUMP DISCHARGE: SILENT CHECK VALVE WITH SEMI-STEEL BODY, BRONZE TRIM AND STAINLESS STEEL SPRING. METRAFLEX 700 SERIES.
 - F. BALL VALVES MAY BE USED IN LIEU OF GATE VALVES 2 INCHES AND SMALLER. BALL VALVES SHALL HAVE BRONZE BODY, BRONZE BALL AND TFE SEATS AND SEALS. STOCKHAM S-216BRRT OR S-216BRRS.
- 12. WATER HEATERS
 - A. NSF LABELS: PROVIDE WATER HEATERS WHICH HAVE BEEN LISTED AND LABELED BY THE NATIONAL SANITATION FOUNDATION.
 - B. UL AND NEMA COMPLIANCE: PROVIDE ELECTRIC MOTORS AND ELECTRICAL COMPONENTS REQUIRED AS PART OF PLUMBING EQUIPMENT, WHICH HAVE BEEN LISTED AND LABELED BY UNDERWRITERS LABORATORIES AND COMPLY WITH NEMA STANDARDS.
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 - B. ALL EXPOSED FIXTURE SUPPLIES AND WASTE LINES SHALL BE CHROME PLATED, NO EXPOSED COPPER, PVC AND/OR CAST IRON PIPING IS ALLOWED. UTILIZE CHROME NIPPLES AS REQUIRED FOR DOMESTIC ROUGH-IN.
 - C. PLUMBING FIXTURES SHALL BE POSITIVELY VENTED AND TRAPPED IN ACCORDANCE WITH THE VIRGINIA STATEWIDE BUILDING CODE, LATEST EDITION. WET VENTING IS ALLOWED IF WASTE PIPING IS OVERRIDEN AND IN ACCORDANCE WITH CODE PROVISIONS. LOCATION OF VENT SHALL NOT EXCEED MAXIMUM DISTANCES TO THE TRAP AS ESTABLISHED WITHIN THE CODE.

- 14. CLEANING AND TESTING
 - A. ALL WATER PIPING, VALVES, ETC. SHALL BE THOROUGHLY FLUSHED OF FOREIGN MATTER AND TESTED FOR LEAKS IN ACCORDANCE WITH THE VIRGINIA STATEWIDE BUILDING CODE, LATEST EDITION. ANY LEAKAGE SHALL BE REPAIRED, DISINFECT DOMESTIC WATER PIPING INCLUDING WATER SERVICE PIPING IN ACCORDANCE WITH AWWA C601.
 - B. ALL DRAIN, WASTE AND VENT PIPING SHALL BE TESTED FOR LEAKS IN ACCORDANCE WITH THE VIRGINIA STATEWIDE BUILDING CODE, LATEST EDITION. NO VISIBLE DROP IN WATER LEVEL WILL BE ACCEPTABLE.
- END OF SPECIFICATIONS

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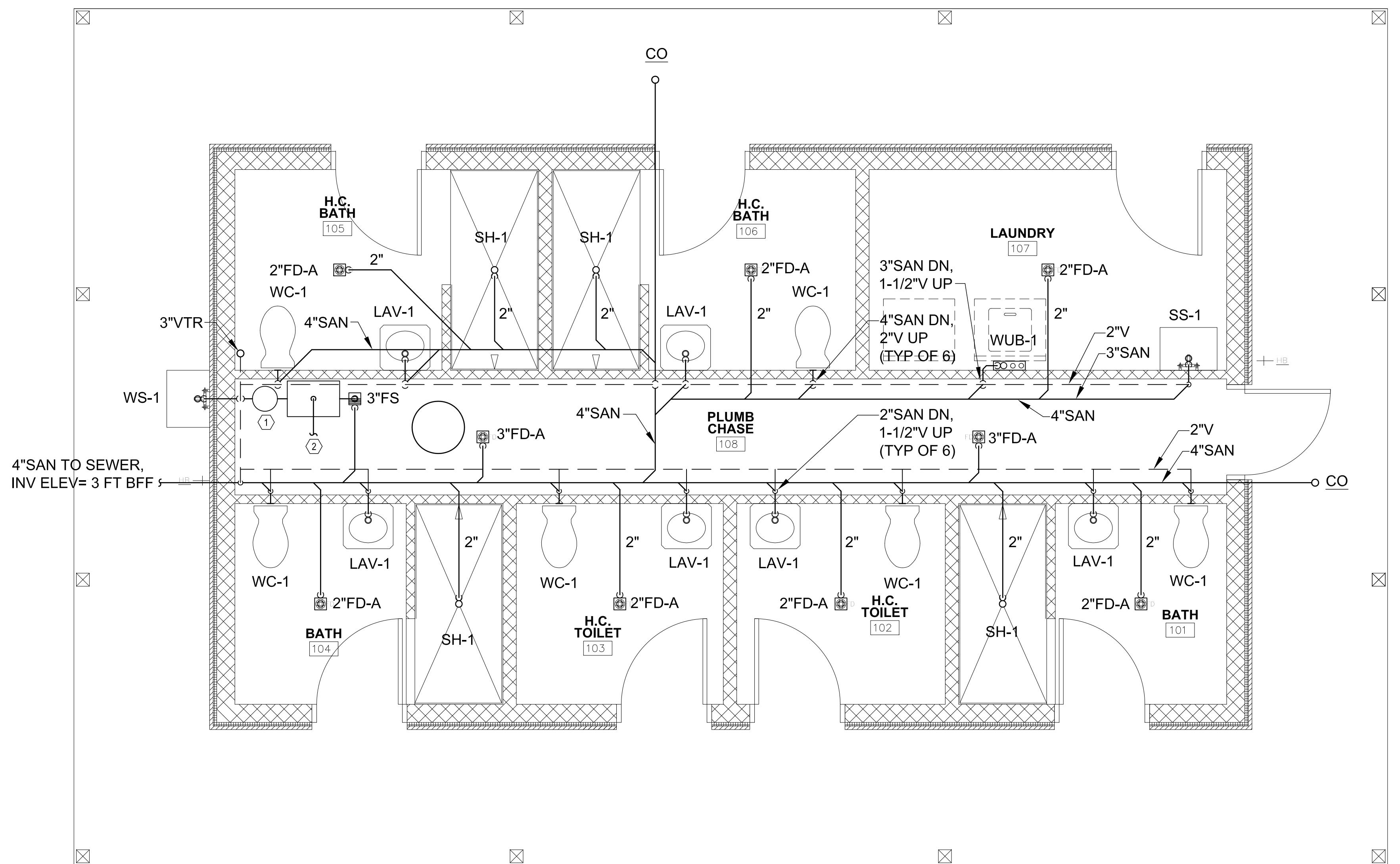
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JOHN N. BERG, JR
Lic. No. 051165
05/10/2018
PROFESSIONAL ENGINEER

EXPLORE PARK
FLEX POD "A" BATHHOUSE
PLUMBING SPECIFICATIONS
COUNTY OF ROANOKE, VIRGINIA

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PLUMBING FLOOR PLAN - WASTE & VENT

1
P2.1

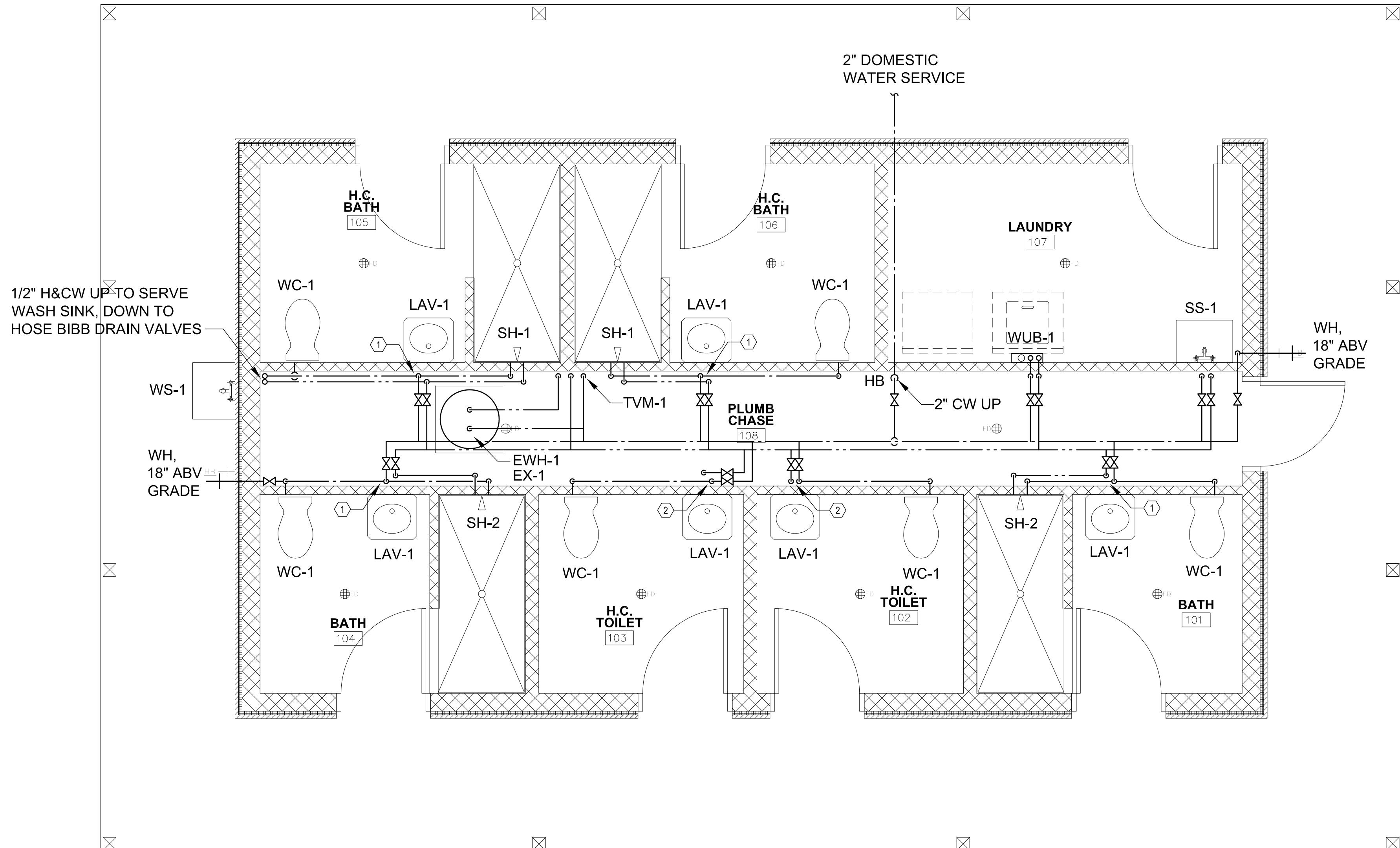
SCALE = 3/8"=1'-0"

GENERAL NOTES:

1. COORDINATE SANITARY INVERT AND LOCATION WITH SITE UTILITY PLAN.

KEYED NOTES:

1. PROVIDE IN-LINE SEDIMENT INTERCEPTOR WITH REMOVABLE BASKET STRAINER ON SINK OUTLET, PRIOR TO GREASE TRAP CONNECTION. REFER TO DETAIL SHEET P0.1.
2. PROVIDE 25 GPM ON-FLOOR TYPE GREASE TRAP WITH DRAW OFF HOSE AND COLLECTION BUCKET. REFER TO DETAIL SHEET P0.1.



PLUMBING FLOOR PLAN - WATER

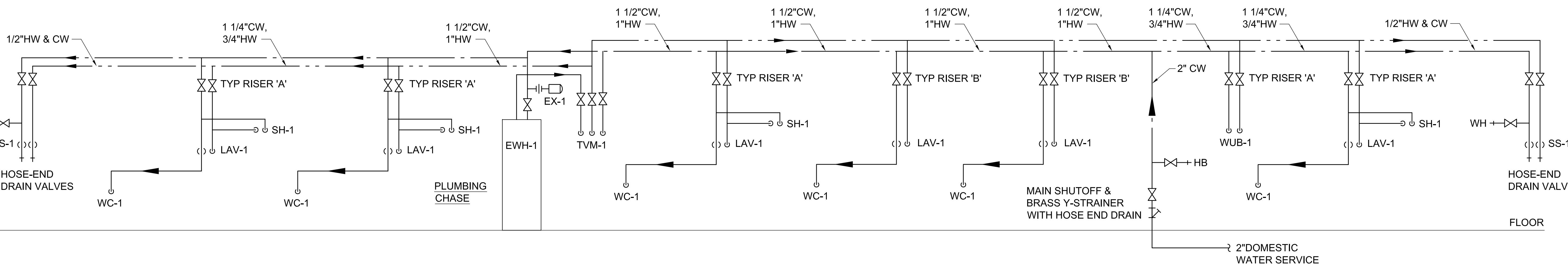
1
P2.2
SCALE = 3/8"=1'-0"

GENERAL NOTES:

1. COORDINATE WATER SERVICE ENTRANCE LOCATION AND DEPTH OF COVER WITH SITE UTILITY PLAN.

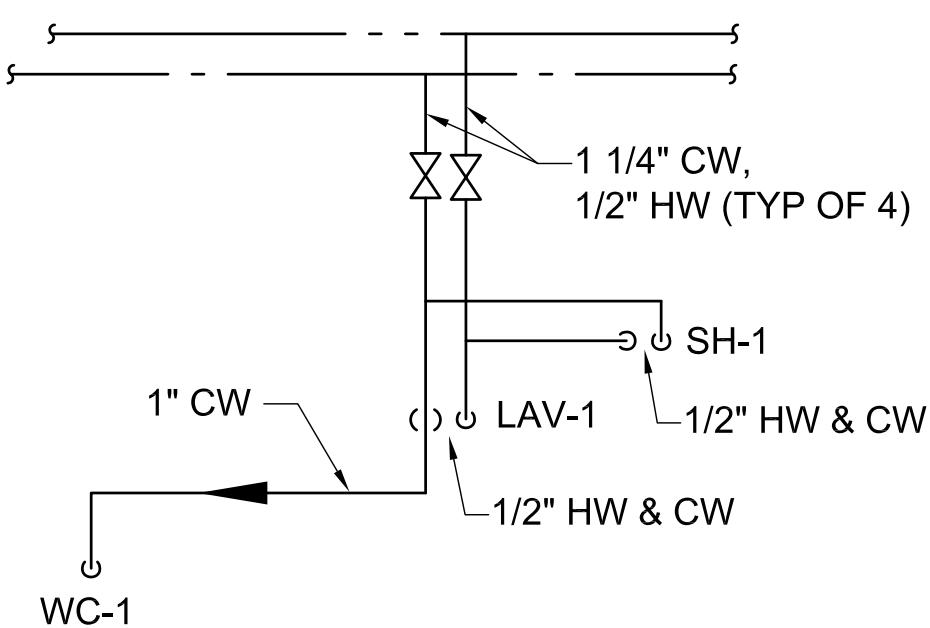
KEYED NOTES:

1. 1 1/4" CW AND 1/2" HW DN SERVING WATER CLOSET, LAVATORY AND SHOWER. SEE RISER DIAGRAM 'A' ON SHEET P3.1.
2. 1 1/4" CW AND 1/2" HW DN SERVING WATER CLOSET AND LAVATORY. SEE RISER DIAGRAM 'B' ON SHEET P3.1.



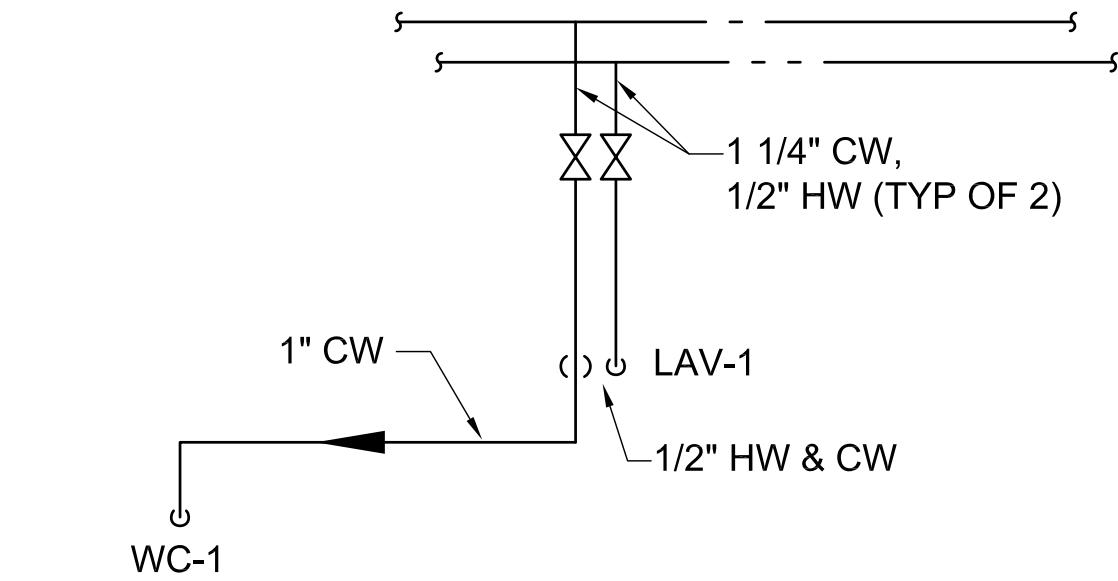
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P3.1

NO SCALE



2
P3.1

NO SCALE



3
P3.1

NO SCALE

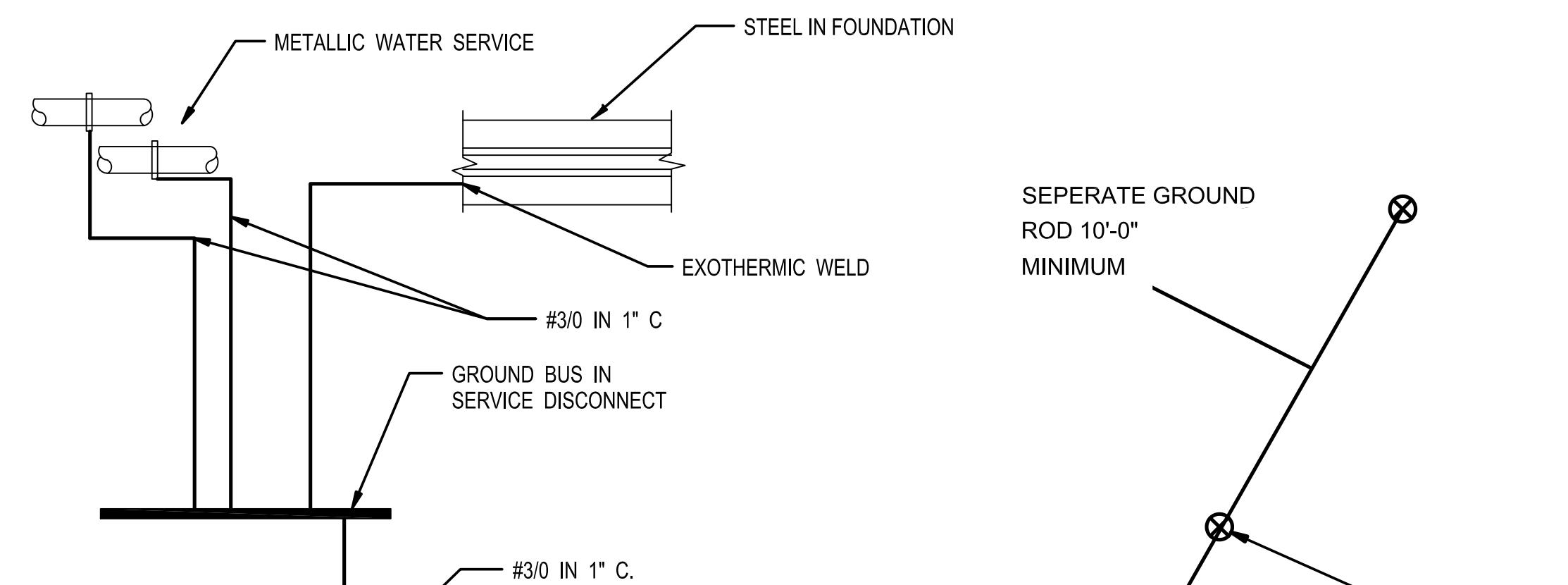
GENERAL NOTES	
1. MECHANICAL EQUIPMENT IS SHOWN IN APPROXIMATE LOCATIONS. FOR EXACT LOCATIONS OF MECHANICAL EQUIPMENT AND PIPING, SEE MECHANICAL DRAWINGS. SOME MECHANICAL EQUIPMENT IS LOCATED ON THE ROOF. VERIFY LOCATION WITH MECHANICAL AND PROVIDE ALL CONDUIT AND WIRING TO OUTDOOR EQUIPMENT.	
2. WHERE LIGHT SWITCHES ARE INDICATED TO BE MOUNTED BEHIND DOOR, MOUNT SUCH SWITCHES A MINIMUM OF 3'-9" FROM HINGED SIDE.	
3. REVISE PANELBOARD SCHEDULES ON PANEL DIRECTORIES TO REFLECT FINAL INSTALLATION CONDITIONS.	
4. LOCATE ALL RACEWAYS TO AVOID INTERFERENCE WITH DUCTS, PIPES, MECHANICAL EQUIPMENT, WITH REMOVAL OF CEILING TILES, OR WITH ACCESS TO EQUIPMENT WHICH REQUIRES PERIODIC ADJUSTMENT OR MAINTENANCE.	
5. PROVIDE NAMEPLATES ON THE EXTERIOR OF ALL ELECTRICAL PANELS AND ENCLOSURES WITH THE DEVICE ID, RATING, POWER SOURCE AND INSTALLATION DATE AND BY WHICH SWITCH OR STARTER.	
6. COUNTER AND TOILET RECEPTACLES TO BE GFI AND COUNTER HEIGHT EXCEPT WHERE NOTED. REFRIGERATOR RECEPTACLE TO BE 36" AFF.	
7. LIGHT FIXTURE TYPE IS SHOWN ONLY ONCE AS TYPICAL FOR THE ENTIRE ROOM UNLESS SPECIFICALLY INDICATED OTHERWISE.	
8. UNLESS INDICATED OTHERWISE, SIZE CONDUITS IN ACCORDANCE WITH NFPA 70.	
9. COORDINATE WITH THE MECHANICAL CONTRACTOR TO ENSURE ALL WORKING CLEARANCE AND DEDICATED WORKING SPACE OF PANELBOARDS.	
10. COORDINATE ELECTRICAL INSTALLATION WITH ALL CASEWORK TO BE INSTALLED. PROVIDE THE NECESSARY JUNCTION BOXES FOR ALL POWER AND DATA CONNECTIONS INDICATED.	
11. GROUNDING CONDUCTORS ARE NOT INDICATED IN BRANCH CIRCUIT RACEWAYS. PROVIDE GROUND CONDUCTORS AS REQUIRED BY NEC.	
12. PROVIDE PLASTIC BUSHING ON THE END OF ALL CONDUIT.	
13. NO SHARING OF NEUTRAL CONDUCTORS.	

ELECTRICAL LEGEND

EM	LED LIGHTING FIXTURE, RECESSED, SURFACE OR PENDANT CEILING MOUNTED, 'EM' INDICATES LIGHTING CONNECTED TO EMERGENCY POWERED INVERTER. 'A' DESIGNATION INSIDE OF FIXTURE INDICATES FIXTURE TYPE		CONDUCTORS IN CONDUIT CONCEALED IN CEILING OR WALL.
A	EXIT LIGHTING FIXTURE, SURFACE CEILING MOUNTED, DIRECTIONAL ARROWS AS INDICATED.		BRANCH CIRCUIT HOME RUN TO PANELBOARD. NOTATION INDICATES PANELBOARD & BRANCH CIRCUIT CONNECTION.
H	EXIT LIGHTING FIXTURE, SURFACE WALL MOUNTED, DIRECTIONAL ARROWS AS INDICATED.		CONDUCTORS IN CONDUIT CONCEALED IN SLAB OR BELOW GRADE.
J	FURNITURE WHIPS UNLESS INDICATED OTHERWISE, FOR FURNITURE WHIPS PROVIDE DATA AND POWER		CONDUCTORS IN CONDUIT TURNED UP.
H	QUAD-PLEX WALL RECEPTACLE		CONDUCTORS IN CONDUIT TURNED DOWN.
H	DUPLEX WALL RECEPTACLE, MOUNTING HEIGHT = 1'-6", EXCEPT 'C' SUBSCRIPT INDICATES MOUNTING IN CASEWORK(TYP). 'GFI' SUBSCRIPT INDICATES GROUND FAULT, 'WP' SUBSCRIPT INDICATES WEATHERPROOF, 'EWC' SUBSCRIPT INDICATES BEHIND ELECTRIC WATER COOLER.		SINGLE-POLE SWITCH, MOUNTING HEIGHT = 4'-0" TO TOP. LOWER CASE SUBSCRIPT WHEN USED, INDICATES FIXTURES CONTROLLED (TYP).
H			THREE-WAY SWITCH, MOUNTING HEIGHT = 4'-0" TO TOP.
S _o			PANELBOARD, 208Y/120-VOLT, 3-PHASE, 4-WIRE, MOUNTING HEIGHT=6'-0" TO TOP. SEE PANELBOARD SCHEDULES.
S ₃			DISCONNECT SWITCH, EXTERNALLY OPERATED, 240V, 3 Ø UNLESS OTHERWISE NOTED. NOTATION INDICATES NUMBER OF POLES AND AMPERAGE CAPACITY. 'NF' SUBSCRIPT INDICATES NON FUSED.

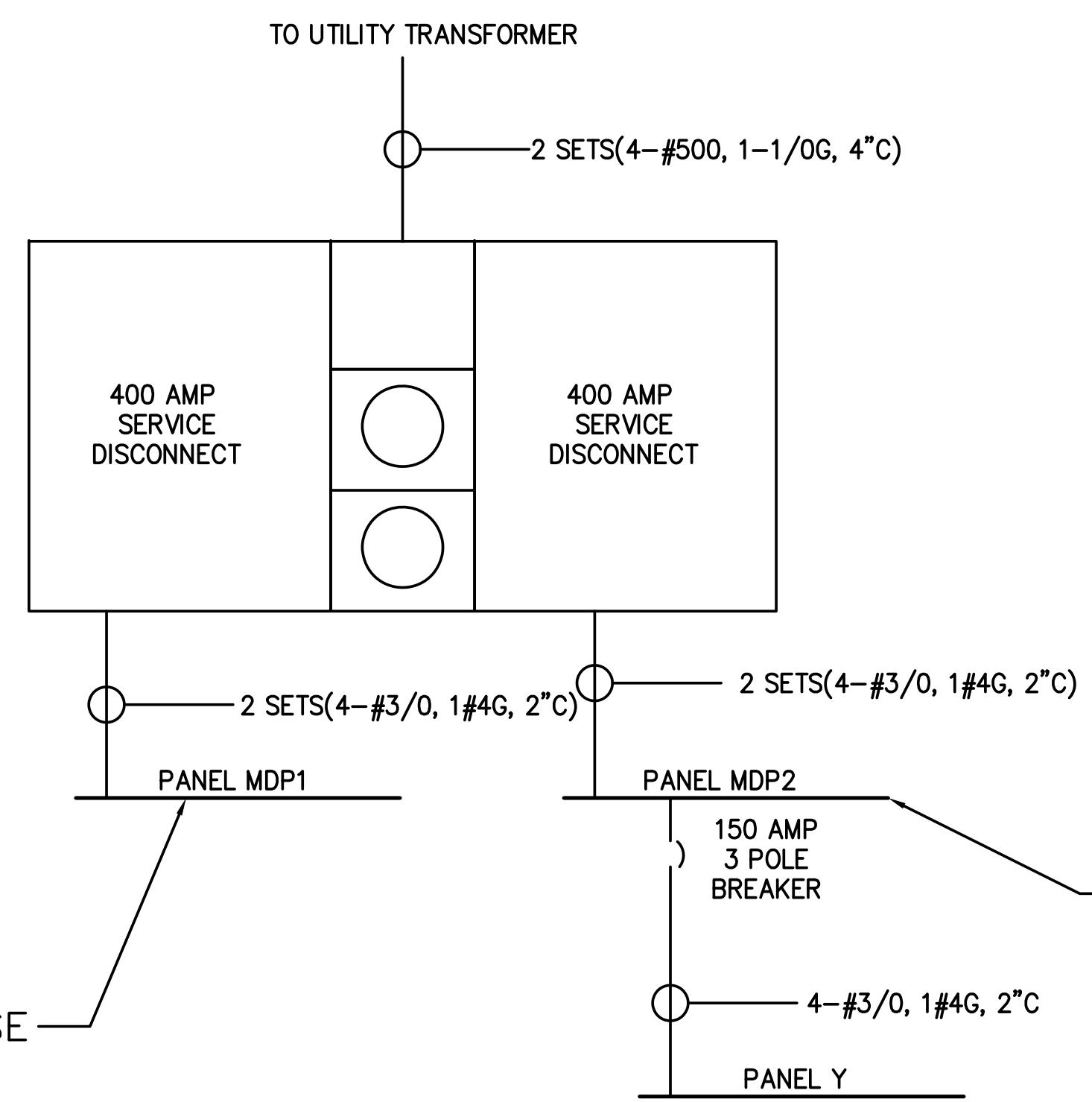
LEGEND NOTES:

1. ALL MOUNTING HEIGHTS ARE TO TOP OF DEVICE UNLESS INDICATED OTHERWISE.



GROUNDING DETAIL

NEW PANEL TO PROVIDE POWER FOR BATH HOUSE



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E0.1

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COMMONWEALTH OF VIRGINIA
DANIEL W. GIBSON
Lic. No. 44271
5-10-18
PROFESSIONAL ENGINEER

EXPLORE PARK
FLEX POD "A" BATHHOUSE
ELECTRICAL LEGEND & DETAILS
DRAWN BY DWG
DESIGNED BY DWG
CHECKED BY
DATE 5/10/2018
SCALE AS NOTED
REVISIONS:
EXPLORE PARK
COUNTY OF ROANOKE, VIRGINIA

JOB NO. 03170073.00

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COMMONWEALTH OF VIRGINIA
DANIEL W. GIBSON
Lic. No. 44271
5-10-18
PROFESSIONAL ENGINEER

EXPLORE PARK
FLEX POD "A" BATHHOUSE
ELECTRICAL SITE PLAN

EXPLORE PARK
COUNTY OF ROANOKE, VIRGINIA

DRAWN BY DWG
DESIGNED BY DWG
CHECKED BY
DATE 5/10/2018
SCALE AS NOTED
REVISIONS:

SHEET NO. E1.1
JOB NO. 03170073.00

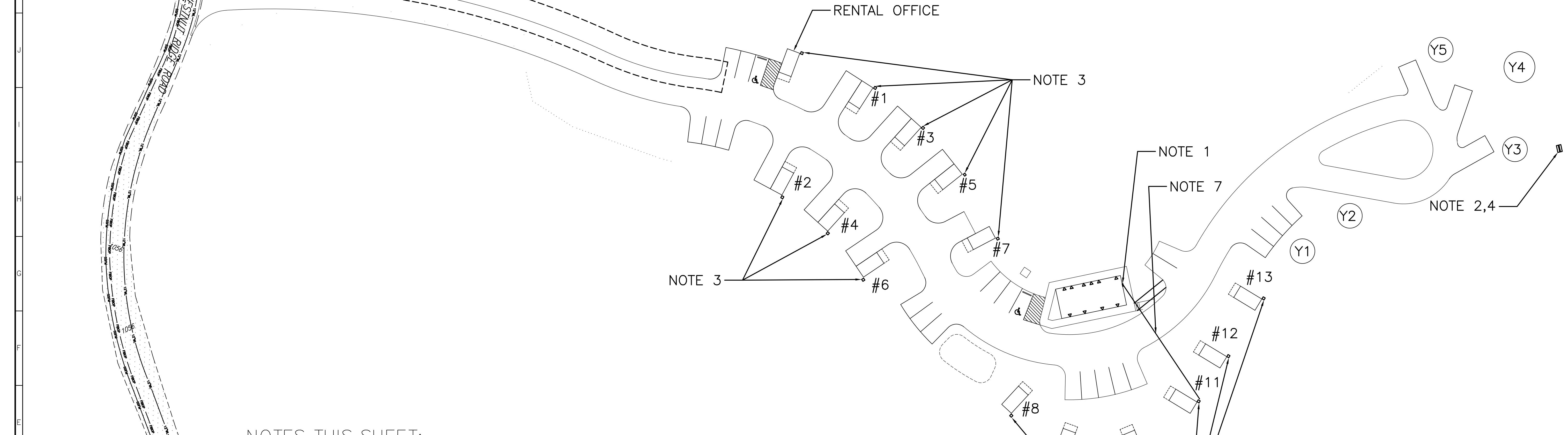
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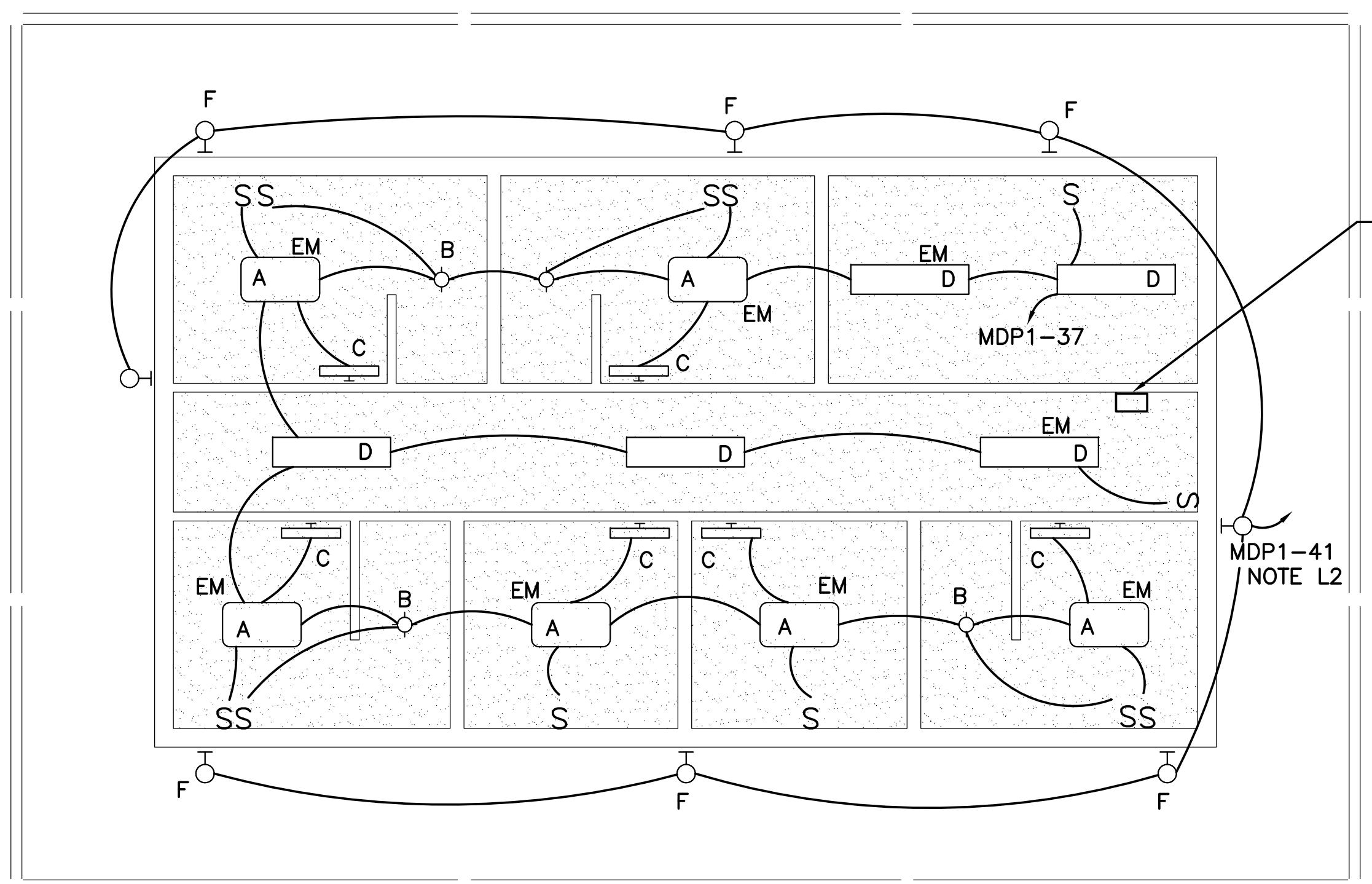
1. PROVIDE MAIN ELECTRICAL SERVICE PANEL. SEE PANELBOARD SCHEDULE MDP1 FOR EXACT INFORMATION. SEE SHEET E0.1 FOR ADDITIONAL INFORMATION.
2. PROVIDE PANEL Y FOR YURT POWER AS SCHEDULED. PROVIDE FEED FROM MDP1 TO YURT PANEL. MOUNT PANEL AND GRINDER PUMP CONTROLLER ON WOODEN STRUCTURE.
3. PROVIDE RV POWER OUTLET 120/240 VOLT, 20 AMP SINGLE PHASE GFCI AND 30 AMP RECEPTACLE. MOUNT RV POWER OUTLET TO WOODEN POST IN THIS AREA. SEE PANELBOARD SCHEDULE MDP2 ON THIS SHEET TO IDENTIFY WHICH CIRCUIT FEEDS EACH OUTLET.
4. PROVIDE POWER TO GRINDER PUMP CONTROL PANEL. COORDINATE EXACT LOCATION WITH OWNER. MOUNT GRINDER PUMP CONTROLLER AND PANEL ON WOODEN STRUCTURE.
5. PROVIDE A METER CENTER WITH 2-400 AMP METERS.
6. PROVIDE A 50 AMP, 120/208V SINGLE PHASE PANEL MOUNTED INSIDE OF EACH YURT. PROVIDE FEED FROM PANEL Y. SEE PANELBOARD SCHEDULE ON PANEL 'Y' INDICATING WHICH CIRCUIT FEEDS EACH UNIT.
7. PROVIDE A 2" SPARE CONDUIT STUBBED BELOW PANEL WITH A CAP ACROSS THE ROAD. STUB UP AND CAP WHERE INDICATED.

ELECTRICAL SITE PLAN

1/32" = 1'-0"

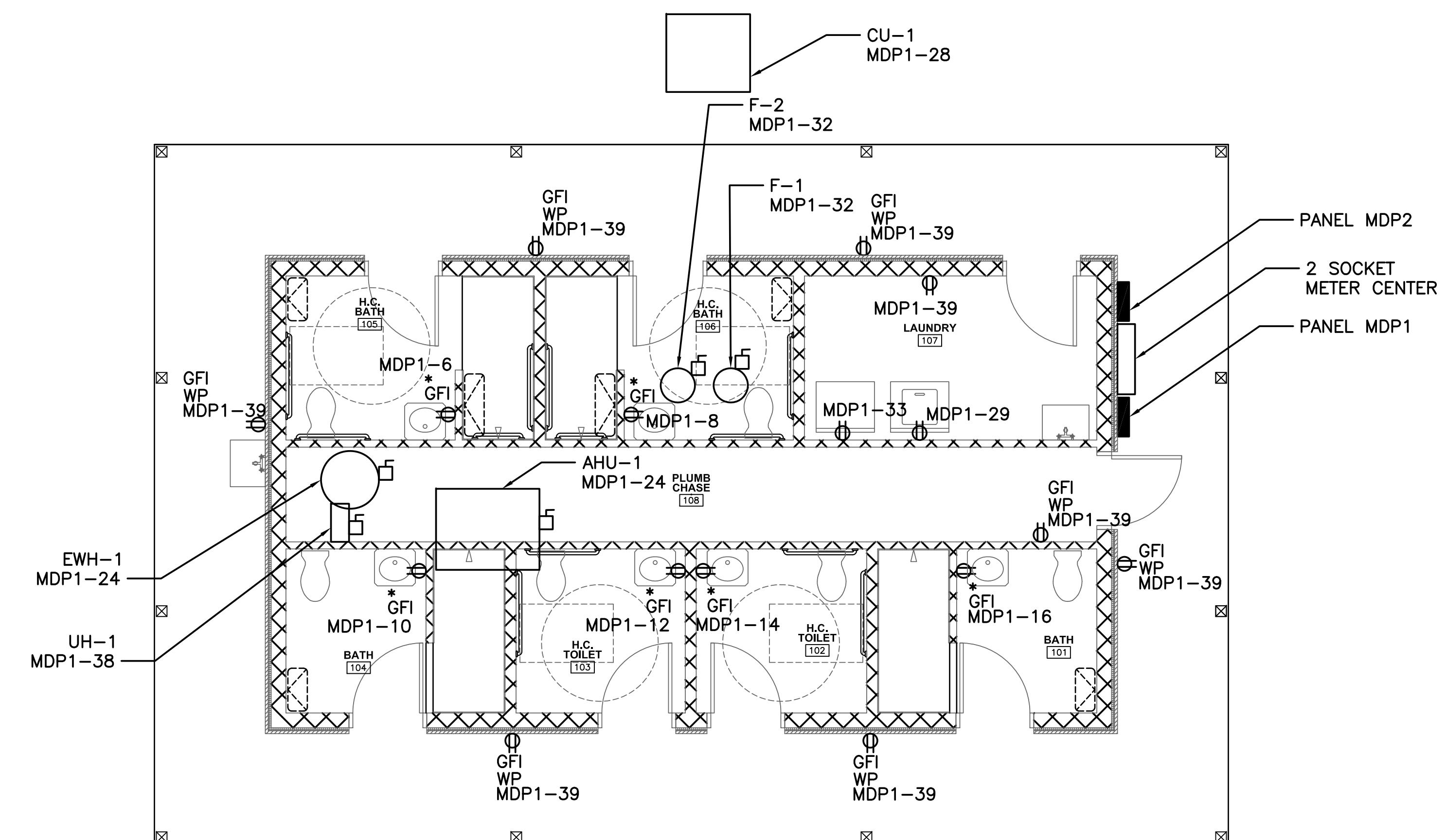
GIBSON
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CHRISTIANSBURG VA 24073
P. 540.998.6069





LIGHTING PLAN

1/4" = 1'-0"



POWER PLAN

1/4" = 1'-0"

LIGHTING FIXTURE SCHEDULE							
MARK	MANUFACTURER	MODEL NUMBER	INPUT VOLTAGE	LAMPS		MNTG.	REMARKS
				NO.	WATTS		
A	KICHLER LIGHTING	10789 AVON	MVOLT		48W	LED	SURF 32.5" LED SURF MOUNT OLD BRONZE FINISH
B	LITHONIA LIGHTING	LDN6 40/ 25 L06 120 WL	MVOLT		27.1	LED	REC RECESSED DOWNLIGHT, WET LOCATION LISTED
C	KICHLER LIGHTING	458380ZLED IMPELLO	MVOLT		43	LED	WALL 24.25" WIDE LED OLDE BRONZE FINISH
D	LITHONIA LIGHTING	VAP 6000LM FST MD 120 40K 80CRI DL	MVOLT		62	LED	SURF DAMP LOCATION, ROUGH LOCATION
F	KICHLER LIGTHING	9028TZ KIRKWOOD	MVOLT		30	LED	WALL OUTDOOR SCREW IN FIXTURE WITH LED BULB

* NOTE: ALL LAMPS AND LED FIXTURES ARE TO BE 4000 KELVIN COLOR TEMPERATURE

NOTES THIS SHEET:

L1. PROVIDE A 375 WATT INVERTER UNIT MOUNTED ON WALL IN CHASE COORDINATE LOCATION WITH PLUMBING. INVERTER SHALL BE LITHONIA EAC ISMM 375W MICRO INVERTER

L2. PROVIDE A PHOTOCELL MOUNTED UNDER THE CANOPY TO CONTROL BATH HOUSE EXTERIOR LIGHTING.

PANEL MDP1																			
VOLTAGE: 208Y/120			PHASE: 3			BUS AMPS: 400A			MAIN BREAKER AMPS: 400A										
CKT NO.	BRKR P	WIRE NO.	SZ	*	CIRCUIT DESCRIPTION	LOAD - KVA			CKT NO.	BRKR P	WIRE NO.	SZ	*	CIRCUIT DESCRIPTION	LOAD - KVA				
						PHA	PHB	PHC							PHA	PHB	PHC	3 PH	
1	1	20			SPARE				2	1	20	2	12		BATH HOUSE LTG	1.5			
3	1	20			SPARE				4	1	20	2	12		BATH HOUSE LTG	1.5			
5	1	20			SPARE				6	1	20	2	12		BATH 105 RCPT	1.5			
7	1	20			SPARE				8	1	20	2	12		BATH 106 RCPT	1.5			
9	1				SPACE ONLY				10	1	20	2	12		BATH 104 RCPT	1.5			
11	1				SPACE ONLY				12	1	20	2	12		BATH 103 RCPT	1.5			
13	1				SPACE ONLY				14	1	20	2	12		TOILET 102 RCPT	1.5			
15	1				SPACE ONLY				16	1	20	2	12		BATH 101 RCPT	1.5			
17	1				SPACE ONLY				18	1	20	2	12		SPARE				
19	1				SPACE ONLY				20	2	60	2	6		INDOOR UNIT	3.0			
21	1				SPACE ONLY				24	2	60	2	6		DUCT HEATER	3.0		4.3	
23	1				SPACE ONLY				28	2	15	2	12		OAU-1	4.3			
25	1				SPACE ONLY				32	1	20	2	12		FAN F-1, F-2	0.5			
27	1				SPACE ONLY				34	2	60	2	6		EWH-1 WTR HTR	9.0			
29	2	50	2	8	COMM WASHER	2.5			38	2	20	2	12		UH-1	1.7			
33	2	50	2	8	DRYER	2.5	3.5		42	1	20				SPARE				
37	1	20	2	12	INTERIOR LTG	1.0													
39	1	20	2	12	CONVRCPKT														
41	1	20	2	12	EXTERIOR LIGHTING		1.5												
TOTAL LEFT SIDE						3.5	3.5	7.5	0.0	TOTAL RIGHT SIDE						14.0	19.2	17.3	0.0
TOTAL						17.5	22.7	24.8	0.0	TOTAL CONNECTED LOAD									65.0

* NOTES

DRAWN BY DWG
DESIGNED BY DWG
CHECKED BY
DATE 5/10/2018
SCALE AS NOTED
REVISIONS:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
SECTION 16000																				
ELECTRICAL SPECIFICATIONS																				
PART 1 - GENERAL																				
1.1 DESCRIPTION OF WORK																				
Provide new lighting, power, data and low voltage systems as indicated on the plans. Project is a new bathhouse and site electrical for camping area.																				
1.2 QUALITY ASSURANCE																				
<p>A. General</p> <ul style="list-style-type: none"> a. Comply with IEEE C2, "National Electrical Safety Code". b. IEEE Compliance: Comply with applicable Institute of Electrical and Electronics Engineers, Inc. standards pertaining to generator construction. c. NEC Compliance: Comply with NFPA 70, "National Electrical Code" as applicable to construction and installation of products required in this specification. d. UL and NEMA Compliance and Labeling: Provide products which have been labeled by Underwriters Laboratories and have been certified to comply with UL requirements. e. IEEE Compliance: Comply with STD 241, "IEEE Recommended Practice for Electrical Power Systems in Commercial Buildings" pertaining to communication systems. <p>B. MOTOR CONTROLLERS</p> <ul style="list-style-type: none"> a. UL and NEMA Compliance and Labeling: Provide products which have been labeled by Underwriters' Laboratories and have been certified to comply with UL and NEMA. <p>C. LIGHTING</p> <ul style="list-style-type: none"> a. NEMA Compliance: Comply with applicable requirements of NEMA Stds. Pub/No.'s LE 1 and LE 2 pertaining to lighting equipment. b. UL Compliance: Comply with UL standards, including UL 486A and B, pertaining to lighting fixtures. Provide lighting fixtures and components which are UL-listed and labeled. Provide exterior fixtures with "Suitable for Wet Location" label. c. CBM Labels: Provide fluorescent lamp ballasts which comply with Certified Ballast Manufacturers Association standards and carry the CBM label. 																				
1.3 COORDINATION OF ELECTRICAL WORK																				
<p>A. General: Refer to the division sections for general coordination requirements applicable to the entire work. It is recognized that the contract documents are diagrammatic in showing certain physical relationships which must be established within the electrical work and in its interface with other work including utilities and mechanical work and that such establishment is the exclusive responsibility of the Contractor.</p> <ul style="list-style-type: none"> a. Arrange electrical work in a neat, well organized manner with conduit and similar services running parallel with primary lines of the building construction and with the maximum headroom possible, but a minimum 7'-0" overhead clearance. b. Locate operating and control equipment properly to provide easy access and arrange entire electrical work with adequate access for operation and maintenance. c. Advise other trades of openings required in their work for the subsequent move-in of large units of electrical equipment. d. Coordinate all work, including power outages, with Owner's Schedule of Operation. <p>B. Product Handling: Space at the project for storage of materials and products is limited. Coordinate the deliveries of electrical materials and products with the scheduling and sequencing of the work so that storage requirements at the project are minimized. In general, do not deliver individual items of electrical equipment to the project substantially ahead of the time of installation.</p>																				
1.3 ELECTRICAL SYSTEM IDENTIFICATION																				
<p>A. Conduit Systems: Provide adequate marking of primary conduits which are exposed or concealed in accessible spaces, to distinguish each run as either a power or signal/communication conduit. Except as otherwise indicated, use orange banding with black lettering. Provide self-adhesive or snap-on type plastic markers. Indicate voltage ratings of conductors where above 240 V. Locate markers at ends of conduit runs, near switches and other control devices and near items of equipment served by the conductors. Switch leg conduit and short branches for power connections need not be marked, except where conduit is larger than 1 inch. Label all junction boxes with branch circuit numbers terminated within.</p> <p>B. Identification Labels and Warning Signs: Provide engraved plastic/laminated or baked enamel labels on major units of electrical equipment including switchboards, panelboards, motor controllers, disconnect switches, signal and similar systems. Label shall include equipment identification mark and voltage characteristics and shall be melamine plastic, 0.125 inch thick, white with black center core. Provide warning signs where there is hazardous exposure or danger associated with access to or operation of electrical facilities. Provide text of sufficient clarity and lettering of sufficient size, minimum 0.25 inch nominal block style, to convey adequate information at each location; mount permanently in an appropriate and effective location.</p>																				
1.4 PAINTING ELECTRICAL WORK																				
<p>A. General: Except as otherwise indicated, comply with the applicable provisions of Division 9 for electrical work painting. Electrical equipment shall have factory-applied painting systems which shall meet the requirements of NEMA ICS6. The work of this article shall include general field painting of electrical work.</p> <ul style="list-style-type: none"> a. Coordinate the painting with the painting of other work of a similar nature and comply with indicated color and color matching requirements. Except as otherwise indicated, paint surfaces of electrical work which would normally be painted in the application and exposure indicated. <p>B. Do not paint over nameplates on equipment, sliding/rotating shaft surfaces, non-ferrous hardware/accessories/trim and similar items where painting would normally be omitted.</p>																				
1.5 ELECTRICAL SYSTEM PERFORMANCE																				
<p>A. General: The overall system performances of electrical work are of even greater importance than the specified individual unit of work performances. Each unit of electrical work has been designed and specified to perform at minimum levels of output and efficiency and is intended to contribute to and be compatible with the entire system. Compatibility of actual performances by electrical system performances is the Contractor's responsibility.</p> <p>B. Adjustments: Where it has been determined that electrical systems do not or will not perform in compliance with the specified performances, adjustments or corrections shall be made to the work as necessary to achieve required performances.</p>																				
1.6 ELECTRICAL WORK CLOSEOUT																				
<p>A. Additional Service: Perform services within the above 12-month period not classified as routine maintenance or as warranty work as described in Division 1 Section "Warranties and Bonds" when authorized in writing. Compensation for additional services must be agreed upon in writing prior to performing services.</p> <p>B. Closeout Coordination: Coordinate closeout operations with closeout of mechanical systems and other power consuming equipment.</p> <p>C. Cleaning and Lubrication: After final testing of each electrical system, clean system both externally and internally. Comply with manufacturer's instructions for lubrication of both power and hand operated equipment. Touch-up minor damage to factory-painted finishes and provide one pint of touch-up paint for each color of major equipment installed.</p>																				
1.7 SUBMITTALS																				
<p>A. LIGHTING</p> <ol style="list-style-type: none"> 1. Product Data: Submit manufacturer's product data and installation instructions on each type building lighting fixture photocell, contactor and component. 2. Shop Drawings: Submit fixture shop drawings where specifically indicated in booklet form with separate sheet for each fixture, assembled in "luminaire type" alphabetical or numerical order, with proposed fixture and accessories clearly indicated on each sheet. 3. Maintenance Data: Submit maintenance data and parts list for each lighting fixture and accessory; including "trouble_shooting" maintenance guide. Include that data, product data, and shop drawings in a maintenance manual. 																				
PART 2 - PRODUCTS																				
2.1 CABLE AND WIRE																				
<p>A. Provide factory-fabricated wire or cable of the size, rating, material and type as indicated for each service in compliance with NECA - Standard of Installation. Where not indicated, provide proper selection as determined by the work requiring the installation to comply with NEC standards. Conductors shall be rated 600 volt of insulation type THW, THWN, THHN, or USE installed in compliance with National Electrical Code requirements.</p> <p>B. Provide bonding conductors for sizes No. 8 AWG and smaller of solid bare copper per ASTM B 1, and for sizes No. 6 AWG and larger stranded bare copper per ASTM B 8.</p> <p>C. No. 10 AWG and smaller diameter shall be solid copper; No. 8 AWG and larger diameter shall be stranded copper.</p> <p>D. Provide color coding for service, feeder, branch, control, and signaling circuit conductors. Color shall be green for grounding conductors and white for neutrals; except where neutrals of more than one system are installed in same raceway or box, other neutral shall be white with colored (not green) stripe. Color of ungrounded conductors in different voltage systems shall be as follows:</p> <ul style="list-style-type: none"> a. 120/208 volt, 3-phase: <ul style="list-style-type: none"> i. Phase A - black. ii. Phase B - red. iii. Phase C - blue. <p>E. Provide the following types of cables in NEC approved locations and applications where indicated. Provide cable UL listed for its intended use.</p> <ul style="list-style-type: none"> a. Metal clad cable: Type MC. <p>F. Provide UL 486A, factory-fabricated, solderless, metal connectors of the size, ampacity, rating, material, type and class as indicated for each service. Where not indicated, provide proper selection as determined by the work requiring the installation to comply with NEC standards. Provide insulating tape in compliance with UL 510.</p>																				
2.7 COMBINATION MOTOR CONTROLLERS																				
<p>A. General: Motor circuit protector: molded-case circuit-type breaker type with magnetic-only trip element calibrated to coordinate with the actual locked-rotor current of the connected motor and the controller overload relays. Provide breakers that are factory assembled with the controller, interlocked with unit cover or door, and arranged to disconnect the controller. Provide motor circuit-protectors with field-adjustable trip elements.</p>																				
2.8 LIGHTING FIXTURES																				
<p>A. Provide lighting fixtures of sizes, types, and ratings indicated in lighting fixture schedule</p> <p>B. Wiring: Provide electrical wiring within fixture suitable for connecting to branch circuit.</p> <ul style="list-style-type: none"> a. NEC Type AF for 120 volt, minimum No. 18 AWG. 																				
2.2 ELECTRICAL RACEWAYS																				
<p>A. Metal Conduit, Tubing and Fittings: Provide metal conduit, tubing and fittings of type, grade, size and weight indicated for each service. Where type and grade are not indicated, provide proper selection as determined by the work requiring the installation to comply with NEC standards for wiring requirements.</p> <ul style																				

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
O	N	M	L	K	J	I	H	G	F	E	D	C	B	A	O	N	M	L	K	J	
INSTALLATION	PART 3 - INSTALLATION																				
3.1	General																				
A.	Verify final locations for rough_in with field measurements and with the requirements of the actual equipment to be connected.																				
B.	Rough_in for owner furnished equipment to make equipment operate as intended, including providing miscellaneous wiring items.																				
C.	Adjust operating mechanisms for free mechanical movement. Clean interior and exterior using manufacturer's approved methods and materials.																				
D.	Touch-up scratched or marred surfaces to match original finish.																				
E.	In general, perform cutting and patching as necessary. Exercise care where cutting, channeling, chasing or drilling floors, walls, partitions, ceilings or other surfaces for installation of electrical work.																				
F.	Patch finished surfaces and building components using new materials specified for the original installation and experienced installers. Installers' qualifications refer to the materials and methods required for the surface and building components being patched.																				
3.2	CABLE, WIRE AND CONNECTORS																				
A.	Provide insulated conductors installed in conduit, except where specifically indicated or specified otherwise or required by NEC to be installed otherwise. Provide insulated equipment grounding conductor in feeder and branch circuits, including lighting circuits. Grounding conductor shall be separate from electrical system neutral conductor.																				
B.	Coordinate cable and wire installation with electrical raceway and equipment installation. Conductor sizes indicated are copper. Pull conductors together where more than one is being installed. Use pulling means and lubricant that will not damage conductor or raceway. Use splice and tap connectors which are compatible with conductor material, and only in accessible junction, pull or outlet boxes.																				
C.	Tighten electrical connectors and terminals, including screws and bolts, in accordance with manufacturer's published torque tightening values. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A.																				
3.2	ELECTRICAL RACEWAYS																				
A.	Provide with complete electrical raceway system before installing conductors within raceways. Provide support as required by NEC but within 1 foot of a change in direction or connection to an enclosure, cover ends of empty conduit to prevent entry of debris during rough-in, provide bonding type locknuts at boxes. Conceal conduit, unless indicated otherwise within finished walls, ceilings and floors. Run exposed conduits parallel or perpendicular to the building structure, close to the ceiling or beams. Keep raceways at least 6 inches away from parallel runs of flues, steam, and hot water pipes.																				
B.	Use the following wiring methods:																				
a.	Outdoors:																				
i.	Intermediate metal conduit																				
ii.	Rigid metal conduit																				
iii.	Liquid-tight flexible metal conduit																				
b.	Indoors:																				
i.	Electrical metallic tubing																				
ii.	Flexible metal conduit																				
iii.	Rigid metal conduit (where exposed and subject to damage)																				
C.	Use raceway fittings that are of types compatible with the associated raceway and suitable for the use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings except as otherwise indicated.																				
D.	Run exposed, parallel, or banked raceways together. Make bends in parallel or banked runs from the same center line so that the bends are parallel. Factory elbows may be used in banked runs only where they can be installed parallel. This requires that there be a change in the plane of the run such as from wall to ceiling and that the raceways be of the same size. In other cases provide field bends for parallel raceways.																				
E.	Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line having not less than 200-lb. tensile strength. Leave not less than 12 inches of slack at each end of the pull wire.																				
F.	Flexible Connections: Use short length (maximum of 6 ft.) of flexible conduit for recessed and semirecessed lighting fixtures, for equipment subject to vibration, noise transmission, or movement; and for all motors. Use liquid-tight flexible conduit in wet locations. Install separate ground conductor across flexible connections.																				
G.	Surface Metal Raceway: Install to walls, cabinets, and ceilings as recommended by equipment manufacturer with fasteners suitable for the material to which the surface metal raceway is being attached. Install a separate green ground conductor in raceway from the junction box supplying the raceway to receptacle or fixture ground terminals. Provide as an integral part or install wiring devices as indicated. Make cuts and other modifications with factory cuts and other modifications with factory furnished tools specifically designed for the purpose.																				
3.3	ELECTRICAL BOXES AND FITTINGS																				
A.	Provide weatherproof outlet boxes for interior and exterior locations exposed to moisture, flush mounted boxes for connection to concealed conduit and pull boxes as required for installation of conductors. Sizes shall be adequate to meet NEC volume requirements, but not smaller than sizes indicated. Remove knockouts only as required and plug unused openings.																				
B.	Fasten boxes rigidly to substrate or structural surfaces to which they are to be mounted, or solidly embed electrical boxes in concrete or masonry.																				
3.4	WIRING DEVICES																				
A.	Install wiring devices in clean outlets after wiring has been installed. Do not install plates and cover installed wiring devices until painting is complete.																				
B.	Ground all wiring devices unless indicated otherwise. Test wiring devices for correct polarity, proper ground and electrical continuity.																				
C.	Install covers and device plates with edges in continuous contact with finished wall surfaces without use of mats or similar devices. Plaster or caulk used as a filling to repair openings around outlets shall not be applied without removing the cover or device plate. Plates installed in wet areas shall be gasketed.																				
3.5	SAFETY AND DISCONNECT SWITCHES																				
A.	Install disconnect switches used for motor-driven equipment within sight of the controller and motor and not more than 50 feet from the controller and motor unless indicated otherwise.																				
B.	Provide an electrical ground for all disconnect switches.																				
C.	Test all switches for proper operation by operating them energized, but without load for six opening/closing cycles. Inspect switch and correct deficiencies, then retest to demonstrate compliance.																				
3.6	ELECTRICAL GROUNDING EQUIPMENT																				
A.	Install electrical grounding systems where shown, in accordance with applicable portions of National Electrical Code, NECA 331-2014 "Standard for Building and Service Entrance Grounding and Bonding," and in accordance with recognized industry practices to ensure that products comply with requirements and serve intended functions.																				
B.	Provide separate grounding conductor with wiring in all raceways.																				
C.	Provide grounding electrode conductor and connect to reinforcing steel in foundation footing where indicated.																				
D.	Install clamp-on connectors only on thoroughly cleaned metal contact surfaces, to ensure electrical conductivity and circuit integrity.																				
3.7	LIGHTING FIXTURES																				
A.	General: Install lighting fixtures of types indicated, where shown and at indicated heights, in accordance with lighting fixture manufacturer's written instructions and with recognized industry practices. Comply with NEMA standards and requirements of National Electrical Code pertaining to installation of lighting fixtures and with applicable portions of NECA's "Standards of Installation".																				