CONSTRUCTION MANAGEMENT
OWNER'S REPRESENTATIVE
CONSULTING

ESTABLISHED 1919

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M E M O R A N D U M
ADDENDUM #1

TO: **All Bidders**

FROM: **Tracey Arena**

DATE: **April 22, 2022**

RE: **Village of Ardsley Contract No. VOA1811 New Public Works Facility**

Addendum #1 consists of 107 pages including this cover sheet

Attached for your review and information is **ADDENDUM # 1** consisting of Clarifications and Additions to:

- **Drawings and Specifications Issued April 7, 2022**

BID DUE DATE REMINDER

Bid Due: Thursday, May 5, 2022, 11am

MANDATORY: Please sign your name and company below acknowledging receipt of Addendum #1, and email this form back to Calgi Construction Company (Email: tarena@calgiconstruction.com)

Addendum # 1 Acknowledgement: _____ _____
Name Company

Celebrating a Century of Construction Services

ADDENDUM NO. 1 dated April 22, 2022

Village of Ardsley

Contract No. VOA1811 New Public Works Facility

This Addendum forms part of the Contract Documents and modifies the original bidding documents issued for bid. Such modifications shall be incorporated into the Contract Documents as if they had been included in the original bidding documents. Except as may be modified herein, all portions of the Contract Documents shall remain in full force and effect. Any term used herein with initial capital letters that is not otherwise defined herein shall have the same meaning ascribed to such term as defined in the Contract Documents.

BIDDERS MUST ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY INDICATES ON THE BID FORM THE NUMBERS RECEIVED.

I. Pre-Bid Sign in Sheet Attached

II. CLARIFICATIONS

- Water Service Piping- All DIP Class 52 water service to and through the building, including new tap and service line from adjacent Greenburgh property, including the interior overhead line between the water room and building exterior, all hangers, insulation, protective covers, etc., shall be provided by the GC. Note that this entire water line is subject to all pressure and bacteriological testing required by the Westchester County Department of Health.

III. SPECIFICATION EDITS AND ADDITIONS

- Reissued Section 01 12 50 Summary of Multiple Primes
- Reissued Section 10 51 13 Metal Lockers
- Reissued Section 26 05 01 - Basic Materials and Methods

IV. DRAWING

- Reissued EQ101, EQ102, EQ103, EQ204, EQ206
- Reissued S005, S100, S101, S102, S102A, S111, S112, S131, S303, S401, S402, Issued S403
- Reissued P001, P103, P104, P501
- Reissued FP101
- Reissued M101, M103, M104, M500
- Reissued E001, E002, E102, E501, E502, E503, E703

V. CONTRACTORS' QUESTIONS AND ENGINEERS' RESPONSES

1. **QUESTION**: Please advise if the PC shall provide an add alternate price for alternate no.5. If the PC is to provide an add alternate in regard to the Lubrication system, please specifically define the scope.

   RESPONSE: All plumbing utilities (compressed air) should be included in the base bid, however the cost associated with making final connections should be included in bid Alternate No.5. Lubrication System to be provided by the GC under Alternate No. 5.

2. **QUESTION:** Shall the Oil/ water Separator be furnished and/or installed by the PC or GC? The Spec is included in 220000 series however the separator is located greater than 5' outside the building. Please confirm all services greater than 5' outside the building exterior shall be by the GC

   RESPONSE: Confirmed by the GC

3. **QUESTION:** Per spec. 22 10 10 – 17 Note 5. Shall CPVC piping be permitted in lieu of copper for domestic water?

   RESPONSE: CPVC piping shall not be permitted in lieu of copper for domestic water. Note 5 at the end of Exhibit "A" - Piping Materials (Plumbing) should be omitted accordingly

4. **QUESTION:** Structural drawing S403 is missing from the bid set. Please advise.

   RESPONSE:.Drawing attached

5. **QUESTION:** The VAVs that have coils in them, do they need drain pans?

   RESPONSE: No drain pans necessary

6. **QUESTION:** The drawings say "Louvers by GC" is that to supply only and installed by others or to supply and install by GC?

   RESPONSE: GC shall provide and install since the louvers are to be installed in the metal wall panels. GC shall coordinate with mechanical contractor for duct, damper and opening sizes.

7. **QUESTION:** All exterior wall caps for unit heaters and ERV units supplied by others?

   RESPONSE: Wall caps to be provided by Mechanical contractor.

8. **QUESTION**: Is 1" lining for transfer elbows only?

   RESPONSE: Yes, for transfer elbows only.

9. **QUESTION:** There are plenums behind louvers some have smaller duct off them with 45 degree elbows and wire mesh screens. There are (2) 102"x 48" and (1) 54"x48" plenums with motorized dampers are they supposed to get 45 degree elbows also?

   RESPONSE:.45 degree cuts and wire mesh screen to be installed where indicated on drawings. Drawings have been updated as part of this Addendum

10. **QUESTION:** High fans 118A, 118B, 118C, 120A,120B, and 126 are installed by others? Electrical contractor?

    RESPONSE: Mechanical Contractor to install fans. Electrical Contractor to provide and connect power.

11. **QUESTION:** For Combined Water/ Fire Service inside the building, up to the water meter inlet valve, please confirm Ductile Victaulic Fittings shall be permitted in lieu of Flanged (Spec page 22 10 20-6).

    RESPONSE: Victaulic fittings may be used on fire suppression piping only.

12. **QUESTION:** Please confirm unit heater condensate drains are not required for the specified gas fired unit heaters.

    RESPONSE: Condensate drains are not required.

END OF ADDENDUM No. 1

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PRE-BID MEETING ATTENDANCE SIGN IN SHEET

PROJECT NAME: VILLAGE OF ARDSLEY NEW PUBLIC WORKS FACILITY PRE-BID MEETING DATE: April 19, 2022 TIME: 11 A.M.
BID DUE DATE: May 5, 2022, 11 A.M. Contract No. 1811-001 – General Construction (GCC); Contract No. 1811-002 – Plumbing Construction (PC); Contract No. 1811-003 – Fire Protection Construction (FSC); Contract No. 1811-004 – Mechanical (HVAC) Construction (MC); Contract No. 1811-005 – Electrical Construction (EC) **PLEASE PRINT ALL INFORMATION**

NAME	COMPANY NAME	CONTRACT BIDDING?	PHONE	EMAIL ADDRESS
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Donald Villota	Specialty Const	G.C.	914-668 5812	dvillota@1scs1.com
Tony Rizzi	AMERICAN PETROLEUM	Pump + TANK	914-438-8014	TONY@APECCO.BIZ
Edward Graf Sr.	Pierotti Corp	G.C.	914-233-9912	Edward G@Pierotticorp.co.
Kyle Trenholm	Coppola Paving	GC (site work)	917-224-7808	kyle@coppolacorp.com
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NAME	COMPANY NAME	CONTRACT BIDDING?	PHONE	EMAIL ADDRESS
Keith Ackerson	Icon Const, Co. Inc.	GC	914 288 0014	KACKERSON@iconcghc.com
John NABER	NABER E.C.	ELEC.	914 941-2244	AJN@NABERELECTRIC.COM
S B.COON	Atlantic	Elec	914 906 2858	Sbrown atlantic6@verizon.net
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NAME	COMPANY NAME	CONTRACT BIDDING?	PHONE	EMAIL ADDRESS
K. ANDOVER	C.W.	HVAC	914 761 9600	Kvandover@careyandwalsh.com
Frank Borducci	Solar Electric	Electric	914 447-5217	Fborducci@solarelectric.org.
Scott Zalesny	SRI Fire Sprinkler	Fire Protection	845 691 3800	DCP@SRIFIRESPRINKLER.com
Steve Pivzinger	Twp Plumbing & Htg	Plumbing	914-438-0747	steve@TwpPlumbinginc.com

SECTION 01 12 50- SUMMARY OF MULTIPLE CONTRACTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.

B. Related Sections include the following:

1. Division 1 Section "Summary" for the Work covered by the Contract Documents, restrictions on use of the premises, Owner-occupancy requirements, and work restrictions.
2. Division 1 Section "Project Coordination" for general coordination requirements.
3. Division 1Section "Temporary Facilities and Controls" for specific requirements for temporary facilities and controls.

1.03 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weather-tight; exterior walls are insulated and weather-tight; and all openings are closed with permanent construction or substantial temporary closures.

1.04 COORDINATION

A. Project Coordinator shall be responsible for coordination between the General Construction Contract, Fire Suppression Contract, Plumbing Contract, Mechanical Contract and Electrical Contract.

1. Construction Manager shall act as Project Coordinator.

1.05 PROJECT COORDINATOR

A. Project Coordinator: Full-time Project Coordinator.

1. Coordination activities of Project Coordinator include, but are not limited to, the following:
    a) Provide overall coordination of the Work.
    b) Coordinate shared access to workspaces.
    c) Coordinate product selections for compatibility.
    d) Provide overall coordination of temporary facilities and controls.
    e) Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
    f) Coordinate construction and operations of the Work with work performed by each contract and Owner's construction forces.
    g) Coordinate preparation of Coordination Drawings prepared by each contractor to coordinate their work with each other.
    h) Coordinate sequencing and scheduling of the Work. Include the following:
        i. Initial Coordination Meeting: At earliest possible date, arrange and conduct a meeting with separate Prime Contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.

ii. Review the individual schedules provided by the Multiple Prime Contractors and incorporate the activities of the owner and architect. Provide amended schedules to the contractor for General Construction who shall then prepare the overall Master Schedule.
iii. Distribute copies of the Master Schedule to the Architect, Owner, and separate Prime Contractors.

i) Provide photographic documentation.
j) Coordinate quality-assurance and quality-control services specified in Division 1 Section "Quality Requirements."
k) Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.
l) Coordinate cutting and patching. m.
m) Coordinate protection of the Work.
n) Coordinate completion of interrelated punch list items.
o) Coordinate preparation of Project Record Documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
p) Collect Record Specification Sections from other contractors, collate Sections into numeric order, and submit complete set.
q) Coordinate preparation of operation and maintenance manuals if information from more than one contractor is to be integrated with information from other contractors to form one combined record.
r) Coordinate sharing access to workspaces by plumbing, fire suppression systems, mechanical, and electrical contractors.
s) Coordinate installation of plumbing, fire suppression systems, mechanical and electrical work into limited spaces.

1.06 GENERAL REQUIREMENTS OF MULTIPLE PRIME CONTRACTS

A. Extent of Contract: Unless the Agreement contains a more specific description of the Work, names and terminology on Drawings and in Specification Sections determine which contract includes a specific element of Project.
   1. Unless otherwise indicated, the Work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.
   2. Local custom and trade union jurisdictional settlements do not control the scope of the Work of each contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, affected contractors shall negotiate a reasonable settlement to avoid or minimize interruption and delays.
   3. Excavation and Back fill of Trenches for the Work of each contract shall be provided by each contract for its own Work to 5"-0" outside the building footprint. Electrical Contract. to provide excavation and backfill of their trenches beyond the 5'- 0” If line.
   4. Cutting and Patching: Provided by each contract for its own Work.
   5. Through-penetration firestopping for the Work of each contract shall be provided by each contract for its own Work.
   6. Each Prime Contract is required to coordinate openings in any new walls and roof with the General Construction Contract.
   7. Within fourteen (14) working days after coordinated construction schedule has been re-

ceived from Project Coordinator, review and submit any and all comments, amendments to, and/or acceptance of said schedule. Project Coordinator shall reissue amended schedule as necessary showing construction operations sequenced and coordinated with overall construction.

8. Project closeout requirements.

B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the Work.

C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Division1 Section "Temporary Facilities and Controls," each contractor is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, and costs and use charges associated with each facility.
2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
3. Its own field office, complete with necessary furniture, utilities, telephone and internet services. Electrical service shall be brought in from temporary panel located 100 feet within property line to own field office.
4. Its own storage and fabrication sheds.
5. Temporary enclosures for its own construction activities.
6. Hoisting facilities for its own construction activities.
7. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary or other harmful waste materials.
8. Progress cleaning of its own areas on a daily basis.
9. Temporary fire-protection equipment including fire extinguishers.
10. Secure lockup of its own tools, materials, and equipment.
11. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

D. Temporary Heating, Cooling, and Ventilation: Each Contractor is responsible for temporary heating, cooling and ventilation required for own work. Owner will pay for utility-use charges.

E. Use Charges: Comply with the following:

1. Water Service: The Owner shall pay the cost for water service, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site.
2. Electric Power Service: Owner shall pay the cost for electric power service, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site with the following conditions:
    a) The Owner shall pay for electric energy for temporary light and power except electric energy requiring more than single phase 400 amp service required for temporary trailers for duration of the project.
    b) Any requirement for electric energy shall be provided by separate sources and completely paid for by each Contractor requiring such power until primary service is installed.

1.07 GENERAL CONSTRUCTION CONTRACT

A. Work in the General Construction Contract includes, but is not limited to, the following:

1. Work is outlined on Drawings with the Sheet Identifiers "EQ," “G," “C”, “A” and "S"

and includes any and all interfacing work shown elsewhere on the remaining Contract Drawings: “FP,” “P,” “M,” “E,” and “T.”.

2. Preparation of coordination drawings, for use by other trades, in compliance with Division 1 Section "Administration Requirements":
    a) Project Coordinator will allocate applicable portions of coordination drawings to the General Construction Contract, Fire Suppression Contract, Plumbing Contract, Mechanical Contract and Electrical Contract for functional and spatial relationships of components of architectural, structural, civil, mechanical and electrical systems.
    b) Indicate required installation sequences if necessary.
    c) General Contractor will be responsible for site coordination drawings, site logistic plan and construction implementation plan.
3. Preparation of overall Master Schedule upon completion of initial coordination meeting convened by the Project Coordinator. Update the Master Schedule monthly through project completion.
4. Site preparation including, but not limited to, clearing, grubbing and earthwork as well as excavation for the building and building utilities 5’-0” outside building perimeter and related earthwork.
5. Site improvements including, but not limited to, roadways, drainage structures, parking lots, pedestrian paving, lawn areas, landscaping, site development furnishings and equipment
6. All Building Utilities: Domestic Water Services, Fire Water Service and Gas Service to 5’-0” outside building foundation walls
7. Concrete Utility Slab-on-Grade for Generator, Transformer including required Bollards
8. All Retaining Walls,
9. All Slabs-on-grade and Stairs-on-grade outside of building footprint, including earthwork and insulation.
10. Site layout including verifying layout information shown on Drawings, in relation to the property survey and existing benchmarks. Locate and lay out reference points as indicated on Site drawings in Contract Documents.
11. Construction Layout including verifying layout information shown on Drawings, in relation to property survey and existing benchmarks. Locate and lay out reference points and control lines and levels for structures, building foundations, column grids, and floor levels, including control lines and levels required for fire suppression, plumbing, mechanical and electrical work from a starting point designated as per the Civil Drawings.
12. Foundations including footings and foundation walls.
13. Contractor must employ a licensed surveyor to perform building layout and to provide certification of location of completed foundation anchors. Provide via the required Submittals process a certified anchor bolt survey upon completion of all foundation work and prior to the start of steel erection. Upon completion of all sub/slab plumbing line installations, perform an as-built survey and provide a certified drawing locating all sub-slab lines including their relationships to all interior and exterior walls.
14. Interior Slab-on-grade, including earthwork and insulation.
15. Metal Panels CMU and required Back-up on all exterior / interior walls, columns, etc. with all necessary reinforcing, ties, etc.
16. Below-Grade building construction, including excavation, backfill and thermal and moisture protection.
17. Superstructure, including floors, mezzanine and roof construction.

18. Exterior enclosure, including walls, parapets, doors, windows and louvers, overhead doors and controls
19. Roofing, including coverings, flashings, metal panels, penetration booths from the pre-manufactured metal building supplier, gutters, snow guards and roof specialties
20. Interior construction, including partitions, doors, interior glazed openings and fittings. Interior finishes including supports and hangars installed by other trades.
21. Fire-protection specialties
22. Stairs, including railings and finishes
23. Interior finishes, finish carpentry, architectural woodwork and built –in casework. Interior and Exterior Impact protection and bollards.
24. Conveying systems, including elevator(s)
25. Equipment noted as supplied by General Contractor as well as equipment noted to be supplied by Owner and installed by Genera Contractor.
26. Furnishings, including casework and floor mats.
27. Final property survey.
28. Final cleaning as specified in Section "Execution and Closeout Procedures."
29. Miscellaneous specialties including, but not limited to the following:
    a) Visual display surfaces and casework
    b) Blocking for roof curbs, plumbing fixtures, etc. as required.
    c) Toilet and bath accessories
    d) Toilet Compartments
    e) Lockers and Gear Lockers
    f) Installation of necessary / required access doors provided by other Prime Contractors
30. Kitchen Cabinets, Stove, Refrigerator, Washer, Dryer etc.

B. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:
    1. Temporary facilities and controls that are not otherwise specifically assigned to the Plumbing Contract, Fire Suppression Systems Contract, Mechanical Contract, and Electrical Contract.
    2. Construction Manager’s field office and supplies, including weekly janitorial services.
    3. Trenching for all utilities, except electrical, by General Contractor up to 5’-0” outside of building perimeter.
    4. Stormwater control.
    5. Temporary roads and paved areas.
    6. Site storm control and drainage.
    7. Site sanitary sewage
    8. Un-piped temporary toilet fixtures and wash facilities, including disposable supplies.
        a) Provide minimum of three temporary toilet fixtures, inclusive of one located at the field offices, for common use and two located within the construction site area where necessary for common use for the entire Contract time. Provide additional as necessary. Maintain and clean temporary toilets as required.
    9. Dewatering facilities and drains, unless required solely for the Work of another contract.
    10. Excavation support and protection, unless required solely for the Work of another contract.
    11. Remove snow and ice from construction areas as required to minimize accumulations. Maintain safe, uninterrupted access to all construction areas.
    12. Project identification and temporary signs.

13. Barricades, warning signs, and lights.
14. Site /Building enclosure fence and lockup as necessary.
15. Security enclosures and lockup.
16. Site / Building Environmental protection.
17. Temporary enclosure for building exterior, except as indicated.
18. Until permanent stairs are available, provide temporary stairs where ladders are not adequate, including to roofs.
19. Pest control. Provide pest control inspection at project closeout as indicated in Division 1 Section “Execution and Closeout Requirements."
20. General waste disposal facilities.
21. Temporary fire-protection equipment.
22. Environmental protection.
23. Temporary water freeze protection structure

1.08 FIRE-SUPPRESSION SYSTEMS CONTRACT

A. Work in the Fire Protection Systems Contract includes, but is not limited to, the following:
    1. Work is outlined on Drawings with the Sheet Identifier "FP," and includes any and all interfacing work shown elsewhere on the remaining Contract Drawings: "EQ", “G," “C,” "A," “S,” “P,” “M, “E”” and “T”.
    2. Preparation of coordination drawings, for use by other trades, in compliance with Division 1 Section "Administration Requirements."
        a) Project Coordinator will allocate applicable portions of coordination drawings to the Site Contract, General Construction Contract, Plumbing Contract, Electrical Contract, and Fire Protection Systems Contract for functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
        b) Indicate required installation sequences if necessary.
    3. Wet-pipe, sprinklers, valves, piping, and risers.
    4. Check valve assemblies and connections to water service.

1.09 PLUMBING CONTRACT

A. Work in the Plumbing Contract includes, but is not limited to, the following:
    5. Work is outlined on Drawings with the Sheet Identifier "P" and "C", and includes any and all interfacing work shown elsewhere on the remaining Contract Drawings: "EQ”,“G," "A," “S,” “FP,” “M, “E”” and “T”.
    1. Preparation of coordination drawings, for use by other trades, in compliance with Division 1 Section "Project Management and Coordination."
        a) Project Coordinator will allocate applicable portions of coordination drawings to the Site Contract, General Construction Contract, Plumbing Contract, Electrical Contract, and Fire Protection Systems Contract for functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
        b) Indicate required installation sequences if necessary.

2. Gas distribution.
3. Plumbing fixtures, including RPZ and DCDA
4. Domestic water distribution.
5. Sanitary waste.
6. Stormwater drainage to 5'-0" outside building perimeter.
7. Plumbing connections to equipment furnished by the General
8. Construction Contract, Fire Suppression Contract, Mechanical Contract and Electrical Contract.

B. Temporary facilities and controls in the Plumbing Contract include, but are not limited to, the following:
   1. Piped water service from point of connection to proposed facility, including, but not limited to, temporary standpipes and hoses for fire protection, and hose-bib, backflow-prevention devices.
   2. Plumbing connections to proposed systems and temporary facilities and controls furnished by the General Construction Contract, Fire Suppression Contract, Mechanical Contract and Electrical Contract.

1.10 MECHANICAL CONTRACT

A. Work in the Mechanical Contract includes, but is not limited to, the following:
   1. Work is outlined on Drawings with the Sheet Identifier "M," and includes any and all interfacing work shown elsewhere on the remaining Contract Drawings: "EQ", “G," “C,” "A," “S,” “FP,” “P, “E” and “T”.
   2. HVAC systems and equipment including rooftop equipment curbs and related vibration control curbs.
   3. HVAC instrumentation and controls.
   4. HVAC testing, adjusting, and balancing.
   5. Building automation system.
   6. Preparation of coordination drawings, for use by other trades, in compliance with Division 1 Section "Administration Requirements.”
      a) Indicate elevations of HVAC systems (including piping and ductwork) with reference to finish floor elevations.
      b) Project Coordinator will allocate applicable portions of coordination drawings to the General Construction Contract, Fire Suppression Contract, Plumbing Contract, Electrical Contract, and Fire Protection Systems Contract for functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      c) Indicate required installation sequences if necessary.
   7. Mechanical connections to equipment furnished by the General Construction Contract, Fire Suppression Contract, Plumbing Contract and Electrical Contract.

1.11 ELECTRICAL CONTRACT

A. Work in the Electrical Contract includes, but is not limited to, the following:
   1. Work is outlined on Drawings with the Sheet Identifiers "E", “C” and “T” and includes any and all interfacing work shown elsewhere on the remaining Contract Drawings: "EQ", “G," ,"A," “S,” “FP,” “P”, and “M”.
   2. Preparation of coordination drawings, for use by other trades, in compliance with Division 1 Section “Administration Requirements"
      a) Project Coordinator will allocate applicable portions of coordination drawings to the General Construction Contract, Fire Suppression Contract, Plumbing Contract, Mechanical Contract and Electrical Contract, for functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      b) Indicate required installation sequences if necessary.
   3. Site electrical distribution.
   4. Site lighting.
   5. Electrical service and distribution.
   6. Exterior and interior lighting.
   7. Special electrical systems, including the following:
      a) Uninterruptible power supply systems.
      b) Packaged engine generator systems.
      c) Battery power systems.
      d) Lightning protection systems
      e) Cathodic protection.
      f) Fire alarm system.
      g) Grounding
   8. Electric wiring for fire suppressing system at kitchen exhaust hood system actuation and exhaust response in accordance with local codes, control wiring, and contactors.
   9. Electrical connections to equipment furnished by the General Construction Contract, Fire Suppression Contract, Plumbing Contract and Mechanical Contract.
   10. Underground utility duct bank, electric, communications, etc and associated pull boxes, underground utility manholes, conductors and transformer pad etc.

B. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:
   1. Temporary electric power service of single phase 400 amp to a distribution panel within Construction Site area as well as area of Field Office(s), not more than 100 ft. in from property line.
   2. Electric power service and electric distribution.
   3. Lighting, including site lighting.
   4. Provide temporary telephone service, electronic communication service, including internet service, and electric power for the Construction Manager field office.
   5. Electrical connections to proposed systems and temporary facilities and controls furnished by the General Construction Contract, Fire Suppression Contract, Plumbing Contract and Mechanical Contract.

C. Transfer of Overhead Services to Underground Utility Duct bank.
   1. The Electrical Contractor will be responsible for the installation and excavation of the Underground Utility Duct Bank as described in contract documents.

2. **The EC will be responsible for the Demolition of the utility poles and overhead services.**
3. **The EC will remove the existing utility poles and store on site for the owner to remove.**
4. **The EC will supply all labor and materials including but not limited to: conduit, pull boxes, vaults, pads, conductors, etc.; for the Underground Utility Duct Bank.**
5. **EC to coordinate with General Contractor for installation of site utilities.**
6. **EC to coordinate with service providers for transfer of overhead services to Underground Utility Duct Bank. Since these services pass through the site and provide service to adjacent properties the services must remain operational until they can be switched over with the least amount service interruption. Service interruptions for adjacent properties must be scheduled a minimum of 4 weeks in advance of disruption.**
7. **All other site electrical and communication conduit will be installed by the EC.**

END OND OF SECTION 011250

SECTION 10 51 13
METAL LOCKERS

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish and install the following:
   1. Metal lockers, for complete with all required tops, closures and filler pieces.
   2. Wood locker room benches.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - ROUGH CARPENTRY: Wood framed base for lockers.

1.03 SUBMITTALS

A. Submit the following under provisions of Section 01 33 23 - SUBMITTALS:
   1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for each item furnished hereunder.
   2. Warranty: Provide sample copies of manufacturers' actual warranties, clearly defining all terms, conditions, and time periods for the coverage thereof.
   3. Shop drawings:
      a. 1/4 inch scale (minimum) plans of each area with specified lockers, include layout of all lockers, closures, and filler panels and large scale details of locker construction; and details of accessory items.
      b. Large scale details of locker and bench construction, showing filler panels, sloping top components, attachment clips, brackets and complete installation details.
   4. Selection samples: Manufacturer's color chips, comprising at least 8 different colors, for selections by the Engineer.

B. Submit manufacturer’s warranties under provisions of Section 01 78 00 – PROJECT CLOSEOUT.

1.04 QUALITY ASSURANCE

A. Obtain locker and benches from a single manufacturer, or from manufacturers recommended by the prime manufacturer of lockers.

B. Notify the Engineer where conflicts apply between referenced standards and existing materials, and existing methods of construction.

1.05 QUALIFICATIONS

A. Manufacturer, with a minimum of 3 years experience demonstrating previously successful work of the type specified herein.

1.06 DELIVERY, STORAGE AND HANDLING

A. Do not order or fabricate lockers, until all specified submittals have been submitted to, and approved by, the Engineer.

B. Store lockers inside, under cover, and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

B. Coordinate schedule of construction, size of access and route to place of installation to prevent delay of installation due to physical impediments. Any work involving the demolition and reconstruction of partitions, walls, floors, roofing, windows, or doors to place and install the work of this Section shall be performed at no additional cost to the Owner.

1.08 EXTRA MATERIALS

A. Upon completion of the Work of this Section, deliver to the Owner extra materials for future repairs and maintenance.
   1. Provide spare keyed cylinders (with keys), an amount equal to 10 percent of total lockers.
   2. Provide two master keys.

B. Clearly label and package extra materials securely to prevent damage.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
   1. Debourgh Manufacturing Company, La Junta CO.
   2. Lyon Metal Products, Inc., Aurora IL.
   3. Penco Products, Inc., Oaks PA.
   4. Republic Storage Systems Company, Inc., Canton OH.

2.02 MATERIALS

A. Sheet Steel: Mild cold-rolled and leveled steel, free from buckle, scale, and surface imperfections.

B. Fasteners: Cadmium, zinc, or nickel plated steel; exposed bolt heads, slotless type; self-locking nuts or locker washers for nuts on moving parts.

1. Locker assembly fasteners shall be "pop" type rivets with aluminum bodies and steel mandrels. Rivets shall be backed up by washers to ensure correct rivet expansion and secure fastening.

C. Equipment: Hooks and hang rods of cadmium-plated or zinc-plated steel or cast aluminum.

2.03 LOCKER TYPES

A. Locker Types:

1. Lockers: Single tier wardrobe locker **24** inches wide by **21** inches deep by 72 inches high at front with sloped tops.

a. General design, Republic Storage Systems Company, Inc., Canton OH; product: “Quiet Series Locker”.

b. Body: Backs, sides, tops, bottoms, shelves and sides minimum 24-gage. Flange tops, bottoms and shelves on four sides, and backs on two sides.

1) Form exposed ends of non-recessed lockers of minimum 16-gage steel.

2) Lower shelf:

a) Standard locker: 6 inches above finished floor.

b) Handicapped accessible locker: 9 inches above finished floor.

3) Top shelf:

a) Standard locker: Manufacturer’s standard height.

b) Handicapped accessible locker: 48 inches above finished floor.

c. Door frame: 16 gage channel or 12 gage angles, with continuous door stop/strike integral with frame on both sides of opening.

d. Door: Flush design without louvers or perforations, 16 gage steel, formed with full channel shape on lock bar side, channel formation on hinge side and flanged top and bottom. Fabricate to swing 180 degrees.

e. Hinges: 5 knuckle, 2 inch high full loop pin hinge welded to frame and riveted to inside of door flange.

1) Lockers doors greater than 42 inches in height, provide 3 hinges.

f. Door handle:

1) Latch design: operable by “club fist” as required by State of New York Regulation Title 19, *2010 Building Code of New York State (BCNYS)* Chapter 11 and International Code Council/American National

Standards Institute, code standard: ICC/ANSI A117.1-2003 edition, *Standard on Accessible and Usable Buildings and Facilities*.

2) Latching method: three point latching with spring steel latch contained in a lock bar under tension. Lock bar contained in door channel by self-lubricating polyethylene guides. Provide frame hooks welded to door frame, furnished with soft rubber silencers at each hook.

3) Locking method: door handle latch design capable of receiving user furnished padlocks.

g. Base: Framed wood base provided under Section 06 10 00 – ROUGH CARPENTRY.

h. Sloping tops: 20 gage steel minimum having a sloped rise approximately 18 to 25 degrees, finished to match lockers, in lengths as long as practicable but not less than 4 lockers. Provide closures at ends finish to match lockers.

i. Filler panels: 18 gage steel minimum, factory-fabricated and finished to match locker units.

j. Trim: 18 gage steel minimum; Provide at jambs and head of recessed lockers, finished to match locker units. Secure with concealed fasteners.

k. Accessories:

1) Double prong hook mounted to underside of locker top or back of locker.

2) Hat/book shelf.

3) Number Plates: Provide each locker door with polished aluminum number plate with black numerals not less than 1/2 inch height.

2.04 LOCKER ROOM BENCHES

A. Movable benches, factory fabricated:

1. Tops: Laminated maple, 12 inches wide by 1-1/4 inches thick of lengths indicated, sealed with two coats of clear lacquer.

2. Legs: Heavy-duty pedestal-type supports fabricated from 1 ½ inch diameter welded steel tubing with a shop applied baked enamel finish to match locker color.

3. Overall seating height shall be between 17-1/2 to 18 inches.

B. ADA Bench: 24 inch by 48 inch solid wood bench sealed with two coats of clear lacquer as indicated on the Drawings, with pedestal legs or wall-mounted brackets with baked enamel to match lockers.

2.05 FACTORY FINISHING

A. Clean, degrease, and neutralize metal; prime and finish with two coats of baked enamel finish.

1. Colors of locker bodies and doors as selected from manufacturer's standard range. Up to two colors may be selected for each locker type.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section. Verify that field measurements are as indicated on reviewed and approved shop drawings.

B. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

A. During the operation of work of this Section, protect the work of other trades against undue soilage and damage by the exercise of reasonable care and precautions. Repair or replace any work so damaged and soiled to match original finishes.

3.03 INSTALLATION

A. Do not commence installation of lockers until immediately adjacent surfaces have been completely installed and finished.

B. Perform installation work in accordance with the approved shop drawings and the manufacturer's installation instructions.

C. Furnish and install all sloped top pieces as required, refer to the Drawings for the various conditions.

D. Furnish and install all filler pieces as required to completely fill recesses, and to align with ends of partitions. Refer to the Drawings for the various conditions.

E. Set lockers absolutely level and in true line, with units bolted together and to the surrounding partitions, to provide a rigid and secure installation. Conceal screw heads and bolts as far as practicable, leaving exposed panels completely free from unused bolt holes.

F. Locate locker benches where shown on the Drawings.

3.04 ADJUSTING AND CLEANING

A. Test each door and latching device, and make adjustments required to ensure a bind-free operation and proper latching.

B. Remove all tape and other packing materials from locker surfaces, and thoroughly clean and polish all exterior and interior surfaces.

C. Touch-up all scratches and other surface defects, using same materials and colors as shop finish.

3.05 PROTECTION

A. Protect locker finish surfaces and hardware from damage until Owners Final Acceptance.

END OF SECTION

SECTION 26 05 01
BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The drawings are diagrammatic, unless detailed dimensioned drawings are included, and show only approximate locations of equipment, fixtures, panelboards, conduits, and wiring devices. Exact locations are subject to the approval of the Owner's Representative. The general run of electrical feeders, branch circuits, and conduits, indicated on the drawings, is not intended to be the exact routing. Exact routings of conduit shall suit the job conditions.

B. Circuit designations, in the form of "Home Runs" on branches, indicate the designation of the branch circuit, the size and the quantity of branch circuit conductors, and the panel board or interconnection box from which the branch circuit is served.

C. Make measurements at the site and in the building during construction for all systems installed as the work progresses in such a manner that the equipment, piping, vents, ducts, conduit, and boxes will fit in the space available. Maintain headroom and if in unfinished areas, be as neatly installed, as obscure and "out-of-the-way" as physically possible. Where more than one trade is involved in an area, space or chase, all shall cooperate and install their own work to utilize the space equally between them in proportion to their individual requirements. In general, ductwork shall be given preference except where grading of piping becomes a problem, followed by piping then electrical wiring. If, after installation of any equipment, piping, ducts, conduit, and boxes, it is determined that ample maintenance and passage space has not been provided, rearrange work and /or furnish other equipment as required for ample maintenance space.

D. Any changes in the size or location of the material or equipment supplied, which may be necessary in order to meet field conditions or in order to avoid conflicts between trades, shall be brought to the immediate attention of the Owner's Representative and approval received before such alterations are made.

1.02 QUALITY ASSURANCE

A. Electric equipment shall be installed in a neat and workmanlike manner. All methods of construction, details of workmanship, that are not specifically described or indicated in the contract documents, shall be subject to the control and approval of the Owner's Representative.

B. Equipment and materials shall be of the quality and manufacture indicated in their respective sections of the specifications. The equipment specified is based upon the acceptable manufacturers listed. Equipment types, device ratings, dimensions, etc., correspond to the nomenclature dictated by those manufacturers. Where "or equal" is stated, equipment shall be equal in every way to that of the equipment

specified and subject to approval. All equipment shall be tested at the factory. Unless specified elsewhere, standard factory inspection and operational tests will be acceptable.

1.03 SUBMITTALS

A. Submit product data for the following equipment, materials and products, including all fittings and accessories:

1. Conduit
2. Expansion Fittings
3. Wireway and Wire Trough
4. Channel Support Systems
5. Conductors
6. Terminal and Equipment Cabinets
7. Wiring Devices Including Dimmers
8. Telephone/Data Communication Outlets
9. Television Outlets
10. Boiler Shutdown Switches
11. Underground Pullboxes (Handholes) and Covers
12. Water Proofing Seals
13. Flashing, Sealing, Firestopping Materials
14. Testing reports prior to energizing equipment and materials.
15. **Manholes and Covers**

PART 2 - PRODUCTS

2.01 MATERIALS

A. Conduit, Raceway and Tubing:

1. Rigid Metal Conduit (RMC) shall be hot-dipped galvanized or electro-galvanized steel, UL listed "rigid metal conduit."
   a. Acceptable Manufacturers:
      1) Republic Conduit
      2) Allied Tube and Conduit
      3) Wheatland Tube Company
      4) Approved equal
2. Electrical Metallic Tubing (EMT) shall be electro-galvanized steel; UL listed.
   a. Acceptable Manufacturers:
      1) Republic Conduit
      2) Allied Tube and Conduit

3) Wheatland Tube Company

4) Approved equal

3. Flexible Metal Conduit shall be constructed one continuous length of electro-galvanized, spirally wound steel strip with interlocking convolutions and interior surfaces free from burrs and sharp edges. Shall be UL listed "flexible metal conduit" or "liquidtight flexible metal conduit" as required.

a. Acceptable Manufacturers:

1) Republic Conduit

2) Allied Tube and Conduit

3) Wheatland Tube Company

4) American Flexible Conduit Company

4. Rigid Non-Metallic Conduit (Schedule 40 for concrete encasement, Schedule 80 for direct burial or where exposed) shall be UL listed "rigid non-metallic conduit" for application in underground, encased, and exposed applications in accordance with the NEC". The conduit shall be made from polyvinyl chloride (PVC) and shall be rated for 90ºC conductors. Conduit and fittings shall be tested in accordance with the testing requirements defined in NEMA TC-2, NEMA TC-3, UL-651 and UL-514.

a. Acceptable Manufacturers:

1) Carlon

2) Heritage Plastics

3) PW Eagle

B. Conduit Fittings:

1. Fittings for rigid metal conduit shall be fully threaded and shall be of the same material as the respective raceway system. Fittings for electrical metallic tubing shall be single screw indenter fittings for conduits up to 2 in. and double screw indenter fittings for conduits 2 in. and larger. Connectors shall also have insulated throat or plastic insulating bushing up to and including 1 in. size. For sizes 1-1/4 in. and larger, provide plastic insulating bushing. Die-cast, pressure cast fittings shall not be used. Fittings for rigid non-metallic conduit shall be solvent cemented in accordance with the manufacturer's instructions.

a. Acceptable Manufacturers:

1) O.Z. Gedney

2) Steel City

3) Thomas & Betts

4) Crouse-Hinds

5) Carlon

2. Expansion Fittings shall be watertight, combination expansion and deflection type designed to compensate for movement in any direction. Fittings shall have flexible copper braid bonding jumpers, neoprene sleeve and stainless steel bands, use aluminum body fittings for rigid aluminum conduit.
    a. Acceptable Manufacturers:
        1) Crouse-Hinds, Type "XD"
        2) O.Z./Gedney, Type "DX"
        3) Approved equal

C. Wireway and Wire Trough:

1. Wireway and Wire Trough shall be hinged cover type wireway with provisions for full lay-in along the entire length of run. Wireway shall be steel, enclosed with gray enamel finish. Provide NEMA 1 units for interior/dry/clean locations and NEMA 12 for interior dry maintenance/shop/utility locations. Size to meet NEC fill requirements or larger as noted on Contract Documents. Provide knockouts along runs. Recess in wall where required for flush mounted equipment. Hinge shall be on the bottom of front face for horizontal mounting. Provide all elbows, tees, pullboxes, fittings, hangers, reducers, supports, supports, etc., to meet installation requirements.
    a. Acceptable Manufacturers:
        1) Square D "Square Duct"
        2) General Electric
        3) Hoffman
        4) Meco

D. Channel Support Systems:

1. Channel Support Systems shall be provided for racking of conduit, trapeze suspensions, equipment support, cable racks and panel racks. Provide poured-in-place inserts for supporting channels at poured concrete walls and ceilings. Channel shall be steel with electroplated zinc finish for interior dry locations. Provide necessary accessories such as bolts, screws, anchors, connection plates, and straps as required to perform the necessary functions. Wet location and exterior channel support systems shall be steel with hot dipped galvanized finish and stainless steel hardware as a minimum. Cut ends shall be touched up with suitable matching finish.
    a. Acceptable Manufacturers:
        1) Unistrut
        2) Globe
        3) Kindorf
        4) B-Line

E. Conductors and Cables:

1. Conductors shall be insulated for 600 volts, unless otherwise noted, and shall be standard AWG and kcmil sizes. Conductors shall be 98% copper, thermal plastic or cross-linked polymer insulated, heat and moisture resistant. Conductor sizes No. 18 AWG and smaller shall be a solid single strand; No. 16 AWG and larger shall be multiple stranded. Minimum conductor size shall be #12 AWG except smaller sizes may be used for communications and special systems. Conductor sizes shall be as called for. Conductors shall be labeled with UL seal and be marked with the manufacturer's name, wire size and insulation type. Insulation for all 600 volt conductors shall be Type THHN/THWN-2 or Type XHHW-2, unless otherwise noted. All exterior and underground conductors shall be XHHW-2. Luminaire fixture wire shall conform to the latest Underwriters Laboratories requirements. Flexible cords and cables for general portable use shall be Type SO or SOOW or as noted. Cables for special use shall be of the type specified for the application.

   a. Color Coding:

      1) All circuits shall be color coded according to the following schedule.

	Three Phase 120/208V	**Three Phase 277/480V**
Ground	Green	Green
Neutral	White	Gray
A or L1	Black	Brown
B or L2	Red	Orange
C or L3	Blue	Yellow

   b. Acceptable Manufacturers:

      1) General Cable
      2) Prysmian
      3) South Wire
      4) Okonite
      5) Senator

2. Metal Clad, Type "MC" Cable shall consist of thermal plastic insulated copper conductors of size and quantity indicated, protected by a positive interlocked armor of galvanized steel. The conductors shall be twisted together and shall have an overall moisture and fire resistant fibrous covering. The cable shall have an integral green insulated full size equipment grounding conductor running its entire length. Where dimming is called for the cable is allowed to include dimming control wiring with a

voltage rating to match the power. The cable shall meet the requirements of the NEC for "Type MC" Metal Clad Cable and shall bear the UL Label.

a. Acceptable Manufacturers:

1) Southwire
2) AFC Cable
3) Approved equal

F. Terminal Lugs and Connectors:

1. The lug shall be capable of continuous operation at the current rating of the cable it is used on. The lug shall be UL listed per UL 486A, using industry standard crimping tools and dies. Terminal lugs shall be solderless, pressure type with UL label for "CU/AL" conductor terminations. The lug shall be a closed-end compression (crimp) type, constructed of seamless, alloy suitable for copper and/or aluminum conductors to match the conductor. The lug shall be made with a chamfered inside end, for ease of conductor insertion. Both one and two hole lugs shall be NEMA sized for standard stud sizes and spacing. The lug shall be designed for use at the system voltage.

a. Acceptable Manufacturers:

1) 3M Scotchlok 30,000 and 31,000 Series
2) Burndy
3) O.Z./Gedney
4) Thomas and Betts

2. The conductor connection shall be capable of continuous operation at the current rating of the cables it is used on. The connection shall be UL listed per UL 486A, using industry standard crimping tools and ides. The connector shall be an inline compression (crimp) type, constructed of seamless, tin-plated copper. The connector shall be constructed with chamfered inside-ends and with center cable stops. The connector shall be designed for use at the system voltage.

a. Acceptable Manufacturers:

1) 3M Scotchlok 10,000 and 11,000 Series
2) Burndy
3) O.Z./Gedney
4) Thomas and Betts

3. "Split-bolt" Connectors shall be solderless type.

a. Acceptable Manufacturers:

1) Burndy
2) Kearney
3) O.Z./Gedney
4) Thomas and Betts

5) Anderson

4. "TWIST ON" Connectors shall be spiral steel spring type and insulated with vinyl cap and skirt.

a. Acceptable Manufacturers:

1) 3-M Company "Scotch-Lok"

2) Ideal "Wing-Nuts"

3) Approved equal

G. Boxes:

1. Outlet boxes shall be galvanized steel, not less than 2-1/2 in. deep, unless restricted by the surroundings, 4 in. square or octagonal, with knockouts. Boxes and associated fittings, plates and devices shall be mechanically fastened (screwed), friction fitting is not acceptable. Outlet boxes exposed to moisture, surface mounted, exterior, wet or damp locations shall be cadmium cast alloy complete with external threaded hubs and gasketed screw fastened covers. Minimum box size shall be as indicated in the NEC for the conductors and devices installed. Boxes shall be approved for the environmental condition where they will be installed.

a. Acceptable Manufacturers:

1) Steel City

2) Raco

3) Appleton

4) Crouse Hinds

2. Telephone/Data Communications Outlet Boxes:

a. 4 in. x 4 in. outlet box with single gang plaster ring with blank cover plate and conduit routed to accessible ceiling space. Cover plate shall match the receptacle cover type.

3. Pull and junction boxes shall be constructed of not less than 14 gauge galvanized steel with trim for flush or surface mounting in accordance with the location to be installed. Provide screw-on type covers. Boxes installed in damp or wet locations shall be of raintight construction with gasketed cover and threaded conduit hubs. In no case shall boxes be sized smaller than as indicated NEC for conduit and conductor sizes installed. Boxes shall be approved for the environmental condition of the location where they will be installed.

a. Acceptable Manufacturers:

1) Hoffman

2) Keystone

3) Approved equal

H. Wiring Devices:

1. Wiring Devices (toggle switches, key switches, receptacles, dimmers, occupancy sensors, etc.) shall be specification grade as a minimum. Switch handle and receptacle face finish shall be as directed by the Architect. Provide device cover plates of rounded nylon colored to match the device in finished areas and rounded raised (Steel City 450/460 series) only for surface mounted locations in unfinished areas. Provide neoprene gasketed cast aluminum/zinc box with hinged (for receptacle) rain tight cast aluminum/zinc lockable while in use cover with stainless steel hardware for devices designated "WP".
    a. Acceptable Manufacturers:
        1) Pass and Seymour
        2) Hubbell
        3) Leviton
2. Toggle/Snap Switches:
    a. Units shall be quiet operation, quick make/quick break, rated for 20A/120-277V/1hp at 120/277V, side/back wired, with nylon/polycarbonate toggle, self-grounding mounting screw clip plate (not staple), ground terminal and silver alloy contacts. Units shall meet latest Federal Specification WS-896, NEMA WD-1 and UL Test 20. Single pole units shall be Hubbell HBL1221, P&S 20AC1 or Leviton 1221-2. Provide two pole, three way, four way, illuminated handle, keyed, etc. type of the same quality and model.
3. Receptacles:
    a. Provide receptacles where indicated on the drawings and where called for. Provide type receptacle as indicated and if not indicated then utilize general receptacle.
    b. General Receptacle: Units shall be NEMA 5-20R, duplex, 20A, 125V, side/back wired, #14 to 10AWG screw terminals with nylon face, indented brass contacts for three point connection, self-grounding stainless steel mounting screw clip plate and green ground terminal. Shall meet requirements of Federal Specification W-C-596, NEMA WD-6 and UL 498.
        1) Units shall have 0.03" thick brass contacts, 0.04 inch galvanized steel mounting strap and be: Hubbell BR20, P&S BR20 or Leviton BR20.
    c. Ground Fault Interrupting Receptacles: Units shall be as specified above for General Receptacle and have 5mA interrupting ground fault level, test/reset front buttons, full through feed capability, power off on reverse wired sensing, 10kA short circuit current rating, be tamper/weather resistant and in compliance with UL 943. Unit shall self-test function to periodically test the components automatically and indicate a failure condition utilizing

an LED. Shall be Hubbell GFR5362, P&S 2096TR or Leviton S7599TR.

d. Stove Receptacles: To be NEMA 14-50R single receptacle in suitable box and steel cover plate painted to match the surrounding. Shall be Hubbell, P&S or Leviton highest grade available.

e. Special Receptacles: provide other type receptacles as indicated herein or on the drawings. Such receptacles shall be Hubbell, P&S or Leviton highest grade available.

4. Television Outlets:

a. 4 in. x 4 in. outlet box with single gang plaster ring with blank cover plate and conduit routed to accessible ceiling space. Cover plate shall match the receptacle cover type.

5. Emergency Shutdown Pushbutton:

a. Where called for provide emergency shutdown/emergency power off push button. Unit shall be Square D Class 9001 Type K NEMA 13 oil tight pushbutton with the following:

1) Red mushroom head 1-1/2 in. button, hinged protective flip up cover, push to operate, pull to reset.

2) Maintained contact operation with one normally open and one normally closed 10A 120V contacts. Provide relay for additional contacts.

3) Red pilot light.

4) Engraved legend plate indicating "XX - Emergency Stop" with XX = the system name.

I. Underground Pullboxes (Handholes):

1. Sidewalk and Grass Areas: Boxes shall be comprised of composite material with stainless steel hardware and ANSI Tier 8 rating minimum. Provide conduit/duct openings per the plans/schematics with spare capacity for 2 - 2" in each side wall, minimum. Box shall be minimum 2'-0" wide x 2'-0" long x 3'-0" deep inside dimensions, or larger as required to meet NEC requirements. Cover shall be imprinted with either "Electric", "Telephone", etc. to designate type of service. Provide 18 in. of #2 crushed stone under pullbox and 18 in. beyond. Refer to drawings per details and locations.

a. Manufacturers:

1) Quazite

2) Old Castle

3) Approved equal

2. All Other Areas: Boxes shall have ANSI Tier 22 rating (22,500lb weight rating) and be comprised of steel reinforced concrete walls and bottom

sections using 5,000 psi, minimum concrete. Bottom shall have 12 in. diameter sump opening and 3/4 in. ground rod opening. Knockouts and openings shall be positioned for conduits/ducts. Provide two (2) rows of anchor bolt inserts for cable rack supports to permit installation of two (2) cable rack supports on each side wall and one (1) cable rack support on each end wall. Provide hot dipped galvanized steel pulling irons at 45° angle between floor and wall opposite each opening. Provide 24 in. x 24 in. opening for frame and cover and a suitable masonry "Throat" between top of box and cover frame to allow for variation in final finished grade. Frame and cover shall be case iron. Box shall be minimum 2'-0" wide x 2'-0" long x 3'-0" deep inside dimensions, or larger as required to meet NEC requirements. Cover shall be imprinted with either "Electric", "Telephone", "Medium Voltage Electric", etc. to designate type of service. Unit shall be rated to AASHTO HS20-44 loading. Provide 18 in. drywell of #2 crushed stone under pullbox and 18" beyond. Provide 4 in. drain to local site daylight. Refer to drawings per details and locations.

a. Manufacturers:

1) Pullbox: Lakelands precast.

2) Cover: Neenah Foundry Company, roadway type.

3) Approved equal.

J. Ductbanks:

1. Ductbanks shall be rigid non-metallic conduit system. Provide all sleeve joints, couplings, bend sections, bends, elbows, offsets, angle couplings, bell ends, caps, base spacers and intermediate spacers as required to meet field conditions. All bends, stub-ups and wall, slab or floor-building penetrations shall be rigid steel conduit without exception.

K. Waterproofing Seals:

1. Provide expanding link type seal, for installation between duct/conduit, and sleeve or core-drilled hole in concrete.

2. Make: Link Seal, manufactured by Thunderline Corp., or approved equal.

L. Flashing, Sealing, Fire-stopping:

1. Fire-Stopping for Openings Through Fire and Smoke Rated Wall and Floor Assemblies:

a. Provide materials and products listed or classified by an approved independent testing laboratory for "Through-Penetration Fire-Stop Systems". The system shall meet the requirements of "Fire Tests of Through-Penetration Fire-Stops" designated ASTM E814.

b. Provide fire-stop system seals at all locations where piping, tubing, conduit, electrical busways/cables/wires, ductwork and similar utilities pass through or penetrate fire rated wall or floor assembly.

Provide fire-stop seal between sleeve and wall for drywall construction.

c. The minimum required fire resistance ratings of the wall or floor assembly shall be maintained by the fire-stop system. The installation shall provide an air and watertight seal.

d. The methods used shall incorporate qualities, which permit the easy removal or addition of electrical conduits or cables without drilling or use of special tools. The product shall adhere to itself to allow repairs to be made with the same material and permit the vibration, expansion and/or contraction of any items passing through the penetration without cracking, crumbling and resulting reduction in fire rating.

2. Acceptable Manufacturers:

a. Dow Corning Fire-Stop System Foams and Sealants

b. Nelson Electric Fire-Stop System Putty, CLK and WRP

c. S-100 FS500/600, Thomas & Betts

d. Carborundum Fyre Putty

e. 3-M Fire Products

M. **Arc Proofing Tape:**

1. **Medium voltage cables in all manholes, vaults, building entrances, switchgear and hand holes shall be wrapped with a fire-retardant arc proofing tape. This shall be continuous length, half lapped as a minimum.**

2. **Make: 3M, 77W secured with Scotch 69 Glass Cloth Electrical Tape.**

N. **Manholes:**

1. **Manholes shall be comprised of concrete walls and bottom sections using 4000 psi concrete. Bottom shall have 12 in. diameter sump opening and 3/4 in. ground rod opening. Knockouts and openings shall be positioned for conduits or ducts. Provide three (3) rows of anchor bolt inserts for cable rack supports to permit installation of two (2) cable rack supports on each side wall and two (2) cable rack supports on each end wall. Provide hot dipped galvanized steel pulling irons at 45° angle between floor and wall opposite each opening. Box shall be a minimum of 5'-0" wide x 7'-0" long x 5'-0" deep inside dimensions or as indicated on the drawings. Provide poured-in-place manholes in renovation areas and precast manholes in new construction areas. Provide a 36 in. diameter opening for frame and cover and a suitable masonry throat between top of box and cover frame to allow for variation in final finished grade. Frame and cover shall be imprinted with either "Electric", "Telephone", etc. to designate type of serve. Unit shall meet or exceed AASHTO HS20-**

44 loading. Provide 18 in. drywell of #2 crushed stone under manhole. Refer for drawings for details and locations.

a. **Manufacturers:**

1) **Pre-Cast Manhole: Oldcastle DB-6**

2) **Approved equal.**

2. **Cable Rack Assembly: Non-metallic. Components fabricated from nonconductive, fiberglass-reinforced polymer.**

a. **Support Stanchions: Normal 36 in. high by 4 in. wide, with minimum of nine (9) holes for arm attachment.**

b. **Arms: Arranged for secure, drop-in attachment in horizontal position at any location of cable stanchions, and capable of being locked in position. Arms shall be 12 in. minimum and rated for twice the intended weight as a minimum. Top of arm for cable support shall be nominally 4 in. wide, and arm shall have slots along full length for cable ties.**

c. **Support shall have rounded corners and be securely fastened to the arm and cable fastened to it with tie wrap or other recommended method.**

d. **Hardware: All hardware shall be stainless steel.**

PART 3 - EXECUTION

3.01 INSTALLATION

A. Unless otherwise noted, wiring for all systems indicated in the contract documents shall consist of insulated conductors installed in raceways. Raceways shall be continuous from outlet box to outlet box and from outlet box to cabinet, junction or pull box. Secure and bond raceways to all boxes and cabinets so that each system of raceways is electrically continuous throughout. Unless otherwise indicated on the drawings, install all wiring in the following raceway system:

1. Wiring 600 Volts or Less in Dry Locations: Electrical metallic tubing.
2. Wiring 600 Volts or Less in Outdoors, Above Grade Locations: Rigid metal conduit.
3. Wiring 600 Volts or Less Installed Below Grade, in Concrete Floor Slabs or Below Ground Floor Slab: Rigid non-metallic conduit encased in concrete with rigid metal conduit bends and penetrations through building floors and walls.
4. Flexible metal conduit shall be used for final connection to all motors, final connection to rotating or vibrating equipment, final connections to dry type transformers and final connections to recessed lighting fixtures. Liquidtight flexible conduit shall be used in all wet or damp locations. Maximum length of flexible conduit shall be 36 in., except that from outlet boxes to lighting fixture maximum length shall be 6 ft. Provide green insulated equipment grounding conductor in all flexible metal conduit.

5. Where allowed, branch circuits may be type MC cable between homerun junction box and equipment/device connection in drywall partitions only. Homerun junction box to be a maximum of 20 ft. from equipment/device.

B. Raceways:

1. Sized as indicated on the drawings. Where sizes are not indicated, raceways shall be sized as required by the National Electrical Code in accordance with the quantity, size, and type of the insulation conductors to be installed. Raceways shall be minimum 3/4 in. trade size for branch circuit wiring and minimum 3/4 in. trade size for all telephone intercommunications, instrumentation, fire alarm, television and computer systems and for all branch circuit "Home Runs" to panelboards.
2. Installed to provide adequate grounding between all outlets and the established electrical system ground.
3. Cut square, free of burrs due to field cutting or manufacture, and bushed where necessary. Bolt length shall not extend more than 1/4 in. beyond a nut.
4. Installed with exterior surfaces not less than 6 in. from any surface with normal operating temperature of 200°F or higher.
5. Plugged at the ends of each roughed-in raceway with an approved cap or disc to prevent the entrance of foreign materials during construction.
6. Concealed throughout except where exposure is permitted by the Owner's Representative. All exposed raceways shall be painted to match existing adjacent surface finish as directed by the Architect.
7. Installed parallel or perpendicular to floors, walls and ceilings where exposed wiring is permitted.
8. Installed with a minimum of bends and offsets. All bends shall be made without kinking or destroying the cross section contour of the raceway. Factory made bends are acceptable and should be considered for raceways larger than 2 in.
9. Installed with UL approved rain-tight and concrete-tight couplings and connectors.
10. Firmly fastened within 3 ft. of each outlet box, junction box, cabinet or fitting. Raceways shall not be attached to or supported by wooden plug anchors or supported from mechanical work such as ductwork, piping, etc.
11. Installed with a #14 AWG fish wire in all telephone, intercommunication, "Spare" or "Empty" conduit runs to facilitate future installation of conductors.
12. Installed with expansion fittings at all building expansion joints such that no undue stress is placed on any electrical raceway due to the proper functioning of expansion joints.
13. Arranged in a neat manner for access and allow for access to work installed by other trades.

14. Raceways installed in concrete slabs shall be located so as not to affect structural integrity of slab, and such that conduit shall have a minimum of 1 in. of concrete cover on all sides. Obtain approval from the Owner's Representative prior to installing conduit larger than 1 in. trade size in concrete slabs. Raceways in slabs shall be for floor box use only, or routing vertically through.
15. Raceways installed below ground floor slab shall be 6 in. minimum below slab with pea stone (NYSDOT 0702-0203) all sides. Where possible, install conduit directly below slab with concrete envelope poured monolithic with slab. Where this is not possible, support raceways and envelop maximum 5 ft. - 0 in. on centers from underside of structural slab by means of galvanized pipe hangers. Pipe hangers shall be coated with asphalt mastic. Installation shall maintain integrity of waterproofing membrane.
16. If it is necessary to burn holes through webs of beams or girders, call such points to the attention of the Owner's Representative and receive written approval both as to location and size of hole before proceeding with work. All holes shall be burned no larger than absolutely necessary.
17. Become familiar with the general construction of the building and place sleeves, inserts, etc., as required. All penetrations through existing floors shall be core drilled and sleeved.
18. Wherever a cluster of four (4) or more raceways rise out of floor exposed, provide neatly formed 6 in. high concrete envelop, with chamfered edges, around raceways.
19. All raceways shall be supported adequately by malleable iron pipe clamps or other approved methods. In exterior or wet locations, supports shall allow not less than 1/4 in. air space between raceway and wall. Firmly fasten raceway within 3 ft. of each outlet box, junction box, cabinet or fitting. The following table lists maximum spacing between conditions, strength of supporting members, etc.
20. Furnish and install such supports at no additional cost to owner.

Conduit Trade Size	**Type of Run**	**Horizontal Spacing in Feet**	**Vertical Spacing in Feet**
3/4 in.	Concealed	7	10
1 in., 1-1/4 in.	Concealed	8	10
1-1/2 in. and larger	Concealed	10	10
1/2 in., 3/4 in.	Exposed	5	7
1 in., 1-1/4 in.	Exposed	7	8

Conduit Trade Size	Type of Run	Horizontal Spacing in Feet	Vertical Spacing in Feet
1-1/2 in. and larger	Exposed	10	10

21. Where raceways puncture roof, install pitch pockets as required in order that the roof warranty is maintained. Coordinate with representative of roofing material manufacturer.
22. At each flush mounted panelboard, terminal cabinet, control cabinet, etc., provide four (4) spare 3/4 in. raceways from panelboard, etc., to an area above the nearest accessible ceiling space. Make 90° turn above the ceiling, arranged for further continuation of raceway, and cap.
23. Provide a bushing at each conduit termination unless fitting at box where conduit terminates has hubs designed in such a manner to afford equal protection to conductors. Provide grounding type insulated bushings on all conduit sizes 2 in. trade size and larger and on all feeder raceways regardless of size. Provide standard bushings for conduits 1 in. and smaller unless otherwise stated.
24. Differing Temperatures: For raceways routed between areas with differing temperatures (interior to exterior, walk in coolers/freezers, environmental chambers, etc.) install raceway as follows:
    a. Provide a thermal break, 4 in. minimum of stainless steel conduit within space wall/separation.
    b. Seal raceway penetration through the wall/separation.
    c. Provide a box on each side of the space wall/separation.
    d. Provide raceway interior sealant (duct seal or suitable foam) to provide a complete air barrier after conductors are installed.
    e. Mounting of raceway and boxes on equipment shall be coordinated and approved by the equipment manufacturer.
25. Raceway installed in wet/damp locations or on exterior walls shall have a spacer manufactured for this purpose provided to maintain a space/void between the mounting surface and the raceway.

C. Underground Raceways and Ductbanks:

1. Encase all underground raceways in concrete, sand (NYSDOT 0733-15), No. 1 crushed stone (NYSDOT 0703-02) or pea stone (NYSDOT 0702-0203). Concrete encasement shall be utilized where indicated and for circuit voltages over 600V. For concrete encasement, form concrete envelope around raceways, 3 in. minimum thickness concrete at top, bottom and sides of raceways, conduits on 7-1/2 in. centers both directions with concrete between raceways. Top of concrete envelope shall be finished not less than 24 in. below finished grade, except where under building slabs. Open trench for its complete length before concrete is

poured; if any obstructions are encountered, make provisions to avoid them. Support raceways minimum 3 in. above bottom of trench before pouring. Furnish and install precast concrete, plastic or fiber spacers. Stagger couplings. When concrete is specified, securely tie raceways in place to prevent floating. Pour concrete as soon as possible after placing and securing of raceways. Pull iron-shod mandrel, not more than 1/4 in. smaller than bore of raceway to remove concrete and other obstructions. Clean raceway by drawing through properly sized cylindrical brushes as many times as necessary to remove dirt. Concrete envelopes shall contain reinforcing rods wherever non-metallic raceways are used. Reinforcing shall be continuous runs of No. 4 deformed rods located in all four corners as well as top and bottom of envelope between each raceway. In locations where non-metallic raceways are used, change to heavy wall metallic conduit (RMC) of same internal diameter before rising out of ground and at bends/elbowes; provide metallic conduit elbows at conduit rise. Carry concrete envelope to a point 12 in. minimum above grade or floor slab at rise point if allowed by site conditions and equipment to be installed. Slope top of concrete away from raceway, chamfer edges. Cap all empty conduits watertight. Place conduit in straight lines. Seal, completely waterproof, all duct joints before encasement. Place direct-bury conduit tier-by-tier method, backfilling each layer to achieve proper spacing utilizing suitable encasement material. Trench backfill shall be in 6" lifts maximum and compacting between. Backfill to be excavated material with rock and organic material removed. For grass locations provide 8" minimum off site topsoil (NYSDOT 0713.01) and seed to match the existing. Other surfaces shall be returned to the original or better condition to the existing surrounding. Elbows shall have a minimum radius of 42 in. Follow proper low temperature installation procedures as recommended by raceway manufacturer. Provide detectable marking tape in soil above all ductbank sand buried conduit. Repair or replace all existing utilities and facilities damage, due to ductbank installation, as part of contract. Where raceways pass between exterior and interior and terminate in building, switchgear, pullbox, etc. provide conduit sealing bushing (O-Z Gedney CSB or approved equal) in each raceway to fill all voids around conduit and cables. Upsize the conduit as needed for suitable sealing bushing.

D. Wiring Methods:

1. Conductors shall not be installed until raceway system, including all outlets, cabinets, bushings and fittings, is completed. Verify that all work of other trades which may cause conductor damage is completed. Use only U.L. approved cable lubricants when necessary. Do not use mechanical means to pull conductors No. 8 or smaller.
2. In general, conductors shall be the same size from the last protective device to the load.

3. All wiring systems shall be properly grounded and continuously polarized throughout, following the color-coding specified. Connect branch circuit wiring at panelboards, as required, in order to provide a "balanced" three-phase load on feeders.
4. Provide insulated green ground conductor in each branch circuit.
5. All feeder connections shall be made to bus and other equipment using solderless, pressure type terminal lugs.
6. Branch circuits connected to a 20A circuit breaker shall be sized as indicated except for lengths exceeding 75 ft. For circuits longer than 75 ft. to 100 ft. utilize No. 10 AWG conductors (line, neutral and ground) and for circuits from 100 ft. to 150 ft. utilize No. 8 AWG (line, neutral and ground) unless otherwise indicated. Conduit size shall be modified in accordance with the NEC.
7. For splices and taps, No. 10 AWG and smaller, use solderless "twist on" connectors having spiral steel spring and insulated with a vinyl cap and skirt.
8. For splices and taps, No. 8 and larger, use insulated solderless set screw AL/CU or hydraulically compressed sleeve fittings suitable for the intended use.
9. Use cast connections for ground conductors.
10. Provide minimum 6 in. of spare/slack of each conductor in each junction or pull box and termination.
11. Make all splices and connections in accessible boxes and cabinets only.
12. Cover uninsulated splices, joints, and free ends of conductor with rubber and friction tape of PVC electrical tape. Plastic insulating caps may serve as insulation. Heat shrink sleeves shall be acceptable for crimp type splices.
13. On termination at branch circuit outlets, leave a minimum of 8 in. free conductor for installation of devices and fixtures.
14. Feeder conductors shall be continuous from point of origin to load termination without splice. If this is not practical, contact the Owner's Representative and receive written approval for splicing prior to installation of feeder(s). Where feeder conductors pass through junction and pull boxes, bind and lace conductors of each feeder together. For parallel sets of conductors, match lengths of conductors as near equal as possible.
15. Branch circuit conductors installed in panelboards, and control conductors installed in control cabinets and panels shall be neatly bound together using "Ty-Raps" or equal.
16. Lighting fixtures, detectors, etc., in mechanical equipment, boiler and pump rooms shall be installed with exposed wiring after equipment, ductwork, piping, etc., are in place. In general, lighting shall be as located on the drawings; where conflicts exist, locate lights for best distribution.

17. Provide cable/conductor vertical support in accordance with the NEC.
18. **Manholes**/Handholes:
    a. Provide cable racks, and securely fasten all cables. Support stanchions shall be spaced 3 ft. apart maximum.
    b. Provide separation of conductors of different systems per NEC requirements.
    c. Pitch all raceways toward the **manhole**/handhole.
    d. Mortar and brick the throats of **manholes**/handholes to grade level. Set cover rim to 1 in. above grass areas and flush with finished areas. Waterproof throat with elastic bituminous plastic cement coating.

E. Outlet Boxes:

1. Consider location of outlets shown on drawings as approximate only. Study architectural, process piping, mechanical, plumbing, structural, roughing-in, etc., drawings and note surrounding areas in which each outlet is to be located. Locate outlet so that when fixtures, motors, cabinets, equipment, etc., are placed in position, outlet will serve its desired purpose. Where conflicts are noted between drawings, contact Owner's Representative for decision prior to installation. Comply with the NEC relative to position of outlet boxes in finished ceilings and walls.
2. Prior to installation, relocate any outlet location a distance of 5 ft. in any direction from location indicated on drawings if so directed by the Owner's Representative. Prior to completion of wall construction, adjust vertical height of any outlet from height indicated if so directed by Owner's Representative. The above modifications shall be made at no additional cost to the Owner.
3. Where outlets at different mounting heights are indicated on drawings adjacent to each other (due to lack of physical space to show symbol on drawings), install outlets on a common vertical line.
4. Where switch outlets are shown adjacent to strike side of door, locate edge of outlet box approximately 3 in. from door frame.
5. Outlet boxes in separate rooms shall not be installed "back-to-back" without the approval of the Owner's Representative.
6. Outlet boxes shall be sized to accommodate the wiring, splices and device(s) to be installed in accordance with the NEC.
7. Outlet boxes installed in plaster, gypsum board or wood paneled hollow cavity walls shall be installed flush with raised plaster covers or raised tile covers. Boxes shall be mechanically fastened and supported by two (2) adjacent structural members (studs) with cross brackets (Garvin Industries Model BMB or approved equal).
8. Outlet boxes installed in tile, brick or concrete block walls shall be installed flush and have extra-deep type raised tile covers or shall be 3-1/2

in. deep boxes with square corners and dimensions to accommodate conductors installed.

9. Surface ceiling mounted outlet boxes shall be minimum 4 in. square, 1-1/2 in. deep, galvanized sheet metal.
10. Surface wall mounted outlet boxes shall be cast type boxes.
11. Install a device cover plate over each and every outlet indicated on drawings. Do not install plates until painting, cleaning and finishing of surfaces surrounding the outlet are complete. Install single one-piece multi-gang covers over multi-gang devices.

F. Receptacles:

1. Ground opening shall be up for vertical installation and on the left for horizontal installation.

G. Toggle Switches:

1. Switches shall be installed in accessible locations near room/space entryway(s).
2. Provide lighted handle switches in mechanical rooms, elevator pits, electric rooms, etc.
3. Switches shall have neutral pulled through the box even if not used.

H. Junction and Pull Boxes:

1. Install junction and pull boxes in readily accessible locations. Access to boxes shall not be blocked by equipment, piping, ducts and the like. Provide all necessary junction or pull boxes required due to field conditions and size as require by the National Electrical Code.

I. Equipment Mounting Heights: Coordinate with architectural interior and exterior elevations.

1. Unless otherwise noted, mount devices and equipment at heights measured from finished floor to device/equipment centerline as follows:

a.	Toggle switches (up position "on")	46 in.
b.	Wall lighting controls (dimmer, digital switch, etc.	46 in.
c.	Receptacle outlets (long dimension vertical, ground" pole farthest from floor)	18 in.
d.	Receptacle outlets above counters	8 in. above counters
e.	Receptacle outlets, above hot water or steam baseboard heaters. Do not install receptacle outlets above electric baseboard heaters	30 in.

f.	Receptacle outlets, hazardous areas; also for refrigerators	48 in.
g.	Receptacle outlets, weatherproof, above-grade	24 in.
h.	Telephone outlets	18 in.
i.	Telephone outlets, wall mounted	46 in.
j.	T.V. outlet	18 in.
k.	Fire alarm manual stations	46 in.
l.	Fire alarm combination audio/visual and standalone visual device (entire strobe lens at heights indicated)	80 in. to bottom of the notification device
m.	Standalone fire alarm audio device	90 in. (min) to 96 in. (max)
n.	Distribution panelboards, to top of backbox	72 in.
o.	Terminal cabinets, control cabinets, to top of backbox	72 in.
p.	Disconnect switches, motor starters, enclosed circuit breakers.	48 in.

2. Where structural or other interferences prevent compliance with mounting heights listed above, consult Owner's Representative for approval to change location before installation.

J. Hangers and Supports:

1. Provide steel angles, channels and other materials necessary for the proper support and erection of motor starters, distribution panelboards, large disconnect switches, large circuit breakers, pendant mounted lighting fixtures, etc.
2. Panelboards, disconnect switches, circuit breakers, cabinets, large pull boxes, adjustable speed drives, cable support boxes and starters shall be secured to the building structure and not supported from conduits. Small panelboards, etc., as approved by Owner's Representative, may be supported on walls. Racks for support of conduits and heavy electrical equipment shall be secured to building construction by substantial structural supports.

K. Identification:

1. Provide engraved lamicoid identification nameplates on switchboards, main service disconnects, transfer switches, motor control centers and on all panelboards using designation shown in panelboard schedule. Include voltage, phase, equipment served, voltage source to panel or equipment.

2. Provide engraved lamicoid identification nameplates for each circuit breaker in the main distribution panel listing the panelboard or equipment connected to each device.
3. Provide engraved lamicoid identification nameplates on all items of equipment including individual circuit breaker enclosures and disconnect switches, listing the equipment connected to the particular device provided under Specification Section 262000, including, but not limited to: starters, disconnect switches, adjustable speed drives, circuit breakers, etc. Include voltage, phase, equipment served, voltage source to panel or equipment.
4. Provide complete type written directory for each panelboard listing room number, function, etc., for each circuit breaker. Directory shall be placed in a plastic clear sleeve in the interior of the panelboard door.Identify junction and pullboxes for particular service and circuit such as power, emergency power, lighting, fire alarm, telephone, interphone, public address, nurse call, etc. using stencil lettering on cover.
5. Using adhesive backed printed tape label (white background, black lettering) all receptacle and switch coverplates, power poles, etc. listing panel designation and circuit number. Tape shall be attached to outside of receptacle or switch coverplates.

L. Spare Parts:

1. Deliver to Owner and obtain receipt for spare parts including key switches, fuses, etc.

3.02 TESTS

A. Branch circuits shall be tested during installation for continuity and identification and shall pass operational tests to determine that all circuits perform the function for which they are designed. For all feeder and exterior branch circuit wiring rated 600 volts or less, provide 1,000 volt "Megger" insulation test prior to energizing feeders. Use a 1,000-volt motor driven megger for all tests. Test voltage shall be applied until readings reach a constant value, and until three (3) equal readings, each one (1) minute apart, are obtained. Minimum megger reading shall be 45 megohms for feeder conductors. Document test results and submit for approval prior to energizing conductors.

Appendix A:
Utility Primary Cable Specification
EO-17

conEdison

CONSOLIDATED EDISON CO. OF NEW YORK, INC.
4 IRVING PLACE
NEW YORK, NY 10003

DISTRIBUTION ENGINEERING
CABLE

SPECIFICATION EO-17
REVISION 11
DECEMBER 2014

EFFECTIVE DATE
DECEMBER 5, 2014

PURCHASE AND TEST SPECIFICATION FOR SHIELDED POWER CABLES 5,000 TO 35,000 VOLTS

FILE: PURCHASE AND TEST MANUAL No. 6

TARGET AUDIENCE	**PURCHASING**
NESC REFERENCE	**None**

TABLE OF CONTENTS

1.0 PURPOSE

This specification details manufacturing and procurement requirements for single conductor cable insulated with Ethylene Alkene (EAM) for operation at voltages from 5,000 to 35,000 volts, inclusive.

2.0 APPLICATION

This specification applies to all equipment leads and primary underground and aerial cable purchased subsequent to implementation of this specification.

3.0 SPECIFICATION REFERENCES

3.1 Cable shall meet or exceed the latest requirements of the following industry standards.

AEIC CS8 Specification For Extruded Dielectric Shielded Power Cables Rated 5 Through 46 kV

ICEA S-94-649 Concentric Neutral Cables Rated 5 Through 46 kV

ICEA S-97-682 Utility Shielded Power Cables Rated 5,000 – 46,000 Volts

ASTM Standards (as applicable)

B8 Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft

B496 Standard Specification for Compact Round Concentric-Lay-Stranded Copper Conductors

B609 Standard Specification for Aluminum 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes

B231 Standard Specification for Concentric-Lay-Stranded Aluminum 1350 Conductors

D1248 Standard Specification for Polyethylene Plastics Extrusion Materials For Wire and Cable

D2240 Standard Test Method for Rubber Property—Durometer Hardness

3.2 The requirements of this specification shall supersede those of any referenced standard. AEIC CS8 shall take precedence over any referenced ICEA standards. Where a particular product requirement or characteristic is specified in more than one referenced document, the most stringent requirement will apply. Wherever reference is made to an industry specification or standard it shall be understood to mean the latest edition of that document.

4.0 CONDUCTOR

The conductors specified for these cables shall conform to ICEA Publication No. S-94-649 or S-97-692 with the following additions:

4.1 **Copper Conductors** – Copper conductors shall be annealed, uncoated and Class B stranded. When compact stranding is specified, the conductor shall conform to the number of wires according to the requirements of ASTM B496 for compact conductors and B8 for compressed conductor.

4.2 **Aluminum Conductors** – Aluminum conductors shall be aluminum 1350 either half hard or three quarter hard in accordance with ASTM B609. The conductors shall conform to ASTM B231 for Class B, compressed stranding. Unilay stranding is not permitted.

5.0 STRAND SHIELDING

5.1 The strands shall be completely shielded with a layer of semi-conducting extruded thermoset material compatible with the insulation. The strand shielding shall be in intimate contact with the strands and shall be completely free stripping from the strands. No tape shall be applied under the extruded shield without permission of the Section Manager, Distribution Cables Systems.

5.2 For 5 kV designs a 105 mil “Discharge Resistant Insulation System” with non-conducting conductor shield (“Permashield”) and discharge resistant insulation meeting the requirements of AEIC CS8 may be substituted for the strand shield.

6.0 INSULATION

6.1 **Non-Shielded Cable** – The insulation for non-shielded cables shall consist of a Type I thermosetting ethylene propylene rubber having a maximum shore A hardness of 65 in accordance with ASTM D2240 and shall meet the requirements of ICEA Pub. No. S-96-659. Shore A hardness shall be demonstrated prior to initial supply of cable and any time changes are made to the insulation compound.

6.2 **Shielded Cable** – The insulation for shielded cables shall consist of a thermoset ethylene alkene (EAM) such as ethylene propylene rubber (EPR) meeting the requirements of the referenced AEIC specification with the additional requirements listed below. The insulation shall be compounded and extruded in a closed system to ensure maximum cleanliness.

6.2.1 **Physical Properties**:

Unaged (original):

Tensile strength, minimum PSI at 15.6°C:	700
Elongation, minimum percentage:	250

After Aging – Air oven test (168 hours at 121°C):

Tensile strength, min. percentage of unaged value:	75
Elongation, min. percent of unaged value:	75

6.2.2 **Electrical Properties**:

Insulation Resistance Constant (K),
min. at 15.6°C: 20,000

6.2.3 **Accelerated Water Absorption (75°C water as per ICEA T-27-581 EM-60 Test)**:

Dielectric constant after 24 hours, maximum: 4.0
Increase in capacitance, maximum, percent:

1-14 days:	3.5
7-14 days:	1.5
Stability factor after 14 days, maximum:	1.0
Alternate to stability factor after 14 days, maximum:	0.5

Compliance to this requirement shall be demonstrated prior to initial supply of cable, any time changes are made to insulation material, and at least once per calendar year that cable is supplied.

6.2.4 **Cold Bend**:

Per ICEA S-94-649 No cracks at minus 40°C

Compliance to this requirement shall be demonstrated prior to initial supply of cable, any time changes are made to insulation material, and at least once per calendar year that cable is supplied.

6.2.5 Insulation Color:
The insulation shall be a contrasting non-black color, so that semi-conducting material on the insulation can be visually detected.

7.0 INSULATION SHIELDING (SHIELDED CABLES)

7.1 5 kV Single Conductor Cable

7.1.1 The insulation shall be completely shielded with a layer of semi-conducting tape of a material compatible with the insulation. The tape shall be smoothly applied in intimate contact with the insulation with no wrinkles. Minimum overlapping shall be 12 ½ percent. It shall be completely free stripping with no residue remaining on the insulation after removal.

7.1.2 The legend "SEMI-CONDUCTING SHIELDING, REMOVE BEFORE SPLICING" shall be printed in white indelible non-conducting ink along the entire surface of the semi-conducting tape. Yellow print may be used only with written permission of the Section Manager, Distribution Cables Systems.

7.2 All 13kV to 35 kV Cables

7.2.1 The insulation shall be completely shielded with a layer of extruded semi-conducting thermoset material compatible with the insulation and have a minimum thickness of 24 mils and a maximum thickness of 60 mils.

7.2.2 The compound shall have a maximum volume resistivity of 100 ohm-meters at 90°C.

7.2.3 It shall be in intimate contact with the insulation and shall be stripped with three to twenty-four pounds of tension for 1/2 inch wide strips at room temperature.

7.2.4 The legend "SEMI-CONDUCTING SHIELDING, REMOVE BEFORE SPLICING" shall be printed in white indelible non-conducting ink along its entire surface.

7.2.5 The cable shall be produced with the conductor shield, insulation and insulation shield all applied in the same extrusion operation. The insulation and insulation shield shall be applied in a common extruder head to eliminate any possible interface contamination.

7.3 METALLIC INSULATION SHIELDING

All single conductor cables shall be provided with a layer of tin coated copper concentric flat straps over the insulation shield. The configuration shall be as shown in the Appendix. It shall cover not less than 75 percent of the insulation shielding surface and be applied helically. The length of lay shall be not less than three nor more than seven times the diameter over the straps. The edges of the straps shall be rounded.

8.0 JACKETS

8.1 Polypropylene Jacket - Unless otherwise specified in the table in the Appendix, single and multiplexed conductor shielded non-URD cables shall have an encapsulated, free stripping polypropylene (PP) jacket having the properties noted below. Tests designated with an asterisk (*) shall be made for qualification or when changes are made to the insulation and at least once per calendar year that cable is supplied.

- Black Color
- Physical Properties, Unaged (original):
  - Tensile strength, psi, min. 2500
  - Elongation 350
- Physical Properties, after 7 Day Air Oven at 121°C
  - Tensile percent retained, min. 75
  - Elongation, percent retained, min. 75
- 1 Hour cold bend at –25°C: No cracks.
- 96 hour oil immersion at 100°C* – ASTM#2-
  - Tensile percent retained, min. 60
  - Elongation, percent retained, min. 60
- 1 hour deformation at 136°C (ICEA), percent max.15
- Vapor transmission rate* per ASTM E96-80, procedure E at 38°C and 90% relative humidity: less than 3.0

8.2 Polyethylene Jacket - The jacket applied over URD cables shall be Linear Low Density Polyethylene (LLDPE) complying with ASTM D1248 Type 1, Class C, Category 4, Grades E4, E5, J1 and J3.

8.3 Chlorinated or Chlorosulphonated Polyethylene Jacket – Unless otherwise specified in the individual cable specifications, the jacket applied over non-shielded equipment lead cable shall be Heavy Duty Chlorinated or Chlorosulphonated Polyethylene complying with ICEA S-96-659.

8.4 Red Stripes - Except for cables designated as equipment leads, jacket to be identified with three (3) equally spaced extruded red stripes.

9.0 TESTS ON COMPLETED CABLE

The following tests shall be run on all completed cables.

9.1 Partial Discharge Test – The following partial discharge level test must be made on completed shielded single conductor cable after multiplexing and on completed three-conductor cable on long length factory reels. Certified test reports shall be submitted only for cut lengths although the actual values reported are those for the completed long lengths.

The partial discharge values shall comply with the maximum discharge in picocoulombs specified in the following tables with a detection sensitivity of 5 pC and using the method specified in the referenced AEIC specification.

9.1.1 Cables with Semi-Conducting Tape Insulation Shield

Rated Circuit Voltage Phase-To Phase	Insulation Thickness	Discharge in Picocoulombs At Percent of Rated Voltage to Ground			
(Volts)	(Mils)	125	150	175	200
5,000	90	5	5	5	10

9.1.2 Cables with Extruded Semi-Conducting Insulation Shield

Cables having extruded semiconducting insulation shield shall be tested for partial discharge in accordance with ICEA S-94-649.

9.1.3 Partial Discharge Testing is not required on 5kV rated cable having an optional Discharge Resistant Design per 5.2.

9.2 AC Voltage Tests – Completed cables on shipping reels shall be tested at the AC voltages specified in the individual cable specifications and in the referenced AEIC specification. Testing of completed long length manufactured factory reels will be accepted in lieu of testing shipping reels only after the manufacturer has provided data demonstrating consistent quality cable before and after reeling onto shipping reels.

10.0 QUALIFICATION TESTS

New suppliers wishing to be approved or current suppliers wishing to change materials or processes must submit satisfactory data for the qualification tests listed in the referenced AEIC specification.

11.0 WITNESSING OF TESTS

Con Edison reserves the right to inspect a manufacturer's facility during the time of cable manufacture and has the option to pick out samples for testing.

12.0 MARKING

Cables shall be marked as follows:

12.1 Printed Marking - Three conductor and single conductor cables shall have the following stamped or printed in legible indelible ink along the lead sheath or outer jacket with 3/16" minimum letters at two foot maximum intervals in the following sequence order:

- Name of the "MANUFACTURER" and the "FACILITY" in which the cable core was made.
- "Year of Manufacture"
- The words, "Property of Consolidated Edison"
- "Cable Spec"
- "Sequential Footage #" on the three conductor cable and on one leg of a triplexed or paralleled cable construction.
- Lightning bolt symbol per Rule 350 of the National Electric Safety Code.

In addition, on each single conductor cable when shipped triplexed or paralleled, there shall be a unique series of "111", "222" or "333" for phase/leg identification. The series of numbers shall be placed immediately preceding the name of the "MANUFACTURER". Each of the legs on any reel shall have a unique series of numbers.

A second phase/leg identification shall be printed on each leg approx. 180 degrees from the first.

12.2 Marker Tape

14.2.1 All cables shall contain a laminated polyester marker tape containing sequential footage (used for traceability in manufacturing/test documentation reports), the name of the manufacturer, the facility in which the cable core was made, the year in which the cable core was manufactured and the identification "for Con Edison", all to appear at intervals of two foot maximum.

14.2.2 On lead covered cables, the tape shall be placed along the core and immediately under the lead sheath.

14.2.3 On non-leaded single conductor cables, the tape shall be immediately under the flat straps or ground wires. The tape shall be along the core and under the binder tape on three conductor cables.

14.2.4 Difference between beginning and ending sequential marking shall be within +/- 2% of the actual cable length.

12.3 **Center Strand Stamp** – All #2 AWG and larger conductors including compact conductors shall have the center strand stamped with the following marking at approximately one foot intervals: Manufacturer's name and year of manufacture and "PROPERTY OF CON ED".

13.0 PULLING BOLTS AND END SEALS

13.1 Non-leaded shielded single conductor network cables shall be equipped with a compression type pulling bolt in accordance with EO-15503-B on the leading end. An approved pulling bolt is required on the leading end of three conductor non-leaded cables. The trailing end of all non-leaded cables shall be sealed with an approved thick wall heat shrinkable end cap in accordance with EO-14621-B.

13.2 **URD and Non-Shielded** – URD cables and non-shielded cables shall be sealed on the leading and trailing ends with an approved thick wall heat shrinkable end cap in accordance with EO-14621-B.

14.0 MANUFACTURER'S PROPOSAL

14.1 The manufacturer shall be responsible for the performance of all inspections and tests. The Company reserves the right to witness any of these inspections and tests and to assure conformity with its requirements.

14.2 Access to all manufacturing and testing facilities shall be granted to the Company representatives at all reasonable times. Failure of the Company to call attention to any defect in material or workmanship shall not relieve the manufacturer of responsibility.

15.0 SHIPPING REELS

15.1 Steel reels shall be permanently stenciled with the reel tare weight

15.2 Reels shall not be shipped with reel wrap or lagging.

16.0 CERTIFIED TEST REPORTS

16.1 One set of certified test report on completed cable shall be e-mailed (preferred) or mailed to the Section Manager, Distribution Cables Systems within one week after the cable has been shipped.

16.2 Reels shall be identified on the CTR by marker tape sequential footage.

George Murray (Signature on File)
George Murray,
Section Manager
Distribution Cable Systems
Distribution Engineering

T. Campbell

Revision 11:	**Filed In**
Modified Appendix to show 15 kV 750 and 500 kcmil conductors (EO-7558 and EO-7561) as being compact round.	Purchase and Test Manual No. 6

APPENDIX

Active Cable Specifications

Specification Number	Class and Stock	Voltage	Number of Conductors	Size of Cond. (AWG or kcmil)	Stranding (Number and Dia-mils)	Insulation Thickness (mils)	Flat Strap Neutral* #x thickness x width (mils)	Jacket Thickness (mis)	Max. O.D (mis)	Approx. Weight Single Cond (lb/Ft)	Approx. Copper Weight Single Cond (LB/FT)	HV Test Cond – Grd 5 Min kV-AC	Minimum Insulation Resistance Megohm-1000'
EO-76235W	561-2817	Equip Lead	1	#2	7/97.4	175 SS	-	45 CPE	845	0.50	.205	33	6,800
DO-7636W	561-2825	Equip Lead	1	#6	7/61.2	175 SS	-	45 CPE	720	0.30	0.081	33	7,800
EO-7637W	561-2916	Equip Lead	1	2/0	19/83.7	175 SS	-	45 CPE	980	0.80	0.411	33	5,700
EO-7638W	561-2924	Equip Lead	1	4/0	19/105.5	175 SS	-	45 CPE	1100	1.00	0.653	33	4,825
EO-7640W	561-2005	Equip Lead	1	300	61/701	175 SS	-	65 CPE	1220	1.40	4.250	33	4,250
EO-7581E	563-2302	5 kV	3-Paralleled	#2	7/97.4	90	8 x 20 x150	50 LLDPE	755	0.47	0.312	18	6,400
EO-7587E	563-2310	5 kV	3-Paralleled	2/0	19/83.7	90	10 x 20 x 150	50 LLDPE	895	0.71	0.523	158	5,000
EO-7583E	563-2328	5 kV	3-Paralleled	4/0	19/105.5	90	12 x 20 x 150	50 LLDPE	1015	1.02	0.807	18	4,200
EO-7584E	563-2336	5 kV	3-Triplexed	350	37/97.3	90	14 x 20 x 150	50 LLDPE	1195	1.54	1.263	18	3,500
EO-7586E/ EO-680	563-2377	5 kV	3-Phase + 500 Tinned Neutral	500	37/116.2	115	16 x 25 x 150	80 LLDPE	1454	2.22	1.795	23	3,800
EO-7238EJ	563-1296	15 kV	1	1/0 Al	19/74.5	175	#2 AWG Equivalent	70 LLDPE	900	0.60	0.205	35	7,400
EO-7555E	563-2153	15 kV	3-Triplexed	2/0	19/83.7	175	12x 25 x 175 (#2 AWG)	40 PP	1125	1.00	0.643	35	5,440
EO-7551E	563-1833	15 kV	3-Triplexed	350 CR	37	165	12 x 20 x 225 (#2 AWG)	40 PP	1240	1.70	1.317	33	3.395
EO-7558E	563-1841	15 kV	3-Triplexed	500 CR	37	175	16 x 20 x 165 (#2 AWG)	40 PP	1390	2.30	1.785	35	7,800
EO-7568E	563-1981	15 kV	3-Triplexed	500 CR	37	165	16 x 20 x 165 (#2 AWG)	25 PP (min point)	1315	2.20	1.785	33	2.920
EO-7561E	563-1973	15 kV	3-Triplexed	750 CR	61	165	20 x 25 x 175 (1/0 AWG)	25 PP (min point)	1555	3.30	2.697	33	2,480
EO-7575E	563-2260	15 kV	3-Triplexed	1000	61/128	175	23 x 25 x 175 (1/0 AWG)	60 PP	1930	4.27	3.522	35	4,000

All Conductors are Copper unless otherwise specified

CR – Compact Round (Alternate stranding may be provided for compact conductors as allowed by ASTM B496)

SS – Strand Shield required on Equipment Lead wire

* - Allternate equivalent neutrall may be provided with approval of Section Manager, Distribution Cable

CPE – Chlorinated or Chlorosulphonated Polyethylene
LLDPE – Linear Low Density Polyethylene
PP - Polypropylene

APPENDIX

Active Cable Specifications (cont.)

Specification Number	Class and Stock	Voltage	Number of Conductors	Size of Cond. (AWG or kcmil)	Stranding (Number and Dia-mils)	Insulation Thickness (mils)	Flat Strap Neutral* #x thickness x width (mils)	Jacket Thickness (mils)	Max. O.D (mils)	Approx. Weight Single Cond (lb/Ft)	Approx. Copper Weight Single Cond (Lb/Ft)	HV Test Cond – Grd 5 Min kV-AC	Minimum Insulation Resistance Megohm-1000'
EO-7556E	563-2138	27 kV	3-Triplexed	2/0	19/83.7	275	16x 25 x 175 (#2 AWG)	40 PP	1350	1.26	0.700	55	7,380
EO-7560E	563-1965	27 kV	3-Triplexed	500 CR	37	260	20 x 25x 175 (#2 AWG)	25 PP (min point)	1555	2.90	1.918	52	4,400
EO-7576E	563-2278	27 kV	3-Paralleled	750	37	275	23 x 25 x 175 (#2 AWG)	60 PP	1980	3.75	2.750	55	6,200
	563-2476		3-Triplexed										
EO-7589E	563-2385	27 kV	3-Triplexed	750 CR	37	260	23 x 20 x 165 (#2 AWG)	60 PP	1770	3.65	2.750	52	6,400
EO-7577E	563-2286	35 kV	3-Triplexed	4/0	19/105.5	345	16 x 25 x 175 (1/0 AWG)	25 PP (min point)	1587	1.77	0.945	69	11,180
EO-7578E	563-2294	35 kV	3-Triplexed	500 CR	37	345	22 x 25 x 175 (1/0 AWG)	60 PP	1847	2.99	1.959	69	9,000
EO-7579E	563-2453	35 kV	3-Triplexed	750	61/110.9	345	16 x 25 x 175	60 PP	2136	3.87	2.642	69	7,300
EO-7580E	563-2461	35 kV	1	1000	61/128	345	17 x 25 x 175	60 PP	2306	4.80	3.409	69	6,600

All Conductors are Copper unless otherwise specified

CR – Compact Round (Alternate stranding may be provided for compact conductors as allowed by ASTM B496)

SS – Strand Shield required on Equipment Lead wire

*- Alternate equivalent neutrall may be provided with approval of Section Manager, Distribution Cable

CPE – Chlorinated or Chlorosulphonated Polyethylene
LLDPE – Linear Low Density Polyethylene
PP - Polypropylene

Appendix B:
Utility Secondary Cable Specifications
EO-18

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
4 IRVING PLACE
NEW YORK, NY 10003

DISTRIBUTION ENGINEERING
DISTRIBUTION CABLE SYSTEMS

SPECIFICATION EO – 18

REVISION 9
OCTOBER 2014

EFFECTIVE DATE
OCTOBER 15, 2014

PURCHASE AND TEST SPECIFICATION FOR INSULATED NETWORK POWER CABLE 600 VOLTS

FILE: PURCHASE AND TEST MANUAL NO.6, SECTION 3

TARGET AUDIENCE	**ELECTRIC CONSTRUCTION DISTRIBUTION ENGINEERING REGIONAL ENGINEERING**
NESC REFERENCE	**ALL SECTIONS**

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1.0 PURPOSE

This specification details manufacturing and procurement requirements for power cables used primarily on the underground secondary network system.

2.0 APPLICATION

This specification applies to power cables used primarily on the underground secondary network system and purchased subsequent to implementation of this specification. Unless otherwise specified in the Appendix, power cables are to be insulated with Filled Ethylene Alkene (EAM).

3.0 SPECIFICATION REFERENCES

Cable shall meet or exceed the latest requirements of the following industry standards.

ICEA S-95-658 Nonshielded Power Cables Rated 2000 Volts or Less For the Distribution of Electrical Energy

ICEA T-22-294 Test Procedures for Extended Time-Testing of wire and Cable Insulations for Service in Wet Locations

ICEA T-26-465 Guide for Frequency of Sampling Extruded Dielectric, Power, Control, Instrumentation, and Portable Cabeles for Test

ICEA T-33-655 Low Smoke, Halogen-Free Polymeric Jackets

ASTM Standards (as applicable)

B8 Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft

B33 Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes

Con Edison EO-6068 Fire and Heat Resistance Tests on 600V and Control Cable and Switchboard Wire

4.0 INSULATED CONDUCTOR

The copper conductors specified for these cables shall conform to ICEA Publication No. S-95-658. The stranding requirements are given in the Appendix.

5.0 UNINSULATED GROUND CONDUCTOR

Where a bare copper ground conductor is specified for use with copper insulated conductors, the uninsulated ground conductor shall be tin coated copper in accordance with ASTM B33. The stranding requirements are given in the Appendix.

6.0 CONDUCTOR COVERING

No semi-conducting strand shield is required. The conductors of all power cables of #6 AWG and larger shall be covered by a suitable opaque polyester tape separator at least 1.0 mils thick with a 10% overlap. This tape is used over the conductor so no deposits from the insulation material remain when the latter is removed.

7.0 DUAL LAYER LOW SMOKE CONSTRUCTION

7.1 Insulation - Flame Retardant Filled EAM Insulation, this includes FR-Ethylene Propylene Rubber (FR-EPR), shall be used for cable having a low smoke zero halogen jacket. Filled EAM Insulation shall meet all requirements of Type E-2 insulation per ICEA S-95-658, except as modified below. Tests designated with an asterisk (*) shall be made for qualification or when changes are made to the insulation and at least once per calendar year that cable is supplied. Other tests shall be performed at least as frequently as called for in ICEA T-26-465.

7.1.1 Physical Properties:

Unaged (original):

Tensile strength, minimum PSI at 15.6°C:	1,400
Elongation, minimum percentage:	200
*Tensile Stress at 100% elongation, PSI	500min/ 1200 max

After Aging – Air oven test (168 hours at 136°C):

Tensile strength, min. percent of unaged value:	80
Elongation, min. percent of unaged value:	70

7.1.2 Electrical Properties:

*Insulation Resistance Constant (K), min. at 15.6ºC:	20,000
*SIC at 75ºC, maximum	3.5
*Power Factor at 75ºC, maximum	2.4

7.1.3 *Cold Bend

8 x OD Mandrel	No cracks at minus 40ºC

7.1.4 *Specific Surface Resistivity

Minimum megohms	200,000

7.1.5 *Oil Resistance after 18 hours at 121ºC

Tensile strength, min. percent of unaged value:	50
Elongation, min. percent of unaged value:	50

7.1.6 Heat Distortion per ASTM D-2220, 60 minutes under load

4/0 and smaller, percent distortion, maximum (Insulation removed from cable)	30
Larger than 4/0, percent distortion, maximum (Buffed samples of insulation)	10

7.1.7 Insulation Thickness

The average thickness of the insulation wall shall not be less than the value indicated in the Appendix. The minimum spot thickness shall not be less than 90 percent of this value.

7.2 Low Smoke Zero Halogen Jacket

Jacket for dual low smoke constructions shall meet all requirements of Type II Thermoset per ICEA T-33-655, except as modified below. Tests designated with an asterisk (*) shall be made for qualification or when changes are made to the insulation and at least once per calendar year that cable is supplied. Other tests shall be performed at least as frequently as called for in ICEA T-26-465.

7.2.1 *Physical Properties - Jacket

Tensile Stress at 100% elongation - jacket, psi	800min/ 1400 max

7.2.2 Physical Properties – Composite Insulation/Jacket

Unaged (original):

Tensile strength, minimum psi at 15.6°C:	1,300
Elongation, minimum percentage:	170
*Tensile Stress at 100% elongation, psi	800min/ 1600 max

After Aging – Air oven test (168 hours at 136°C):

Tensile strength, min. percent of unaged value:	80
Elongation, min. percent of unaged value:	70

7.2.3 *Oil Resistance after 18 hours at 121°C

Tensile strength, min. percent of unaged value:	60
Elongation, min. percent of unaged value:	60

7.2.4 *Gravimetric Water Absorption

7 days at 70°C, maximum mg/square inch 15

7.2.5 *Tear Resistance

Maximum mg/square inch 40

7.2.6 Heat Distortion (Composite Insulation/Jacket)

1 hour at 121°C, maximum percent distortion 30

7.2.7 Hot Creep Test at 150°C (Composite Insulation/Jacket)

Elongation, percent maximum	100
Creep Set, percent maximum	10

7.2.8 Cold Bend (Completed Cable)

8 X OD Mandrel No cracks at minus 25°C

7.2.9 *Lead TCLP

Maximum mg/liter 5

7.2.10 *Tracking Resistance (Per ASTM D-2132)

Minimum Time to Failure 200 Hours

7.2.11 *Specific Surface Resistivity

Minimum megohms 200,000

7.2.12 **Jacket Adhesion** - The insulation and jacket shall adhere to such a degree that a manual separation of the jacket from the insulation shall show definite adhesion between the insulation and the jacket at all points along the line of separation.

7.2.13 **Jacket Thickness** - The average thickness of the jacket wall shall not be less than the value indicated in the Appendix. The minimum spot thickness shall not be less than 90 percent of this value.

8.0 DUAL LAYER CHLORINATED OR CHLOROSULPHONATED POLYETHYLENE (CPE OR CSPE) JACKETED CONSTRUCTION

8.1 **Insulation** - Standard Filled EAM Insulation, such as Ethylene Propylene Rubber (EPR), shall be used for cables with Chlorinated or Chlorosuphonated Polyethylene (CPE or CSPE) cover. Standard Filled EAM Insulation shall meet all requirements of Type E-1 insulation per ICEA S-95-658, except as modified below. Tests designated with an asterisk (*) shall be made for qualification or when changes are made to the insulation and at least once per calendar year that cable is supplied. Other tests shall be performed at least as frequently as called for in ICEA T-26-465.

8.1.1 ***Electrical Properties**:

Insulation Resistance Constant (K), min. at 15.6°C:	20,000
SIC at 75°C, maximum	4.0
Power Factor at 75°C, maximum	2.00

8.1.2 **Cold Bend**

8 X OD Mandrel	No cracks at minus 40°C

8.1.3 ***Specific Surface Resistivity**

Minimum megohms	200,000

8.1.4 **Heat Distortion per ASTM D-2220, 60 minutes under load**

4/0 and smaller, percent distortion, maximum (Insulation removed from cable)	30
Larger than 4/0, percent distortion, maximum (Buffed samples of insulation)	10

8.2 Chlorinated or Chlorosuphonated Polyethylene Jacket

8.2.1 General Requirements - When a Chlorinated or Chlorosulphonated Polyethylene jacket is specified, it shall meet all requirements of ICEA S-95-658 and the requirement below.

8.2.2 Specific Surface Resistivity

Minimum megohms	200,000

8.2.3 Jacket Adhesion - On single conductor (including multiplexed) cable, the insulation and jacket shall adhere to such a degree that a manual separation of the jacket from the insulation shall show definite adhesion between the insulation and the jacket at all points along the line of separation.

9.0 NORMAL AND EMERGENCY TEMPERATURES

The insulation shall perform satisfactorily over a conductor which has a normal continuous operating temperature of 90°C for conductors of 350 kcmil or less and at 110°C for conductors of 500 kcmil or greater. The insulation shall also perform satisfactorily at an emergency operating temperature of 130°C and a short circuit rating of 250°C. Operation at the emergency operating temperature shall not exceed 100 hours per year.

10.0 PRODUCTION TESTS

10.1 General – Production runs of cable shall be tested with a frequency per ICEA T-26-465 to ensure cable meets all requirements of 4.0, 5.0, 7.0, and 8.0, as applicable.

10.2 High Voltage Tests

Single conductor power cables shall be tested upon completion, or completion of multiplexing if applicable, in the standard water bath after a minimum six hour immersion for single conductor cables or after a minimum one hour immersion for multiplexed cables.

11.0 QUALIFICATION TESTS

New suppliers wishing to qualify for these insulations and/or jackets shall furnish test data showing conformance to all requirements of this specifications and the referenced specifications. They also must conform to the following requirements:

11.1 Long Term Aging - Elongation

Aging data shall be submitted on an Arrhenius-type plot to establish the time to loss of 40 percent of the elongation of the insulation at various temperatures. A minimum of three data points at least ten degrees different in temperature shall be used to plot the curve. By extrapolation it shall be demonstrated that the time to a 40 percent loss in the unaged elongation at 90°C shall not be less than 40 years and at 110°C not be less than 35,000 hours.

11.2 Electrical Moisture Absorption – 14 Day

	Standard EAM Insulation	Fire Retardant EAM Insulation
Electrical Method: (ICEA S-68-516, EM-60)		
Dielectric constant after 1 day, maximum:	4.0	3.5
Increase in capacitance:		
1-14 days, maximum percent:	3.0	4.0
7-14 days, maximum percent:	1.5	2.0
Stability factor after 14 days, maximum:	1.0	1.0

11.3 Electrical Moisture Absorption – Long Term

Samples of #14 AWG or #12 AWG copper wire covered with a 0.030 inch thickness of insulation shall be immersed in water maintained at 90°C ± 2°C for a period of six months. One sample shall be continuously energized with 600 volts, 60 Hz and one sample shall be continuously energized with negative 600 volts DC (except when electrical measurements are being made). At the end of six months the samples shall meet the following:

After six months in 90°C water with continuous 600 volts AC:

- Dielectric constant, maximum: 4.0
- Percent power factor, maximum: 2.5
- Stability factor, maximum: 0.8
- 3,000 VAC one minute voltage withstand, every two weeks during the six months: pass

11.4 Dielectric Breakdown Tests – Impulse, Step-Time, and Rapid Rise

Impulse, step-time and rapid rise test data generated in accordance with standard ICEA practice, except the conductor shall be heated to 90°C ± 1°C. Test data shall be submitted on five samples with a minimum conductor size of #14 AWG insulated with a 0.045 inch, ± 10 percent, thickness of insulation. The minimum acceptable level of maximum stress at the conductor surface (S maximum, calculated by the maximum stress theory) for each of these tests shall be:

Basic Impulse Level … 500 volts per mil
Step-Time Level …..… 500 volts per mil
Rapid Rise Level ….… 500 volts per mil

11.5 Oil Immersion Test

In addition to the requirements of paragraph 7.1.5 and 7.2.3 of this specification, the cable jacket and Flame Retardant Filled EAM insulation of cables of new suppliers shall be subjected to ten cycles of oil immersion as follows:

The samples shall be immersed in 121°C oil for eight hours and allowed to dry in air for 16 hours. The tensile strength and elongation of one or more samples shall be measured after each eight hour cycle as per the referenced specification ICEA S-95-695.

Jacket

Tensile strength, min. percent of unaged value:	60
Elongation, min. percent of unaged value:	60

FR-EAM Insulation

Tensile strength, min. percent of unaged value:	50
Elongation, min. percent of unaged value:	50

11.6 Cold Bend

8 x OD Mandrel	5 Min Withstand, 80 volts/mil
	No cracks at minus 40°C

11.7 Flame Test

In addition, Con Edison may wish to perform the flame tests of EO-6068 and samples of cables for these tests will be required.

11.8 Requalification

Approved suppliers will also be subject to re-test of qualification requirements and flame tests if their insulating and/or jacket compound is changed.

12.0 MARKINGS

12.1 Printed Marking - All cable shall have the following imprinted or stamped in legible indelible ink along the outer surface of the cable at two foot maximum intervals in the following sequence order:

- Name of the "MANUFACTURER" and the "FACILITY" in which the cable core was made.
- "Year of Manufacture"
- The words, "Property of Consolidated Edison"
- The size of the conductor, the voltage rating, and the type of insulation (EPR, EAM, etc.) and jacket (LSNH, CPE, CSPE)
- "Sequential Footage #" on single conductor cable and on one leg of a multiplexed construction.

12.2 Marker Tape

12.2.1 All cables larger than one-half inch in diameter shall contain a laminated polyester marker tape containing:

- A sequential footage (for manufacturing traceability)
- The name of the manufacturer and facility
- The year in which the cable was manufactured
- The words, "For Con Edison"

All to appear at two foot maximum intervals. Single conductor (including multiplexed cables) shall have the tape immediately over the conductor.

12.2.2 Difference between beginning and ending sequential marking shall be within +/- 2% of the actual cable length.

12.3 Center Strand Stamp

All conductors larger than #6 AWG, excluding flexible stranding, shall have the center strand stamped with the following marking at approximately one foot intervals:

- The manufacturer's name
- The year of manufacture
- "FOR CON EDISON"

13.0 MOISTURE

There shall be no water in the strands or between the insulation and jacket of the cable when received. Each end of each single conductor or multiple conductor cable shall be made watertight as per paragraph 15. Free water present anywhere in the cable is grounds for rejection of the cable.

14.0 END SEALS

Single conductor cables (including each leg of multiplexed cables) shall be made watertight with a thick wall heat shrinkable cap per EO-13118-B and EO-5022.

15.0 MANUFACTURER'S PROPOSAL

15.1 Each manufacturer shall submit a proposal in compliance to this specification. Any exceptions to this specification shall be included in the proposal, on a separate list. Exceptions must be approved prior to placement of an order.

15.2 During the term of the order, the manufacturer must obtain approval from the Company in writing of any changes he intends to make in the design or materials previously submitted.

16.0 INSPECTION

16.1 The manufacturer shall be responsible for the performance of all inspections and tests. The Company reserves the right to witness any of these inspections and tests and to assure conformity with its requirements.

16.2 Access to all manufacturing and testing facilities shall be granted to the Company representatives at all reasonable times. Failure of the Company to call attention to any defect in material or workmanship shall not relieve the manufacturer of responsibility.

17.0 CERTIFIED TEST REPORTS

The Manufacturer shall maintain records permitting traceability of each shipped length of cable, by means of shipping reel number and Purchaser's order number, to the Manufacturer's records and tests of the original insulated length produced. Retention shall be for a minimum of 5 years.

18.0 SHIPPING REELS

The outside of both flanges of non-returnable wood reels shall be indelibly stenciled, minimum six inch tall lettering, with the appropriate Con Edison EO specification number. Reel labels shall include sequential footage markings from marker tape.

APPENDIX TO EO-18
Active Cable Specifications

Specification Number	Class and Stock	Insulation	Number of Conductors	Size of Conductor (AWG or kcmil)	Stranding (Number and Dia-mils)	Insulation Thickness (mils)	Jacket Thickness (mis)	Maximum OD (mis)	Approx. Weight Single Cond (lb/Ft)	Approx. Copper Weight Single Cond (Lb/Ft)	HV Test Cond – Grd 5 Min kV-AC	Minimum Insulation Resistance Megohm-1000'
EO-693	561-0951	EP/CPE	1	#2	665/10	55	30	575	0.28	0.211	5,500	3,000
EO-694	561-1074	EP/CPE	1	2/0	1323/10	65	45	780	0.55	0.425	5,500	2,700
EO-695	561-1165	EP/CPE	1	4/0	2107/10	65	45	695	0.84	0.676	5,500	2,200
EO-7657	561-4698	FR-EAM/LSNH	1	#6	7/61.2	45	30	390	0.12	0.081	5,500	3,400
EO-7664	561-0489	FR-EAM/LSNH	3	#6	7/61.2	45	30	390	0.12	0.081	5,500	3,400
EO-7651	561-4672	FR-EAM/LSNH	1	#2	7/97.4	45	30	475	0.26	0.205	5,500	2,300
EO-7665	561-0488	FR-EAM/LSNH	3	#2	7/97.4	45	30	475	0.26	0.205	5,500	2,300
EO-7681	561-4995	FR-EAM/LSNH	4	#2	7/97.4	45	30	475	0.26	.205	5,500	2,300
EO-7652	561-4623	FR-EAM/LSNH	1	2/0 (TS)	19/83.7	55	45	650	0.52	0.411	5,500	2,000
EO-7682	561-5000	FR-EAM/LSNH	4	2/0 (TS)	19/83.7	55	45	650	0.52	0.411	5,500	2,000
EO-7653	561-4607	FR-EAM/LSNH	1	4/0 (TS)	19/105.5	55	45	770	0.78	0.653	5,500	1,600
EO-7683	561-4615	FR-EAM/LSNH	4	4/0 (TS)	19/105.5	55	45	770	0.78	0.653	5,500	1,600
EO-7654	561-4631	FR-EAM/LSNH	1	500	61/90.5	65	50	1105	1.76	1.544	10,000	1,300
EO-7656	561-4680	FR-EAM/LSNH	3	500	61/90.5	65	50	1105	6.65*	5.993*	10,000	1,300
			2	4/0 (TS)	7/173.9	-	-	-			-	-
EO-7658	561-4649	FR-EAM/LSNH	4	500	61/90.5	65	50	1105	1.76	1.544	10,000	1,300
EO-7655	561-4656	FR-EAM/LSNH	1	750	61/110.9	65	50	1300	2.58	2.316	10,000	1,100
EO-7659	561-4664	FR-EAM/LSNH	4	750	61/110.9	65	50	1300	2.58	2.316	10,000	1,100

Insulation Types:
EP/CPE: EP Insulation with Chlorosulphonated or Chlorinated Polyethylene Jackte
FR-EAM/LSNH: Fire Retardant EAM with Black Low Smoke Zero Halogen Jacket

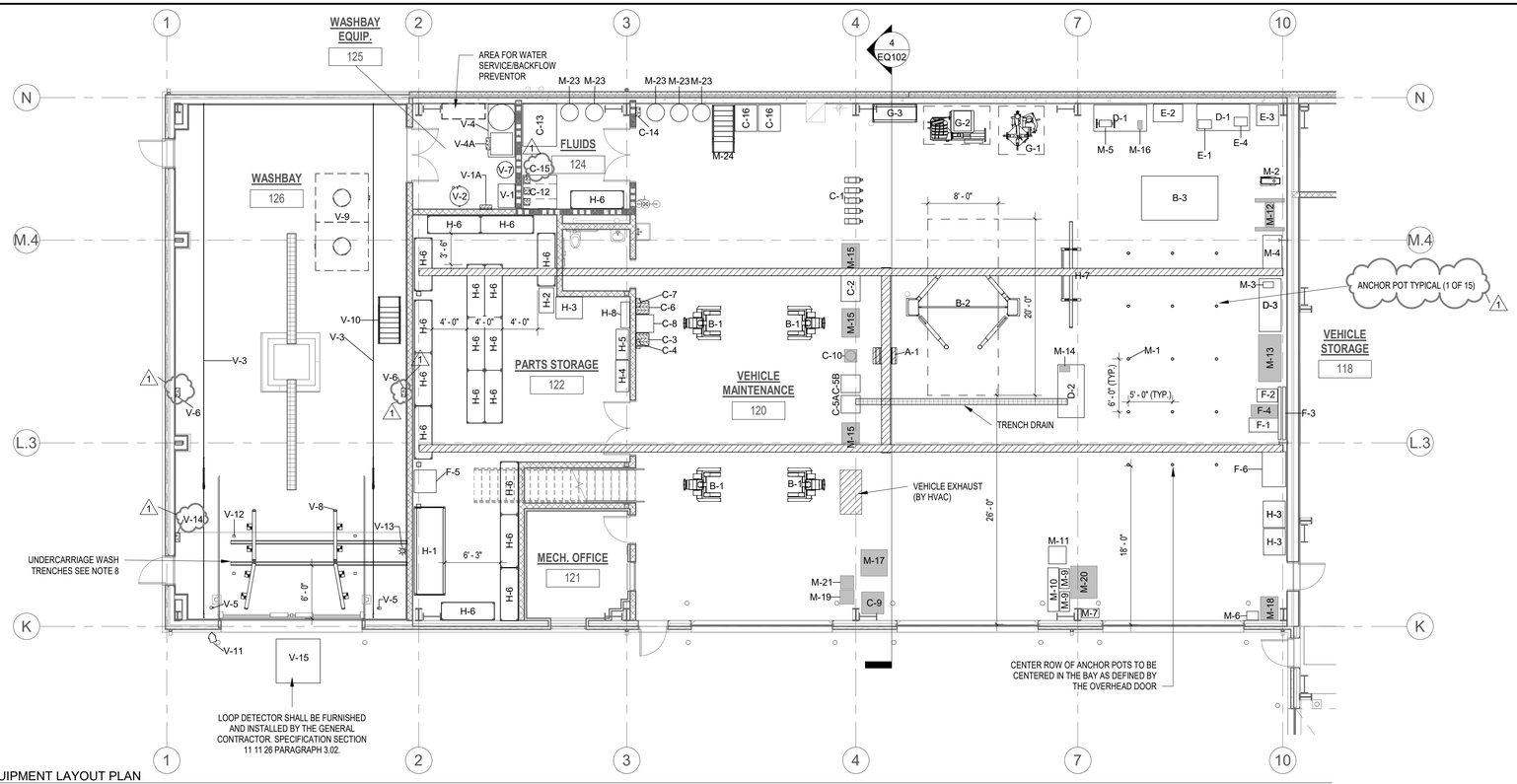
* - Weights shown for EO-7656 are for completed assembly

TS – Tin Coated Copper Strands

George Murray (Signature on File)
George Murray
Distribution Cable Systems Section Manager
Distribution Engineering Department

Thomas Campbell

REVISION 9:	**FILE:**
Added reference to ICEA T-26-465. Removed multiconductor, control cable and DC cable requirements. Deleted references to aluminum conductors. Eliminated requirements for “Integral” Filled EAM Insulation Added tracking resistance requirement to low smoke zero halogen jacket Added Chlorinated Polyethylene Jacket Added “ For Con Edison” to Center Strand Stamp Removed EO-580 (moved to CE-ES-4175) Deleted require that CTRs be sent at time of shipment. Revised table	Purchase and Test Manual No. 6
Due for review / revision: 10/2019	



EQUIPMENT LAYOUT PLAN
1/8" = 1'-0"

Industrial Equipment Schedule

EQ Number	Description	Count	Equipment Type	Spec Number	Notes
A-1	5 Ton Bridge Crane	1	N	14 22 13	ADD ALT. #4
B-1	72,000lbs Four Post Mobile Lift	1	N	14 45 00	
B-2	18K 2 Post Lift	1	N	14 45 00	
B-3	1,800lbs Portable Mower Lift	1	N	14 45 00	
C-1	Lube Reel Bank (5 reels)	1	N	11 11 29	ADD ALT. #5
C-2	Low Profile Waste Oil Caddy	1	N	11 11 29	ADD ALT. #5
C-3	Waste Oil Pump Out	1	N	11 11 29	ADD ALT. #5
C-4	Waste Oil High Level Alarm	1	N	11 11 29	ADD ALT. #5
C-5A	Waste Oil Caddy	1	N	11 11 29	ADD ALT. #5
C-5B	Waste Antifreeze Caddy	1	N	11 11 29	ADD ALT. #5
C-6	Waste Anti-Freeze Pump Out	1	N	11 11 29	ADD ALT. #5
C-7	Waste Antifreeze High Level Alarm	1	N	11 11 29	ADD ALT. #5
C-8	Oil Filter Drain Box	1	N	11 11 29	ADD ALT. #5
C-9	DEF Mobile Cart w/ Pump	1	ERO	N/A	
C-10	Portable Grease Caddy	1	ERO	N/A	
C-11	N/A	1	N/A	N/A	
C-12	Fluid Tank 300 Gal (100 15W-40, 100 ATF, 100 Hydraulic Fluid)	1	N	11 11 29	ADD ALT. #5
C-13	Waste Fluid Tank (300 Waste oil, 100 Waste Anti Freeze)	1	N	11 11 29	ADD ALT. #5
C-14	Fluid Storage Room Sump Alarm	1	N	11 11 29	ADD ALT. #5
C-15	Wall Mounted Lube Pumps	3	N	11 11 29	ADD ALT. #5
C-16	Oil Trolley	2	N	11 11 29	ADD ALT. #5
D-1	Steel Work Bench (72inx36in)	2	N	12 40 00	ADD ALT. #7
D-2	Steel Work Bench w Casters	1	N	12 40 00	ADD ALT. #7
D-3	Electric Charging Station	1	N	12 40 00	ADD ALT. #7
E-1	Hydraulic Hose Crimping Machine	1	N	12 40 00	
E-2	Hydraulic Hose & Fitting Storage	1	N	12 40 00	
E-3	Hydraulic Hose Reel Rack	1	N	12 40 00	
E-4	Hydraulic Hose Saw	1	N	12 40 00	
F-1	MIG Welder	1	N	12 40 00	
F-2	Torch Cart	1	N	12 40 00	
F-3	Welding Screen	2	N	12 40 00	
F-4	Plasma Cutter	1	ERO	N/A	
F-5	Oxygen Tank Storage Cage	1	N	12 40 00	
F-6	Portable Weld Fume Extractor	1	N	12 40 00	
G-1	Tire Changer	1	N	12 40 00	
G-2	Tire Balancer	1	N	12 40 00	
G-3	Tire Storage Rack	1	N	12 40 00	
H-1	Pallet Rack	1	N	12 40 00	ADD ALT. #7
H-2	Storage Cabinet	1	N	12 40 00	ADD ALT. #7
H-3	Bin Storage	3	N	12 40 00	ADD ALT. #7
H-4	Flammable Cabinet (45 Gallons)	1	N	12 40 00	ADD ALT. #7
H-5	Small Part Drawer Storage	1	N	12 40 00	ADD ALT. #7

Industrial Equipment Schedule

EQ Number	Description	Count	Equipment Type	Spec Number	Notes
H-6	Parts Shelving (6' x 2')	18	N	12 40 00	ADD ALT. #7
H-7	Cantilever Rack	1	N	12 40 00	ADD ALT. #7
H-8	Cubby Storage	1	N	12 40 00	ADD ALT. #7
M-1	Anchor Pot	1	N	12 40 00	
M-2	Drill Press	1	N	12 40 00	
M-3	Heavy Duty Anvil Bench Vice	1	N	12 40 00	
M-4	Parts Washer	1	N	12 40 00	
M-5	Bench Grinder	1	N	12 40 00	
M-6	Portable Battery Charger	1	N	12 40 00	
M-7	Brake Fluid Exchanger	1	N	12 40 00	
M-8	N/A	1	N/A	N/A	
M-9	3-Ton Floor Jack	2	N	12 40 00	
M-10	5-Ton Floor Jack	1	N	12 40 00	
M-11	AC Recovery and Recharge System	1	N	12 40 00	
M-12	Shop Press	1	ERO	N/A	
M-13	Snap-On Red Toolbox	1	ERO	N/A	
M-14	Bench Vice	1	ERO	N/A	
M-15	Tool Cart	3	ERO	N/A	
M-16	Bench Mounted Chainsaw Sharpener	1	ERO	N/A	
M-17	Transmission Jack	1	ERO	N/A	
M-18	2-Ton Engine Crane	1	ERO	N/A	
M-19	KantLeak Vac-U Fill	1	ERO	N/A	
M-20	3/4 Ton Wheel Dolly	1	ERO	N/A	
M-21	Trash Can	1	ERO	N/A	
M-23	Drum Dolley	5	N	12 40 00	
M-24	Mobile Platform	1	N	12 40 00	
V-1	Vehicle wash Pressure Plant	1	N	11 11 26	
V-1A	Manual Wash Control panel	1	N	11 11 26	
V-2	Vehicle Wash - Hot Water Heater	1	N	11 11 26	
V-3	Vehicle Wash Festoon	2	N	11 11 26	
V-4	Automatic Undercarriage Pump Skid	1	N	11 11 26	
V-4A	Undercarriage Wash Control Panel	1	N	11 11 26	
V-5	Automatic Undercarriage photo Eye	2	N	11 11 26	
V-6	Undercarriage Control Panel	2	N	11 11 26	
V-7	Vehicle Wash Soap Drum	1	N	11 11 26	
V-8	Vehicle Wash Guide Rails	1	N	11 11 26	
V-9	Vehicle Wash Pre-Treatment Tank (1500gal)	1	N	11 11 26	
V-10	Vehicle Wash Mobile Platform	1	N	11 11 26	
V-11	Vehicle wash Entry Traffic Light	1	N	11 11 26	
V-12	Automatic Undercarriage Blasters	1	N	11 11 26	
V-13	Vehicle Wash Activation Light	1	N	11 11 26	
V-14	Automatic Undercarriage Wash Toggle Swtich	1	N	11 11 26	
V-15	Loop Detector	1	N	11 11 26	

GENERAL NOTES:

1. EQUIPMENT LAYOUTS ARE SCHEMATIC. GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING EXACT LOCATIONS WITH OWNER AND MANUFACTURER REQUIREMENTS. GENERAL CONTRACTOR SHALL COORDINATE ALL UTILITY REQUIREMENTS WITH ELECTRICAL, PLUMBING, AND HVAC CONTRACTORS. FINAL EQUIPMENT LOCATIONS SHALL BE CONFIRMED BY THE OWNER PRIOR TO RUNNING UTILITIES AND INSTALLATION EQUIPMENT.
2. GENERAL CONTRACTOR SHALL COORDINATE UTILITY REQUIREMENTS OF EXISTING EQUIPMENT PRIOR TO INSTALLATION OF SERVICES.
3. PRIOR TO RUNNING UTILITIES, GENERAL CONTRACTOR SHALL MARK OUT ALL EQUIPMENT LOCATIONS ON THE FLOOR USING CHALK OR ANOTHER ACCEPTABLE MEANS, AND SHALL REVIEW/REVISE FINAL EQUIPMENT LOCATIONS AS DIRECTED BY THE OWNER AND THE ENGINEER.
4. B-2 SHALL BE CENTERED IN THE MAINTENANCE BAYS AS DEFINED BY THE OVERHEAD DOOR OPENING. CONFIRM INSTALLATION LAYOUT DIMENSIONS WITH THE MANUFACTURER. AI SO SEE OWNERS MANUALS.
5. ELECTRICAL, MECHANICAL, AND PLUMBING CONTRACTORS SHALL PROVIDE AND CONNECT UTILITIES TO ALL EQUIPMENT AS SHOWN ON THE ELECTRICAL, MECHANICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS IN ORDER TO PROVIDED A COMPLETE AND OPERABLE SYSTEM. ALL UTILITIES FOR EQUIPMENT SHALL BE PROVIDED AS PART OF THE BASE BID HOWEVER THE COSTS ASSOCIATED WITH MAKING FINAL UTILITY CONNECTIONS FOR EQUIPMENT SHALL BE INCLUDED IN THE APPLICABLE BID ALTERNATE.
6. THE ELECTRICAL CONTRACTOR SHALL HAVE A NEW YORK LICENSED ELECTRICIAN CONFIRM THE VOLTS, PHASE, AMPS, AND NEMA PLUG CONFIGURATION FOR EACH PIECE OF EQUIPMENT (INCLUDING EXISTING EQUIPMENT TO BE RELOCATED) IN ADVANCE OF ORDERING MATERIALS AND INSTALLATION.
7. SEE SPECIFICATION SECTION 11 11 29 - FLUID DISTRIBUTION SYSTEM ALONG WITH DETAILS ON EQ102 & EQ103 FOR ADDITIONAL INFORMATION AND SCOPE DELINEATION FOR THE FLUID AND WASTE FLUID DISTRIBUTION SYSTEMS.
8. THE UNDERCARRIAGE WASH TRENCH DRAINS SHALL BE FURNISHED BY THE GENERAL CONTRACTOR'S VEHICLE WASH SUB CONTRACTOR AND SHALL BE INSTALLED BY THE PLUMBING CONTRACTOR.

ABBREVIATIONS:

N NEW EQUIPMENT TO BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.

ERO EXISTING EQUIPMENT TO BE RELOCATED AND INSTALLED BY THE OWNER. ~~UTILITIES FOR ERO EQUIPMENT TO BE PROVIDED BY GENERAL CONTRACTOR.~~ UTILITES SHALL BE PROVIDED BY THE ELECTRICAL AND PLUMBING CONTRACTORS.

ERC EXISTING EQUIPMENT TO BE RELOCATED AND INSTALLED BY THE CONTRACTOR. UTILITIES FOR ERC EQUIPMENT TO BE PROVIDED BY ~~THE GENERAL CONTRACTOR.~~ THE ELECTRICAL AND PLUMBING CONTRACTORS.

NIC NEW EQUIPMENT PROVIDED AND INSTALLED BY THE OWNER (NOT IN CONTRACT), HOWEVER UTILITIES FOR THIS EQUIPMENT SHALL BE PROVIDED ~~BY SUB-CONTRACTORS.~~ BY THE ELECTRICAL AND PLUMBING CONTRACTORS.

LINE TYPES
- MEZZANINE LIMITS
- NIC/ERO EQUIPMENT
- NEW EQUIPMENT

HATCHES
- CEILING MOUNTED
- WALL MOUNTED

Project:

VILLAGE OF ARDSLEY, NY

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RHINEBECK ARCHITECTURE

Seal:

Revisions:

Rev	Date	Description
1	4/22/22	ADDENDUM NO. 1

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022
Drawn By: NCH
Reviewed By: TJC
Approved By: JFB

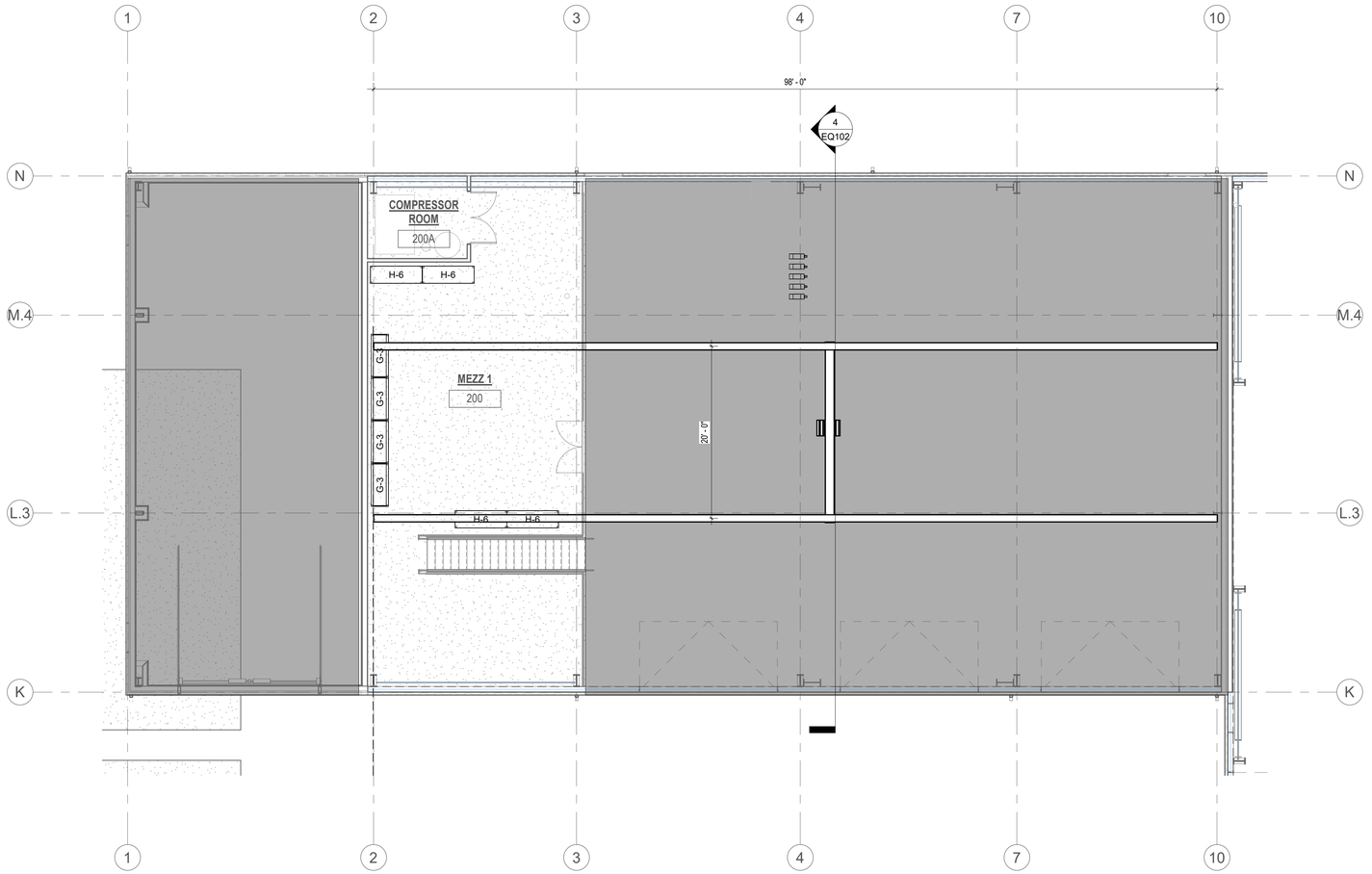
W&S Project No: ENG20-0501

Drawing Title:

EQUIPMENT LAYOUT PLAN

Sheet Number:

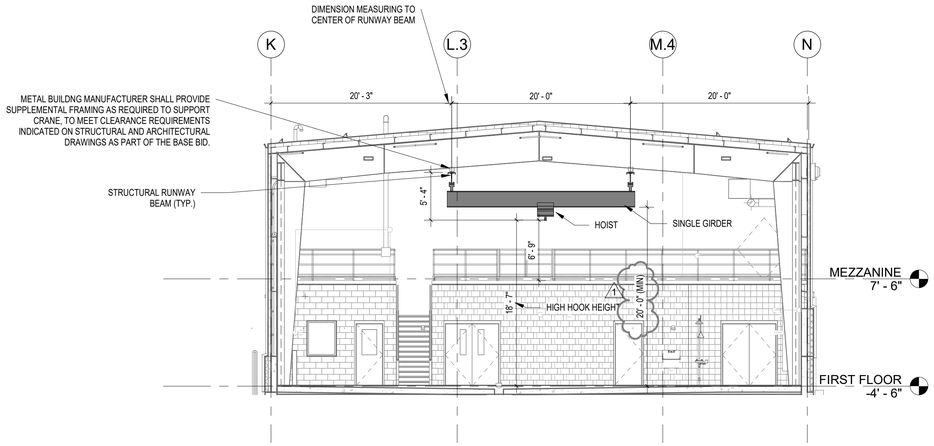
EQ101



MEZZANINE EQUIPMENT LAYOUT
1/8" = 1'-0"

Mezzanine Industrial Equipment Schedule					
EQ Number	Description	Count	Equipment Type	Spec Number	Notes
G-3	Tire Storage Rack	4	N	12 40 00	ADD ALT. #7
H-6	Parts Shelving (6' x 2')	4	N	12 40 00	ADD ALT. #7

Industrial Equipment Power Schedule						
EQ Number	Description	Count	E - Voltage	E - Phase	E - Amps	E - HP
A-1	5 Ton Bridge Crane	1	480V	3PH	14A Nom. 53A St.	
B-1	72,000lbs Four Post Mobile Lift	1	120V	1PH	1.3A	
B-2	18K 2 Post Lift	1	208V	1PH		4HP
C-1	Lube Reel Bank (5 reels)	1	120V	1PH	25A	
C-4	Waste Oil High Level Alarm	1	120V	1PH	6.6A	
C-7	Waste Antifreeze High Level Alarm	1	120V	1PH	6.6A	
C-9	DEF Mobile Cart w/ Pump	1	120V	1PH	2.5A	
C-14	Fluid Storage Room Sump Alarm	1	120V	1PH	6.6A	
D-3	Electric Charging Station	1	120V	1PH	15A	
E-1	Hydraulic Hose Crimping Machine	1	120V	1PH		1.5HP
E-4	Hydraulic Hose Saw	1	208V	1PH		5HP
F-1	MIG Welder	1	208V	1PH	57A	
F-4	Plasma Cutter	1	208V	1PH	52A	
F-6	Portable Weld Fume Extractor	1	120V	1PH	11.9A	1HP
G-1	Tire Changer	1	208V	1PH	20A Breaker	1HP
G-2	Tire Balancer	1	208V	1PH	10A	
M-2	Drill Press	1	120V	1PH		1.5HP
M-4	Parts Washer	1	120V	1PH	1.4A	
M-5	Bench Grinder	1	120V	1PH	3.6A	
M-6	Portable Battery Charger	1	120V	1PH	10A	
M-11	AC Recovery and Recharge System	1	120V	1PH	10 A	
M-16	Bench Mounted Chainsaw Sharpener	1	120V	1PH	2.1A	
V-1	Vehicle wash Pressure Plant	1	480V	3 PH	25 A	7.5 HP
V-1A	Manual Wash Control panel	1	120V	1PH	20A	
V-2	Vehicle Wash - Hot Water Heater	1	120V	1PH	1A	
V-4	Automatic Undercarriage Pump Skid	1	480V	3PH	70A	40HP
V-4A	Undercarriage Wash Control Panel	1	120V	1PH	20A	



5-TON BRIDGE CRANE DETAIL (ADD ALTERNATE #4)
1/8" = 1'-0"

Industrial Equipment Plumbing Schedule					
EQ Number	Type	Count	P - Vent	P - Air	P - Water
B-3	1,800lbs Portable Mower Lift	1		Shop Air (90-100 psi)	
C-3	Waste Oil Pump Out	1		Shop air (60-120PSI)	
C-6	Waste Anti-Freeze Pump Out	1		Shop air (60-120PSI)	
C-10	Portable Grease Caddy	1		Air Operated	
C-15	Wall Mounted Lube Pumps	3		6:1 pumps 7 scfm @ 40 psi. 12:1 pumps 69 scfm @ 90 psi. Diaphragm pumps 10 scfm @ 60 psi.	
G-1	Tire Changer	1		110-145 PSI	
V-1	Vehicle wash Pressure Plant	1		1/2"- 6CFM @ 90PSI	1" Water connection from V-2
V-2	Vehicle Wash - Hot Water Heater	1	4" Vent	3/4" Gas connection (440,000btu/hr)	1" Water 10 gpm @ 60psi
V-4	Automatic Undercarriage Pump Skid	1		1/2" 6 cfm 80-100psi air	1.5" suppy (water line connects to a 250 gallon buffer tank)
V-9	Vehicle Wash Pre-Treatment Tank (1500gal)	1	4" vent per chamber		

NOTES:

1. BRIDGE CRANE SHALL BE INLCUDED IN ADD ALTERNATE #4.
2. METAL BUILDING MANUFACTURER SHALL PROVIDE STEEL SUPPORT/SHIMS FOR BRIDGE CRANE EQUIPMENT TO ACCOMODATE THE SLOPE OF THE STRUCTURAL STEEL IN ORDER TO PROVIDE A LEVEL BRIDGE CRANE SYSTEM AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
3. HOOK SHALL NOT EXTEND MORE THAN 1.5 FT DOWN FROM CRANE GIRDER WHEN IN FULL UP POSITION.
4. SEE STRUCTURAL AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL DETAILS.
5. COORDINATE BRIDGE CRANE HEIGHT WITH OTHER UTILITIES AS REQUIRED.
6. BRIDGE CRANE SHALL BE LOCATED VERTICALLY IN THE VEHICLE MAINTENANCE SHOP TO PROVIDE A MINIMUM OF 7 FT OF CLEARANCE OVER THE MEZZANINE MEASURED FROM THE MEZZANINE SURFACE TO HIGH HOOK HEIGHT.

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

220 HEATHERDELL ROAD,
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RHINEBECK ARCHITECTURE

Seal:

Revisions:

Rev	Date	Description
1	4/22/22	ADDENDUM NO. 1

Issued For: BID

PROJECT TRUE

SCALE: AS NOTED

Date: APRIL 7, 2022

Drawn By: NCH

Reviewed By: TJC

Approved By: Approver

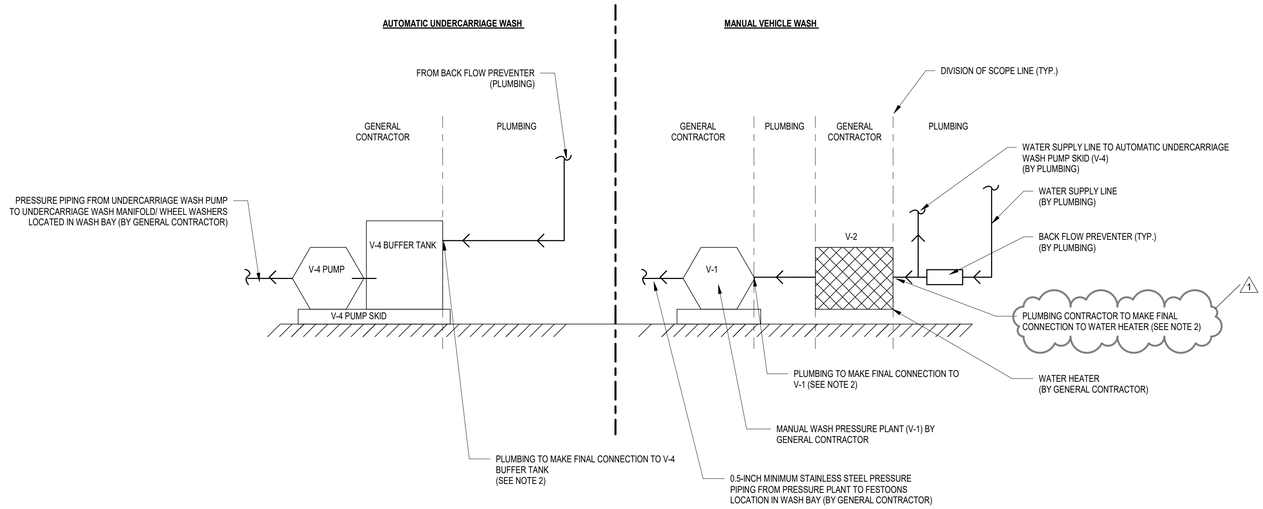
W&S Project No: ENG20-0501

Drawing Title:

DETAILS

Sheet Number:

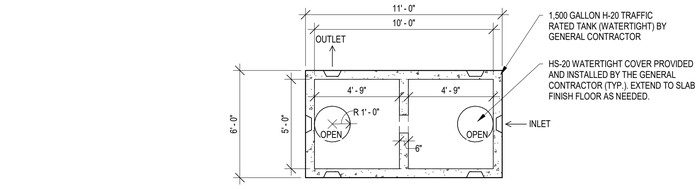
EQ102



NOTE:

1. THIS DETAIL IS SCHEMATIC ONLY, AND NOT ALL COMPONENTS ARE SHOWN. THE GENERAL CONTRACTOR SHALL PROVIDE ALL VALVES, FITTINGS AND PIPING AS REQUIRED TO PROVIDE A COMPLETE AND OPERABLE SYSTEM
2. PLUMBING CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO PUMPS AND HOT WATER HEATER, COORDINATE FINAL CONNECTION REQUIREMENTS WITH VEHICLE WASH EQUIPMENT INSTALLER.

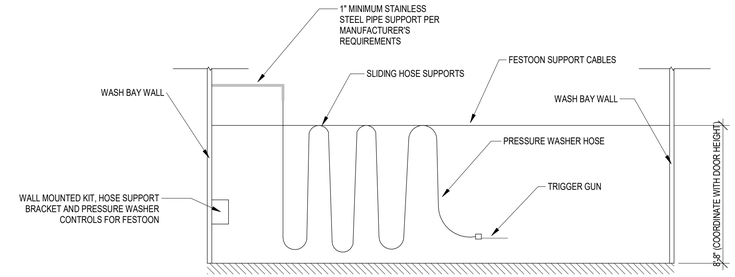
Vehicle Wash Equipment Room Coordination Schematic
N.T.S.



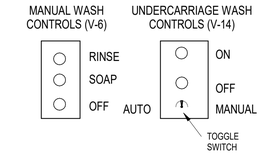
GENERAL NOTE: TANK SHALL BE SUBPPLEID AND INSTALLED BY THE G.C.

DESIGN NOTES:
1. CONCRETE 5,000 PSI @ 28 DAYS
2. HS-20-44 LOADING WITH 12" TO 60" OF COVER
3. REINFORCING ASTM A615 GRADE 60
4. CONST. JOINT TO HAVE MIN. 1" BUTYL SEALANT

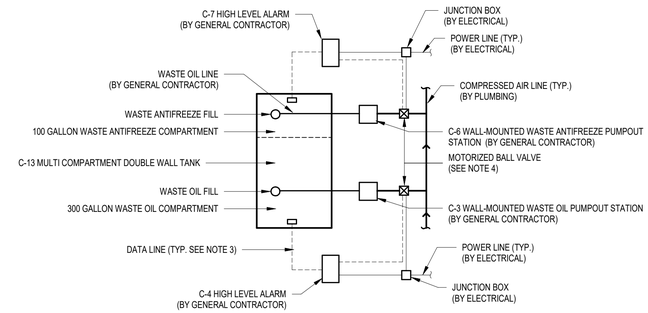
VEHICLE WASH PRE-TREATMENT TANK DETAIL (V-9) (BASE BID)
1/4" = 1'-0"



VEHICLE WASH HOSE FESTOON (TYP. 1 OF 2) (V-3)
N.T.S.



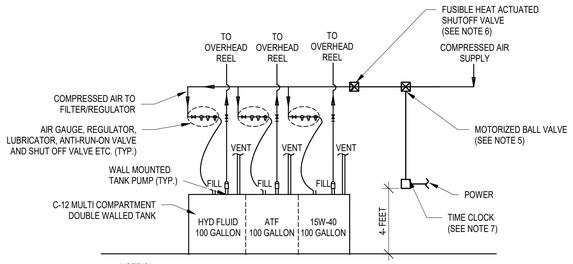
Vehicle Wash Controls
N.T.S.



NOTE(S):

1. NOT ALL COMPONENTS OF PUMPING SYSTEM ARE SHOWN. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT/COMPONENTS NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM, PER MANUFACTURER'S REQUIREMENTS.
2. HIGH LEVEL ALARM SHALL ACTIVATE THE MOTORIZED BALL VALVE TO SHUT OFF AIR SUPPLY TO PUMPOUT STATION WHEN THE WASTE OIL TANK REACHES 90% CAPACITY.
3. EMPTY 1" CONDUITS WITH PULL STRING SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR. GENERAL CONTRACTOR SHALL PULL DATA WIRES.
4. MOTORIZED BALL VALVE SHALL BE SUPPLIED BY THE GENERAL CONTRACTOR AND SHALL BE INSTALLED BY THE PLUMBING CONTRACTOR. POWER SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

WASTE OIL TANK SCHEMATIC PIPING ARRANGEMENT (ADD ALTERNATE #5)
N.T.S.

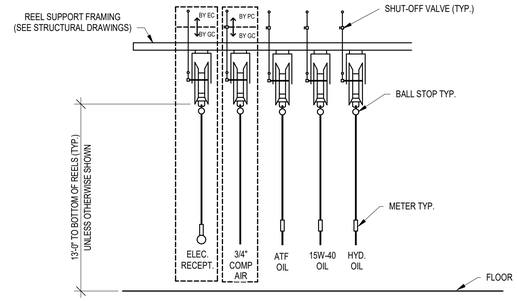


NOTE(S):

1. NOT ALL COMPONENTS OF PUMPING SYSTEM ARE SHOWN. CONTRACTOR SHALL PROVIDE ALL EQUIPMENT/COMPONENTS NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM, PER MANUFACTURER'S REQUIREMENTS.
2. COORDINATE TANK OPENINGS TO PROVIDE LAYOUT SHOWN
3. TANKS VENT TO OUTSIDE AS SHOWN ON PLUMBING DRAWINGS
4. WASTE OIL TANK SHALL BE PROVIDED WITH PUMP-OUT CAM-LOCK CONNECTIONS IN ACCORDANCE WITH SPECIFICATIONS
5. MOTORIZED BALL VALVE SUPPLIED BY GENERAL CONTRACTOR AND INSTALLED BY PLUMBING. POWER PROVIDED BY ELCTRICAL.
6. HEAT ACTUATE SHUTOFF SUPPLIED BY GENERAL CONTRACTOR, INSTALLED BY PLUMBING.
7. TIME CLOCK PROVIDED BY GENERAL CONTRACTOR, INSTALLED BY ELECTRICAL. ELECTRICAL TO PROVIDE AN OVERRIDE SWITCH ADJACENT TO TIME CLOCK.
8. OWNER SHALL PROVIDE FLUIDS TO FILL LUBE TANKS, TO ALLOW GENERAL CONTRACTOR TO PRESSURIZE AND CALIBRATE SYSTEM.

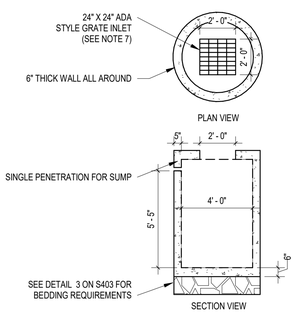
GENERAL TANK PIPING ARRANGEMENT (ADD ALTERNATE #5)
N.T.S.

C-1



NOTE: CONTRACTOR SHALL PROVIDE SUPPLEMENTAL FRAMING/SUPPORTS AS NEEDED TO CONNECT TO REEL SUPPORT FRAMING

REEL BANK DETAIL (ADD ALTERNATE #5)
N.T.S.



MIN. SUMP VOLUME = 500 GALLONS

FLUID STORAGE ROOM SUMP NOTES:

1. TANK SHALL HAVE A MINIMUM CAPACITY OF 500 GALLONS BELOW THE SUMP SENSOR PENETRATION.
2. TANK SHALL BE LOCATED BENEATH THE FLUID STORAGE ROOM TO SERVE AS SECONDARY CONTAINMENT FOR THE FLUID STORAGE TANKS, THEREFORE THE TANK SHALL NOT HAVE ANY INLET OR OUTLETS BESIDES THE DRAIN INLET AT THE TOP OF THE TANK AND THE PENETRATION FOR THE SUMP SENSOR CONDUIT WHICH SHALL BE SEALED WATER TIGHT AND LOCATED AS HIGH UP ON THE TANK AS POSSIBLE.
3. TANK SHALL BE INSTALLED PER DETAIL SHOWN ON THE STRUCTURAL DRAWINGS.
4. CONCRETE SHALL HAVE 4,000 PSI. MINIMUM CEMENT PER ASTM C-478 (6.1)
5. REINFORCED STEEL COMFORMS TO LATEST ASTM A 185 SPECIFICATIONS. 0.15 SQ. IN / LINEAL FT. AND 0.15 SQ. IN (BOTH WAYS) BASE BOTTOM STEEL REINFORCEMENT TO MEET OR EXCEED AASHTO HS-20 LOADING.
6. TANK SHALL BE SEALED INSIDE AND OUT WITH AQUA-SAFE CONCERTED SEALER AS MANUFACTURED BY BAY OIL COMPANY OR APPROVED EQUAL.
7. SEE DETAIL 3 ON SHEET S403 FOR ADDITIONAL FRAME AND GRATE REQUIREMENTS.
8. PRE-CAST CONCRETE TANK SHALL BE DESIGNED FOR H-20 WHEEL LOAD RATING AND ANTI-BUOYANCY WITH GROUNDWATER ASSUMED TO BE AT GRADE. PROVIDE ANTI-BUOYANCY CALCULATIONS STAMPED BY A NEW YORK PROFESSIONAL ENGINEER.
9. BUTYL RUBBER JOIN T SEALAN T PER ASTM C—990 AASHTO M —198
10. ONE POUR MONOLITHIC BASE
11. THE FLUID STORAGE ROOM SUMP SHALL BE A 5FT DIAMETER CONCRETE PRECAST CATCH BASIN WITH NO OUTLET PIPE AS MANUFACTURED BY SITUATE RAY PRECAST OR APPROVED EQUAL

FLUID STORAGE ROOM SUMP DETAIL (BASE BID)
N.T.S.

Project:

VILLAGE OF ARDSLEY, NY

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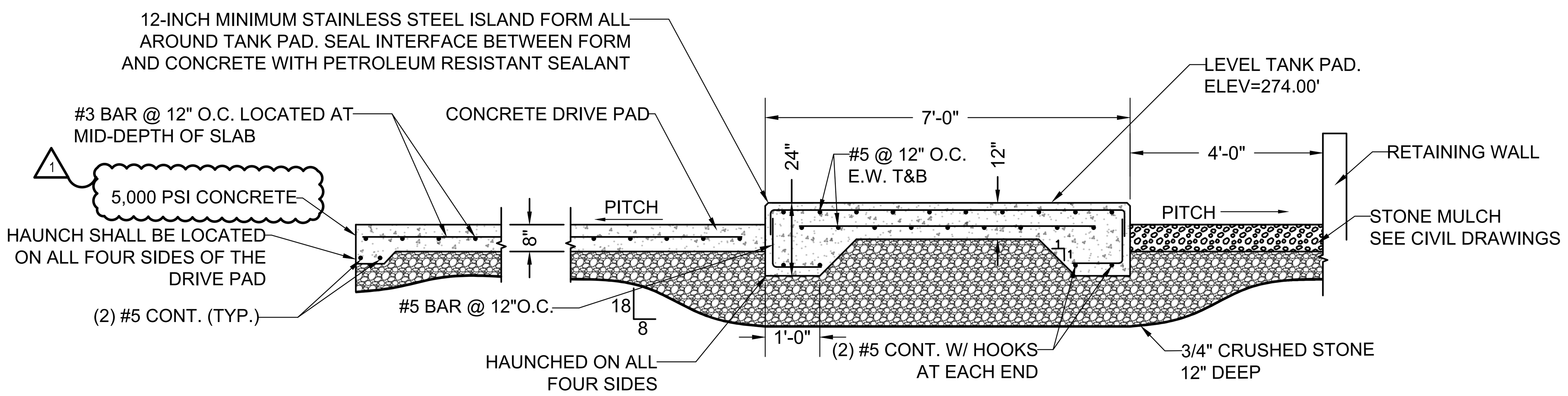
W&S Project No:	ENG20-0501

Drawing Title:

DETAILS II

Sheet Number:

EQ103

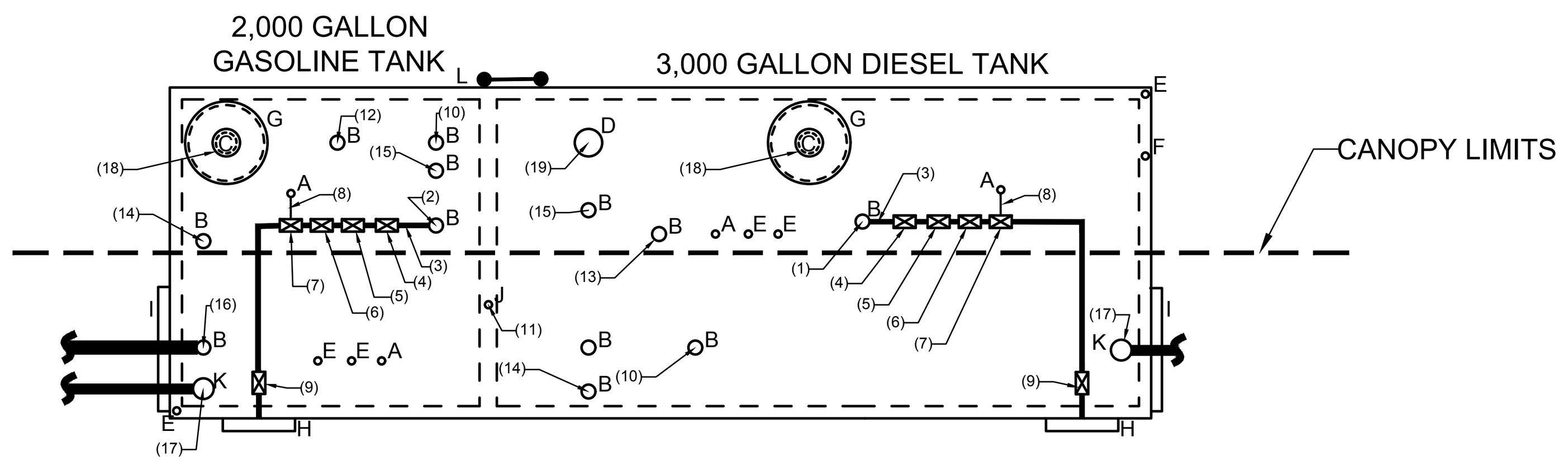


NOTES:

1. CONCRETE PADS SHALL BE 4,500 PSI AND COATED WITH SALT RESISTANT SEALANT AS SPECIFIED. SEE SECTION 03 30 00 - CAST IN PLACE CONCRETE.

1 CONCRETE FUELING PAD AND TANK PAD

SCALE: N.T.S.



LEGEND:

A. 2" FEMALE FIREGUARD COUPLING
B. 4" FEMALE FIREGUARD COUPLING
C. 8" FFSO 150# FLANGE - PRIMARY EMERGENCY VENT USE ONLY
D. 8" FFSO 150# FLANGE THROUGH OUTER SHELL ONLY. MARK WITH SPECIAL WARNING LABEL "INTERSTITIAL EMERGENCY VENT USE ONLY"
E. 2" FITTING THROUGH OUTER SHELL ONLY WITH CAST IRON PLUG - FOR MFG USE ONLY
F. 2" INTERSTITIAL MONITOR PIPE - MALE NPT END
G. 24" TIGHT BOLT MANWAY WITH "C" MOUNTED IN COVER
H. WAYNE S1 BRACKET
I. PIPING SUPPORT BRACKET
J. 2" INTERSTITIAL MONITOR PIPE - MALE NPT END - BULK HEAD MONITOR USE
K. 6" FEMALE FIREGUARD COUPLING
L. EXTERNAL TANK LADDER FOR MAINTENANCE ACCESS

NOTES:

1. SEE PIPING NOTES ON EQ202 FOR ADDITIONAL INFORMATION/REQUIREMENTS.
2. FINAL TANK FITTING LAYOUT AND QUANTITY TO BE ADJUSTED AS NEEDED AND CONFIRMED DURING THE SUBMITTAL PROCESS TO MEET THE DESIGN LAYOUT AND TO MEET MANUFACTURER AND CODE REQUIREMENTS.
3. TANK TOP PIPING SUPPORT BRACKETS (NOT SHOWN) SHALL BE INCLUDED TO SUPPORT DISPENSER PIPING AS NEEDED.

SCHEDULE:

1. 1.5 HP RED JACKET PUMP
2. 3/4 HP RED JACKET PUMP
3. 1.5" SCH 40 CARBON STEEL PIPE
4. 1.5" THREADED GATE VALVE
5. 1.5" EMERGENCY VALVE (MORRISON BROS. 346DI-0400 AV)
6. 1.5" SOLENOID VALVE (MORRISON BROS. 710SS-2150 1V)
7. 0.5" EXPANSION RELIEF VALVE (MORRISON BROS. 078DI-0200 AV)
8. 0.5" SCH 40 CARBON STEEL PIPE FROM EXP. RELIEF VALVE TO TANK
9. 1.5" BALL VALVE (MORRISON BROS. 691 BSS)
10. TANK LEVEL PROBE/HIGH LEVEL SENSOR (VEEDER ROOT 846391-399)
11. INTERSTITIAL SENSOR (VEEDER ROOT 794390-420)
12. 3" CARBON STEEL VENT PIPE WITH PV VENT CAP (HUSKY 005885, PRES. 2.5-6" W.C., VAC. 6"-10" W.C. AND 005041 ADAPTER)
13. 3" CARBON STEEL VENT PIPE WITH ATMOSPHERIC VENT CAP (OPW 23-0055)
14. CLOCK GAUGE (MORRISON BROS. 818-0400AGEVR)
15. GAUGE STICK PORT WITH CAP (MORRISON BROS. 305GSP2000AKEVR)
16. VAPOR RECOVERY ADAPTOR AND CAP
17. PRODUCT FILL
18. PRIMARY EMERGENCY VENT (MORRISON BROS. 244OF-0200AEVR)
19. SECONDARY EMERGENCY VENT (MORRISON BROS. 244OF-0100AEVR)

2 FUEL SYSTEM COMPONENT SCHEDULE

SCALE: N.T.S.

Project: VILLAGE OF ARDSLEY NEW YORK 1896

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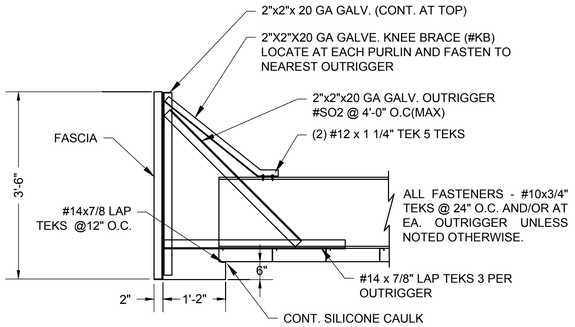
FUEL SYSTEM DETAILS II

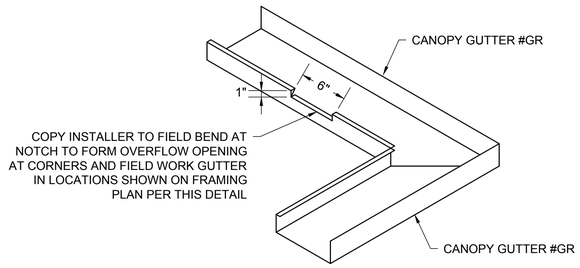
BID ALTERNATE 2

Sheet Number:

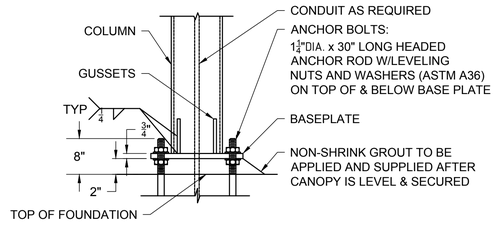
EQ203



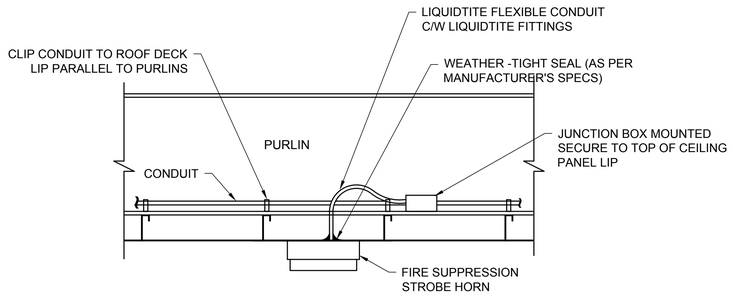
1 FASCIA SECTION
SCALE: N.T.S.



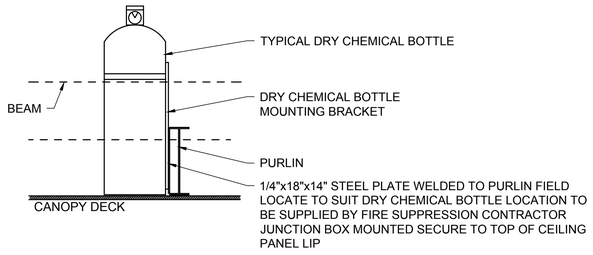
2 SECONDARY DRAIN OVERFLOW DETAIL
SCALE: N.T.S.



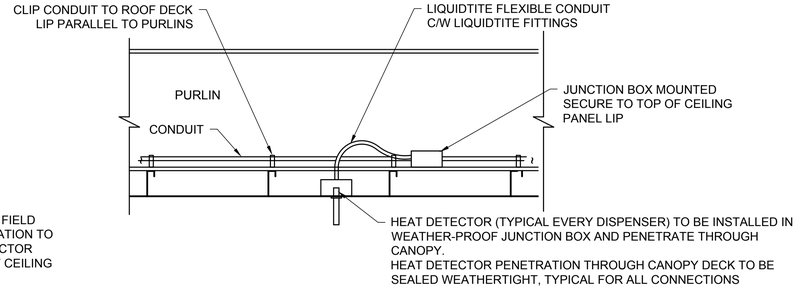
3 BASE PLATE DETAIL (TYP. ALL COLUMNS)
SCALE: N.T.S.



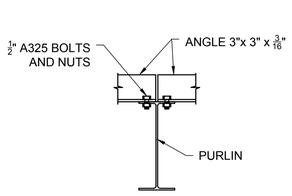
4 TYPICAL FIRE SUPPRESSION STOBE / HORN ALARM
SCALE: N.T.S.



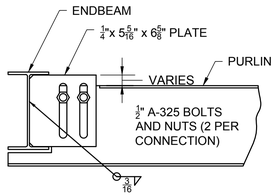
5 DRY CHEMICAL BOTTLE MOUNTING DETAIL
SCALE: N.T.S.



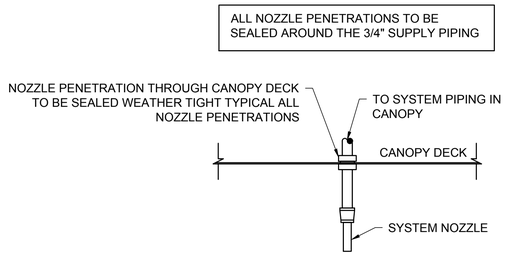
6 TYPICAL HEAT DETECTOR CONNECTION DETAIL
SCALE: N.T.S.



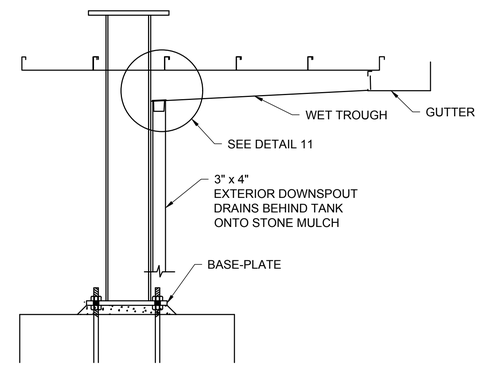
7 ANGLE LATERAL BRACING
SCALE: N.T.S.



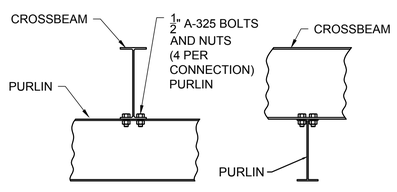
8 ANGLE LATERAL BRACING
SCALE: N.T.S.



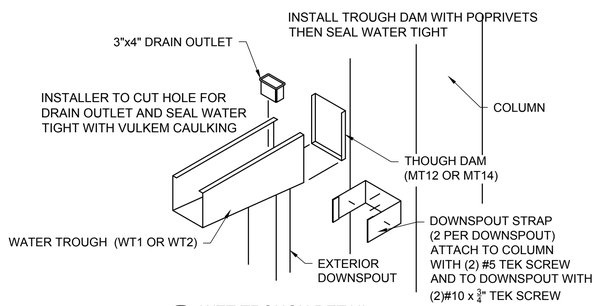
9 NOZZLE ELEVATION
SCALE: N.T.S.



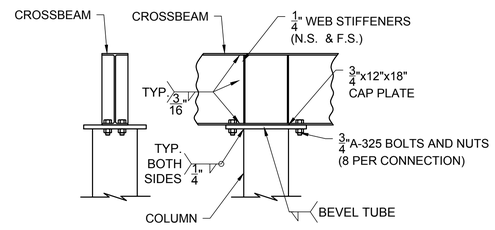
13 EXTERIOR DRAIN DETAIL
SCALE: N.T.S.



10 CROSEEBEAM TO PURLIN CONNECTION
SCALE: N.T.S.



11 WET TROUGH DETAIL
SCALE: N.T.S.



12 CROSSBEAM TO COLUMN CONNECTION
SCALE: N.T.S.

GENERAL NOTES:

1. DETAILS SHOWN ON THIS PAGE SHALL BE PART OF ADD ALTERNATE 2A.
2. NOT ALL FOUNDATION COMPONENTS SHOWN FOR CLARITY. SEE DETAIL 5 ON EQ205

Project:

VILLAGE OF ARDSLEY NEW YORK 1896

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Seal:

STATE OF NEW YORK JEFFERY FRASER BUSH 083450 LICENSED PROFESSIONAL ENGINEER

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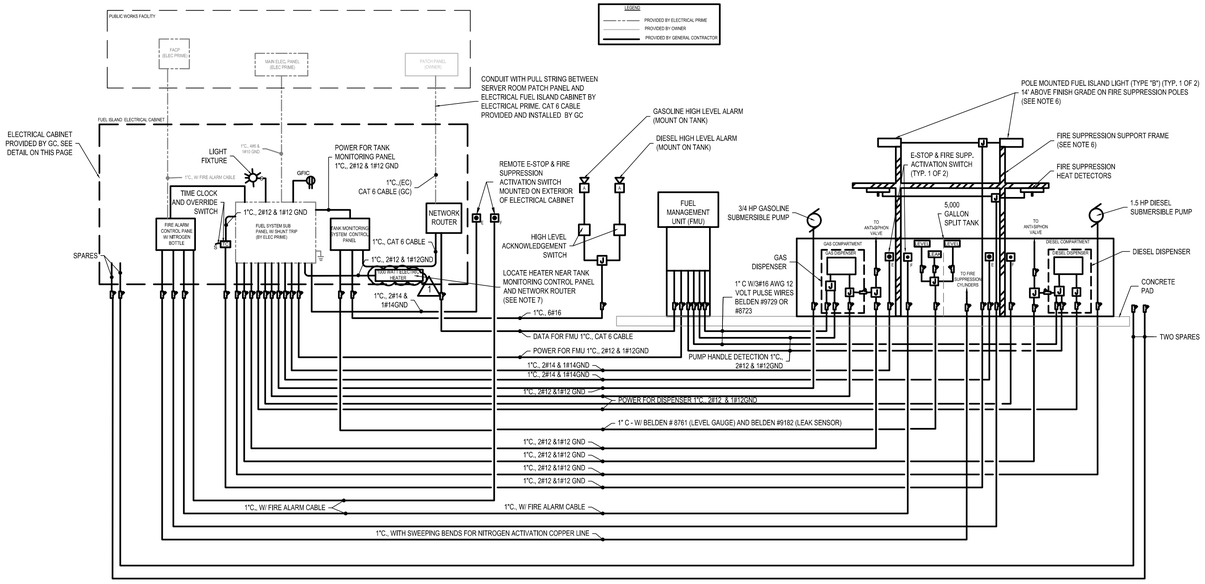
CANOPY DETAILS I

ADD ALTERNATE 2A

Sheet Number:

EQ204



1 FUEL ISLAND ONE LINE DETAIL (ADD ALTERNATE 2)

SCALE: N.T.S.

NOTES:

1. GENERAL CONTRACTOR SHALL PROVIDE ALL EQUIPMENT CONDUITS, SEALS, AND WIRING DOWN STREAM OF THE FUEL ISLAND ELECTRICAL SUB-PANEL. SUB PANEL SHALL BE PROVIDED BY THE ELECTRICAL PRIME.
2. THIS DETAIL IS A SCHEMATIC AND SHOWS THE GENERAL LAYOUT OF THE FUEL SYSTEM CONDUITS ONLY. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, MATERIALS, LABOR, ETC. INCLUDING CONDUIT, SEALS, JUNCTION BOXES, E-STOPS, WIRING, AND ALL OTHER APPURTENANCES AS NEEDED IN ORDER TO PROVIDE A COMPLETE AND OPERABLE SYSTEM.
3. ALL ABOVE GRADE CONDUITS SHALL BE 1" GALVANIZED RIGID STEEL W/ 3#12 & 1#12 GND THHN / THWN STRANDED CONDUCTORS UNLESS OTHERWISE NOTED. ALL BELOW GRADE CONDUITS SHALL BE 1" SCHEDULE 80 PVC W/ 3#12 & 1#12 GND THHN / THWN STRANDED CONDUCTORS UNLESS SPECIFIED OTHERWISE.
4. CONTRACTOR SHALL CONFIRM EXACT CONDUIT, WIRING AND EQUIPMENT REQUIREMENTS WITH SPECIFIC EQUIPMENT MANUFACTURER'S REQUIREMENTS PRIOR TO INSTALLATION.
5. ALL EMERGENCY SHUTOFFS AND DISCONNECTS WITHIN 20' OF THE FUEL DISPENSING EQUIPMENT SHALL BE INTRINSICALLY SAFE.
6. IF ADD ALTERNATE 2A (FUEL ISLAND CANOPY) IS SELECTED,THE FIRE SUPPRESSION SUPPORT FRAME SHALL NOT BE INSTALLED AND THE FOLLOWING SHALL BE INSTEAD MOUNTED IN THE CANOPY:
   - 6.1. FUEL ISLAND LIGHTS (SEE LIGHTING FIXTURE SCHEDULE NOTES BELOW)
   - 6.2. FIRE SUPPRESSION HEAT DETECTORS
   - 6.3. FIRE SUPPRESSION CYLINDERS
   - 6.4. SECURITY CAMERAS (PROVIDED BY OWNER)
7. THE ELECTRIC HEATER SHALL BE 1000 WATTS AND SHALL HELP MAINTAIN A STABLE ENCLOSURE TEMPERATURE DURING THE WINTER MONTH. THE HEATER SHALL HAVE THE FOLLOWING MINIMUM REQUIREMENTS:
   - 7.1. STEEL HOUSING
   - 7.2. BUILT IN THERMOSTAT (RANGE 40 F TO 100 F)
   - 7.3. UNIT SHALL BE AS MANUFACTURED BY ELECTRIC KING PART NUMBER U12100 OR APPROVED EQUAL
8. THE NETWORK ROUTER SHALL HAVE A MINIMUM OF 4 LAN CONNECTION PORTS. ROUTER SHALL BE AS MANUFACTURED BY D-LINK MODEL DI-604, OR APPROVED EQUAL.

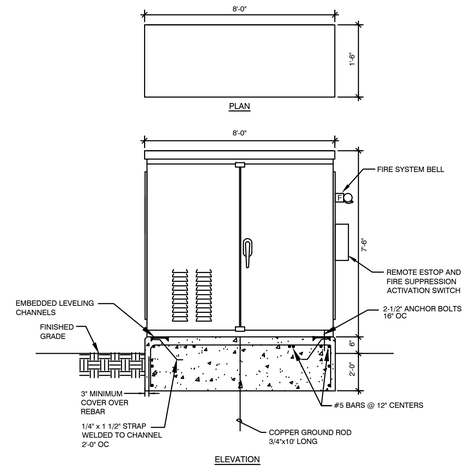
1

FUEL ISLAND LIGHT FIXTURE SCHEDULE

TYPE	TYPE	MANUFACTURER	CATALOG NUMBER	MOUNTING	REMARKS
A	RECESSED CANOPY LED AREA LIGHT (ADD ALTERNATE 2A)	CREE	#CAN-304-PS-RS-04-E-UL-WH-700	RECESS CANOPY	TIME CLOCK CONTROLLED
B	POLE MOUNTED LED AREA LIGHT (ADD ALTERNATE 2)	CREE	#OSQ-HO-A-NM-4ME- 40L-40K-UL-BK-R	POLE MOUNTED	TIME CLOCK CONTROLLED

NOTES:

1. IF BID ALTERNATE 2A IS SELECTED THE CONTRACTOR SHALL FURNISH SIX (6) TYPE "A" RECESSED CANOPY LED AREA LIGHTS. THE SIX (6) LIGHTS SHALL BE EVENLY SPACED IN THE DECKING OF THE CANOPY.
2. IF BID ALTERNATE 2A IS NOT SELECTED THE CONTRACTOR SHALL FURNISH TWO (2) TYPE "B" POLE MOUNTED LED AREA LIGHTS. THE TWO POLE MOUNTED LIGHTS SHALL BE SUPPORTED ON THE FIRE SUPPRESSION SUPPORT POLES AS INDICATED IN THE ONE LINE DETAIL, SHOWN ABOVE ON THIS SHEET.



2 PAD MOUNTED ELECRICAL CABINET DETAIL

SCALE: N.T.S.

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH THE EXACT CABINET SIZE WITH ALL MANUFACTURER EQUIPMENT SIZES PRIOR TO SUBMITTING THE CABINET FOR APPROVAL. PROVIDE A SCALED DRAWING SHOWING ALL EQUIPMENT.
2. FUEL ISLAND ELECTRICAL CABINET SHALL BE STAINLESS STEEL NEMA 3R RATED CABINET WITH THE FOLLOWING MINIMUM REQUIREMENTS:
   - 2.1. SLOPED ROOF AND OPEN BOTTOM
   - 2.2. CONTINUOUS STAINLESS STEEL HINGES
   - 2.3. FILTERED LOUVERS IN LEFT HAND DOOR
   - 2.4. STAINLESS STEEL 3-POINT PAD LOCKABLE HANDLE
   - 2.5. TWO STEEL BACK PANELS PAINTED WHITE FOR MOUNTING DEVICES IN CABINET
3. CONTRACTOR SHALL INSTALL 1-INCH HARD BOARD INSULATION ALONG THE SIDE WALLS, ROOF AND DOORS USING CONSTRUCTION ADHESIVE. WHEN INSTALLING INSULATION ON DOORS, CUT AND SHAPE INSULATION BOARD AS NEEDED TO AVOID THE DOOR LOCKING HARDWARE AND LOUVER IN LEFT HAND DOOR.

1

Project:

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STATE OF NEW YORK JEFFERY FRASER BUSH 083680 PROFESSIONAL ENGINEER

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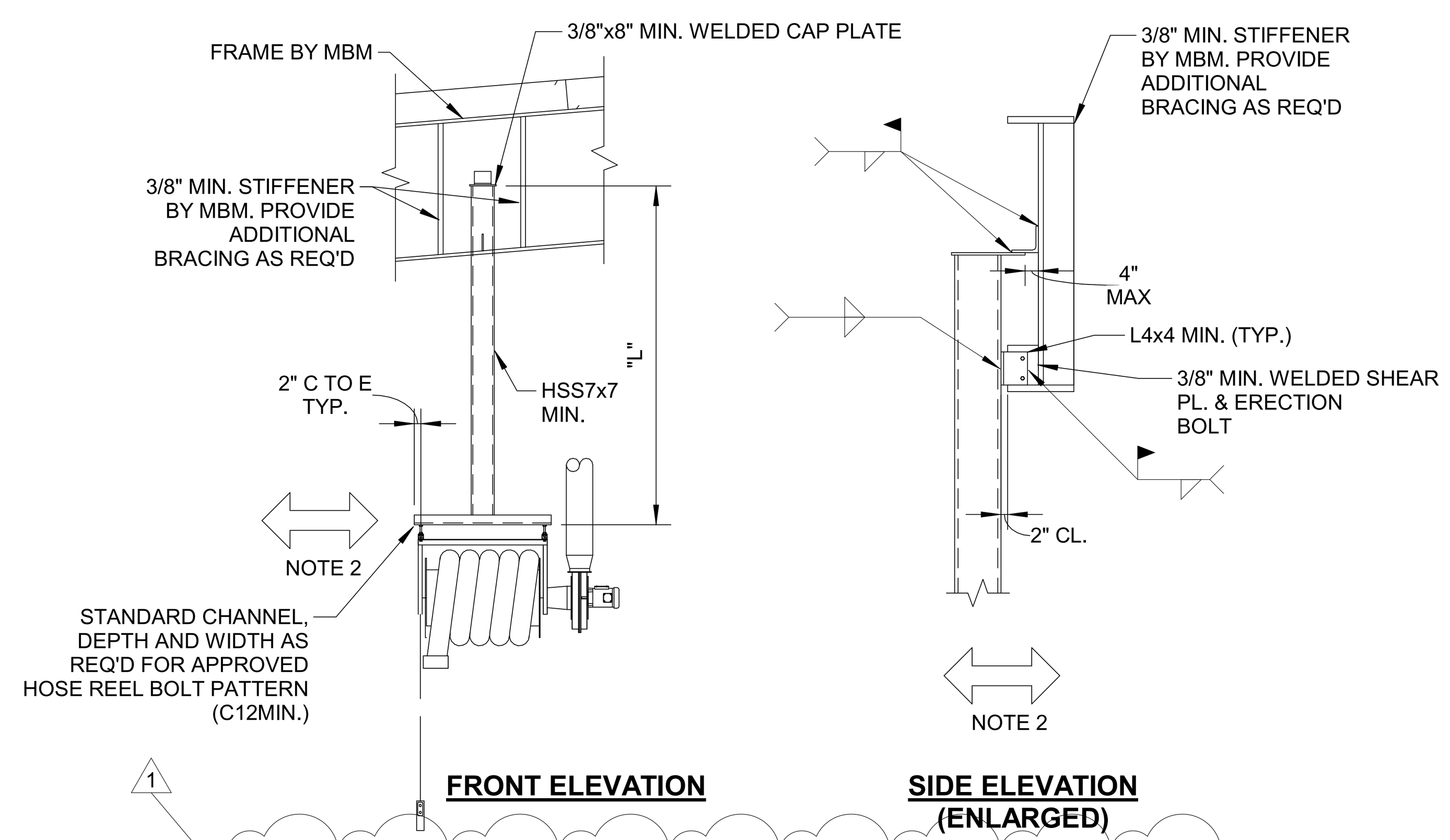
FUEL ISLAND ONE-LINE DIAGRAM

ADD ALTERNATE 2

Sheet Number:

EQ206



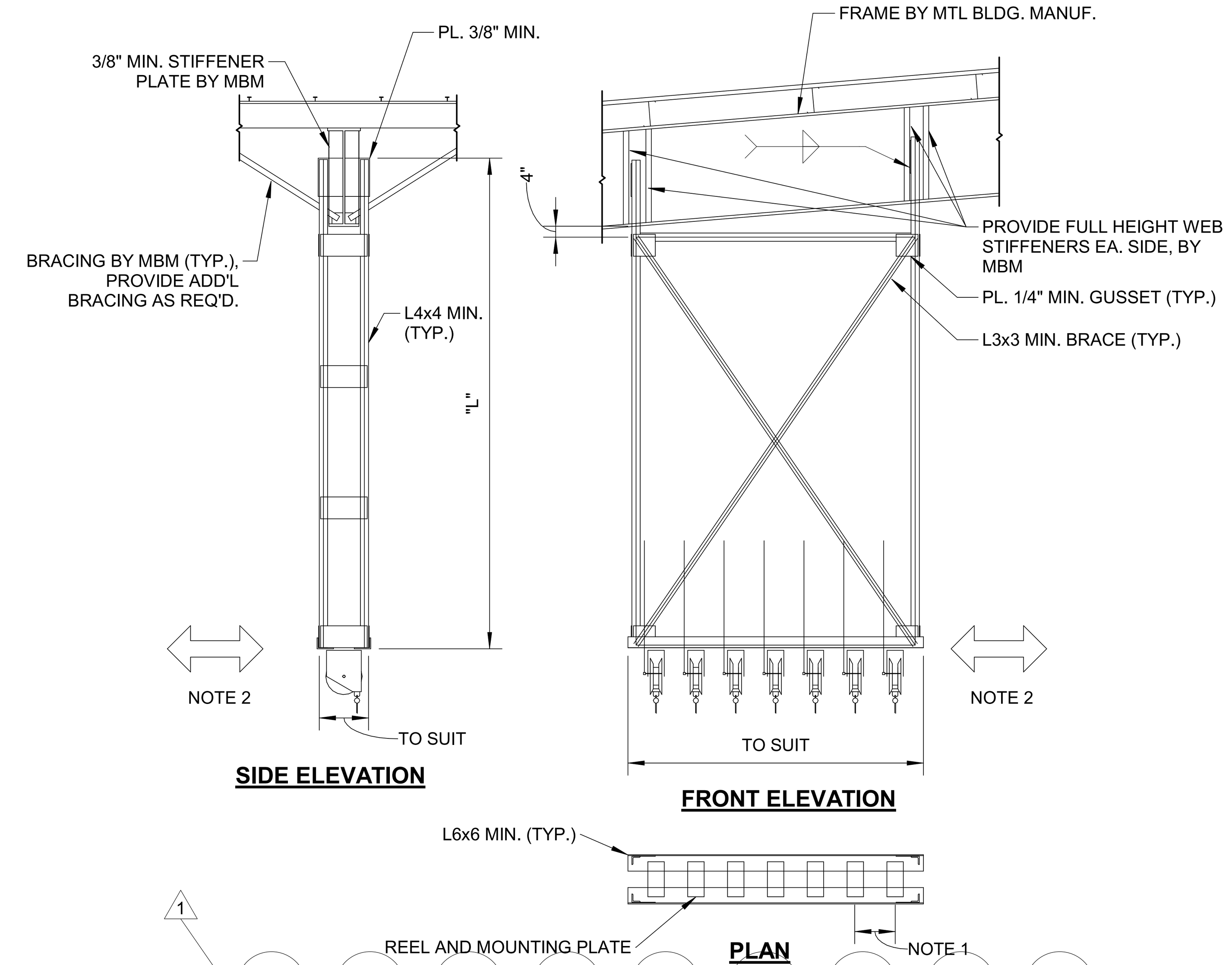
1

NOTE(S):

1. EXHAUST REEL SUPPORT SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK.
2. COORDINATE SIZE AND LOCATION OF REELS WITH METAL BUILDING MANUFACTURER.
3. CONNECTION AT FRAMES SHALL BE DESIGNED BY BUILDING MANUFACTURER AND SUBCONTRACTOR TO SAFELY SUPPORT FRAME AND REEL DEAD LOAD IN ADDITION TO 200 LB IN ANY DIRECTION AT LOCATIONS SHOWN ABOVE. MAXIMUM ALLOWABLE LATERAL DEFLECTION SHALL BE L/360 AT BASE OF SUPPORT.
4. COORDINATE HEIGHT REQUIREMENTS WITH EQUIPMENT DRAWINGS.

1 EXHAUST REEL SUPPORT

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



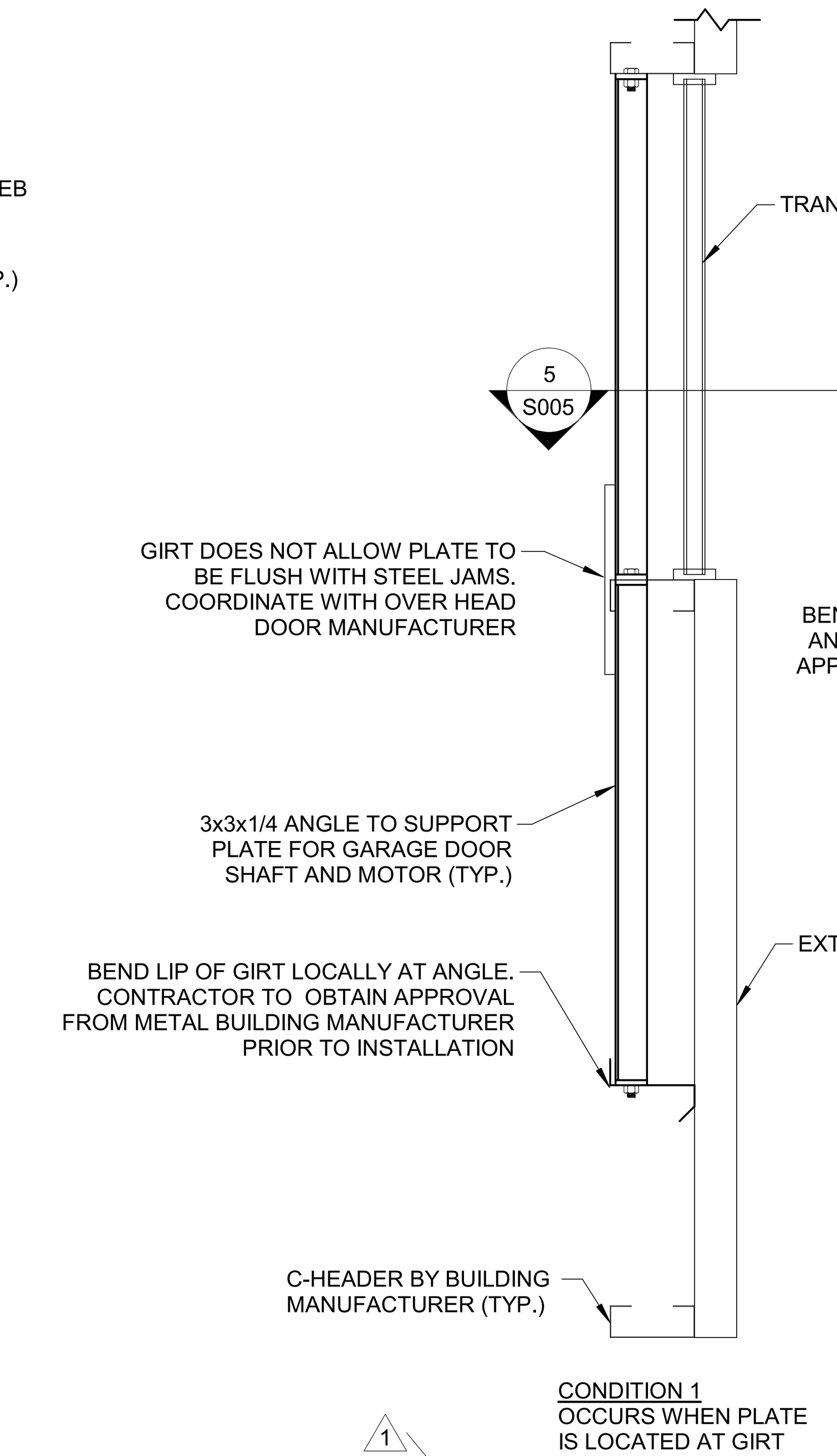
1

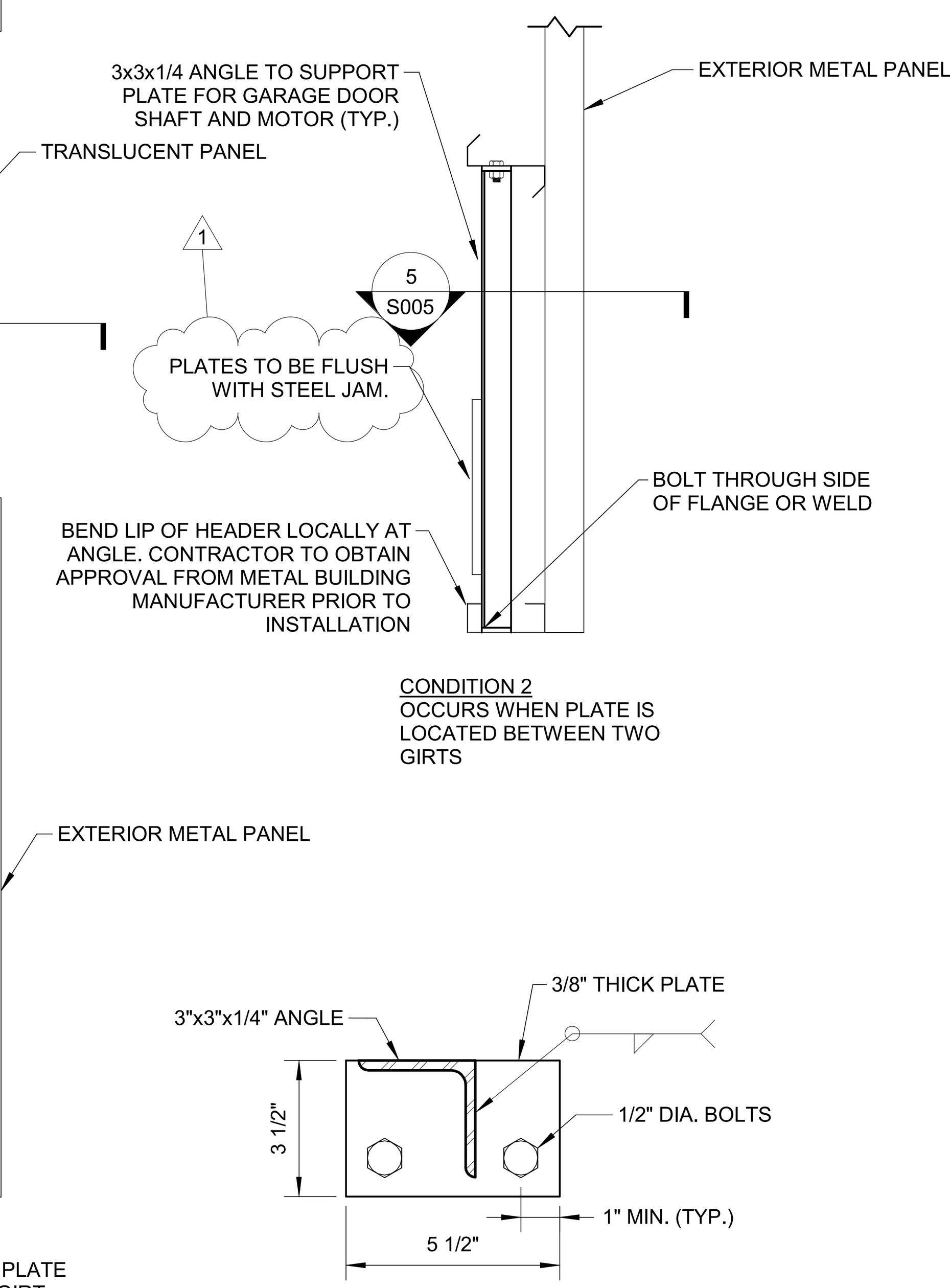
NOTE(S):

1. HOSE REEL SUPPORT SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK.
2. COORDINATE SIZE AND LOCATION OF REELS WITH METAL BUILDING MANUFACTURER.
3. CONNECTION AT FRAMES SHALL BE DESIGNED BY BUILDING MANUFACTURER AND SUBCONTRACTOR TO SAFELY SUPPORT FRAME AND REEL DEAD LOAD IN ADDITION TO 200 LB IN ANY DIRECTION AT LOCATIONS SHOWN ABOVE. MAXIMUM ALLOWABLE LATERAL DEFLECTION SHALL BE L/360 AT BASE OF SUPPORT.
4. COORDINATE HEIGHT REQUIREMENTS WITH EQUIPMENT DRAWINGS.

2 HOSE REEL SUPPORT

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





5 OVERHEAD DOOR SUPPORT SECTION

SCALE: 3" = 1'-0"

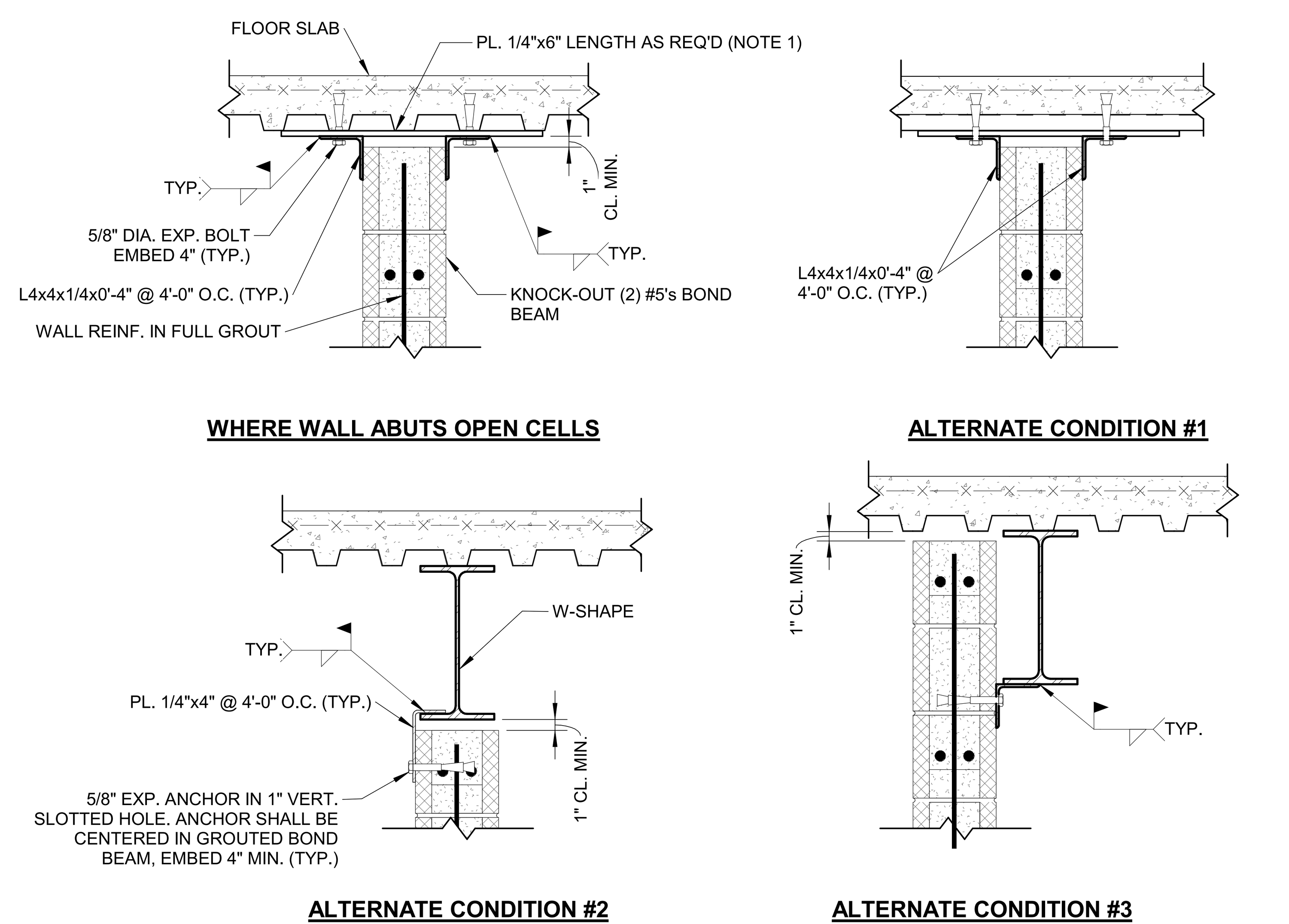
1

NOTE(S):

1. METAL BUILDING DESIGNER SHALL DESIGN GIRTS TO SUPPORT OVERHEAD DOORS AND SUPPLEMENTAL FRAMING

4 OVERHEAD DOOR SUPPORT DETAIL

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



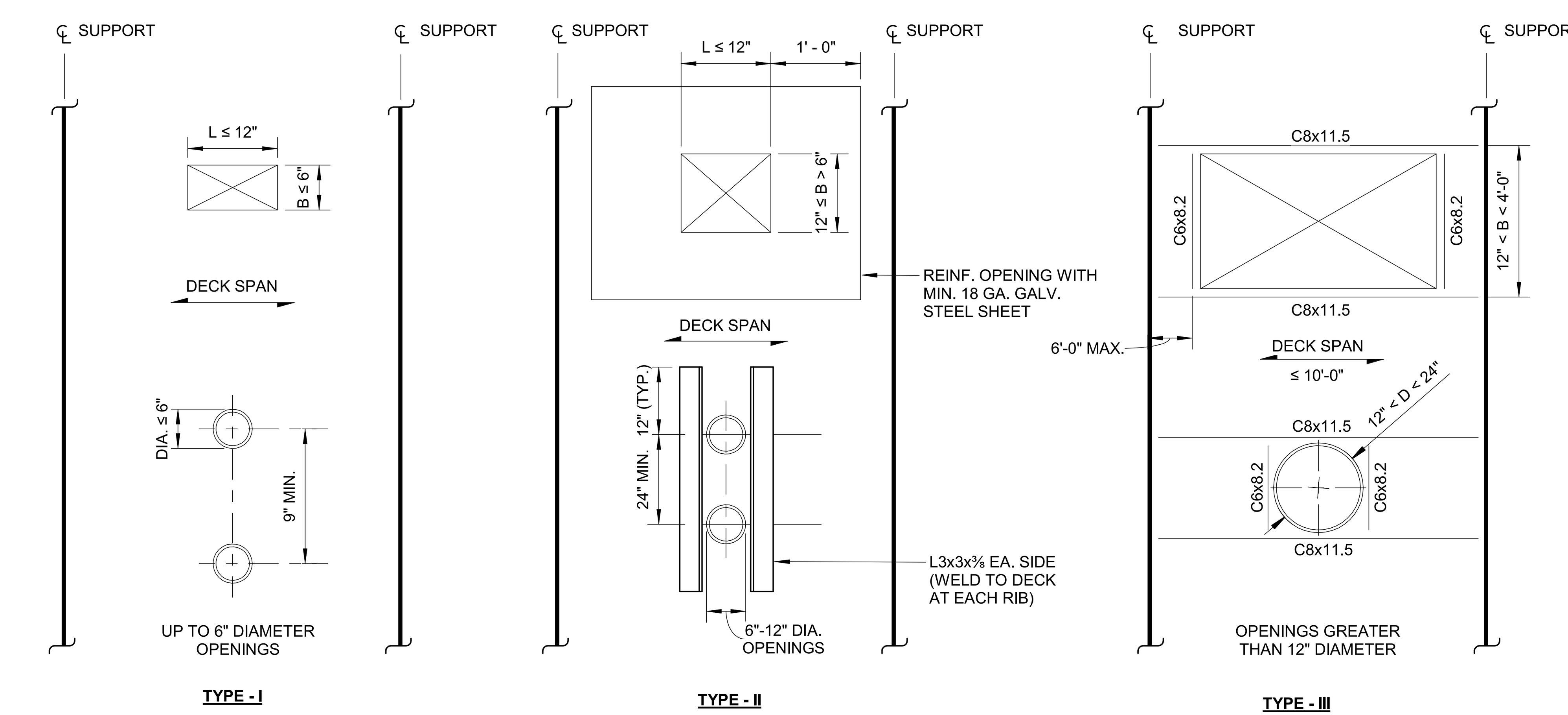
1

NOTE(S):

1. WHERE RIBS ARE IN FULL CONTACT WITH RESTRAINING ANGLES THE PLATE MAY BE OMITTED.

3 MASONRY PARTITION BRACING DETAILS

SCALE: 1" = 1'-0"



NO REINF. REQUIRED FOR OPENINGS. (METAL DECK CONTRACTOR SHALL PROVIDE DECK CLOSURE @ ALL PIPE CHASES.)

REINF. OPENING WITH MIN. 18 GA. GALV STEEL SHEET 12" OR GREATER ON ALL SIDES OF OPENING.
OR:
REINF. OPENING WITH L3x3x¾ EA. SIDE OF OPENING PERPENDICULAR TO DECK SPAN AND EXTENDING 12" BEYOND OPENING EA. END.

NOTE: OPENINGS OUTSIDE THE LIMITS ABOVE SHALL BE FRAMED WITH STRUCTURAL STEEL. OPENING SIZES AND LOCATIONS TO BE SUBMITTED TO THE STRUCTURAL ENGINEER

6 TYPICAL FRAMING DETAILS AT COMPOSITE DECK OPENINGS

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

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Project:

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VILLAGE OF ARDSLEY, NY

220 HEATHERDELL ROAD
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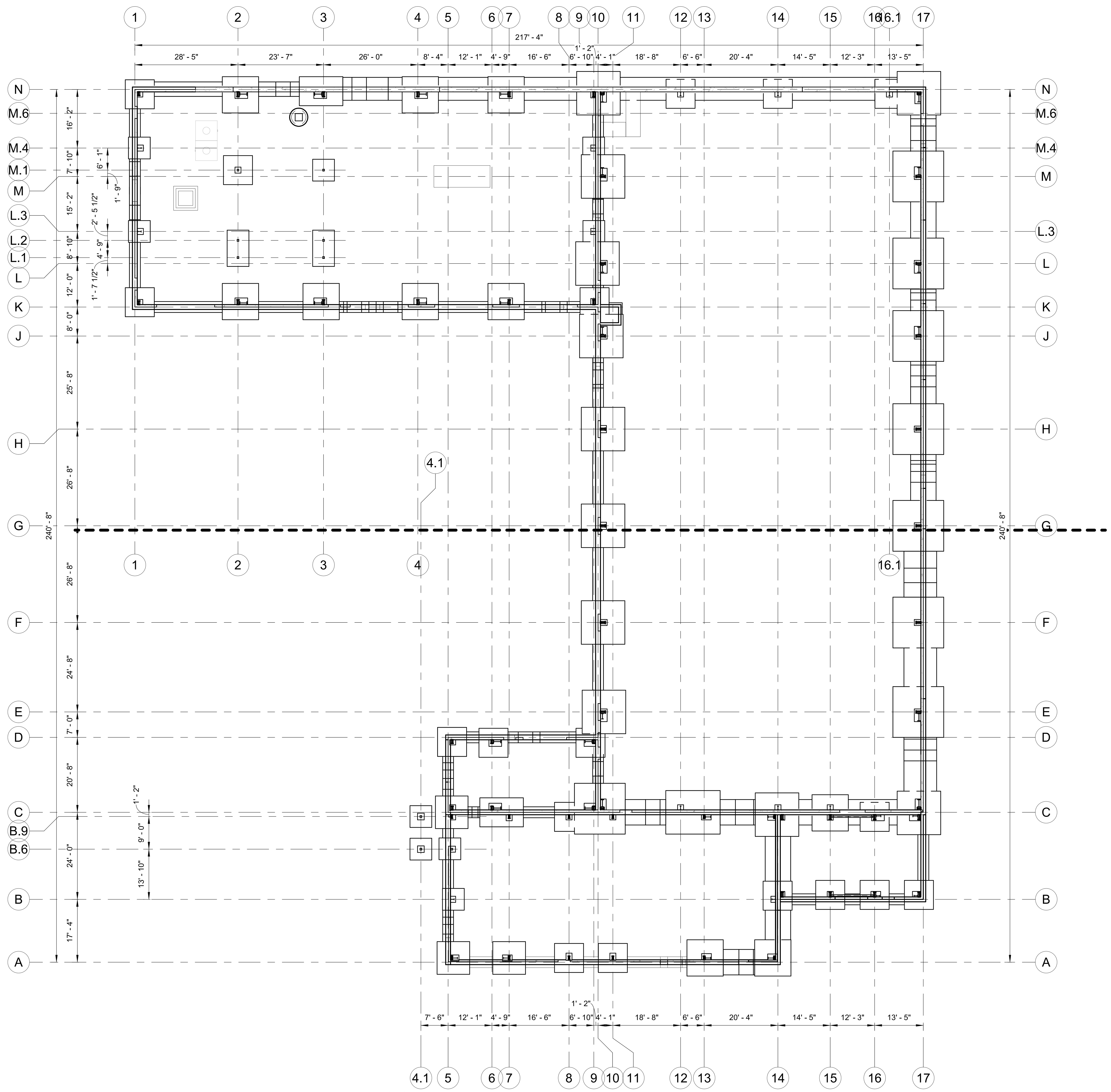
Drawing Title:

TYPICAL DETAILS III

Sheet Number:

S005



NOTES:

1. COORDINATE ALL WORK (INCLUDING FLOOR ELEVATIONS, DIMENSIONS, FINISH DETAILS. PENETRATIONS, ETC.) WITH THE ARCHITECTURAL DRAWINGS.
2. [XX'-XX"] INDICATES BOTTOM OF FOOTING ELEVATION. ALL EXTERIOR FOOTINGS SHALL BE LOCATED A MINIMUM OF 4'-0" BELOW FINISH GRADE.
3. F# - INDICATES NEW CONCRETE FOOTING TYPE. SEE "FOOTING SCHEDULE" ON SHEET S401.
4. P# - INDICATES NEW CONCRETE PIER TYPE. SEE "PIER SCHEDULE" ON SHEET S401.
5. VEHICLE LIFT LOCATIONS SHALL BE COORDINATED WITH EQUIPMENT DRAWINGS AND APPROVED SHOP DRAWINGS.
6. S.F. INDICATES STEP FOOTING. SEE DETAILS ON S002.

1 FOUNDATION PLAN

SCALE: 1/16" = 1'-0"

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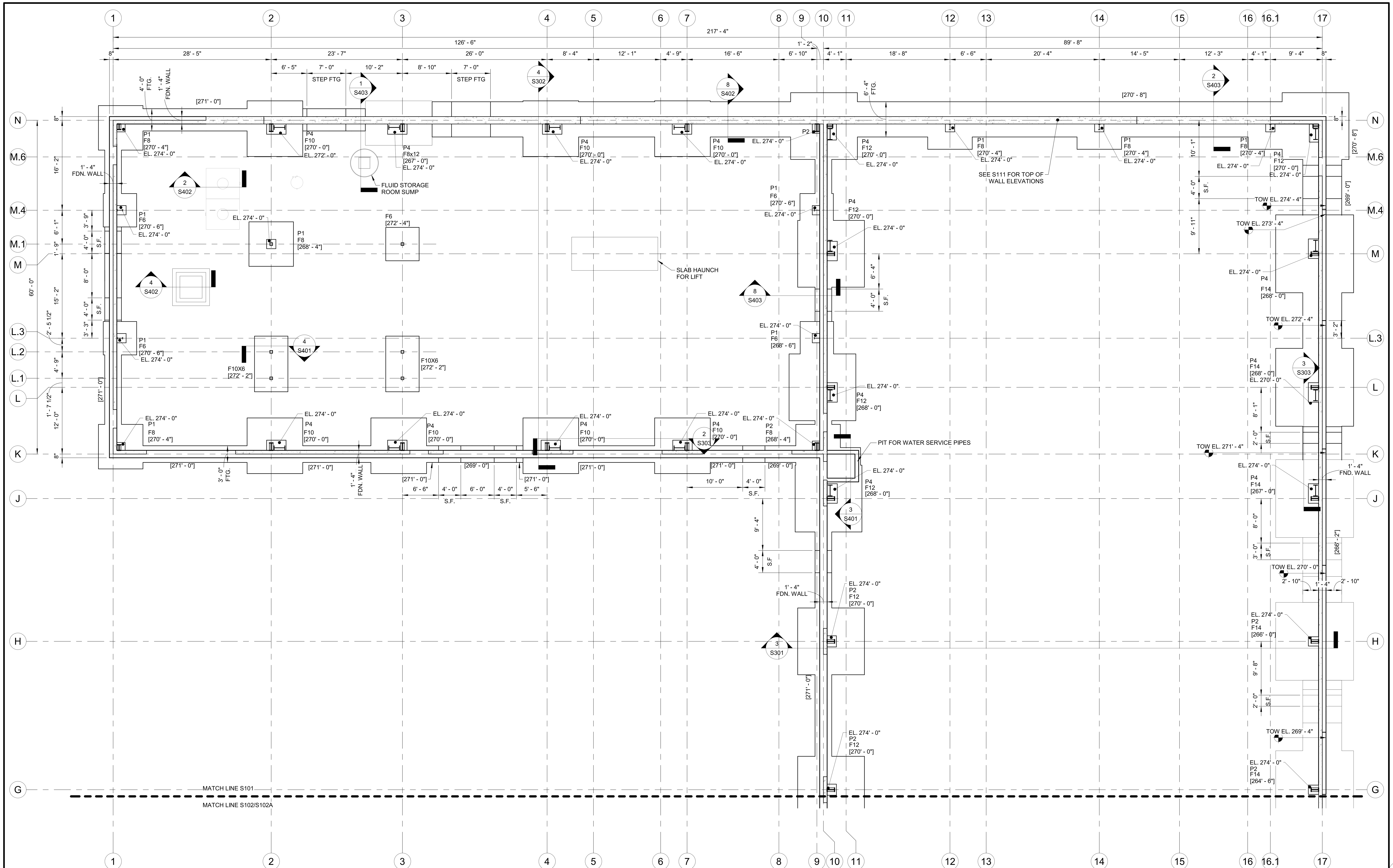
Drawing Title:

OVERALL FOUNDATION PLAN

Sheet Number:

S100



NOTES:
1. COORDINATE ALL WORK (INCLUDING FLOOR ELEVATIONS, DIMENSIONS, FINISH DETAILS, PENETRATIONS, ETC.) WITH THE ARCHITECTURAL DRAWINGS.
2. [XX'-XX"] INDICATES BOTTOM OF FOOTING ELEVATION. ALL EXTERIOR FOOTINGS SHALL BE LOCATED A MINIMUM OF 4'-0" BELOW FINISH GRADE.
3. F# - INDICATES NEW CONCRETE FOOTING TYPE. SEE "FOOTING SCHEDULE" ON SHEET S401.
4. P# - INDICATES NEW CONCRETE PIER TYPE. SEE "PIER SCHEDULE" ON SHEET S401.
5. VEHICLE LIFT LOCATIONS SHALL BE COORDINATED WITH EQUIPMENT DRAWINGS AND APPROVED SHOP DRAWINGS.
6. S.F. INDICATES STEP FOOTING. SEE DETAILS ON S002.

1 SHOPS/STORAGE/ADMIN FOUNDATION PLAN A

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

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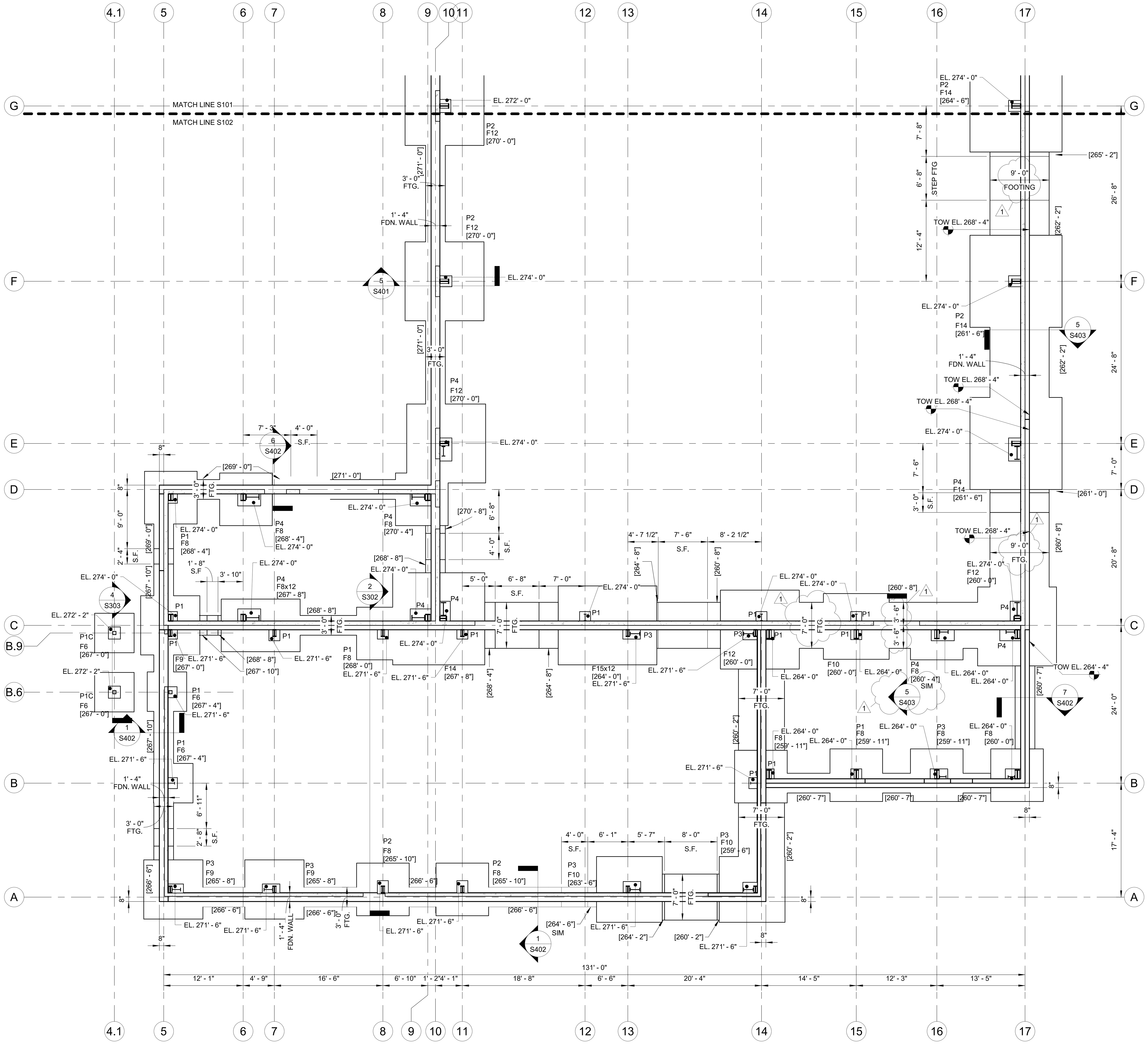
Drawing Title:
FOUNDATION PLAN A

Sheet Number:
S101



NOTES:
1. COORDINATE ALL WORK (INCLUDING FLOOR ELEVATIONS, DIMENSIONS, FINISH DETAILS, PENETRATIONS, ETC.) WITH THE ARCHITECTURAL DRAWINGS.
2. [XX'-XX"] INDICATES BOTTOM OF FOOTING ELEVATION. ALL EXTERIOR FOOTINGS SHALL BE LOCATED A MINIMUM OF 4'-0" BELOW FINISH GRADE.
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4. P# - INDICATES NEW CONCRETE PIER TYPE. SEE "PIER SCHEDULE" ON SHEET S401.
5. VEHICLE LIFT LOCATIONS SHALL BE COORDINATED WITH EQUIPMENT DRAWINGS AND APPROVED SHOP DRAWINGS.
6. S.F. INDICATES STEP FOOTING. SEE DETAILS ON S002.

1 MAINT/STORAGE FOUNDATION PLAN B
SCALE: 1/8" = 1'-0"

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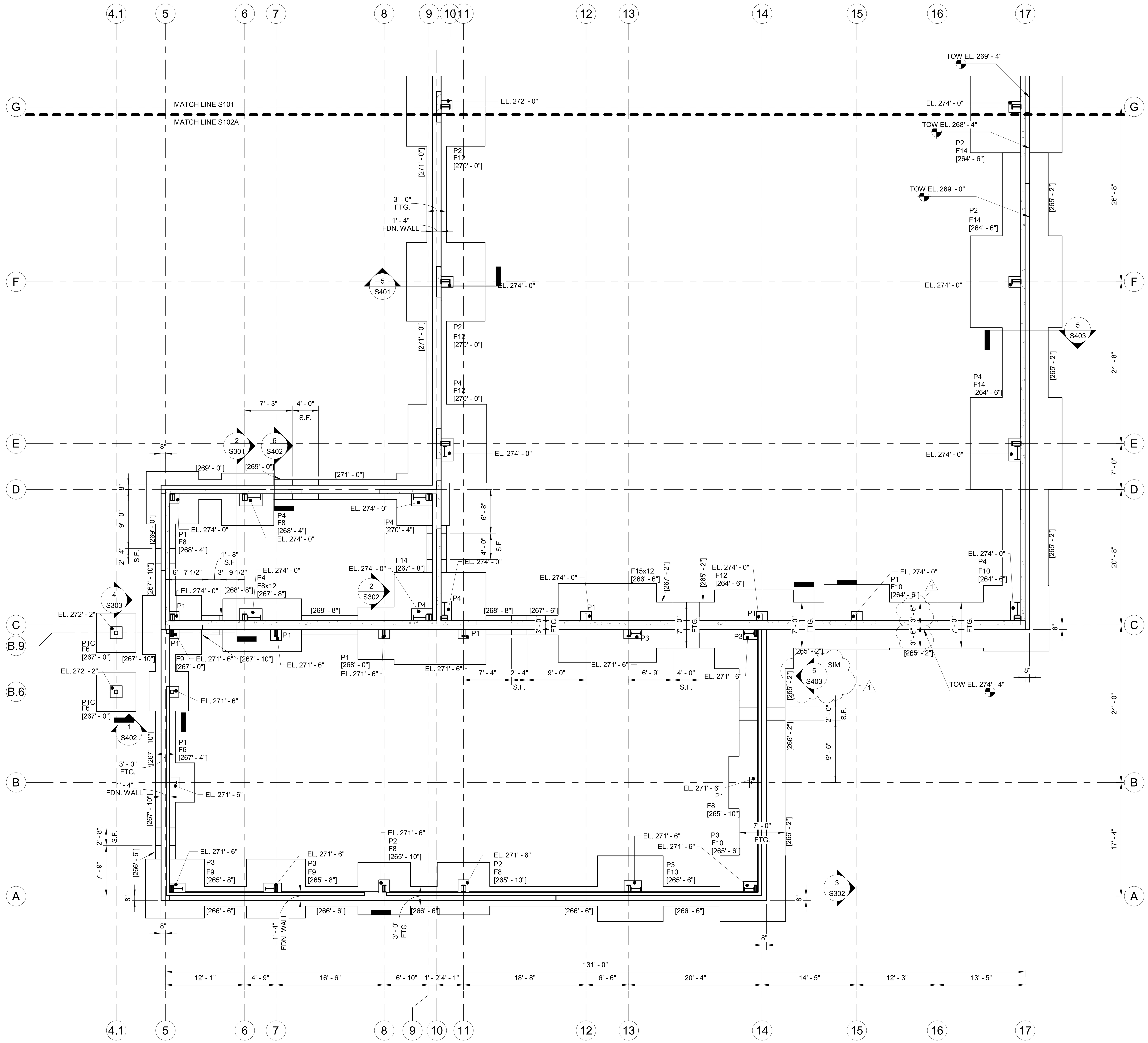
FOUNDATION PLAN B

Sheet Number:
S102



NOTES:
1. COORDINATE ALL WORK (INCLUDING FLOOR ELEVATIONS, DIMENSIONS, FINISH DETAILS, PENETRATIONS, ETC.) WITH THE ARCHITECTURAL DRAWINGS.
2. [XX'-XX"] INDICATES BOTTOM OF FOOTING ELEVATION. ALL EXTERIOR FOOTINGS SHALL BE LOCATED A MINIMUM OF 4'-0" BELOW FINISH GRADE.
3. F# - INDICATES NEW CONCRETE FOOTING TYPE. SEE "FOOTING SCHEDULE" ON SHEET S401.
4. P# - INDICATES NEW CONCRETE PIER TYPE. SEE "PIER SCHEDULE" ON SHEET S401.
5. VEHICLE LIFT LOCATIONS SHALL BE COORDINATED WITH EQUIPMENT DRAWINGS AND APPROVED SHOP DRAWINGS.
6. S.F. INDICATES STEP FOOTING. SEE DETAILS ON S002.

1 MAINT/STORAGE FOUNDATION PLAN B - ALT #3
SCALE: 1/8" = 1'-0"

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FOUNDATION PLAN B - ALT #3

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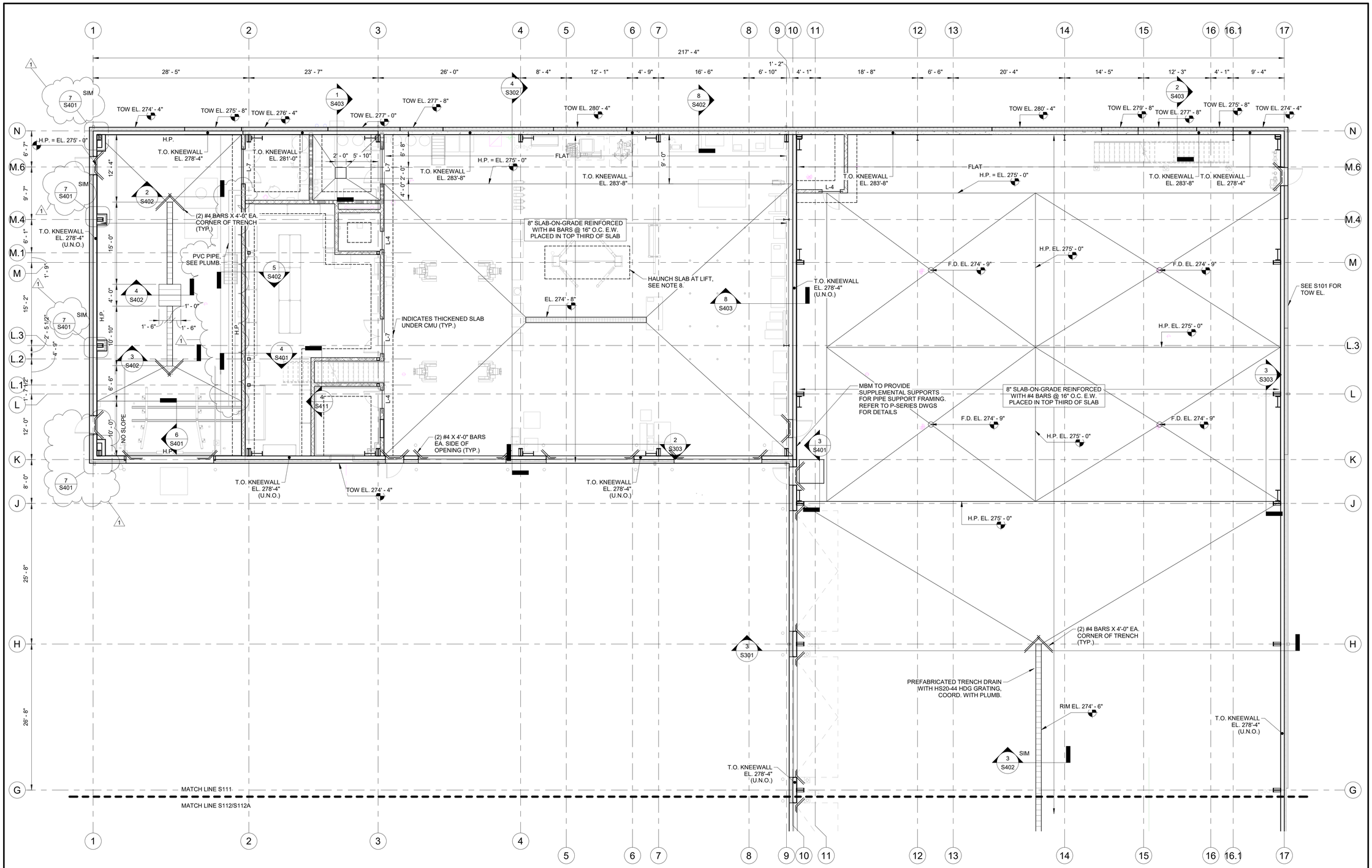
S102A



NOTES:
1. COORDINATE ALL WORK (INCLUDING, BUT NOT LIMITED TO, FLOOR ELEVATIONS, DIMENSIONS, FINISH DETAILS, PENETRATIONS, ETC.) WITH ARCHITECTURE, CIVIL/SITE, HVAC, EQUIPMENT AND PLUMBING DRAWINGS.
2. F.D. INDICATES FLOOR DRAIN LOCATIONS. COORDINATE WITH PLUMBING.
3. H.P. DESIGNATES HIGH POINTS IN SLAB AT ELEVATION INDICATED. SLOPE SLAB FROM H.P. TO DRAINS. MAXIMUM SLOPE TO DRAIN IN VEHICLE MAINTENANCE AND SHOPS BAYS SHALL BE 1/8" PER FOOT.
4. COORDINATE MASONRY WALL LOCATIONS AND WALL OPENINGS (DOORS, VENTS, WINDOWS, ETC.) WITH ARCHITECTURE AND MEP DRAWINGS.
5. LOCATIONS OF CONSTRUCTION JOINTS AND SAW JOINTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. REFER TO GENERAL NOTES FOR SPACING REQUIREMENTS. SUBMIT JOINT LOCATIONS TO THE ENGINEER FOR APPROVAL. REFER TO S003 FOR TYPICAL DETAILS.
6. COORDINATE ALL NON-STRUCTURAL WALLS WITH ARCHITECTURE FOR WALL TYPE AND LOCATIONS.
7. L-# INDICATES CONCRETE MASONRY UNIT (CMU) LINTEL TYPE. REFER TO CMU LINTEL SCHEDULE ON S004 FOR LINTEL INFORMATION. STEEL LINTELS SHALL NOT BE USED IN INTERIOR CONCRETE MASONRY WALLS UNLESS NOTED OTHERWISE ON THE PLANS.
8. COORDINATE LOCATIONS AND DIMENSIONS OF HAUNCHED SLAB WITH APPROVED SHOP DRAWINGS AND LIFT MANUFACTURER. HAUNCH SLAB TO 12" DEPTH. PROVIDE #4 @ 6" BOTH WAYS AT BOTTOM OF SLAB IN THESE LOCATIONS. SLAB REINFORCEMENT TO CONTINUE THROUGH THIS SECTION.

1 MAINT/STORAGE SLAB PLAN A
SCALE: 1/8" = 1'-0"

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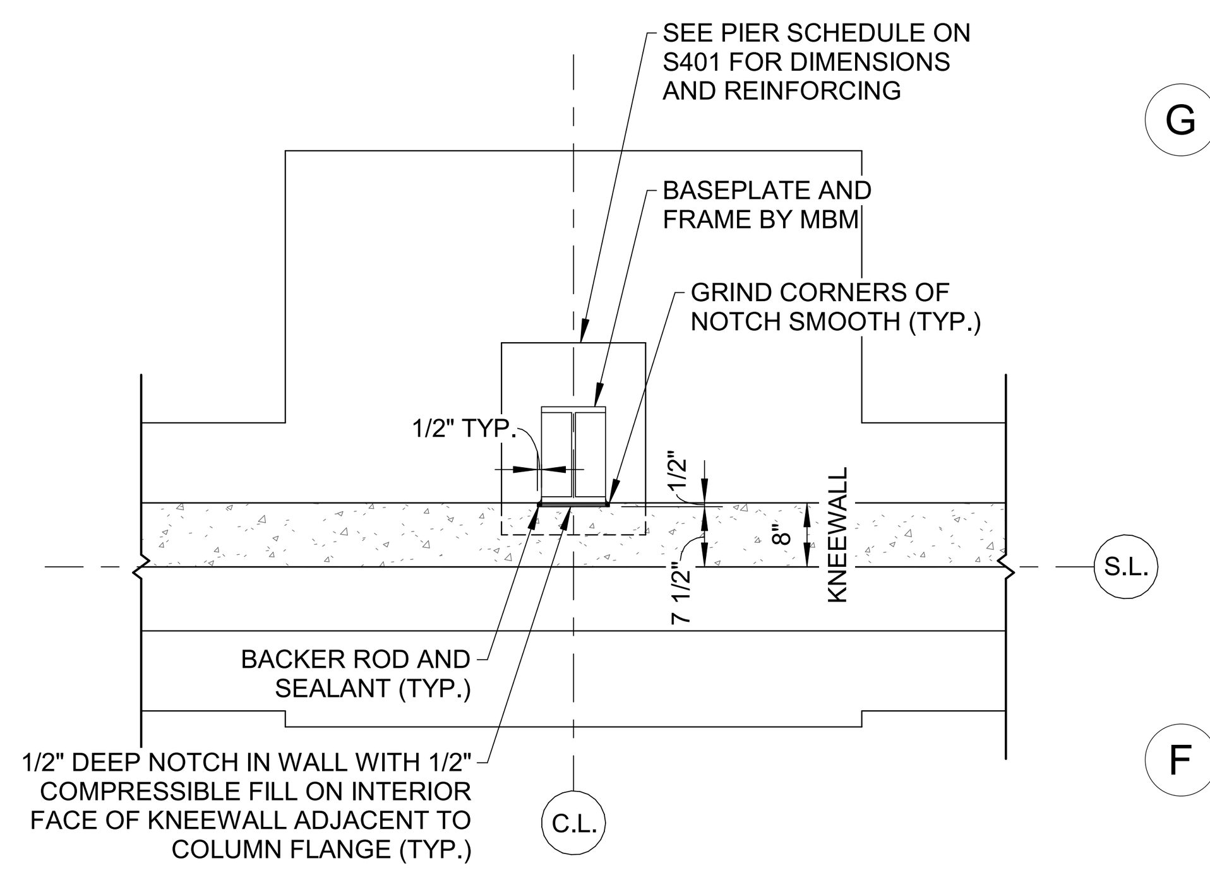
W&S Project No:	ENG20-0501

Drawing Title:
SLAB PLAN A

Sheet Number:
S111

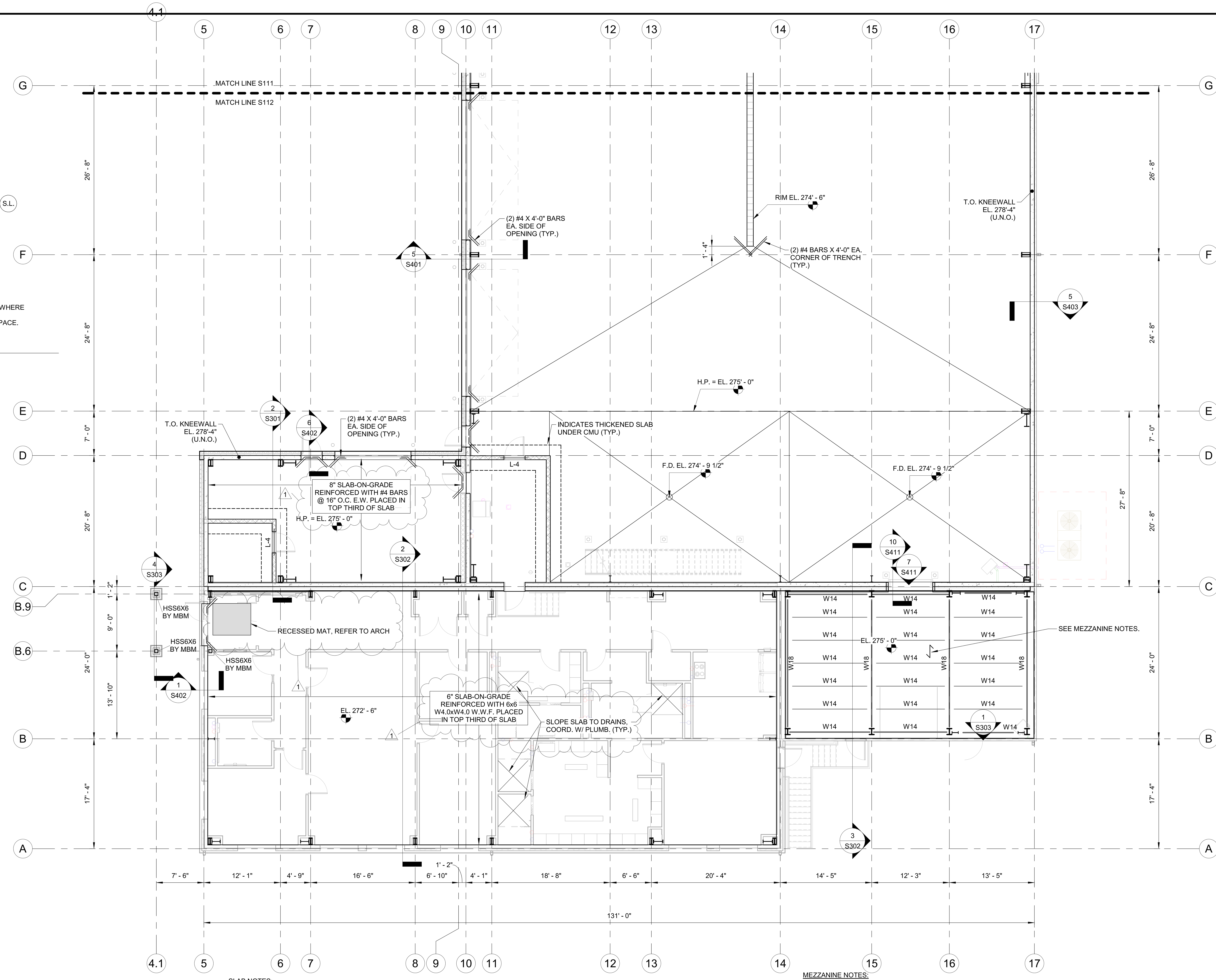


NOTE(S):

1. PROVIDE KNEEWALL NOTCH AND COMPRESSIBLE FILL AT ALL LOCATIONS WHERE THE COLUMN FLANGE IS DIRECTLY ADJACENT TO THE KNEEWALL.
2. PROVIDE UNIFORM NOTCH WIDTH ALONG THE SAME WALL IN THE SAME SPACE.

2 KNEEWALL AT COLUMN

SCALE: 1/2" = 1'-0"



SLAB NOTES:

1. COORDINATE ALL WORK (INCLUDING, BUT NOT LIMITED TO, FLOOR ELEVATIONS, DIMENSIONS, FINISH DETAILS, PENETRATIONS, ETC.) WITH ARCHITECTURE, CIVIL/SITE, HVAC, EQUIPMENT AND PLUMBING DRAWINGS.
2. F.D. INDICATES FLOOR DRAIN LOCATIONS. COORDINATE WITH PLUMBING.
3. H.P. DESIGNATES HIGH POINTS IN SLAB AT ELEVATION INDICATED. SLOPE SLAB FROM H.P. TO DRAINS. MAXIMUM SLOPE TO DRAIN IN VEHICLE MAINTENANCE AND SHOPS BAYS SHALL BE 1/8" PER FOOT.
4. COORDINATE MASONRY WALL LOCATIONS AND WALL OPENINGS (DOORS, VENTS, WINDOWS, ETC.) WITH ARCHITECTURE AND MEP DRAWINGS.
5. LOCATIONS OF CONSTRUCTION JOINTS AND SAW JOINTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. REFER TO GENERAL NOTES FOR SPACING REQUIREMENTS. SUBMIT JOINT LOCATIONS TO THE ENGINEER FOR APPROVAL. REFER TO S003 FOR TYPICAL DETAILS.
6. COORDINATE ALL NON-STRUCTURAL WALLS WITH ARCHITECTURE FOR WALL TYPE AND LOCATIONS.
7. L-# INDICATES CONCRETE MASONRY UNIT (CMU) LINTEL TYPE. REFER TO CMU LINTEL SCHEDULE ON S004 FOR LINTEL INFORMATION. STEEL LINTELS SHALL NOT BE USED IN INTERIOR CONCRETE MASONRY WALLS UNLESS NOTED OTHERWISE ON THE PLANS.

MEZZANINE NOTES:

1. INDICATES SPAN DIRECTION OF 3" N.W. CONCRETE ON 2" STEEL DECK (TOTAL THICKNESS 5").
2. SEE S002 FOR DESIGN LOADS.
3. STEEL DECK POUR STOPS SHALL BE 3/8" BENT PLATE AT GUARDRAILS AND STAIR INTERFACES, UNLESS NOTED OTHERWISE.
4. STEEL MEZZANINE FRAMING SHOWN SCHEMATICALLY FOR BIDDING PURPOSES. MEZZANINE FRAMING SHALL BE HOT ROLLED WIDE FLANGE AND HSS SECTIONS, DESIGNED, FABRICATED AND INSTALLED BY THE METAL BUILDING MANUFACTURER (MBM). FLOOR SYSTEMS SHALL BE DESIGNED AS A COMPOSITE FLOOR SYSTEM WITH 3-1/2" WELDED METAL STUDS.
5. CONSIDER NOMINAL BEAM DEPTHS SHOWN (E.G. W12 = 12") TO BE MAXIMUM DEPTHS. VARY WEIGHTS AS REQUIRED BY DESIGN. COORDINATE WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND EQUIPMENT DRAWINGS.
6. METAL BUILDING MANUFACTURER TO FINALIZE BRACING LOCATIONS AND SUBMIT TO ARCHITECTS/ENGINEER FOR REVIEW.
7. COORDINATE/PROVIDE OPENINGS IN MEZZANINE SLAB-ON-DECK FOR MECH./ELEC. /PLUMB. FIRE PROTECTION/ COMMUNICATION. REFER TO DETAIL 6 ON S005.

1 SHOPS/STORAGE/ADMIN SLAB PLAN B

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

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Project:
ARDSLEY DEPARTMENT OF PUBLIC WORKS

VILLAGE OF ARDSLEY NEW YORK 1896

VILLAGE OF ARDSLEY, NY

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RHINEBECK ARCHITECTURE

Seal:
STATE OF NEW YORK
JEFFREY FRASER BUDROW
083680
PROFESSIONAL ENGINEER

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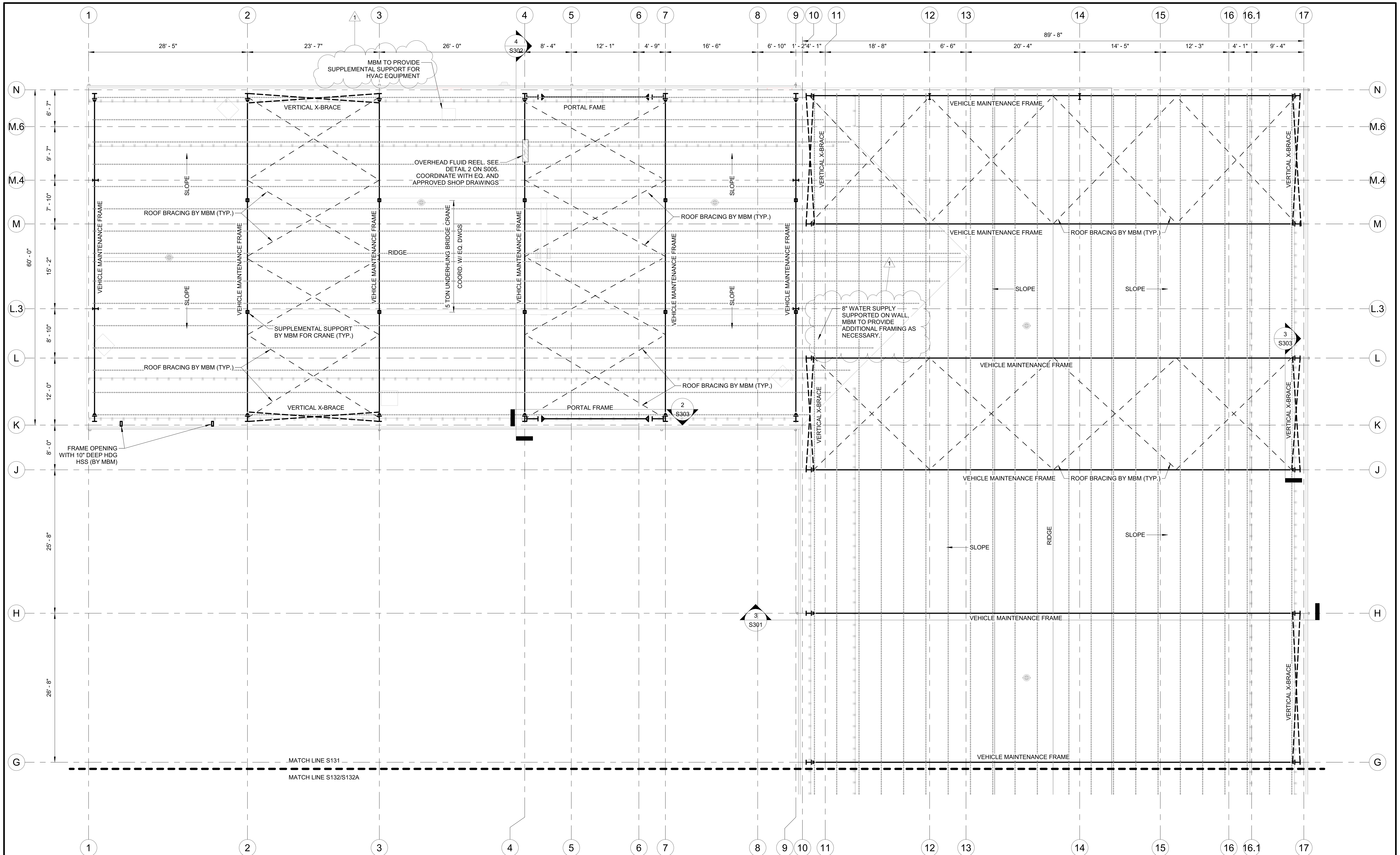
SLAB PLAN B

Sheet Number:

S112



NOTES:

1. >< INDICATES PROPOSED BRACING LOCATIONS. MBM TO SUBMIT FINAL BRACING LOCATIONS TO ENGINEER FOR REVIEW.
2. MBM TO PROVIDE ALL SUPPLEMENTAL SUPPORT/FRAMING FOR ROOF OPENINGS, ROOFTOP EQUIPMENT, ROOF SUSPENDED EQUIPMENT AND ROOF PENETRATIONS AS REQUIRED. NOT ALL SUPPLEMENTAL SUPPORT/FRAMING SHOWN ON DRAWINGS. COORDINATE QUANTITIES, WEIGHTS, AND LOCATIONS WITH ARCHITECTURAL, HVAC, PLUMBING, MECHANICAL, ELECTRICAL AND EQUIPMENT DRAWINGS.
3. ROOF PURLINS ARE SHOWN IN SCHEMATIC ONLY. QUANTITY, SPACING, LOCATIONS AND DIMENSIONS OF ROOF PURLINS SHALL BE DESIGNED AND FURNISHED BY METAL BUILDING MANUFACTURER.
4. ALL STEEL HARDWARE LOCATED IN THE WASH BAY AND CANOPY SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM 125, ASTM 153, AND ASTM A663 G185 (AS APPLICABLE).
5. MBM TO PROVIDE FRAMING MEMBERS TO SUPPORT EXTERIOR COLD-FORMED METAL FRAMING.

1 ROOF FRAMING PLAN A

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

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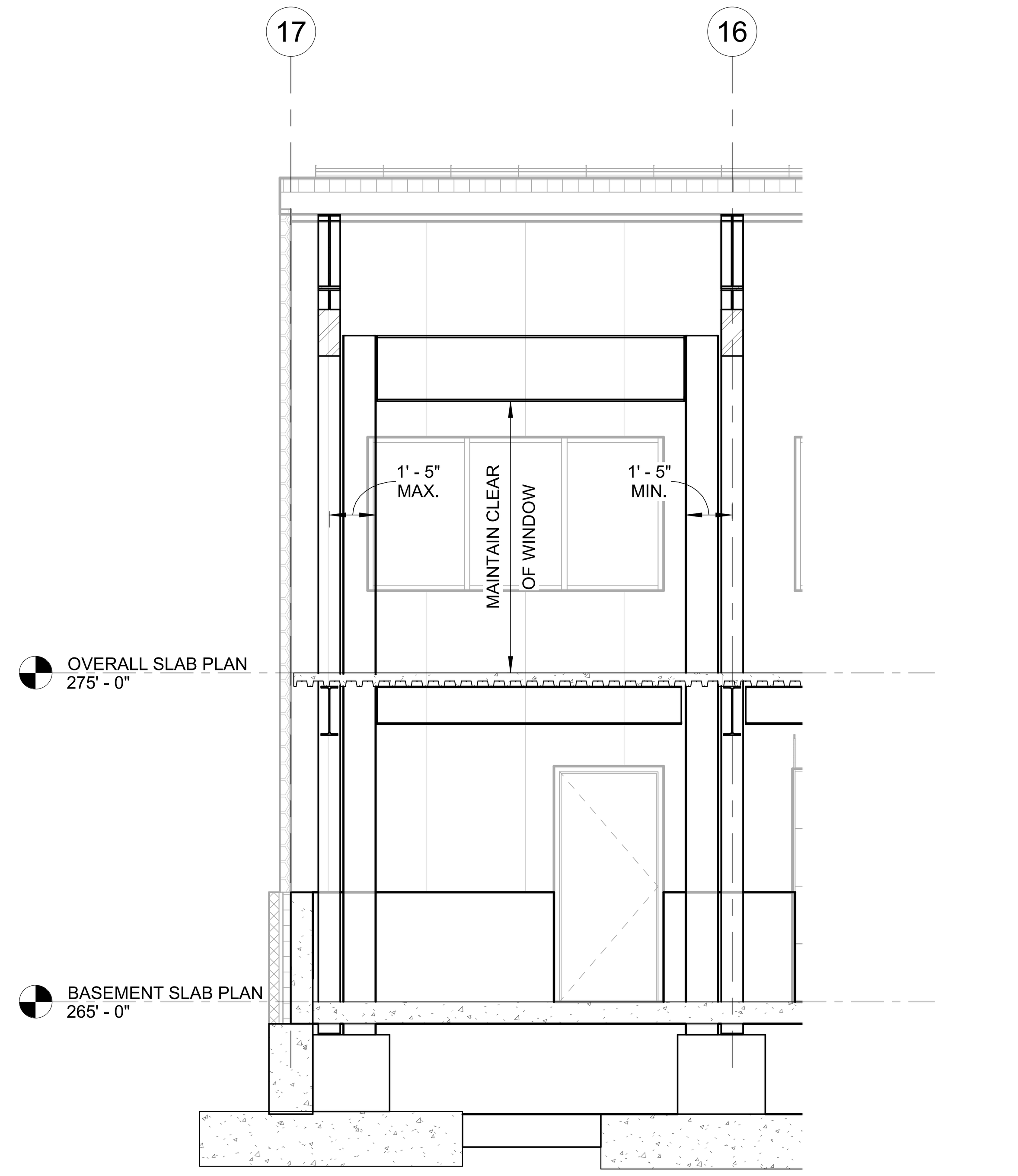
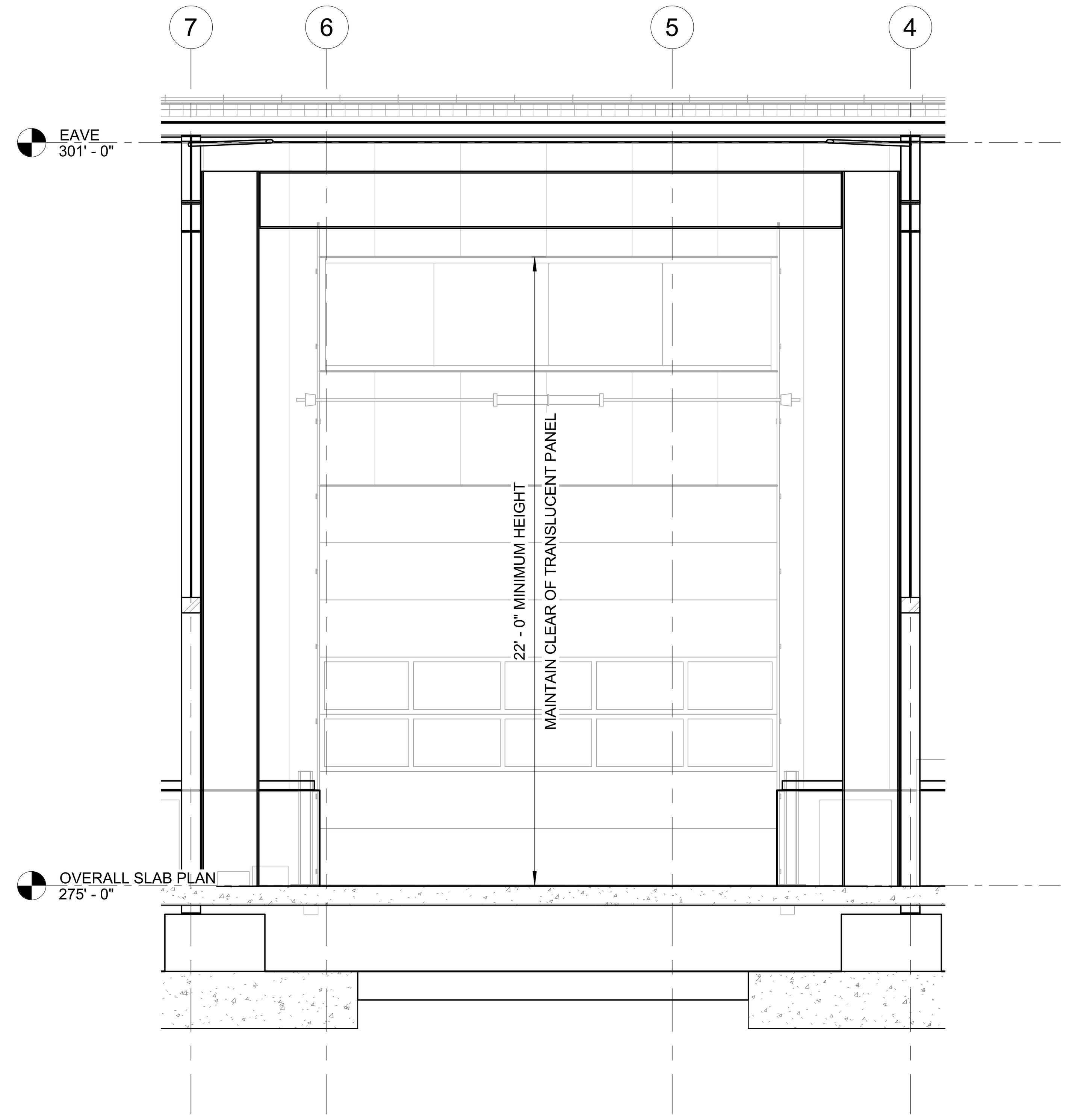
ROOF FRAMING PLAN A

Sheet Number:

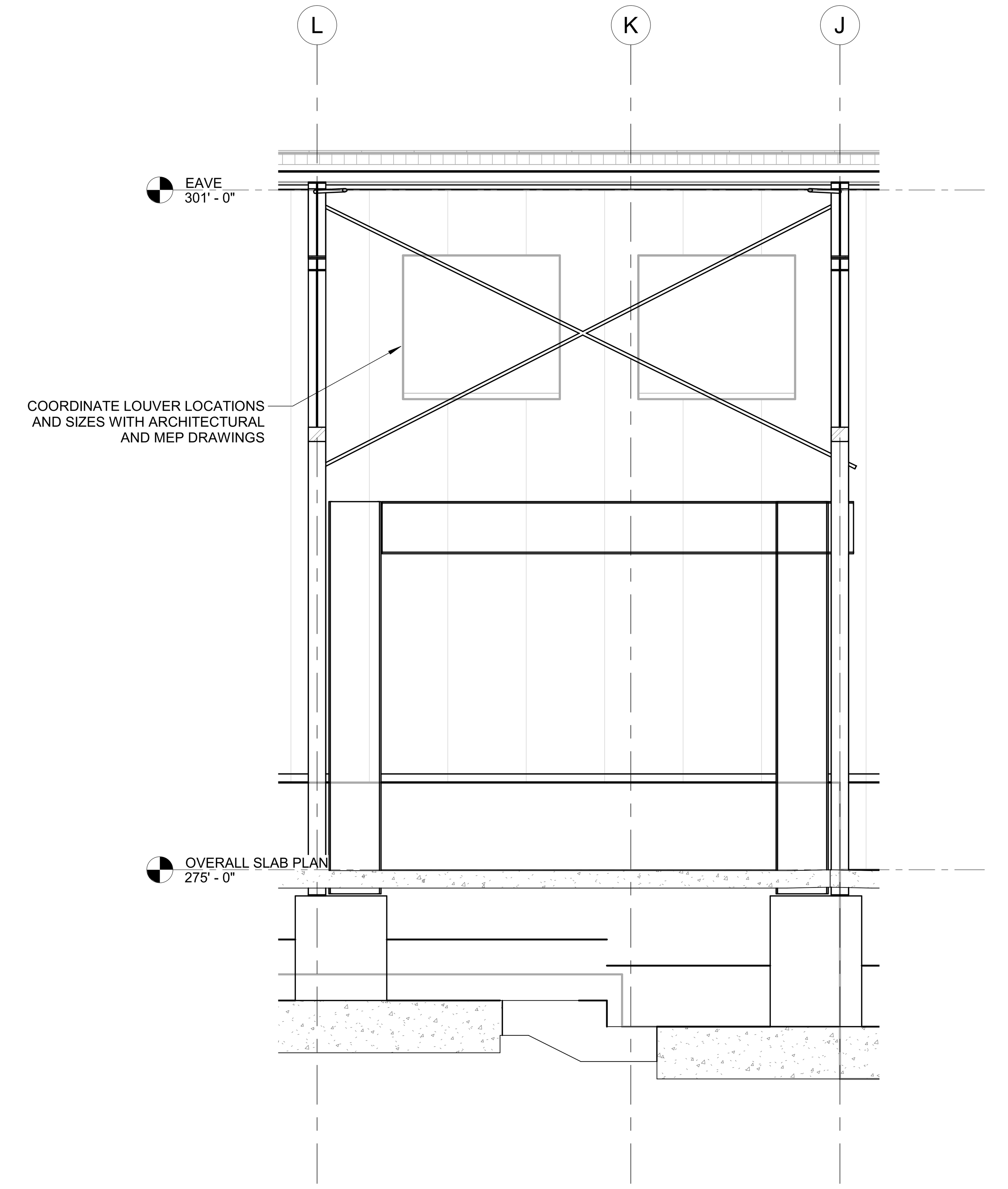
S131



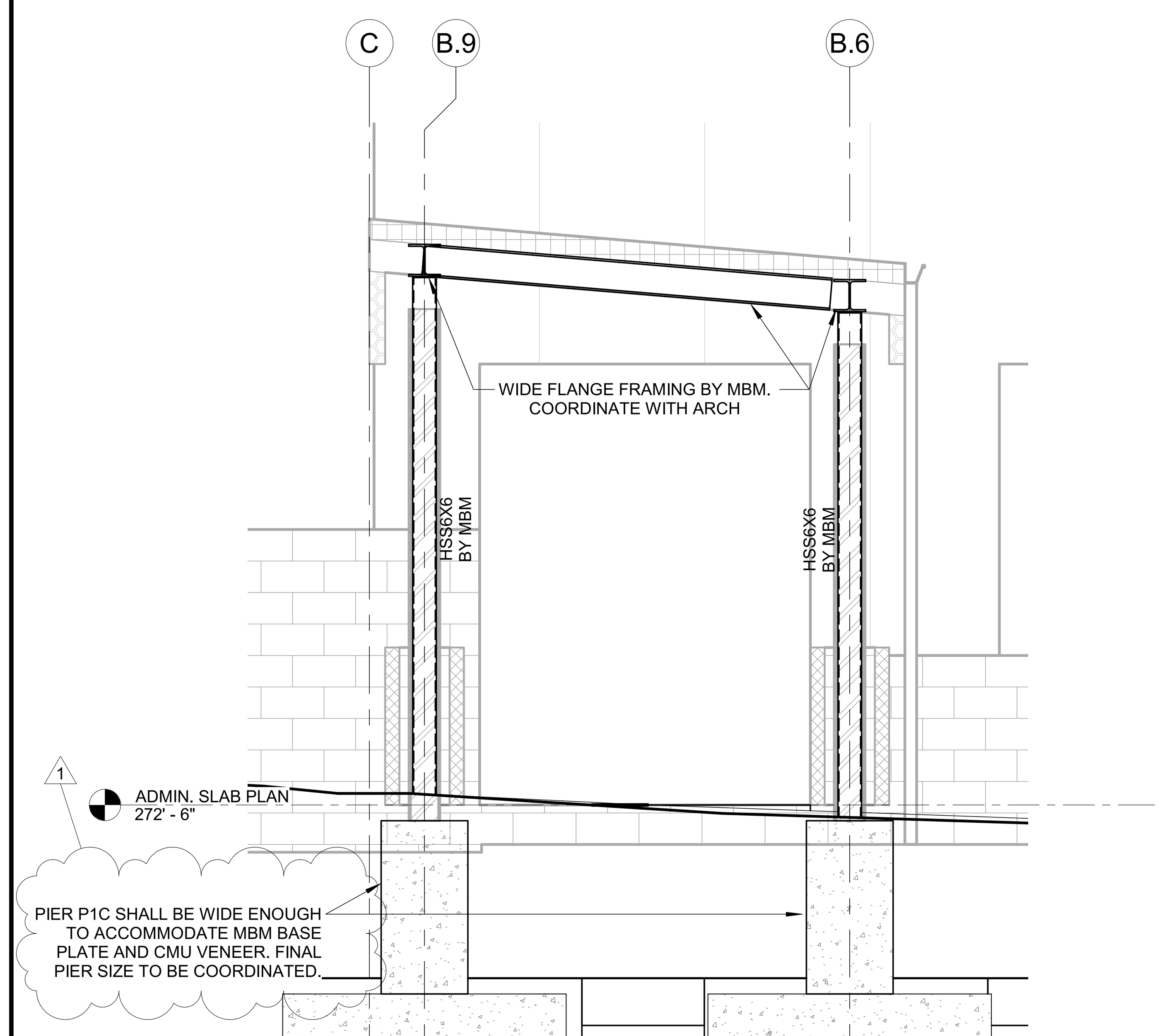
1 PORTAL FRAME ELEVATION @ SHOP/STORAGE
SCALE: 1/4" = 1'-0"



2 PORTAL FRAME ELEVATION @ VEHICLE MAINT.
SCALE: 1/4" = 1'-0"



3 TYP. PORTAL FRAME ELEVATION @ VEHICLE STORAGE
SCALE: 1/4" = 1'-0"



1

NOTE:
1. ALL STEEL HARDWARE LOCATED IN THE VESTIBULE SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM 125, ASTM 153, AND ASTM A663 G185 (AS APPLICABLE).
2. PIER REINFORCING NOT SHOWN.

4 SECTION I @ VESTIBULE
SCALE: 3/8" = 1'-0"

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Drawing Title:

TYPICAL FRAME ELEVATIONS II

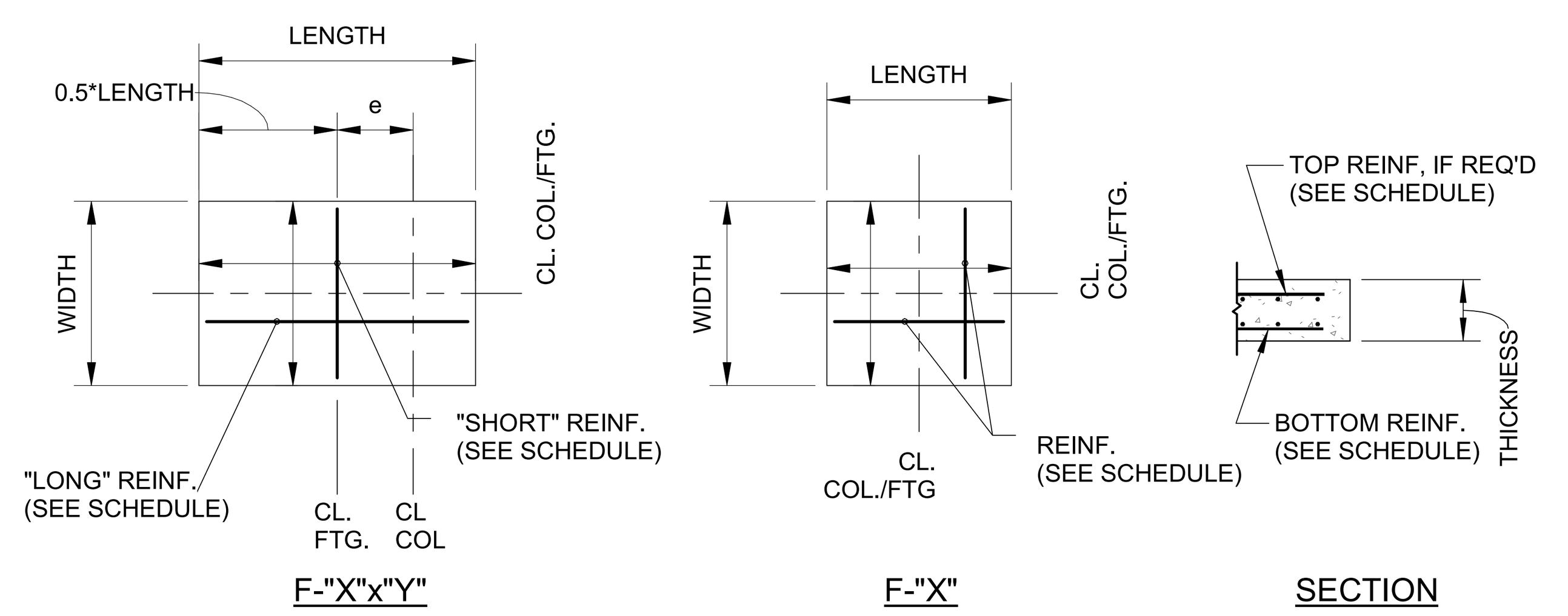
Sheet Number:

S303

FOOTING SCHEDULE						
MARK	DIMENSIONS			REINFORCEMENT		TOP REINFORCEMENT
	WIDTH [FT.]	LENGTH [FT.]	THICKNESS [IN.]	LONG WAY	SHORT WAY	
F6	6.0	6.0	18	(7) #5	(7) #5	#5 @ 12" O.C.
F10X6	6.0	10.0	20	(7) #5	(11) #8	#5 @ 12" O.C.
F8	8.0	8.0	20	(9) #7	(9) #7	#5 @ 12" O.C.
F9	9.0	9.0	22	(10) #7	(10) #7	#5 @ 12" O.C.
F10	10.0	10.0	24	(11) #8	(11) #8	#5 @ 12" O.C.
F8x12	12.0	8.0	24	(9) #7	(13) #8	#5 @ 12" O.C.
F12	12.0	12.0	24	(13) #8	(13) #8	#5 @ 12" O.C.
F14	14.0	14.0	24	(15) #8	(15) #8	#5 @ 12" O.C.
F15x12	15.0	12.0	24	(13) #8	(16) #8	#5 @ 12" O.C.

FOOTING NOTE(S):

1. SQUARE FOOTINGS SHALL BE CENTERED BELOW COLUMNS U.N.O.
2. RECTANGULAR FOOTINGS SHALL BE ORIENTED AS SHOWN IN PLAN, U.N.O.
3. FOOTINGS SIZES ARE FOR BID PURPOSES ONLY, SIZES WILL BE VERIFIED UPON APPROVAL OF METAL BUILDING SHOP DRAWINGS. FOOTINGS SHALL NOT BE CAST UNTIL METAL BUILDING SHOP DRAWINGS ARE APPROVED AND FOOTINGS SIZES ARE VERIFIED BY THE ENGINEER.
4. WHERE FOOTING INTERSECT IN PLAN, FOOTING SHALL BE CAST INTEGRAL WITH THE REINFORCING AS SPECIFIED IN THE TABLE ABOVE.

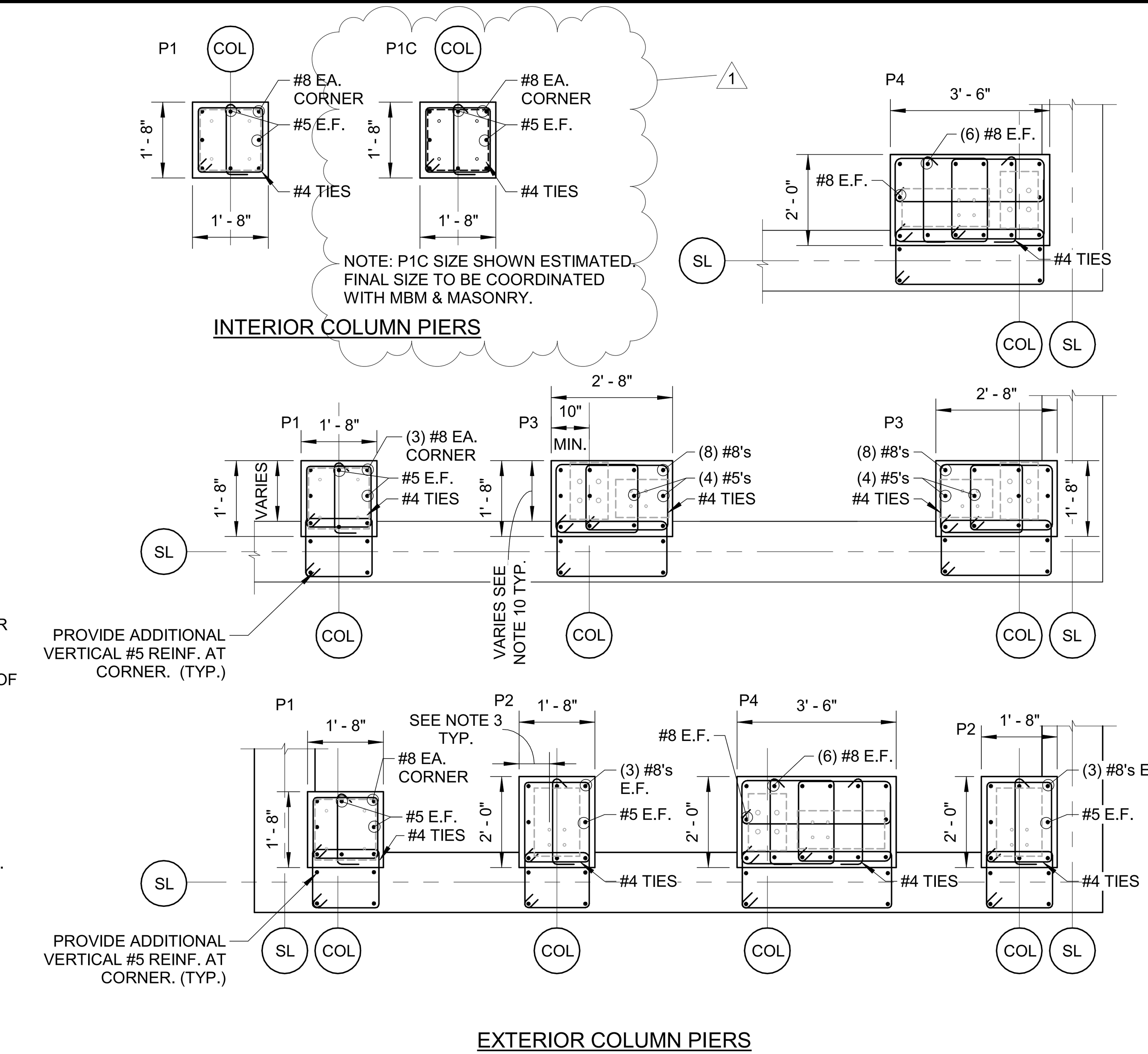


1 FOOTING SCHEDULE (METAL BUILDING)
SCALE: 1/4" = 1'-0"

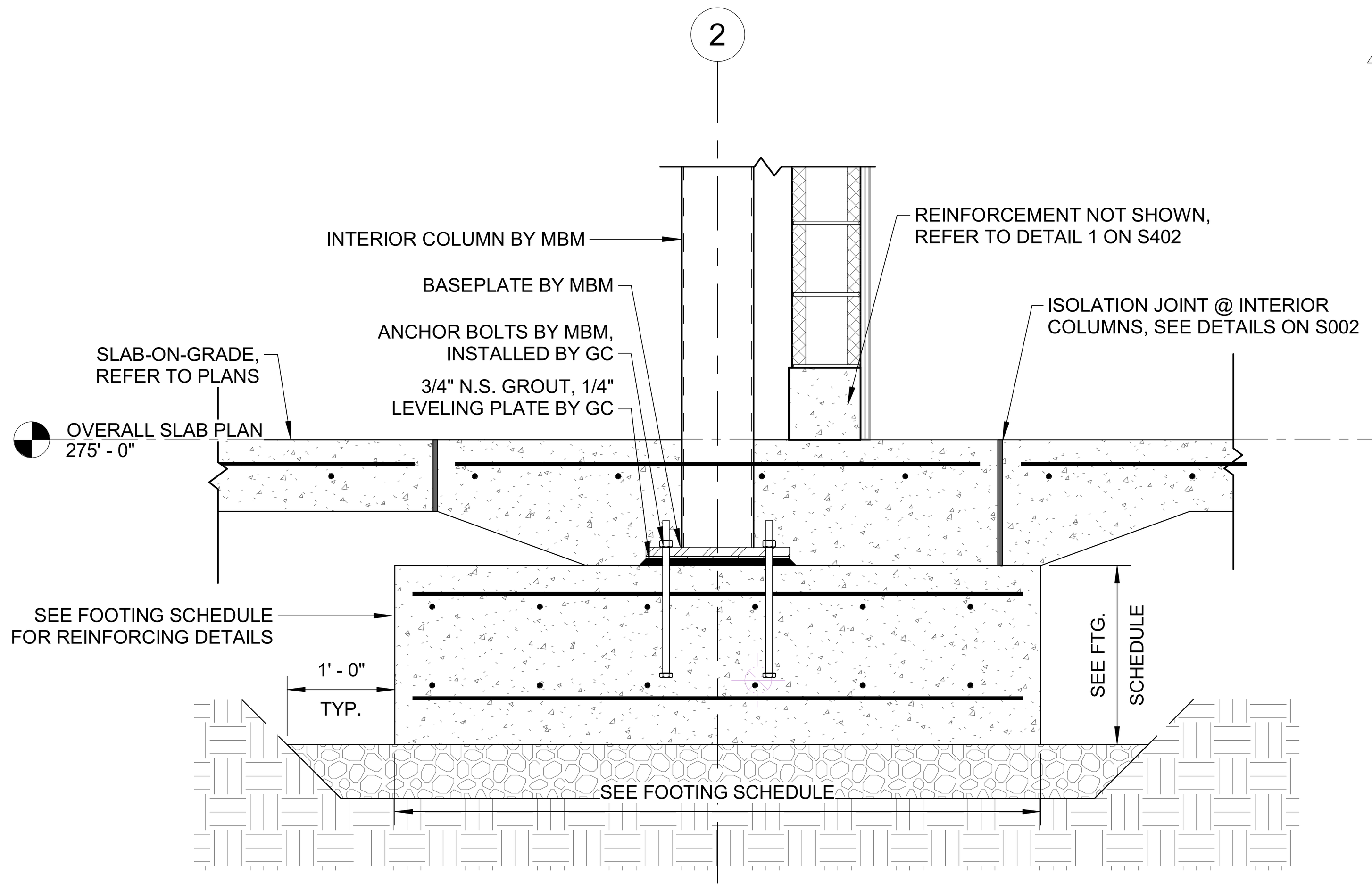
PIER SCHEDULE						
MARK	DIMENSIONS		T.O. PIER ELEVATION	REINFORCEMENT		COMMENTS
	WIDTH [IN.]	LENGTH [IN.]		VERTICAL	TIES	
P1	20	20	-1' - 0"	(4) #8'S, (4) #5'S	#4 @ 12" O.C.	(6) #4 TIES IN TOP 12"
P2	20	24	-1' - 0"	(6) #8'S, (2) #5'S	#4 @ 12" O.C.	(6) #4 TIES IN TOP 12"
P3	20	32	-1' - 0"	(8) #8'S, (4) #5'S	#4 @ 12" O.C.	(6) #4 TIES IN TOP 12"
P4	24	42	-1' - 0"	(14) #8'S	#4 @ 12" O.C.	(6) #4 TIES IN TOP 12"

NOTE(S):

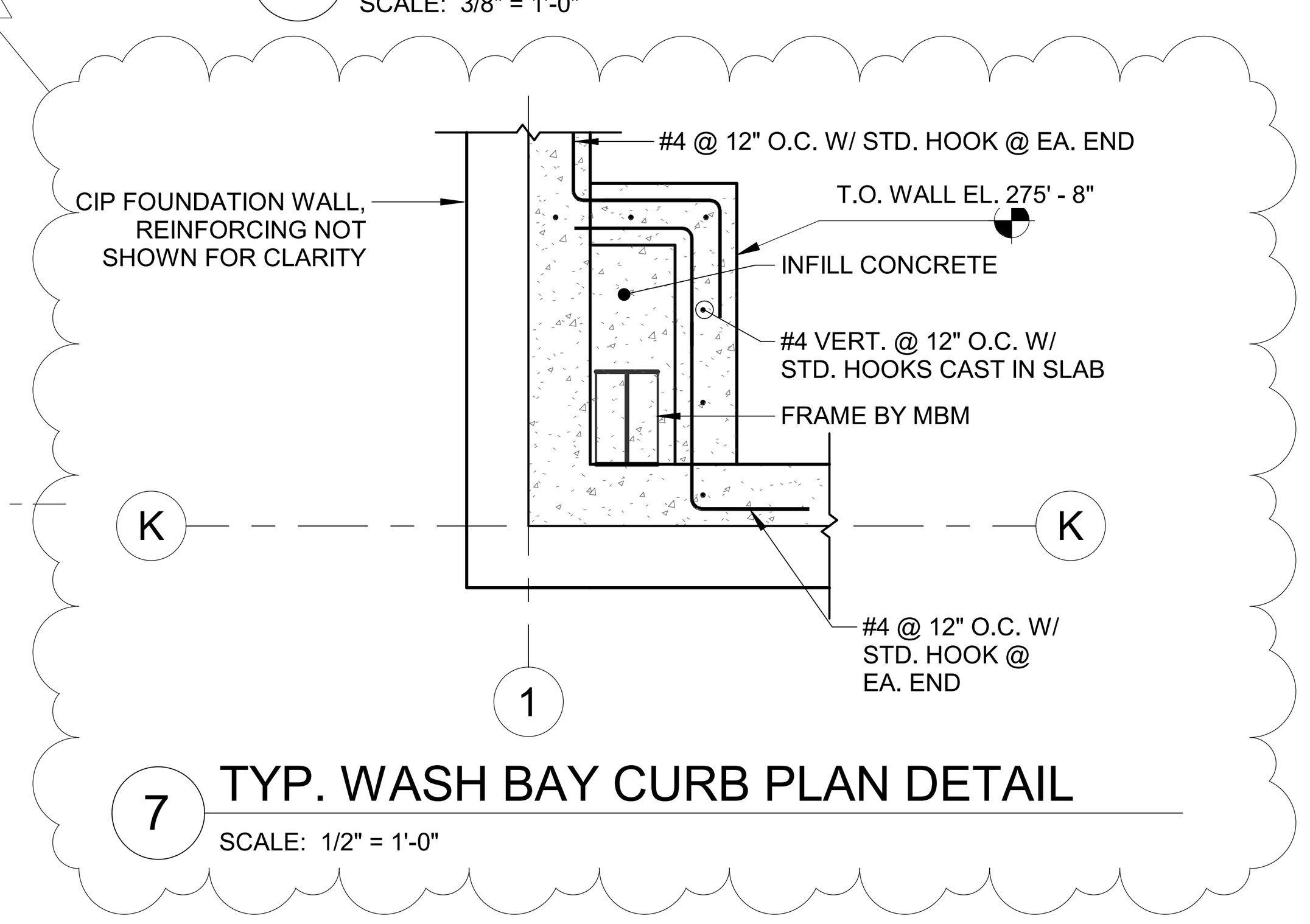
1. FINAL LOCATIONS OF PIERS SHALL BE COORDINATED WITH APPROVED METAL BUILDING SHOP DRAWINGS. PIERS SHALL BE CENTERED BELOW COLUMN SECTION AT THE BASE PLATE LEVEL.
2. METAL BUILDING BASE PLATES SHALL BE DESIGNED TO FIT ON AND WITHIN PIER DIMENSIONS SHOWN ABOVE. ANY PIER MODIFICATIONS WILL BE AT COST OF THE CONTRACTOR. THE CONTRACTOR SHALL IDENTIFY ANY PIERS REQUIRING MODIFICATIONS AND SUBMIT TO THE ENGINEER FOR REVIEW.
3. ANCHOR RODS SHALL RESIDE WITHIN REINFORCING TIES AND SHALL BE A MINIMUM OF 7xBOLT DIAMETER FROM EDGE OF PILASTER / FOUNDATION. FINAL ANCHOR BOLT LAYOUT BY METAL BUILDING MANUFACTURER. SEE ANCHOR BOLT SCHEDULE ON S003 FOR REQUIRED EMBEDMENT DEPTHS. CONTRACTOR/MBM SHALL IDENTIFY PIERS WHERE THIS CRITERIA IS NOT MET.
4. PROVIDE INVERTED #6 U-BARS TO MATCH VERTICAL REINFORCING. VERTICAL LEG TO BE 36" LONG OR FULL DEPTH OF PIER, WHICHEVER IS LESS.
5. WALL REINFORCING SHALL PASS CONTINUOUSLY THROUGH THE PIER.
6. TIES SHALL BE #4 @ 12" VERTICALLY WITH 6 TIES LOCATED WITHIN THE TOP 12" ON THE PIER, UNLESS OTHERWISE NOTED.
7. PEDESTALS ARE DEFINED AS SET INTEGRAL WITH A WALL, PIERS ARE PEDESTALS WHICH STAND ALONE.
8. PIERS SUPPORTING PORTAL FRAMES ARE TURNED 90 DEGREES IN PLAN, SEE PLAN FOR REQUIRED ORIENTATIONS.
9. MEZZANINE COLUMNS MAY BE OFFSET FROM THE FOUNDATION WALL AS APPROVED BY THE ENGINEER TO ACCOMMODATE FRAMING REQUIREMENTS.
10. CENTER PIER BENEATH BASEPLATE. PIER OVERLAP WITH FOUNDATION WALL MAY VARY BASED ON BASEPLATE LOCATION. PIER REINFORCING MUST BE CENTERED UNDER BASEPLATE AND MEET COVER REQUIREMENTS ON S001.
11. T.O. PIER ELEVATION INDICATES RELATIVE ELEVATION TO TOP OF CONCRETE SLAB.



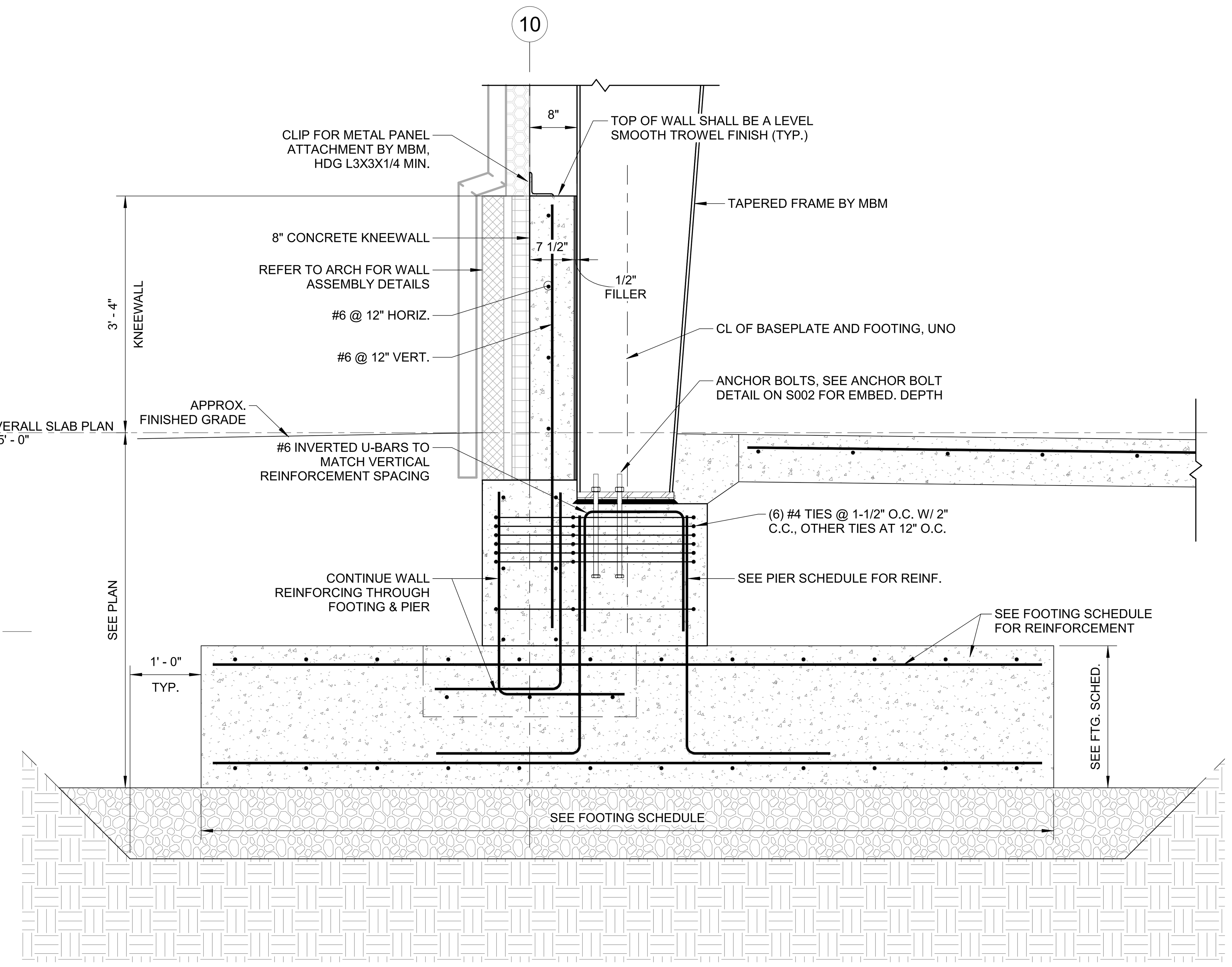
2 PIER DETAIL (METAL BUILDING)
SCALE: 3/8" = 1'-0"



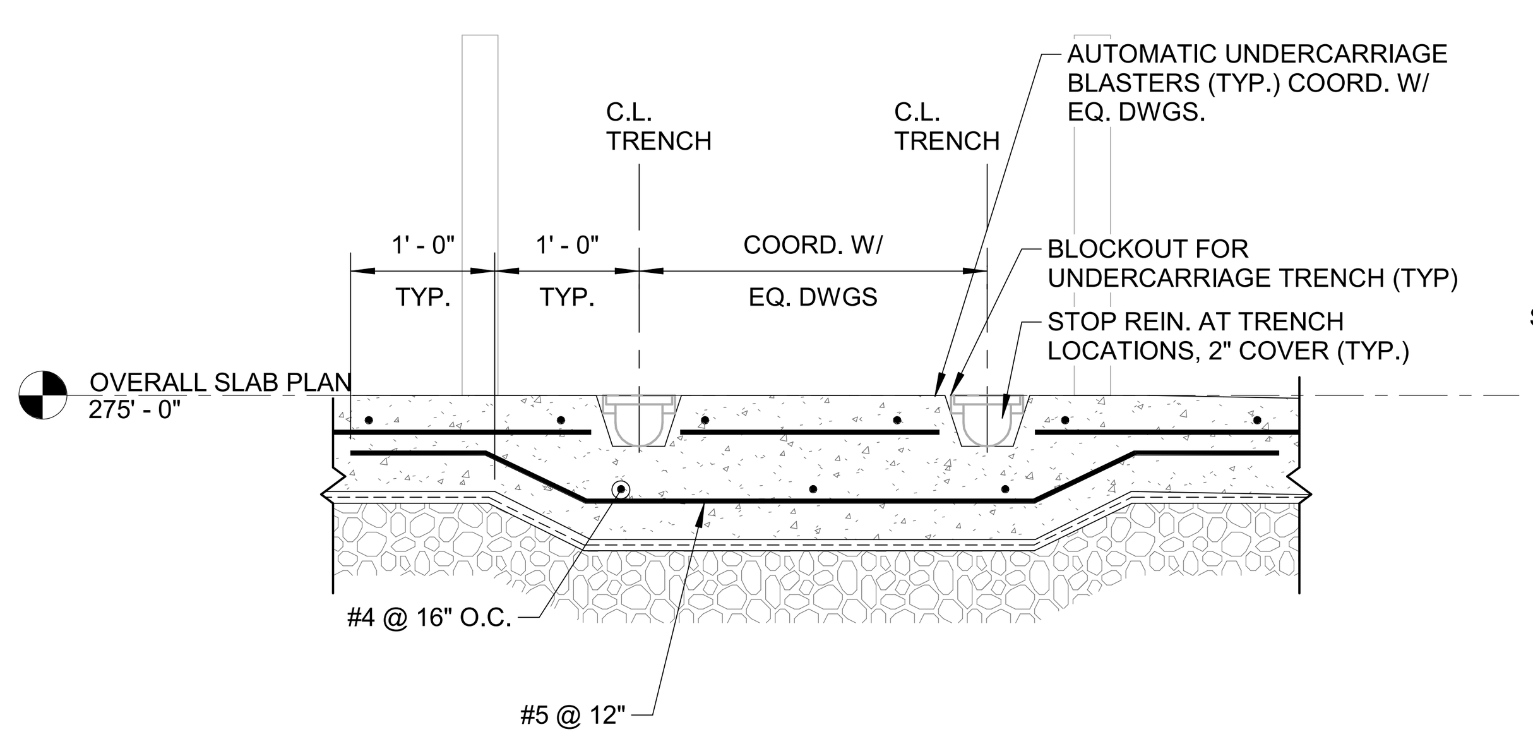
4 SECTION @ INTERIOR ISOLATED FOOTING
SCALE: 3/4" = 1'-0"



7 TYP. WASH BAY CURB PLAN DETAIL
SCALE: 1/2" = 1'-0"

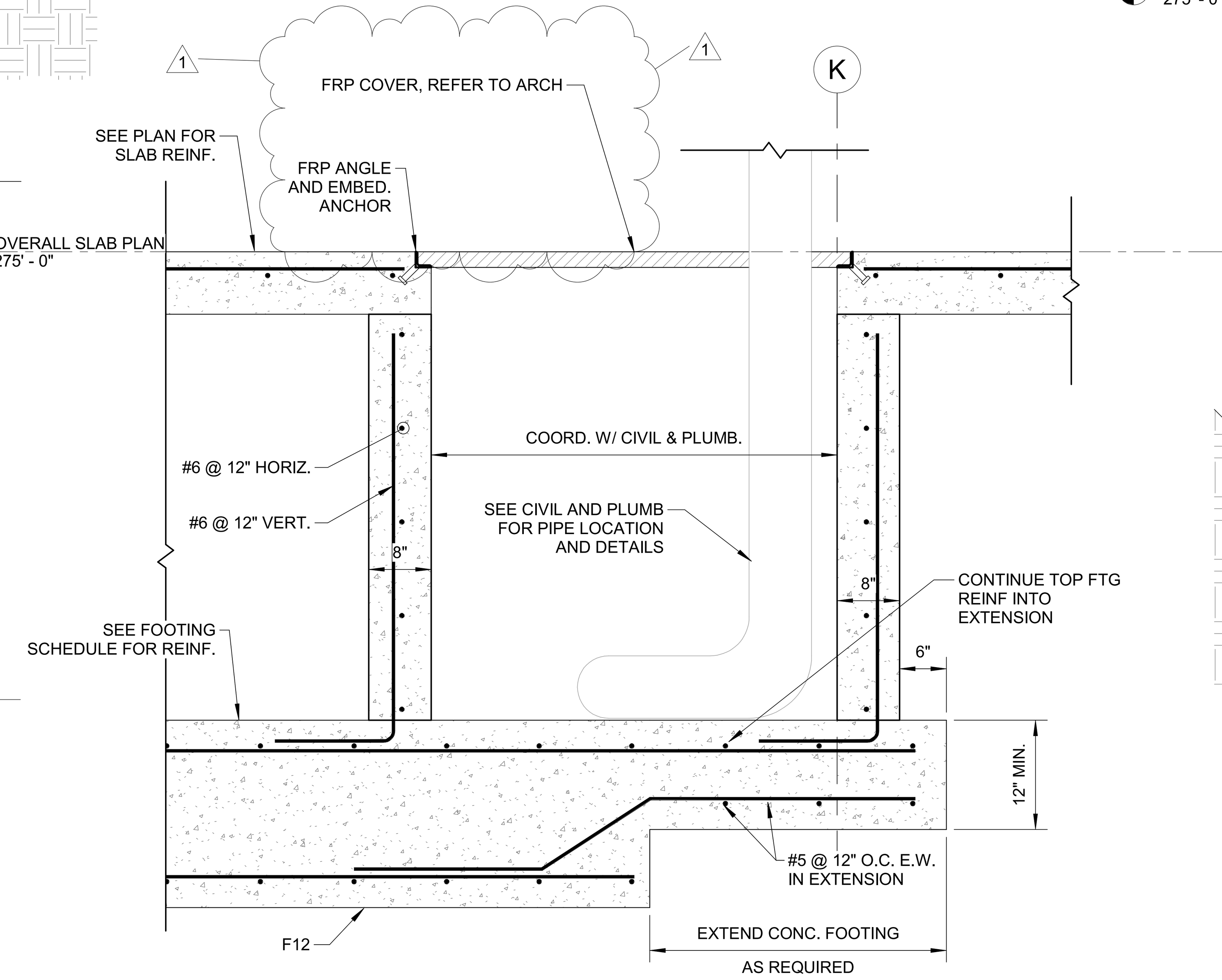


5 TYPICAL SECTION @ PIER
SCALE: 3/4" = 1'-0"



NOTE(S):
1. COORDINATE TRENCH LOCATIONS AND DIMENSIONS WITH EQ. DWGS. AND APPROVED SHOP DWGS.

6 SECTION @ UNDERCARRIAGE WASH
SCALE: 3/4" = 1'-0"



3 FOUNDATION SECTION @ WATER MAIN PIT
SCALE: 3/4" = 1'-0"

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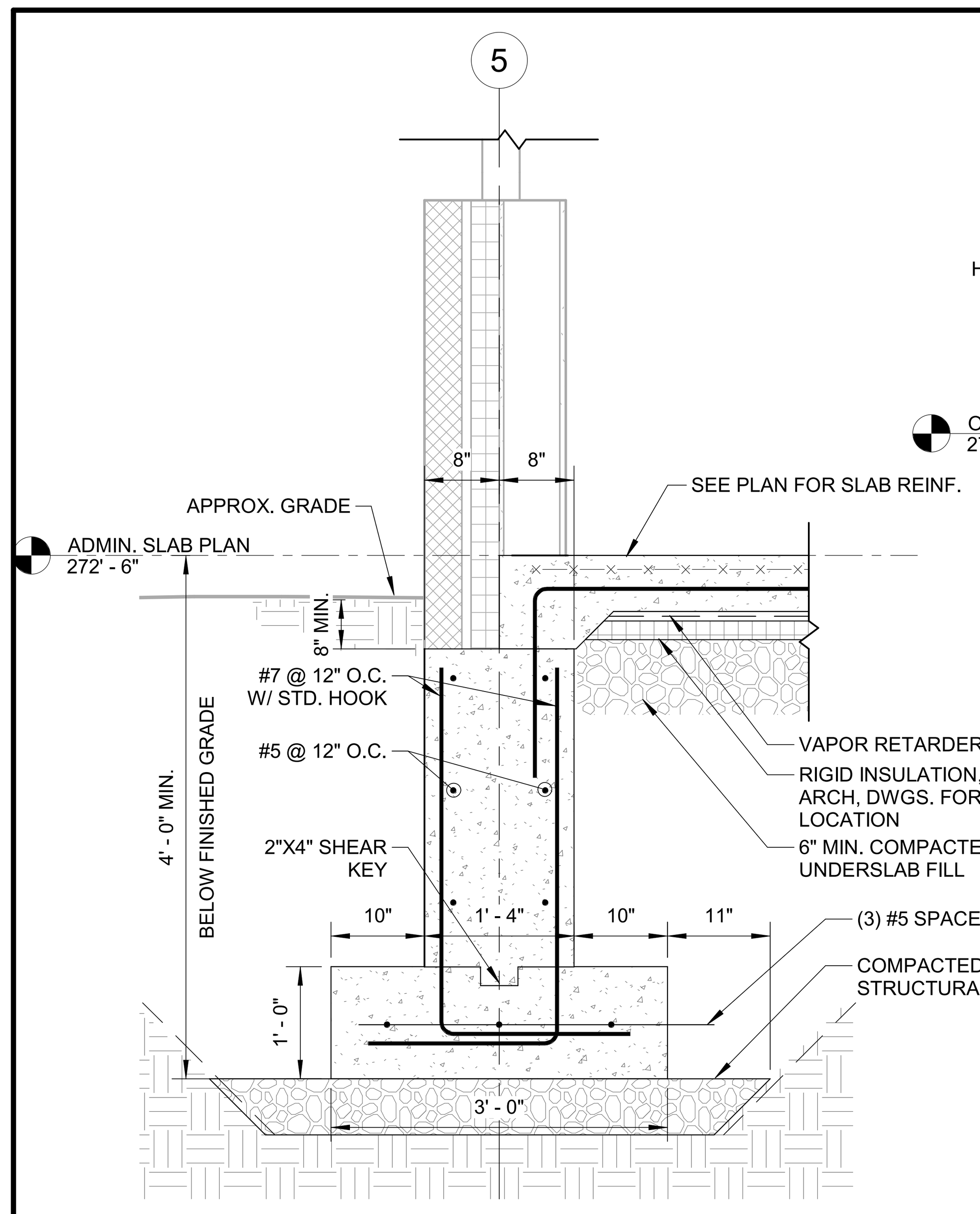
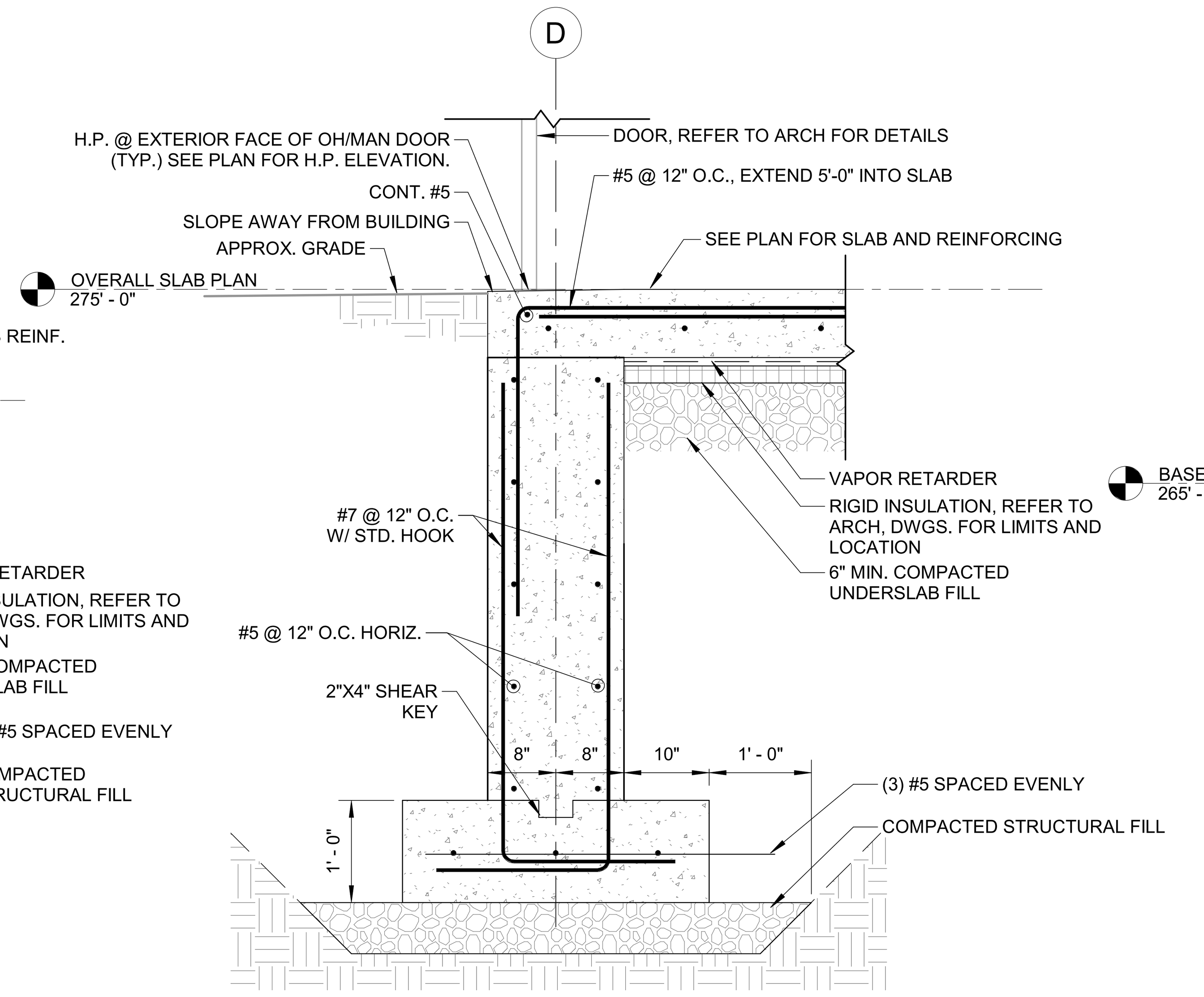
FOUNDATION SECTIONS & DETAILS I

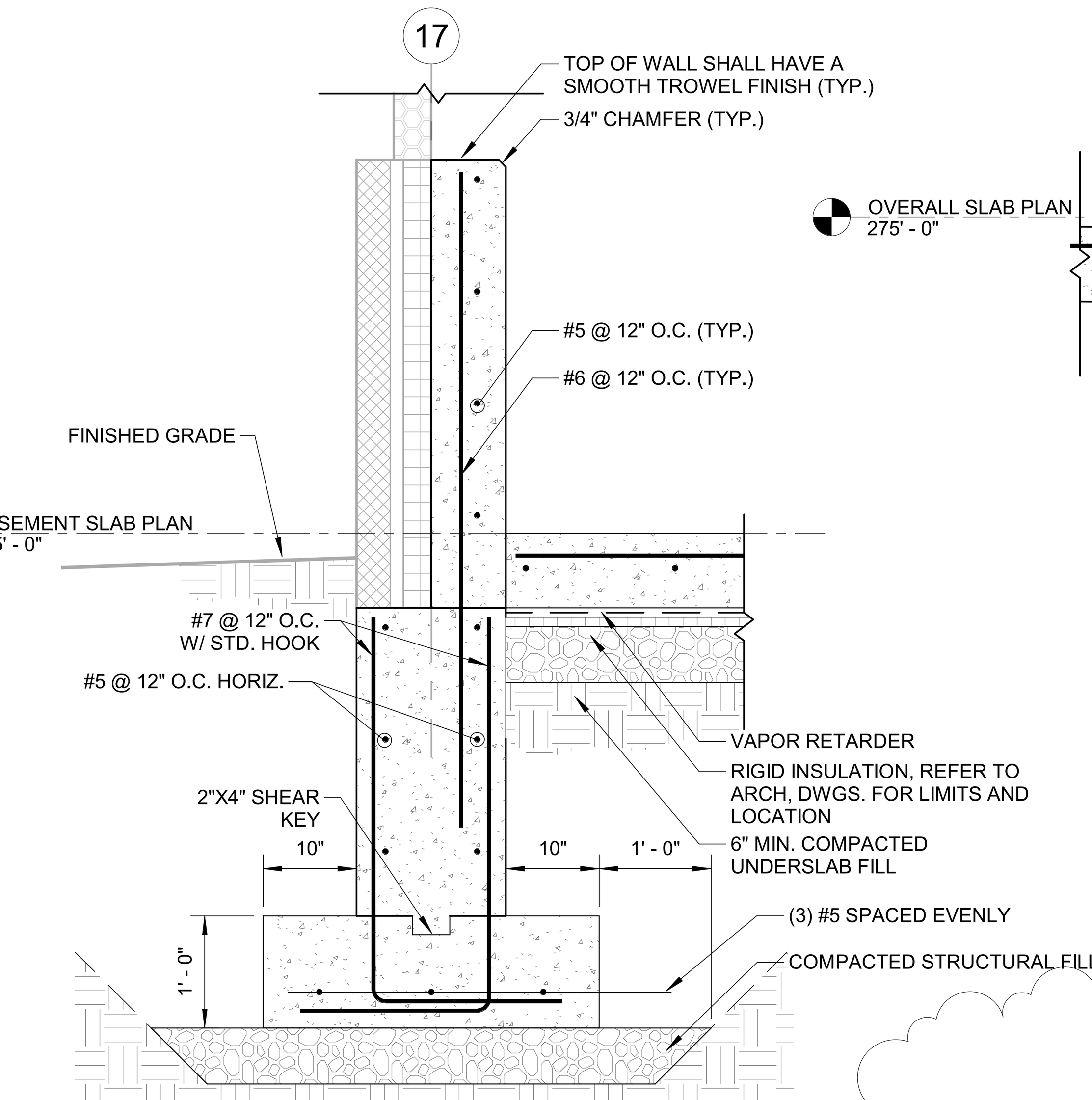
Sheet Number:
S401



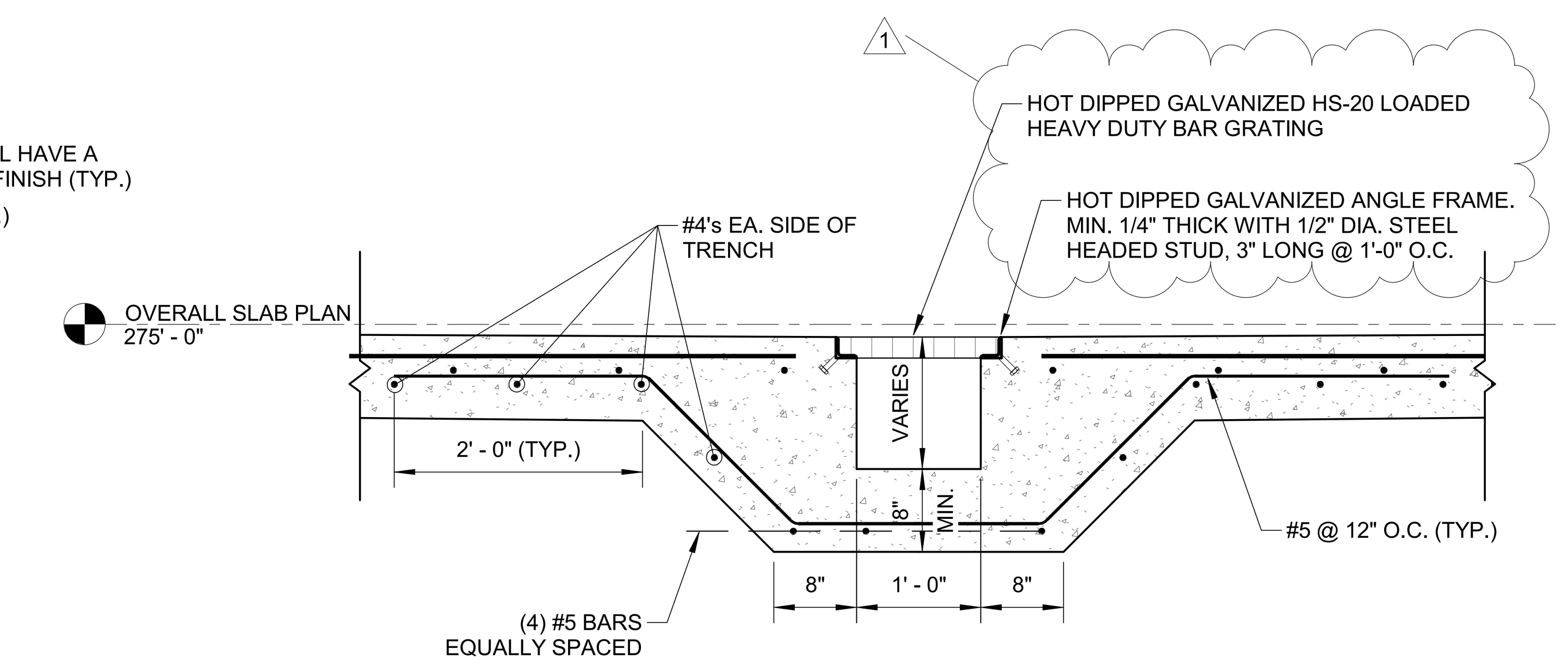
1 SECTION @ ADMINISTRATION
SCALE: 3/4" = 1'-0"



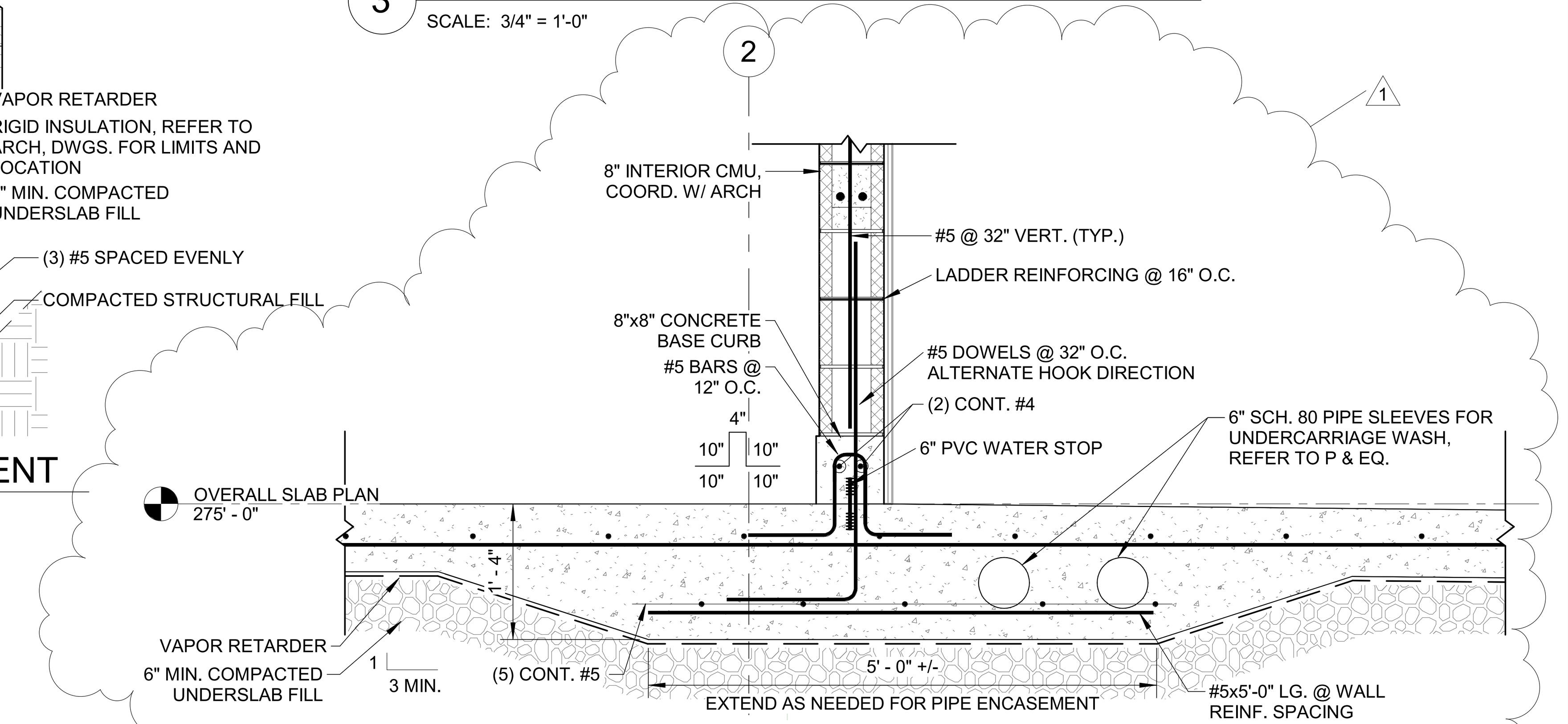
6 TYP FOUNDATION SECTION @ DOOR
SCALE: 3/4" = 1'-0"



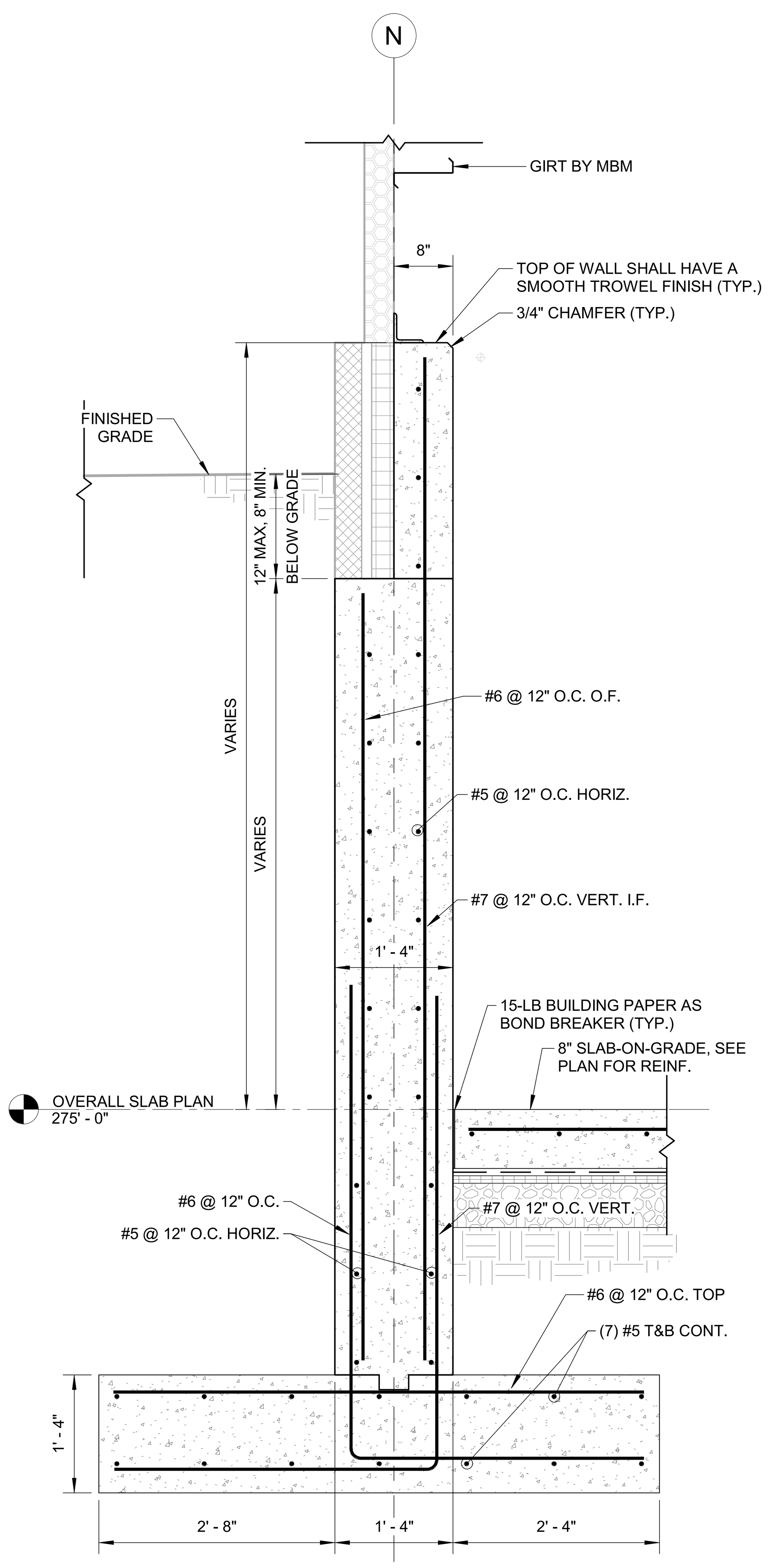
7 FOUNDATION SECTION @ BASEMENT
SCALE: 3/4" = 1'-0"



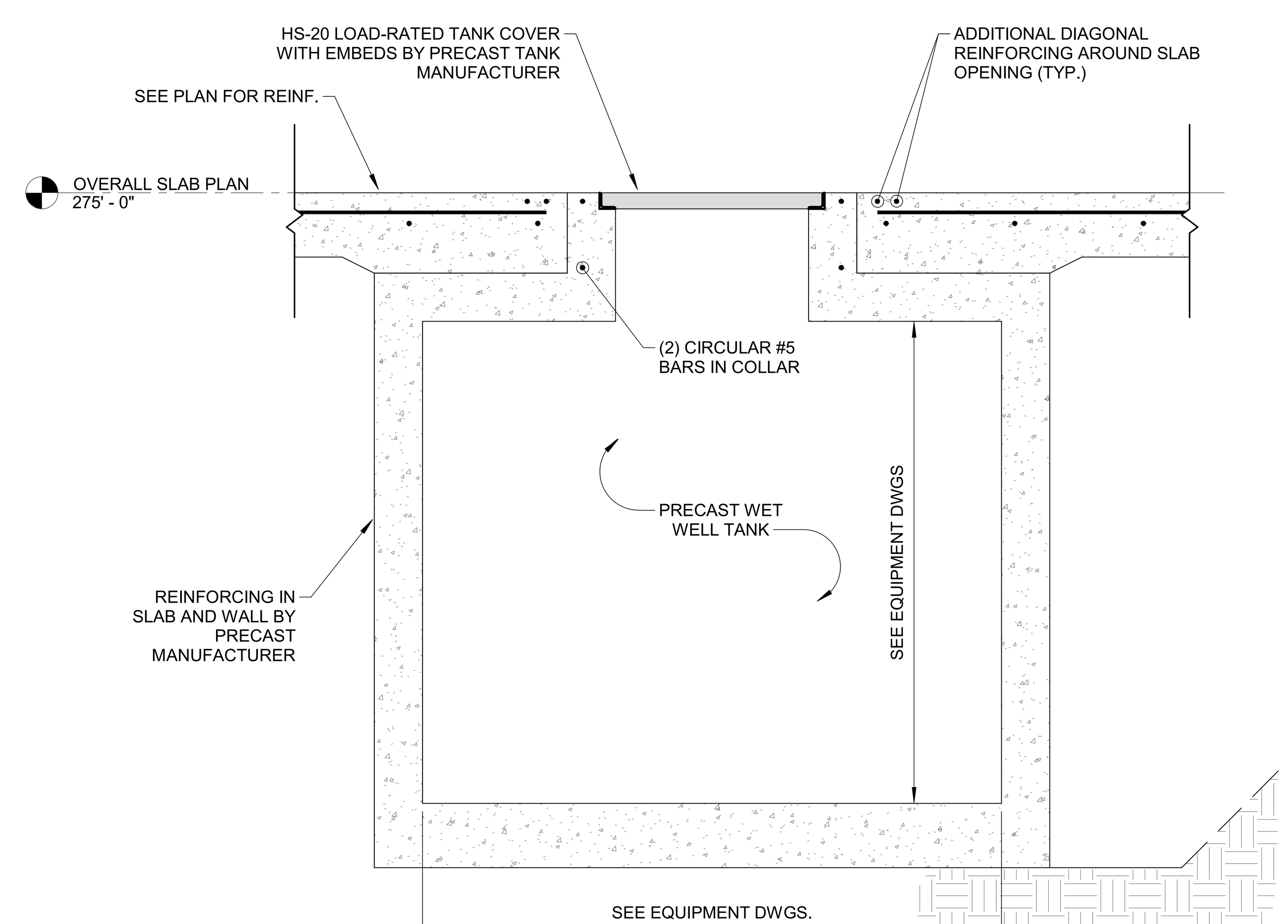
3 SECTION @ TRENCH DRAIN IN WASH BAY
SCALE: 3/4" = 1'-0"



5 SECTION @ WASH BAY WALL
SCALE: 3/4" = 1'-0"

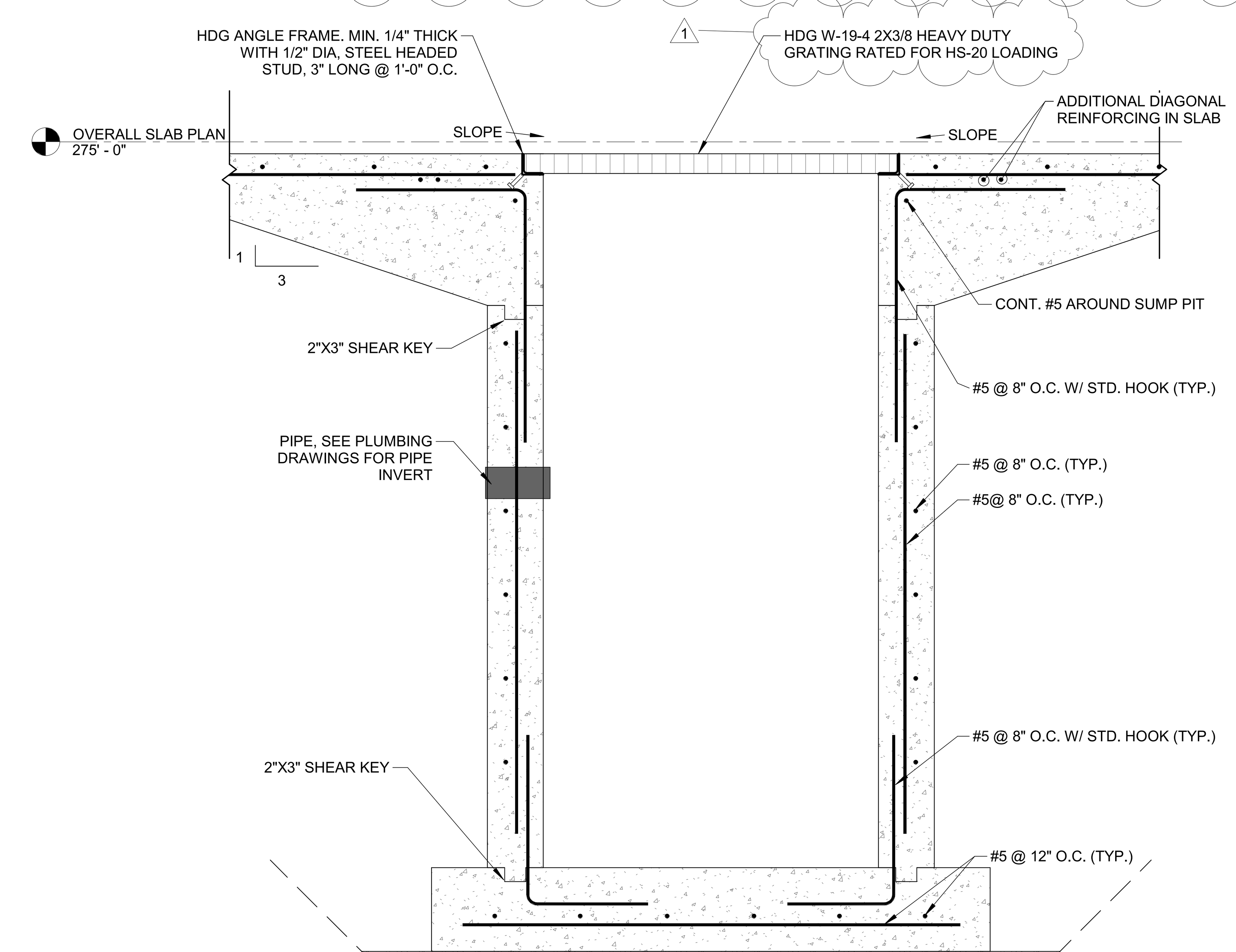


8 SECTION @ RETAINING KNEEWALL
SCALE: 3/4" = 1'-0"



NOTE(S):
1. REFER TO EQ. DRAWINGS FOR DETAILS

2 SECTION @ PRE-TREATMENT TANK
SCALE: 3/4" = 1'-0"



4 SECTION @ WASH BAY SUMP
SCALE: 3/4" = 1'-0"

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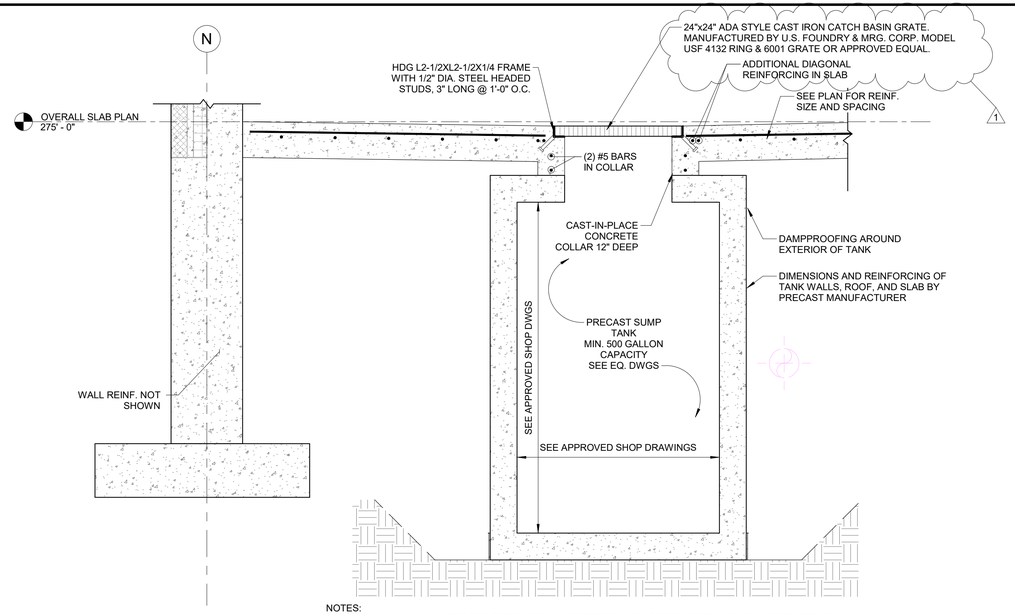
FOUNDATION SECTIONS & DETAILS II

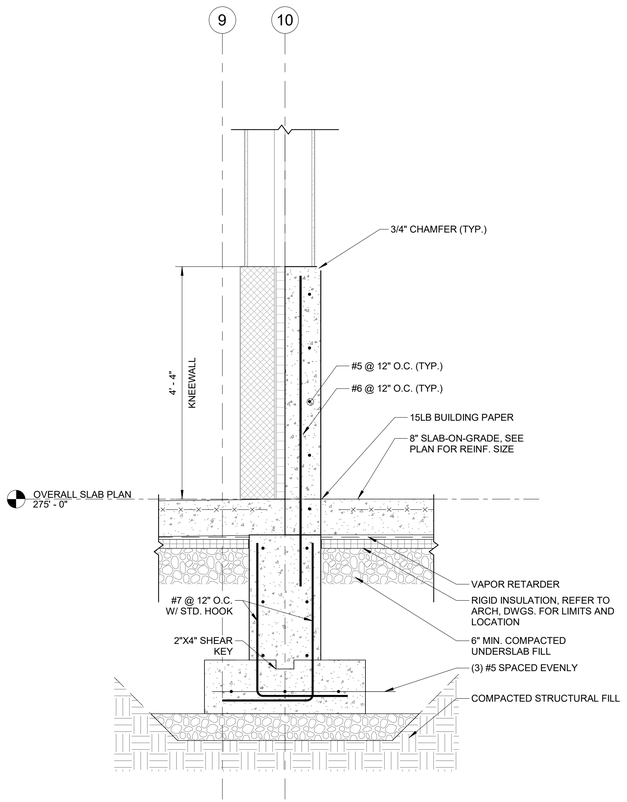
Sheet Number:
S402



NOTES:
1. 500 GALLON (MIN.) WATER-TIGHT PRECAST CONCRETE TANK TO BE DESIGNED AND MANUFACTURED BY THE PRECAST MANUFACTURER. SUBMIT CALCULATIONS TO EOR FOR REVIEW AND APPROVAL PRIOR TO FABRICATION. TANK SHALL BE A MINIMUM HS-20 LOAD-RATED.
2. PRECAST TANK TO BE PROVIDED AND INSTALLED BY GC. MINIMUM LOADING, CONCRETE AND REINFORCEMENT REQUIREMENTS SHALL BE IN ACCORDANCE WITH REQUIREMENTS INCLUDED IN PRECAST MANHOLES AND CATCHBASINS SPEC.

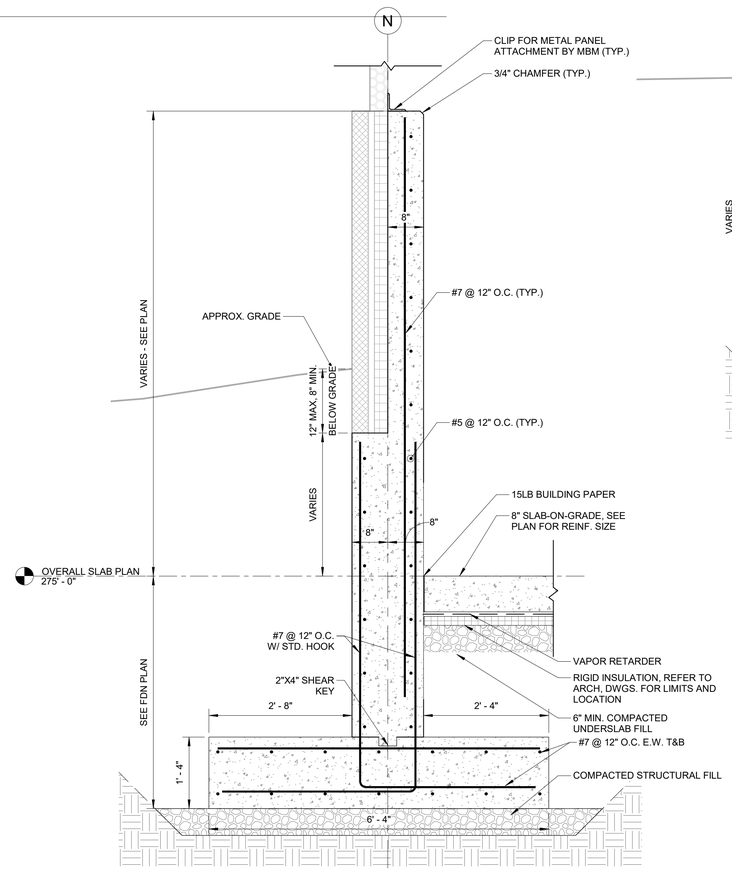
1 SECTION @ FLUIDS ROOM SUMP

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



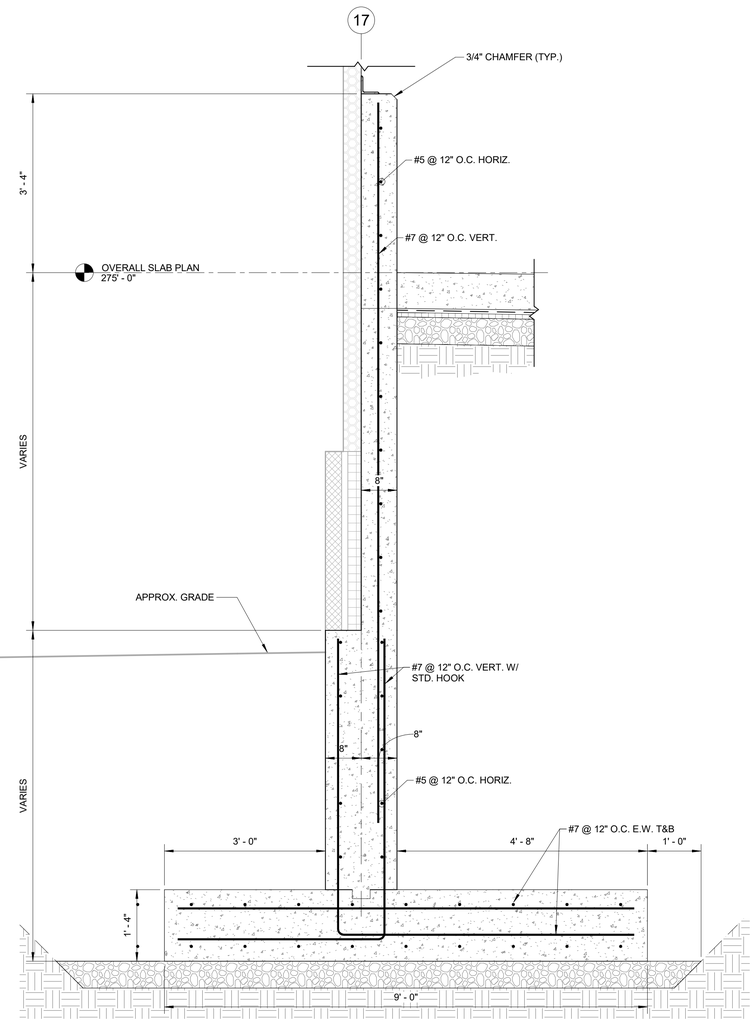
8 SECTION @ BETWEEN MAINT & VEH. STORAGE

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



2 SECTION @ VEHICLE STORAGE

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



5 SECTION @ FOUNDATION RETAINING WALL

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

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FOUNDATION SECTIONS & DETAILS III

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S403

GENERAL NOTES:

A. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT LOCAL CODES AND PROJECT SPECIFICATIONS.
B. THE PLUMBING CONTRACTOR SHALL COORDINATE ALL PIPING WITH MECHANICAL, ELECTRICAL, ARCHITECTURAL, AND STRUCTURAL TRADES PRIOR TO CONSTRUCTION TO AVOID ITERFERENCE.
C. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES, WATER HAMMER ARRESTORS, TRAPS, ETC.
D. PROVIDE TRAP GUARDS FOR ALL P-TRAPS FOR FLOOR DRAINS LOCATED IN MECHANICAL ROOMS, PUBLIC RESTROOMS AND OTHER AREAS WHERE TRAP EVAPORATION MAY OCCUR.
E. PLUMBING CONTRACTOR SHALL CONNECT ALL ITEMS OF EQUIPMENT FURNISHED BY OTHERS AND UNDER OTHER SECTIONS OF THE SPECIFICATIONS. CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY TO COMPLETE THE PLUMBING INSTALLATION.
F. REFER TO ARCHITECTURAL DRAWING FOR ROUGHING DIMENSIONS OF PLUMBING FIXTURE MOUNTINGS HEIGHTS.
G. PROVIDE UNIONS FOR ALL PIPING CONNECTIONS TO EQUIPMENT.
H. ALL PLUMBING FIXTURES AND EQUIPMENT SHALL BE IN COMPLIANCE WITH CURRENT APPLICABLE ENERGY CONSERVATION CODES.
I. ALL PIPING AND EQUIPMENT IS SHOWN DIAGRAMMATICALLY ONLY. GENERAL ORIENTATION SHOWN IN PLAN AND SECTIONAL DRAWINGS. EXACT LOCATION SHALL BE DETERMINED IN FIELD. MAINTAIN HEAD ROOM AND SPACE CONDITIONS AT ALL TIMES. ALL WORK SHALL BE COORDINATED WITH ALL TRADES BEFORE PROCEEDING WITH INSTALLATION. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES. PRIOR TO EQUIPMENT SUBMITTALS, CONTRACTOR SHALL VERIFY EXISTING AND PROPOSED CONDITIONS SUCH AS CORRIDORS, PASSAGE-WAY ROOM SIZES, ETC. TO ENSURE SPECIFIED EQUIPMENT CAN BE PROPERLY INSTALLED.
J. FABRICATE AND INSTALL ALL PIPING IN ACCORDANCE WITH THE STATE PLUMBING CODE, LOCAL PLUMBING CODE, AND APPLICABLE SECTIONS OF THE BUILDING CODES.
K. INSTALL PIPING CLOSE TO WALLS, PARTITIONS, CEILINGS, ETC. OFFSET ONLY WHERE NECESSARY TO FOLLOW WALLS, AS INDICATED. PROVIDE ALL NECESSARY FITTINGS, OFFSETS, VALVES AND OTHER DEVICES REQUIRED FOR A COMPLETE INSTALLATION.
L. INSTALL PIPING IN A CONCEALED MANNER, STRAIGHT, PLUMB AND AS DIRECT AS POSSIBLE. FORM RIGHT ANGLES PARALLEL WITH BUILDING WALLS. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER. PIPE SHALL BE LOCATED TO PERMIT ACCESS FOR SERVICE VALVES.
M. CONCRETE PADS, PITS, AND FLASHING FOR PLUMBING EQUIPMENT SHALL BE AS INDICATED ON THE STRUCTURAL AND ARCHITECTURAL PLANS, UNLESS NOTED OTHERWISE. COORDINATE EXACT SIZES OF REQUIRED OPENINGS AND SUPPORTS FOR FURNISHED EQUIPMENT.
N. ALL PIPING SHALL BE REAMED TO BE FREE OF BURRS. KEEP PIPING FREE FROM SCALE AND DIRT. PROTECT OPEN PIPE ENDS WHENEVER WORK IS SUSPENDED DURING CONSTRUCTION TO PREVENT FOREIGN MATERIAL FROM ENTERING, AND CAP ALL OPEN ENDS DURING CONSTRUCTION WITH APPROVED TEMPORALLY CAPS OR MATERIALS.
O. ALL GAS PIPING AND OTHER PLUMBING SYSTEMS SHALL BE SEISMICALLY BRACED IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE STATE BUILDING CODE AND THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). SEAL ALL WALL AND FLOOR PENETRATIONS AROUND NEW PIPES WITH FIRE PROOF CAULKING.
P. MAINTENANCE LABELS SHALL BE AFFIXED TO ALL PLUMBING EQUIPMENT AND MAINTENANCE AND OPERATION MANUALS SHALL BE PROVIDED TO OWNER.
Q. INSTALL WELDED OR THREADED PIPE IN AREAS WHERE SPACE IS CRITICAL BETWEEN FINISHED CEILING AND STRUCTURAL SURFACE. INSTALL ALL VENTS THRU ROOF 10'-0" MINIMUM FROM EDGE OF ROOF AND 25'-0" FROM FRESH AIR INTAKES.
R. SUBMIT ALL REQUIRED PLUMBING DOCUMENTS TO LOCAL PLUMBING OFFICIAL FOR APPROVAL. THE ENTIRE PLUMBING SYSTEM SHALL BE INSTALLED IN COMPLIANCE WITH ALL APPLICABLE BUILDING CODES, REGULATIONS, AND LOCAL REQUIREMENTS.
S. SUBMIT APPROVED PRESSURE REDUCING VALVES & BACKFLOW PREVENTION DEVICES TO WATER AUTHORITY. CONTRACTOR SHALL PROVIDE ALL NECESSARY DEVICES PER WATER AUTHORITY REQUIREMENTS AND MANUFACTURER RECOMMENDATIONS.
T. ALL WALL, CEILING AND FLOOR PENETRATIONS CONVEYING PLUMBING AND DRAINS SHALL BE FULLY SEALED AND CAULKED AROUND THE PENETRATING FEATURE TO RESTORE THE REQUIRED FIRE OR SMOKE BARRIER RATING OF THE WALL, CEILING OR FLOOR PENETRATED. AT A MINIMUM, AT ALL LOCATIONS A TWENTY (20) MINUTE FIRE/SMOKE RESISTANCE SHALL BE MAINTAINED. WHERE REQUIRED BY CODE, THE PENETRATING FEATURES SHALL ALSO BE SUPPLIED AND INSTALLED WITH A MECHANISM OR MATERIAL WHICH WILL MAINTAIN THE WALL, CEILING OR FLOOR RATING IN THE EVENT OF A FIRE.
U. PLUMBING OR SPRINKLER RELATED PIPE SHALL NOT PENETRATE INTO OR PASS THROUGH STAIRWAYS UNLESS IT IS REQUIRED FOR SERVICING THE STAIRWAY OR IT IS SEGREGATED FROM THE STAIRWAY PASSAGEWAY BY AN ENCLOSURE SYSTEM RATED EQUAL TO OR GREATER THAN THE REQUIRED STAIRWAY RATING.
V. PROVIDE FLUSH TYPE ACCESS DOORS OR PANELS NO SMALLER THAN 12"x12" AND NO LARGER THAN 30"x30" FOR ALL VALVES OR APPARATUS LOCATED IN CHASES, WALLS, AND NON ACCESSIBLE CEILINGS, OR FLOORS.
W. INSTALL WATER HAMMER ARRESTORS IN COMPLIANCE WITH ALL APPLICABLE CODES. SIZE OF WATER HAMMER ARRESTORS SHALL BE ACCORDING TO THE WATER HAMMER SCHEDULE AND MANUFACTURER'S RECOMMENDATIONS FOR THAT BRANCH LINE.
X. CLEANOUTS SHALL BE PROVIDED AS INDICATED ON PLANS AND AS REQUIRED BY THE LOCAL CODES.
Y. PRIOR TO INSTALLING ANY PIPING, VERIFY EXISTING OR NEW INVERT ELEVATIONS, LOCATIONS AND PIPE SIZES. INSTALL ALL SANITARY AND WASTE BEGINNING AT LOW POINT OF EACH SYSTEM AND CONTINUE WITH UNBROKEN CONTINUITY OF INVERT. LOW POINT OF EACH
Z. SYSTEM SHALL BE COORDINATED WITH SITE UTILITIES CONTRACTOR. REFER TO SITE UTILITY PLANS FOR REFERENCE.
AA. DRAIN VALVES SHALL BE PROVIDED ON LOWEST POINT OF ALL DOMESTIC WATER RISERS AS FOLLOWS: 1-1/2" OR LESS-PROVIDE 1/2" DRAIN VALVE. 2" OR LARGER-PROVIDE 3/4" DRAIN VALVE.
BB. PROVIDE ISOLATION VALVES AT ALL FIXTURES AND EQUIPMENT.
CC. PLUMBING CONTRACTOR SHALL INSTALL GAS VENTS FOR ALL GAS MANIFOLD/TRAIN SYSTEMS LOCATED AT BOILERS OR WATER HEATERS. PRIOR TO CONSTRUTION, CONTRACTOR SHALL REVIEW THE EXISTING CONDITIONS TO DETERMINE MOST ECONOMICAL ROUTE FOR MANIFOLD VENTS BEGINNING AT EQUIPMENT AND EXTENDING THROUGH ROOF.

PLUMBING SYMBOL LIST

SYMBOL	DESCRIPTION
	POINT OF CONNECTION
NTS	NOT TO SCALE
AFF	ABOVE FINISHED FLOOR
BFF	BELOW FINISHED FLOOR
VTR	VENT THRU ROOF
GC	GENERAL CONTRACTOR
MC	MECHANICAL CONTRACTOR
PC	PLUMBING CONTRACTOR
EC	ELECTRICAL CONTRACTOR
	NEW PIPING LOCATED ABOVE FLOOR/SLAB
	NEW PIPING LOCATED BELOW FLOOR/SLAB
	COLD WATER PIPING (CW)
	HOT WATER PIPING (HW)
	HOT WATER RECIRCULATING PIPING (HWR)
W	WATER SERVICE - EXTERIOR
SAN	SANITARY SEWER PIPING
V	VENT PIPING (V)
G	NATURAL GAS PIPING (G)
OW	OIL/WATER WASTE PIPING (OW)
CA	COMPRESSED AIR PIPING (CA)
	ELBOW DOWN
	45°OFFSET
	ELBOW UP
	BOTTOM/TEE CONNECTION
	TOP TEE CONNECTION
	"P" TRAP
	PIPE CONTINUATION
	CAP OR PLUG
	DECK PLATE CLEANOUT (DPCO)
	WALL PLATE CLEANOUT (WPCO)
	CLEANOUT (CO)
	FLOOR DRAIN (FD) / FLOOR SINK (FS)
	WALL HYDRANT (WH) / HOSE BIBB (HB)
	STRAINER
M	WATER METER
	SHUT OFF VALVE
	BALANCING VALVE
	CHECK VALVE
	SOLENOID VALVE
	PRESSURE REDUCING VALVE
	RELIEF VALVE
	UNION
	BACKFLOW PREVENTER (BFP)
	SHOWER HEAD
	SHOCK ABSORBER (SA)
	RECIRCULATION PUMP
	THERMOMETER
	PRESSURE GAUGE
X	DRAWING KEYNOTE

FIXTURE AND EQUIPMENT CONNECTION SCHEDULE

DESIGNATION	DESCRIPTION	COLD WATER	HOT WATER	WASTE OR SANITARY	VENT	REMARKS
WC-A	WATER CLOSET - PUBLIC - FLUSH VALVE	1"	-	3"	2"	ADA HEIGHT, WALL HUNG, ELONGATED, 1.28 GPF: AMERICAN STANDARD AFWALL. OPEN FRONT TOILET SEAT.
UR-A	URINAL -PUBLIC - FLUSH VALVE	3/4"	-	2"	1-1/2"	WALL MOUNTED, ELONGATED FLUSHING RIM, TOP SPUD, SLOAN G2 OPTIMA PLUS SENSOR BATTERY POWERED, 0.5 GPF: AMERICAN STANDARD WASHBROOK.
LAV-A	LAVATORY - ADA	1/2"	1/2"	1-1/2"	1-1/2"	AMERICAN STANDARD LUCERNE, WALL-HUNG, LAV GUARD
LAV-B	LAVATORY - PUBLIC - ADA	1/2"	1/2"	1-1/2"	1-1/2"	AMERICAN STANDARD, LAV GUARD
SK-A	KITCHEN SINK	1/2"	1/2"	1-1/2"	1-1/2"	ELKAY LUSTERTONE, ADA, STRAINER
SH-A	SHOWER - ADA	1/2"	1/2"	1-1/2"	1-1/2"	AQUATIC ADVANTAGE 16030BFSC, CENTER BRASS DRAIN, SLIP RESISTANT TEXTURED BOTTOM, VINYL FLEXIBLE DAM, REINFORCED FOR FOLDING SEAT AND GRAB BARS, CURTAIN ROD, SOAP DISH. MOEN 8346EP15 POSI-TEMP TRIM KIT, CHROME FINISH, HAND-HELD SHOWER WITH 30" SLIDE BAR, DROP ELL, 69" METAL HOSE, CHROME FINISH, 1.5 GPM.
FD-A	FLOOR DRAIN - STANDARD	-	-	2"	1-1/2"	JAY R SMITH FIGURE 2010,7" ADJUSTABLE STRAINER, TRAP GUARD
FD-B	FLOOR DRAIN - WITH RECESS	-	-	3"	1-1/2"	JAY R SMITH FIGURE 2010, 7" ADJUSTABLE STRAINER, TRAP GUARD, WITH RECESSED, ANTI-FLOOD RIM.
FD-C	FLOOR DRAIN - HEAVY DUTY	-	-	4",6"	-	JAY R SMITH FIGURE 21243C, 12" NICKEL BRONZE HINGED GRATE, SEDIMENT BUCKET, QUAD CLOSE TRAP SEAL,
TD-A	TRENCH DRAIN SYSTEM WITH CATCH BASIN	-	-	4",6"	-	ZURN Z882-HDG, GALVANIZED PRE-SLOPED TRENCH DRAIN SYSTEM, HIGH DENSITY POLYETHYLENE, EXTRA HEAVY DUTY 12" WIDE GRATE, EN1433 CLASSIFICATION 'E', GALVANIZED CATH BASIN WITH SEDIMENT BASKET.
EWC-A	WATER COOLER - ADA	1/2"	-	1-1/2"	1-1/2"	ELKAY EZSTL8LC, BI-LEVEL NON-FILTERING, 8 GPH.
MS-A	MOP BASIN	3/4"	3/4"	2"	1-1/2"	FIAT MODEL MSB
EM-SH	EMERGENCY SHOWER AND EYE/FACE WASH	1"	1"	-	-	SPEAKMAN SE-603, FREE-STANDING, 20GPM TEPID (60-100 DEG.F.) WATER
SS-A	SERVICE SINK	1/2"	1/2"	2"	1-1/2"	AMERICAN STANDARD AKRON

BACKFLOW PREVENTER SCHEDULE

NO.	AREA SERVED	USAGE	TYPE	ORIENTATION	INLET/ OUTLET SIZE (IN.)	INLET/ OUTLET SHUTOFF VALVE TYPE	MAX. WORKING PRESSURE (PSI)	FLOW AT 7.5 FPS (GPM)	PRESSURE DROP AT 7.5 FPS (PSI)	DESIGN MAKE
DCDA-1	DPW BLDG	FIRE WATER	DCDA	HORIZONTAL	6"	OSY	175	680	7.0	WATTS 709 DCDA
RPZ-1	DPW BLDG	DOMESTIC WATER	RPZ	HORIZONTAL	3"	OSY	175	170	12.0	WATTS LF909 RPZ
RPZ-2	WASHBAY	WASHBAY EQUIPMENT	RPZ	HORIZONTAL	1"	QUARTER TURN BALL	175	20	10.0	WATTS 009M2-QT-S

AIR COMPRESSOR SCHEDULE

NO.	LOCATION	SERVICE	ACFM	MAX. PRESSURE (PSIG)	MOTOR			TYPE	DESIGN MAKE
					HP	VOLTAGE	PHASE		
COMP-1	COMPRESSOR ROOM	TRUCK BAYS	92.4	175	15	480	3	DUPLEX RECIPROCATING	CHAMPION MODEL HR15-12

REMARKS:
1. INCLUDE 120 GALLON RECEIVER
2 INCLUDE REFRIGERANT DRYER
3. INCLUDE 400 GALLON DRY STORAGE TANK

WATER HEATER SCHEDULE

NO.	SERVICE	STORAGE VOLUME (GAL.)	BTUH INPUT	GALLONS/ HOUR...	TEMP RISE DEG F	FUEL TYPE	VENT IN INCHES	ELECTRIC	EFFICIENCY	DESIGN MAKE
WH-1	ADMIN	60	1200000	138	100	NAT GAS	3"	120V / 5A	95%	A.O. SMITH CYCLONE MXI BTH 120(A)
WH-2	VEHICLE MAINT.	60	1200000	138	100	NAT GAS	3"	120V / 5A	95%	A.O. SMITH CYCLONE MXI BTH 120(A)

MASTER MIXING VALVE SCHEDULE

TAG NO.	SERVICE	TYPE	DESIGN RANGE (GPM)	PEAK FLOW (GPM)	MAX. PRESSURE DROP AT PEAK FLOW (PSI)	CONNECTIONS			DESIGN MAKE
						HW INLET	CW INLET	MIXED OUTLET	
MMV-1	WH-1,WH-2	HIGH/LOW	0.5 - 159	60.0	10	1-1/4"	1-1/4"	1-1/2"	POWERS LFSH1434

PUMP SCHEDULE

NO.	LOCATION	SERVICE	GPM	HEAD FT WATER	MOTOR				TYPE	DESIGN MAKE
					HP	VOLTAGE	PHASE	RPM		
RP-1	MEZZANINE	ADMIN HWR	1.2	13.1	0.5	208	1	2225	INLINE	BELL & GOSSETT ECOCIRC XL 55-45

EXPANSION TANK SCHEDULE

NO.	LOCATION	SERVICE	RELIEF PRESSURE	TANK VOLUME (GALLONS)	MAX. ACCEPT FACTOR	DESIGN EQUIPMENT
ET-1	WH-1, WH-2	DOM. WATER	125 PSI	10	1.0	AMTROL ST-35-CL

SHOCK ABSORBER SCHEDULE

NO.	FIXTURE UNIT RATING	SIZE IN INCHES	PDI SYMBOL
SA-A	1 - 11	1/2"	A
SA-B	12 - 32	3/4"	B
SA-C	33 - 60	1"	C
SA-D	61 - 113	1 1/4"	D
SA-E	114 - 154	1 1/2"	E
SA-F	155 - 330	2"	F

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Reviewed By: PJW

Approved By: BAB

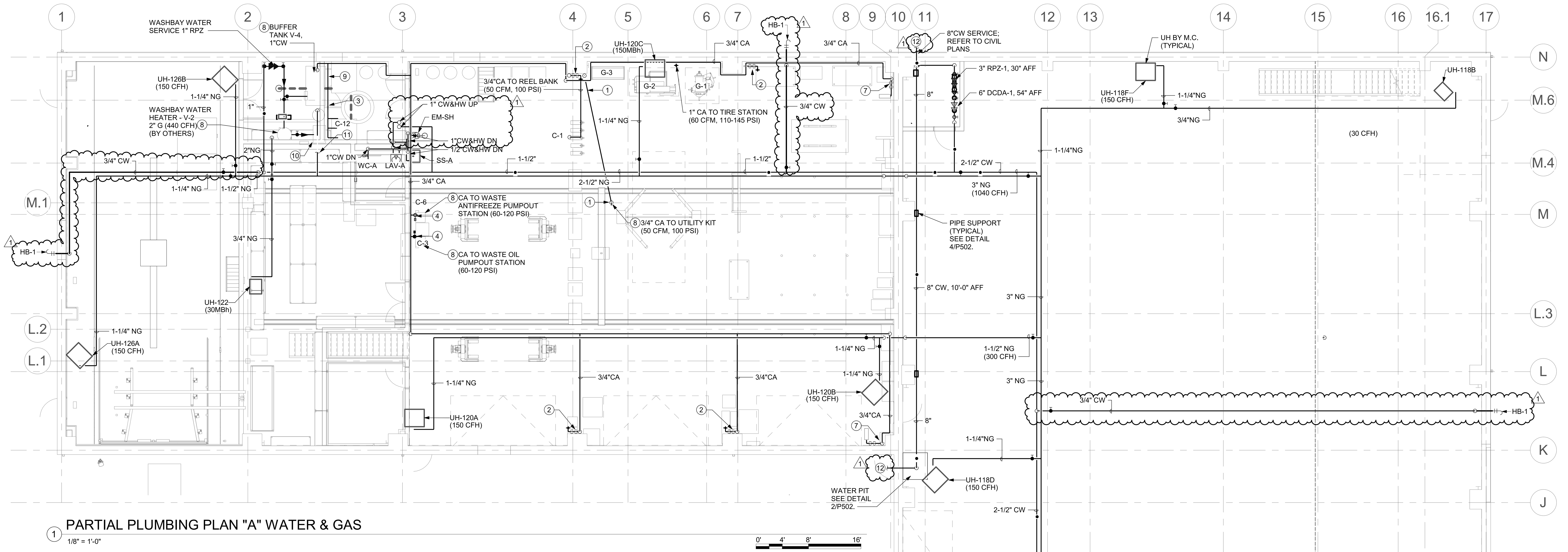
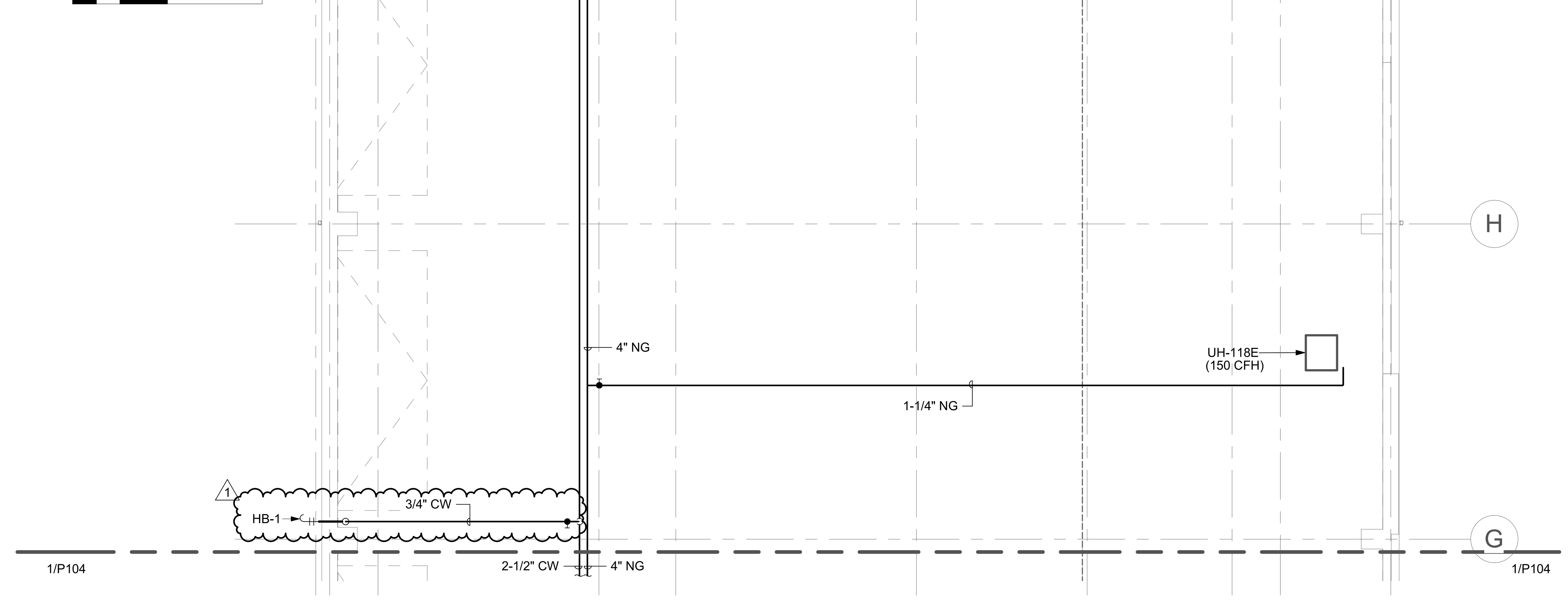
W&S Project No: N2190088

Drawing Title:

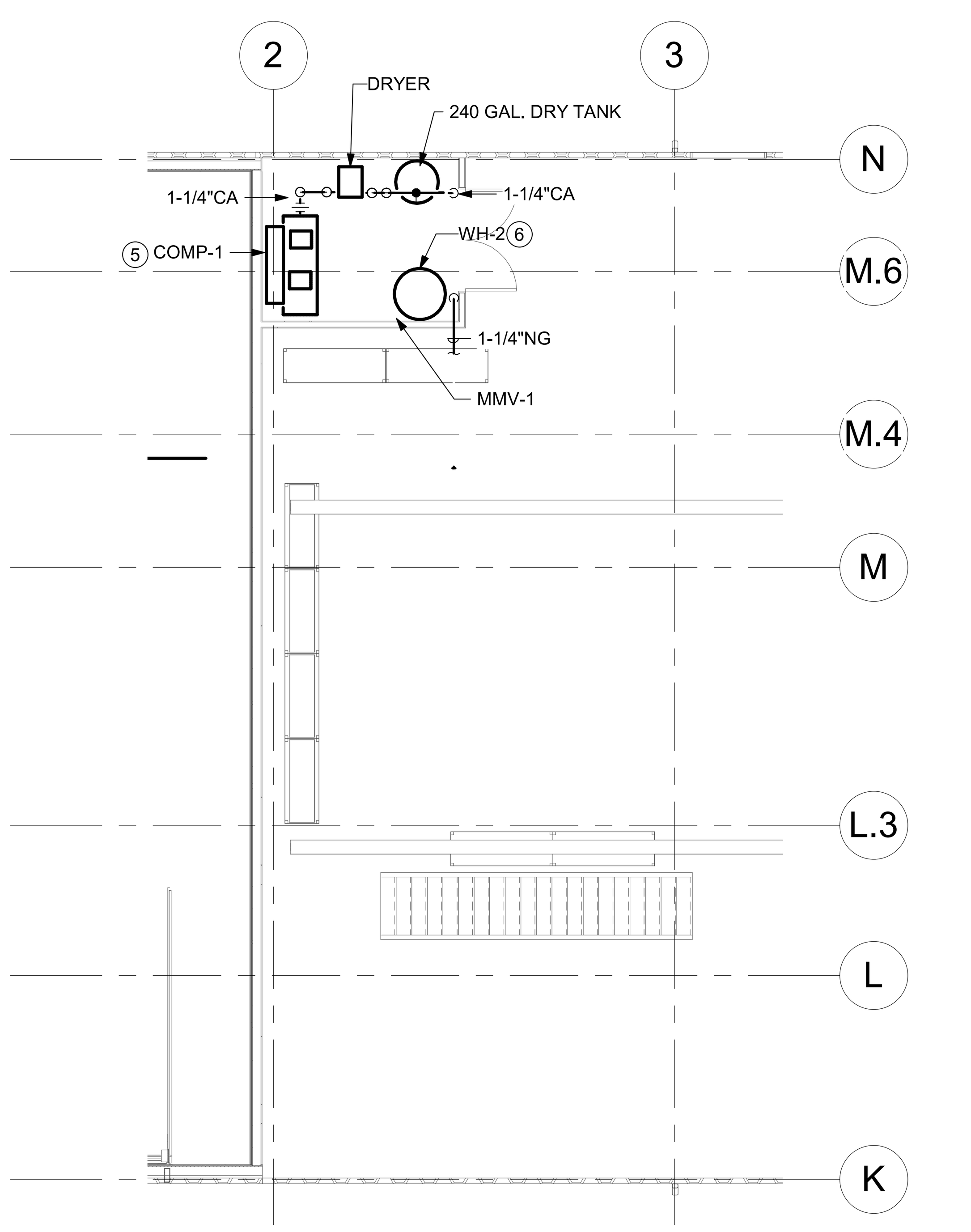
GENERAL NOTES, SCHEDULES & SYMBOL LIST

Sheet Number:

P001

1 PARTIAL PLUMBING PLAN "A" WATER & GAS
1/8" = 1'-0"



2 MEZZANINE 1 FLOOR PLAN - PLUMBING WATER & GAS
1/8" = 1'-0"

P103 DRAWING NOTES

1 PROVIDE 2" PVC PIPE SLEEVE BELOW FINISHED FLOOR FOR ROUTING OF 3/4" PNEUMATIC HOSE TO SERVE THE VEHICLE LIFT STATION UTILITY KIT. COORDINATE LOCATION OF STUB UP WITH VEHICLE LIFT MANUFACTURER.
2 3/4" CA DROP TO 3/4" FILTER-REGULATOR-LUBRICATOR, MOUNTED 5'-0" AFF. TERMINATE WITH 3/4" QUICK DISCONNECT(50 CFM, 100 PSI)
3 INSTALL FUSIBLE HEAT ACTIVATED SHUT OFF VALVE AND MOTORIZED BALL VALVE IN MAIN CA LINE TO LUBE PUMPS. MOTORIZED BALL VALVE AND HEAT ACTIVATED SHUTOFF VALVE PROVIDED BY LUBE SYSTEM CONTRACTOR.
4 INSTALL MOTORIZED BALL VALVE IN CA LINE. MOTORIZED BALL VALVE PROVIDED BY LUBE SYSTEM CONTRACTOR.
5 PROVIDE 15HP RECIPROCATING COMPRESSOR WITH 120 GALLON RECEIVER, REFRIGERANT DRYER, AND 400 GALLON DRY STORAGE TANK, REFER TO SPECIFICATIONS.
6 PROVIDE 60 GALLON GAS FIRED MODULATING WATER HEATER, COMPLETE WITH EXPANSION TANK AND T&P RELIEF VALVE. ROUTE 1-1/4"HW TO EMERGENCY EYEWASH, SS-A AND LAV-A IN ROOMS BELOW. ROUTE 3/4"NATURAL GAS LINE FROM MAIN. REFER TO DETAIL 6/P500 FOR CONNECTIONS. REFER TO SPECIFICATIONS.
7 3/4" CA DROP TO 3/4" FILTER-REGULATOR-LUBRICATOR, MOUNTED 5'-0" AFF. TERMINATE WITH WALL MOUNTED 50FT 3/4" AIR REEL (50 CFM, 100 PSI)
8 PLUMBING CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO VEHICLE WASH EQUIPMENT. COORDINATE FINAL CONNECTION REQUIREMENTS WITH VEHICLE WASH EQUIPMENT INSTALLER.
9 3/4"CA TO FLUID TANK SYSTEM (7CFM @ 40PSI; 69CFM @ 90PSI; 10CFM @ 60PSI)
10 BUFFER TANK V-1 1"CW, 1/2" CA (6 CFM @ 90 PSI)
11 ~~1-1/4"NG TO WH-2 (120CFH)~~
12 ALL DIP CLASS 52 WATER SERVICE TO AND THROUGH THE BUILDING, INCLUDING NEW TAP AND SERVICE LINE FROM ADJACENT GREENBURGH PROPERTY, INCLUDING THE INTERIOR OVERHEAD LINE BETWEEN THE WATER ROOM AND BUILDING EXTERIOR, ALL HANGERS, INSULATION, PROTECTIVE COVERS, ETC., SHALL BE PROVIDED BY THE GC. NOTE THAT THIS ENTIRE WATER LINE IS SUBJECT TO ALL PRESSURE AND BACTERIOLOGICAL TESTING REQUIRED BY THE WESTCHESTER COUNTY DEPARTMENT OF HEALTH.

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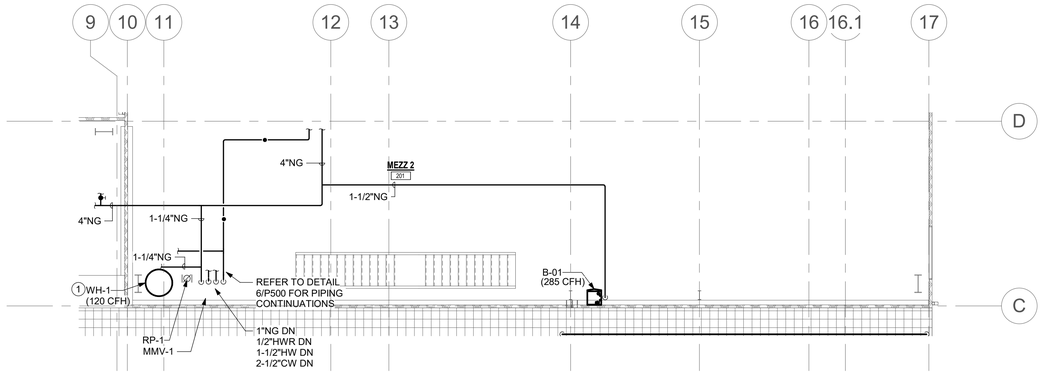
PARTIAL LARGE SCALE PLUMBING FLOOR PLANS - AREA "A" - WATER AND GAS

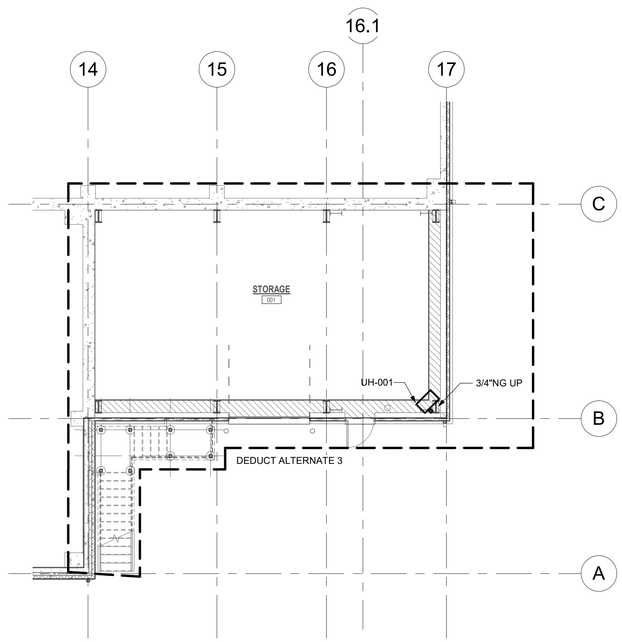
Sheet Number:

P103



2 MEZZANINE 2 FLOOR PLAN - LARGE SCALE

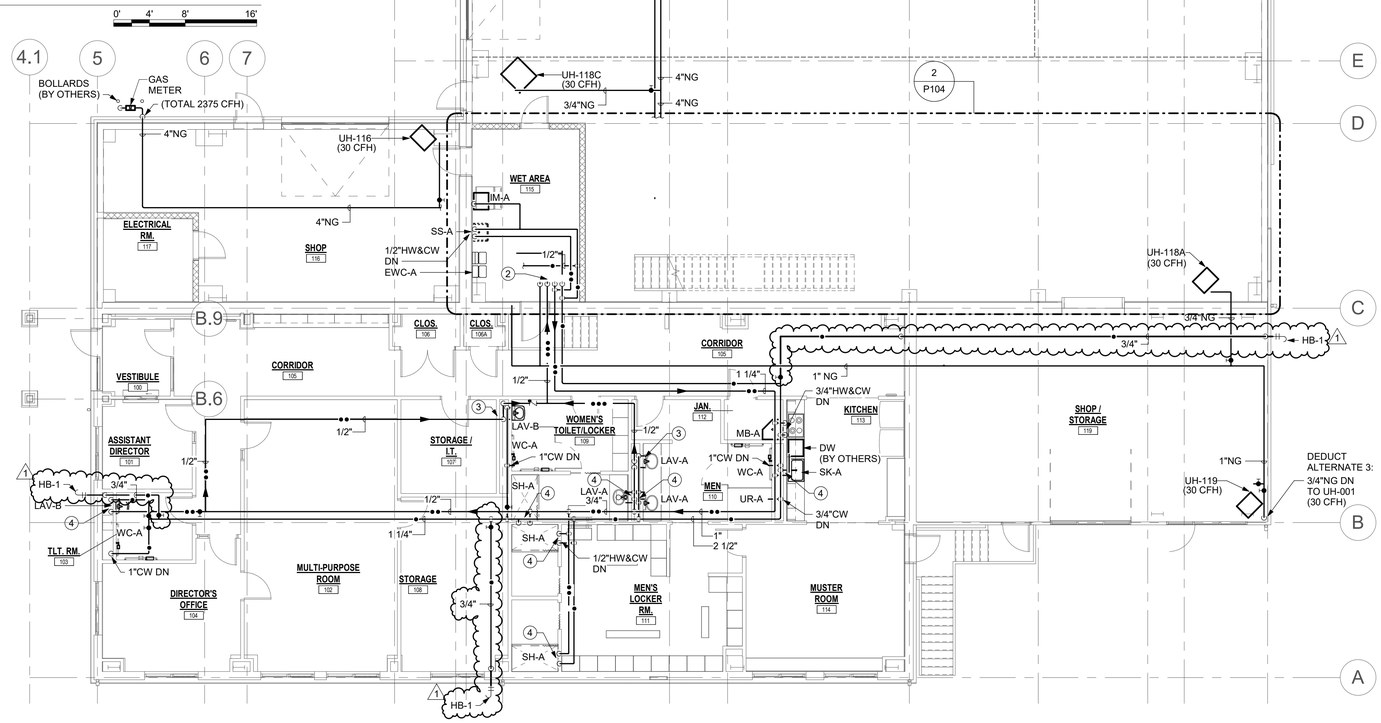
1/8" = 1'-0"



3 BASEMENT FLOOR

1/8" = 1'-0"

0' 4' 8' 16'



1 PARTIAL LARGE SCALE FIRST FLOOR/ADMIN PLAN "B" WATER & COMPRESSED AIR

1/8" = 1'-0"

0' 4' 8' 16'

P104 DRAWING NOTES

1. PROVIDE 60 GALLON GAS FIRED MODULATING WATER HEATER, COMPLETE WITH EXPANSION TANK AND T&P RELIEF VALVE. INCLUDE RP-1. ROUTE HW, CW, AND HWR TO FIXTURES IN ROOMS BELOW. ROUTE 3/4"NATURAL GAS LINE FROM MAIN. REFER TO DETAIL 6/P500 FOR CONNECTIONS. REFER TO SPECIFICATIONS.
2. 1"NG UP; 1/2"HWR UP; 1-1/2"HW UP; 2-1/2"CW UP
3. 1/2"HW, CW&HWR DN
4. 1/2"HW&CW DN

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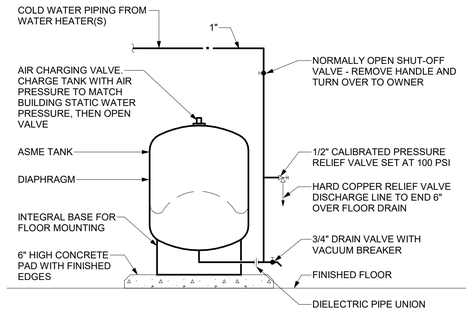
PARTIAL LARGE SCALE PLUMBING FLOOR PLANS - AREA "B" - WATER & GAS

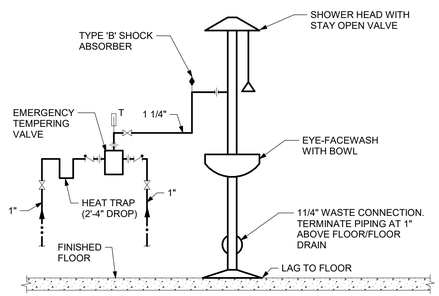
Sheet Number:

P104



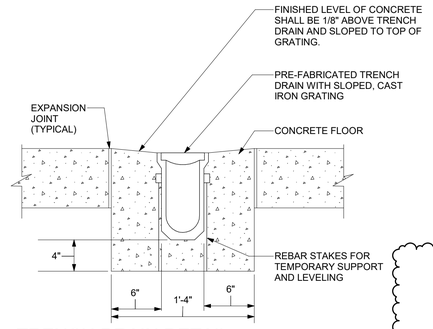
1 THERMAL EXPANSION TANK DETAIL

NOT TO SCALE



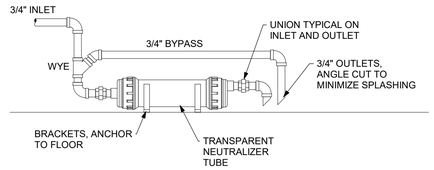
2 EMERGENCY SHOWER/EYEWASH DETAIL

NOT TO SCALE



3 TRENCH DRAIN DETAIL

NOT TO SCALE



DETAIL NOTES:

A. NEUTRALIZER AND PIPING SHALL NOT OBSTRUCT ANY SERVICE SPACES OR ACCESS DOORS ON EQUIPMENT

B. PIPING SIZE SHALL BE 3/4" MINIMUM, DO NOT USE 1/2" VINYL TUBE

C. MOUNT NEUTRALIZER LEVEL, AND HORIZONTAL, WITH OUTLET HIGHER THAN INLET. VERTICAL MOUNTING SHALL NOT BE ACCEPTED DUE TO POSSIBLE BLOCKAGE OF INLET BY NEUTRALIZING MEDIA.

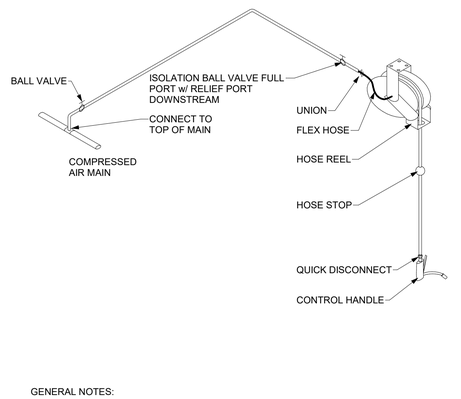
D. ALL PIPING SHALL BE LOWER THAN APPLIANCE CONDENSATE OUTLETS

E. TOTAL CONNECTED EQUIPMENT SHALL BE 300,000 BTUH OR LESS

F. DESIGN BASIS: AXIOM NC-1

5 CONDENSATE NEUTRALIZER DETAIL

NOT TO SCALE



GENERAL NOTES:

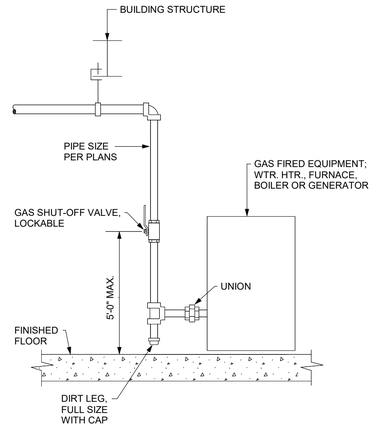
A. ADJUST HOSE STOPS AND REEL TENSION. CONTROL HANDLE TO HANG AT 4'-6" AFF UNLESS OTHERWISE REQUESTED BY OWNER.

B. QUICK DISCONNECT TO MATCH OWNER'S MODEL FOR RENOVATIONS

C. COLOR CODE EXPOSED PIPING IN SERVICE BAYS. PAINT 12" BAND ON PIPING ON 20 FOOT CENTERS WITH UNIQUE COLOR FOR EACH PIPE CONTENTS. PROVIDE CHART WITH KEY TO COLORS TO OWNER.

6 COMPRESSED AIR - HOSE REEL DETAIL

NOT TO SCALE



DETAIL NOTES:

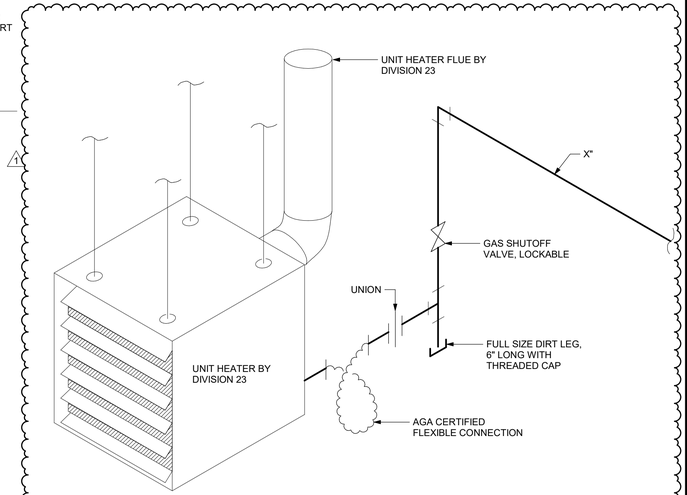
A. PROVIDE SHUT-OFF VALVE, DIRT LEG AND UNION AT EACH GAS CONNECTION ON EACH PIECE OF EQUIPMENT.

B. VERIFY CONNECTION SIZES, QUANTITIES AND LOCATIONS WITH M.C.

C. PROVIDE PIPE NIPPLE THROUGH EQUIPMENT CASE. CSST & FLEX LINES SHALL NOT PENETRATE CASING PER CODE.

7 GAS EQUIPMENT CONNECTION DETAIL

NOT TO SCALE



11 UNIT HEATER - GAS PIPING DETAIL

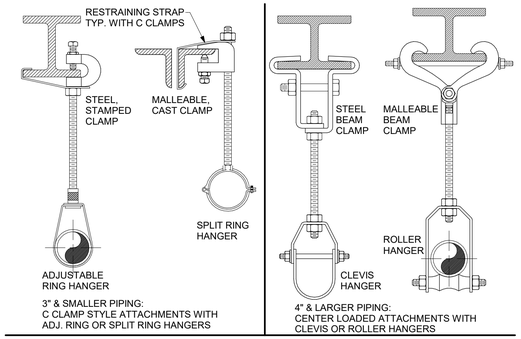
NOT TO SCALE

SUPPORT SCHEDULE					
PIPE SIZE	PIPE MATERIAL & SUPPORT SPACING				ROD SIZE
	STEEL	COPPER	PLASTIC	CAST IRON	
3/4" TO 1"	8 FT.	6 FT.	3 FT.	EACH HORIZONTAL JT., 5 FT. MAXIMUM SPACING	3/8 IN.
1 1/4" TO 2"	10 FT.	6 FT.	3 FT.		3/8 IN.
2 1/2" TO 4"	12 FT.	10 FT.	4 FT.		1/2 IN.
5" TO 6"	12 FT.	10 FT.	4 FT.		5/8 IN.
8"	12 FT.	10 FT.	4 FT.		3/4 IN.
OVER 8"	TO SUIT LOADING CONDITIONS				

DETAIL NOTES:

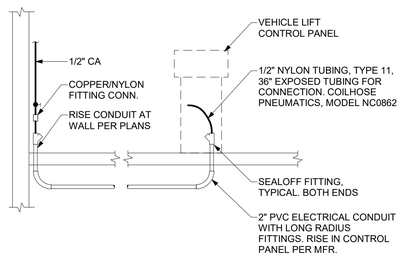
HORIZONTAL PIPING
1. SUPPORT WITHIN 18 INCHES OF EACH COUPLING JOINT FOR 10 FT. PIPE LENGTHS
2. SUPPORT AT 5 FT. INTERVALS FOR 5 FT. PIPE LENGTHS
3. 4 INCH AND LARGER PIPE - BRACE AT CHANGES IN DIRECTION TO PREVENT HORIZONTAL MOVEMENT
4. INSTALLATIONS REQUIRING MULTIPLE JOINTS WITHIN A FOUR FOOT DEVELOPED LENGTH SHALL BE SUPPORTED AT EVERY OTHER OR ALTERNATING COUPLINGS. FINISHES

5. TYPICAL - ELECTROPLATED ZINC OR CADMIUM FINISH
6. COPPER PIPING, UNINSULATED - COPPER PLATED OR PVC COATED
7. EXTERIOR & WET LOCATIONS, HOT DIPPED GALVANIZED HARDWARE & HANGERS



8 PIPE HANGER AND SPACING DETAILS - STEEL STRUCTURE

NOT TO SCALE



DRAWING NOTES:

A. PROVIDE ONE DEDICATED CONDUIT PER VEHICLE LIFT CONTROL PANEL

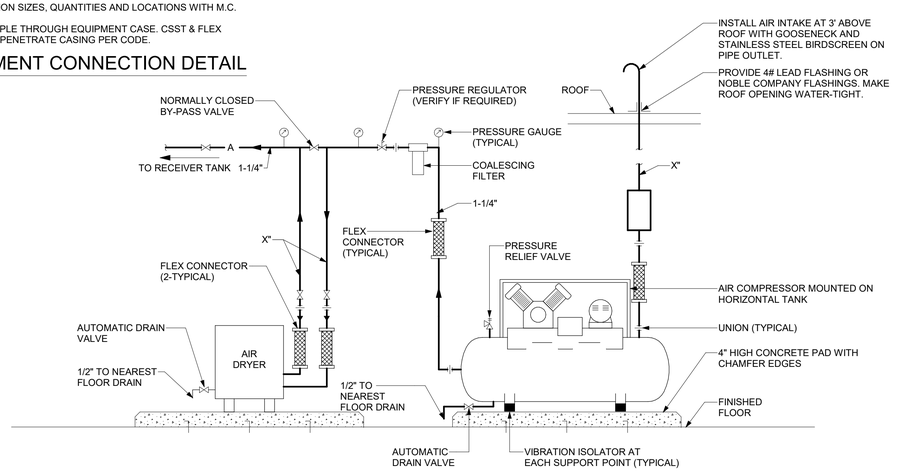
B. PROVIDE 1/2" COMPRESSED AIR CONNECTION TO CONDUIT RISER AT WALL

C. PROVIDE PERMANENT LABEL AT VALVE "VEHICLE LIFT COMPRESSED AIR"

D. STUB UP ABOVE FINISHED FLOOR PER LIFT MFR. COORDINATE CONDUIT ROUTE AND RISE LOCATIONS AT LIFT CONTROL CABINET WITH E.C. PROVIDE SEALOFF AT BOTH ENDS OF CONDUIT PER LIFT MANUFACTURER. PROVIDE 1/2", NYLON, TYPE 11, TUBING IN CONDUIT WITH 36" MIN. EXPOSED TUBING AT BOTH ENDS.

9 VEHICLE LIFT - COMPRESSED AIR DETAIL

NOT TO SCALE



DETAIL NOTES:

A. PIPE SIZES AND COMPRESSOR LOCATION AS INDICATED ON DRAWINGS .

B. COORDINATE EQUIPMENT ELECTRICAL CONNECTION REQUIREMENTS WITH SECTION 16/DIVISION 26.

C. ALL DRAIN PIPING SHALL TERMINATE AT 1" ABOVE NEAREST FLOOR DRAIN.

D. PAINT EXPOSED PIPING ABOVE ROOF WITH ONE(1) PRIMER AND TWO(2) FINISH COATS AS SPECIFIED.

10 AIR COMPRESSOR DETAIL

NOT TO SCALE

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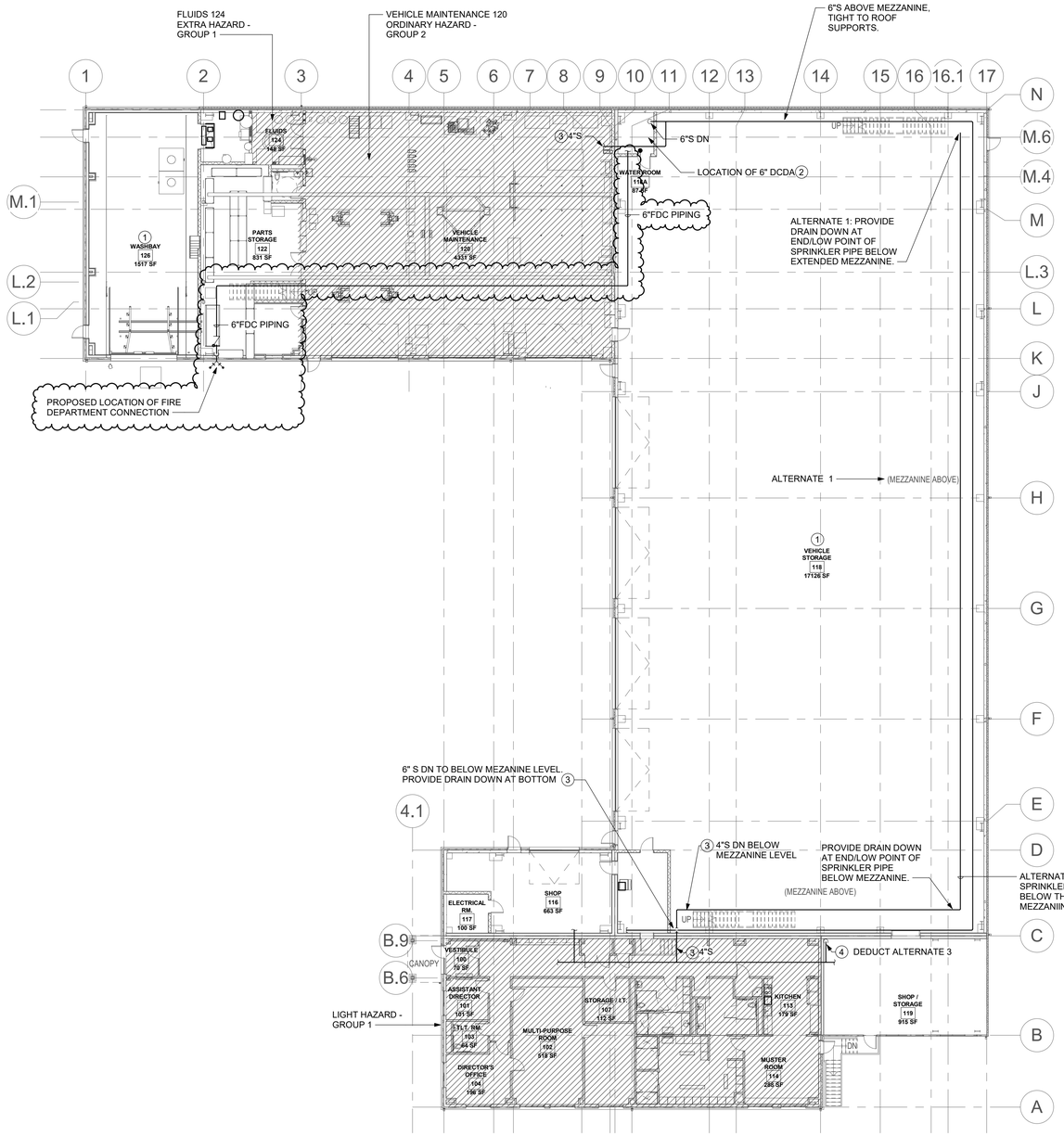
DETAILS

Sheet Number:

P501



1 OVERALL FIRST FLOOR FIRE PROTECTION PLAN

1/16" = 1'-0"

0' 8' 16' 32'

FP101 DRAWING NOTES

1 FIRE HAZARD CLASSIFICATION SHALL BE ORDINARY HAZARD GROUP 1 UNLESS OTHERWISE NOTED.
2 FIRE SERVICE BACK FLOW PREVENTOR PROVIDED BY THE PLUMBING CONTRACTOR. COORDINATE SIZE AND CLEARANCE REQUIRMENTS WITH THE PC BASED ON THE RESULTS OF THE HYDRAULIC CALCULATIONS. REFER TO THE PLUMBING DRAWINGS FOR ROOM LAYOUT.
3 SPRINKLER MAIN SIZES INDICATED ARE FOR SUGGESTED ROUTING REFERENCE ONLY. THIS CONTRACTOR SHALL HYDRAULICALLY CALULATE AND CONFIRM ALL MAINS AND BRANCH PIPING.
4 DEDUCT ALTERNATE No. 3: 2"S DN TO BASEMENT LEVEL. PROVIDE DRAIN DOWN AT BOTTOM.

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY

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RHINEBECK ARCHITECTURE

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Reviewed By: PJW
Approved By: BAB

W&S Project No: N2190088

Drawing Title:

OVERALL FIRE PROTECTION FLOOR PLAN

Sheet Number:

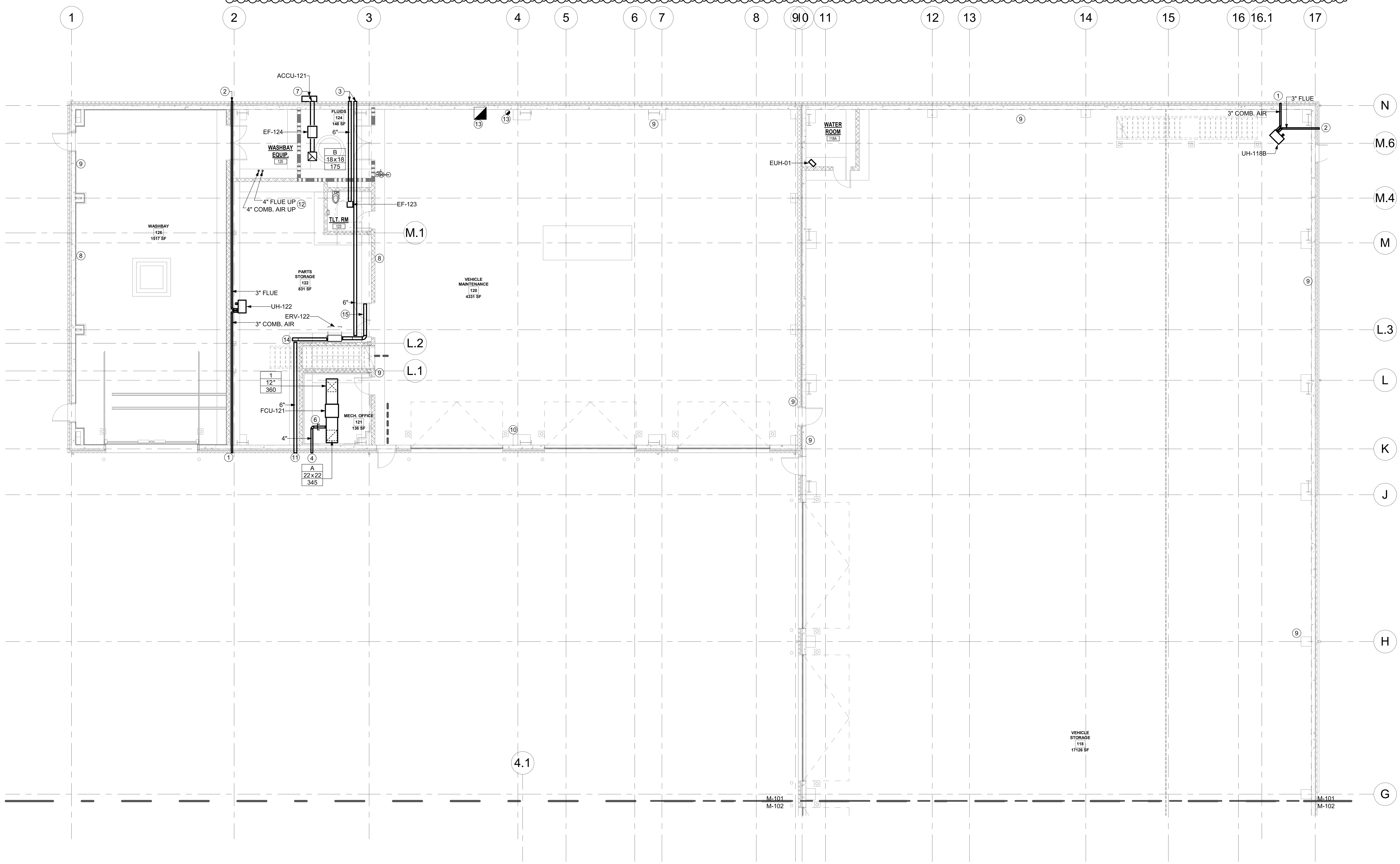
FP101

M-101 DRAWING NOTES

1 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
2 PROVIDE 3" DOUBLE WALL B VENT PER SPECIFICATION. TERMINATE WITH RAIN CAP.
3 PROVIDE 6" WALL CAP WITH BACKDRAFT DAMPER.
4 PROVIDE 4" WALL CAP.
6 BALANCE THE OUTSIDE AIR DUCT TO PROVIDE 25 CFM OF OUTDOOR AIR.
7 PROVIDE 8" WALL CAP WITH BACKDRAFT DAMPER.
8 PROVIDE HONEYWELL 301CC0 AND GAS DETECTION SYSTEM AT THIS LOCATION MOUNT 6'-0" ABOVE FINISHED FLOOR. PROVIDE ALARM LIGHT BAR ON TOP OF UNIT.
9 LOCATE HONEYWELL E3POINT SENSOR FOR GAS DETECTION SYSTEM WITH ALARM LEVEL LIGHTS AND HORN AT THIS LOCATION. SENSOR SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR. PROVIDE WIRING BACK TO HONEYWELL 301CC0 AND GAS DETECTION SYSTEM.

M-101 DRAWING NOTES

10 PROVIDE MONOXIVENT 6" DIAMETER 25' SPARE EXHAUST REEL AT THIS LOCATION.
11 PROVIDE 6" WALL CAP.
12 4" FLUE AND 4" COMBUSTION AIR TO BE CONNECTED TO HOT WATER HEATER. REFER TO EQUIPMENT DRAWINGS FOR EXACT LOCATION OF HOT WATER HEATER.
13 TERMINATE EXHAUST DUCT 18" ABOVE FINISHED FLOOR. CUT DUCT AT 45 DEGREES COVER DUCT WITH WIRE MESH SCREEN.
14 CUT DUCT AT 45 DEGREE ANGLE WITH WIRE MESH SCREEN.
15 PROVIDE 12x4 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 100 CFM.



1 FIRST FLOOR DUCTWORK PLAN - AREA A
1/8" = 1'-0"

Project:

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Reviewed By: TES
Approved By: BAB
W&S Project No: N2190088

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FIRST FLOOR DUCTWORK PLAN - AREA A

Sheet Number:

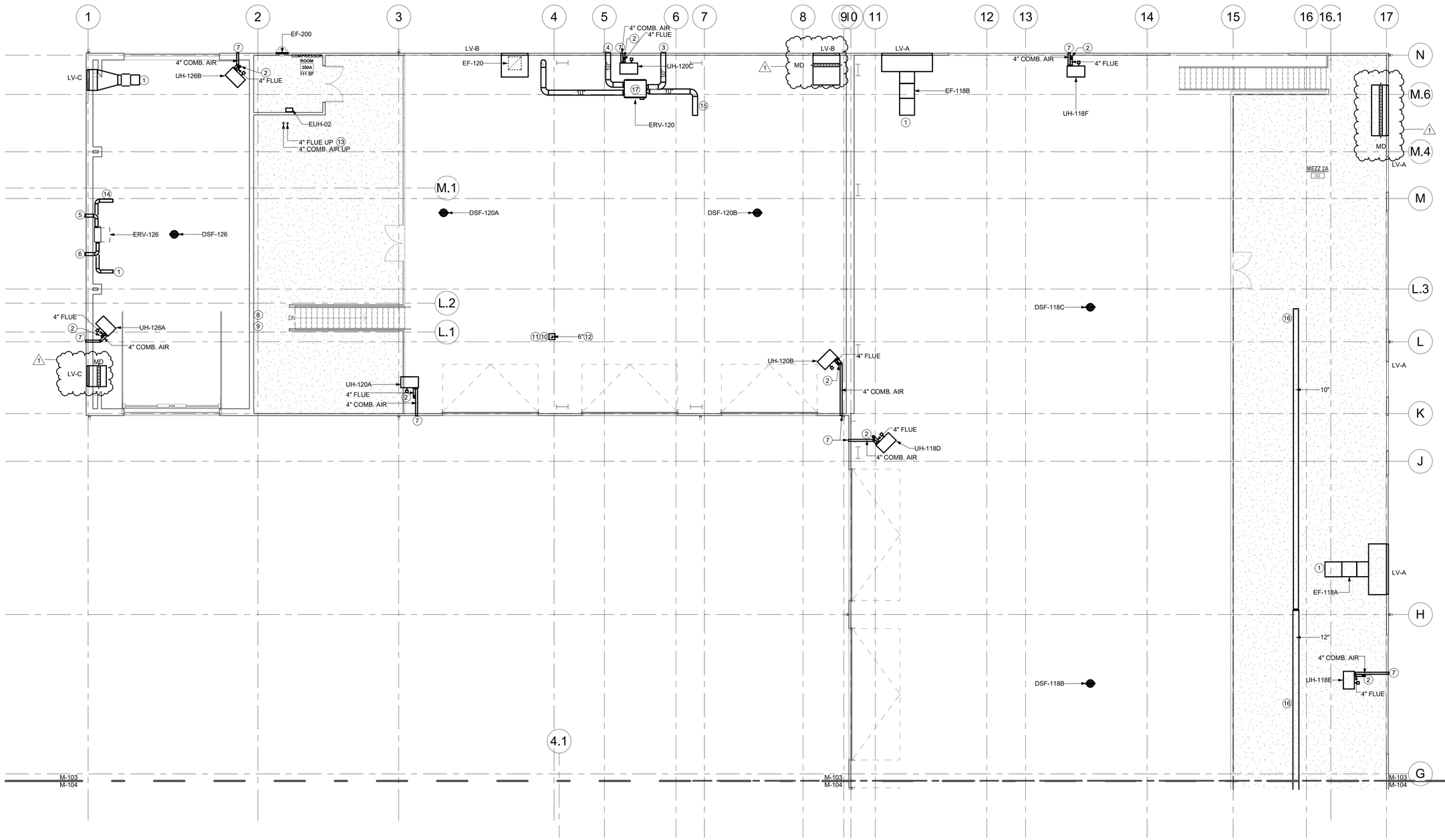
M101

M-103 DRAWING NOTES

1 CUT DUCT AT 45 DEGREE ANGLE WITH WIRE MESH SCREEN.
2 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
3 PROVIDE 10" WALL CAP WITH BACKDRAFT DAMPER.
4 PROVIDE 10" WALL CAP.
5 PROVIDE 6" WALL CAP WITH BACKDRAFT DAMPER.
6 PROVIDE 6" WALL CAP.
7 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.

M-103 DRAWING NOTES

8 PROVIDE HONEYWELL 301CC0 AND GAS DETECTION SYSTME AT THIS LOCATION MOUNT 6'-0" ABOVE FINISHED FLOOR.
9 LOCATE HONEYWELL E3POINT SENSOR FOR GAS DETECTION SYSTEM WITH ALARM LEVEL LIGHTS AND HORN AT THIS LOCATION. SENSOR SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR.
10 PROVIDE MONOXIVENT SPRING OPERATED REEL MODEL 9000-W, 6" DIAMETER, 36' HOSE LENGTH.
11 PROVIDE MONOXIVENT D20 FAN, 208V 3 PHASE MOTOR. SIZE 900 CFM 6" ESP.
12 6" DUCT UP FROM EXHAUST REEL AND ASSOCIATED FAN. TERMINATE ABOVE ROOF WITH GOOSENECK.
13 TERMINATE 4" FLUE AND 4" COMBUSTION AIR IN A CONCENTRIC VENT ABOVE ROOF.
14 PROVIDE 12x4 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 100 CFM.
15 PROVIDE 12x8 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 250 CFM.
16 PROVIDE 12x8 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 300 CFM.
17 MOUNT ERV BELOW UNIT HEATER.



1 MEZZANINE FLOOR DUCTWORK PLAN - AREA A
1/8" = 1'-0"

Project:

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Reviewed By:	TES
Approved By:	BAB
W&S Project No:	N2190088

Drawing Title:

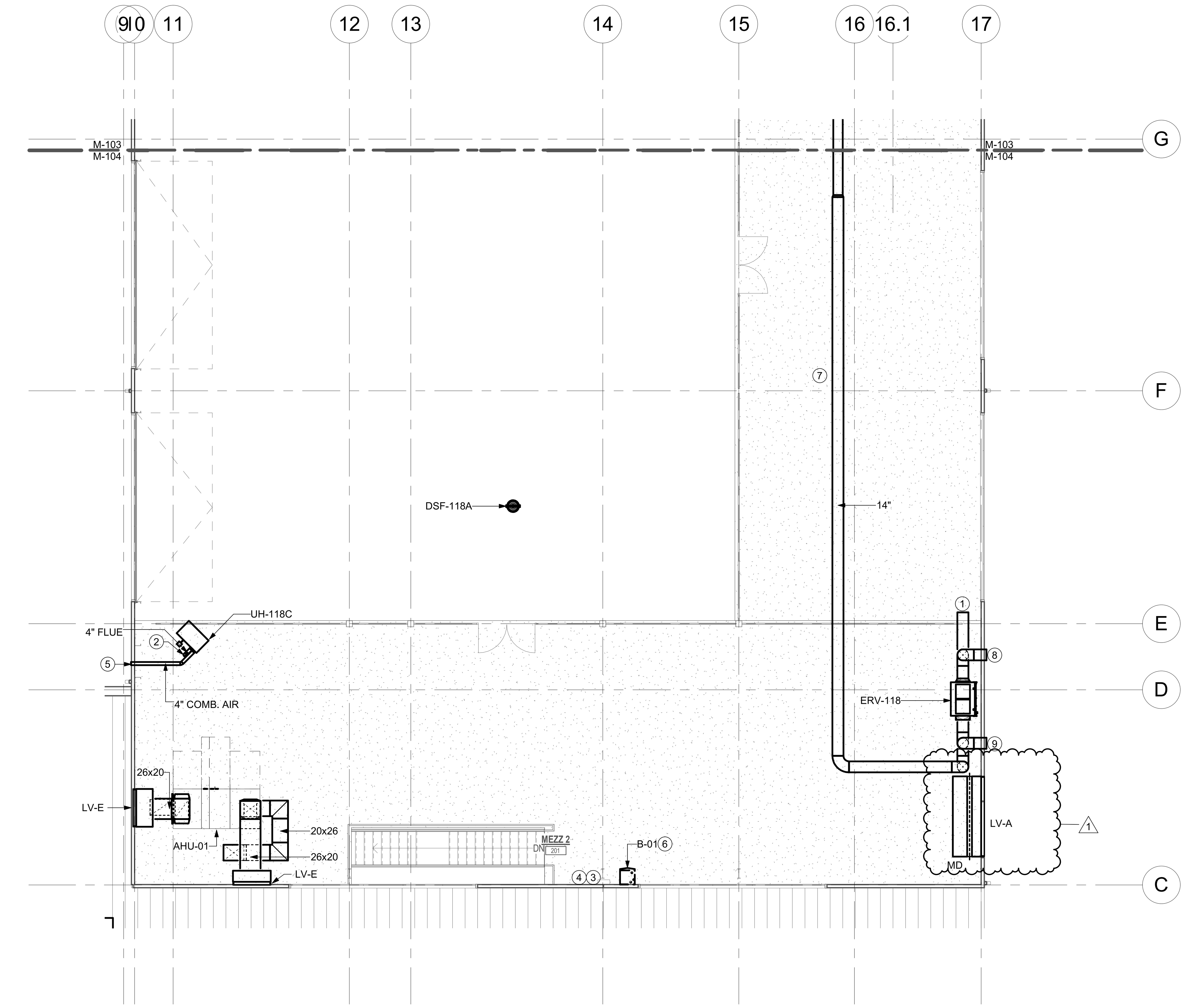
MEZZANINE DUCTWORK PLAN - AREA A

Sheet Number:

M103

M-104 DRAWING NOTES

1 CUT DUCT AT 45 DEGREE ANGLE WITH WIRE MESH SCREEN.
2 PROVIDE 3" DOUBLE WALL B VENT PER SPECIFICATION. TERMINATE WITH RAIN CAP.
3 PROVIDE HONEYWELL 301CC0 AND GAS DETECTION SYSTME AT THIS LOCATION MOUNT 6'-0" ABOVE FINISHED FLOOR.
4 LOCATE HONEYWELL E3POINT SENSOR FOR GAS DETECTION SYSTEM WITH ALARM LEVEL LIGHTS AND HORN AT THIS LOCATION. SENSOR SHALL BE MOUNTED 5'-0" ABOVE FINISHED FLOOR.
5 PROVIDE 3" GALVANIZED COMBUSTION AIR DUCT FOR UNIT HEATER. TERMINATE PER UNIT HEATER MFG INSTALLATION INSTRUCTIONS.
6 TERMINATE 3" COMBUSTION AIR AND 3" FLUE FROM B-01 IN CONCENTRIC VENT ON ROOF.
7 PROVIDE 12x8 TYPE 2 SUPPLY GRILLE AT THIS LOCATION. BALANCE TO 300 CFM.
8 PROVIDE 14" WALL CAP.
9 PROVIDE 14" WALL CAP WITH BACKDRAFT DAMPER.



1 MEZZANINE FLOOR DUCTWORK PLAN - AREA B
1/8" = 1'-0"

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NEW PUBLIC WORKS FACILITY

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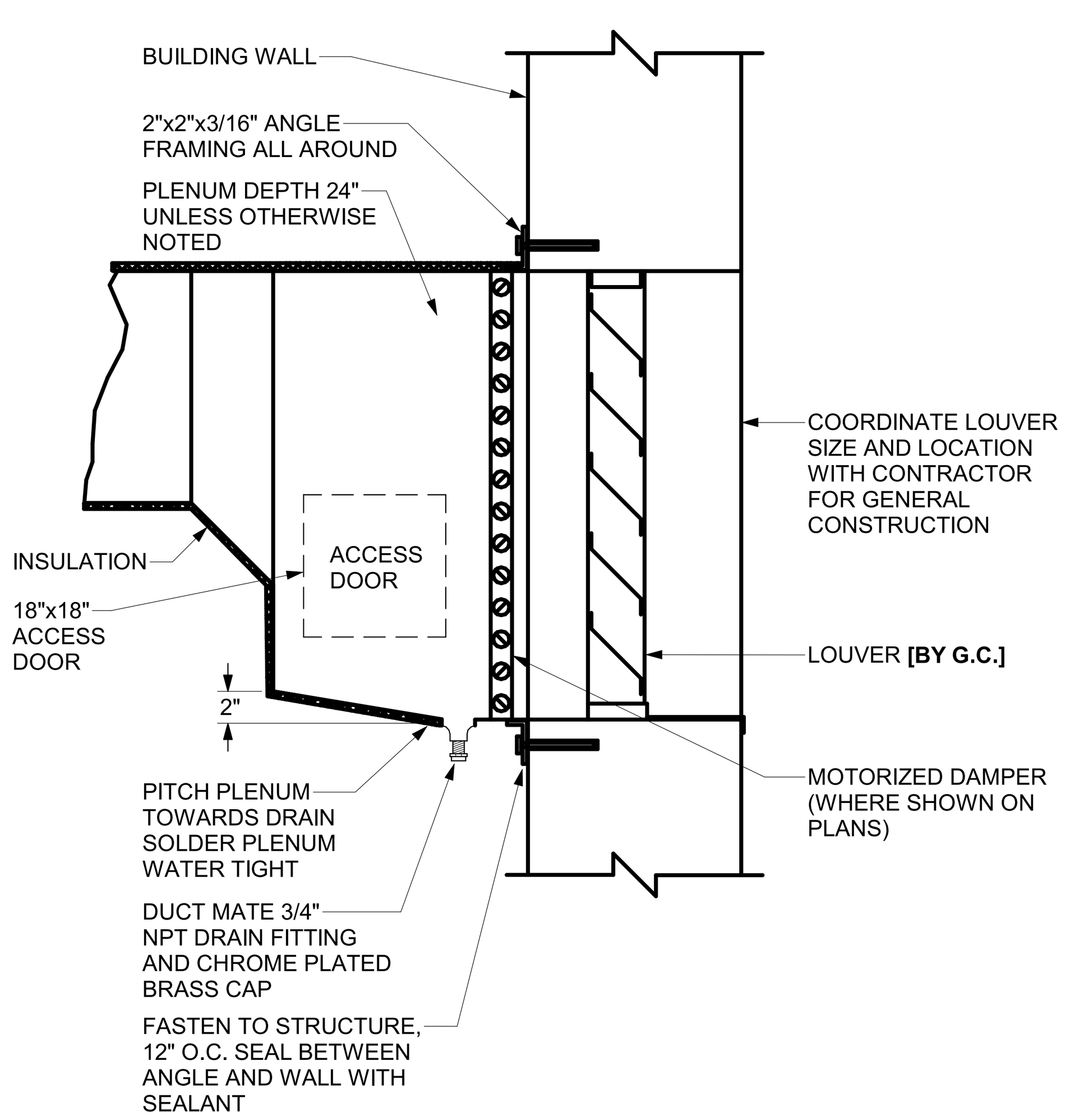
MEZZANINE DUCTWORK PLAN - AREA B

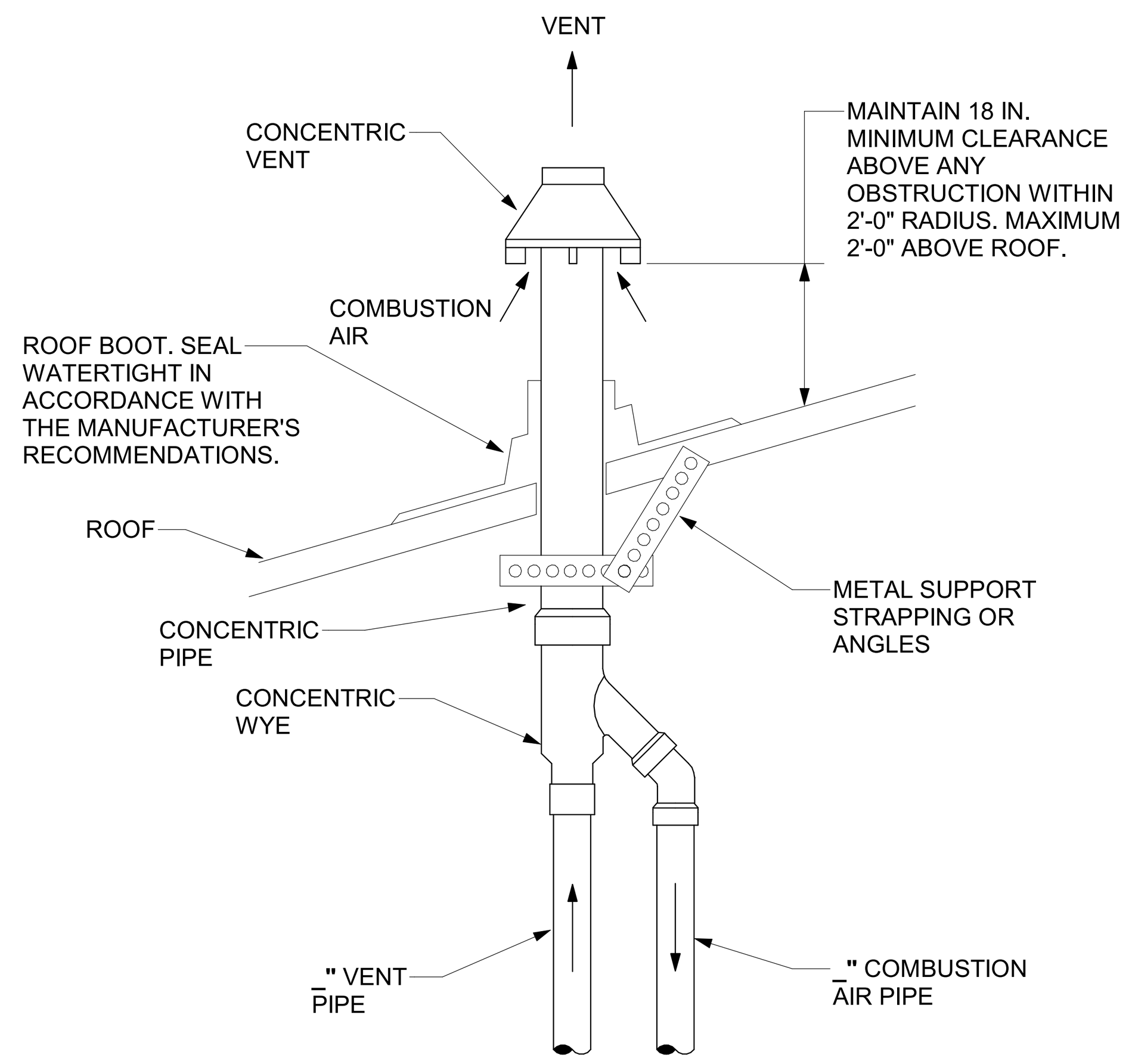
Sheet Number:

M104



1 LOUVER PLENUM DETAIL

NOT TO SCALE

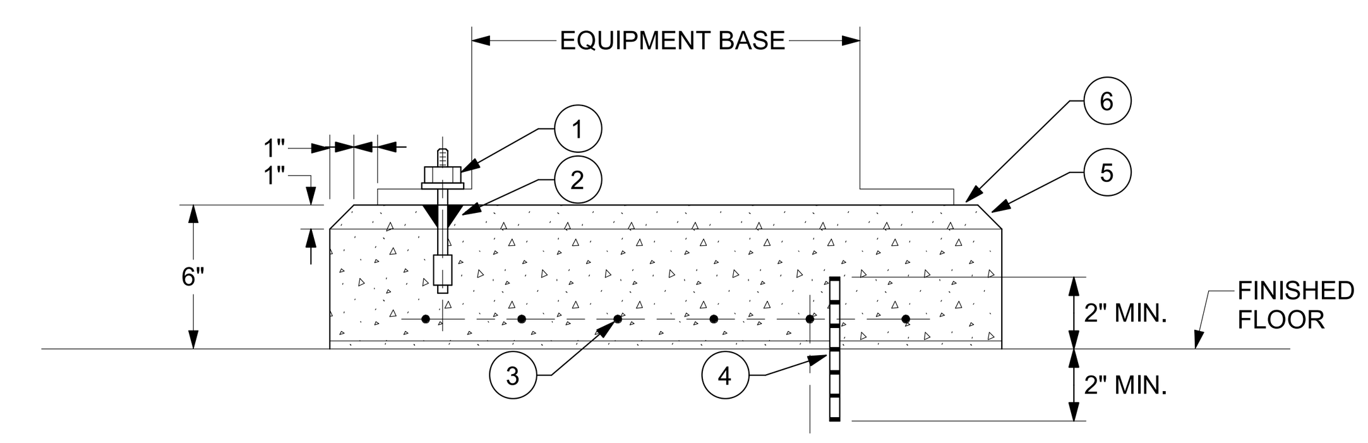


DETAIL NOTES:

A. CONCENTRIC WYE, CONCENTRIC PIPE AND CONCENTRIC VENT TERMINATION ARE PART OF A MANUFACTURED KIT.

2 CONCENTRIC VENT TERMINATION KIT DETAIL - ROOF

NOT TO SCALE



DETAIL NOTES:

1 ANCHOR BOLT, SIZE & LOCATION AS REQUIRED TO MATCH EQUIPMENT BASE.

2 PLASTIC SLEEVE & ANCHOR.

3 #3 REINFORCING BARS, 12" O.C. EACH WAY.

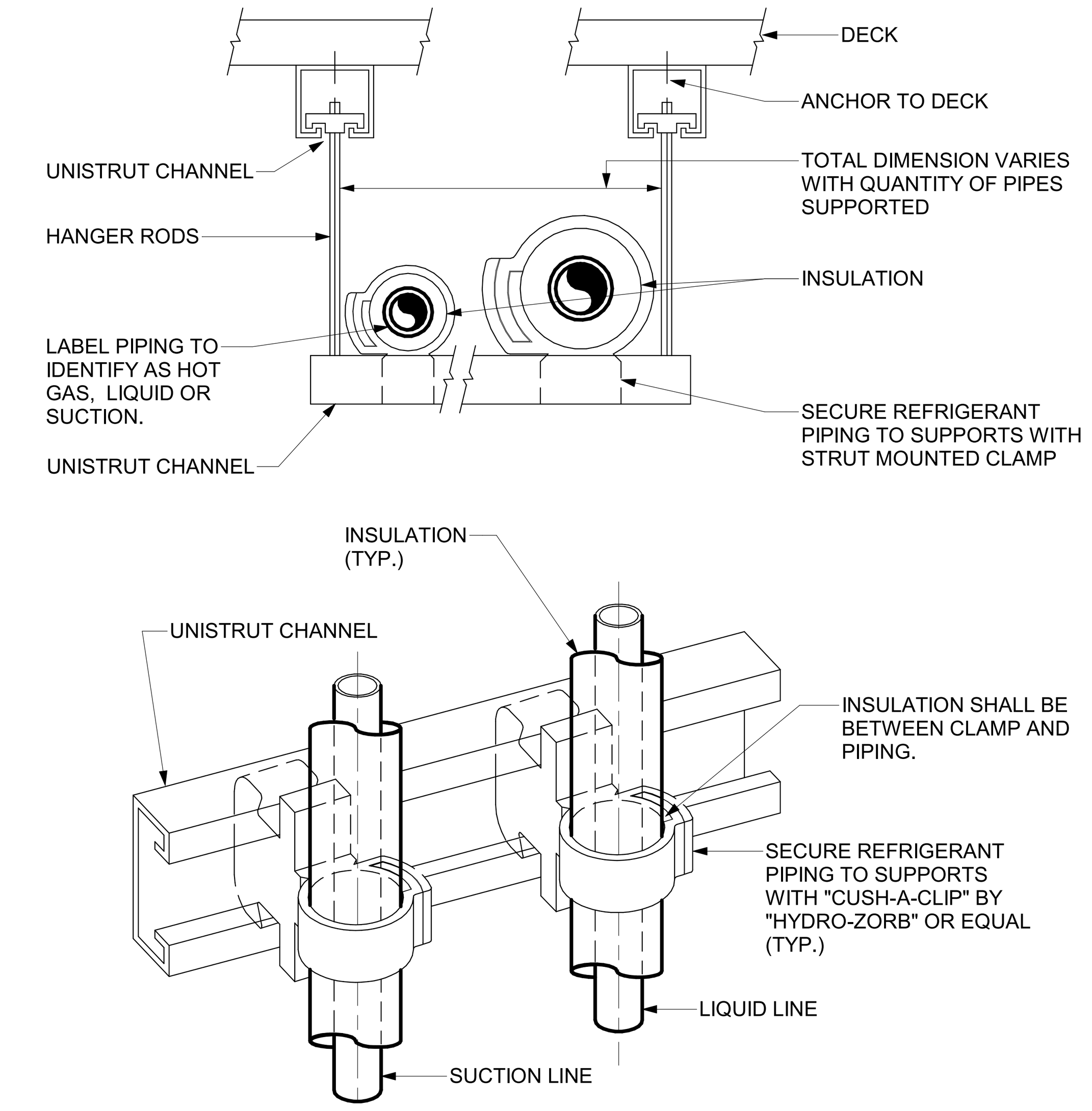
4 #4 DOWEL, 12" O.C.

5 CHAMFER.

6 CONCRETE PAD 3,000 PSI CONCRETE, LENGTH & WIDTH, 6" GREATER THAN THE EQUIPMENT BASE PLATE.

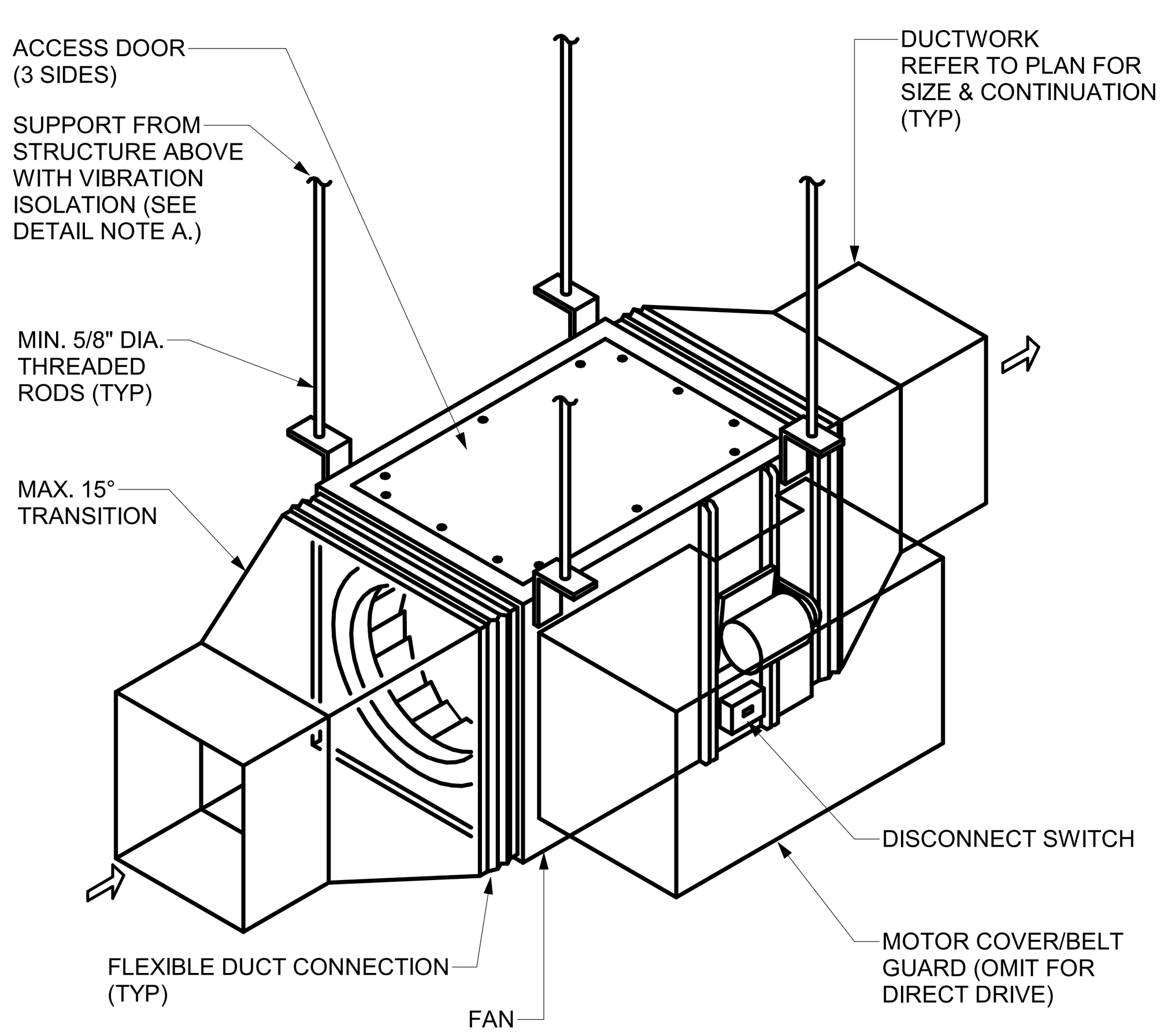
3 CONCRETE EQUIPMENT BASE DETAIL

NOT TO SCALE



4 REFRIGERANT PIPE SUPPORT DETAIL

NOT TO SCALE



DETAIL NOTES:

A. VIBRATION ISOLATORS SHALL BE PROVIDED AS SPECIFIED AND IN ACCORDANCE WITH THE FAN MANUFACTURER'S RECOMMENDATIONS **[AND SPECIFICATION 230548 - VIBRATION ISOLATION OF MECHANICAL SYSTEMS.]**

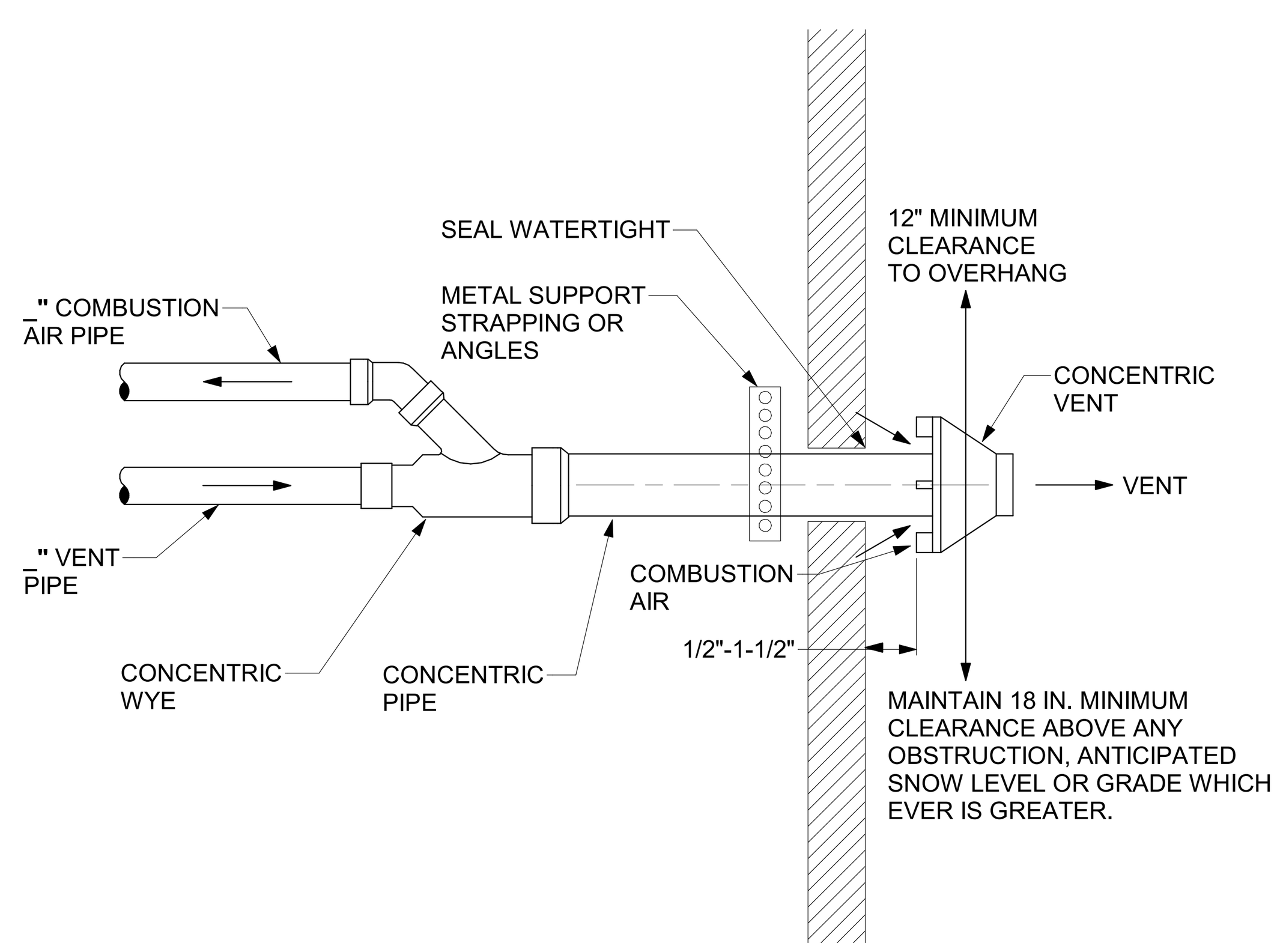
B. FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS EXPLICITY.

C. ORIENT SUCH THAT ACCESS TO MOTOR IS NOT OBSTRUCTED.

D. DETAIL ABOVE DEPICTS SQUARE TYPE IN-LINE EXHAUST FAN. TUBULAR TYPE IS SIMILAR.

5 INLINE FAN DETAIL

NOT TO SCALE

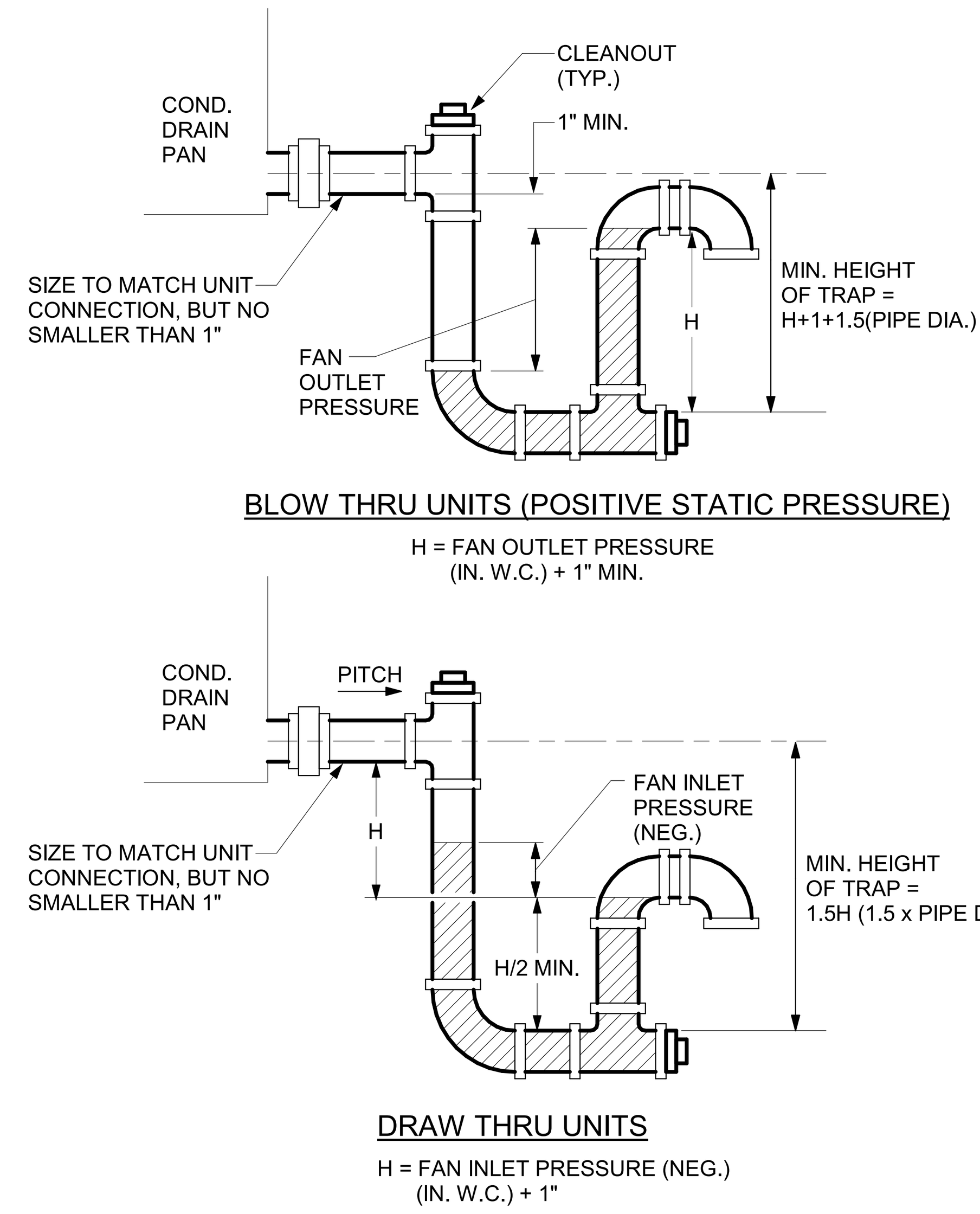


DETAIL NOTES:

A. CONCENTRIC WYE, CONCENTRIC PIPE AND CONCENTRIC VENT TERMINATION ARE PART OF A MANUFACTURED KIT.

6 CONCENTRIC VENT TERMINATION KIT DETAIL - SIDEWALL

NOT TO SCALE



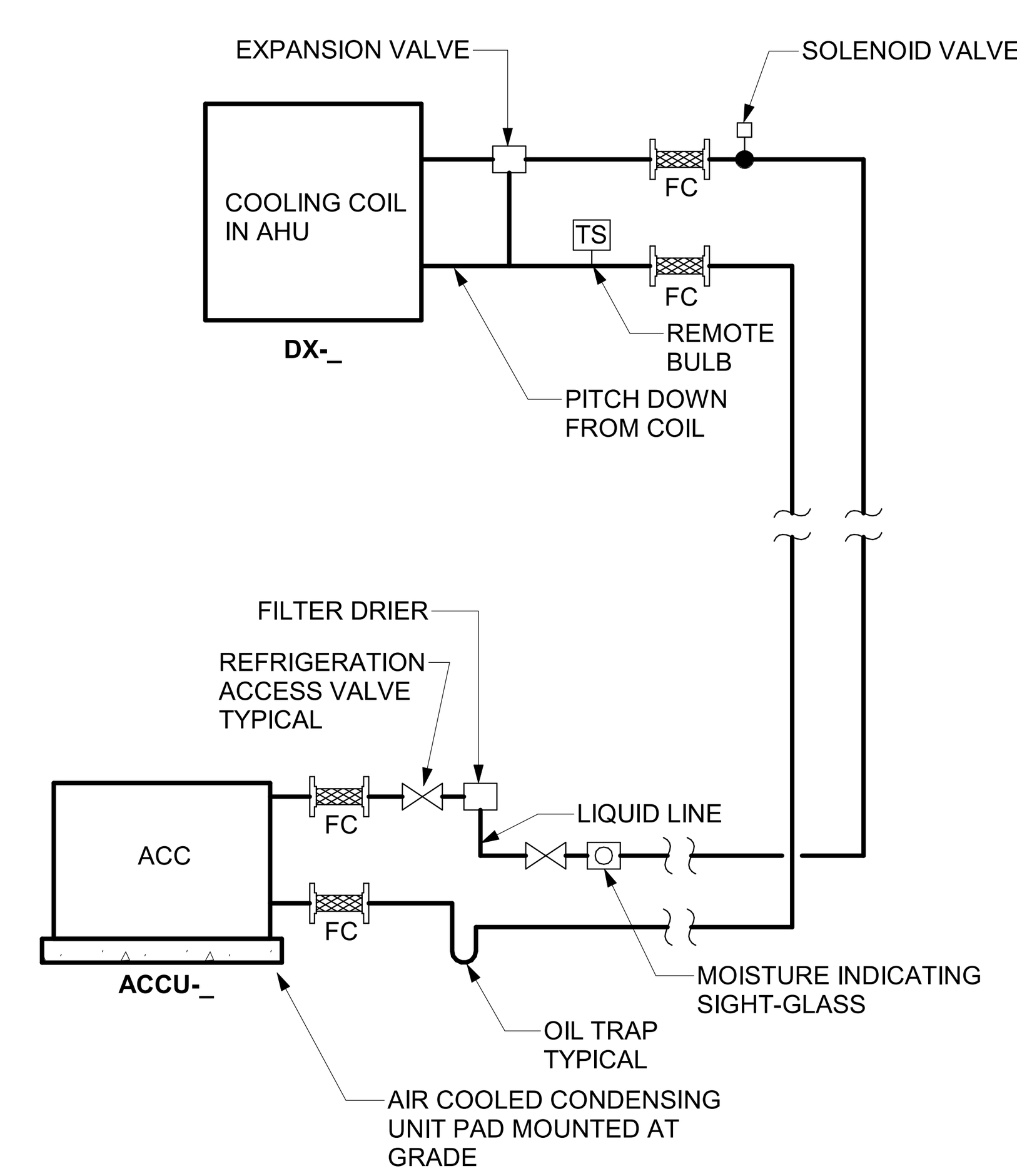
DETAIL NOTES:

A. AS AN ALTERNATE, IT IS ACCEPTABLE TO PIPE THE TRAP EXACTLY AS SHOWN IN THE MANUFACTURER'S INSTALLATION MANUAL.

B. SEE SPECIFICATIONS FOR PIPE TYPE.

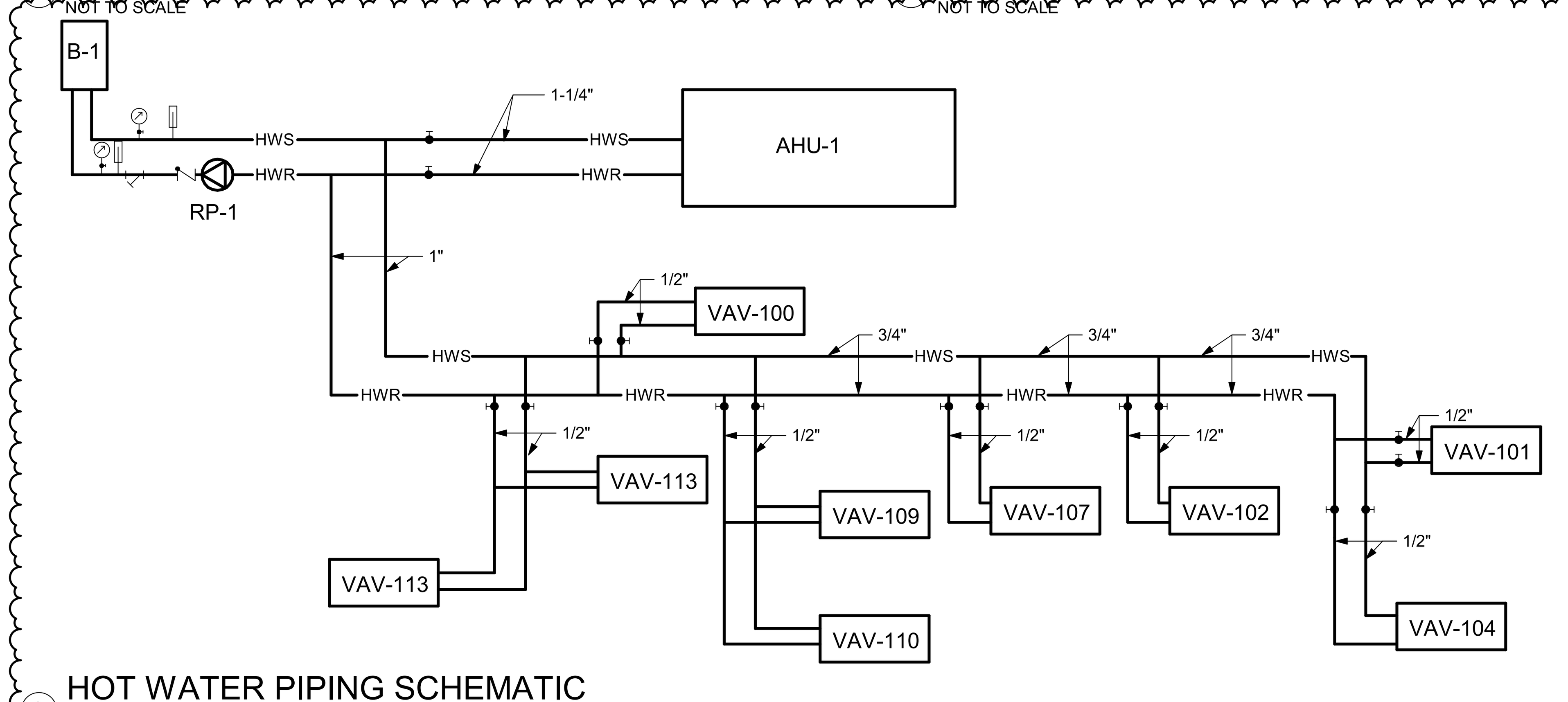
7 ROOFTOP UNIT CONDENSATE DRAIN TRAP DETAIL

NOT TO SCALE



8 DX PIPING CONNECTIONS DETAIL - CONDENSING UNIT BELOW COIL

NOT TO SCALE



9 HOT WATER PIPING SCHEMATIC

NTS

Project:

VILLAGE OF ARDSLEY, NY

VILLAGE OF ARDSLEY NEW YORK 1896

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Reviewed By: TES

Approved By: BAB

W&S Project No: N2190088

Drawing Title:

DETAILS

Sheet Number:

M501

GENERAL NOTES

(APPLY TO ALL DRAWINGS)

A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES TO PERFORM ALL OPERATIONS REQUIRED FOR THE COMPLETE INSTALLATION AND RELATED WORK AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN. ELECTRIC EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER.

B. PROVIDE ALL ELECTRICAL EQUIPMENT CONNECTIONS.

C. PROVIDE ALL REQUIRED SUPPORTS AND ACCESSORIES.

D. PROVIDE ALL WORK IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE LATEST EDITION OF THE:
1. BUILDING CODE OF NEW YORK STATE
2. ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE
3. OSHA REQUIREMENTS
4. LOCAL MUNICIPAL ORDINANCES AND CODES
5. AUTHORITY HAVING JURISDICTION (AHJ)
6. SERVING UTILITY COMPANIES

E. PROVIDE ELECTRICAL INSPECTION CERTIFICATE FROM INSPECTION AGENCY RECOGNIZED AS ACCEPTABLE FROM THE AHJ.

F. ALL RECEPTACLES INDICATED AS GFI TYPE MUST BE A GFI RECEPTACLE. CONNECTING NORMAL RECEPTACLES DOWNSTREAM OF ONE GFI RECEPTACLE IS NOT ACCEPTABLE PROVIDE TEMPORARY ELECTRICAL SERVICE IN SIZES TO ACCOMMODATE CONSTRUCTION WHERE REQUIRED.

G. REPAIR OR REPLACE ALL DEFECTS IN MATERIAL OR WORKMANSHIP WITHIN ONE YEAR OF CONSTRUCTION CLOSE OUT DATE AT NO ADDITIONAL COST TO THE OWNER.

H. PERFORM ALL OPERATIONS REQUIRED FOR A COMPLETE SYSTEM TEST. PRIOR TO CLOSE OUT DATE SUBMIT ALL SATISFACTORY SYSTEM TEST RESULTS FOR RECORD.

I. SUBMITTALS:
1. ALL ITEMS OF EQUIPMENT AND MATERIALS PROVIDED SHALL BE SUBMITTED FOR ENGINEERING REVIEW.
2. SUBMIT A MINIMUM OF THREE COPIES OF SHOP DRAWINGS/PRODUCT DATA INFORMATION.

J. CONTRACTOR IS HERE BY CAUTIONED THAT ELECTRIC POWER CHARACTERISTICS (VOLTAGE, PHASE, HORSEPOWER, AMPERAGE, ETC.) OF EQUIPMENT IS BASED ON AVAILABLE INFORMATION AT THE TIME OF PROJECT DESIGN. CONTRACTOR MUST VERIFY CHARACTERISTICS FOR EACH PIECE OF NEW EQUIPMENT PRIOR TO ORDERING ELECTRICAL EQUIPMENT. INDICATE VERIFICATION ON SUBMITTALS.

K. LOCATIONS INDICATED FOR LIGHTING FIXTURES ARE APPROXIMATE. LOCATE FIXTURES AS REQUIRED TO AVOID INTERFERENCE WITH BUILDING STEEL, PIPING, DUCTWORK, CONDUIT, DIFFUSERS, GRILLES, SPEAKERS, SMOKE DETECTORS, ETC. FIELD COORDINATE EXACT LOCATIONS AS NEAR AS POSSIBLE TO THE LOCATION INDICATED. VERIFY COMPLIANCE WITH NEC ARTICLE 410.16 FOR INSTALLATION OF LIGHT FIXTURES IN CLOTHES CLOSETS, PRIOR TO ROUGH-IN. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS.

L. EXACT LOCATIONS OF CEILING MOUNTED SMOKE DETECTORS, EXIT SIGNS, ETC. SHALL BE COORDINATED WITH OTHER CEILING MOUNTED EQUIPMENT TO AVOID CONFLICT. LOCATE DEVICES AS NEAR AS POSSIBLE TO THE LOCATION INDICATED. FIRE ALARM SMOKE AND HEAT DETECTORS SHALL BE LOCATED 3'-0 MINIMUM FROM HVAC DIFFUSERS, REGISTERS, GRILLES, ETC. SMOKE DETECTORS AT SMOKE DOORS MUST BE INSTALLED WITHIN 5'-0 OF THE DOORS (REFER TO NFPA 72).

M. ALL NEW CIRCUITING SHALL BE CONCEALED (EXCEPT IN UNFINISHED SPACES). PROVIDE ALL CUTTING AND PATCHING AS REQUIRED.

N. CONTRACTOR SHALL REVIEW ALL TRADES' CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT. COORDINATE EXACT MOUNTING LOCATIONS WITH THE ARCHITECT AND OTHER CONTRACTORS. REFER TO ARCHITECTURAL PLANS FOR CASEWORK LAYOUT, ELEVATIONS, ETC. COORDINATE WITH LOCATIONS OF ELECTRICAL DEVICES AND OUTLETS

O. EXACT LOCATION OF MECHANICAL AND PLUMBING EQUIPMENT THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THE MECHANICAL AND PLUMBING DRAWINGS.

P. PROVIDE CONDUIT/WIRING (CIRCUITING) AND REQUIRED CONNECTIONS TO ALL DEVICES/ EQUIPMENT. CONNECT TO CIRCUIT(S) AS INDICATED.

Q. COORDINATE ALL WORK WITH OTHER TRADES; REFER TO ARCHITECTURAL DRAWINGS FOR COORDINATING LOCATIONS.

R. RE-INSTALL REMOVED SYSTEM DEVICES REMOVED AS A RESULT IN WALL, PARTITION OR CEILING REPLACEMENT WORK. PROVIDE POWER AND COMMUNICATION WALL AND PARTITION MOUNTED DEVICES AND RECONNECT TO EXISTING SYSTEMS. CLEAN EXISTING CEILING MOUNTED DEVICES. EXTEND EXISTING SYSTEM CIRCUITS AS REQUIRED FOR REINSTALLATION. COORDINATE WITH EXISTING SYSTEM MANUFACTURER.

S. SLEEVE AND SEAL ALL WALL AND FLOOR PENETRATIONS. PROVIDE APPROPRIATE FIRE STOPPING FOR ALL PENETRATIONS.

T. SHARED NEUTRAL SHALL NOT BE ALLOWED ON ANY BRANCH CIRCUITS. MAINTAIN SERVICE CLEARANCES OF ALL EQUIPMENT. ADVISE OTHER TRADES OF SERVICE CLEARANCES AND ENSURE NO SERVICES OR TRADES RUN THROUGH SERVICE AREA.

U. ALL WIRING INDICATED ON PLANS IS TO BE COPPER WIRING UNLESS OTHERWISE NOTED.

V. REFER TO ONE-LINE DIAGRAM. RATINGS TO MATCH THE RATING OF THE WALL/CEILING. UTILIZE FIRE RATED PUDDY PADS IN THESE LOCATIONS.

W. REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING OF RECEPTACLES IN AND NEAR ALL MILLWORK AND CABINETRY.

X. THE CONTRACTOR MUST FOLLOW FEDERAL AND STATE ELECTRICAL SAFETY PRACTICE INCLUDING LOCK OUT TAG OUT (LOTO). THE CONTRACTOR MUST AFFIX THEIR COMPANY'S INDIVIDUAL LOTO LOCKS AND TAGS TO CONTROL HAZARDOUS ENERGIES AND TO PREVENT INJURIES

COORDINATION NOTES

(APPLY TO ALL DRAWINGS)

A. VERTICAL CLEARANCES BY SPACE:
a. VEHICLE STORAGE 19'-8"
b. MAINTENANCE 23'-0"
c. WASH BAY 23'-0"
d. MEZZANINE 7'-6"
e. SHOPS 19'-0"
f. CANOPY 21'-8"

ABBREVIATIONS

ABBREV.	DESCRIPTION
A	AMPERE
AIC	AMPERE INTERRUPTING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
ASD	ADJUSTABLE SPEED DRIVE
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AV	AUDIOVISUAL
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CLG	CEILING
CM	CONSTRUCTION MANAGER
CU	COPPER
DN	DOWN
EA	EACH
EC	ELECTRICAL CONTRACTOR
EG	EQUIPMENT GROUND
ELEC	ELECTRIC
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GFI	GROUND FAULT CIRCUIT INTERRUPTER
G/GND	GROUND
HH	HAND HOLE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LED	LIGHT EMITTING DIODE
LTG	LIGHTING
MC	METAL CLAD CABLE
MCB	MAIN CIRCUIT BREAKER
MH	MAN HOLE
MLO	MAIN LUG ONLY
NA	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NM	NON-METALLIC SHEATHED CABLE
NMT	NON-METALLIC TUBING
NTS	NOT TO SCALE
OH	OVERHEAD
PH	PHASE
PC	PLUMBING CONTRACTOR OR PHOTO CELL
P	POLE
RMC	RIGID METAL CONDUIT
SP	SPACE
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATION
STP	SHIELDED TWISTED PAIR
SW	SWITCH
SWBD	SWITCHBOARD
TV	TELEVISION
TYP	TYPICAL
UC	MOUNTED UNDER COUNTER HEIGHT OR UNDERGROUND COMMUNICATION
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
UL	UNDERWRITER'S LABORATORY
V	VOLT
W	WIRE OR WATT
WP	WEATHERPROOF
XP	EXPLOSION PROOF

POWER DISTRIBUTION AND CONTROL

SYMBOL	DESCRIPTION
T-XX	TRANSFORMER, REFER TO ONE LINE DIAGRAM AND TRANSFORMER SCHEDULE FOR SIZE AND TYPE
PP-XX	208/120 VOLT RECESSED PANELBOARD
PP-XX	208/120 VOLT PANELBOARD
PP-XX	480/277 VOLT RECESSED PANELBOARD
PP-XX	480/277 VOLT PANELBOARD
	DISTRIBUTION PANELBOARD.
	MOTOR STARTER. REFER TO ELECTRIC EQUIPMENT AND CONTROL SCHEDULE FOR SIZE AND TYPE.
	DISCONNECT SWITCH AMP RATING AS INDICATED
	FUSED DISCONNECT SWITCH AMP RATING AS INDICATED
	COMBINATION DISCONNECT SWITCH AND MAGNETIC STARTER REFER TO ELECTRIC EQUIPMENT AND CONTROL SCHEDULE
ASD	ADJUSTABLE SPEED DRIVE
M	ELECTRICAL CONNECTION. REFER TO ELECTRIC EQUIPMENT AND CONTROL SCHEDULE FOR DESCRIPTION. LETTERS AND NUMBERS REFER TO "ITEM DESIGNATION" ON THE SCHEDULE.
ACCU-*	ELECTRICAL CONNECTION. REFER TO ELECTRIC EQUIPMENT AND CONTROL SCHEDULE FOR DESCRIPTION. LETTERS AND NUMBERS REFER TO "ITEM DESIGNATION" ON THE SCHEDULE.
	SINGLE POINT CONNECTION TO EQUIPMENT
S_M	MANUAL MOTOR STARTER
SPD	SURGE PROTECTIVE DEVICE
X	EQUIPMENT CONNECTION, REFER TO EQUIPMENT SCHEDULE FOR WIRING REQUIREMENTS NUMBER INDICATES ITEM ON SCHEDULE.

BASIC MATERIALS AND METHODS

SYMBOL	DESCRIPTION
TV SP SP	GANGED DEVICES
	TWO PIECE PREWIRED SURFACE RACEWAY
	DIVIDABLE SURFACE RACEWAY WITH DEVICES AS INDICATED.
	SPECIAL PURPOSE RECEPTACLE. PROVIDE PROPER VOLTAGE, CLASS, CURRENT RATING AND NEMA CONFIGURATION AS REQUIRED BY BRANCH CIRCUIT AND/OR MATCH CAP ON EQUIPMENT BEING FURNISHED BY OTHERS. PROVIDE CORD AND CAP. SUBSCRIPT INDICATES TYPE: # - NEMA TYPE D - DRYER RECEPTACLE R - RANGE RECEPTACLE T - TWISTLOCK X - MATCH EQUIPMENT CAP
J	JUNCTION BOX
	PUSH BUTTON
E_B	EMERGENCY SHUTDOWN PUSH BUTTON, SUBSCRIPT INDICATE TYPE: B - BOILER G - GENERATOR P - POWER
	DUPLEX RECEPTACLE, SUBSCRIPTS INDICATE TYPE: G - GROUND FAULT CIRCUIT INTERRUPTER AC - ABOVE COUNTER WP - WEATHERPROOF
	DUPLEX RECEPTACLE, CEILING MOUNTED
	TWO DUPLEX RECEPTACLE, SINGLE COVER
TC	TIME CLOCK
HD	ELECTRIC HAND DRYER
HH	UNDERGROUND HANDHOLE
MH	MANHOLE
1 X	REFERENCE TO DRAWING NOTE
	EXISTING WIRING OR EQUIPMENT, SOLID LIGHT LINE WEIGHT IS EXISTING.
	HEAVY SOLID LINE WEIGHT IS NEW

ONE LINE DIAGRAM

SYMBOL	DESCRIPTION
	NON-FUSED DISCONNECT SWITCH
	THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKER
BST LSIG #AT #AF	CIRCUIT BREAKER SOLID STATE TRIP CHARACTERISTICS INDICATED BY SUBSCRIPTS: AT - TRIP COIL AMPERE RATING AF - FRAME SIZE AMPERE RATING L - LONG TIME TRIP S - SHORT TIME TRIP I - INSTANTANEOUS TRIP G - GROUND FAULT TRIP
	CURRENT TRANSFORMER
M	UTILITY METER
PM	POWER METER
GRAP	GENERATOR REMOTE ANNUNCIATION PANEL
	TRANSFORMER, REFER TO SCHEDULE OR ONE-LINE
G	GENERATOR SET
	TRANSFER SWITCH, RATING AS INDICATED. ATS = AUTOMATIC
	GROUND CONNECTION
NAME	PANELBOARD

LIGHTING CONTROL

SYMBOL	DESCRIPTION
$S^3_{a,b}$	TOGGLE SWITCH, VOLTAGE AS INDICATED ON FIXTURE SCHEDULE, SUBSCRIPTS INDICATE TYPE: 3 - THREE WAY SWITCH 4 - FOUR WAY SWITCH LV - LOW VOLTAGE WP - WEATHER PROOF EP - EXPLOSION PROOF OS - OCCUPANCY SENSOR VS - VACANCY SENSOR a,b,c - SWITCHING DESIGNATIONS NUMBER OF LETTERS EQUALS NO. OF GANGED SWITCHES
$D^3_{a,b,c}$	DIMMER SWITCH, SUBSCRIPTS INDICATE TYPE: LV - LOW VOLTAGE OS - OCCUPANCY SENSOR VS - VACANCY SENSOR a,b,c - SWITCHING DESIGNATIONS NUMBER OF LETTERS EQUALS NO. OF GANGED SWITCHES
PC	PHOTOELECTRIC CONTROL
OS	CEILING MOUNTED OCCUPANCY SENSOR a,b,c - INDICATES CONTROL ZONES
VS	CEILING MOUNTED VACANCY SENSOR a,b,c - INDICATES CONTROL ZONES

DRAWING SYMBOLS

1 / E-XXX	SECTION DETAIL NUMBER VIEW REFERENCE SHEET NUMBER
1 / E-XXX	DETAIL/ENLARGED PLAN NUMBER VIEW REFERENCE SHEET NUMBER
1 / E-XXX	ELEVATION DETAIL NUMBER VIEW REFERENCE SHEET NUMBER

FIRE ALARM

SYMBOL	DESCRIPTION
F	MANUAL PULL STATION
S	SMOKE DETECTOR
H	COMBINATION SET TEMPERATURE AND RATE OF RISE HEAT DETECTOR
CO	CARBON MONOXIDE DETECTOR
DSD	DUCT SMOKE DETECTOR
F 15 H	NOTIFICATION APPLIANCE, AUDIBLE AND VISUAL # INDICATES STROBE CANDELA IF OTHER THAN 75. C - INDICATES CEILING
F 15 H	NOTIFICATION APPLIANCE, VISUAL # INDICATES STROBE CANDELA IF OTHER THAN 75. C - INDICATES CEILING
CO 15	CARBON MONOXIDE NOTIFICATION APPLIANCE, AUDIBLE AND VISUAL; # INDICATES STROBE CANDELA IF OTHER THAN 75
TS	TAMPER SWITCH
WF	SPRINKLER WATERFLOW SWITCH (PADDLE OR PRESSURE SWITCH TYPE)
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATION PANEL

ACCESS CONTROL

SYMBOL	DESCRIPTION
DC	DOOR CONTACT SWITCH. PROVIDE SINGLE GANG JUNCTION BOX AND 1" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING SPACE. (HARDWARE AND WIRING BY OTHERS)
CR	CARD READER. PROVIDE DOUBLE GANG JUNCTION BOX AND 1" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING SPACE. (HARDWARE AND WIRING BY OTHERS)

CLOSED CIRCUIT TELEVISION

SYMBOL	DESCRIPTION
	SECURITY CAMERA. PROVIDE SINGLE GANG JUNCTION BOX AND 1" CONDUIT WITH PULL STRING TO ABOVE ACCESSIBLE CEILING. (CAMERA AND CABLING BY OTHERS)

COMMUNICATIONS

SYMBOL	DESCRIPTION
2P	COMBINATION POWER AND TELE/DATA OUTLET; "#P" INDICATES QUANTITY OF DUPLEX RECEPTACLES REQUIRED. PROVIDE SEPERATE SINGLE-GANG BOX AND 1" CONDUIT TO ABOVE ACCESSIBLE CEILING SPACE FOR TELE/DATA OUTLET. EXAMPLE SYMBOL SHOWN INDICATES : (2) DUPLEX RECEPTACLES AND (1) SINGLE-GANG TELE/DATA WALL BOX.
WAP	WIRELESS ACCESS POINT (ALL WORK BY OTHERS)
VP	VIDEO PROJECTOR MOUNT

LUMINAIRES

SYMBOL	DESCRIPTION
FA d	LUMINAIRE. UPPER CASE LETTERS INDICATE FIXTURE TYPE ON SCHEDULE, LOWER CASE LETTER INDICATES CONTROL DESIGNATION.
FA d	WALL MOUNTED LUMINAIRE. UPPER CASE LETTERS INDICATE FIXTURE TYPE ON SCHEDULE, LOWER CASE LETTER INDICATES CONTROL DESIGNATION.
NL	LUMINAIRE CONNECTED TO NIGHT LIGHT CIRCUIT, UNSWITCHED
EM	LUMINAIRE WITH INTEGRAL EMERGENCY BATTERY BACKUP
INV	LUMINAIRE CONNECTED TO EMERGENCY LIGHTING INVERTER
	LUMINAIRE STRIP
	WALL MOUNTED EMERGENCY LUMINAIRE WITH BATTERY PACK
	CEILING MOUNTED EXIT LUMINAIRE
	WALL MOUNTED EXIT LUMINAIRE

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ELECTRICAL LEGEND & ABBREVIATIONS

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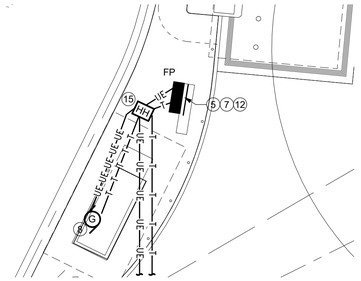
E001



2 ELECTRICAL SITE PLAN - ENLARGED GENERATOR & FUEL ISLAND CABINET

1" = 10'-0"

GENERAL NOTES:

A. REFER TO ONE-LINE DIAGRAM, SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

B. ALL CONDUITS BENEATH AREAS OF VEHICULAR TRAFFIC SHALL BE RIGID METAL CONDUIT (RMC). RMC SHALL EXTEND A MINIMUM OF 24" BEYOND THE AREA OF VEHICULAR TRAFFIC. REFER TO TYPICAL DUCTBANK SECTION DETAIL.

C. ALL CONDUITS NOT BENEATH AREAS OF VEHICULAR TRAFFIC SHALL BE SCHEDULE 80 RIGID NONMETALLIC CONDUIT (DIRECT BURIED). REFER TO TYPICAL DIRECT BURIED CONDUIT DETAIL.

D. PROVIDE FIRESTOPPING AND WATERPROOF SEALS AS REQUIRED WHERE PENETRATING EXTERIOR WALLS.

1 E. THE EC SHALL BE RESPONSIBLE FOR CONDUIT, WIRE, TRENCHING, BACKFILLING, AND SITE REPAIRATIONS.

E002 DRAWING NOTES:

1. PROVIDE (1) 1" CONDUIT FOR SHED ELECTRICAL LOADS.
2. PROVIDE UTILITY TRANSFORMER PAD. REFER TO UTILITY TRANSFORMER PAD DETAIL FOR REQUIREMENTS.
3. PROVIDE GENERATOR AND CONCRETE PAD. REFER TO ONE-LINE DIAGRAM AND DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

1 4. PROVIDE (1) 4"C FROM T-TAP TO WITHIN 2' OF THE EXISTING UTILITY POLE FOR NEW PRIMARY SERVICE CONDUCTORS INSTALLED BY THE UTILITY COMPANY. PROVIDE WITH REFERENCE MARK AT END OF CONDUIT RUN. SEE UTILITY POLE CONDUIT RISER DETAIL AND ONE-LINE FOR ADDIONAL INFORMATION AND REQUIREMENTS.

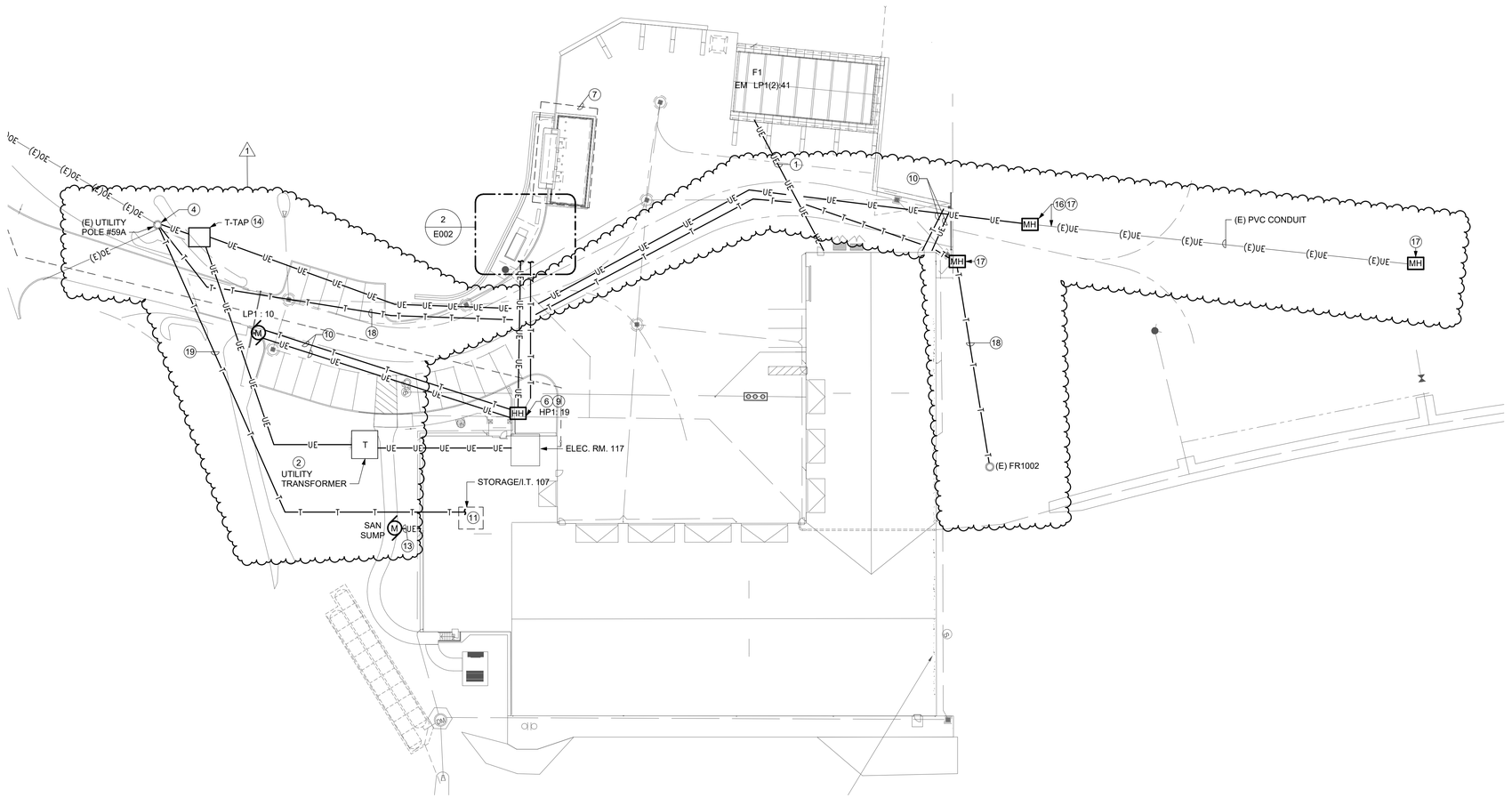
5. PROVIDE FUEL ISLAND PANEL "FP" IN WEATHERPROOF ENCLOSURE. ENCLOSURE PROVIDED BY OTHERS. PROVIDE 2" COMMUNICATIONS CONDUIT FROM ENCLOSURE TO HANDHOLE.
6. PROVIDE (2) POWER HANDHOLES AND 1 DATA HANDHOLE FOR CONDUITS COMING INTO/OUT OF THE BUILDING. REQUIRED CONDUIT INCLUDE BUT ARE NOT LIMITED TO GENERATOR FEEDER (ADD ALTERNATE 6), MOTORIZED GATE, SITE LIGHTING CIRCUIT, FUEL ISLAND FEEDER, AND TELE/DATA SERVICE. REFER TO ONE LINE DIAGRAM AND ELECTRICAL SHCEDULES AND FLOOR PLANS FOR INDIVIDUAL CIRCUIT REQUIREMENTS. PROVIDE (1) SPARE 2" CONDUIT TO EACH HANDHOLE FROM INSIDE OF THE BUILDING.
7. FUEL ISLAND IS PART OF ALTERNATE 2.
8. GENERATOR IS PART OF ALTERNATE 6. PROVIDE PAD MOUNTED GENERATOR, REFER TO DRAWING E503.
9. PROVIDE (1)277V, 20A BRANCH CIRCUIT FOR SITE LIGHTING BY OTHERS. TIE INTO TIMECLOCK.
10. PROVIDE UNDERGROUND POWER AND 1" SPARE DATA CONDUIT FOR MOTORIZED VEHICLE GATE. REFER TO EQUIPMENT CONTROL SCHEDULE FOR GATE POWER REQUIREMENTS.
11. PROVIDE 2" SPARE COMMUNICATIONS UNDERGROUND CONDUIT TO UTILITY POLE INDICATED BY DRAWING NOTE 4.
12. PROVIDE MONITOR MODULE AND FIRE ALARM CIRCUIT FOR CONNECTION TO FUEL ISLAND FIRE SUPPRESSION SYSTEM. ROUTE FIRE ALARM CIRCUIT IN SPARE FUEL ISLAND COMMUNICATIONS CONDUIT.
13. EMPTY CONDUIT WITH PULL STRING FOR ROUTING OF PUMP CABLE PROVIDED BY OTHERS, SEE DRAWING E102 FOR DETAILS ON CONDUIT.

1 14. PROVIDE S&C 15KV PME-9 PAD MOUNTED T-TAP SWITCH IN ACCORDANCE WITH THE UTILITY COMPANY, WITHIN 10' OF THE UTILITY POLE. COORDINATE REQUIREMENTS WITH THE UTILITY COMPANY. PROVIDE CONCREATE PAD PER CONCRETE PAD DETAIL.

15. PROVIDE (2) HANDHOLES, (1) FOR POWER AND (1) FOR COMMUNICATIONS.

1 16. PROVIDE OLD CASTLE DB-9 MANHOLE. REFER TO MANHOLE DETAIL FOR ADDITIONAL INFORMATIN AND REQUIREMENTS.

17. PROVIDE MANHOLE TO TIE INTO EXISTING UNDERGROUND PVC CONDUIT. EXTEND WIRING THROUGH EXISTING CONDUIT AND TERMINATE INSIDE NEXT MANHOLE DOWNSTREAM OF THIS LOCATION. EXISTING UNDERGROUND CONDUIT IS ROUGHLY 175' IN LENGTH. CONTRACTOR TO VERIFY EXACT LENGTH IN THE FIELD.
18. PROVIDE THE FOLLOWING CONDUITS FOR SERVICE PROVIDERS THROUGH ENTIRETY OF SITE WHERE UNDERGROUND COMMUNICATIONS CONDUIT IS SHOWN: (2) 4"C FOR VERIZON, (1) 4"C FOR CROWN CASTLE, (1) 4"C FOR ALTICE. COORDINATE WITH SERVICE PROVIDERS. PROVIDE CONDUIT RISERS AT EACH END, FOR EACH CONDUIT.
19. PROVIDE 4" UNDERGROUND CONDUIT FROM EXISTING UTILITY POLE FOR INCOMING TELECOM. SERVICE PROVIDED BY OTHERS.



1 ELECTRICAL SITE PLAN

1" = 30'-0"

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SITE PLAN

Sheet Number:

E002

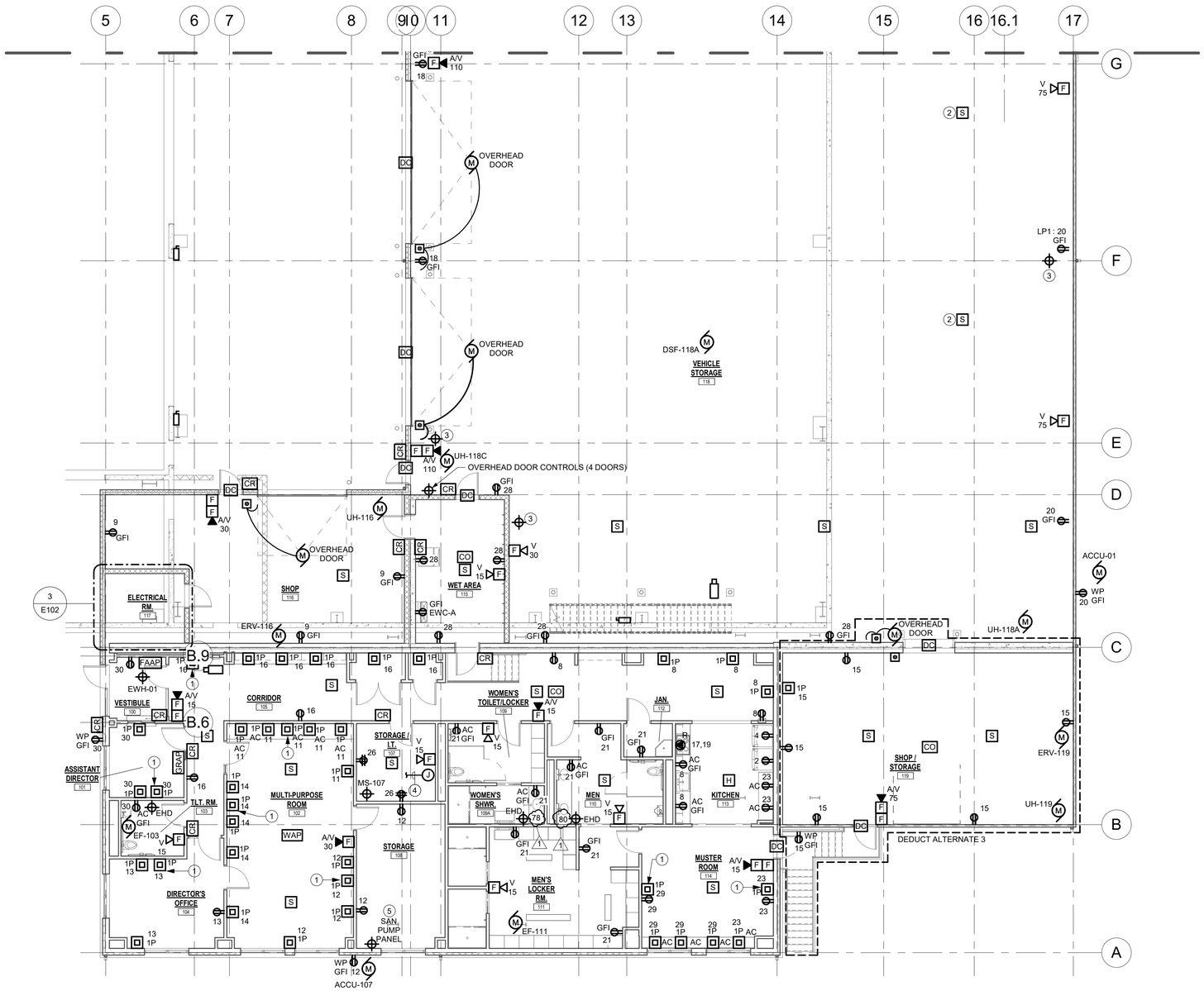
GENERAL NOTES:

A. UNLESS OTHERWISE NOTED, ALL BRANCH CIRCUIT WIRING SHALL BE (2)#12, (1)#12G, 3/4"C. TO PANEL LP1, UNLESS OTHERWISE NOTED.

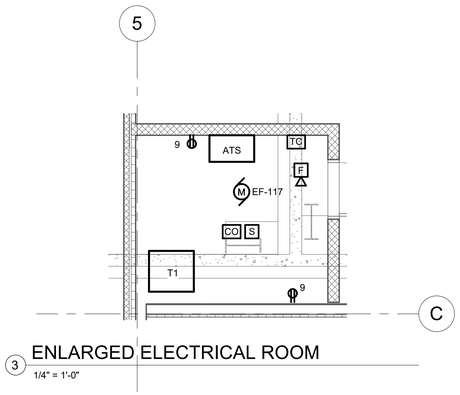
B. REFER TO ONE-LINE DIAGRAM, SCHEDULES AND DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

E102 DRAWING NOTES:

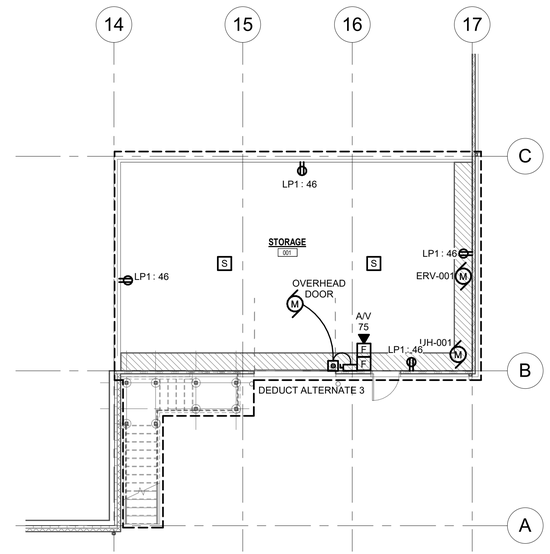
1. RECEPTACLE AND DATA DROP ARE FOR WALL MOUNTED TV. CONTRACTOR TO COORDINATE MOUNTING HEIGHTS IN FIELD PRIOR TO ROUGH-IN.
2. SMOKE DETECTORS ARE PART OF ADD ALTERNATE 1. SHOULD ADD ALTERNATE 1 BE ACCEPTED PROVIDE SMOKE DETECTORS MOUNTED TO UNDERSIDE OF MEZZANINE 2A.
3. E3POINT SENSOR PROVIDED BY OTHERS. PROVIDE (2)#12, (1)#12G, 3/4"C. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.
4. PROVIDE 2" CONDUIT FROM IT ROOM TO HANDHOLE ON TELE/DATA HANDHOLE ON SITE.
5. PROVIDE 20A 3P CIRCUIT BREAKER IN PANEL HP1, CIRCUIT WITH (3)# 12,(1)#12G, 3/4"C FOR CIRCUITING OF SAN PUMP PANEL. PROVIDE (1)2" CONDUIT FROM SAN PUMP PANEL TO SAN PUMPS ON SITE FOR ROUTING OF CABLE PROVIDED BY OTHERS.



1 FIRST FLOOR POWER & SYSTEMS - AREA B
1/8" = 1'-0"



3 ENLARGED ELECTRICAL ROOM
1/4" = 1'-0"



2 BASEMENT FLOOR POWER & SYSTEMS PLAN
1/8" = 1'-0"

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FIRST FLOOR AREA B AND BASEMENT POWER & SYSTEMS PLAN

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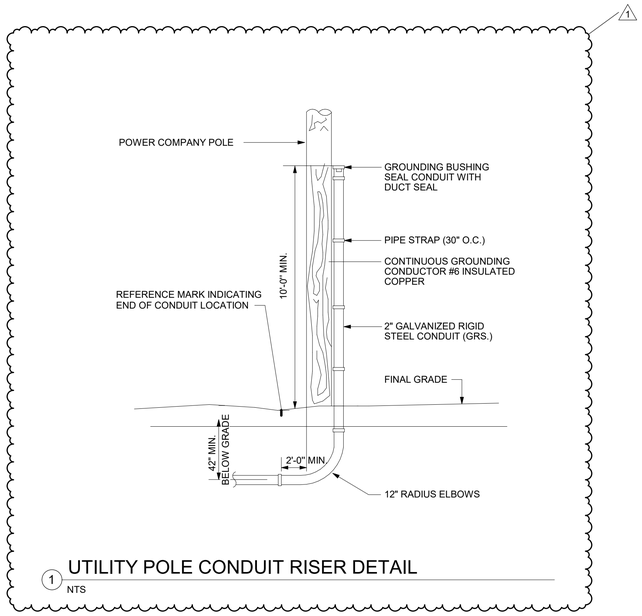
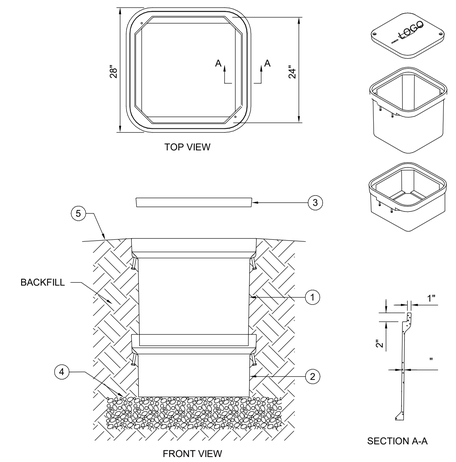
E102



1 UTILITY POLE CONDUIT RISER DETAIL

NTS



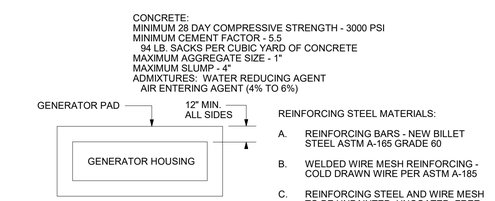
NOTES:

1. 24" x 24" x 24" PRECAST POLYMER CONCRETE STACKABLE ENCLOSURE, OPEN BOTTOM.
2. 24" x 24" x 14" STACKABLE EXTENSION, OPEN BOTTOM.
3. BOLTED COVER.
4. 6" OF #2 CRUSHED STONE BELOW HANDHOLE. EXTEND MINIMUM OF 6" AROUND OUTSIDE EDGE.
5. SLOPE FINISHED GRADE AWAY FROM COVER.

2 HANDHOLE DETAIL

NTS

CONCRETE:
MINIMUM 28 DAY COMPRESSIVE STRENGTH - 3000 PSI
MINIMUM CEMENT FACTOR - 5.5
94 LB. SACKS PER CUBIC YARD OF CONCRETE
MAXIMUM AGGREGATE SIZE - 1"
MAXIMUM SLUMP - 4"
ADMIXTURES: WATER REDUCING AGENT
AIR ENTERING AGENT (4% TO 6%)



REINFORCING STEEL MATERIALS:

A. REINFORCING BARS - NEW BILLET STEEL ASTM A-165 GRADE 60

B. WELDED WIRE MESH REINFORCING - COLD DRAWN WIRE PER ASTM A-185

C. REINFORCING STEEL AND WIRE MESH TO BE UNPAINTED, UNCOATED, FREE FROM RUST, SCALE AND OIL.

DETAIL NOTES:

A. TOP OF NEW PADS SHALL BE 4" ABOVE EXISTING GRADE LEVEL.

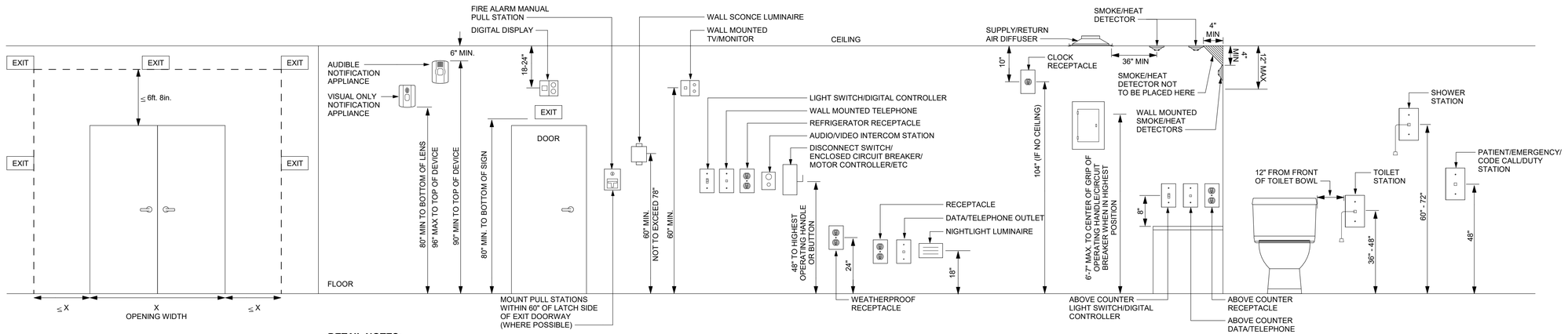
B. TOP SURFACE SHALL BE TROWL FINISHED.

C. PROVIDE ANCHOR BOLTS AS PER GENERATOR MANUFACTURERS REQUIREMENTS.

D. READ THE SPECIFICATIONS AND REFER TO THE CONDUIT PLAN.

3 REINFORCED CONCRETE GENERATOR PAD DETAIL

NTS



DETAIL NOTES:

A. MOUNTING LOCATIONS OF RECEPTACLES, SWITCHES, FIRE ALARM, NURSE CALL AND DATA DEVICES.
B. DEVICE HEIGHTS ARE TO BE AS INDICATED UNLESS OTHERWISE NOTED.

4 DEVICE MOUNTING LOCATION DETAIL

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ELECTRICAL DETAILS

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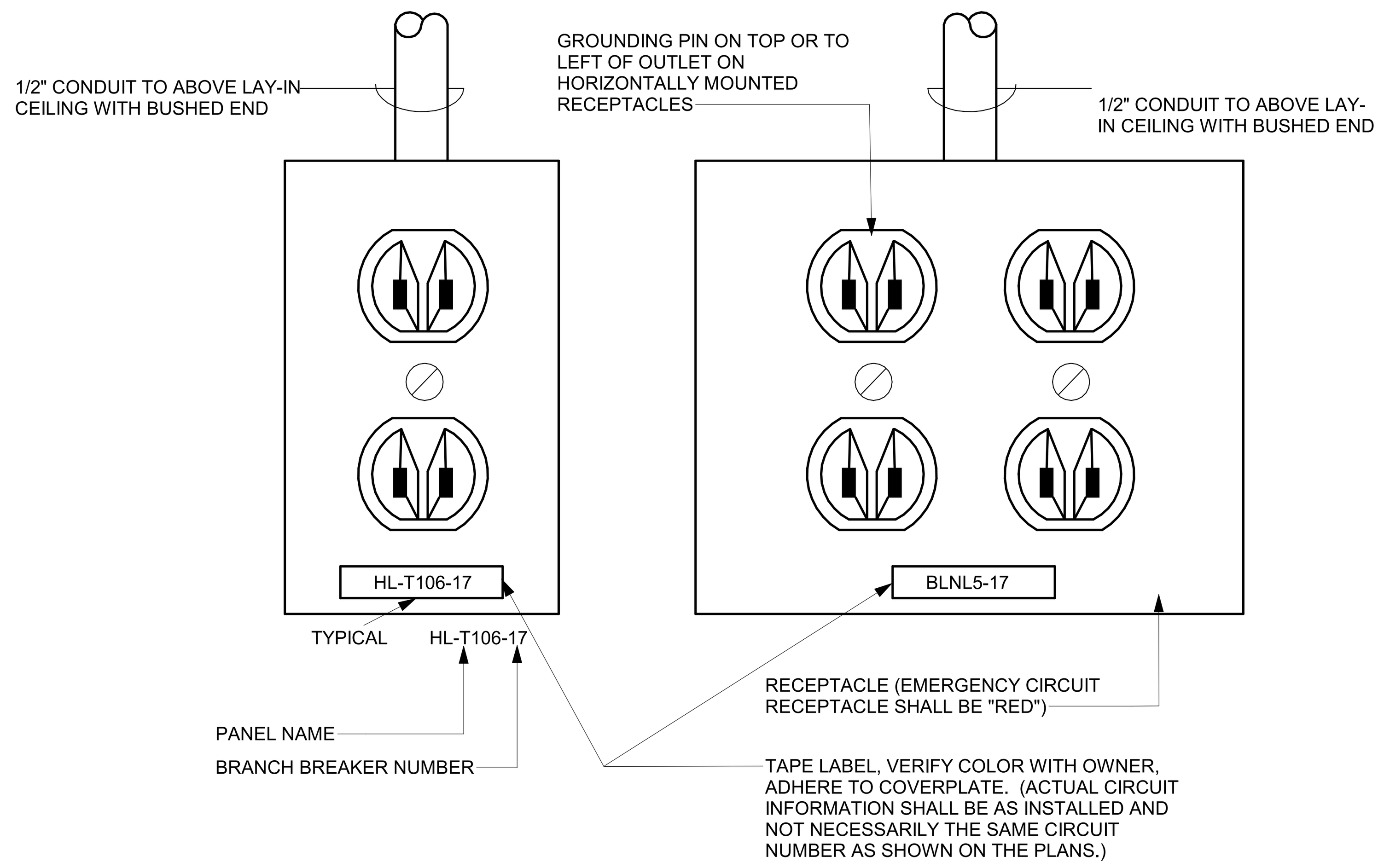
E501

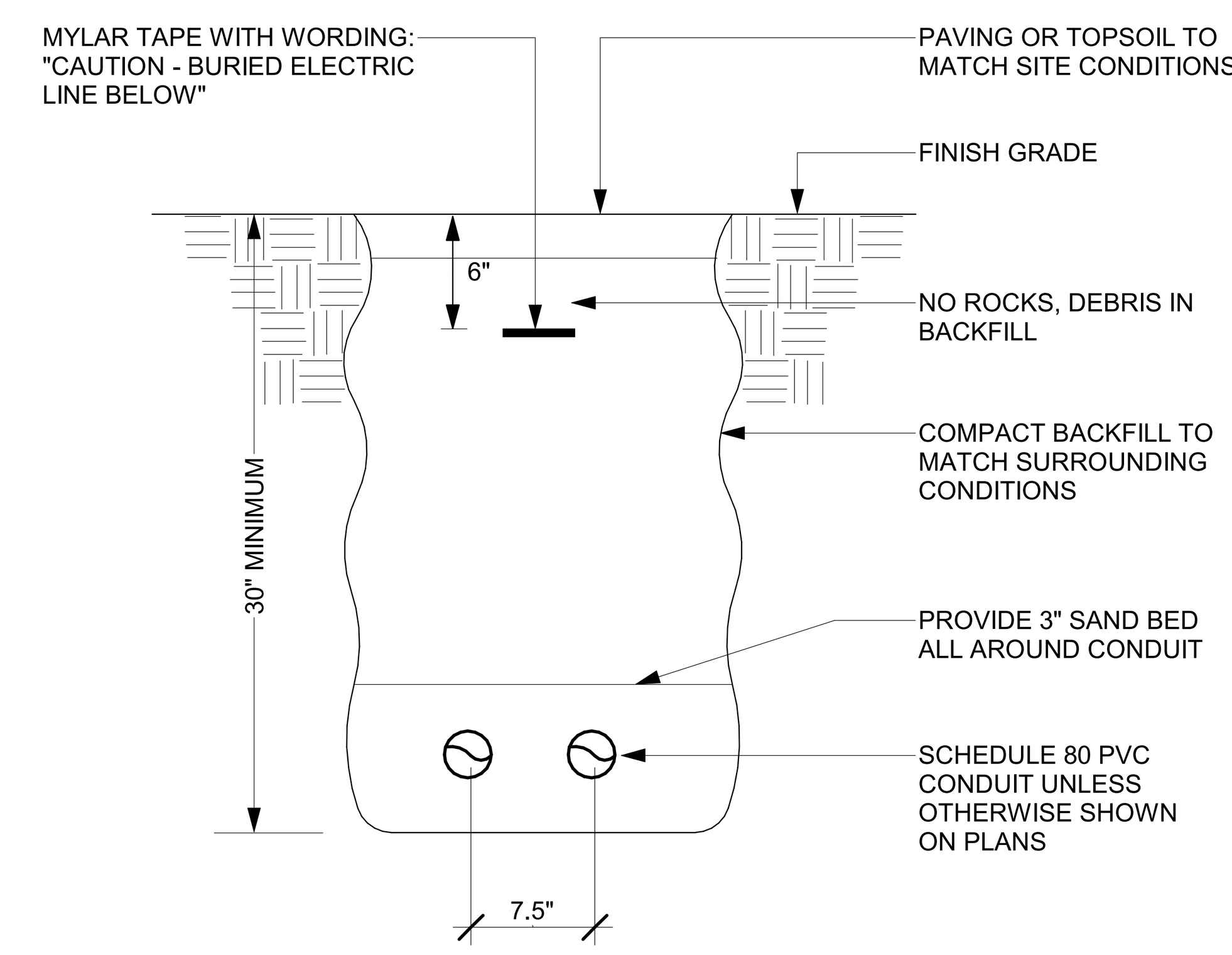


GENERAL DETAIL NOTES:

A. PROVIDE GREEN GROUND WIRE IN ALL RECEPTACLE CIRCUITS. CONNECT TO GROUND BUS IN PANEL.

B. DO NOT INSTALL RECEPTACLES, COMPUTER OR TELEPHONE OUTLETS BACK TO BACK. INSTALL IN ADJACENT STUD CAVITIES, TO REDUCE SOUND TRANSMISSION.

1 TYPICAL RECEPTACLE IDENTIFICATION REQUIREMENTS
NTS



DETAIL NOTES:

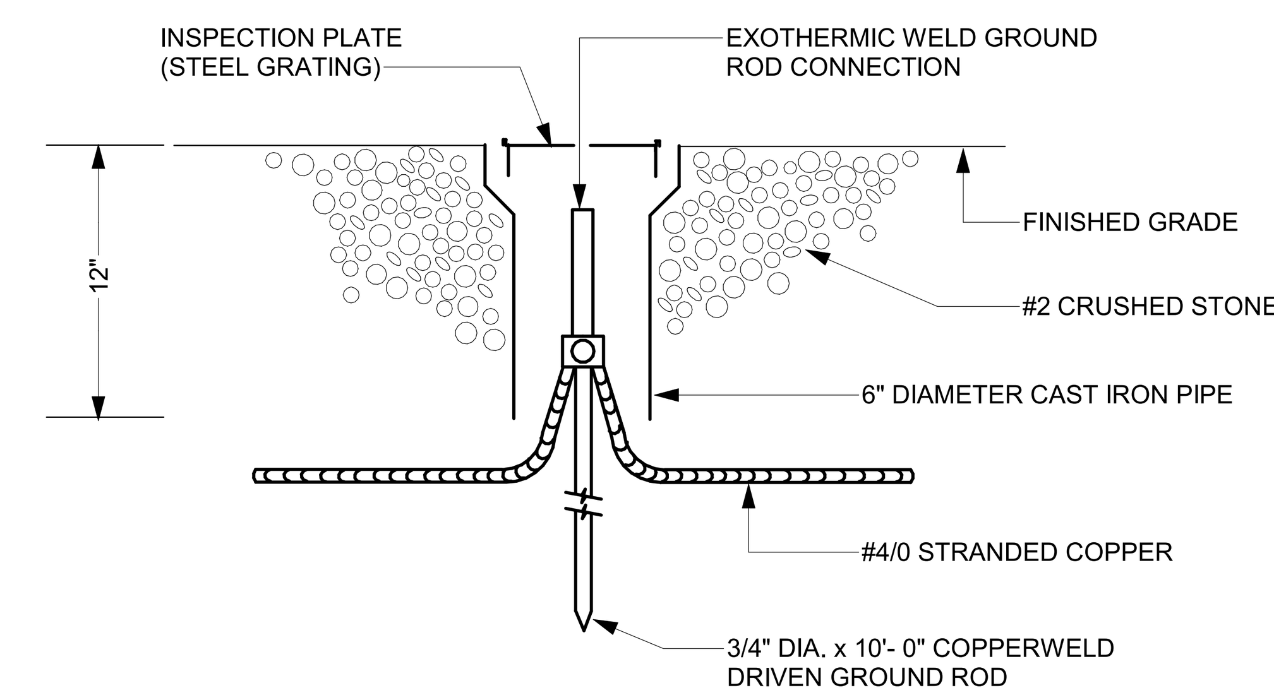
A. READ THE SPECIFICATIONS.

B. REPAIR ALL SETTLEMENT.

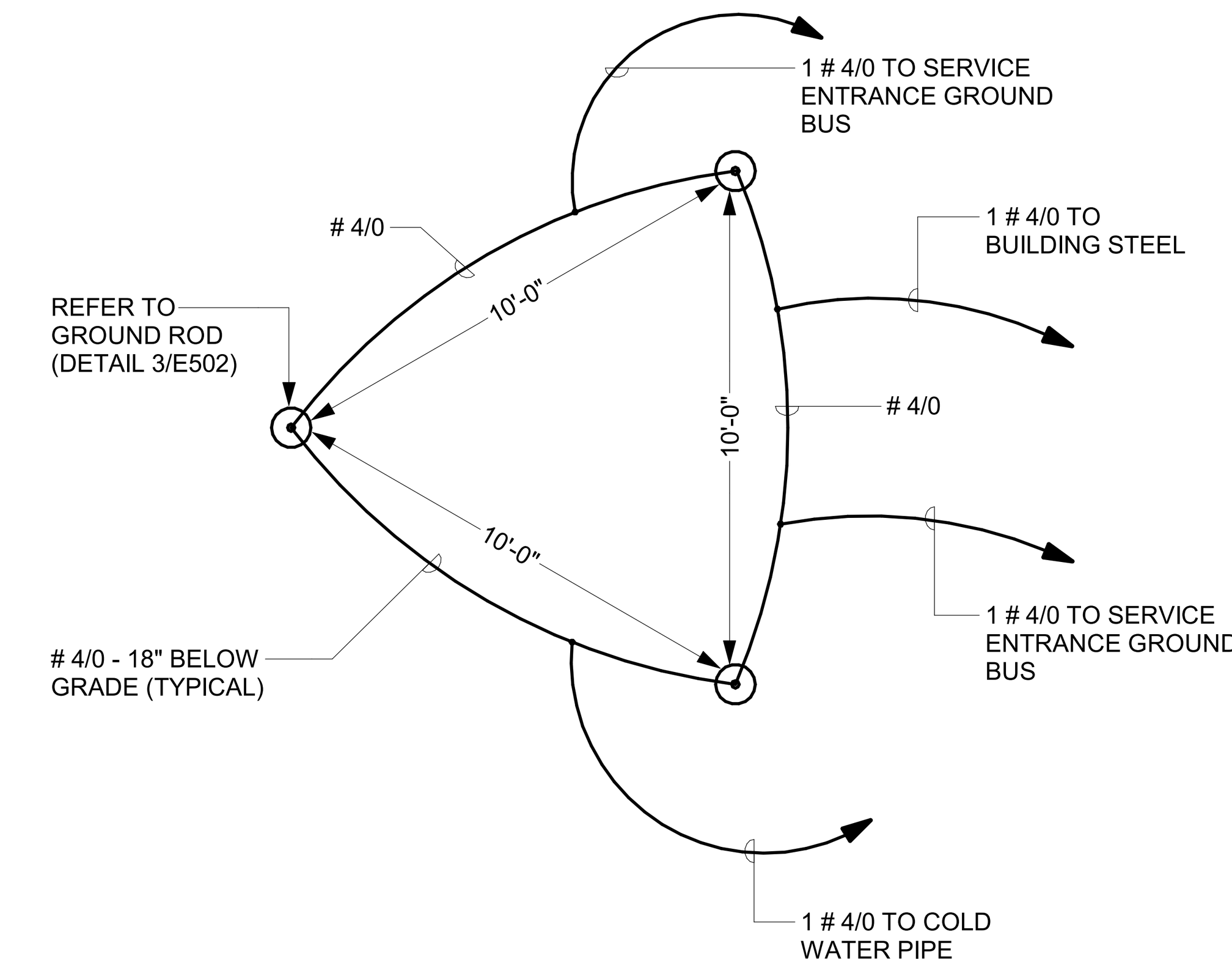
C. MINIMUM TOP SOIL - 6".

D. WHERE ADDITIONAL CONDUITS ARE REQUIRED, INCREASE TRENCH WIDTH AND INSTALL CONDUITS WITH 3" MINIMUM SPACING.

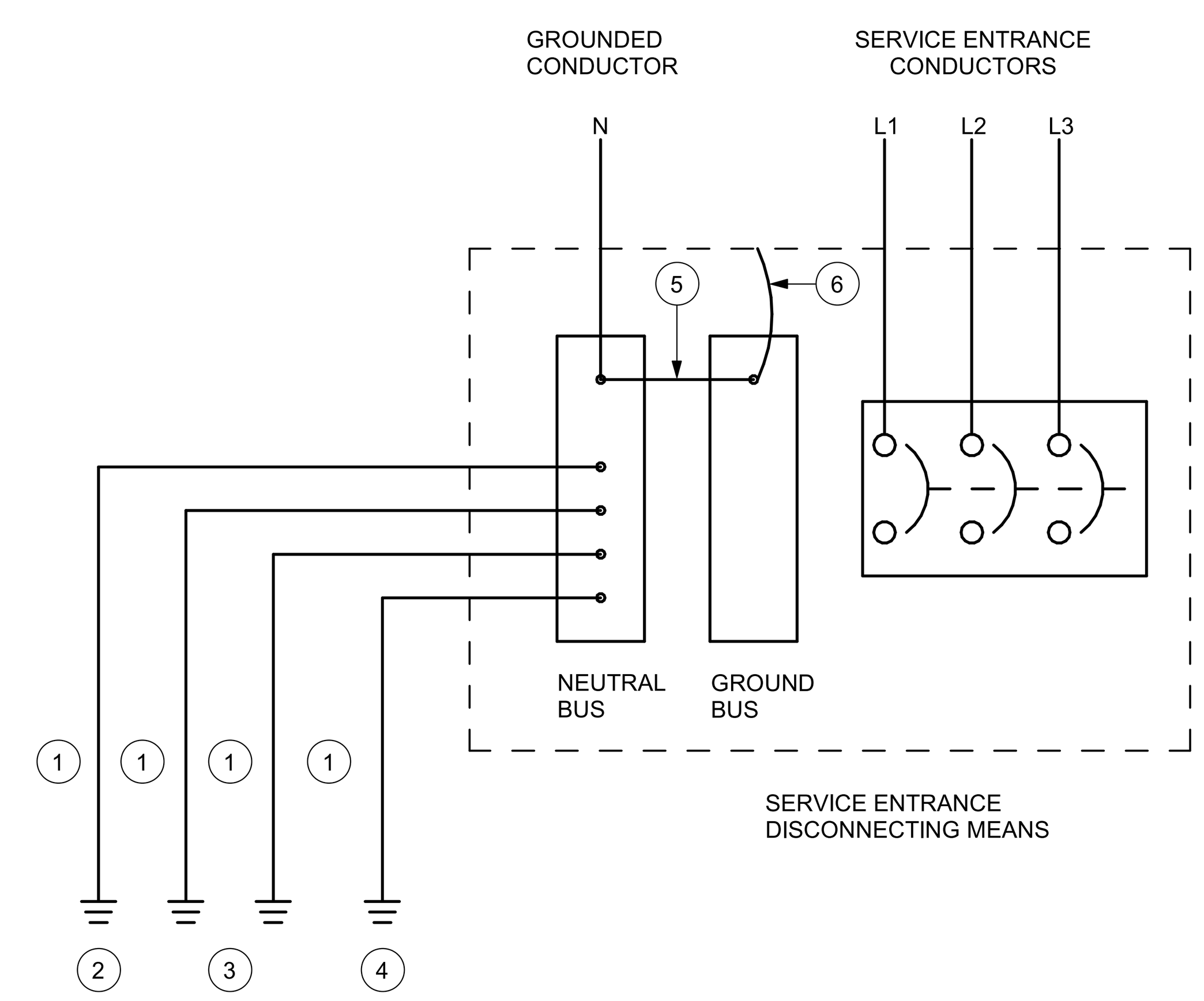
2 TYPICAL DIRECT BURIED CONDUIT DETAIL
NTS



3 TYPICAL GROUND ROD DETAIL
1/8" = 1'-0"



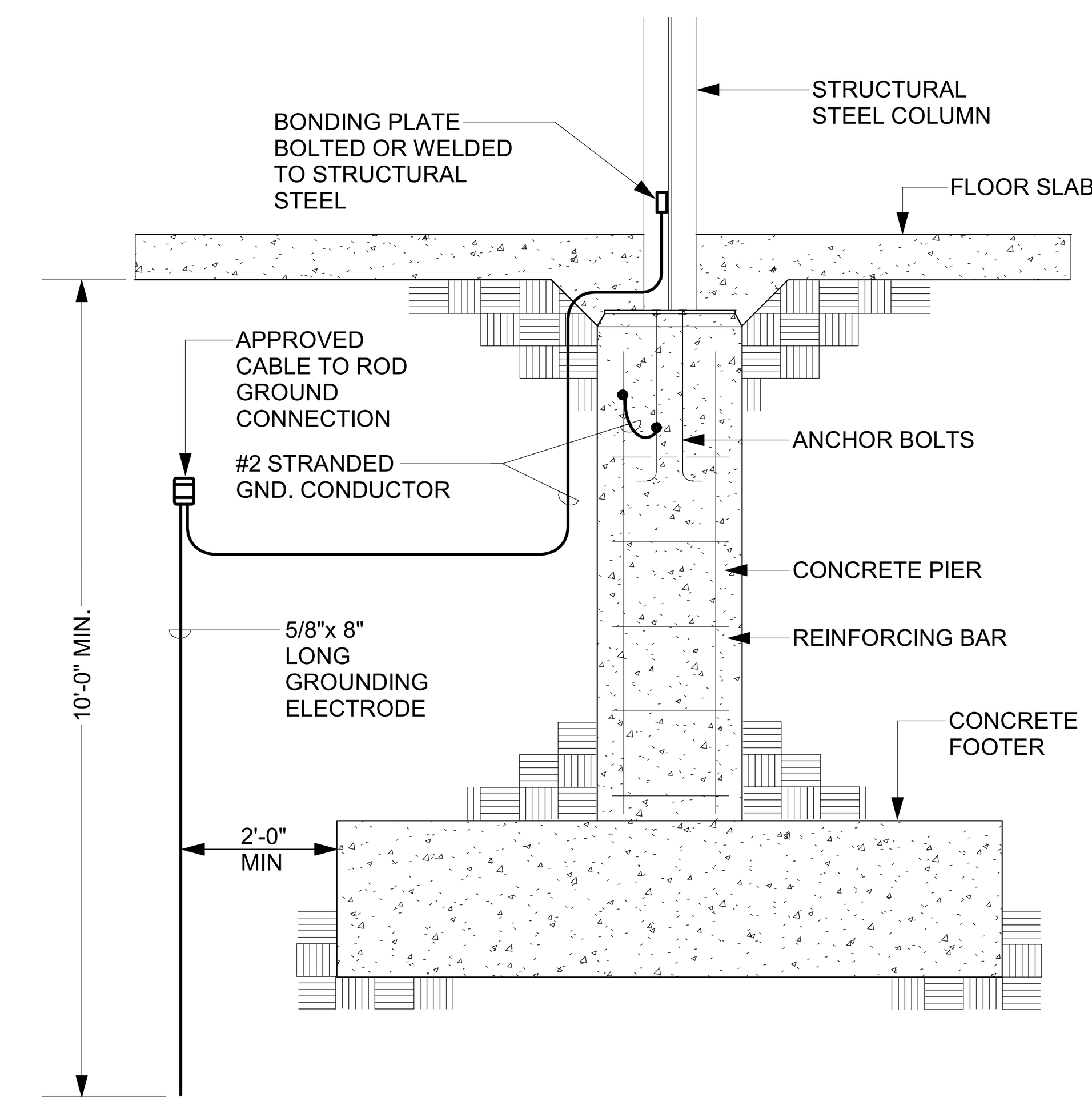
4 GROUNDING SYSTEM DETAIL
NTS



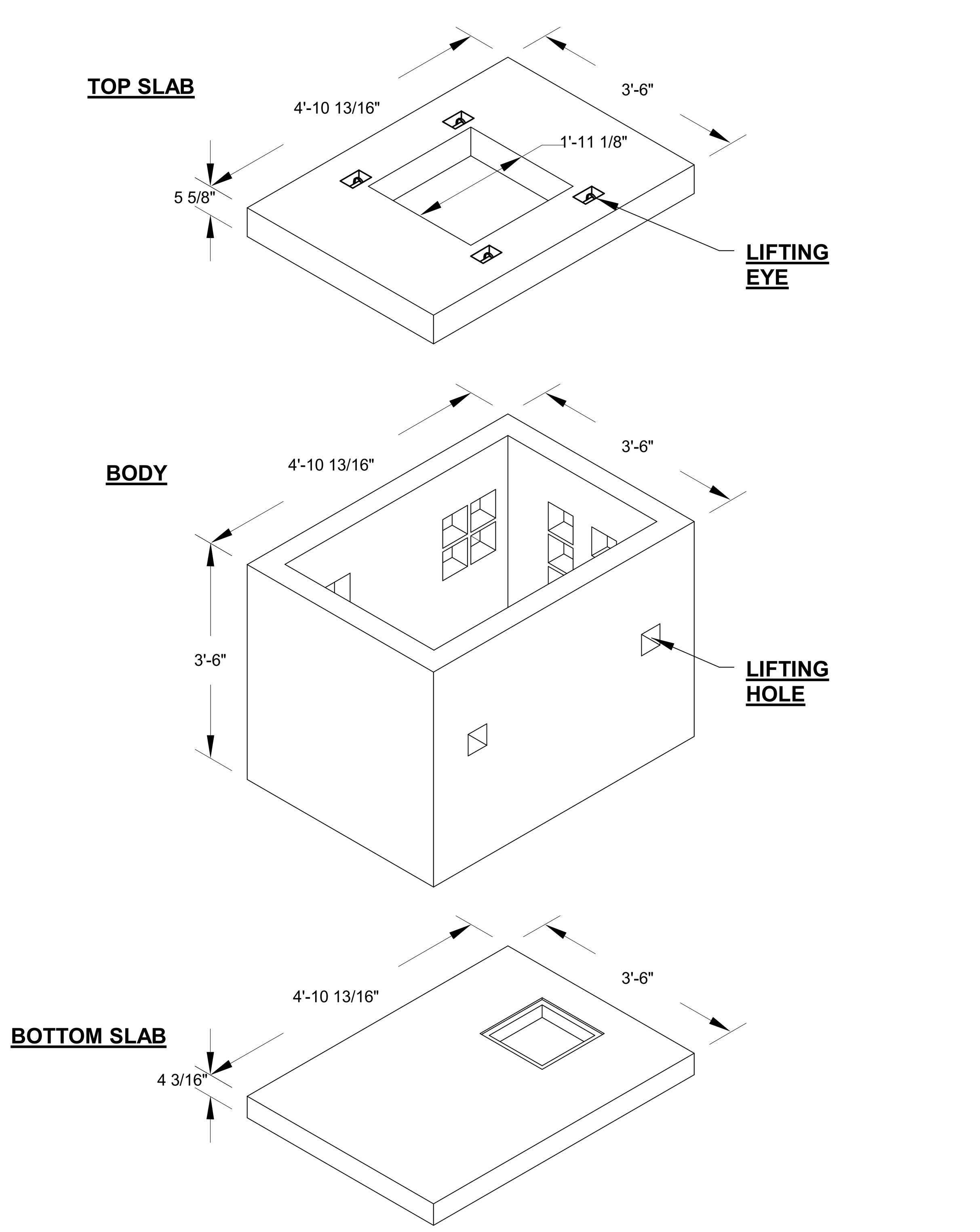
DETAIL NOTES:

1. GROUNDING ELECTRODE CONDUCTOR. PROVIDE INSULATED COPPER CONDUCTOR PER SPECIFICATIONS. IF NO SIZE IS SPECIFIED, PROVIDE INSULATED COPPER CONDUCTOR SIZED PER N.E.C., TABLE 250-66. INSTALL IN RIGID, SCHEDULE 40, PVC RACEWAY.
2. METAL UNDERGROUND WATER PIPE IN DIRECT CONTACT WITH EARTH FOR 10 FEET OR MORE. SHALL BE SUPPLEMENTED BY ITEMS 3 & 4.
3. BUILDING STRUCTURAL STEEL.
4. MADE GROUNDING ELECTRODE. REFER TO MADE GROUNDING ELECTRODE-GROUND GRID" DETAIL & SPECIFICATIONS.
5. MAIN BONDING JUMPER. PROVIDE INSULATED COPPER CONDUCTOR PER N.E.C. ARTICLE 250-28.
6. BOND GROUND BUS TO EQUIPMENT ENCLOSURE WITH BARE COPPER BONDING JUMPER PER N.E.C ARTICLE 250-28.

5 SERVICE ENTRANCE GROUNDING
NTS



6 STRUCTURAL STEEL GROUNDING DETAIL
NTS



NOTES:
1. CONCRETE: 28 DAY COMPRESSIVE STRENGTH F'C = 4,000 PSI.

1

7 MANHOLE DETAIL
NTS

Project:
VILLAGE OF ARDSLEY, NY
VILLAGE OF ARDSLEY NEW YORK 1896
NEW PUBLIC WORKS FACILITY
220 HEATHERDELL ROAD, VILLAGE OF ARDSLEY, NEW YORK 10502

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RHINEBECK ARCHITECTURE

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SCALE: AS NOTED

Date:	APRIL 7, 2022
Drawn By:	KML
Reviewed By:	SZE
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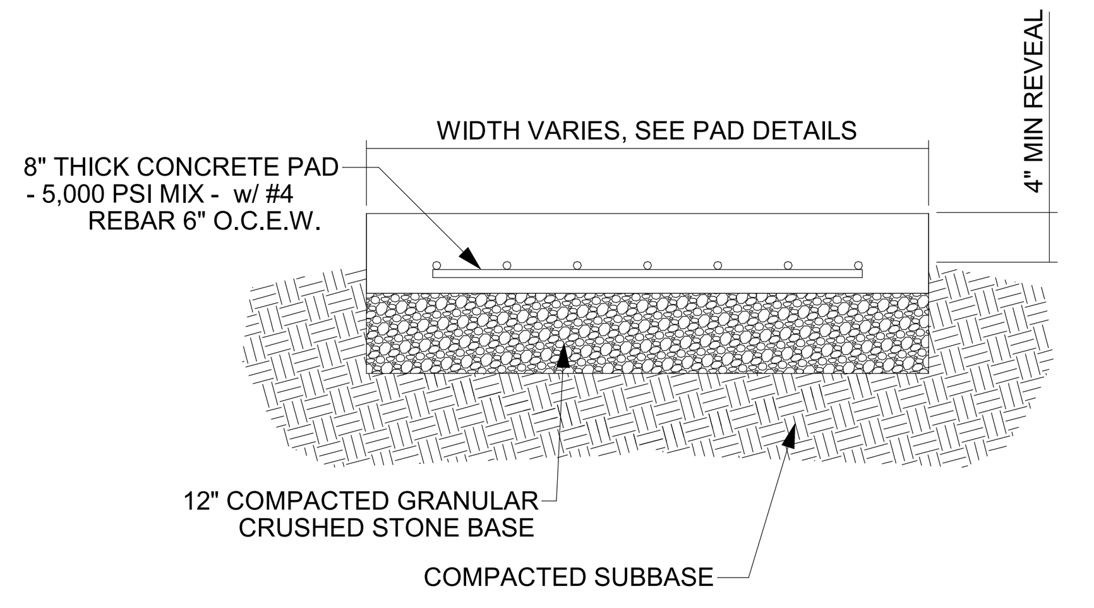
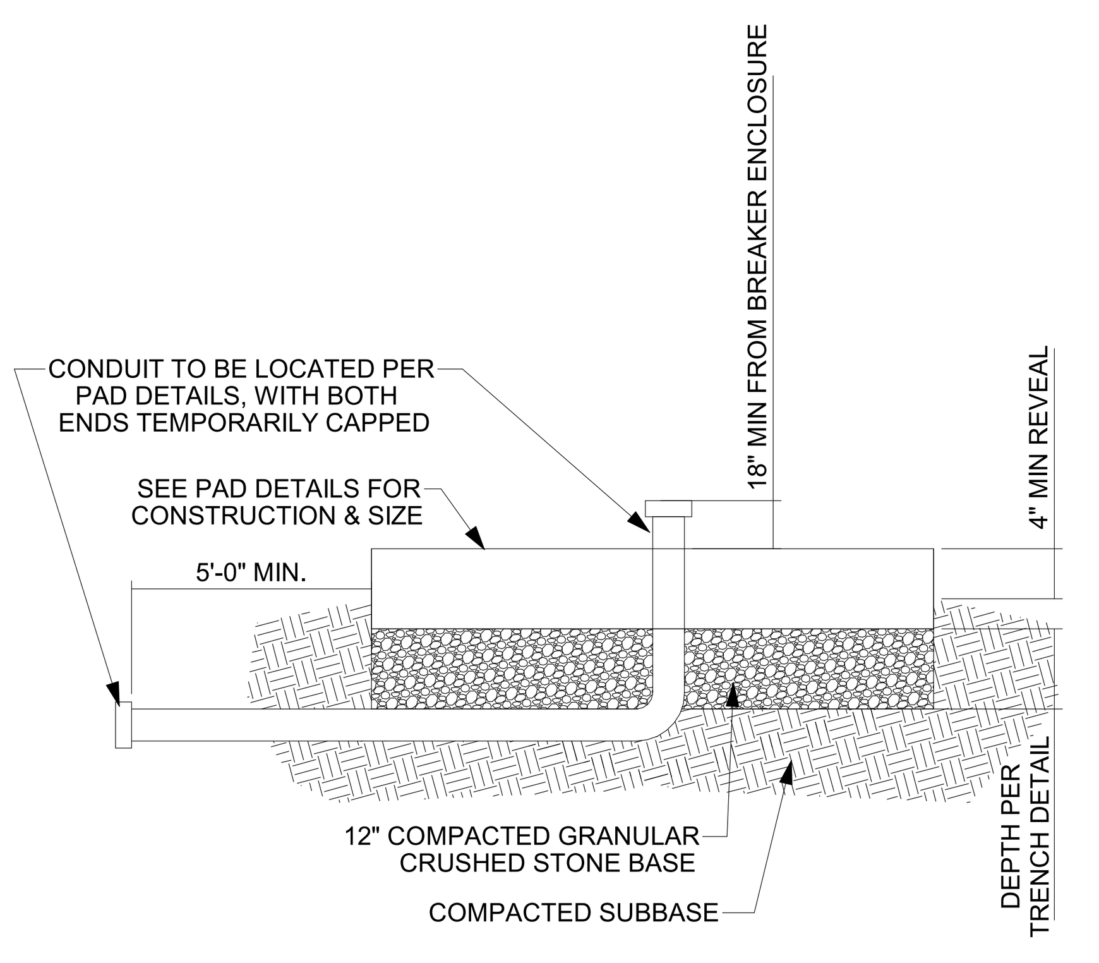
ELECTRICAL DETAILS

Sheet Number:
E502



CONCRETE PAD DETAIL

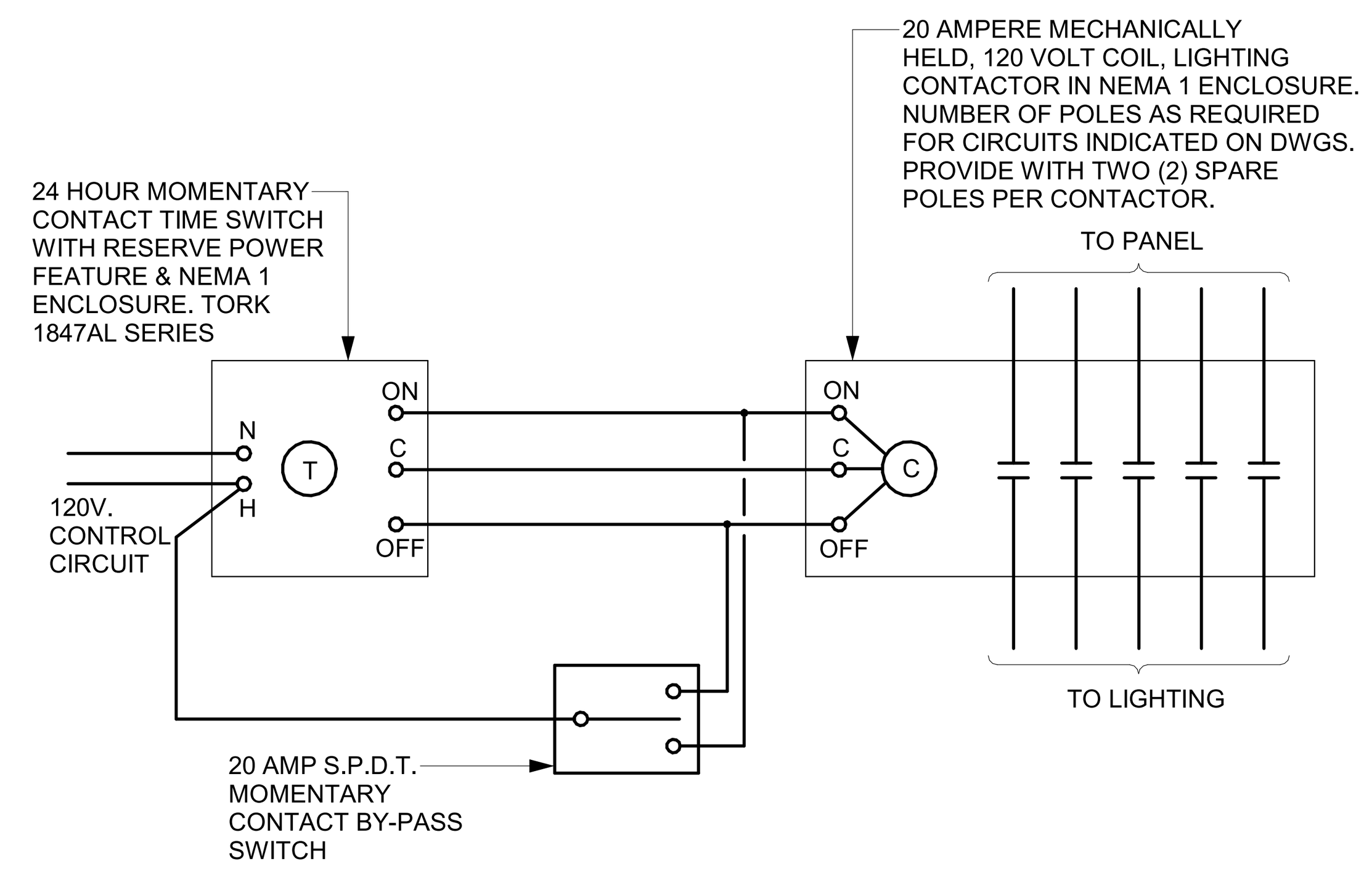
NOTE:
1. CONCRETE PAD TO EXTEND A MINIMUM OF 6" BEYOND THE PERIMETER OF ENCLOSURE.



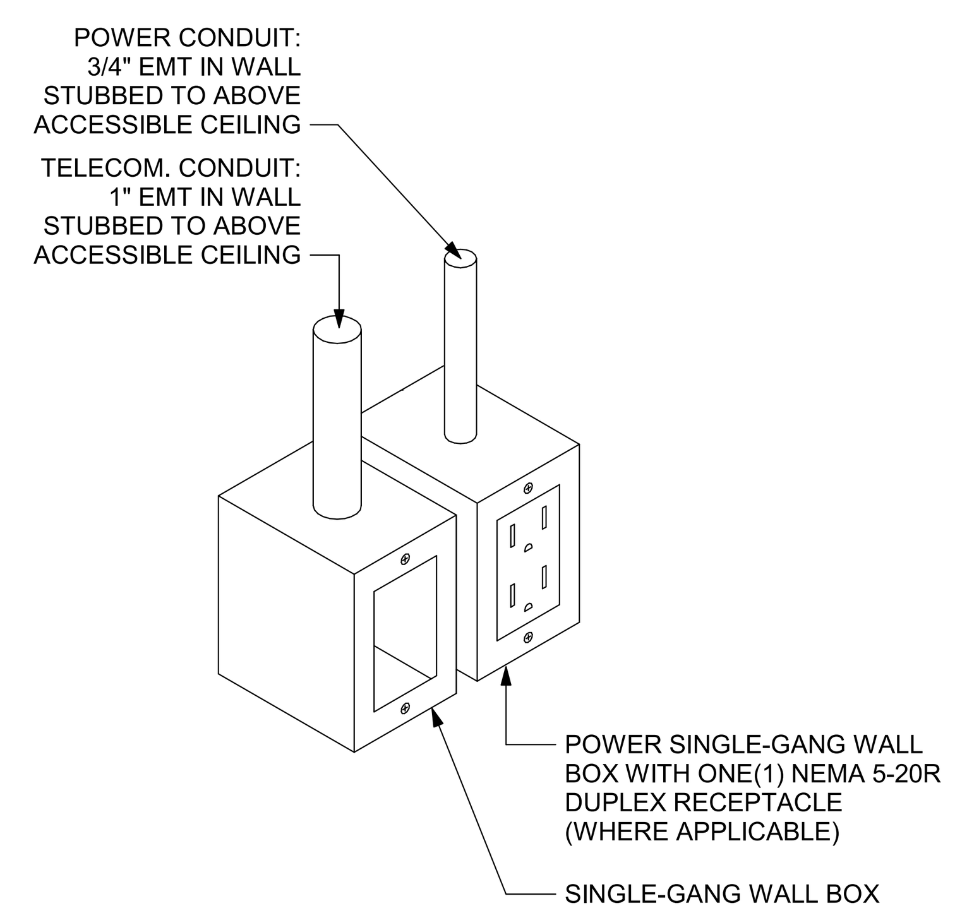
CONDUIT STUB DETAIL

NOTE:
1. CONCRETE PAD TO EXTEND A MINIMUM OF 6" BEYOND THE PERIMETER OF ENCLOSURE.

(1) GENERAL EQUIPMENT PAD DETAIL
NTS



(3) TYPICAL LIGHTING CONTROL SCHEMATIC
NTS



SYMBOL: 1P

(5) TYPICAL COMBINATION POWER & TELE/DATA OUTLET DETAIL
NTS

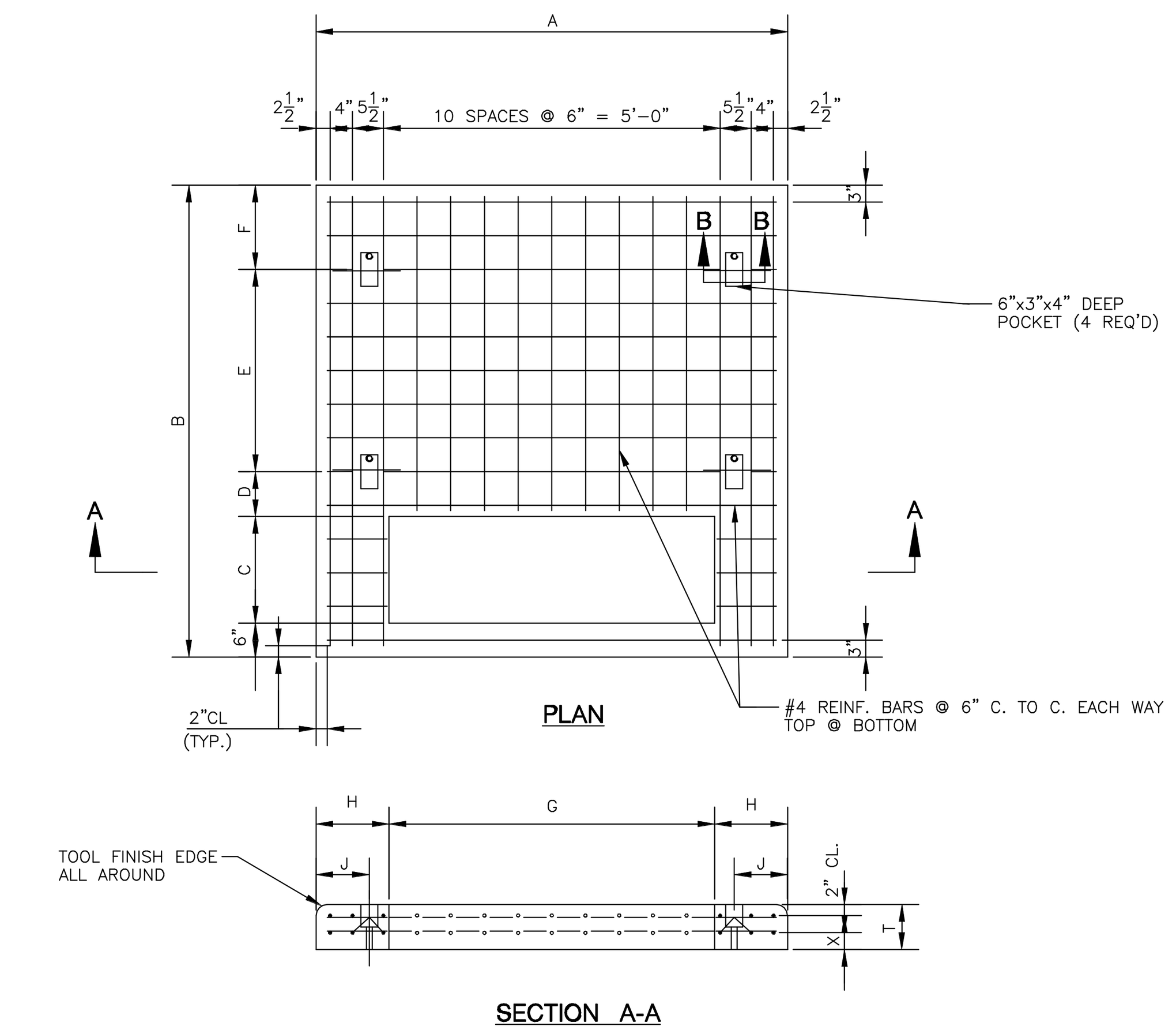
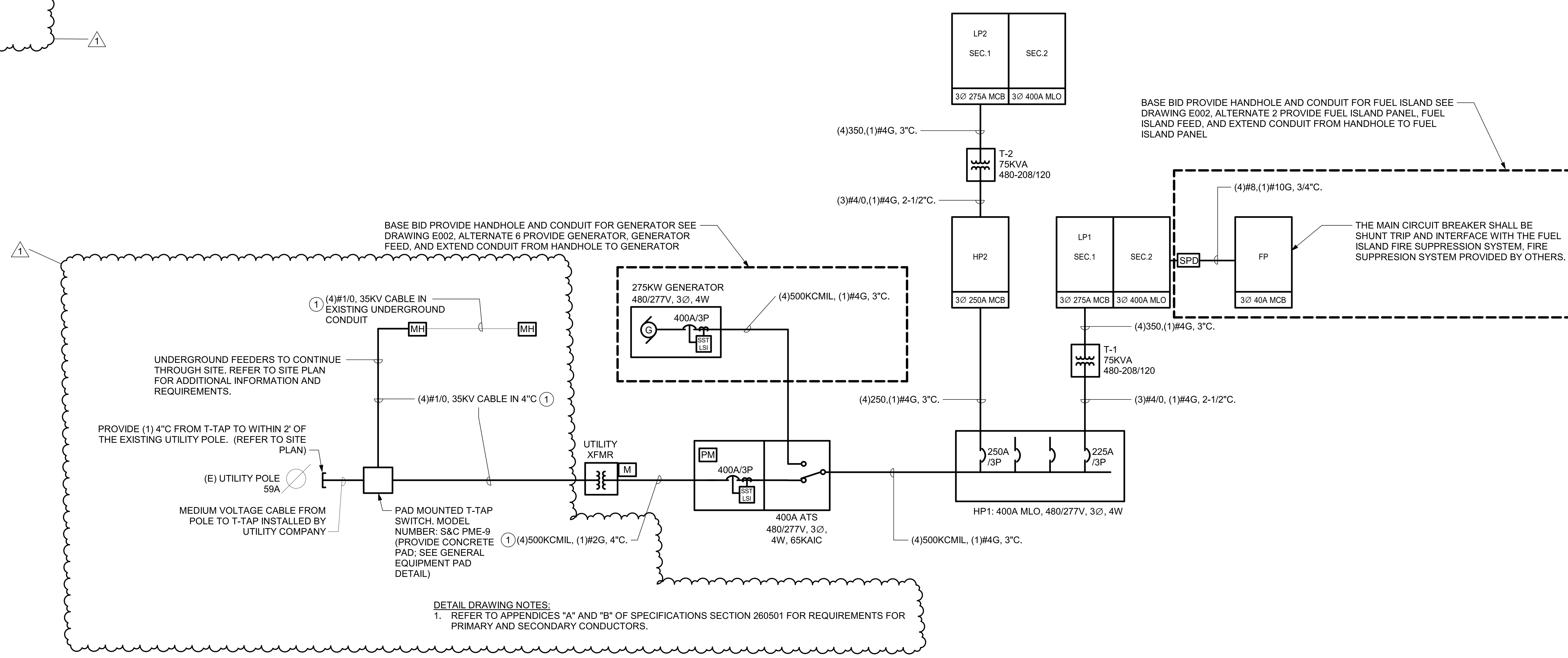


TABLE															
THREE PHASE TRANSFORMER		CONCRETE PAD TYPE OF INSTALLATION	DIMENSIONS (INCHES)											APPROX. VOLUME (CU.YDS)	APPROX. PRECAST PAD WEIGHT (LBS.)	
SIZE (KVA)	PRIMARY VOLTAGE		A	B	C	D	E	F	G	H	J	T	X		REINF.	PAD
75–500	4KV & 13KV	FIELD POURED	84	72	19	——	——	——	44	20	——	8 1/2	3	0.95	——	——
		PRECAST	84	72	19	8	30	9	44	20	12	7 1/2	2	0.84	212	3395

DETAIL GENERAL NOTES:
A. REINFORCING BARS SHALL BE WIRE TIED AT ALL CONTACT POINTS WITH PLASTIC COATED WIRE TIES.
B. ALL REINFORCING BARS SUPPORTED FROM FRAMEWORK SHALL REST ON COATED WIRE BAR SUPPORTS.
C. EPOXY COATING, DAMAGED AS A RESULT OF HANDLING OR CUTTING OF REINFORCING BARS, SHALL BE REPAIRED WITH PATCHING MATERIAL CONFORMING TO ASTM SPEC. DES A—775.
D. A 2" MINIMUM OF CONCRETE SHALL BE MAINTAINED OVER ALL REINFORCING BARS AND SHAPES, UNLESS OTHERWISE NOTED.
E. WHERE HORIZONTAL BARS ARE CUT FOR REPLACEMENT PURPOSES, SPLICE BARS OF THE SAME SIZE AND AT LEAST 2'— 6" LONG SHALL BE INSTALLED ACROSS THE CUT POSITION.
F. PAD SHALL BE INSTALLED ON A MINIMUM OF 6" CRUSHED STONE.
G. TOP SURFACE OF PAD SHALL HAVE A STEEL TROWEL FINISH.
H. TOP OF PAD SHALL BE 6" ABOVE GRADE.
I. OMIT LIFTING EYES, POCKETS AND DRAIN HOLES FROM FIELD— POURED PADS.
J. FOR PRECAST PADS, FILL LIFTING HOLES AND OPEN AREAS AROUND CONDUITS WITH MORTAR AFTER PAD IS INSTALLED.
K. CONCRETE SHALL CONFORM TO CON EDISON SPEC. EO— 1 008, CLASS II.
L. CEMENT MORTAR SHALL CONFORM TO CON EDISON SPEC. EO—1 00,167 (STK § 000—0802).
M. ALL REINFORCING BARS SHALL BE BILLET STEEL, DEFORMED, AND SHALL CONFORM TO ASTM SPEC. A—615, GRADE 60. ALL REINFORCING BARS SHALL BE EPOXY COATED AND SHALL CONFORM TO ASTM N. SPEC. A—775.
O. STRUCTURAL STEEL SHALL CONFORM TO ASTM SPEC. A—36.
P. WELD STRUCTURAL STEEL MEMBERS IN ACCORDANCE WITH EO—11320.

(2) UTILITY TRANSFORMER PAD DETAIL
NTS



DETAIL DRAWING NOTES:
1. REFER TO APPENDICES "A" AND "B" OF SPECIFICATIONS SECTION 260501 FOR REQUIREMENTS FOR PRIMARY AND SECONDARY CONDUCTORS.

(4) ELECTRICAL ONELINE DIAGRAM
NTS

Project:

VILLAGE OF ARDSLEY, NY

NEW PUBLIC WORKS FACILITY
220 HEATHERDELL ROAD, VILLAGE OF ARDSLEY, NEW YORK 10502

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Seal:

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PROJECT TRUE

SCALE: AS NOTED

Date:	APRIL 7, 2022
Drawn By:	KML
Reviewed By:	SZE
Approved By:	BAB
W&S Project No:	N2190088

Drawing Title:

ELECTRICAL DETAILS

Sheet Number:

E503

PANELBOARD DIRECTORY

M/E PROJECT:	NEW PUBLIC WORKS FACILITY	PANEL NAME:	**HP1**			TYPE:	BRANCH
PROJECT NO.:	203050					MOUNTING:	Wall Mounted
FACILITY:		VOLTAGE:	480/277 Wye	L-L	PHASE: 3	OCP TYPE:	MLO
LOCATION:		AIC:	65	k	WIRE: 4	BUS RATING:	400 A
		SOURCE:				MCB RATING:	

CKT NO.	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		C		POLE	TRIP	CIRCUIT DESCRIPTION	CKT NO.
1				3394.8	9422.4								2
3	AHU-01	20 A	3			3394.8	9422.4			3	20 A	ACCU-01	4
5								3394.8	9422.4				6
7				2909.8	23051.7								8
9	OVERHEAD DOORS	20 A	3			2909.8	21603.9			3	225 A	T1 (FEEDING LP1)	10
11								2909.8	24744.7				12
13				61719.1	191.1					1	15 A	DSF-118A,B,C	14
15	HP2	250 A	3			62376.7	3214			1	20 A	VEHICLE STORAGE LIGHTS	16
17								53000.2	4968	1	30 A	VEHICLE STORAGE LIGHTS	18
19	EXTERIOR LIGHTING	20 A	1	559.9	0					1	20 A	EXIT SIGNS	20
21	MEZZANINE LIGHTS	20 A	1			2185	1108.5						22
23	ADMIN LIGHTS	20 A	1					2957.4	1108.5	3	20 A	SAN PUMP PANEL	24
25	SPACE	--	--	0	1108.5								26
27	SPACE	--	--			0	0			--	--	SPACE	28
29	SPACE	--	--					0	0	--	--	SPACE	30
31	SPACE	--	--	0	0					--	--	SPACE	32
33	SPACE	--	--			0	0			--	--	SPACE	34
35	SPACE	--	--					0	0	--	--	SPACE	36
37	SPACE	--	--	0	0					--	--	SPACE	38
39	SPACE	--	--			0	0			--	--	SPACE	40
41	SPACE	--	--					0	0	--	--	SPACE	42

PANELBOARD DIRECTORY

M/E PROJECT:	NEW PUBLIC WORKS FACILITY	PANEL NAME:	**LP1**			TYPE:	BRANCH
PROJECT NO.:	203050					MOUNTING:	SURFACE
FACILITY:		VOLTAGE:	120/208 Wye	L-L	PHASE: 3	OCP TYPE:	MCB
LOCATION:		AIC:	10	k	WIRE: 4	BUS RATING:	400 A
		SOURCE:	T1			MCB RATING:	275 A

CKT NO.	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		C		POLE	TRIP	CIRCUIT DESCRIPTION	CKT NO.
1	EF-117	15 A	1	16.8	180					1	20 A	REFRIGERATOR	2
3	EF-123	15 A	1			16.8	180			1	20 A	REFRIGERATOR	4
5	FACP	20 A	1					50	540	1	20 A	REC MEZZ 2	6
7	REC WATER RM, VEHICLE STOR	20 A	1	540	1295					1	20 A	REC CORR & KIT, UC LIGHTS	8
9	REC ELEC RM & SHOP 116	20 A	1			900	1176			1	20 A	FRONT GATE	10
11	REC MULTI PURPOSE RM	20 A	1					1080	1260	1	20 A	REC MULTI PURPOSE & STOR RM	12
13	REC DIRECTOR'S OFFICE	20 A	1	720	900					1	20 A	REC MULTI PURPOSE RM	14
15	REC EXT & SHOP/STOR	20 A	1			1260	1440			1	20 A	REC CORR	16
17	KITCHEN RANGE	50 A	2					4160	720	1	20 A	REC VEHICLE STOR	18
19				4160	1080					1	20 A	REC VEHICLE STOR	20
21	REC JAN, MEN, WOMEN'S	20 A	1			1440	509.6			2	15 A	ERV-120	22
23	REC MUSTER & KITCHEN	20 A	1					900	509.6				24
25	RP-1	15 A	2	582.4	720					1	20 A	REC IT	26
27						582.4	1080			1	20 A	REC WET AREA & VEHICLE STOR	28
29	REC MUSTER	20 A	1					900	1080	1	20 A	REC VEST, AST DIR, TLT RM	30
31				2113.6	2113.6								32
33	EF-118A	25 A	3			2113.6	2113.6			3	25 A	EF-118B	34
35								2113.6	2113.6				36
37	SPACE	--	--	0	0					1	20 A	SPARE	38
39	SPACE	--	--			0	0			1	20 A	SPARE	40
41	SPACE	--	--					0	0	1	20 A	SPARE	42

PANELBOARD DIRECTORY

M/E PROJECT:	NEW PUBLIC WORKS FACILITY	PANEL NAME:	**LP1**			TYPE:	BRANCH
PROJECT NO.:	203050					MOUNTING:	SURFACE
FACILITY:		VOLTAGE:	120/208 Wye	L-L	PHASE: 3	OCP TYPE:	MLO
LOCATION:		AIC:	10	k	WIRE: 4	BUS RATING:	400 A
		SOURCE:	LP1			MCB RATING:	

CKT NO.	CIRCUIT DESCRIPTION	TRIP	POLE	A		B		C		POLE	TRIP	CIRCUIT DESCRIPTION	CKT NO.
43	INVERTER	20 A	1	0	16.8					1	15 A	EF-103	44
45	EWC-A	20 A	1			180	720			1	20 A	REC RM 001 STORAGE	46
47	B-01	15 A	1					216	468	1	20 A	ERV-001, ERV-116, ERV-119	48
49	UH-001	15 A	2	124.8	600					1	15 A	WH-1	50
51						124.8	800.8			2	20 A	ERV-118	52
53	FP	60 A	3					2900.4	800.8				54
55				3336	660					1	20 A	DRYER	56
57						2640	2038.4			2	30 A	ACCU-107	58
59	UH-116	15 A	2					124.8	2038.4				60
61				124.8	998.4					2	15 A	EWH-01	62
63	UH-119	15 A	2			124.8	998.4						64
65								124.8	124.8	2	15 A	UH-118A	66
67	UH-118B	15 A	2	124.8	124.8								68
69						124.8	260			2	15 A	UH-118E	70
71	UH-118F	15 A	2					260	260				72
73				260	260					2	15 A	UH-118C	74
75	EF-111	15 A	2			260	260						76
77								260	1740	1	20 A	EHD	78
79	UH-118D	15 A	2	260	1740					1	20 A	EHD	80
81						260	0					SPACE	82
83	SPACE	--	--					0	0	--	--	SPACE	84

1

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RHINEBECK ARCHITECTURE

Seal:

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Approved By: BAB

W&S Project No: N2190088

Drawing Title:

ELECTRICAL SCHEDULES

Sheet Number:

E703