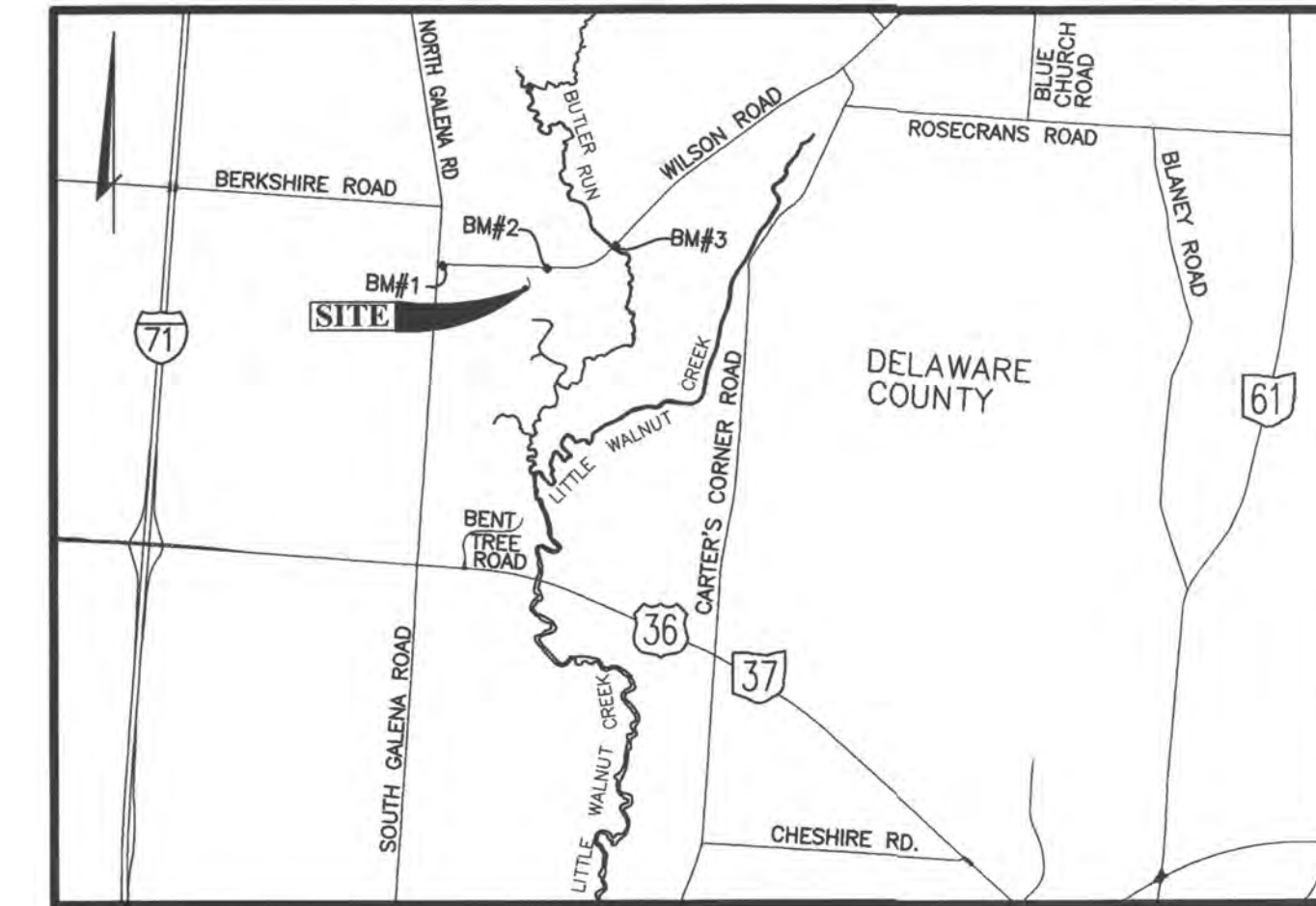


DELAWARE COUNTY, OHIO SANITARY SEWER IMPROVEMENT FOR NORTHSTAR GOLF RESORT PUMP STATION 2006



LOCATION MAP
Scale: 1" = 3500'

OWNER/DEVELOPER
Northstar Golf Resort
41 South High Street, Suite 1010
Columbus, Ohio 43215
Tele: (614) 221-4286
Fax: (614) 221-7069

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43064
Phone: 614.775.4500 Fax: 614.775.4800



Professional Engineer

3/20/06
Date

James D. Ward
County Commissioner

Approved this 6th day of July, 2006

Kristy W. Grah
County Commissioner

Approved this 6th day of July, 2006

County Commissioner
Approved this 6th day of July, 2006

Jack Smelter
Delaware County Sanitary Engineer

Approved this 6th day of June, 2006

Chris E. Bowen
Delaware County Engineer

Approved this 27th day of June, 2006

INDEX OF SHEETS

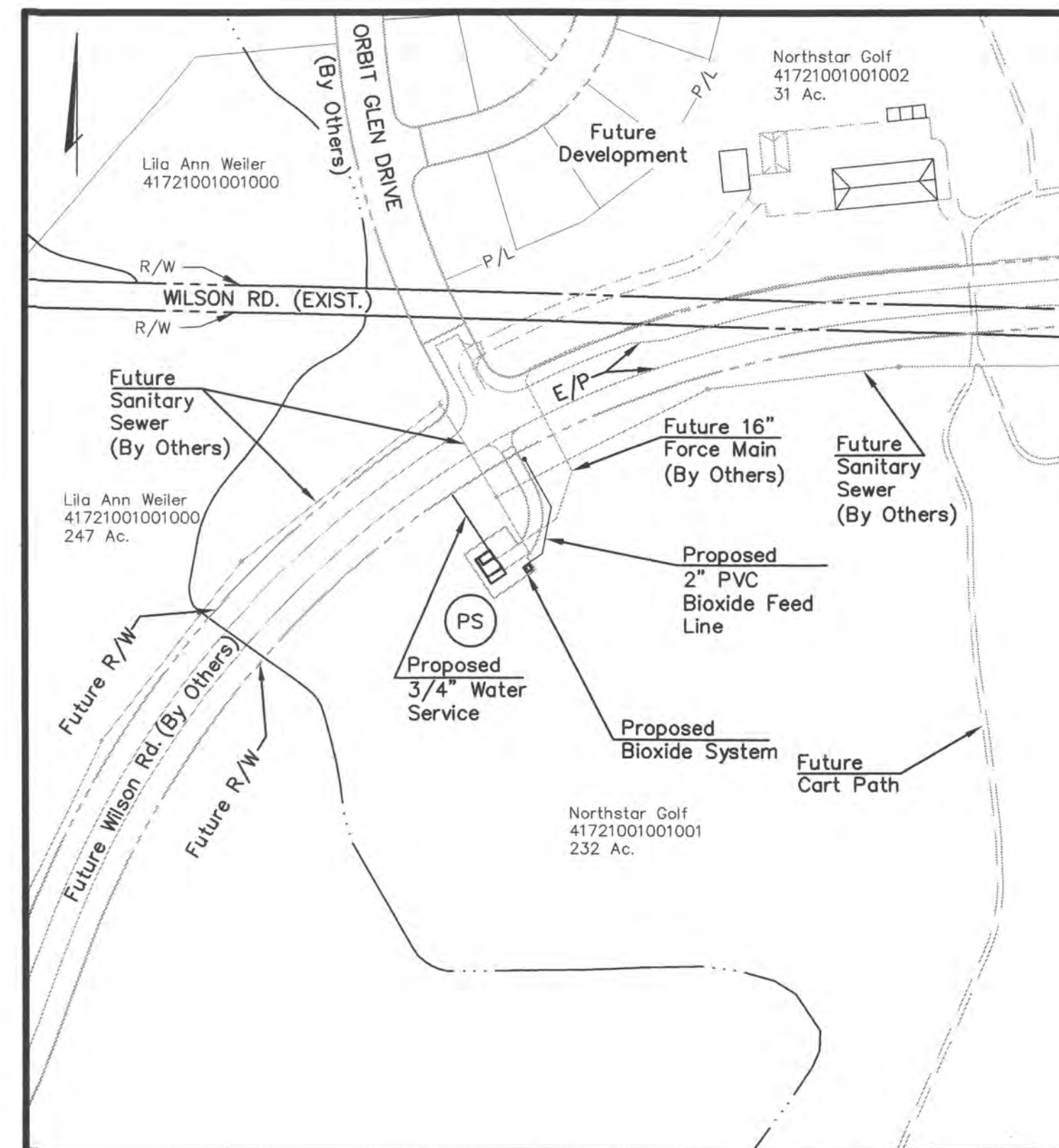
Title Sheet	1
General Notes	2
Site/Grading Plan	3
Structural Details	4-11
First Floor & Basement Plan Views	12
Typical Sections	13-15
Bioxide System Details	16
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OHIO BUILDING CODE INFORMATION

Building Use Group Classification	U
Construction Type	V-8
Occupancy Load	5

BENCH MARKS (NAVD 88)

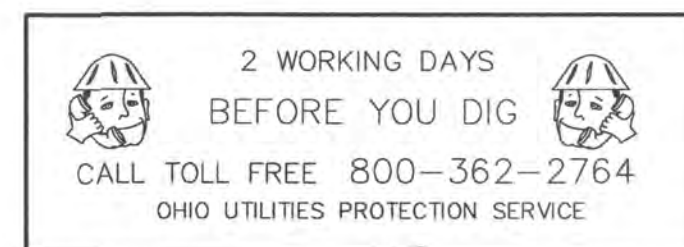
- B.M. #1** Brass Tablet set in concrete and stamped "97-179". Located approximately 82' East of the North Galena Road and Wilson Road intersection and 14' South of Wilson Road. Elev. = 949.9
- B.M. #2** Brass Tablet set in concrete and stamped "97-136". Located approximately 0.4 miles East of the North Galena Road and Wilson Road intersection and 15' South of Wilson Road. Elev. = 943.4
- B.M. #3** Brass Tablet set in concrete and stamped "97-139". Located approximately 0.5 miles East of the North Galena Road and Wilson Road intersection and 8.5' East of Wilson Road. Elev. = 932.9



INDEX MAP
Scale: 1" = 200'

CHANGE ORDER SCHEDULE

Date Approved	Approved	Prepared	Change	Date Prepared	Description of Change	Sht. No.
1/30/07	C.E.A.		▲	12/15/06	Revised Louvers	17, 28, A-1, A-2, A-3
1/30/07	C.E.A.		▲	1/22/07	REVISED ELASTOMERIC ECCENTRIC REDUCER & ACCOMPANYING ELEVATIONS	14



DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION
TITLE SHEET

Job No. 2004-0517
Date March 20, 2006
Scale As Noted
Sheet 1 / 30

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43064
Phone: 614.775.4500 Fax: 614.775.4800

MARK	DATE	DESCRIPTION

C:\MIDATA\PROJECTS\20040517\DWG\PS\STATION\FINAL\605175501.DWG (PUMP STATION) (FINAL) (605175501.DWG) (LAYOUT) - 3 - PLOTS: 31083VES-1, 31083VES, 31159XCL - LAST SAVED BY: GBARRETT [2/27/2006 10:24:06 AM] - PLOTTED BY: GBARRETT [2/27/2006 10:24:06 AM]

1. GENERAL NOTES

The County of Delaware requirements, together with the Specifications of the State of Ohio, Department of Transportation, including all supplements currently in force shall govern all materials and workmanship involved in the improvements shown on these plans unless otherwise noted. The Contractor shall refer to the "Standard Plans and Specifications for Construction of Sanitary Facilities in Delaware County, Ohio" for all necessary construction details.

The Contractor and Sub-Contractor shall be solely responsible for all federal, state and local safety requirements, together with exercising precautions at all times for the protection of persons (including employees) and property. It is also the sole responsibility of the Contractor and Sub-Contractor to initiate, maintain and supervise all safety requirements, precautions and programs in connection with the work.

The Contractor shall obtain all necessary permits.

The Contractor shall furnish and maintain sanitary convenience facilities for the workmen and inspectors for the duration of the work.

All testing of the sanitary pump station, shall be completed following the procedures in the "Standard Plans and Specifications for Construction of Sanitary Facilities in Delaware County, Ohio."

The Contractor shall furnish and place acceptable material as backfill and embankment around the proposed structures. Material used may be obtained from the material excavated or from approved off-site borrow, if required. Waste excavation may be disposed at direction of the Engineer. All backfill embankment shall be placed in accordance with Delaware County Engineer Drawing R100 and Delaware County Engineer Construction and Materials Specification 203.05.

The Contractor shall cooperate with the Delaware County Sanitary Engineer and shall provide all necessary equipment to perform all testing.

Roof drains, foundation drains and other clean water connections to the Sanitary Sewer are prohibited on this project.

Any changes in the materials will need to be approved by the Delaware County Sanitary Engineer and Engineer of Record.

2. EXISTING UTILITIES

The identity and location of the existing underground utility facilities known to be located in the construction area have been shown on the plans as accurately as provided by the Owner of the underground utility. Delaware County and/or the Engineer assume no responsibility as to the accuracy of the underground facilities shown on the plans.

Support, protection and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor. The cost of this work shall be included in the price bid for the various items.

The Contractor shall cause notice to be given to the Ohio Utilities Protection Service (O.U.P.S.) (Telephone 1-800-362-2764 toll free) and to the Owners of underground utility facilities shown on the plans who are not members of a registered underground protection service in accordance with Section 153.64 of the Revised Code. The above mentioned notice shall be given at least 48 hours prior to start of construction.

The Contractor is responsible to coordinate the relocation of any utilities as required by the plan with the utility company.

The Contractor shall expose the utility or structure indicated sufficiently in advance of laying the proposed sewer or building structures, as applicable, in order to verify the proposed location. Cost to be included in the price bid for the various sewer items.

Any field tie disturbed during construction shall be replaced as directed by the County, with PVC/HDPE pipe spanning the trench. The trench shall be filled with Compacted Granular Material. Cost of this work is to be included in the price bid for the various items.

The following utilities are located within the work limits of this project and the Owners do not subscribe to a registered underground utility protection service.

Table with 3 columns: UTILITY, OWNER, TELEPHONE. Lists Water Mains, Sanitary Sewers, and Storm Sewers with their respective owners and contact information.

3. AREA RESTORATION

All areas, including fences, that are disturbed by this project, shall be restored to original or better condition, per Item 659 (Seeding and Mulching), or other applicable specification.

All items of work for which no specific method of payment is provided, including the restoration of disturbed or damaged property to its original state, shall be performed by the Contractor and the cost of same shall be included in the price bid for various related bid items.

4. STORAGE OF EQUIPMENT AND MATERIALS

No materials, including pipe, shall be stored within twenty (20) feet of the edge of pavement of both the existing and relocated pavement of Wilson Road nor within fifty (50) feet of any intersecting street or driveway. During non-working hours, storage of equipment shall comply with these same requirements. Compliance with these requirements shall not in any way relieve the Contractor of his legal responsibilities or liabilities for the safety of the public.

5. RIGHT OF WAY

In addition to direct requirements of the Contract Documents, the Contractor shall observe and conform to the specific requirements of all rights-of-way including easements, court entries, rights of entry or action filed in court in accordance with the code of the applicable governing agency. The cost of the operations necessary to fulfill such requirements shall be included in the price bid for the various items of the contract unless specific provision is made in the Contract Documents for the measurement of and payment for such cost specific items of the Contract.

6. TRAFFIC

No non-rubber tired vehicles shall be moved on public streets.

All traffic control devices shall be furnished, erected, maintained and removed by the Contractor in accordance with the "Ohio Manual of Uniform Traffic Control Devices for Streets and Highways", copies of which are available from the Ohio Department of Transportation, Bureau of Traffic, 1980 E. Broad Street, Columbus, Ohio 43215.

Type "C" Steady Burn Lights shall be used on all barricades, drums and similar traffic control devices in use at night and weekends.

All trenches shall be backfilled or securely plated during non-working hours.

7. MAINTAIN DRAINAGE

The flow in all sewers, drains and watercourses encountered shall be maintained by the Contractor at his own expense, and whenever such watercourses and drains are disturbed or destroyed during the prosecution of the work they shall be restored by the Contractor at his own cost and expense to a condition satisfactory to the Engineer.

8. TREE PRESERVATION

The Developer will preserve as many existing trees as possible during the course of construction of the force main to prevent mechanical and compaction injury to existing trees not exempt under the Tree Impact Plan, per Township Zoning Officer. The Developer will require the Contractor and Builders to install snow fencing or barrier around a tree or group of trees to protect the trees. Tree protection shall be placed before any construction or grading is begun and shall be maintained in repair during construction. The fencing shall be located as far out from the trunk as the discipline to restrict construction within that area.

All trees, whether shown or not shown on the plans, are to be preserved unless approval to remove is given in writing by the Engineer or their removal has been designated thusly: X on the plans. The Contractor shall use special precautions to avoid damage to all other trees. When, in the opinion of the Engineer, trunks or branches of trees would be endangered by the use of mechanical excavation devices, hand excavation will be required. The cost of tree removal and disposal and the cost of tree protection shall be included in the price bid for Trees Removed and Disposed of.

All disturbed surface areas not covered by structures or a hard surface improvement shall be covered with stone or shall be seeded or sodded, per EPA and County Erosion & Sedimentation Control Requirements and sloped to drain. All grass or stone areas shall have a minimum slope or grade of eight-tenths percent; except that the ground next to buildings shall slope away from the building at a five percent grade for a minimum of ten feet.

In addition to all of the above, the Contractor shall read the Township's Development Regulations for the Northstar Tract, and abide by required specifications listed in same.

9. STANDARD DRAWINGS

Standard Drawings listed on these plans, as shown in the "Preliminary Standard Plans and Specifications for Construction of Sanitary Facilities in Delaware County, Ohio, shall be considered a part thereof.

10. PUMP STATION GENERAL NOTES

All General Notes are to be hereby considered for the construction work of the sewage pump station, where applicable.

The Contractor shall comply with material and construction requirements of Delaware County Sanitary Engineer. The Contractor shall obtain any and all permits required, and pay cost for any and all fees.

The Contractor shall furnish all materials, labor, tools, transportation, incidentals and appurtenances shown on the accompanying drawings. Any material or work not specifically mentioned or shown on the drawings, but necessary to complete the work, shall be furnished by the Contractor. All shop drawings shall be submitted to the Delaware County Sanitary Engineer's office for review.

The Contractor is required to visit the site and fully inform himself concerning all conditions affecting the scope of the work. Failure to visit the site shall not relieve him from any responsibility in the performance of this Contract.

The Contractor shall investigate and locate all existing utilities and notify all utility companies a minimum of 48 hours prior to construction.

The Contractor shall provide 4" to 6" sand or grit leveling base under each concrete structure and shall place granular fill as required, dependent on soil conditions. Contractor shall grade area to drain surface water away from station.

All disturbed areas shall be seeded and mulched after final grading by Contractor. The Contractor shall maintain positive drainage away from the pump station building and wet well.

Roof drains, foundation drains, and other clean water connections to the sanitary system are prohibited.

All General Notes shown on Sheet 2 are to be hereby considered for the construction work of the wastewater pump station, where applicable.

11. PUMP STATION SPECIFICATIONS

Work under this section includes furnishing and installing the pump station, complete as shown on the drawings, general specifications and as specified herein.

12. ACCESS LID AND FRAME ASSEMBLIES

The wet well top shall be fitted with (4) double leaf 60" x 60" Heavy Duty access Covers "Safehatch" by Flygt. Each door shall have a handle, a latch to hold it in the open position, and lockable hasp. The access covers, cover frames, and top slab shall be designed for a 300 p.s.f. live load. The frame assemblies shall be placed in the concrete wet well top when it is poured. There shall be one (1) 36" x 36" Heavy Duty access Cover "Safehatch" by Flygt inside the pump station located on the first floor.

13. PIPING

The Contractor shall supply and install all piping and valves required in the concrete wet well chamber as shown on the Drawings. Flanged Joint-Ductile Iron Pipe shall be Class 52 conforming to AWWA C-110, C-150 and C-151 w/ rubber gaskets per C-111.

14. PUMPS

Contractor shall coordinate with the Developer, Engineer, and Delaware County Engineers Office to furnish and install the pumps specified during each Phase, as the service area develops.

For Phase I, all reducers, supports and piping shall be adjusted or modified accordingly to maintain the ultimate design of the pump supports and pipe elevations as shown on Sheet 14. The Phase I pumps shall be removed and replaced with the pumps specified for Phase II

PHASE I PUMP DATA

Table with 2 columns: Item, Value. Lists Total No. of Flygt Manufactured Pumps (2), Pump Model (NT-3171.180 HT), Pump Design Flow (1 Pump in operation) (923-gpm), Total Dynamic Head (65.9-ft), Impeller Diameter (10.1-in).

PHASE I PUMP SCHEDULE

Table with 2 columns: Item, ELEVATIONS. Lists Invert of Deepest Sewer (904.0-ft), Standby Pump On (903.6-ft), High Water Alarm (903.4-ft), Lead Pump On (901.6-ft), Pumps Off (899.5-ft), Invert of Wet Well (896.5-ft).

PHASE II PUMP DATA

Table with 2 columns: Item, Value. Lists Total No. of Flygt Manufactured Pumps (3), Pump Model (NT-3202.180 HT), Pump Design Flow (2 Pumps in operation) (2,325-gpm), Total Dynamic Head (88.1-ft), Impeller Diameter (12.4-in).

PHASE II PUMP SCHEDULE

Table with 2 columns: Item, ELEVATIONS. Lists Invert of Deepest Sewer (904.0-ft), Standby Pump On (903.6-ft), High Water Alarm (903.4-ft), Lead Pump On (903.1-ft), Lead Pump On (902.1-ft), Pumps Off (899.5-ft), Invert of Wet Well (896.5-ft).

15. SUMP PUMPS

Furnish and install two (2) sump pumps as called for on the Drawings and as specified herein. Pumps shall be Model CP 3057.181 HT as manufactured by Flygt.

16. CIRCULAR CHART RECORDER

The Contractor shall install a DR 4500 A Truline Circular Chart Recorder per Delaware County Sanitary Engineer Specifications.

17. PAINTING

All valve chamber piping and valves shall be painted (except flanges and machined edges). All painting preparations and application shall be in accordance with "Standard Plans and Specifications for Construction of Sanitary Facilities in Delaware County, Ohio," the latest edition of the "Recommended Standards for Wastewater Facilities", General Specification Section 9900. Painting, and per paint manufacturer's recommendations.

18. PRESSURE GAUGES

Pump pressure gauges shall be provided and installed on the discharge lines of each pump furnished and placed on the project. Locations of gauges shall be on tops of the horizontal discharge piping, inside the valve chamber and upstream from each check valve.

Gauge and Accessory Requirements

Pressure gauges shall be solid front, liquid filled gauges with clear glass windows, bottom 1/4" NPT outlet and stainless steel Bourdon tube. All gauges shall be dual-calibrated in feet of water and psig. Gauges shall be 4 1/2" diameter. All gauges shall be filled with an approved impulse dampener. Gauges shall be No. 1279SL with No. 1106S impulse dampener, by Ashcraft, or approved equal by U.S. Gauge, H.O. Trerice Co., Helicoid of Robertshaw. Pump discharge side gauges shall have full dial registration for 0 to 100 psi.

Pressure Gauge Connections - At all pressure gauge connections, as denoted on the Drawings, furnished and installed pressure gauge connectors shall consist of brass gauge cocks with 1/4" brass union ends, No. 1094 by Ashcraft, or approved equal.

19. CHANNEL MONSTER

A hydraulic powered grinder (Channel Monster) as manufactured by JWC Environmental or equal, shall be provided. The installation of the grinder shall include:

One (1) Model CMO3210-AD Channel Monster system suitable for up to 2850 gpm in wall mounted from with a downstream condition of freefall (refer to JWC Environmental flow curves for additional performance data). Scope of supply to include: *Grinder with 32" cutter stack, 11-tooth cam cutters in 4130 alloy steel, 10" dia. 304 stainless steel rotating drum with 1/4" spacing between coils, cartridge-style tungsten carbide mechanical seals with BUNA-N elastomers rated for 90 psi, green epoxy-coated ductile iron housings and siderails and torque motor

One (1) HPP10504 hydraulic power pack with 5hp TEFC 230v/3ph/60Hz or 460v/3ph/60Hz motor, (2) 1/2"-40" hoses with 304 SST quick disconnect fittings at the grinder with 304 stainless steel stand

One (1) CMA1104-style wall-mounted frame and 30' long guide rail assembly, fabricated in 304 stainless steel

One (1) PC2200 motor controller in NEMA 4X FRP enclosure accepting 230v/3ph/60Hz or 460v/3ph/60Hz input power, includes IEC starter with over-current protection, jam-sensing current transformer and micro-PLC

Four (4) Operation and Maintenance manuals

20. WATER SERVICE

DEL-CO Water Co., Inc. (548-7746) will make tap to the future 12" water main and install the meter pit.

The Contractor shall arrange with DEL-CO for scheduling work to be performed; pay tap fee including other charges that may be associated with tap installation; arranging for open trench and plumbing inspections if required.

The Contractor shall install approx. 100 Lin. Ft. of 3/4" Type "K", soft temper copper tubing conforming to ASTM B 88 of Fed. Spec. WW-1799 in open trench. Minimum cover to be 54" below finish grade. Minimum lateral clearance from sanitary sewers and force main shall be 10".

Building plumbing to be Type "L" copper of type and joint construction meeting local plumbing code. Provide two (2) hose bibbs, one at El. 933.32 and one at El. 892.00.

Provide and install one (1) 3/4" backflow preventer device on the El. 933.32 floor level.

All costs for material, labor and fees associated with the "WATER SERVICE LINE AND BUILDING WATER PLUMBING ITEMS", as called for above and shown on the drawings, shall be paid for by proposal item of that description.

The Contractor shall provide the required items for a bioxide odor control system, as manufactured and installed by US Filter, to be installed adjacent to the wet well. The bioxide odor control system will consist of a storage tank and a dosing pump that feeds directly to the wet well. The Contractor shall provide all electrical, tubing, and mounting requirements for the proper operation of the odor control system as required by the drawings and supplement specifications.

21. PULSAIR PAC-1/5 MIXING SYSTEM

The Contractor shall provide the required items for the installation of the Pulsair PAC-1/5 mixing system as manufactured by Pulsair Systems, Inc. The list of equipment shall include:

- One (1) PAC-1/5 controller
One (1) 1" air filter with auto drain
One (1) 1" "T" handle, manually operated regulator
Five (5) 3/4" Air Injection Valves
Installation drawings and instructions
Operating and maintenance instructions
One pre-plumbed NEMA-4X 304SS secondary enclosure
Five (5), 12" 316 stainless steel double accumulator plates

Contractor shall provide all necessary plumbing between Pulsair PAC-1/5 controller, air compressor and injection valves located on wet well floor.

The Contractor shall also provide an Ingersoll-Rand model 2475, air compressor with an 80 gall vertical receiver or equal. The compressor shall include the following electrical features:

Motor shall be NEMA T frame with drips proof enclosure, class B insulation, 1.15 service factor, and greased lubricated ball bearings. The motor shall be rated 7.5 HP, 3 phase, 460 volts.

Starter shall be NEMA size 1 with 3-pole overload relay equipped with class 20 heaters. Starter to be rated 600 volts maximum, 3 phase, 10 Hp. Starter coil shall be for use at line voltage (460 volts). Provide any supplemental control power fuses required to comply with the National Electrical Code (NFPA70-2005) for wires extending beyond controller enclosure. (Note: Branch circuit short circuit and ground fault protection provided by others shall be 20 Amp. thermal-magnetic circuit breaker.) Overloads shall require manual reset. As an alternate, supplier may provide a "E" series starter with equivalent characteristics.

Control of the motor shall be means of a pressure switch rated for line voltage (460 volts). Pressure switch shall provide for on-off control at Pulsair recommended pressure settings. The switch shall be housed in a NEMA enclosure and it shall also provide for relieving compressor head pressure when the pressure switch is in the off position (unloader operation).

Wiring between components shall be by means of flexible metal conduit, liquid tight flexible metal conduit, or Engineer approved raceway. Wiring shall be complete except for the incoming 3 phase ground wires from the branch circuit protection.

Motor starter shall be located on the assembly in such a manner that the installed assembly will comply with National Electrical Code requirements for workspace about electrical equipment (NFPA 70-2005§ 110)

22. CONSTRUCTION SEQUENCE

This is a general sequence of construction activities. The Contractor shall provide a final sequence of construction activities.

- 1. The Contractor shall establish stabilized construction entrances.
2. The Contractor shall establish all sediment control devices including sediment fence prior to any construction activities.
3. The Contractor shall perform all earthwork operations in accordance with the plan details and notes.
4. The Contractor shall complete the installation of the pump station including, the coordination of the connection of the gravity sewer and force main to the pump station, in accordance with the plan details and notes.
5. The Contractor shall install the pump station driveway after completion of the installation of the gravity sewer and force main.
6. The Contractor shall place seeding and mulching as necessary to reestablish all denuded areas.
7. The Contractor shall remove and dispose of the erosion control devices only after all areas have established cover.

23. START-UP

The Contractor shall arrange and conduct a Pump Station Start-Up meeting with the Owner prior to discharge of sewerage to Pump Station. All manufactures representatives shall be present at the start-up meeting.

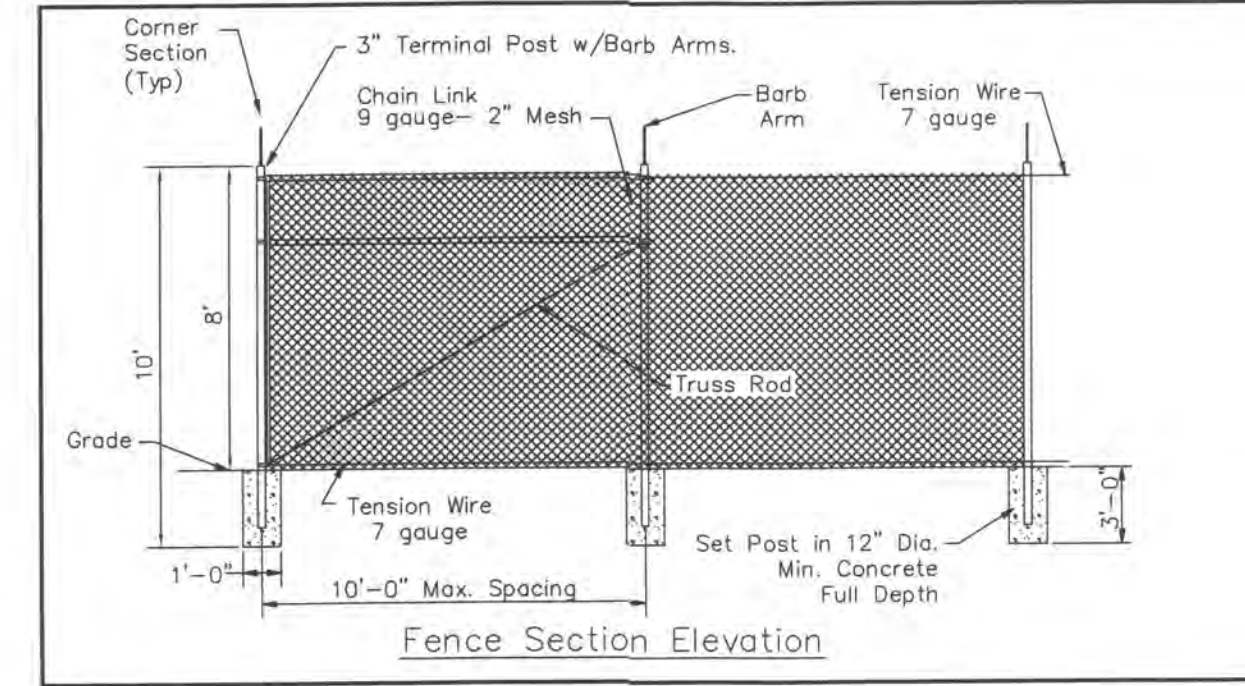
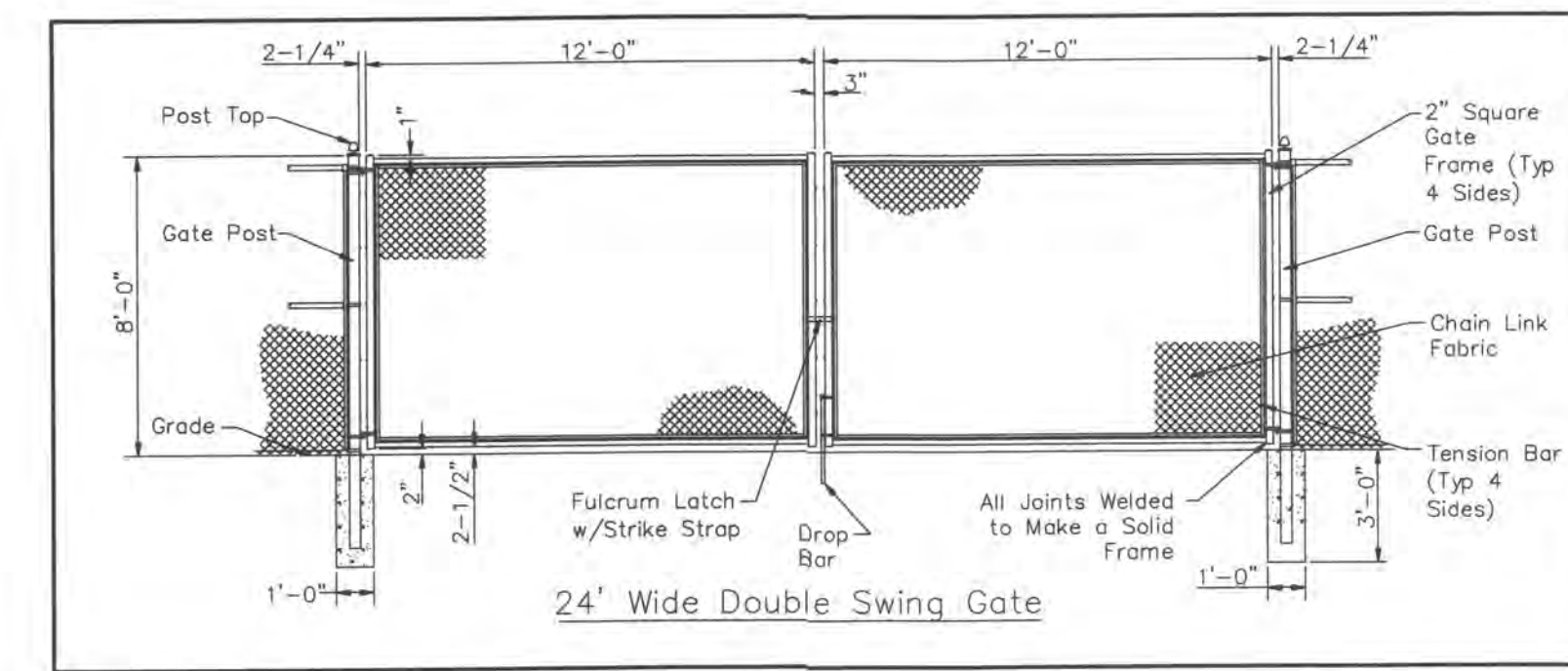
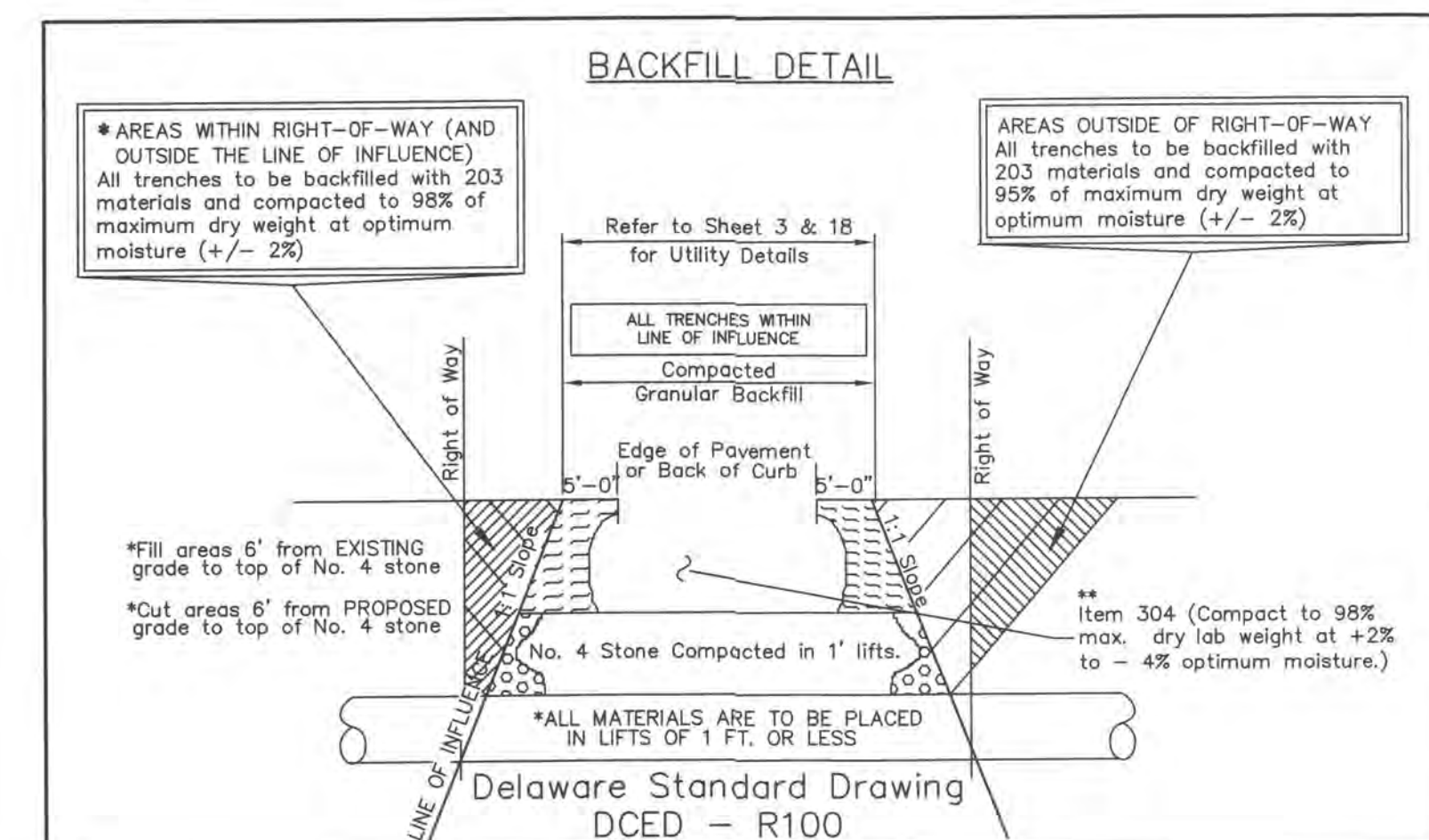
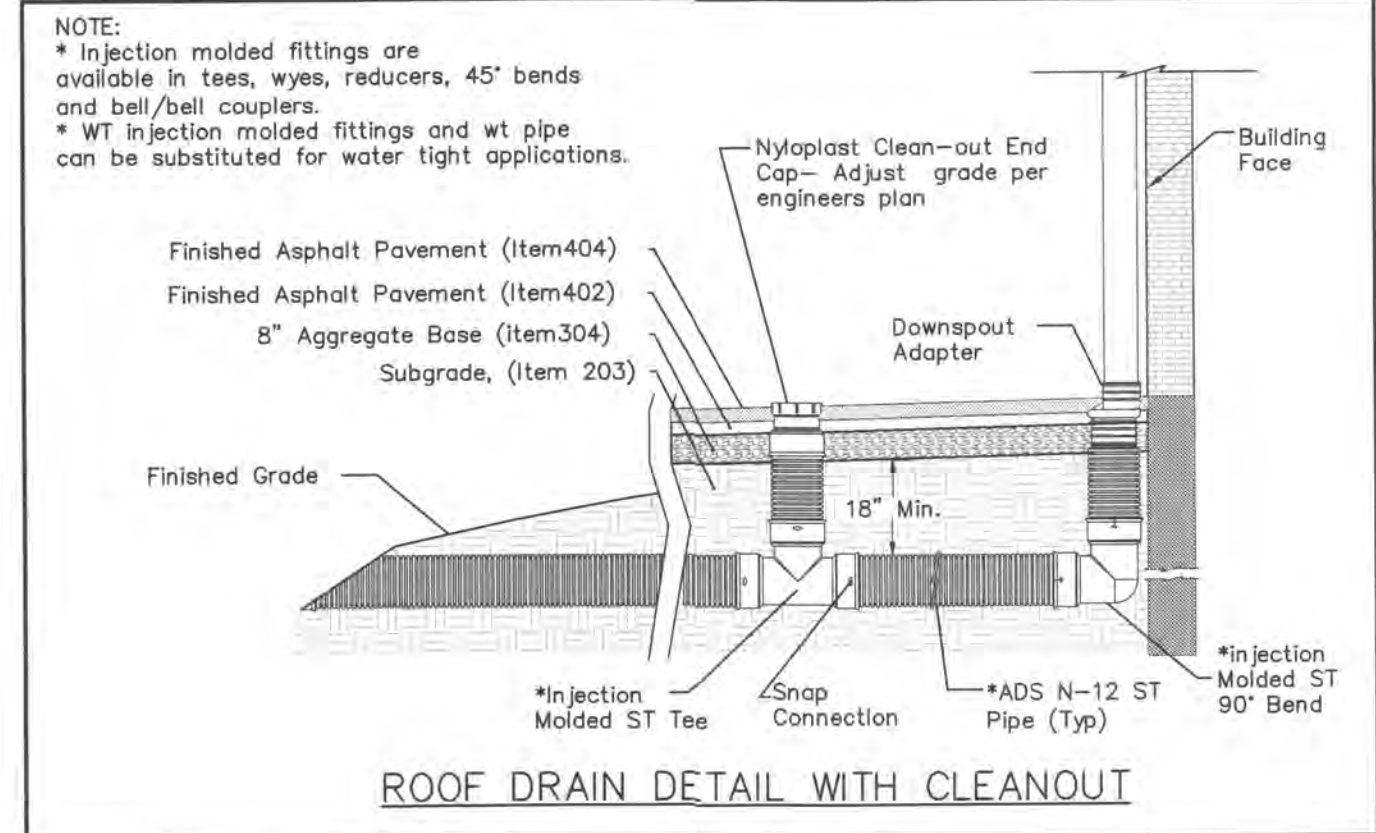
All aspects of the pump station operation shall be tested and documented.

24. EXTRA COMPENSATION

No extra compensation will be paid to the Contractor by reason of compliance with any of the requirements indicated on the plans, but payments shall be deemed to be included among the several items, as bid upon, unless otherwise specifically provided.

25. MISCELLANEOUS WORK

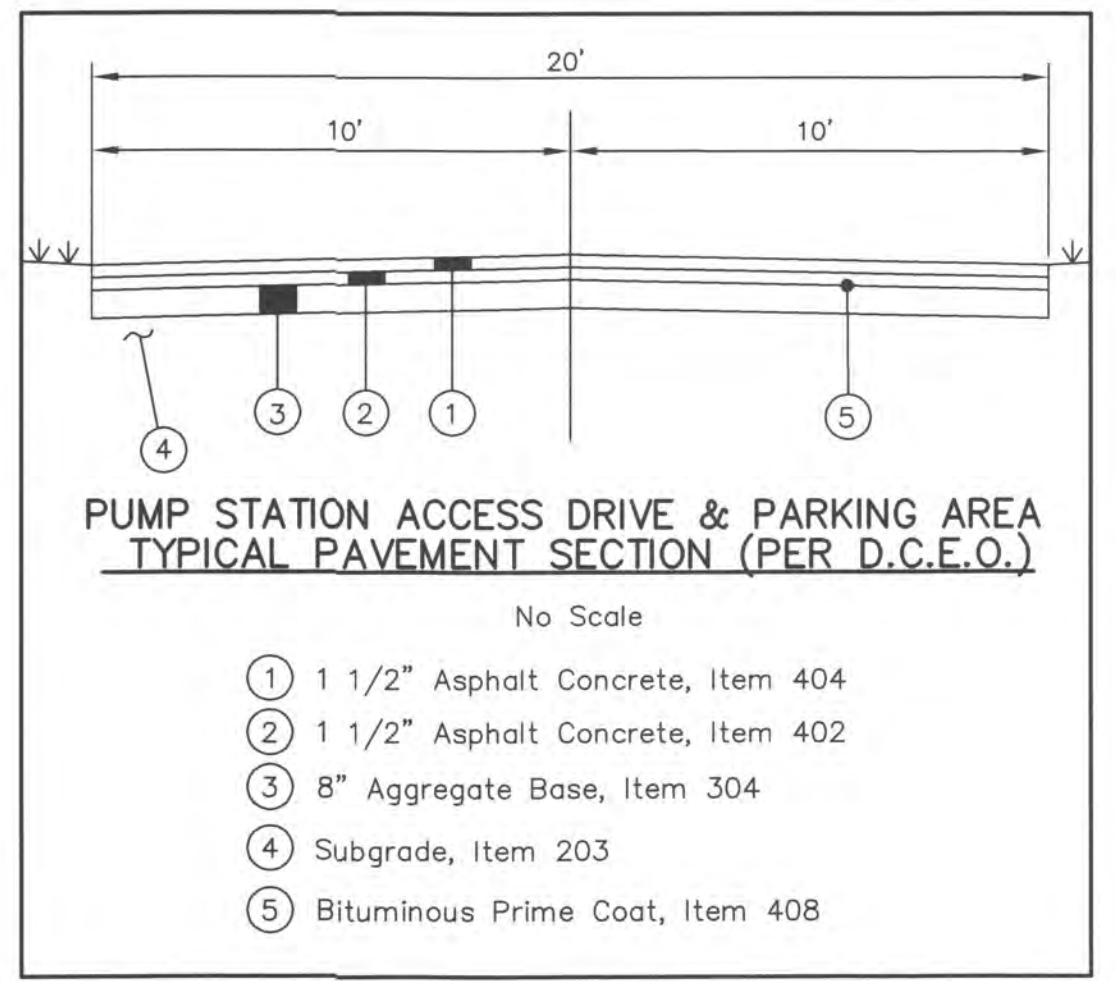
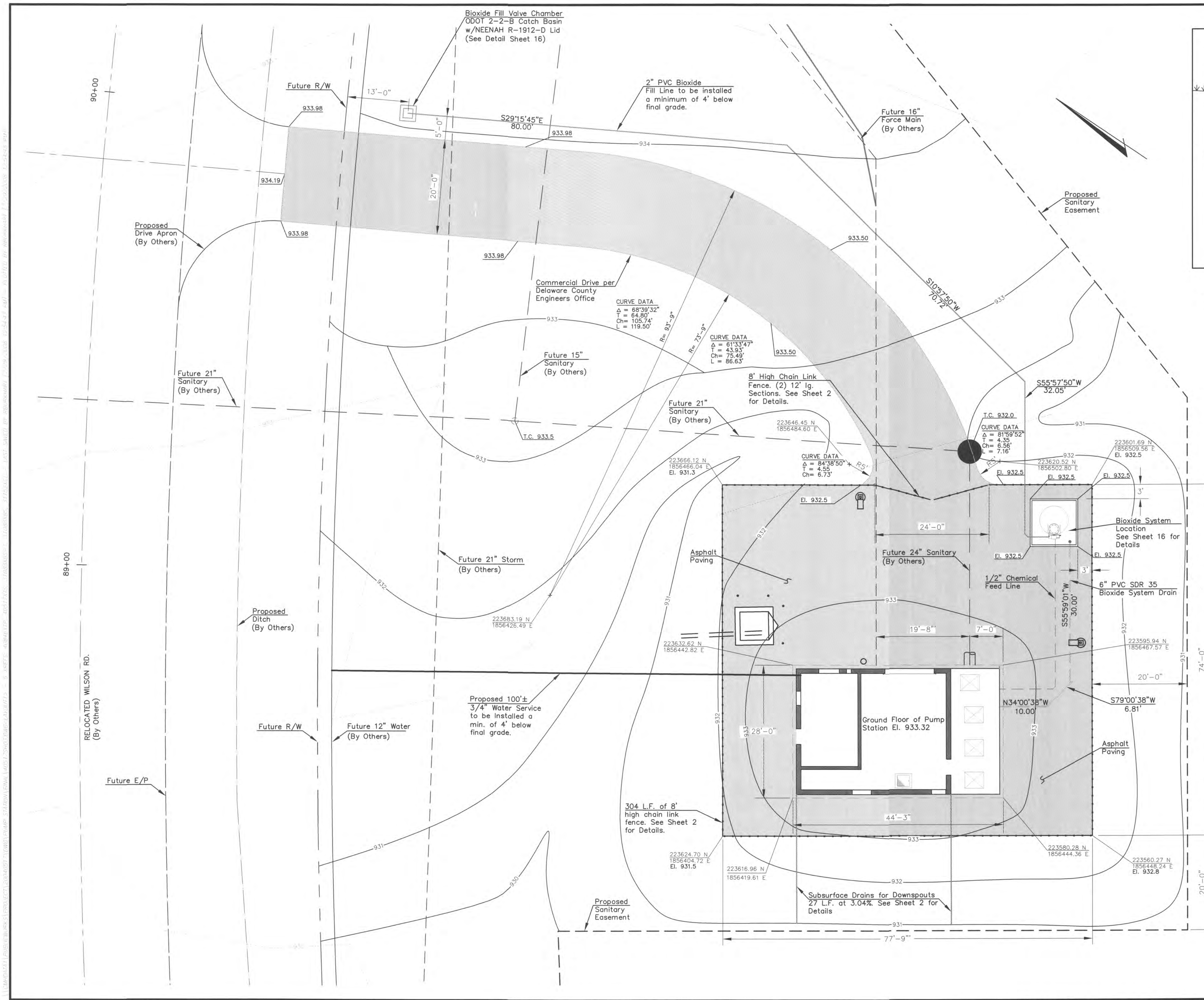
All items of work called for on the plans for which no specific method of payment is provided shall be performed by the Contractor and the cost of same shall be included in the price for the various related items.



DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION
GENERAL NOTES
EMHT
Evans, Mechwart, Hamilton & Tilton, Inc.
Engineers - Surveyors - Planners - Scientists
5500 New Albany Road Columbus, OH 43254
Phone: 614.775.4500 Fax: 614.773.4800
Date: October 5, 2006
Scale:
Job No: 2004-0517
Sheet: 2 of 30

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

Ohio Building Code Information added to notes per the request of the Delaware County Code Compliance Building Regulation Department.



All backfill shall comply with the Delaware Standard Drawing DCED-R100 on Sheet 2. All utilities including waterlines and electric conduits within pavement limits shall be backfilled with compacted granular backfill with Item 304 stone.

LEGEND

- 933 — Proposed Contours
- 932 — Existing Contours
- Transformer, Meter & Pad
- Light Pole
- Antenna Pole
- Bollard

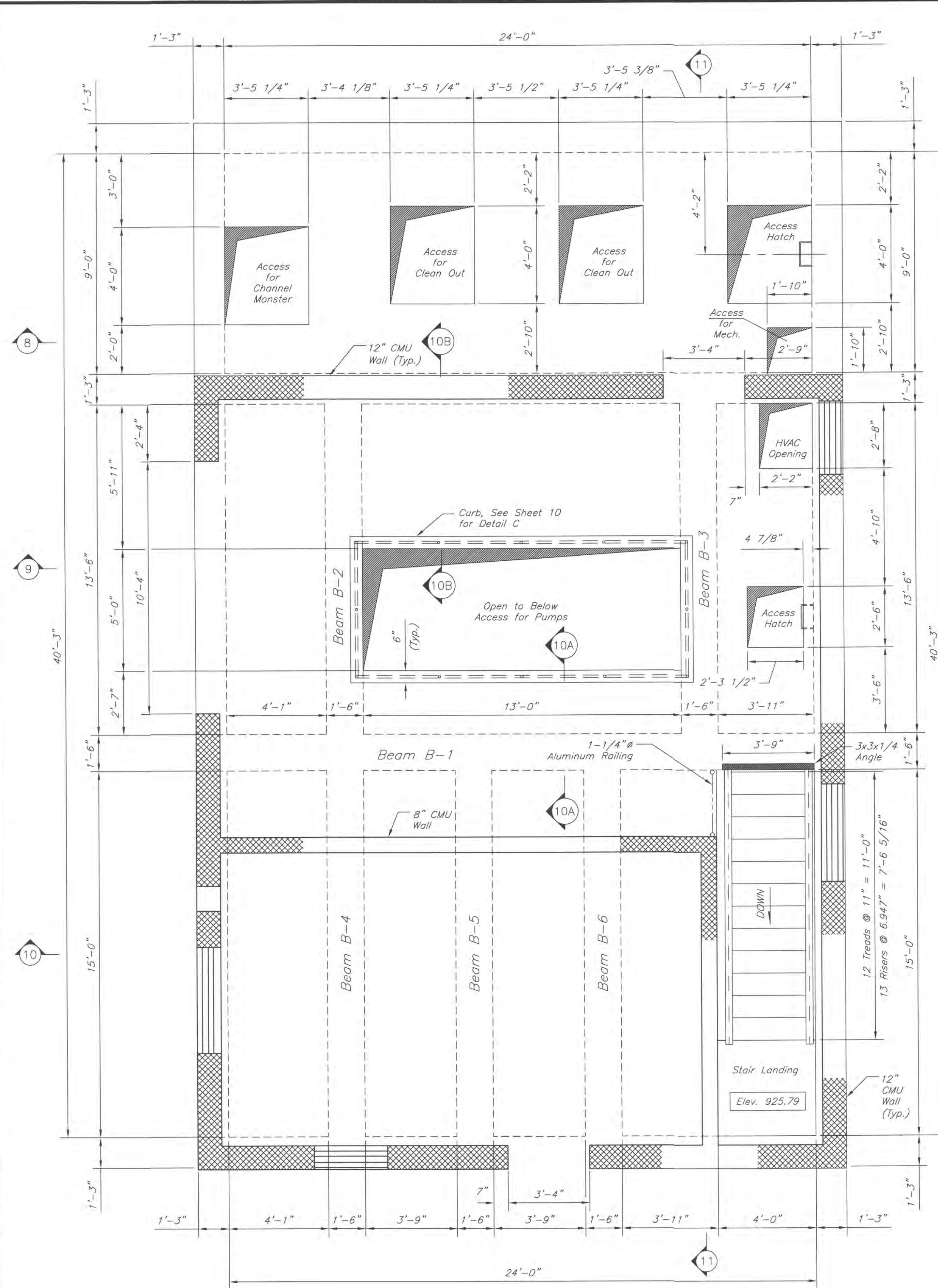
2 WORKING DAYS
 BEFORE YOU DIG
 CALL TOLL FREE 800-362-2764
 OHIO UTILITIES PROTECTION SERVICE

DELAWARE COUNTY, OHIO
 SANITARY SEWER IMPROVEMENT
 FOR
NORTHSTAR GOLF RESORT
 PUMP STATION
 SITE/GRADING PLAN

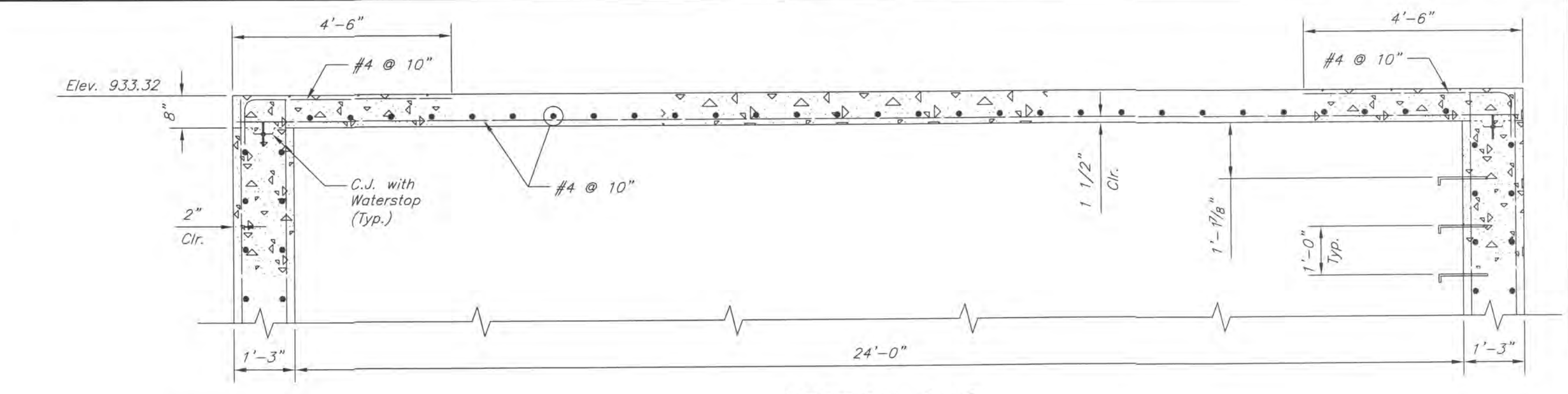
EMHT
 Evans, Mechwart, Hambleton & Tilton, Inc.
 Engineers • Surveyors • Planners • Scientists
 5500 New Albany Road, Columbus, OH 43254
 Phone: 614.775.4500 Fax: 614.775.4800

Date: October 5, 2006
 Scale: 1" = 10'
 Job No: 2004-0517
 Sheet: 3 of 30

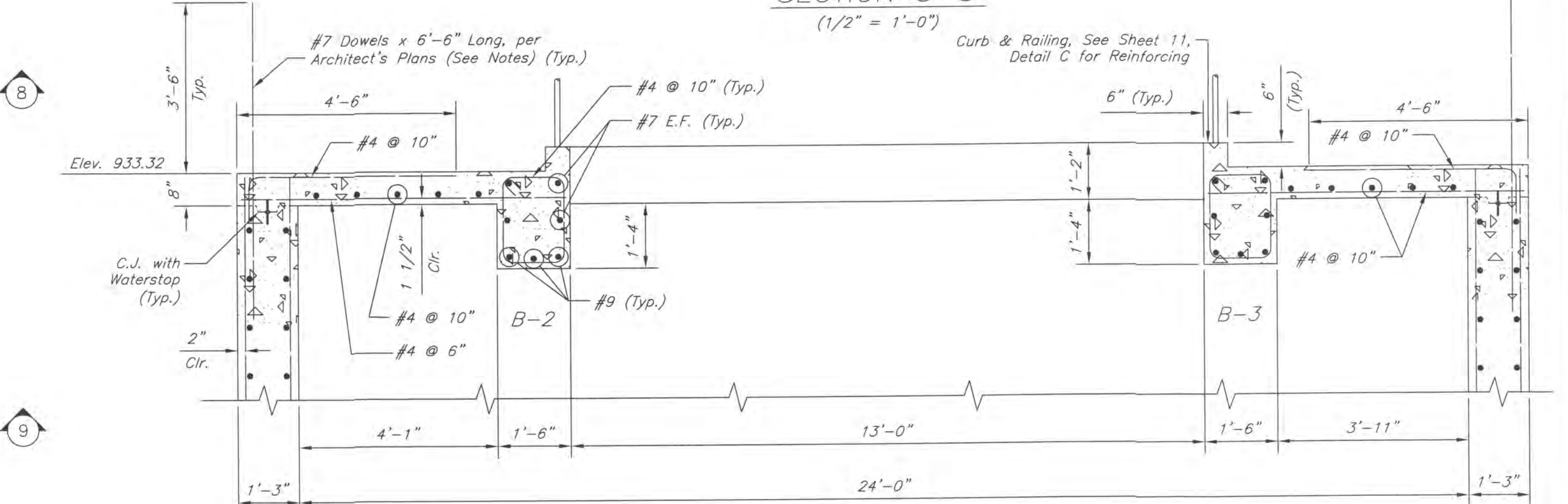
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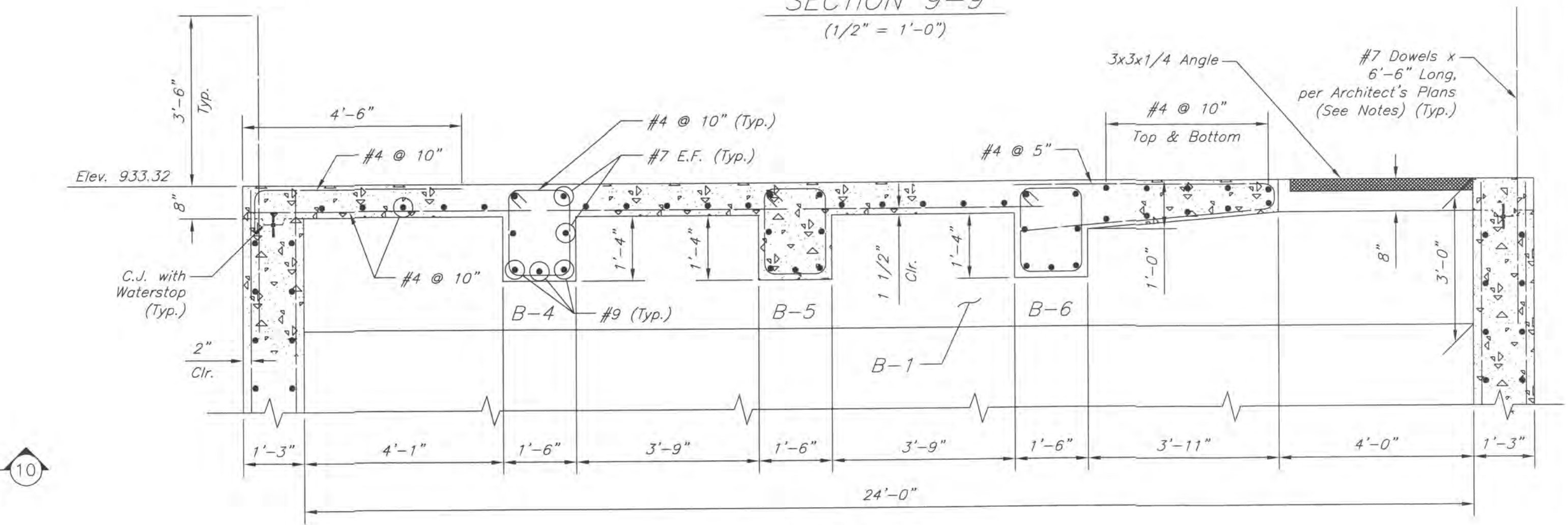
PLAN VIEW - FIRST FLOOR (ELEV. 933.32)
 (3/8" = 1'-0")



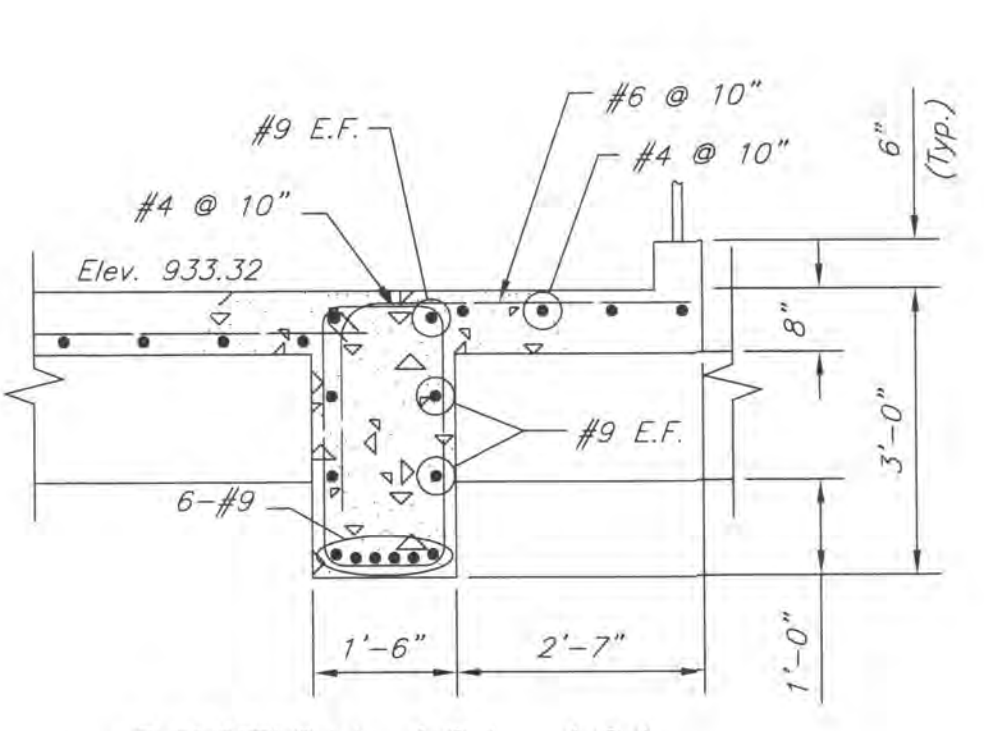
SECTION 8-8
 (1/2" = 1'-0")



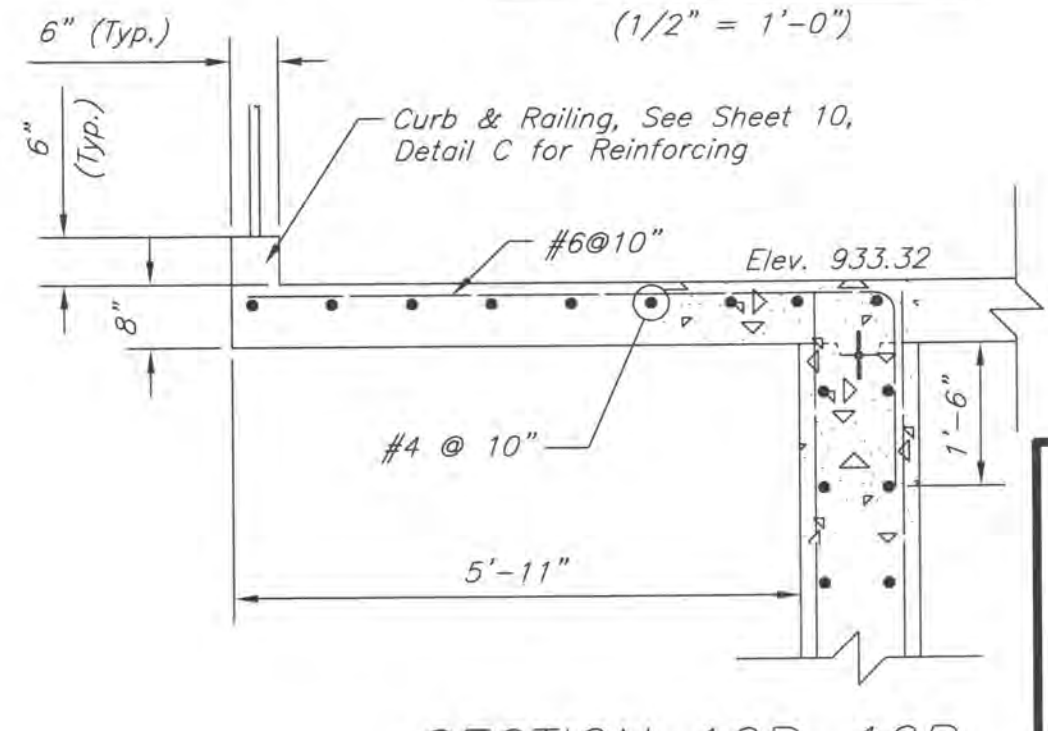
SECTION 9-9
 (1/2" = 1'-0")



SECTION 10-10
 (1/2" = 1'-0")



SECTION 10A-10A
 (1/2" = 1'-0")
 Note: Section Used Between Beam B-2 & B-3 Only



SECTION 10B-10B
 (1/2" = 1'-0")
 Note: Section Used Between Beam B-2 & B-3 Only

2 WORKING DAYS
 BEFORE YOU DIG
 CALL TOLL FREE 800-362-2764
 OHIO UTILITIES PROTECTION SERVICE

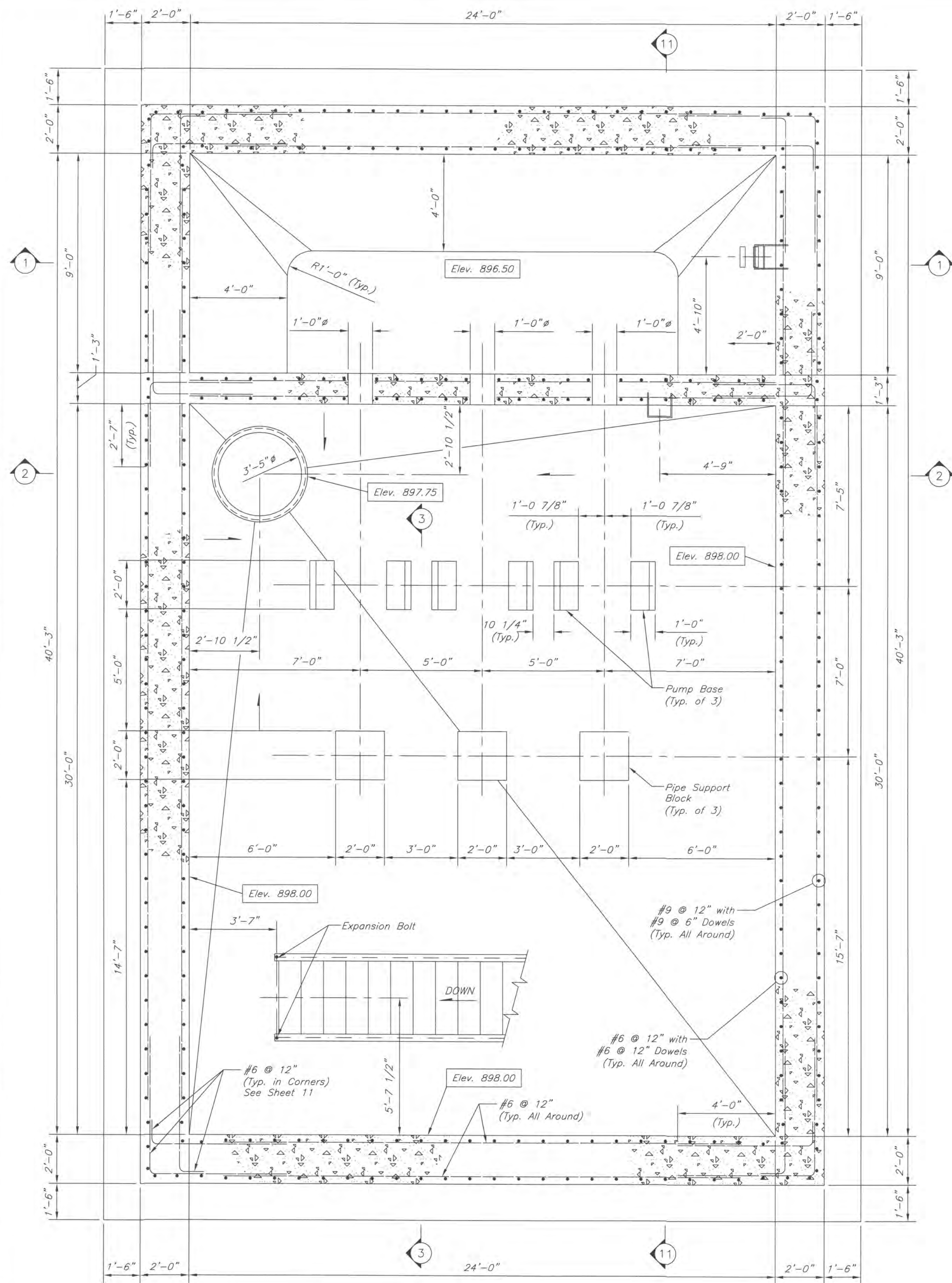
DELAWARE COUNTY, OHIO
 SANITARY SEWER IMPROVEMENT
 FOR
NORTHSTAR GOLF RESORT
 PUMP STATION
PLAN VIEW - FIRST FLOOR (ELEV. 933.32)

EMHT
 Evans, Mechwart, Hombleson & Tilton, Inc.
 Engineers • Surveyors • Planners • Scientists
 5500 New Albany Road, Columbus, OH 43054
 Phone: 614.773.4500 Fax: 614.773.4800

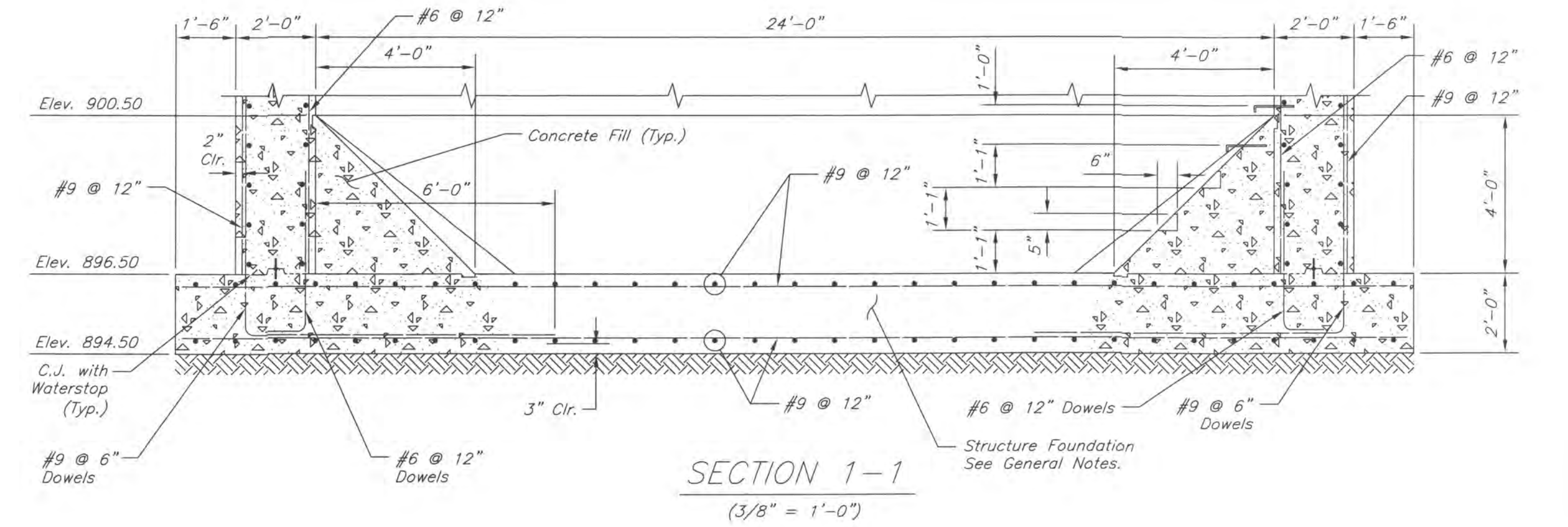
Date:	October 5, 2006
Scale:	As Noted
Job No:	2004-0517
Sheet:	4 of 30

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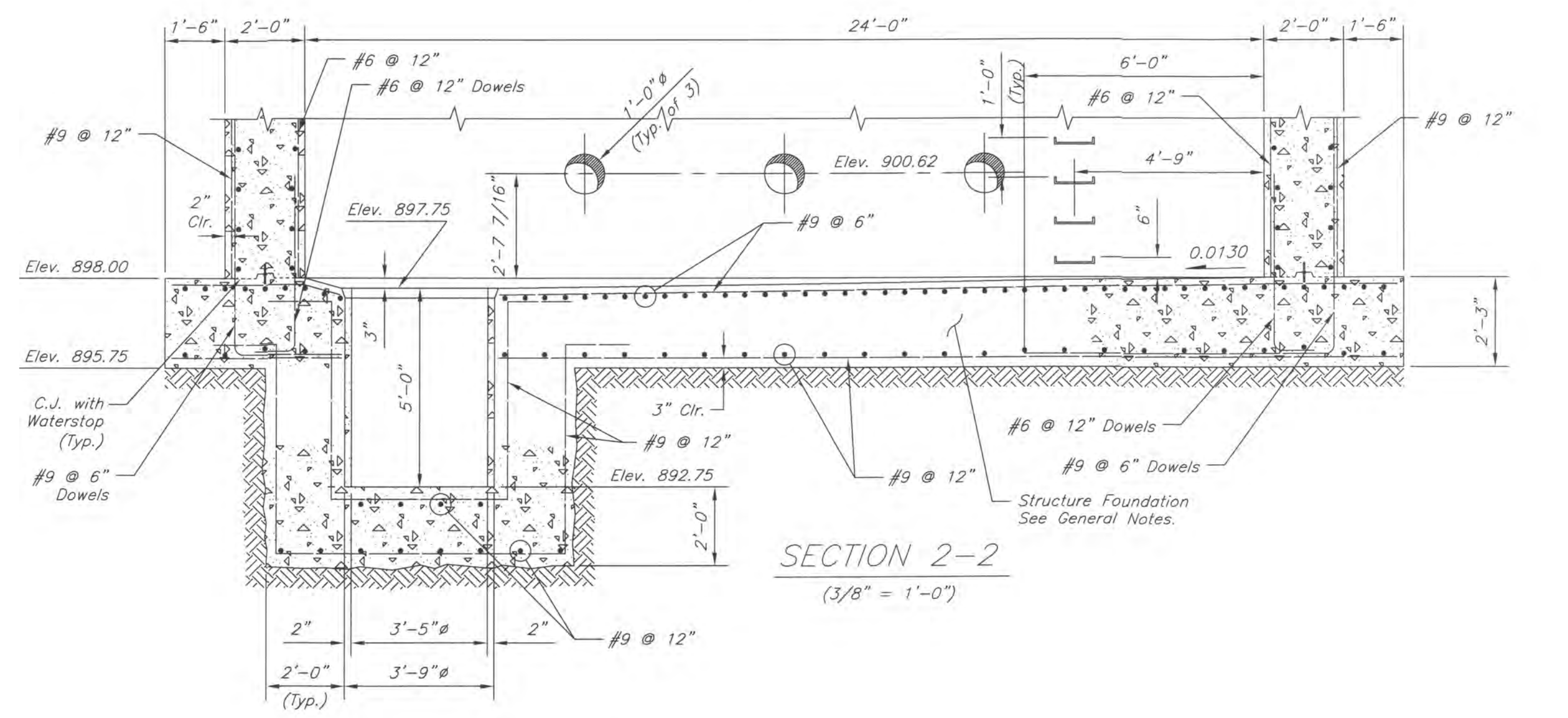
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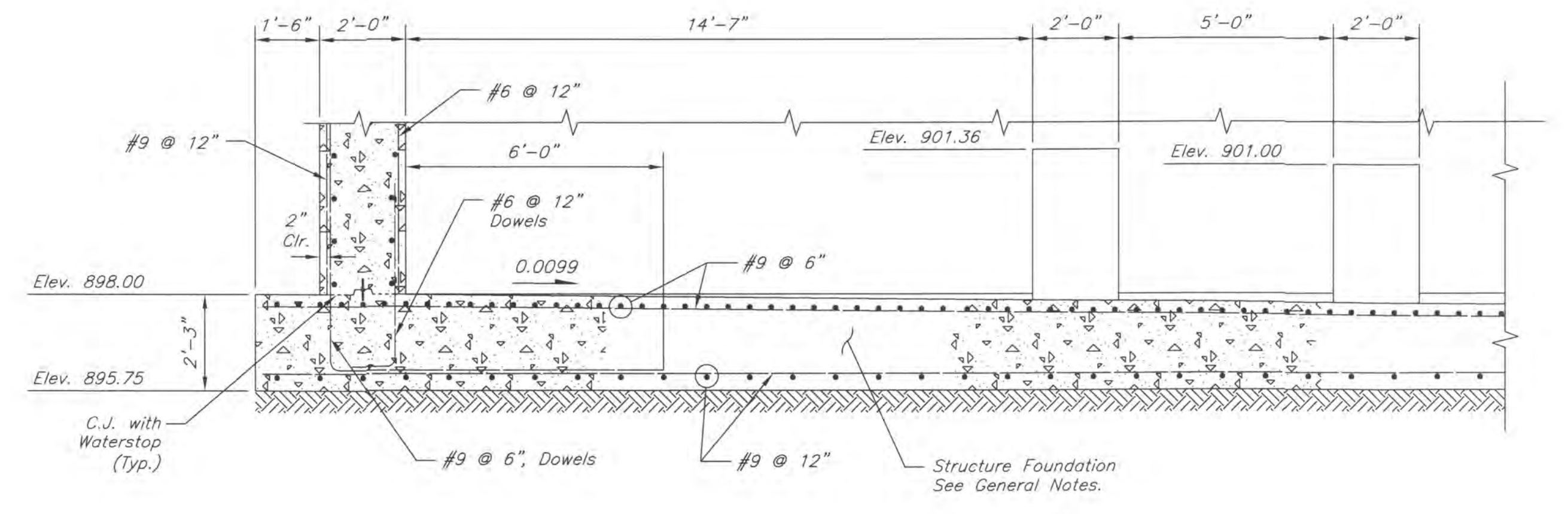
PLAN VIEW - BASEMENT (ELEV. 898.00)
 (3/8" = 1'-0")



SECTION 1-1
 (3/8" = 1'-0")



SECTION 2-2
 (3/8" = 1'-0")



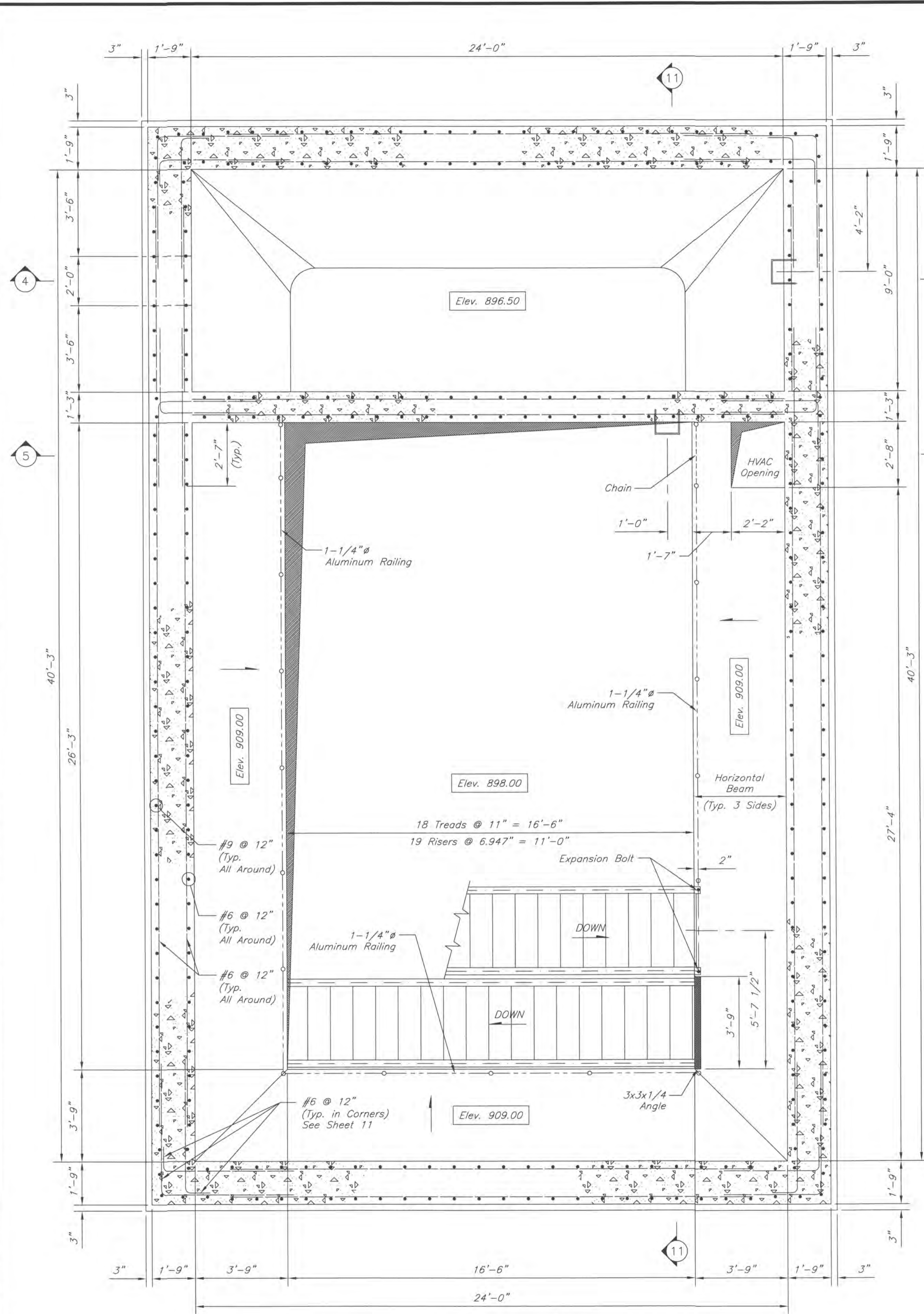
SECTION 3-3
 (3/8" = 1'-0")

DELAWARE COUNTY, OHIO SANITARY SEWER IMPROVEMENT FOR NORTHSTAR GOLF RESORT PUMP STATION PLAN VIEW - BASEMENT (ELEV. 898.00)	
	Date: October 5, 2006 Scale: As Noted Job No: 2004-0517 Sheet: 5 of 30

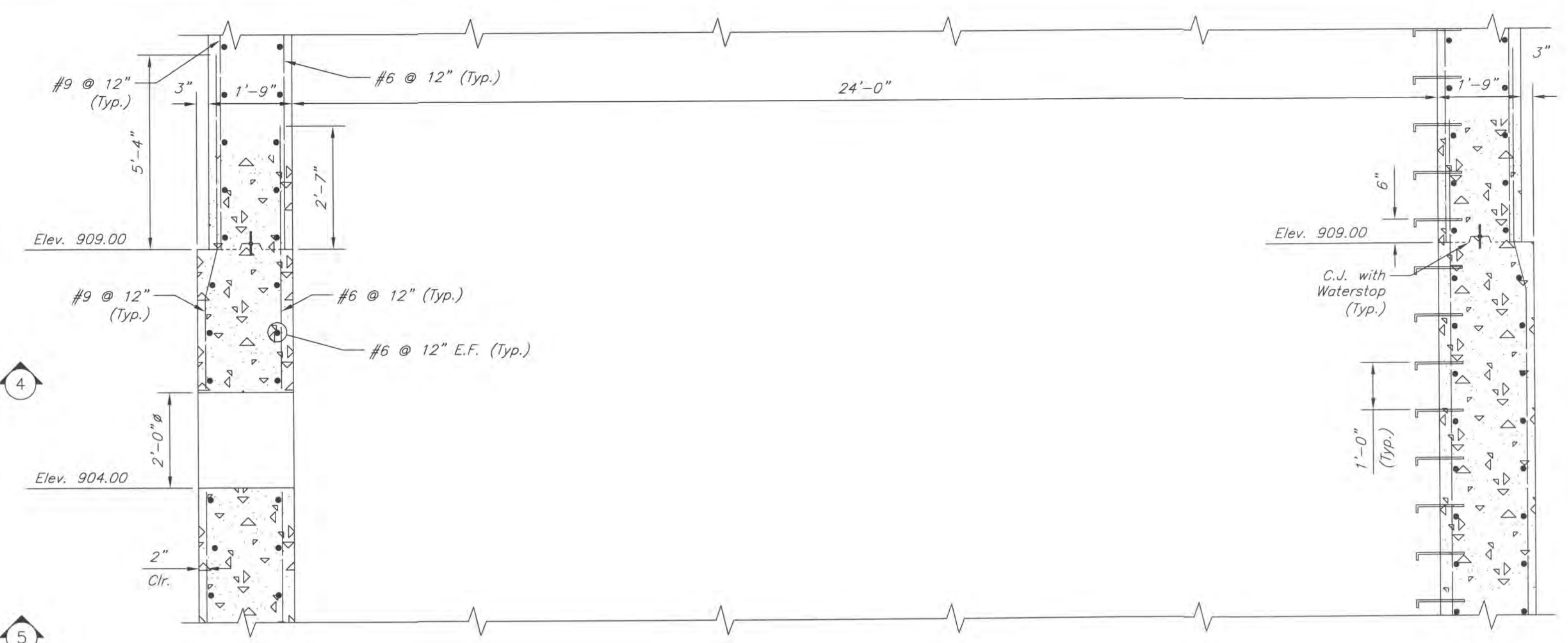
2 WORKING DAYS
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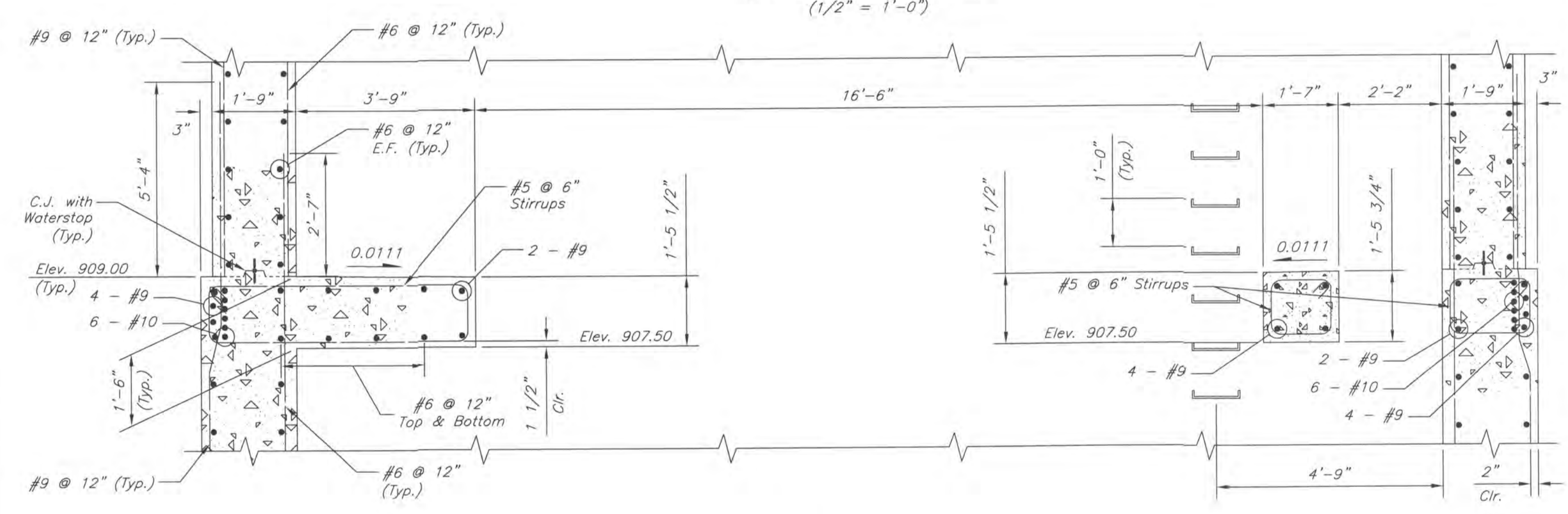
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PLAN VIEW - BASEMENT (ELEV. 909.00)
 (3/8" = 1'-0")



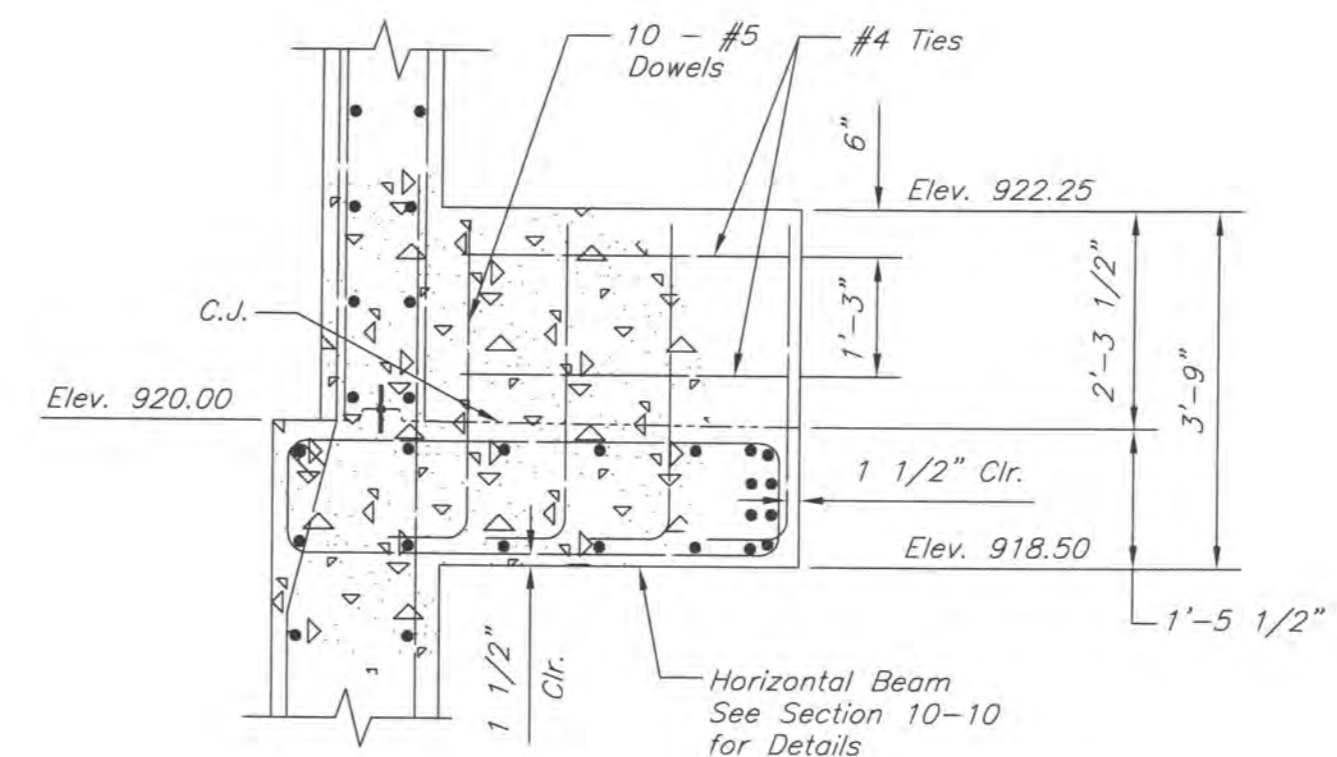
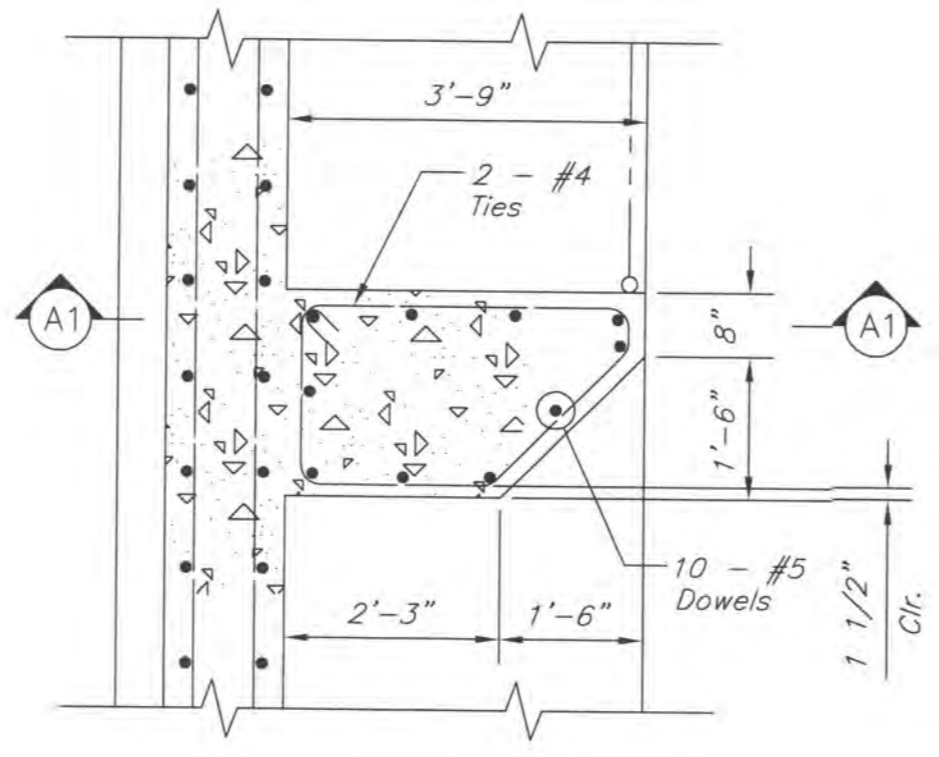
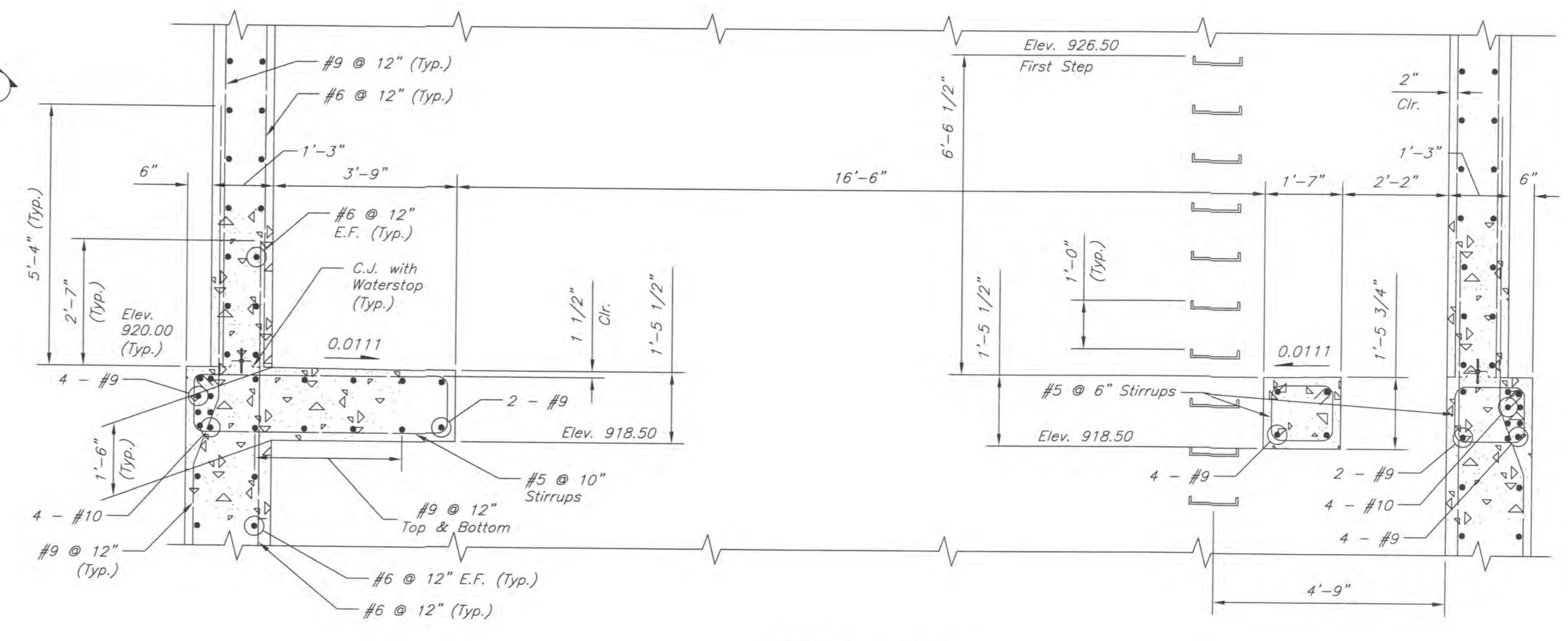
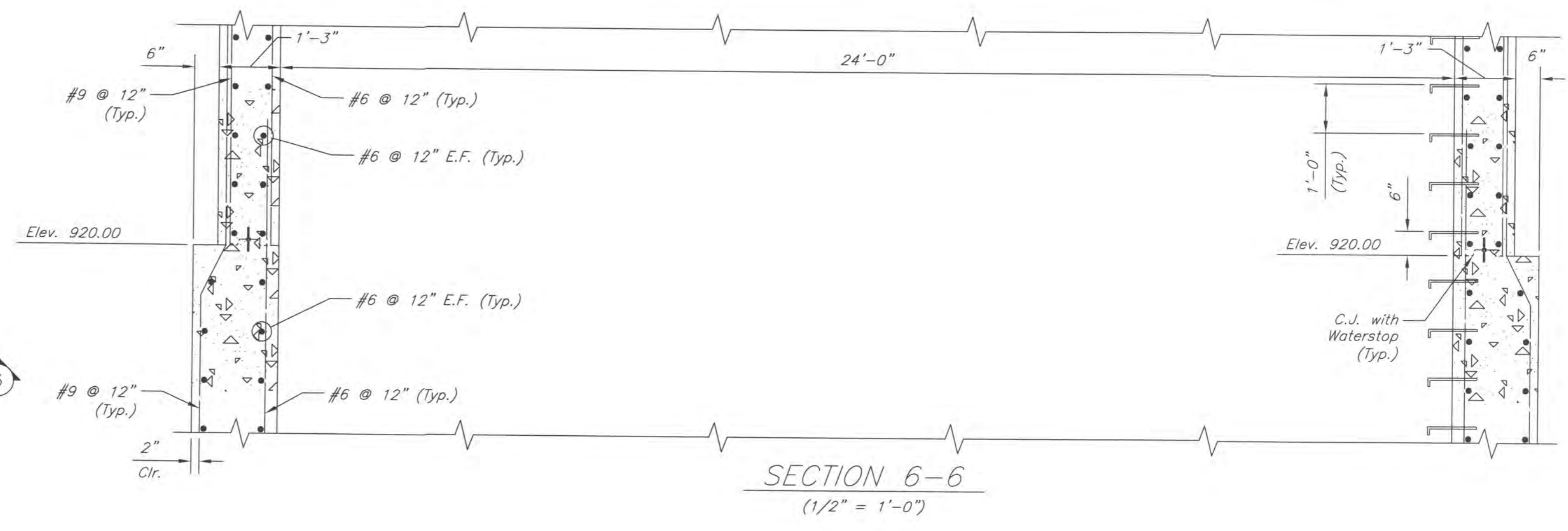
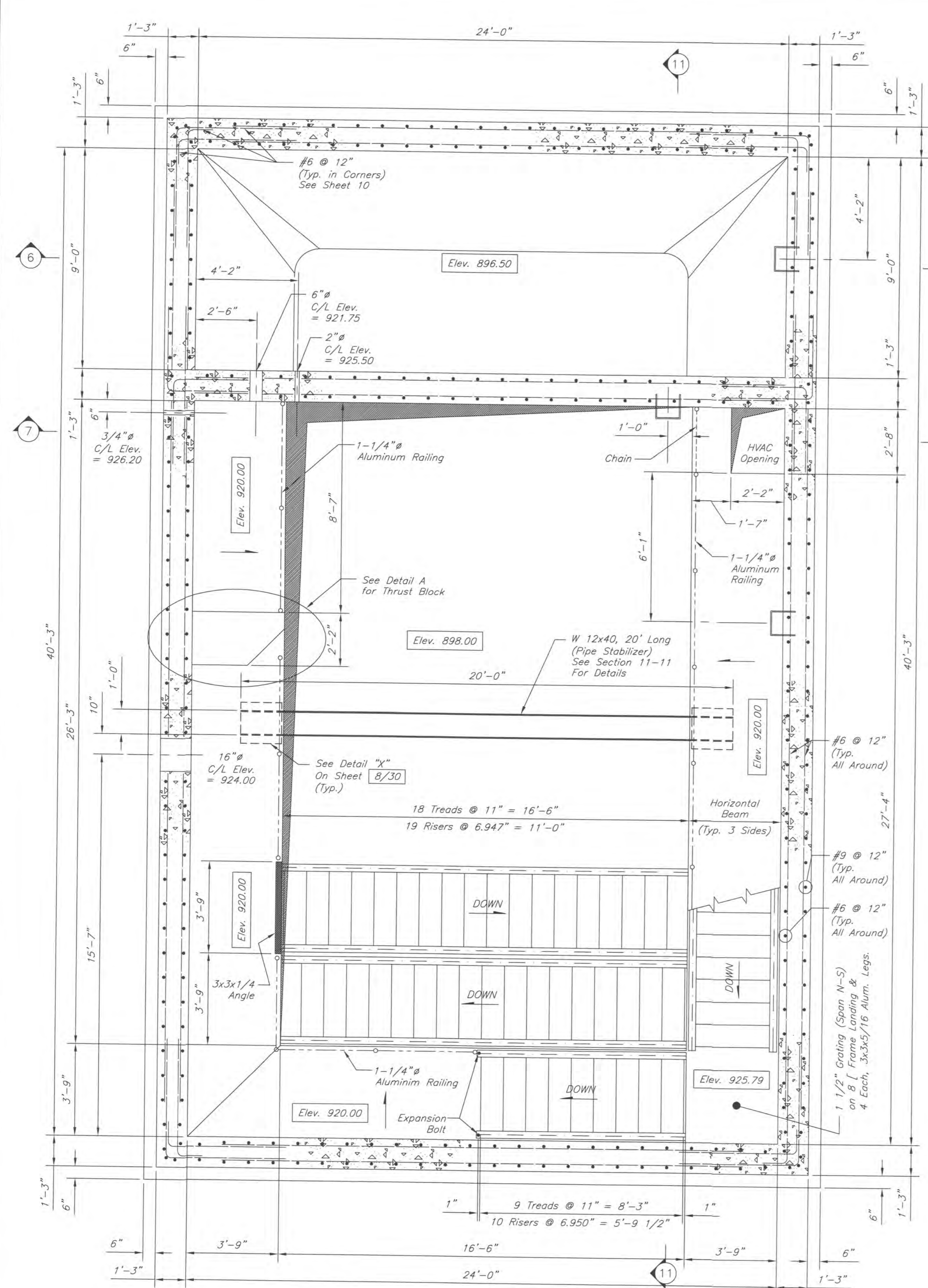
SECTION 4-4
 (1/2" = 1'-0")



SECTION 5-5
 Railing Not Shown for Clarity
 (1/2" = 1'-0")

DELAWARE COUNTY, OHIO SANITARY SEWER IMPROVEMENT FOR NORTHSTAR GOLF RESORT PUMP STATION PLAN VIEW - BASEMENT (ELEV. 909.00)	
	Date: October 5, 2006 Scale: As Noted Job No: 2004-0517 Sheet: 6 of 30
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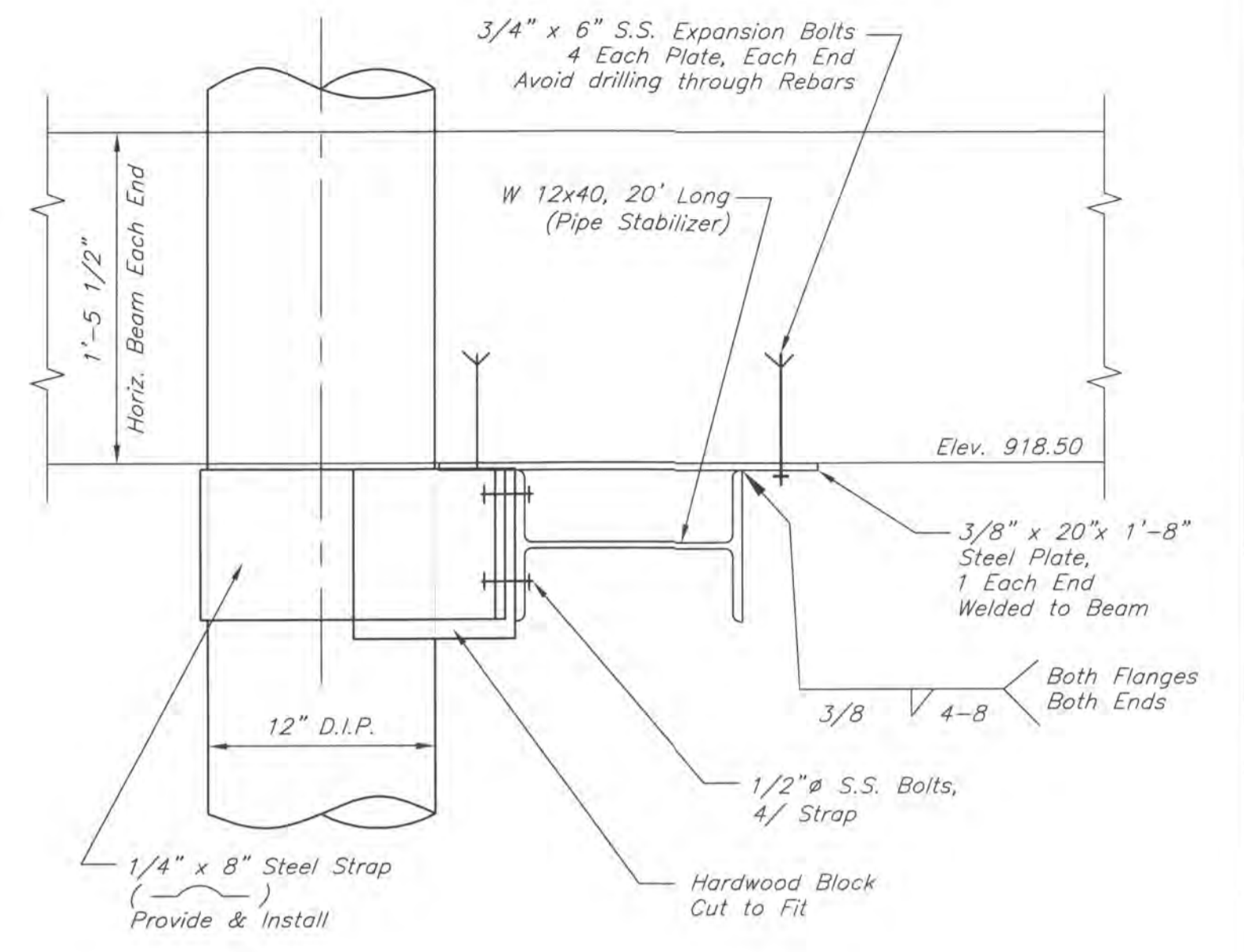
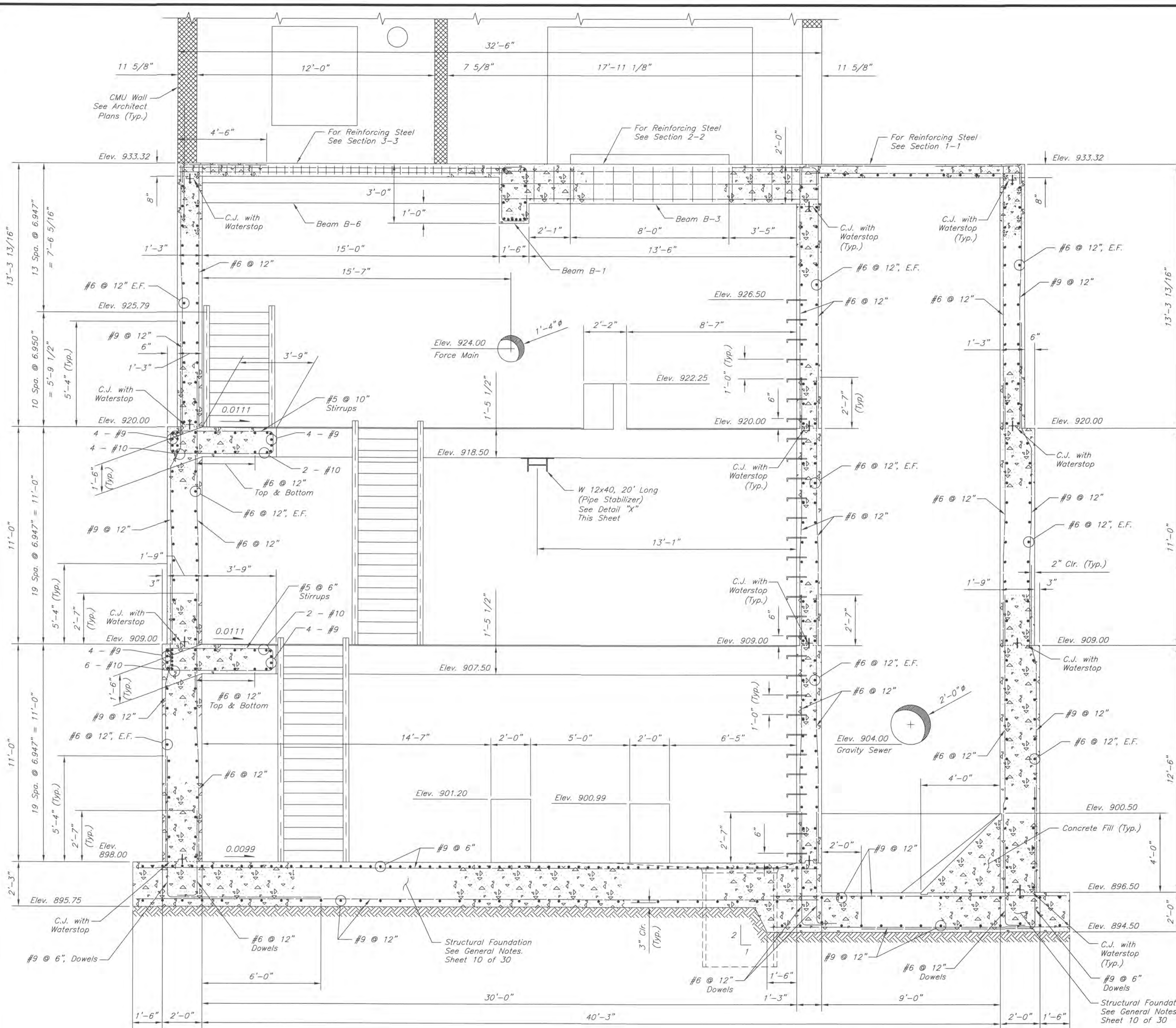
DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION
PLAN VIEW - BASEMENT (ELEV. 920.00)

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DETAIL "X"
 Typ. of 3
 (1 1/2" = 1'-0")

SECTION 11-11
 Railing Not Shown for Clarity
 (3/8" = 1'-0")

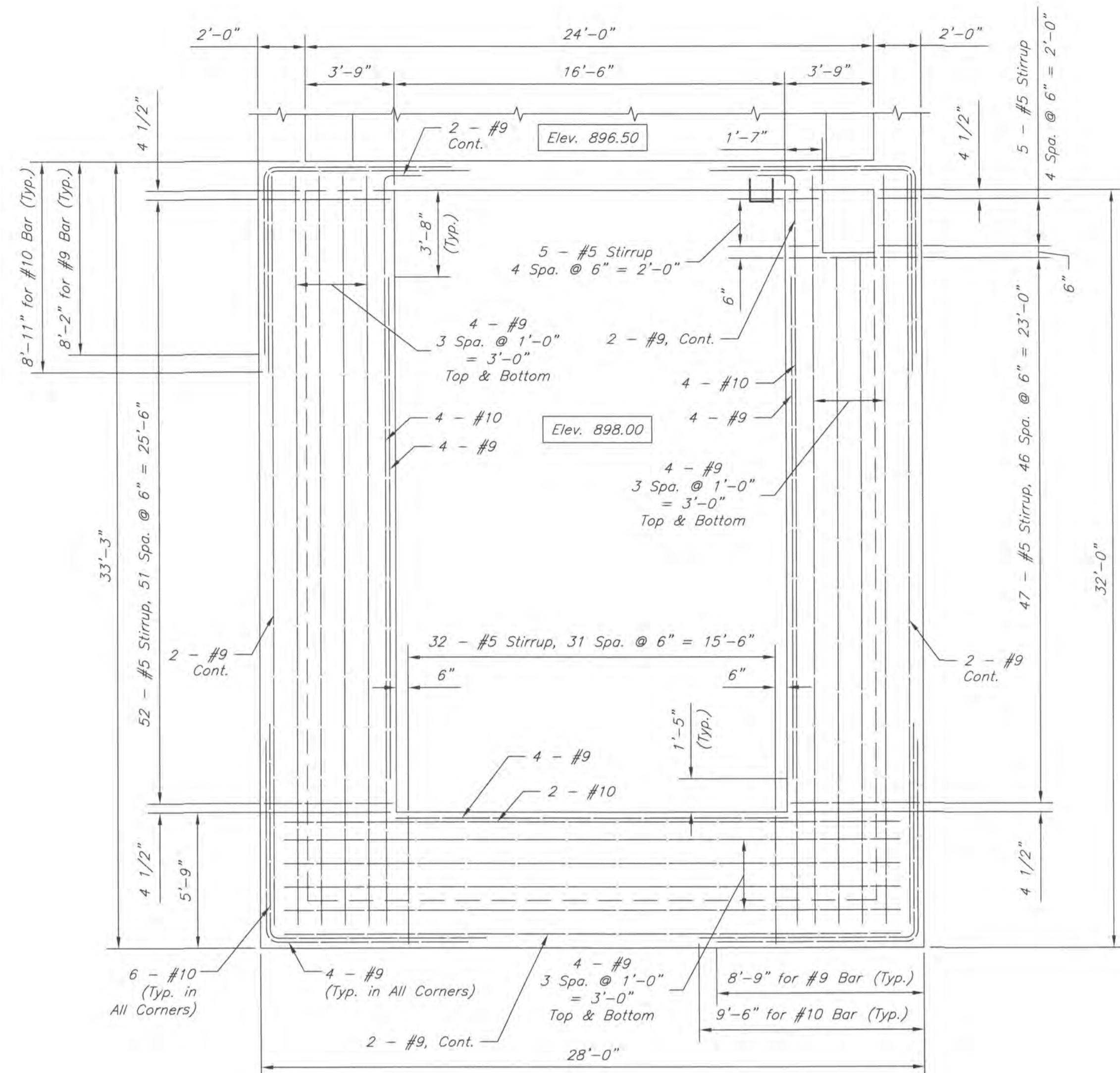
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 PUMP STATION
 SECTION 11-11

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 Job No: 2004-0517
 Sheet: 8 of 30

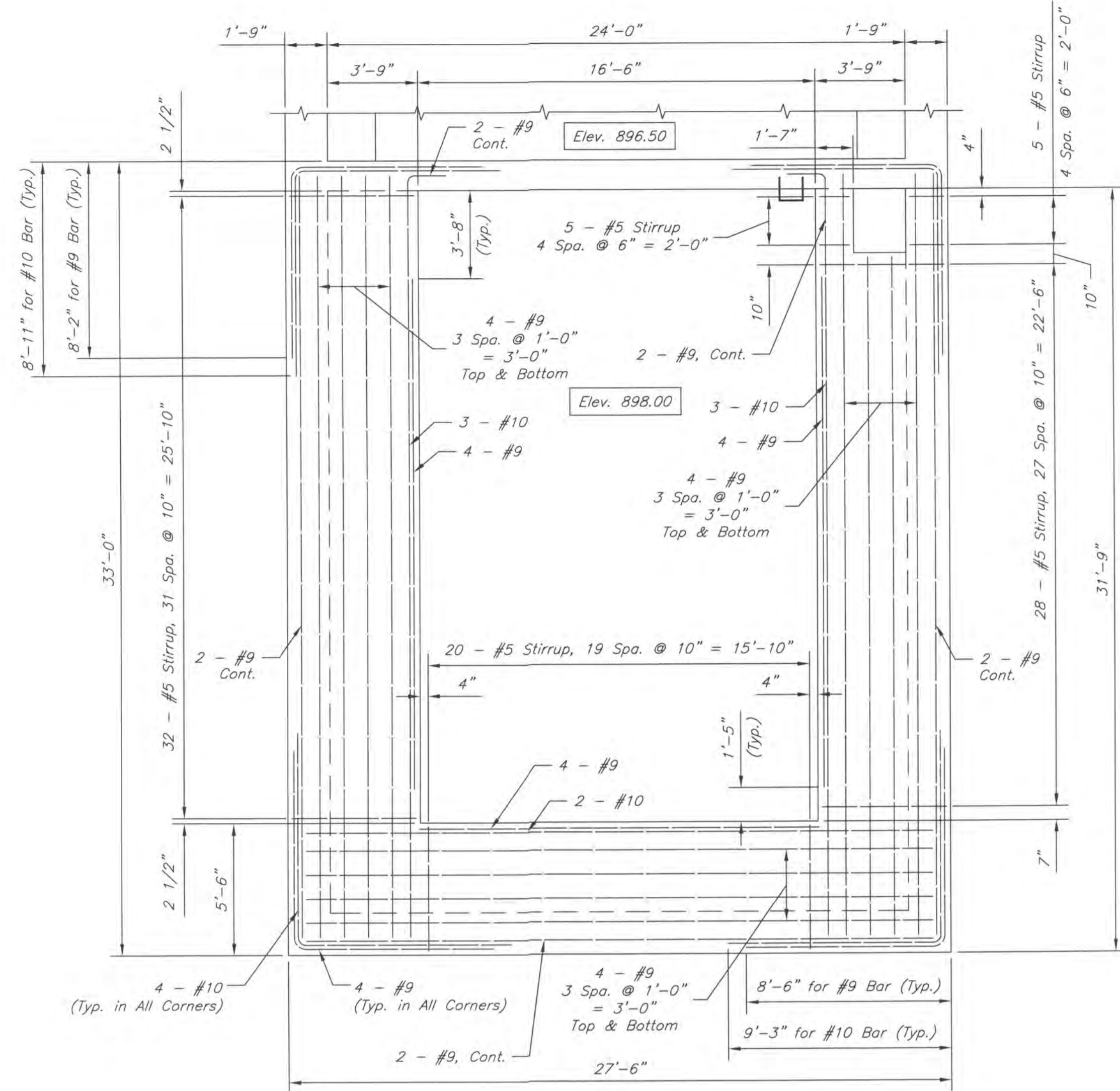
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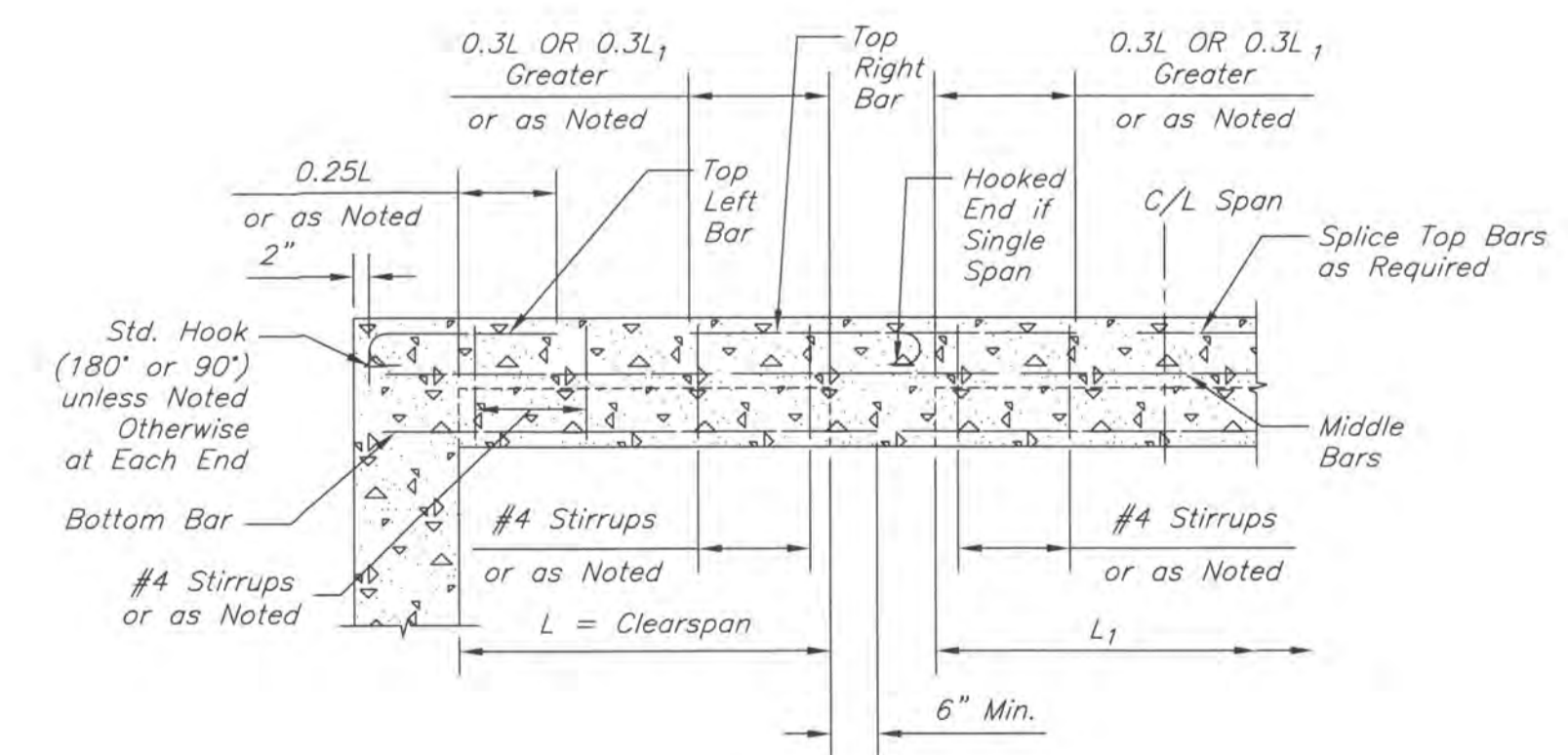
REINFORCING STEEL DETAILS (ELEV. 909.00)

Wall Reinforcing Not Shown for Clarity
(1/4" = 1'-0")



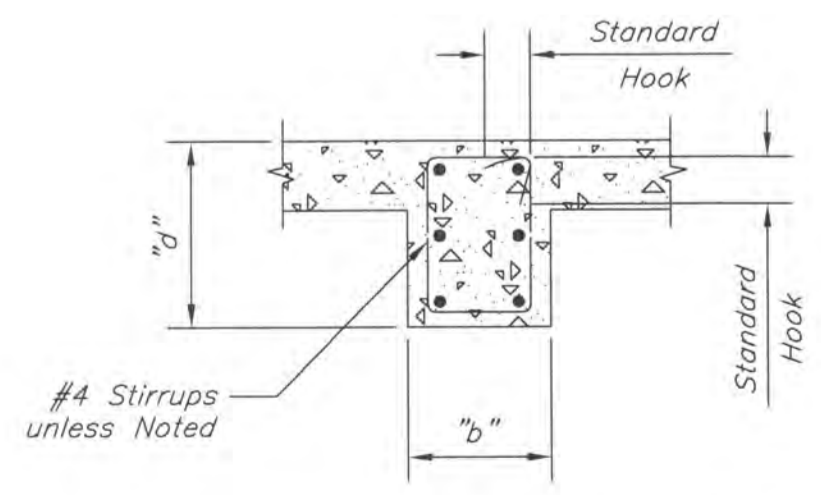
REINFORCING STEEL DETAILS (ELEV. 920.00)

Wall Reinforcing Not Shown for Clarity
(1/4" = 1'-0")



CONCRETE BEAM DETAIL

The Left and Right End of each Beam is Determined by the Orientation of the Beam Mark on the Framing Plan. The Left End Bar Size in Span L₁ is the Same as the Right End Bar of Span L.
(1/2" = 1'-0")



TYPICAL STIRRUP DETAIL

(1/2" = 1'-0")

BEAM	"b" WIDTH	"d" DEPTH	REINFORCEMENT				REMARKS	STIRRUPS SIZE & SPACING FROM FACE OF EACH SUPPORT
			BOTTOM BARS NO. & SIZE	TOP BARS				
				LEFT END NO. & SIZE	CONT. NO. & SIZE	RIGHT END NO. & SIZE		
B-1	1'-6"	3'-0"	6 - #10	2 - #9		2 - #9	2 - #9	#4 @ 10"
B-2	1'-6"	2'-0"	3 - #9	2 - #7		2 - #7	2 - #7	#4 @ 10"
B-3	1'-6"	2'-0"	3 - #9	2 - #7		2 - #7	2 - #7	#4 @ 10"
B-4	1'-6"	2'-0"	3 - #9	2 - #7		2 - #7	2 - #7	#4 @ 10"
B-5	1'-6"	2'-0"	3 - #9	2 - #7		2 - #7	2 - #7	#4 @ 10"
B-6	1'-6"	2'-0"	3 - #9	2 - #7		2 - #7	2 - #7	#4 @ 10"

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION
BEAM DETAILS

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NOTES - STRUCTURE BELOW ELEVATION 933.32

The CONCRETE Contractor shall coordinate his work with the other contractors/ subcontractors prior to any pouring of concrete. This is to facilitate installation of all components required to complete the Pump Station construction. This coordination shall include, but is not limited to, the following:
 Electrical - For location of required conduit sleeves and/or caes.
 Architectural - For proper placement of dowels that protrude above elevation 933.32.
 Civil/Mechanical - For location of all piping through walls and slabs.

Design Live Loads:
 Stairways 100 psf

Geotechnical Information/ Foundation Design Notes:
 Foundation based on BBC&M Engineering, Inc. report for job number 01109611.001. Refer to this report for soils information and allowable bearing pressures.

The foundation, as designed, will produce a bearing pressure of 4500 psf. Bottom of basement slab shall be cast against undisturbed earth. If unsuitable bearing material occurs at the bottom of the basement slab elevation, the slab shown shall be extended to accommodate the changed condition. A registered soils engineer employed by Delaware County shall verify the suitability of the bearing material. The Engineer must approve any changes in the slab. If shale is encountered at the bottom of excavation, Contractor shall contact EMH&T for direction.

JOINT NOTES:

Waterstop for construction joints shall be Greenstreak No. 703, 3/16" x 6" ribbed or structural equivalent. All waterstops shall be properly supported and wired to reinforcing to remain straight and true.

Construction joints shall be provided as shown on the plans. Additional joints requested by the Contractor shall be submitted for review and approval by the Delaware County engineer. All construction joints below grade shall contain a waterstop.

CAST-IN-PLACE CONCRETE NOTES:

Concrete shall conform to the State of Ohio Department of Transportation (ODOT), Construction and Material Specification Item 511, Class C, f'c = 4000 psi. Testing of concrete specimens shall be performed in accordance with ODOT Construction and Materials Specifications Item 499.08 and 499.09. Item 499.08 shall be modified to allow Delaware County to make additional concrete specimens for testing, at their discretion.

All exposed non-reentrant corners of concrete shall be cast with a 3/4" x 3/4" chamfer.

Plain Reinforcing Steel shall conform to ODOT Construction Specifications Item 509, ASTM A615, A616, or A617, Grade 60.

Reinforcing Steel fabrication shall be in accordance with the latest edition of CRSI Manual of Standard Practice.

Concrete Clear Cover shall meet the following minimum values:

- Concrete cast against earth (i.e. bottom of basement slab, footings) = 3 inches
- Concrete surfaces exposed to soil, water and/or weather = 2 inches
- Concrete surfaces not exposed to soil, water and/or weather = 1 1/2 inches

Minimum reinforcement lap lengths, unless otherwise shown, shall be:

Bar Size	Splice Length	Hook Length
#4	20"	8"
#5	26"	10"
#6	31"	12"
#7	39"	14"
#8	51"	16"
#9	64"	19"

Note: When lapping two different size bars, use the splice length for the larger bar. Modify the splice length by the following factor when applicable:

- Light-weight Concrete Aggregate x 1.3
- Epoxy Coated Reinforcing Steel x 1.5

BUOYANCY NOTES:

During construction, the structure can be buoyant prior to being loaded with backfill and superstructure. In the event that the excavation or other area around the structure is in danger of being flooded or the surrounding ground around the excavation becomes saturated, the structure must be filled with water to prevent flotation. The Contractor shall provide sufficient openings or other devices that will maintain the water level on the inside at the same elevation as the outside and take any other measures that insures that the structures do not float. Measures shall be provided that will insure protection of the structures against flotation when the construction site is unattended. The Contractor will be responsible for design of a plan to prevent any damage due to flotation and shall submit the plan to the Owner. The Contractor will be responsible to implement the plan for protection, and he will be responsible for all damages to structures that become buoyant.

ALUMINUM NOTES:

All Aluminum in contact with concrete grout, or dissimilar metals shall be coated with two coats of coal tar epoxy, approved by the Owner.

STEEL NOTES:

All structural steel shapes, plates and bars shall conform to ASTM A-36 or better. All structural steel shall be fabricated, erected and connected in compliance with the latest AISC Specifications and ASTM Specifications.

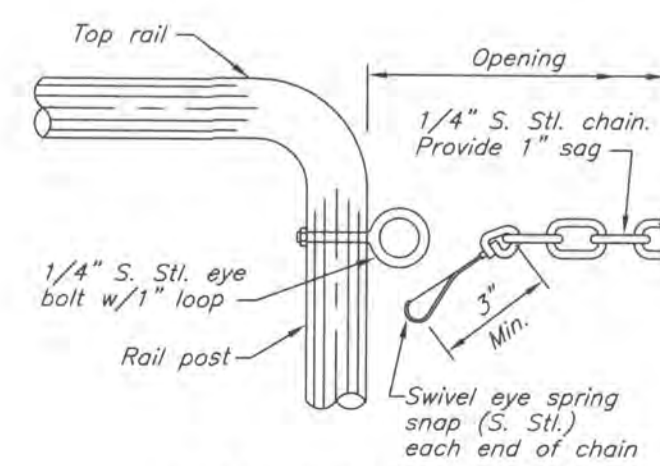
SHOP DRAWING NOTES:

Six (6) sets of shop drawings shall be submitted to EMH&T for review. Upon approval, five sets will be returned for distribution.

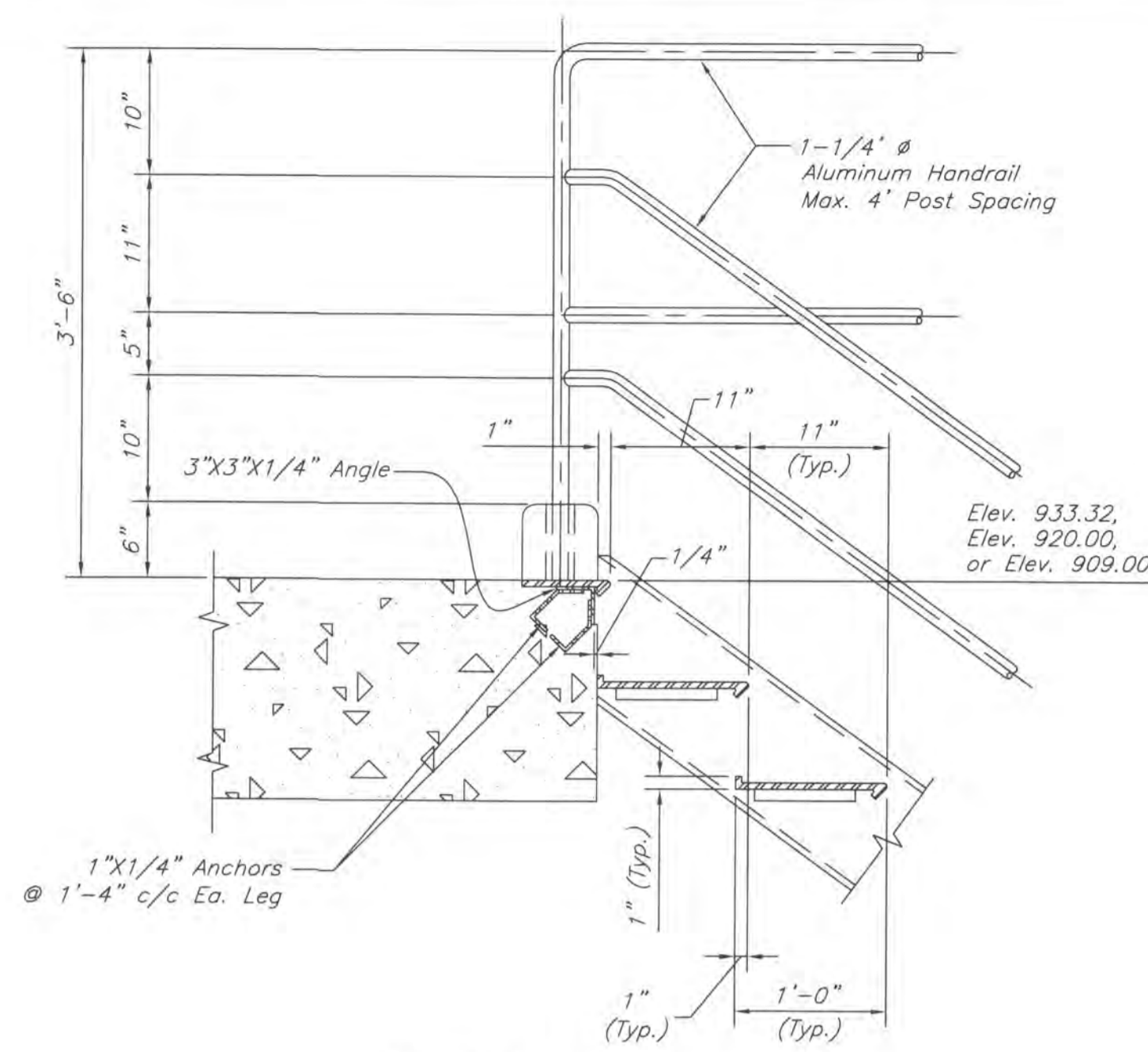
All existing drainage courses shall be maintained during construction and placement of the proposed structure. The contractor shall submit to Delaware County a Schedule of Sequence and Method of maintaining the watercourse. Special attention shall be observed to insure that all erosion control features are installed and maintained throughout the duration of the project.

BACKFILL NOTES:

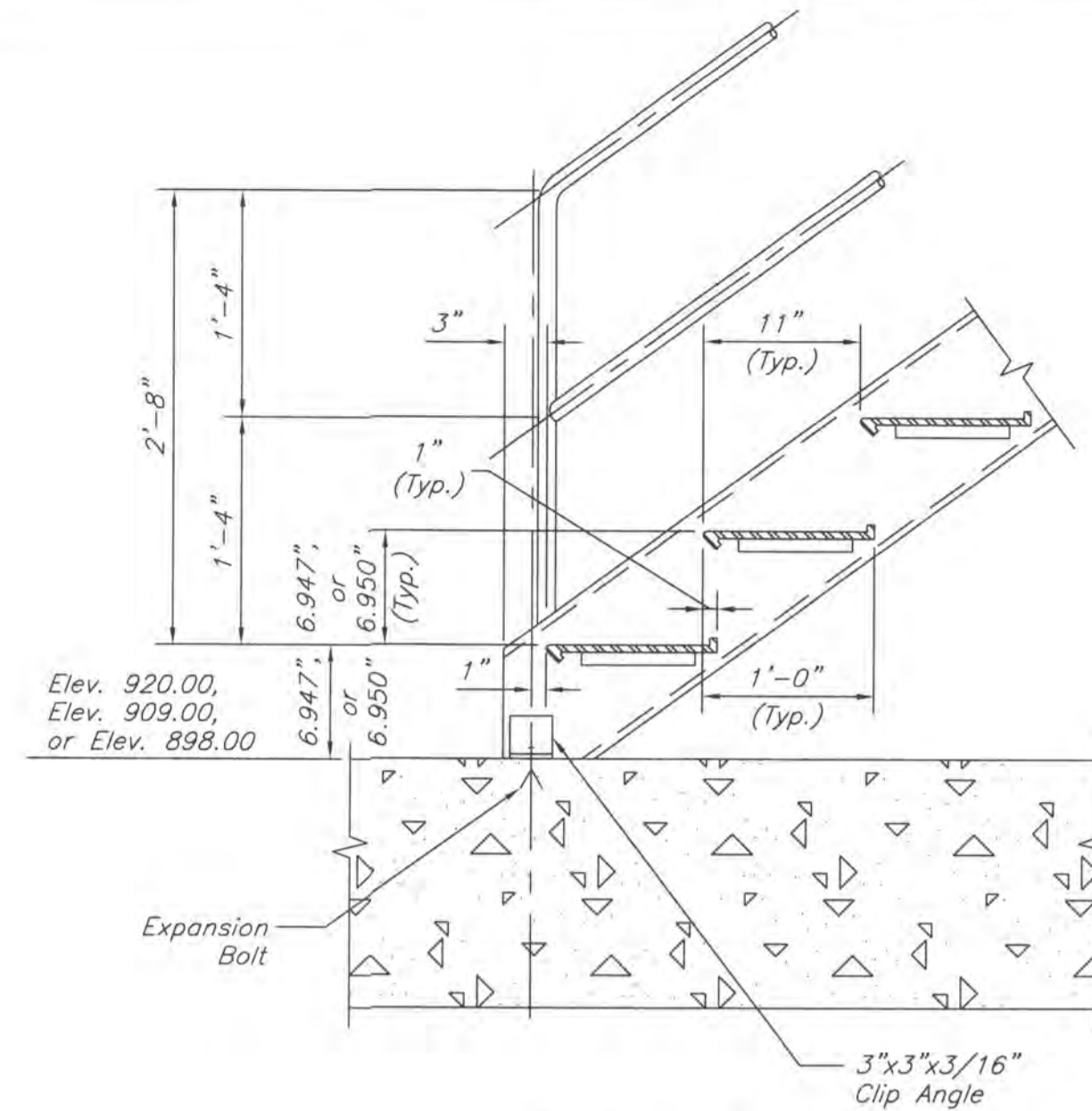
Backfill shall not be placed and the structure shall not impound water until concrete has achieved 4000 psi. Water shall not be impounded against the structure until backfill is in place.



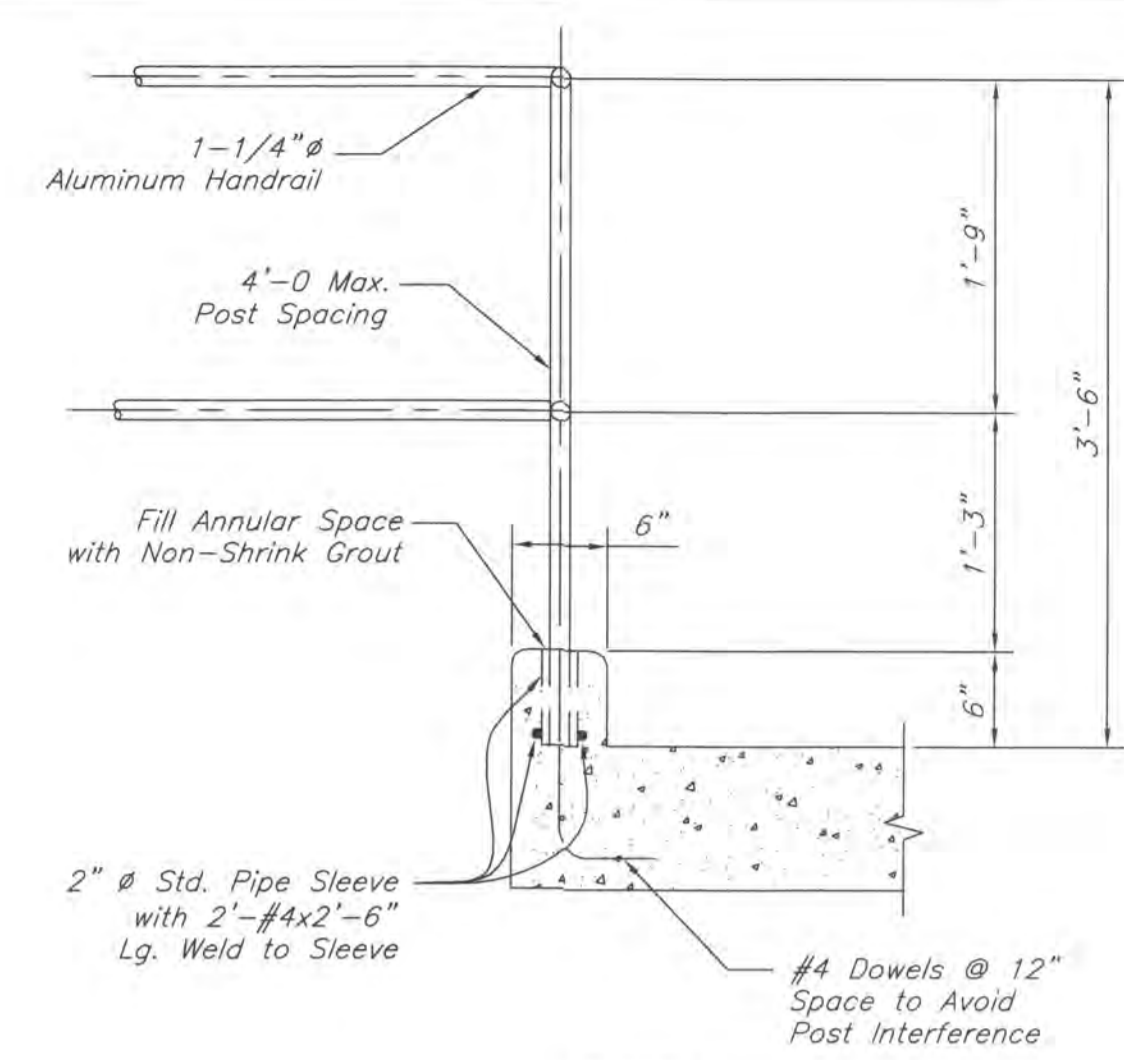
RAILING CHAIN
(3" = 1'-0")



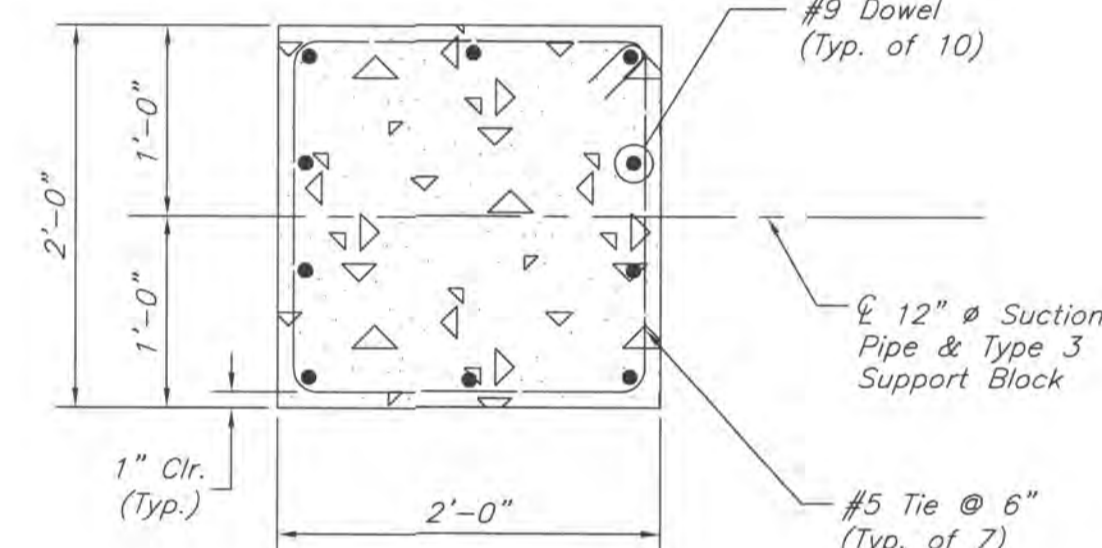
DETAIL A
(1" = 1'-0")



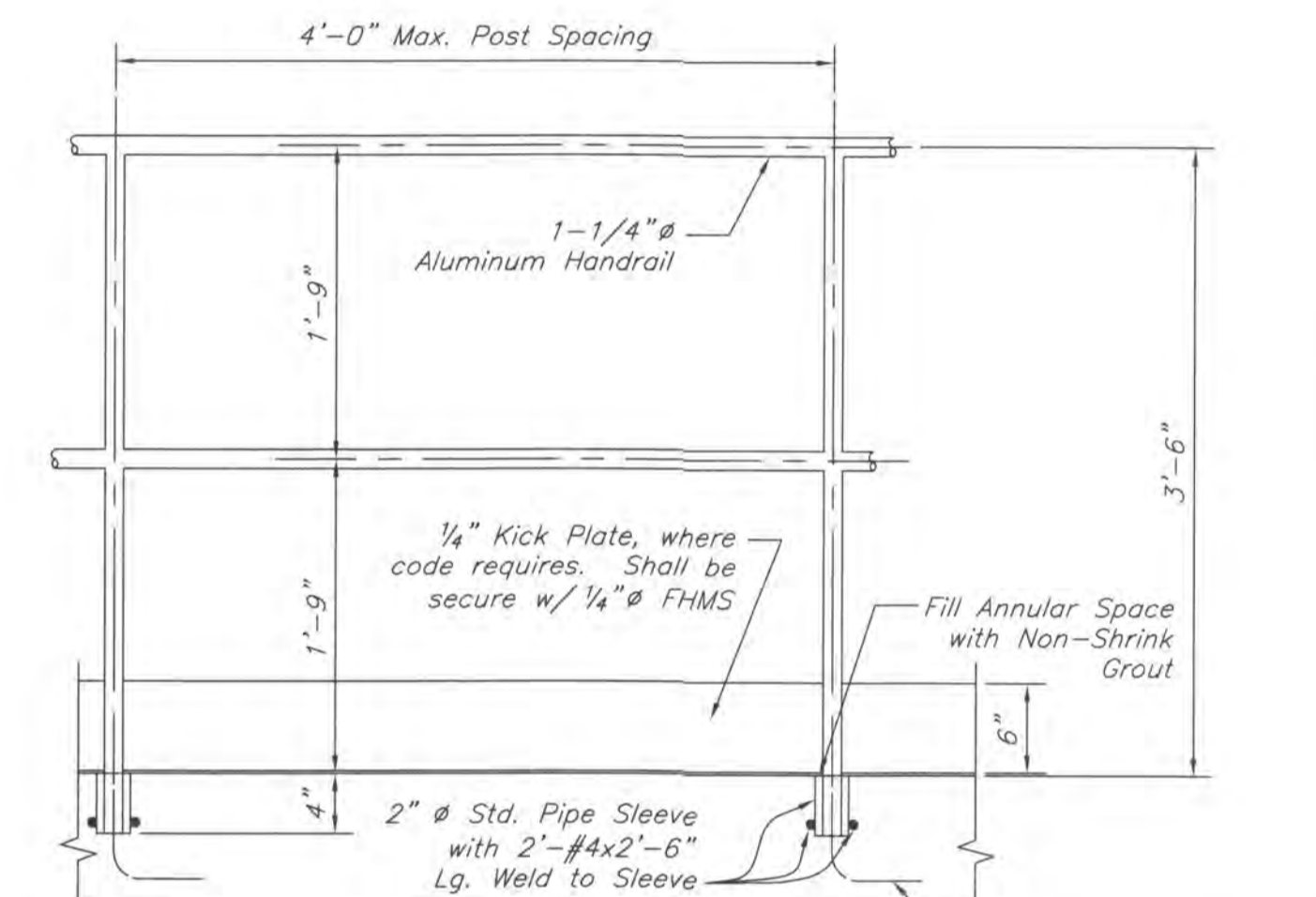
DETAIL B
(1" = 1'-0")



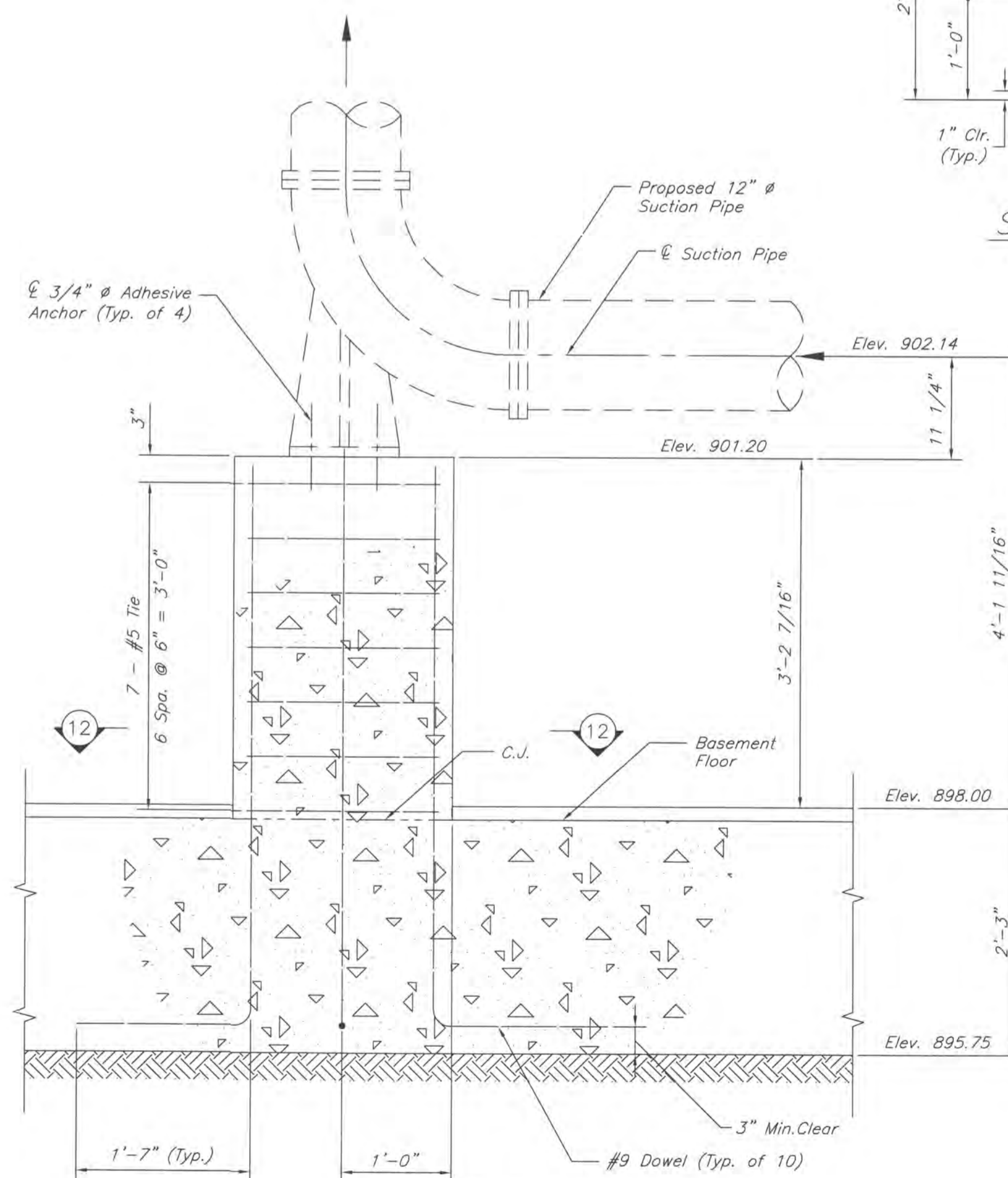
DETAIL C
(1" = 1'-0")



SECTION 12-12
PLAN VIEW (1" = 1'-0")



DETAIL D
(1" = 1'-0")



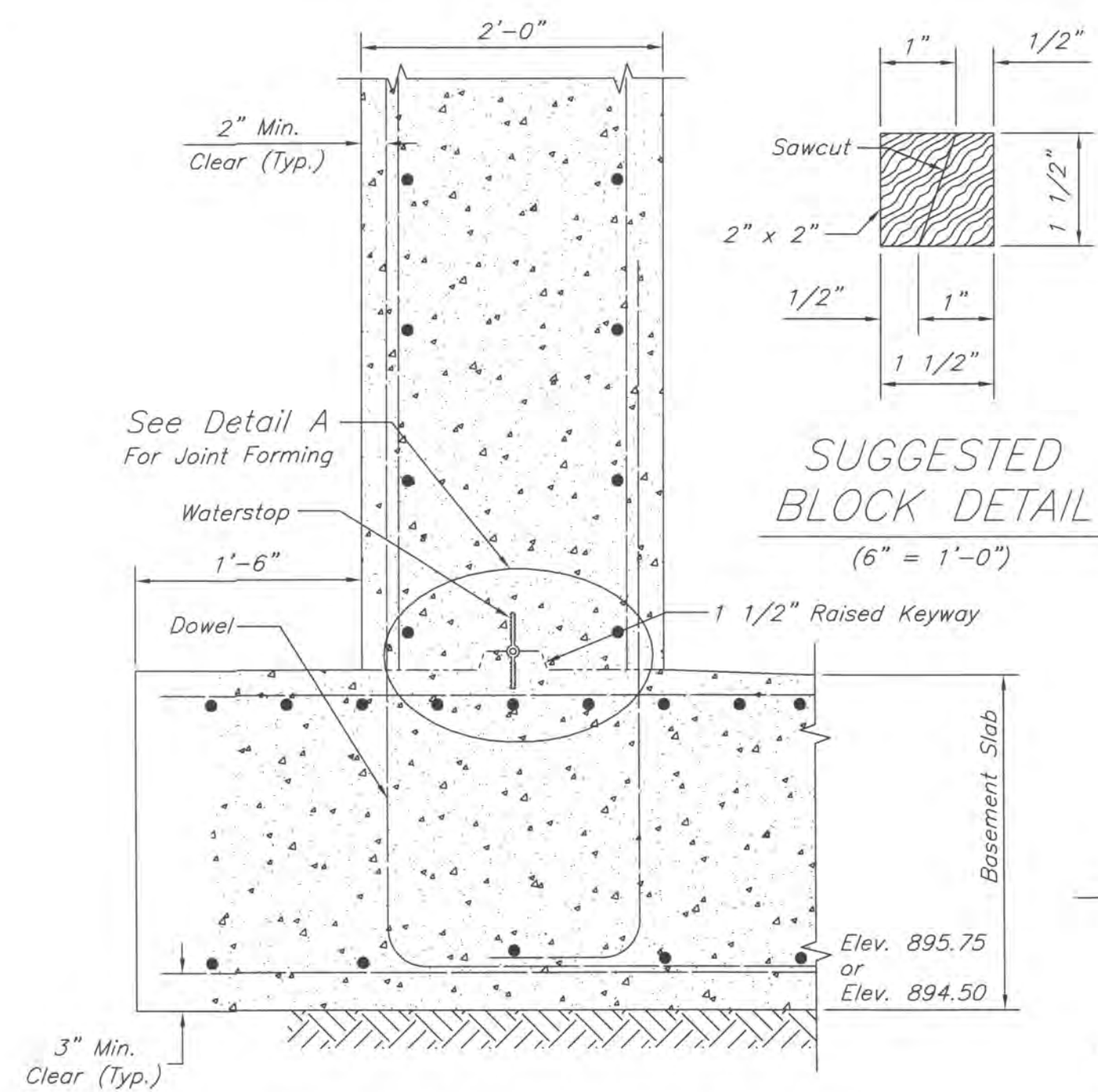
PIPE SUPPORT BLOCK
SLAB REINFORCING NOT SHOWN FOR CLARITY
(1" = 1'-0")

ESTIMATED QUANTITIES			
ITEM	QUANTITY	UNIT	DESCRIPTION
503	9,150	CU. YD.	UNCLASSIFIED EXCAVATION, INCLUDING SHALE
511	120	CU. YD.	CLASS C CONCRETE, BASE SLAB
511	330	CU. YD.	CLASS C CONCRETE, WALLS
511	25	CU. YD.	CLASS C CONCRETE, TOP SLAB
511	4	CU. YD.	CLASS C CONCRETE, MISCELLANEOUS (INCLUDES PUMP BASES, CURBS)
511	41	CU. YD.	CLASS C CONCRETE, BEAMS
511	6	CU. YD.	CLASS C CONCRETE, CONCRETE FILL
513	57	TREADS	METAL STAIRS
513	1,000	POUNDS	MISCELLANEOUS STRUCTURAL STEEL
517	196	FT.	RAILING, MISC.: 1 1/4" DIAMETER STEEL RAILING
518	337	CU. YD.	POROUS BACKFILL WITH FILTER FABRIC
518	150	FT.	6" PERFORATED CORRUGATED PLASTIC PIPE

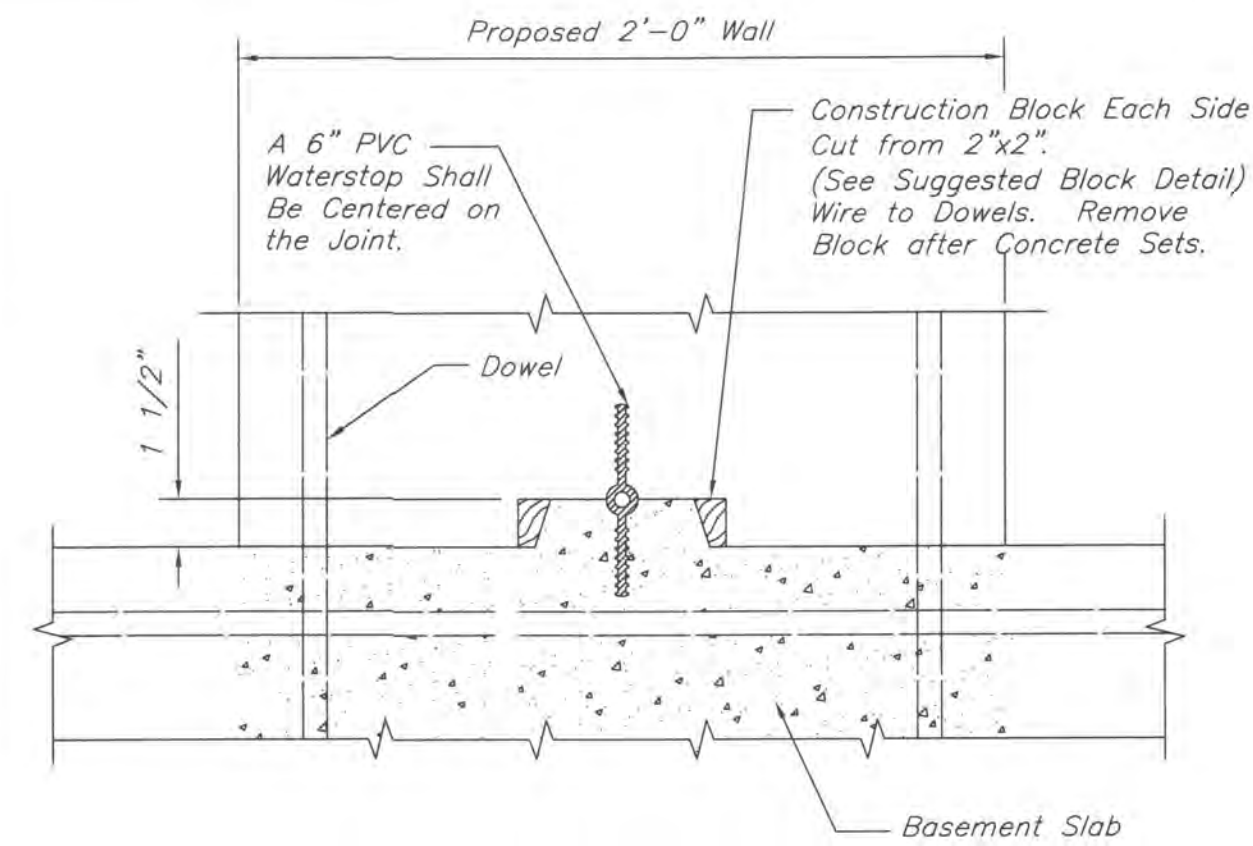
DELAWARE COUNTY, OHIO
 SANITARY SEWER IMPROVEMENT
 FOR
NORTHSTAR GOLF RESORT
 PUMP STATION
 MISC. STANDARD DETAILS

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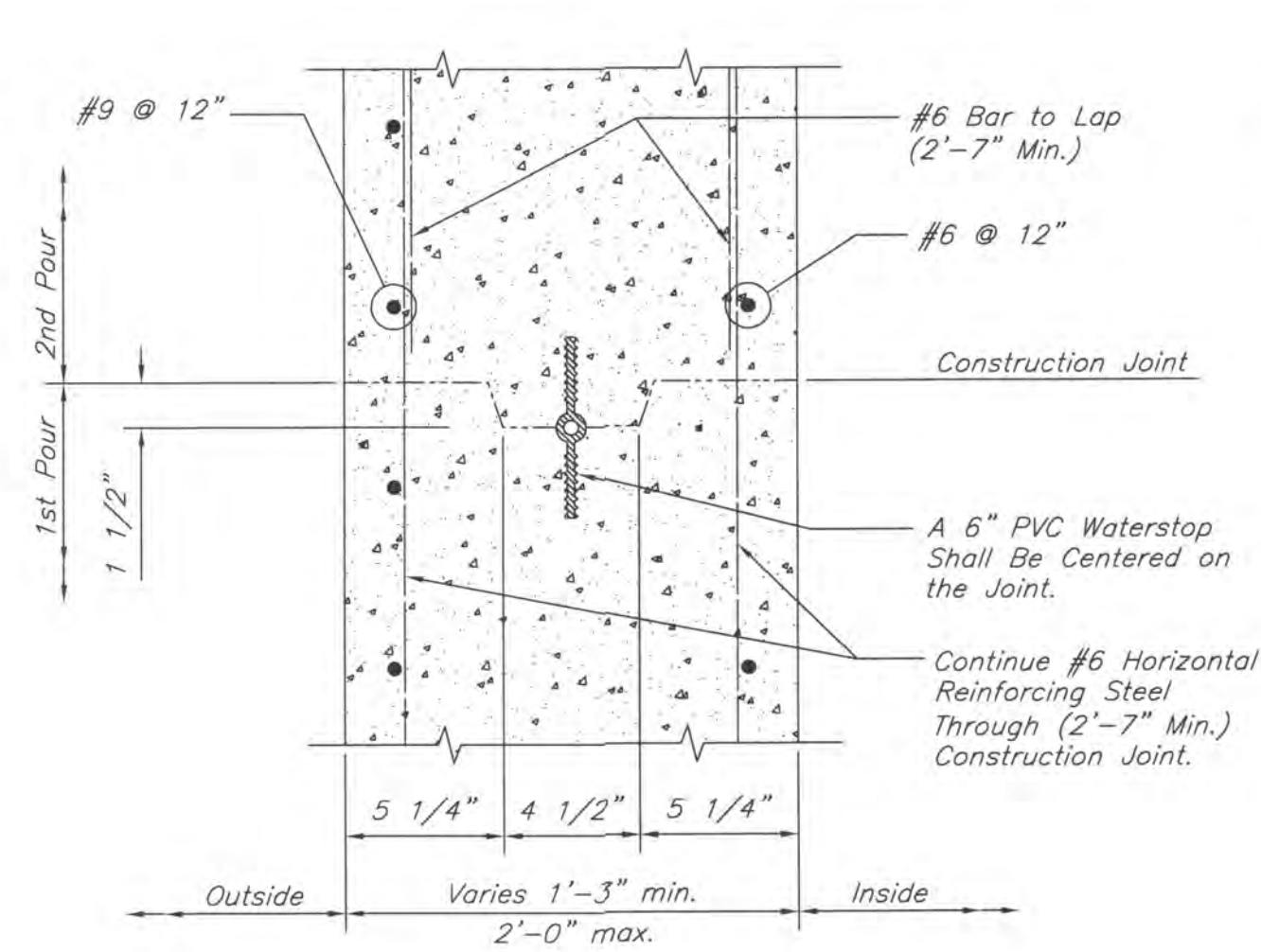
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 Sheet: 10 of 30



SUGGESTED BLOCK DETAIL
(6" = 1'-0")

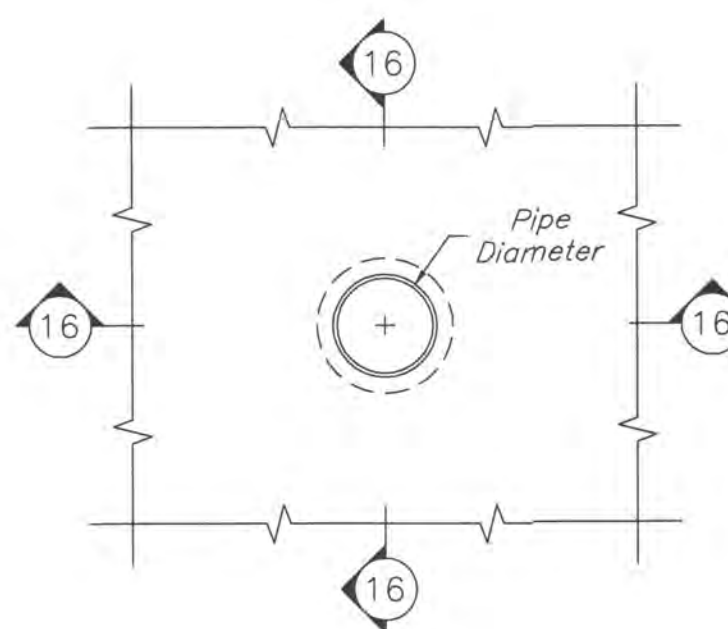


DETAIL A
SHOWN JUST AFTER
(2" = 1'-0")

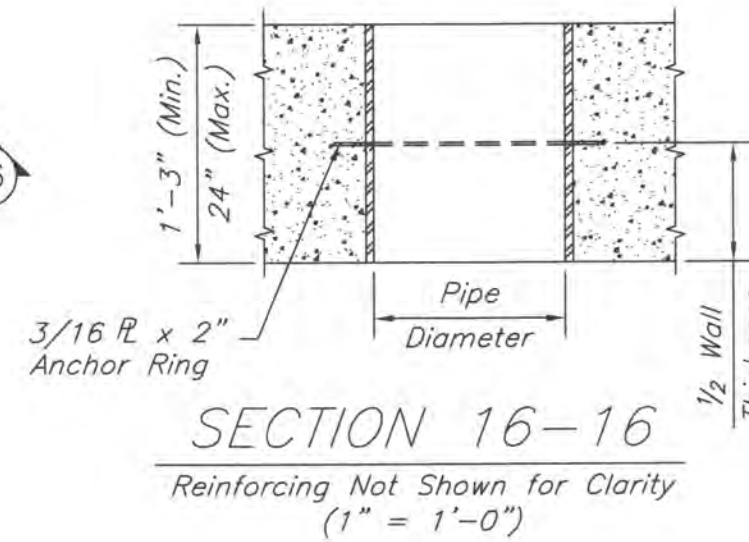


OPTIONAL VERTICAL CONSTRUCTION JOINT DETAIL

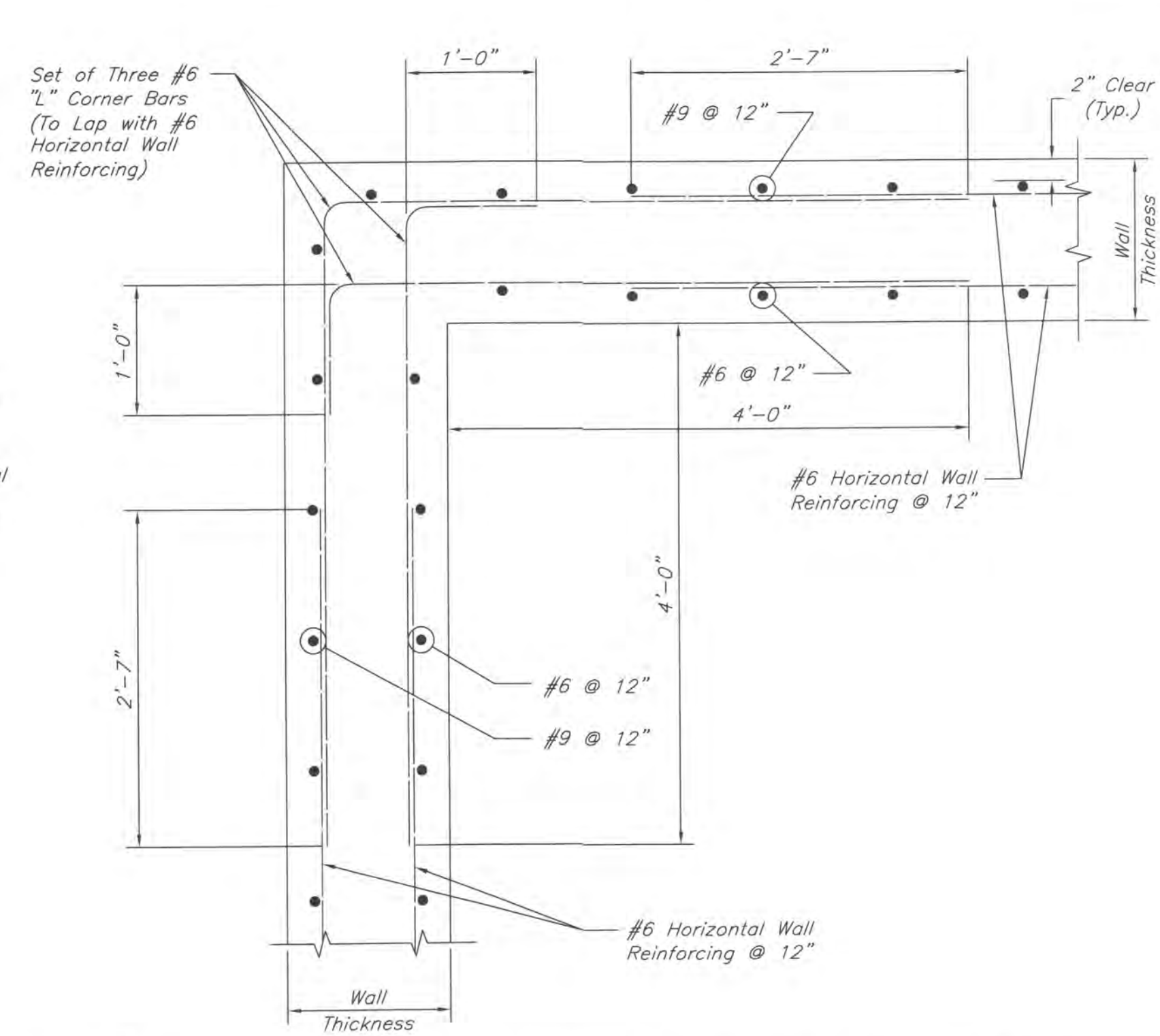
PLAN VIEW
1'-3" thick wall shown, 1'-9" & 2'-0" similar
(2" = 1'-0")



WALL SLEEVE
PIPE OPENING
(1/2" = 1'-0")



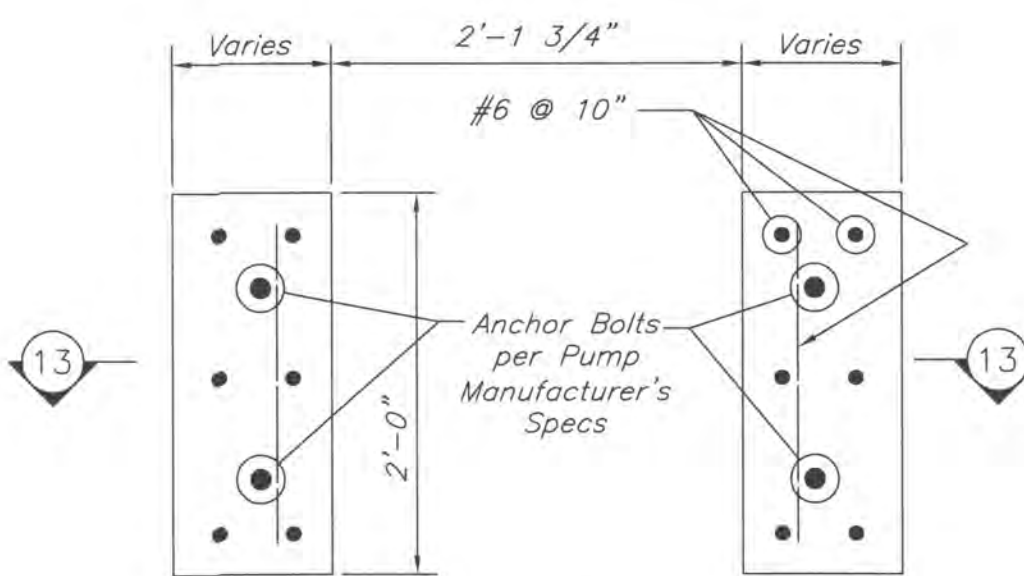
SECTION 16-16
Reinforcing Not Shown for Clarity
(1" = 1'-0")



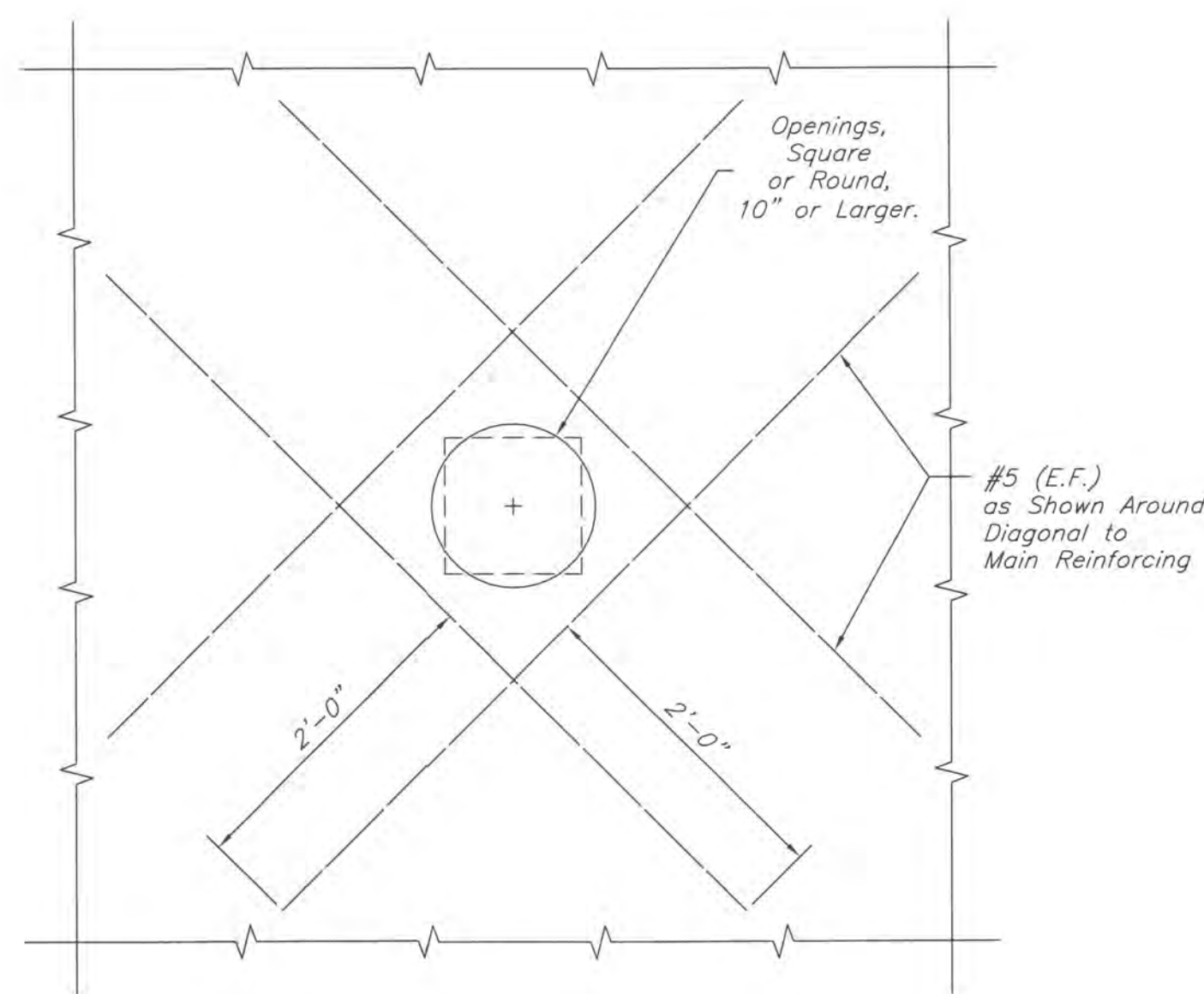
WALL CORNER REINFORCING DETAIL
PLAN VIEW (1" = 1'-0")

TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL, COMPLETE IN PLACE

AT BOTTOM OF BASEMENT WALL SHOWN
AT TOP OF BASEMENT WALL SIMILAR
(1" = 1'-0")

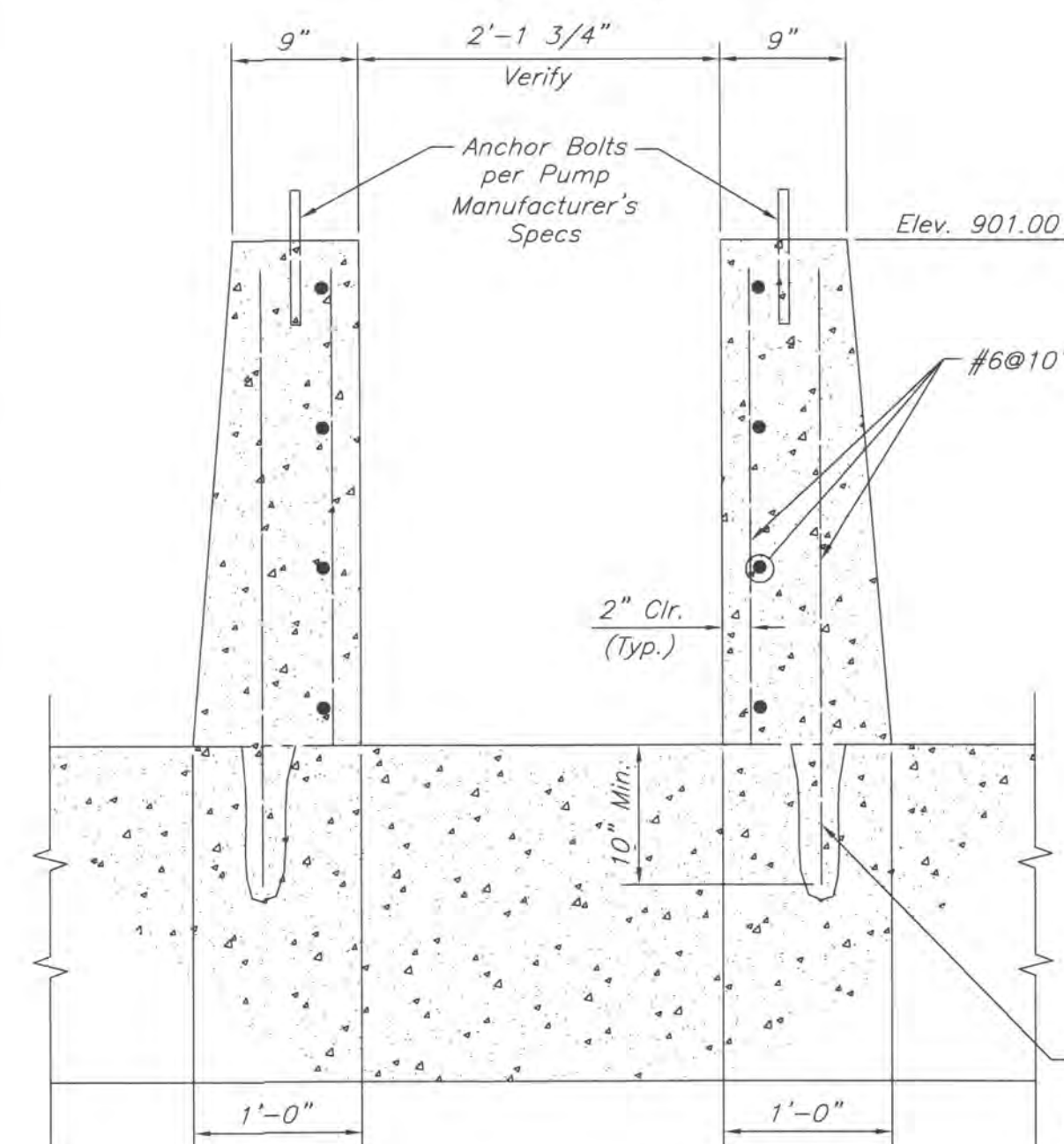


ELEVATED PUMP BASE
(1" = 1'-0")



REMAINING OPENING DETAIL

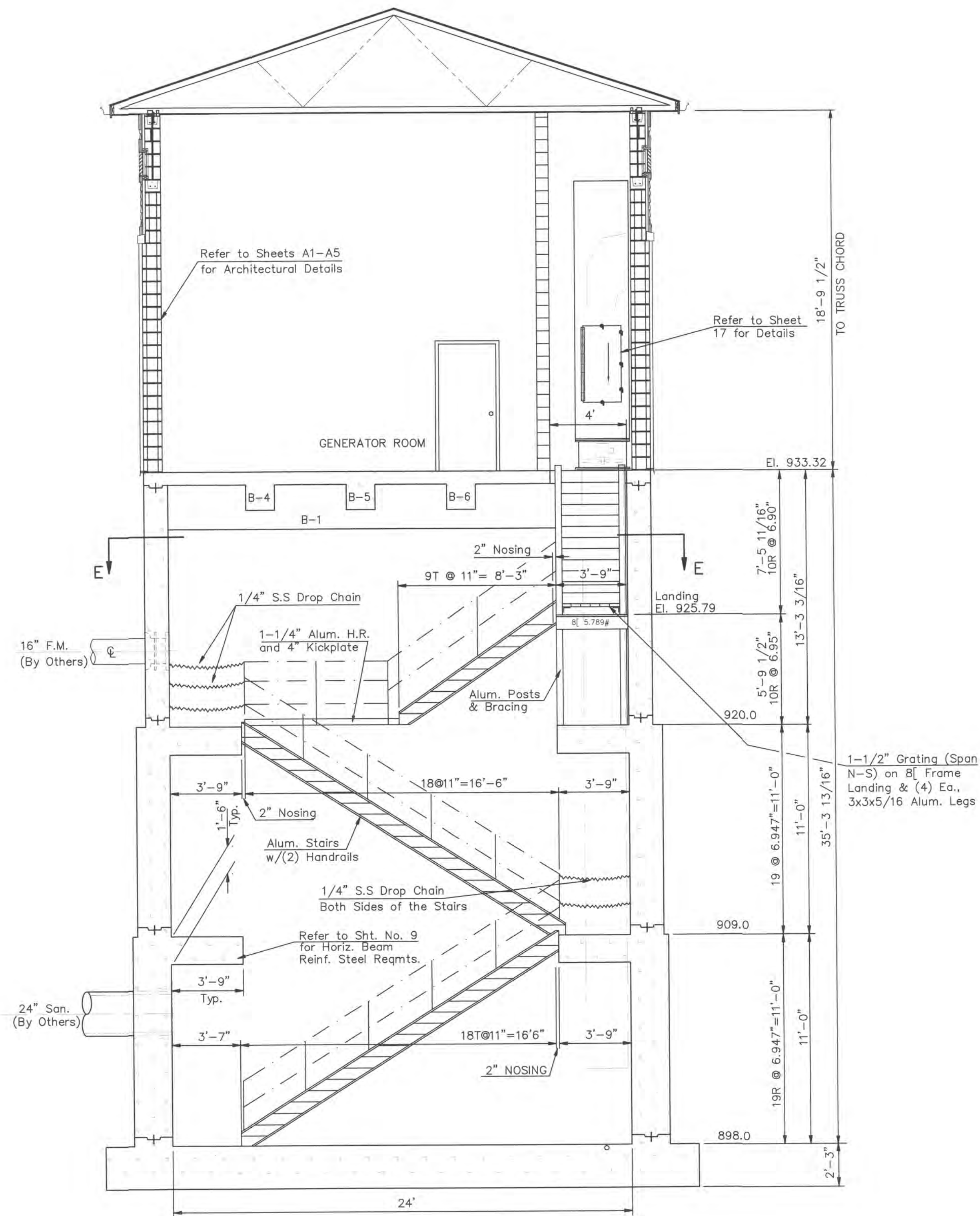
REINFORCEMENT AROUND OPENINGS NOT DETAILED
ELSEWHERE ON THE PLANS
(1" = 1'-0")



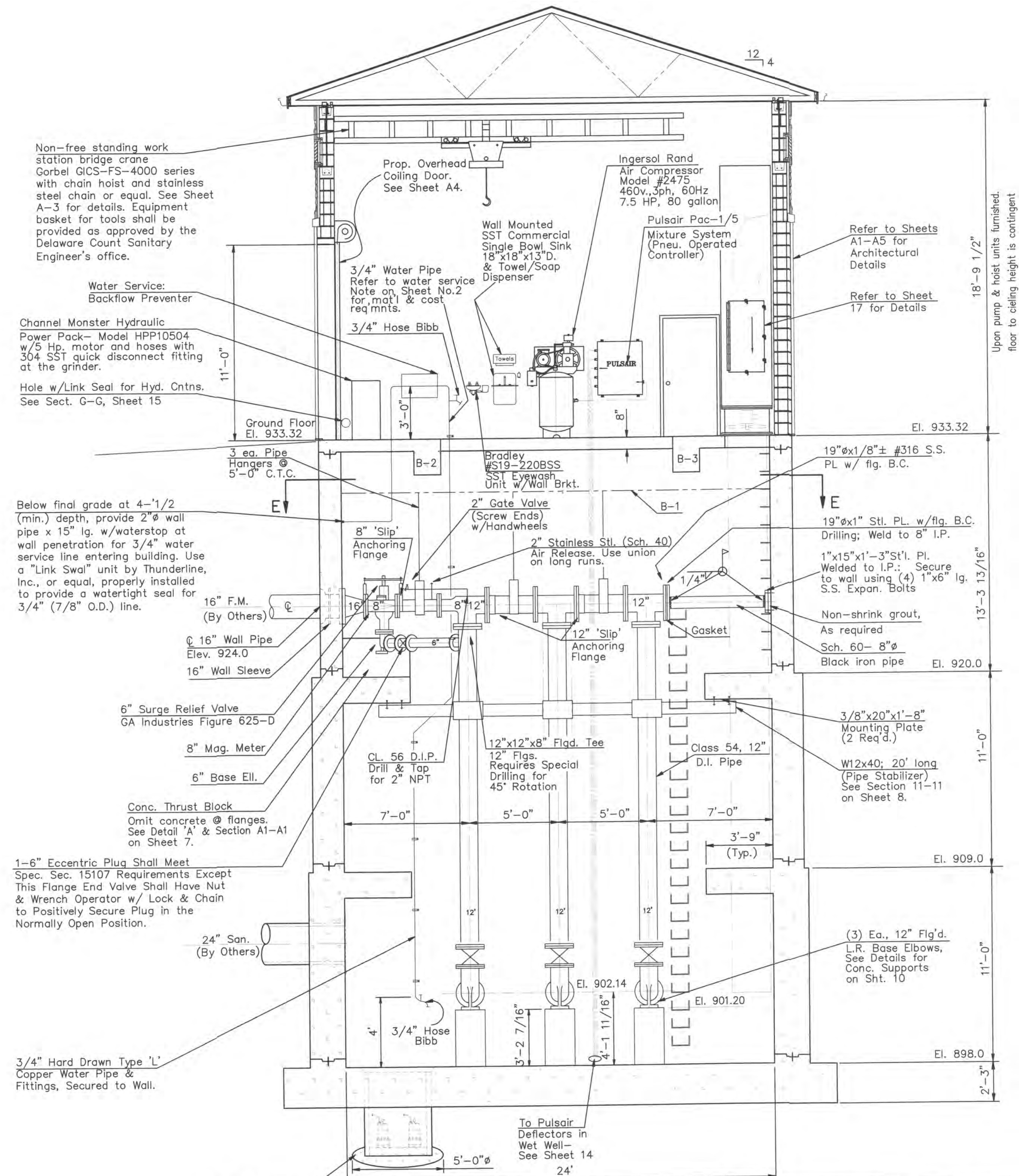
SECTION 13-13
SLAB REINFORCING
NOT SHOWN FOR CLARITY
(1" = 1'-0")

#6@10" Dws. Grouted into drilled holes using Epoxy quick setting grout equal to Sika's Sikastix 350 and in accordance with the Pump Manufacturer's Specifications.

DELAWARE COUNTY, OHIO SANITARY SEWER IMPROVEMENT FOR NORTHSTAR GOLF RESORT PUMP STATION STANDARD CONCRETE DETAILS	
	Date: October 5, 2006
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SECTION A-A
Scale: 1/4" = 1'-0"



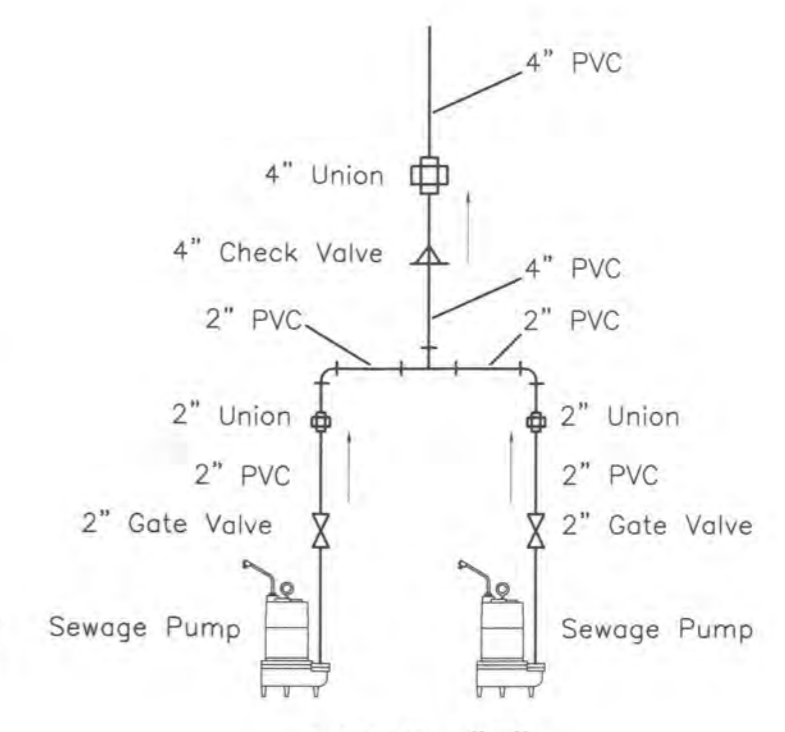
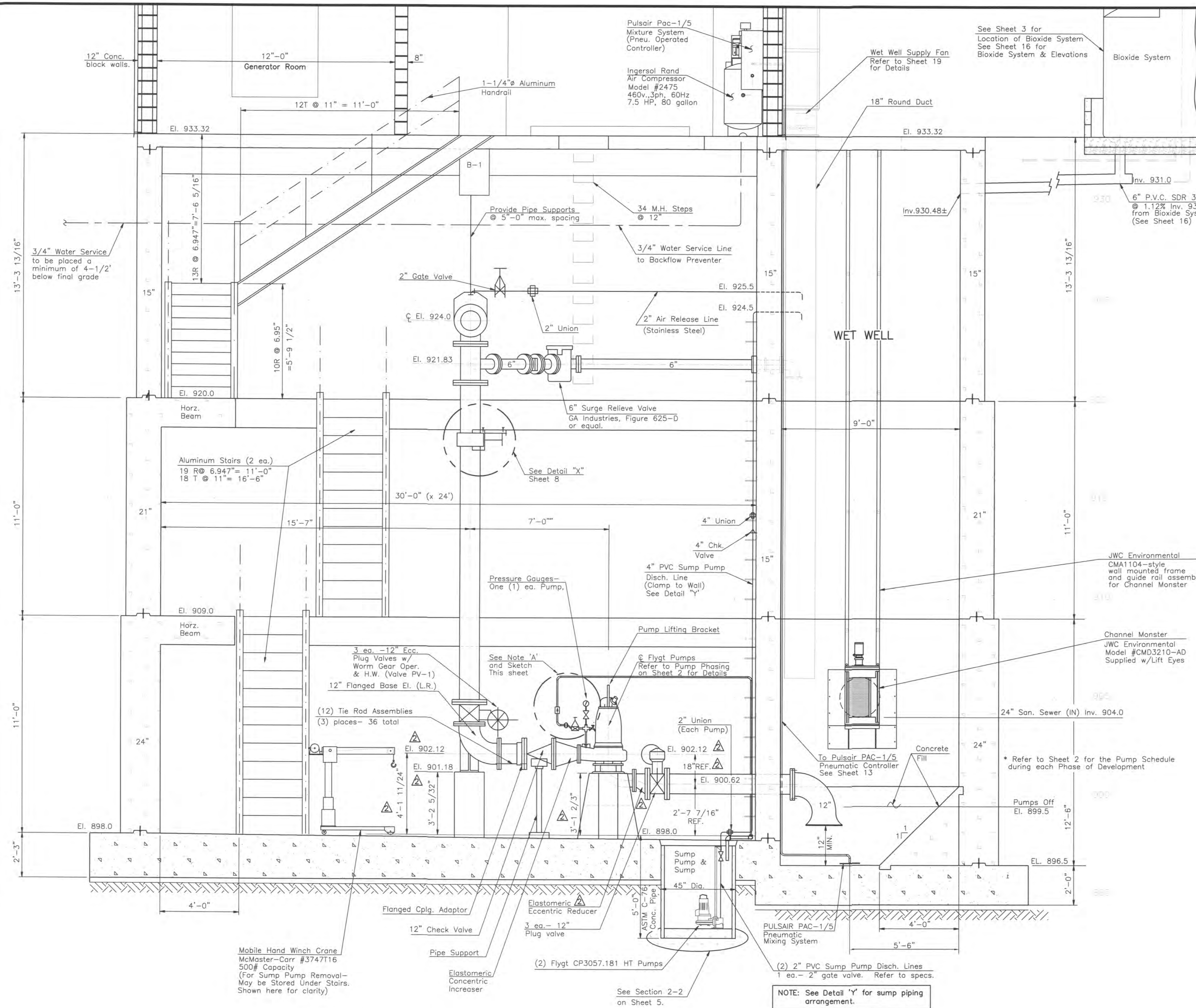
SECTION B-B
Scale: 1/4" = 1'-0"

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FOR
NORTHSTAR GOLF RESORT
PUMP STATION
TYPICAL SECTIONS

Date: October 5, 2006
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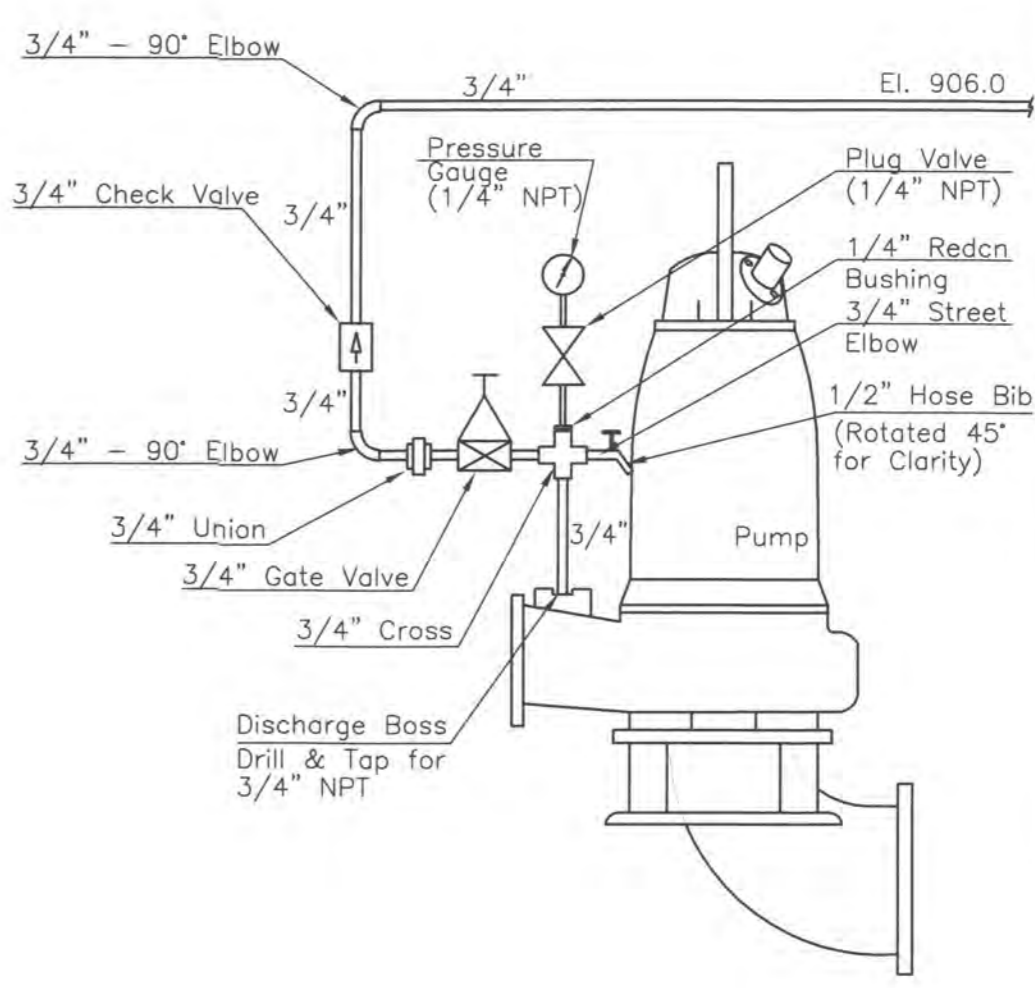
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Phone: 614.773.4500 Fax: 614.773.4800



DETAIL "Y"
Sewage Pump Discharge Manifold
Not to Scale

PUMP DISCHARGE PIPING - NOTE A
Required Three Locations.
Construction and Materials shall be as follows:

1. Drill top pump discharge boss for 3/4" n.p.t.
2. Install 3/4" G.I.P. nipple and cross.
3. Install pressure gauge and piping in vertical run from cross per Spec. Sec. 15146 using 1/4" G.I. pipe bushing and nipples with brass plug valve and gauge.
4. Install 1/2" brass hose bibb on horiz. run from cross on side toward pump via a 3/4" G.I. street elbow to clear pump.
5. Install air release lines from remaining cross outlet using 3/4" G.I. Pipe and fittings throughout to discharge into the Wet Well. Each line shall be provided with valve and fittings near the pump connection, as shown, to be as follows:
3/4" brass gate valve w/handwheel, union, 3/4" brass check valve - equal to Nibco T-413. Install check valve in upsidedown position with flow arrow pointing north; adjust or re-work disc to assure closing of disc when pump is pumping sewage.



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SECTION C-C
Scale: 3/8"=1'-0"

Revised elastomeric eccentric reducer installation. Accompanying elevations revised to accommodate reducer installation.

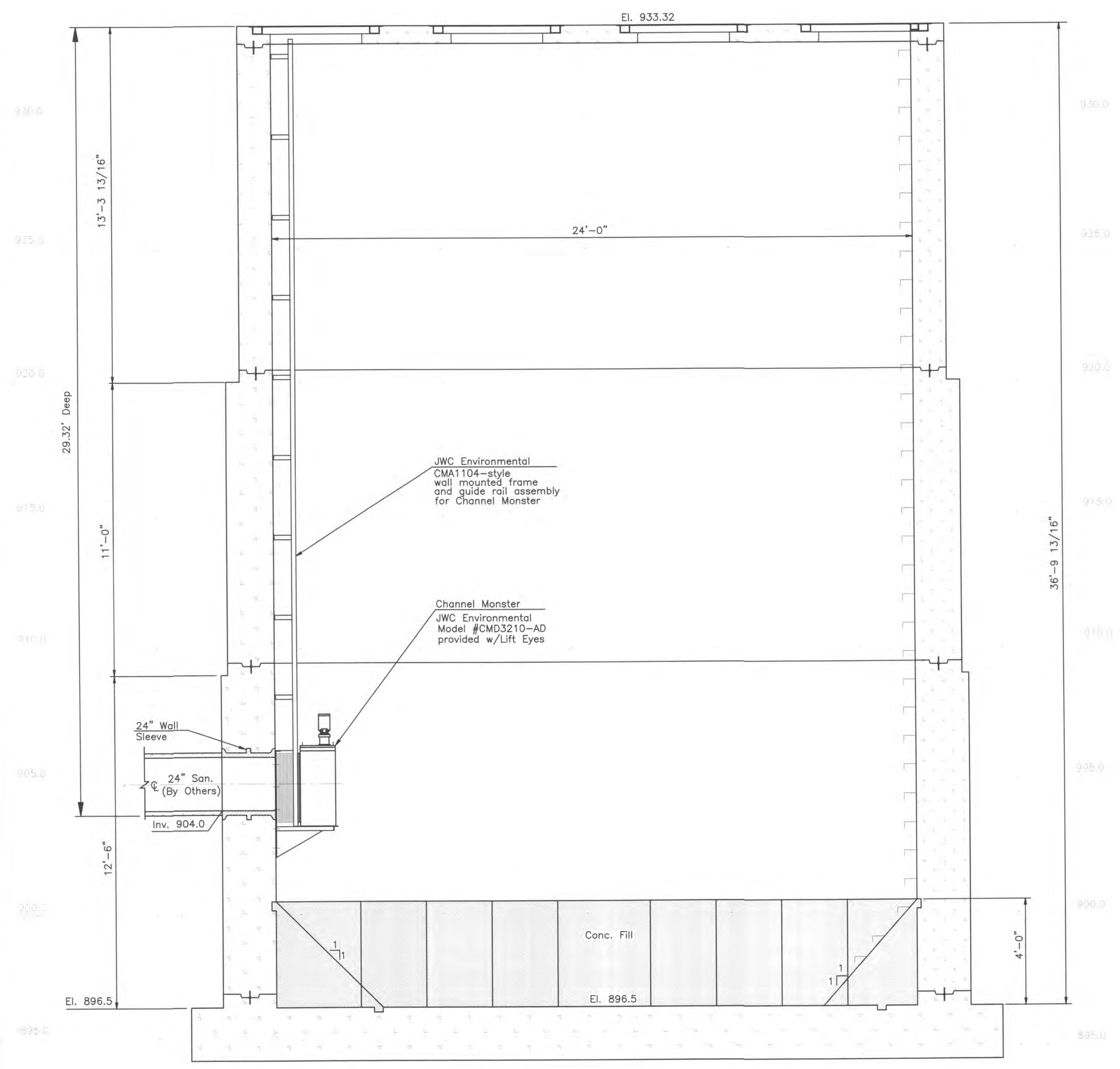
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SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION
TYPICAL SECTIONS

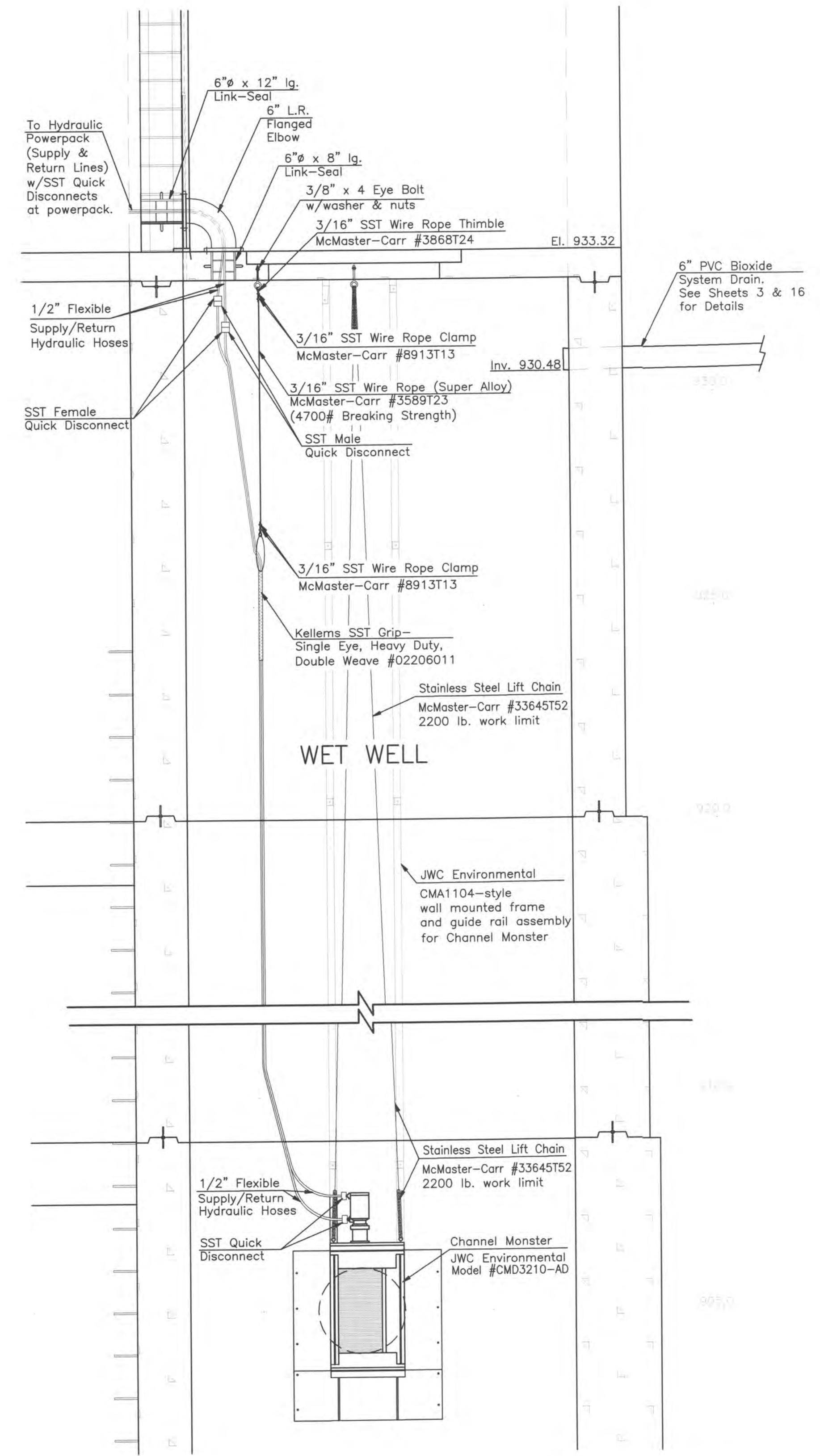
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Date: October 5, 2006
Scale: 3/8" = 1'-0"
Job No: 2004-0517
Sheet: 14 of 30

REVISED AS CONSTRUCTED 7/29/08



SECTION D-D
Scale: 3/8"=1'-0"



SECTION G-G
Scale: 1/2" = 1'-0"
(See Sheet 12 for Plan Location)

2 WORKING DAYS
BEFORE YOU DIG
CALL TOLL FREE 800-362-2764
OHIO UTILITIES PROTECTION SERVICE

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION
TYPICAL SECTIONS

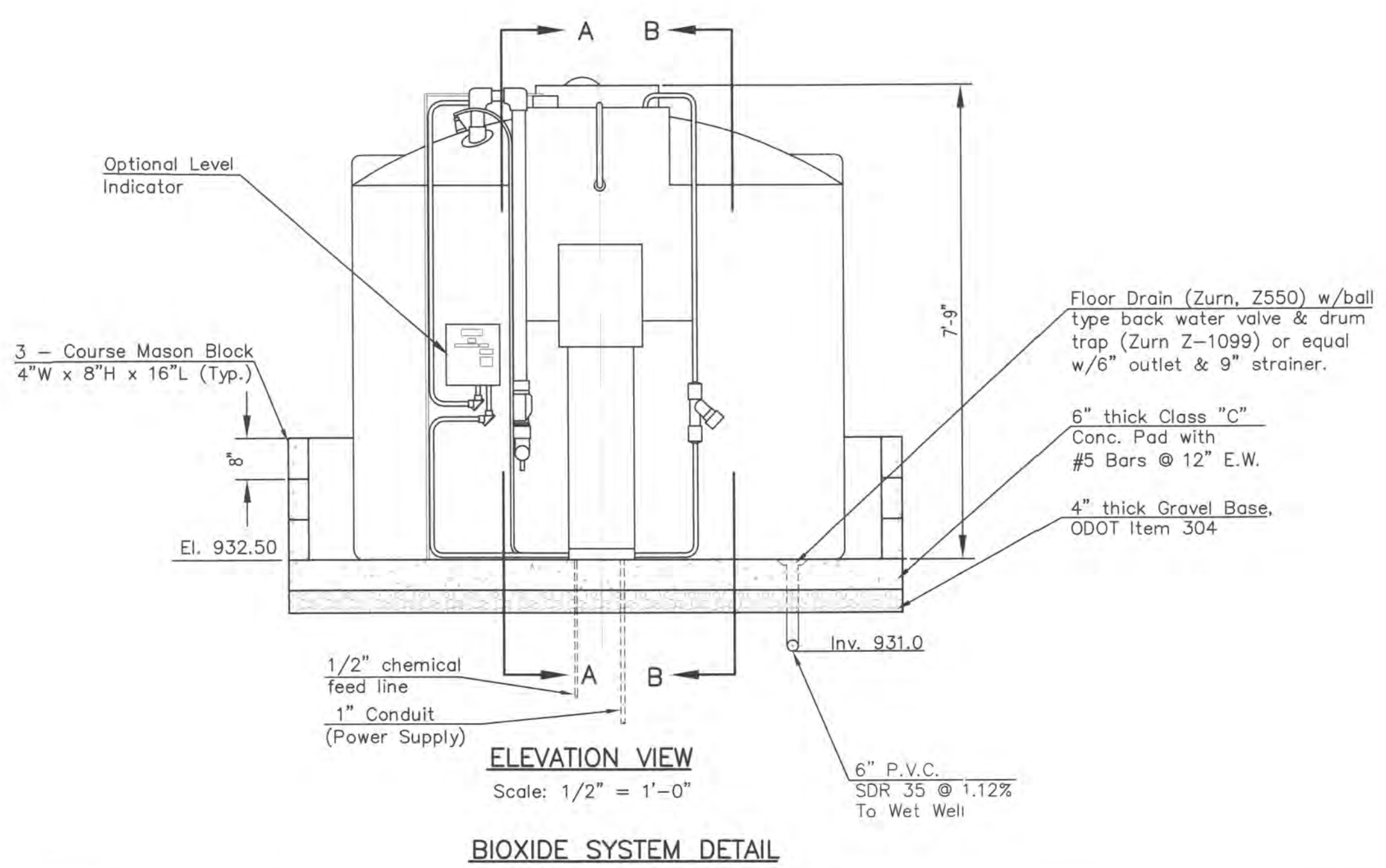
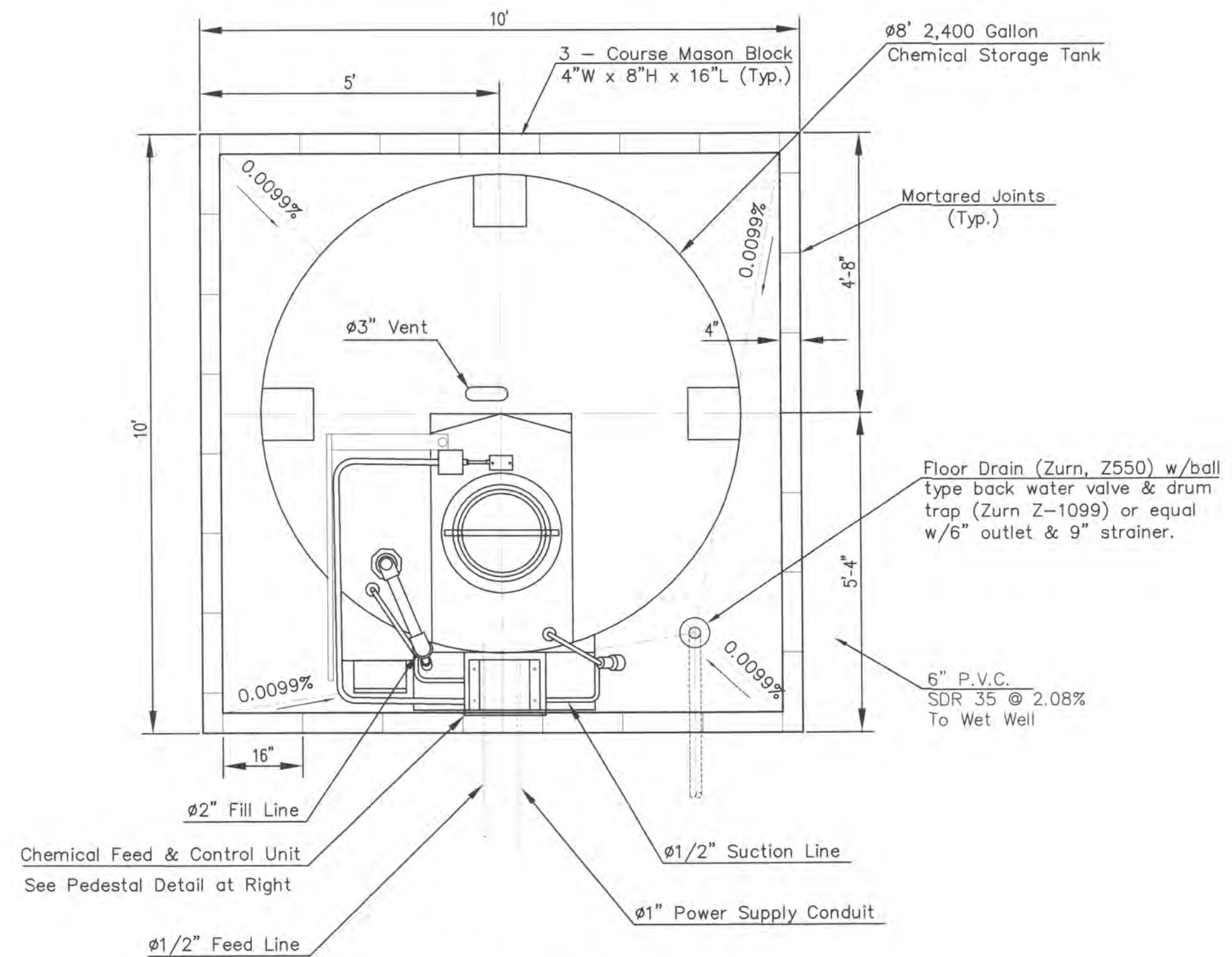
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Phone: 614.775.4500 Fax: 614.775.4503

Date: October 5, 2006
Scale: As Noted
Job No: 2004-0517
Sheet: 15 of 30

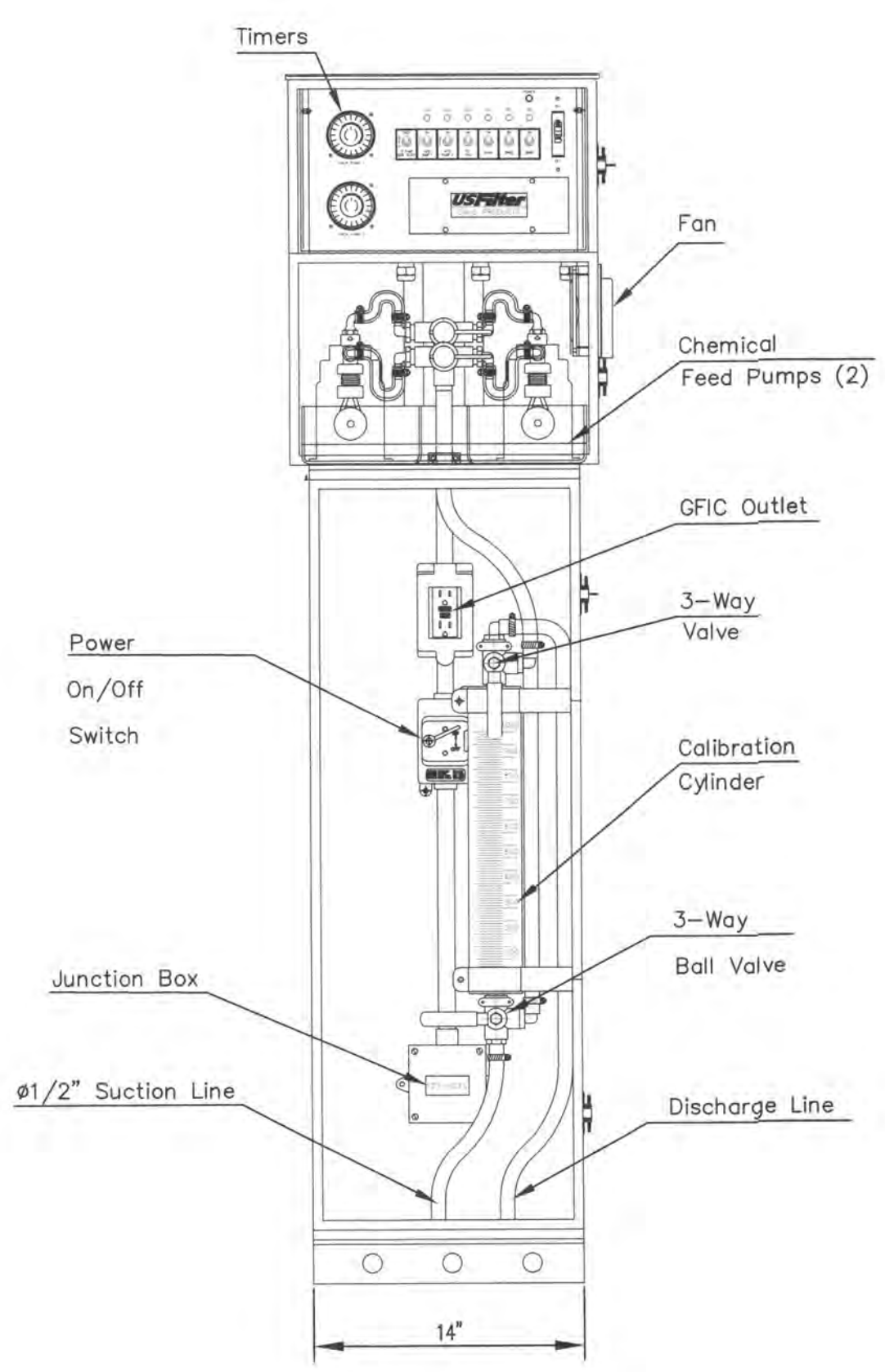
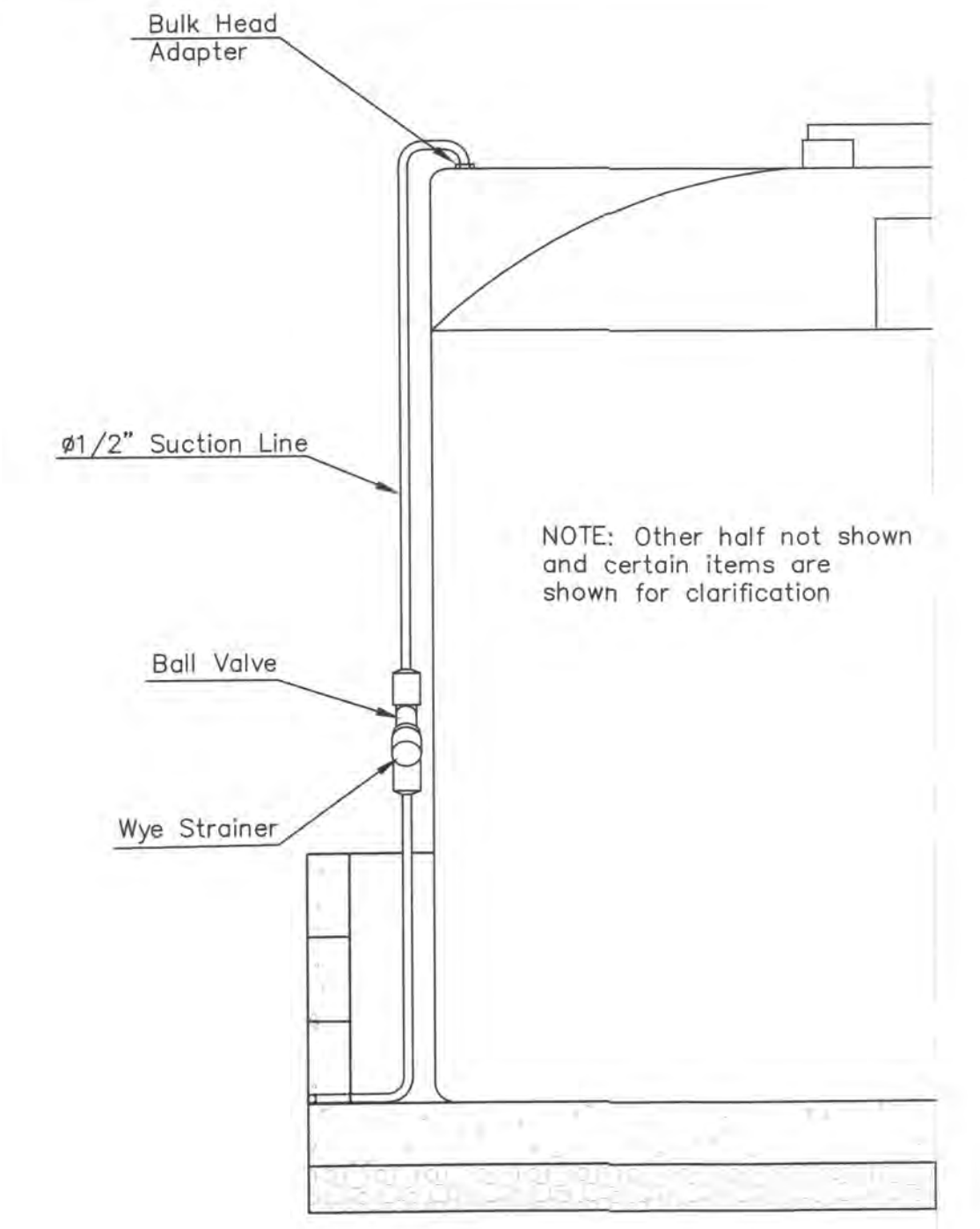
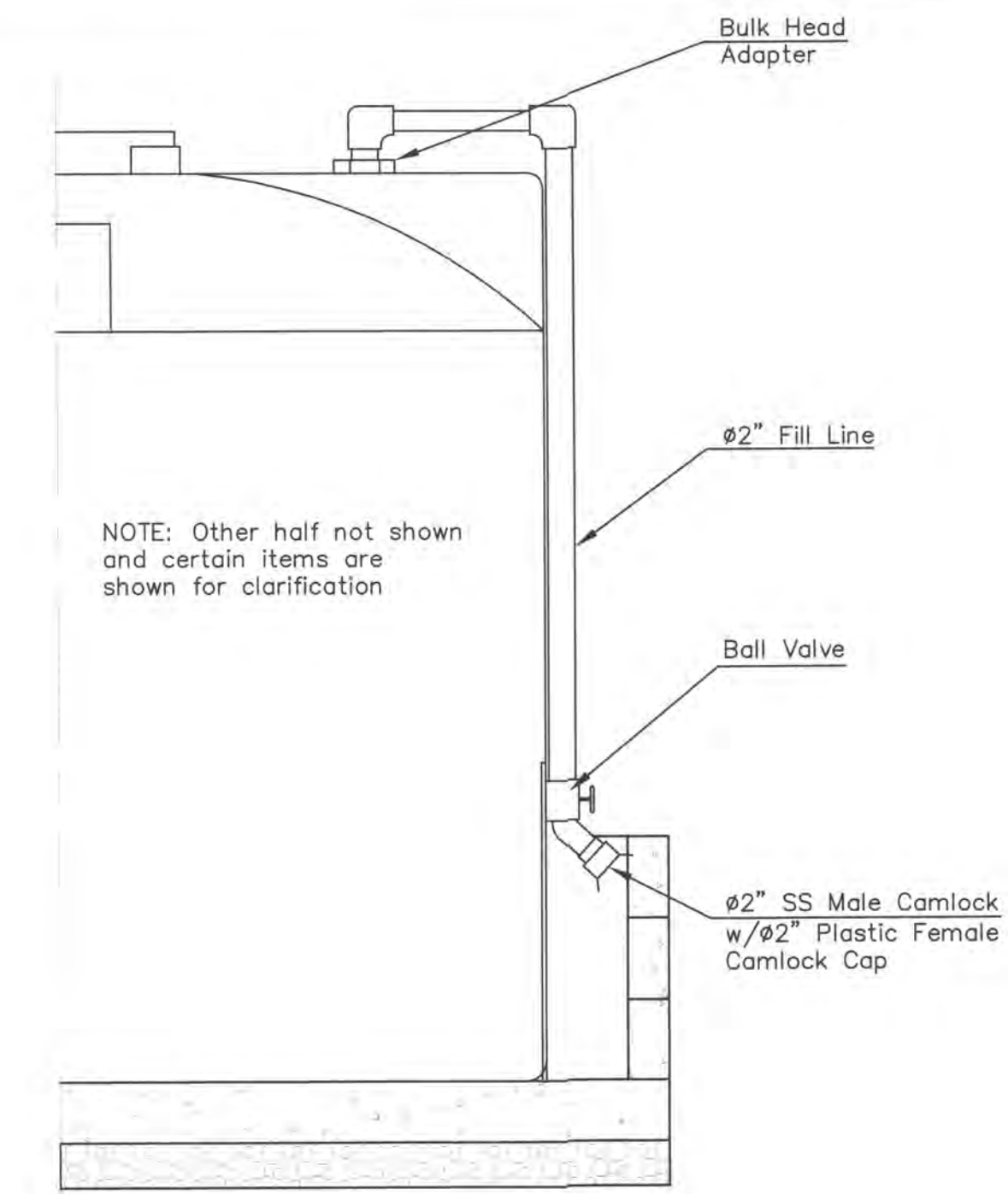
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NOTES

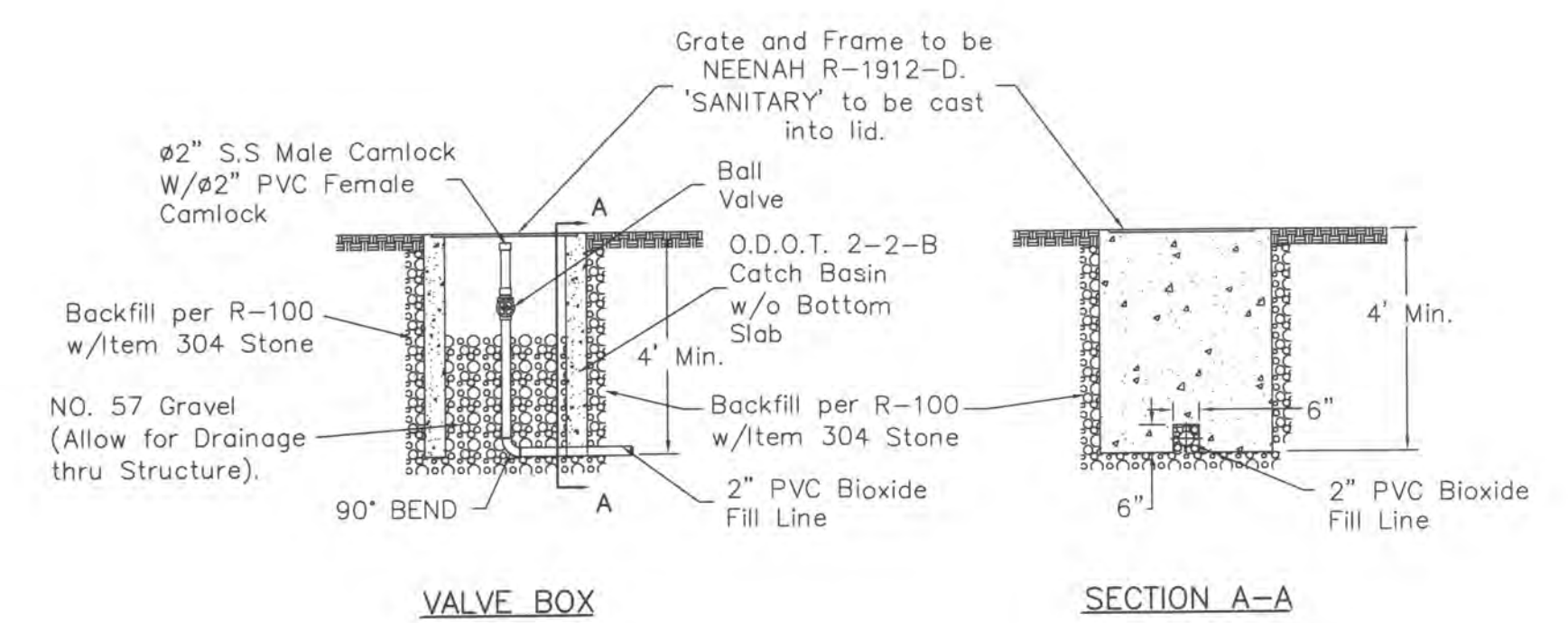
1. U.S. filter shall provide 2,400 gallon bioxide system.
2. Contractor to furnish concrete pad with all in-slab piping and conduit.
3. All piping and appurtenances shall be pvc, sch 80.
4. All electrical conduit and wiring by contractor.
5. Utilize sweeps only (no elbows) for conduit directional changes.
6. Contractor to furnish and install all necessary slab openings, sleeves and sealant.
7. Contractor to furnish and install all necessary hangers, supports, and blocking for piping.
8. All hardware required for installation shall be stainless steel, furnished and installed by contractor.
9. See supplemental specifications for chemical feed unit, calibration pedestal, piping support, storage tank, level gauge and various other components.



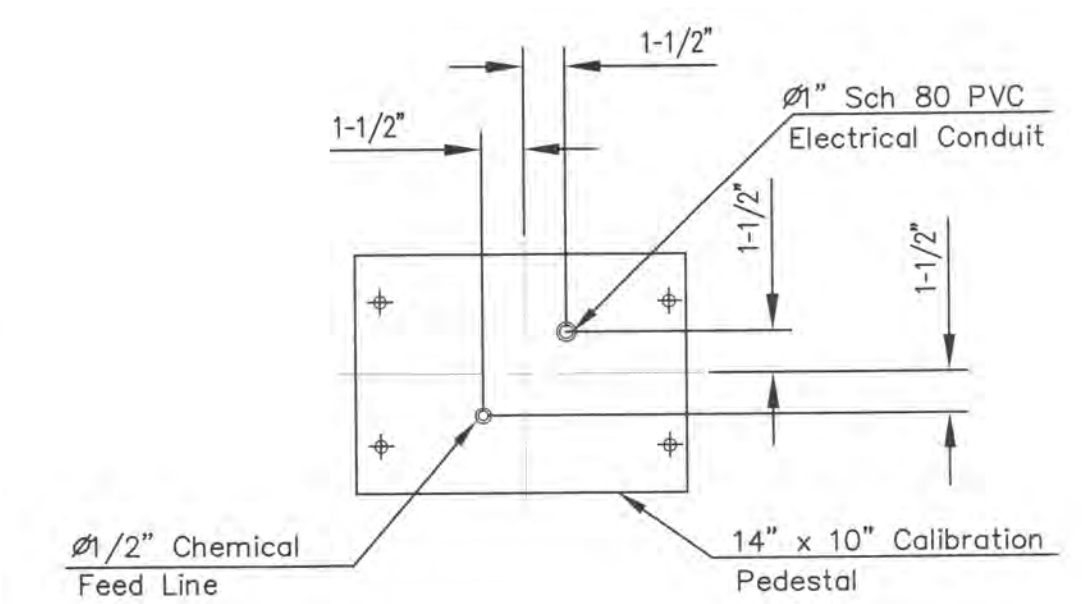
BIOXIDE SYSTEM DETAIL



CHEMICAL FEED UNIT DETAIL



BIOXIDE FILL DETAIL AT WILSON ROAD
Not to Scale



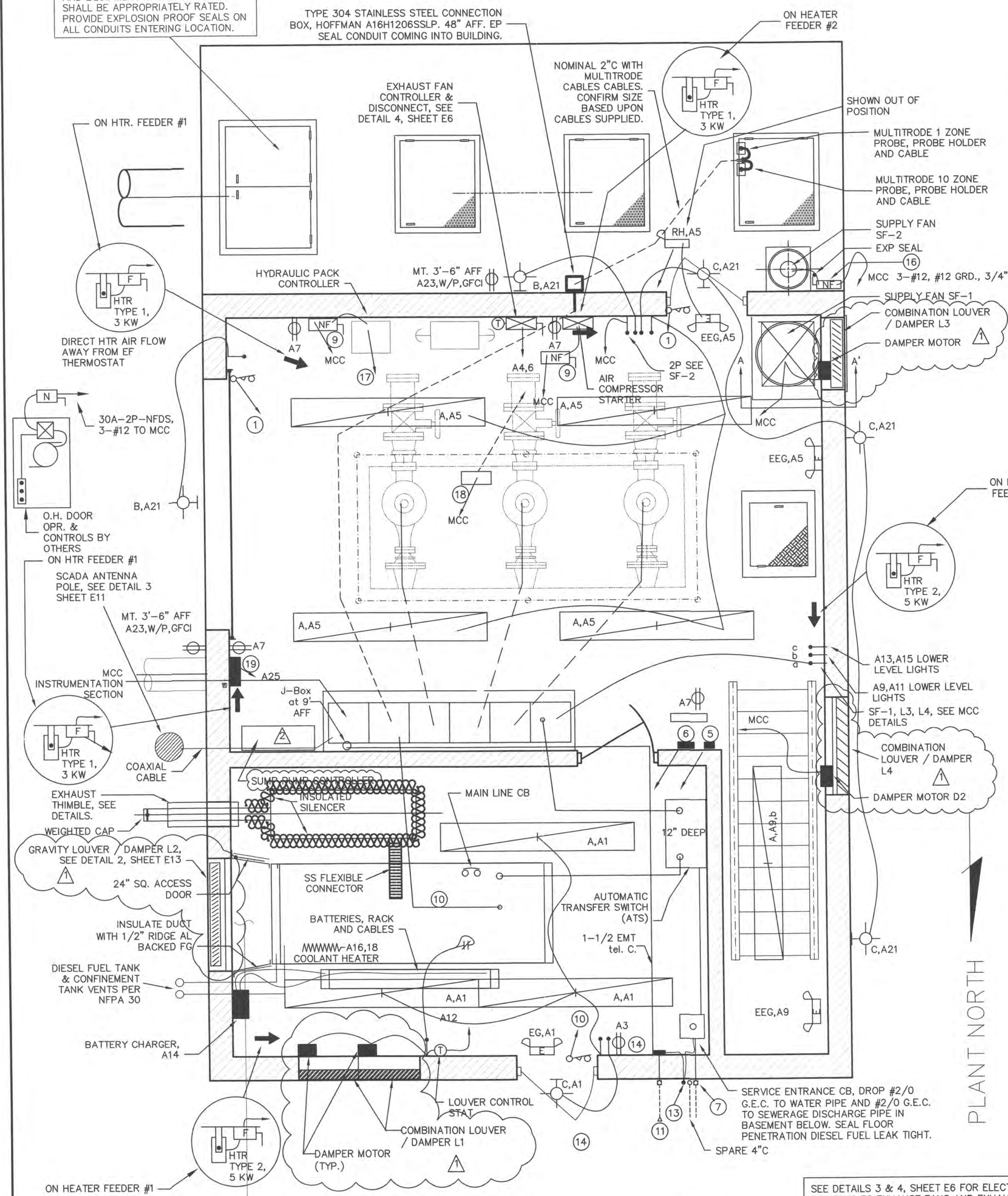
PEDESTAL DETAIL

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
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PUMP STATION
BIOXIDE SYSTEM DETAILS

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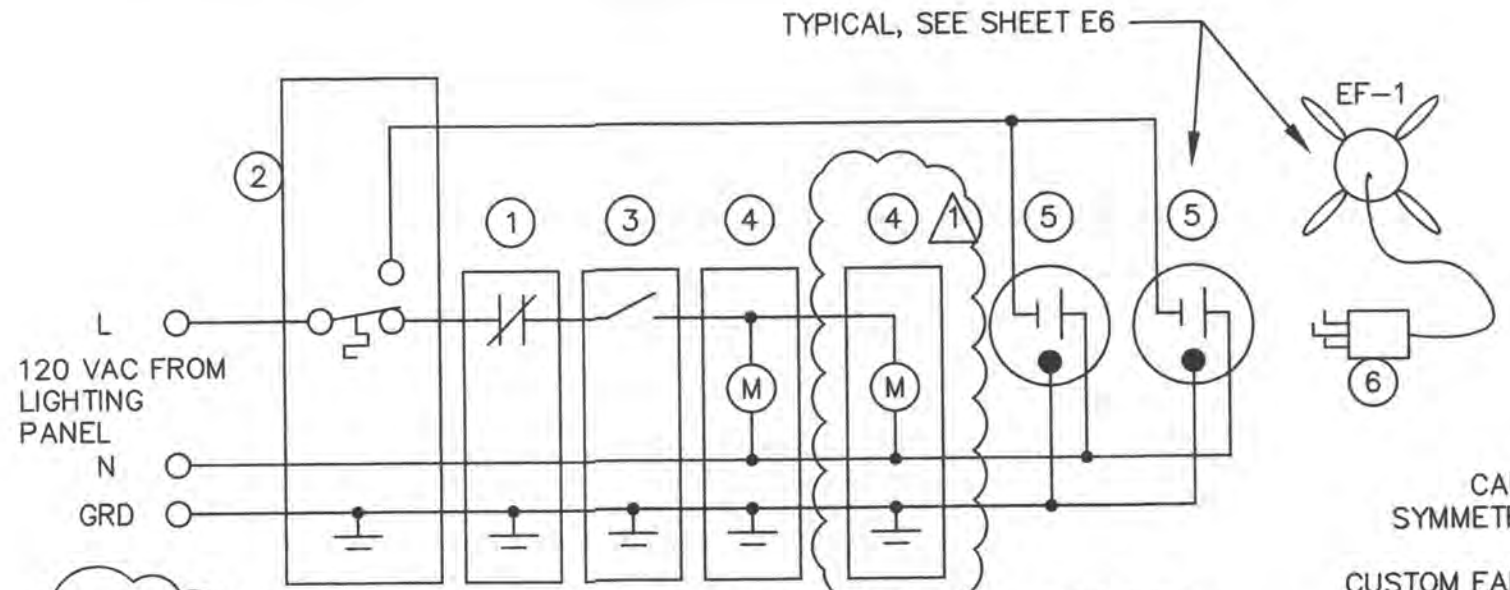
Date: October 5, 2006
Scale: Noted
Job No: 2004-0517
Sheet: 16 of 30

CAUTION: WET WELL IS A NEC CLASSIFIED LOCATION, CLASS 1, DIV. 1, GROUP C & D. ALL ELECTRICAL WORK AND EQUIPMENT IN THIS LOCATION SHALL BE APPROPRIATELY RATED. PROVIDE EXPLOSION PROOF SEALS ON ALL CONDUITS ENTERING LOCATION.



GRADE LEVEL ELECTRICAL FLOOR PLAN 1
SCALE: 3/8" = 1' - 0" E1

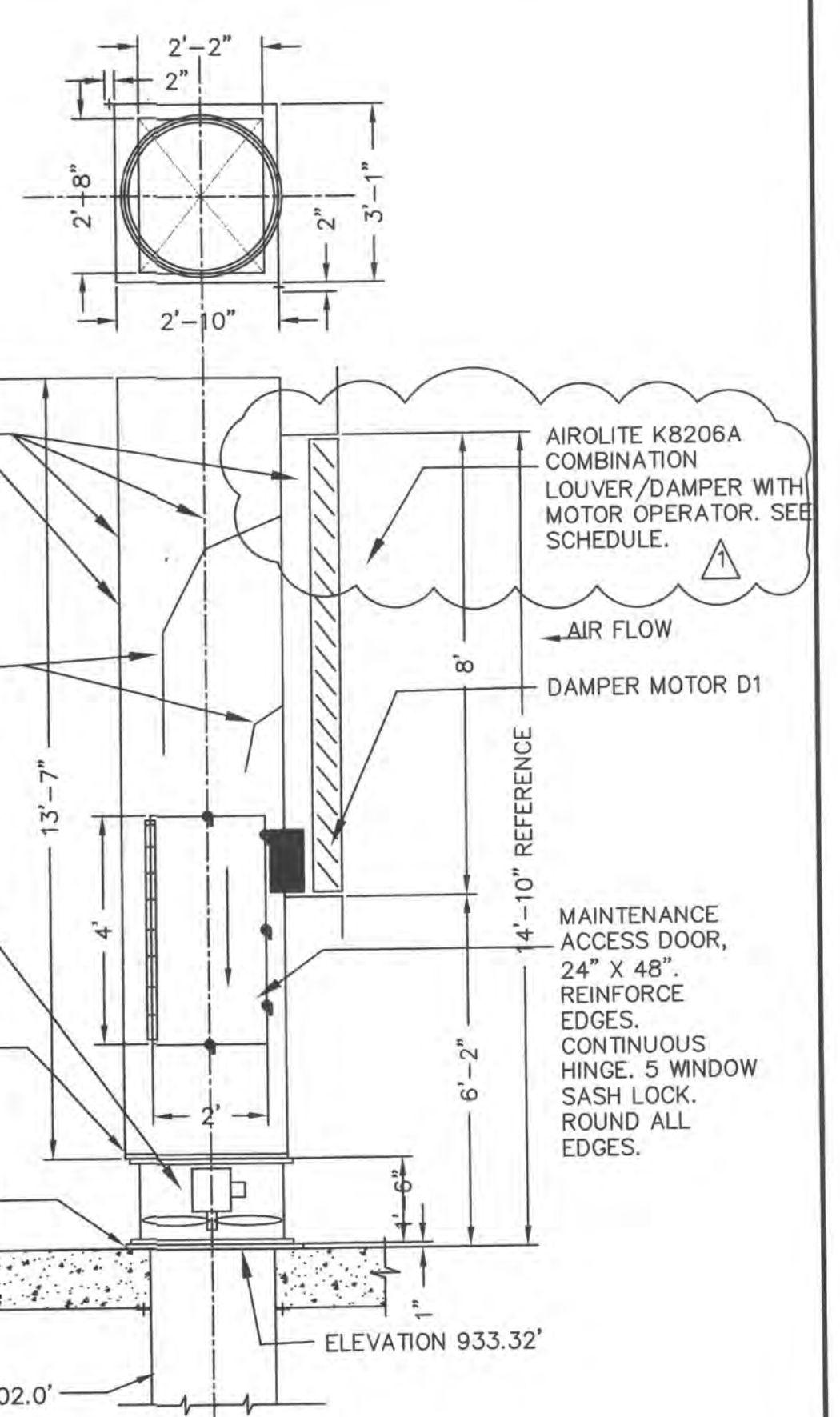
SEE DETAILS 3 & 4, SHEET E6 FOR ELECTRICAL AND MECHANICAL WORK RELATING TO EXHAUST FANS AND EXHAUST LOUVERS LOCATED AT APPROXIMATE ELEVATION 948', ROUGHLY 15' AFF OF GRADE LEVEL ROOMS.



NOTES:
1. GENERATOR LOUVER CONTROL RELAY. CONTACTS OPEN WHENEVER GENERATOR IS COMMANDED TO RUN.
2. THERMOSTAT "LCT", HONEYWELL T631C1012, RISING TEMPERATURE SHALL OPEN LOUVER AND START FANS IN UP LEVEL, MOUNT 8' ABOVE FINISHED FLOOR. NOTE THAT THERMOSTAT MUST BE FIRST DEVICE IN CASCADE. SET TO 85 DEGREES F.
3. HUBBELL 1221 IN FS BOX NEAR INLET LOUVER.
4. REVERSE ACTING INLET DAMPER OPERATOR. POWERED TO CLOSE, SPRING OPENING. BOLIMO MODEL AF120-S-US, 120 VAC INPUT, COMPLETE WITH CRANK ARM, PUSH ROD, SWIVEL JOINTS, MOUNTING BRACKET AND OTHER APPURTENANCES AS NEEDED. SUPPLY ADDITIONAL MOTORS BEYOND QTY. OF 2 IF RECOMMENDED BY DAMPER MANUFACTURER.
5. HUBBELL SINGLE DEVICE RECEPTACLE, PART NO. HBL4710. TO SERVE AS LOCAL DISCONNECT FOR FAN.
6. EQUIP FAN WITH HUBBELL PLUG, PART NO. HBL4720C.

GENERATOR INLET LOUVER & EXHAUST FANS CONTROL 2
NOT TO SCALE E1

- NOTES:
- 2-#18 IN 1/2" C. OTHER SIGNAL WIRES MAY BE RUN IN THIS CONDUIT. NO POWER WIRES. TERMINATE WITH 12' OF SLACK WIRE IN MCC INSTRUMENTATION VERTICAL SECTION. LABEL WIRES WITH SENSOR IDENTIFICATION. PROVIDE FLEXIBLE METAL CONDUIT MAKE UP SECTION. MATCH SENSOR HUB SIZES.
 - 3-#12 IN 3/4" C TO MCC.
 - 3-#10 IN 3/4" C TO MCC.
 - HEATER ASSEMBLY SHOWN OUT OF POSITION FOR CLARITY. INSTALL HEATER ASSEMBLY PER DETAIL 1 SHEET E12. ARROW INDICATED AIR FLOW DIRECTION.
 - GEN. EMG. BREAK GLASS STOP SWITCH. RUN 3-#18 TO GENERATOR CONTROL BOX. 3/4" C. MAY BE COMBINED WITH GEN. REMOTE MONITOR PANEL WIRES.
 - GEN. REMOTE MONITOR PANEL. RUN 3-#18 TO ATS, 16-#18 TO GENERATOR CONTROL BOX, 3/4" C.
 - SERVICE LATERAL, 3-350 MCM, 1-#2/0, CU, TWH IN 4" C TO PAD MOUNTED TRANSFORMER. PROVIDE APPLETON MOGUL 6x8 SERIES, TYPE LB WITH ROLLERS.
 - SPARE 4" C TO PAD MOUNTED TRANSFORMER. INSTALL #12 PULL WIRE. CAP CONDUIT AT BUILDING STUB UP.
 - 30 A, 3P, 600 V, NON-FUSED, NEMA 12 DISCONNECT SWITCH.
 - 30-#18 IN 1" C FROM GENERATOR 14 RELAY DRY CONTACT BOX TO MCC INSTRUMENTATION SECTION. PROVIDE 12' SLACK IN EA. WIRE AND LABEL RELAY SOURCE.
 - EXTEND TEL. CONDUIT 5' FROM BUILDING AND THEN DIRECT BURIAL. PROVIDE BELL END.
 - GENERATOR RUN RELAY FOR LOUVER CONTROL.
 - 5/8" DIA. X 10' COPPER CLAD GROUND ROD, CLAMPS, #4 BC TO SERVICE ENTRANCE CB AND TO TELEPHONE PROTECTIVE MODULE. 1/2" PVC SLEEVE THROUGH WALL. CAULK OPENING.
 - TELEPHONE BOARD, 2'X2'X3/4", PLYWOOD, PAINTED ALL SIDES, WHITE. COORDINATE WITH FIRE EXTINGUISHER AND LOADING PLAQUE.
 - INSULATE EXHAUST PIPE, MUFFLER, TAILPIPE, SEE SPECIFICATIONS.
 - 30 A, 3P, 600 V, NON-FUSED, NEMA 4X-SS DISCONNECT SWITCH.
 - 4-#16 IN 3/4" C TO MCC INSTRUMENTATION SECTION, GRINDER OFF AND GRINDER FAIL ALARMS. SELECT N.C. CONTACTS IN "OFF" POSITION AND ALARM CONDITION.
 - PULSAR CONTROL PANEL (PLC). RUN 3-#16 IN 3/4" C TO MCC CENTER, PULSAR INHIBIT CIRCUIT. SEE DETAIL 3, SHEET E7. CONTROL PANEL SHOWN OUT OF POSITION. MOUNTED ON WALL BY AIR COMPRESSOR STARTER.
 - GAS DETECTOR ASSEMBLY. SEE DETAIL 5 SHEET E7. MOUNT SENSORS AT LEVEL 900.0 MSL.
 - MAKE ALL CONDUIT CONNECTIONS TO GENERATOR FROM ABOVE GRADE. THERE IS NO PROVISION TO MAKE CONDUIT STUB UPS THROUGH TANK AREA.



NOTES:
1. PROVIDE SIGN ON MAINTENANCE DOOR READING: "CAUTION - MOVING PARTS AND ROTATING FAN BLADE BEHIND THIS DOOR. LOCK OUT AND TAG OUT CONTROLLER AT MCC-1 ROTATING FAN BEFORE OPENING THIS DOOR. FAILURE TO LOCK OUT AND TAG OUT BEFORE OPENING DOOR MAY RESULT IN EQUIPMENT DAMAGE AND BODILY INJURY, INCLUDING DEATH."

SECTION A-A'
DRY WELL SUPPLY FAN SF-1 & DUCT 3
SCALE: 3/8" = 1' - 0" E1

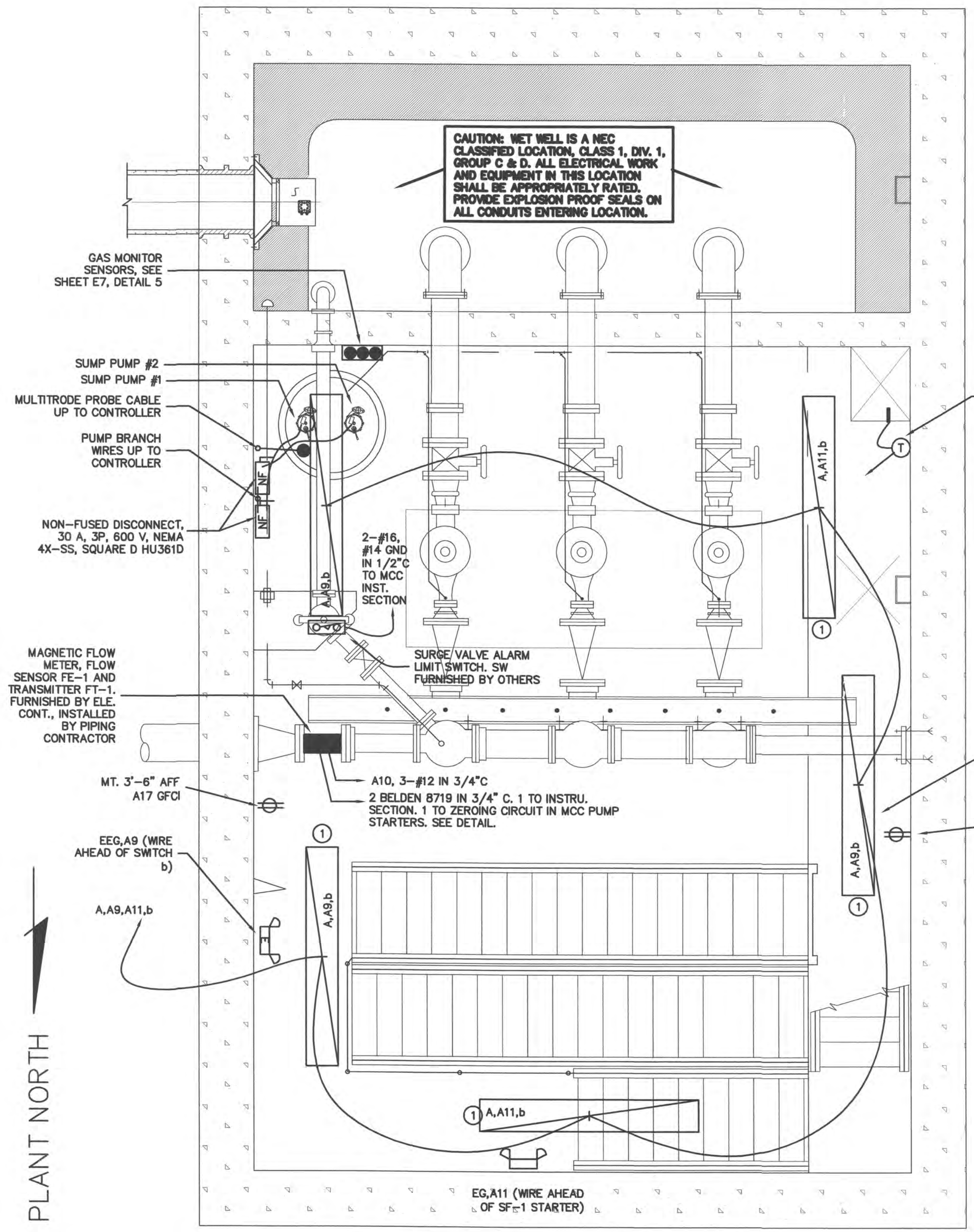
STATE OF OHIO
RALPH B. HOFFMAN
REGISTERED PROFESSIONAL ENGINEER
Signed: *Ralph B. Hoffman*
Date: 7/31/08

REVISIONS		
MARK	DATE	DESCRIPTION
Δ	11/28/06	ADDED MISSING LABEL
Δ	11/28/06	LOUVER & MOTOR CHANGES

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION

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Date: December 15, 2006
Scale:
Job No: 2004-0517
Sheet: 17 of 30



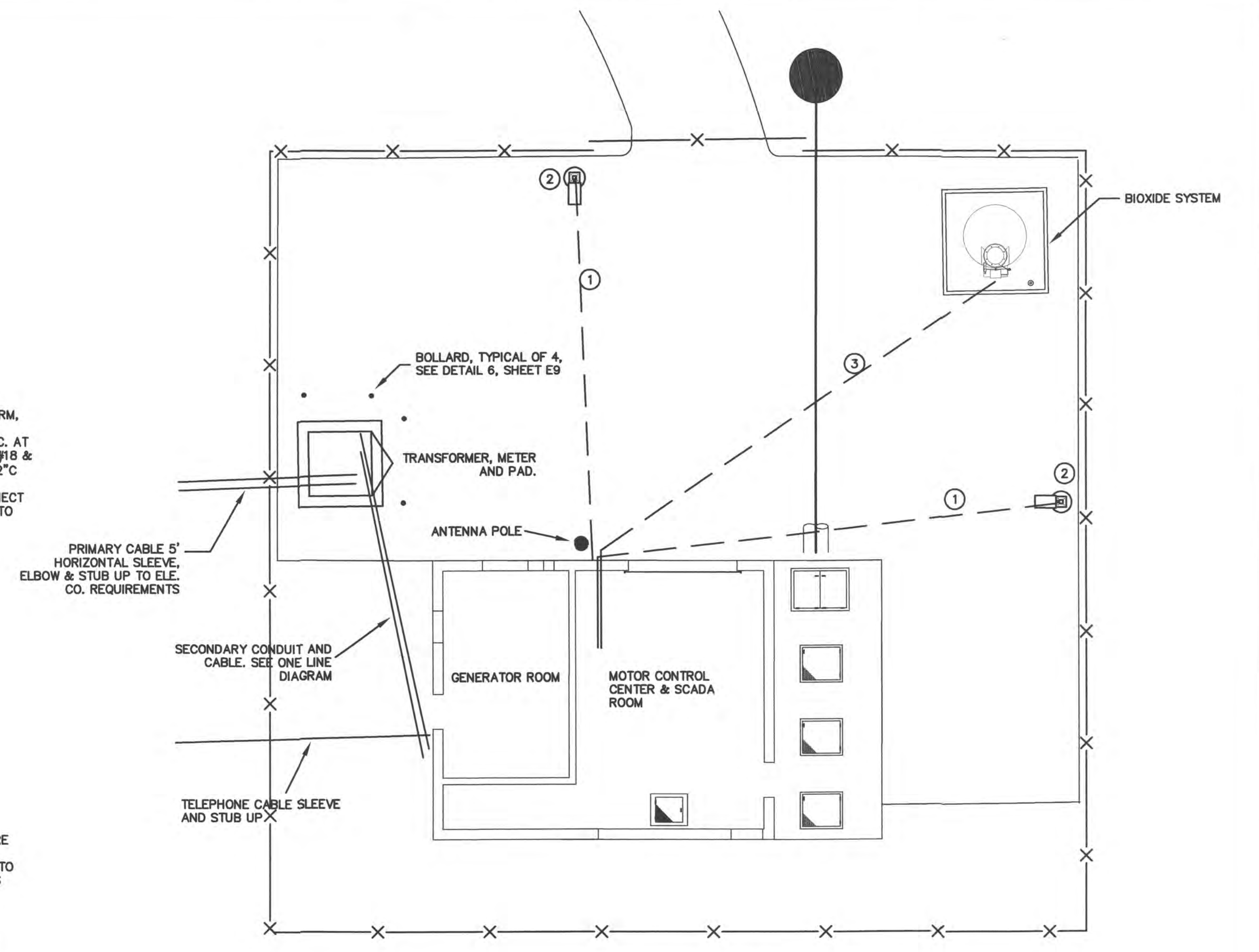
NOTES:
1. THERE ARE FIVE TYPE "A" FIXTURES AT APPROXIMATE ELEVATION OF 931 FEET. THERE IS A SECOND SET OF FIVE TYPE "A" LIGHTS AT APPROXIMATE ELEVATION OF 918 FEET, AND A THIRD SET OF FIVE TYPE "A" LIGHTS AT APPROXIMATE ELEVATION OF 907 FEET. EGRESS AND EXIT LIGHTS ARE SHOWN INDIVIDUALLY.

LOWER LEVEL SECTION "E" ELECTRICAL FLOOR PLAN 1
SCALE: 3/8" = 1' - 0" E2

LOW TEMP ALARM, HONEYWELL T631A1006. N.C. AT LOW TEMP. 2-#18 & #14 GRD IN 1/2" C TO MCC INST. SECTION. CONNECT REMOTE BULB TO AIR DUCT.

SLIDE FIXTURE SOUTH AS NECESSARY TO AVOID STEPS

MT. 3'-6" AFF A19 GFCI



NOTES:
1. 2-#12 PWR & #12 GRD IN 1" C.
2. POLE & LUMINAIRE ASSEMBLY TYPE "A". SEE DETAIL 4, SHEET E4.
3. 3-#12 POWER TO LPA CRT 26 AND 3-#14 (SPARES) 1" C.

SITE ELECTRICAL & TELEPHONE 2
SCALE 1/8" = 1'-0" E2

STATE OF OHIO
RALPH B. HOFFMAN
REGISTERED PROFESSIONAL ENGINEER
37934
Signed: *Ralph B. Hoffman*
Date: *March 20, 2006*

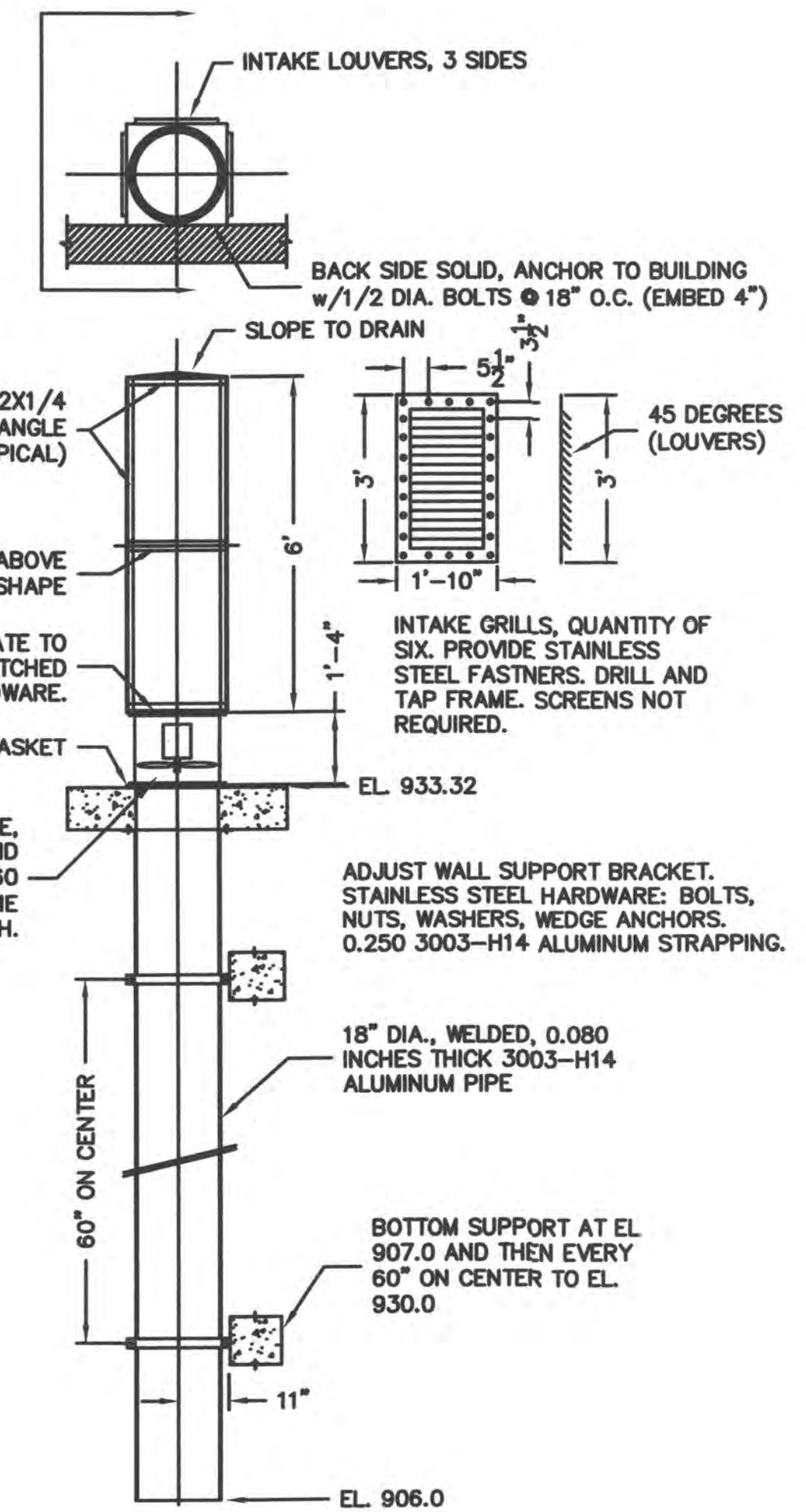
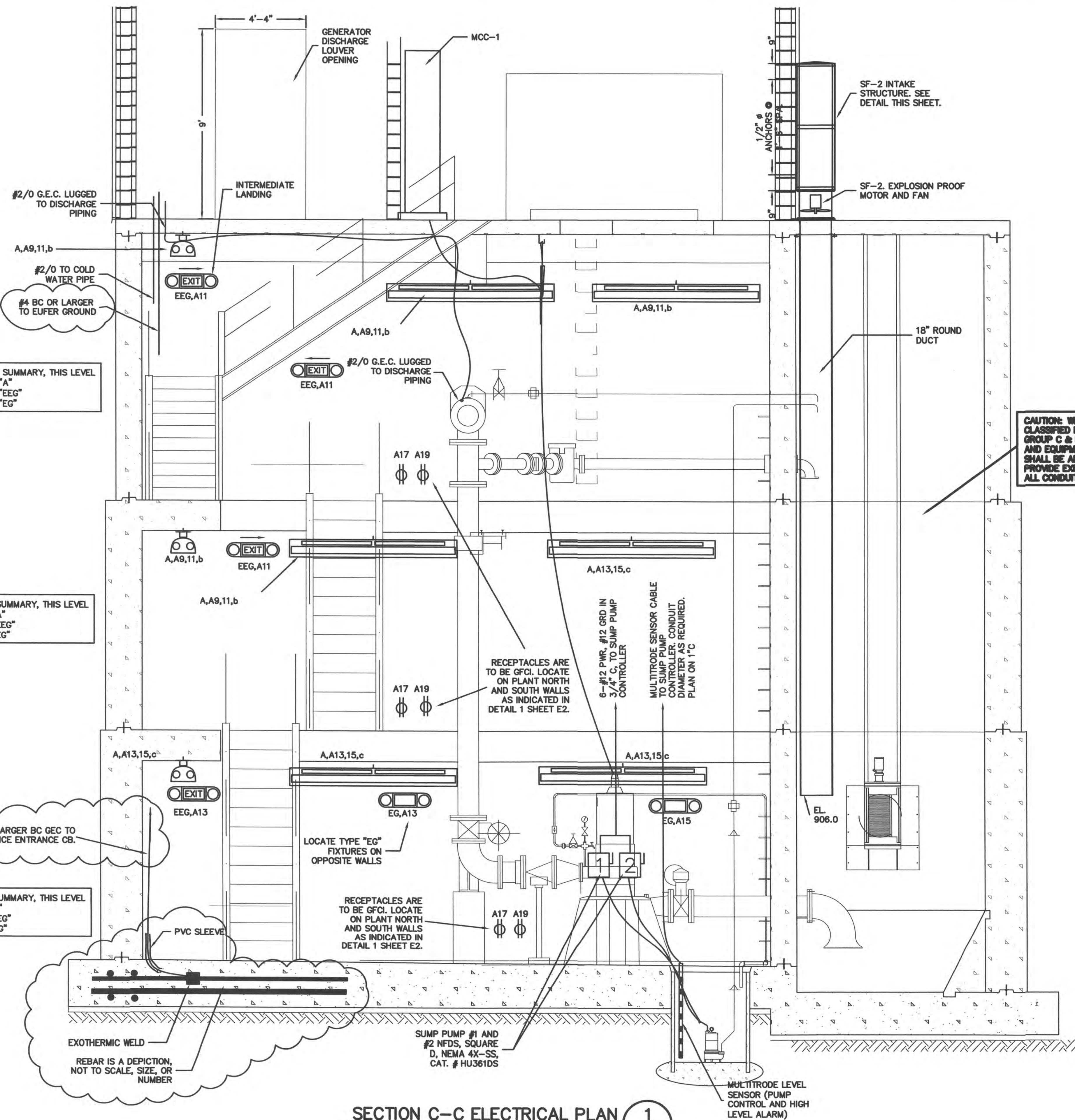
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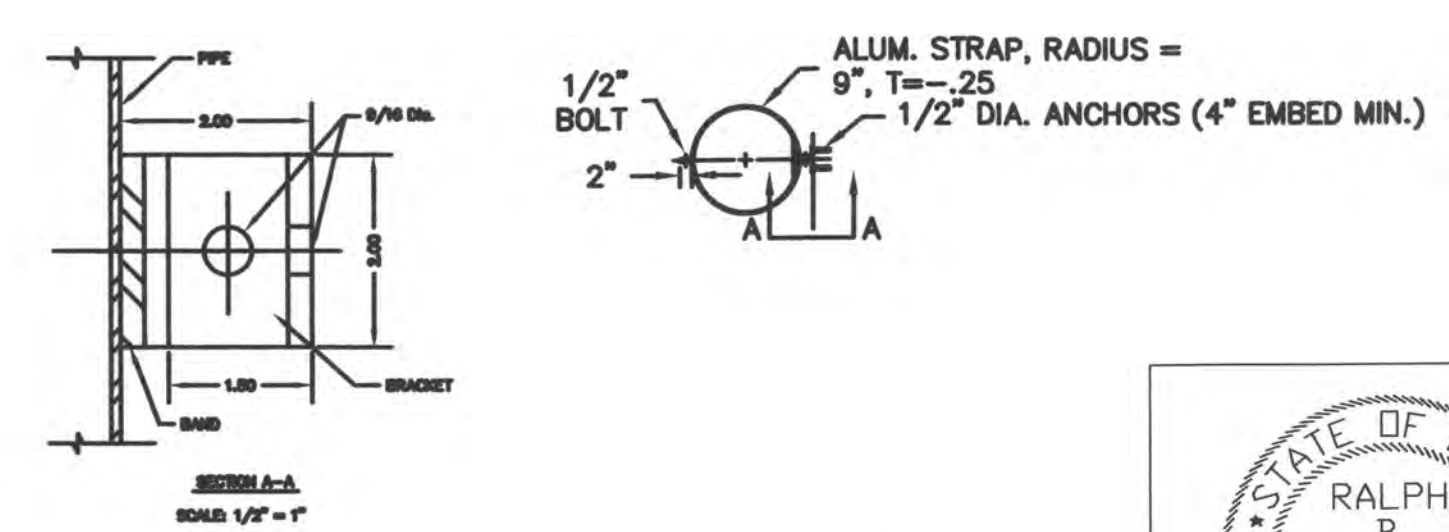
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Date: March 17, 2006
Scale:
Job No: 2004-0517
Sheet: 18 of 30

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WET WELL SUPPLY FAN SF-2 & DUCT 2
 SCALE: 3/8" = 1' - 0"
 E3



SF-2 DUCT SUPPORT BRACKET 3
 AS NOTED
 E3

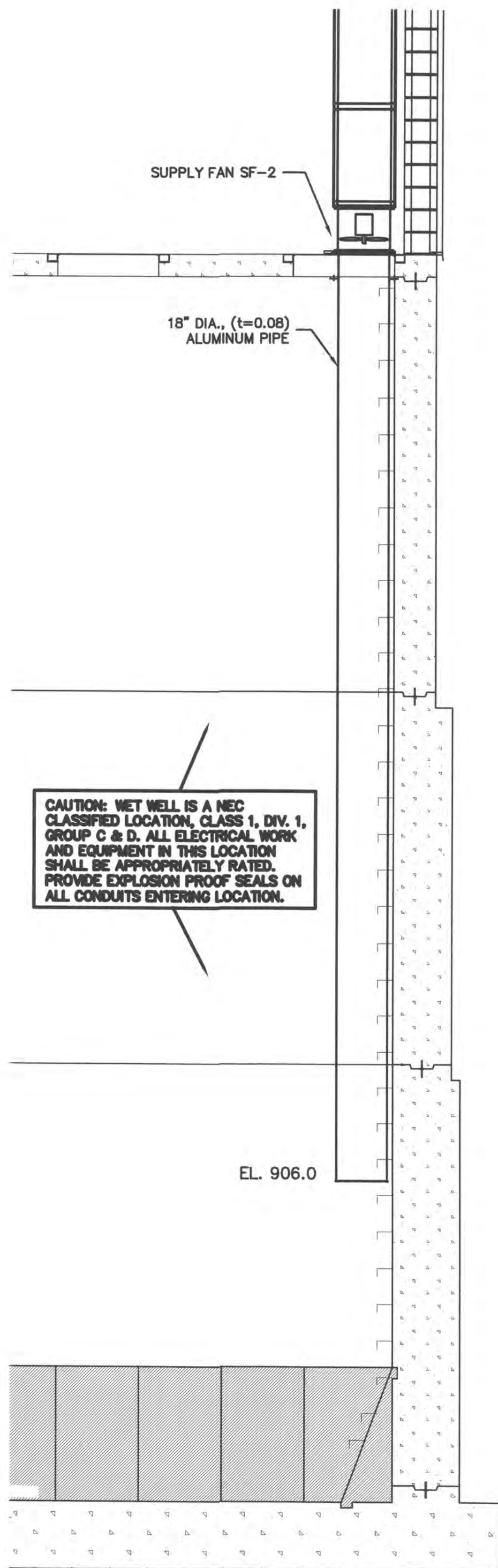
STATE OF OHIO
 RALPH B. HOFFMAN
 37934
 REGISTERED PROFESSIONAL ENGINEER
 Signed: *Ralph B. Hoffman*
 Date: *October 5, 2006*

DELAWARE COUNTY, OHIO
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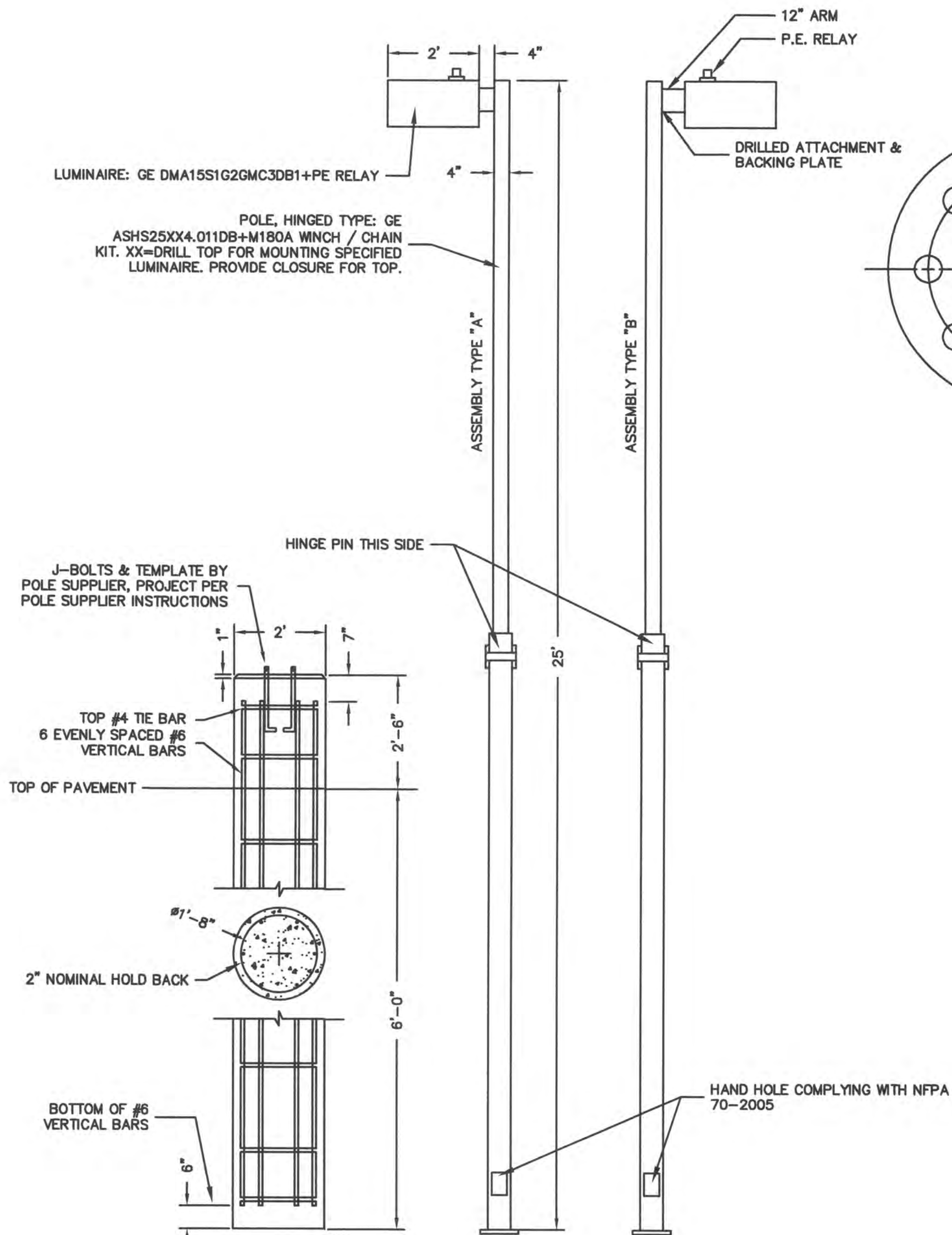
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ELECTRICAL SECTION D-D

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

1
E4

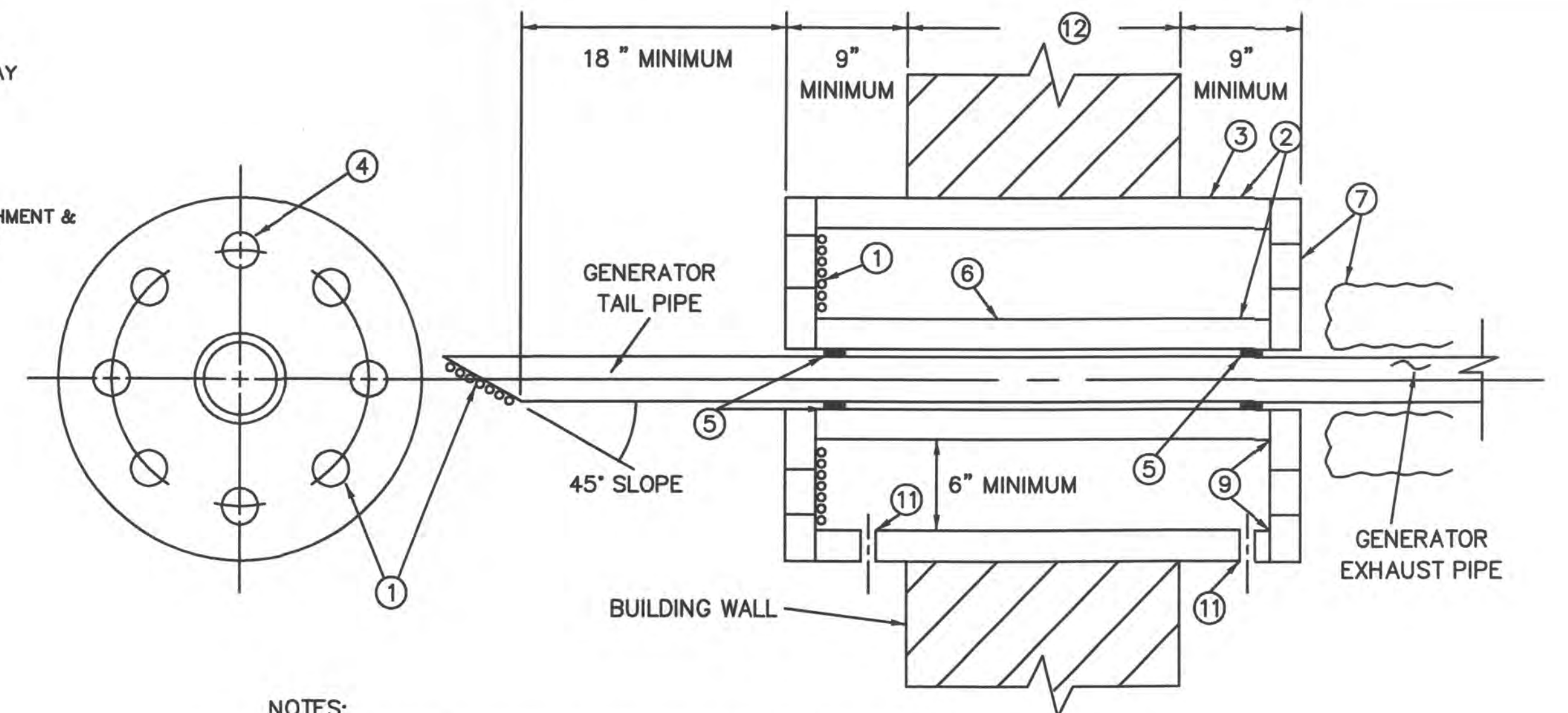


AREA LIGHTING DETAIL

SCALE: 1" = 2'-0"

4
E4

- NOTES:
1. PAINT LIGHT FOUNDATION ABOVE GRADE WITH TRAFFIC YELLOW PER ENGINEER'S FIELD INSTRUCTIONS.
 2. INSTALL 1" RMC FROM POLE TO INTERIOR OF BUILDING. PLAN CONDUIT ENTRY SO THAT CONDUIT DEFLECTION DUE TO REBAR IS AVOIDED. INSTALL GROUNDING BUSHING ON CONDUIT AND BOND TO POLE STUD WITH #6 BC. BOND GRN. EQUIPMENT GROUNDING WIRE FROM BRANCH CIRCUIT TO POLE STUD. CARRY GRD TO LUMINAIRE.
 3. NOTE DIFFERENT LUMINAIRE MOUNTING LOCATION FOR THE ASSEMBLY TYPE "A" AND TYPE "B".



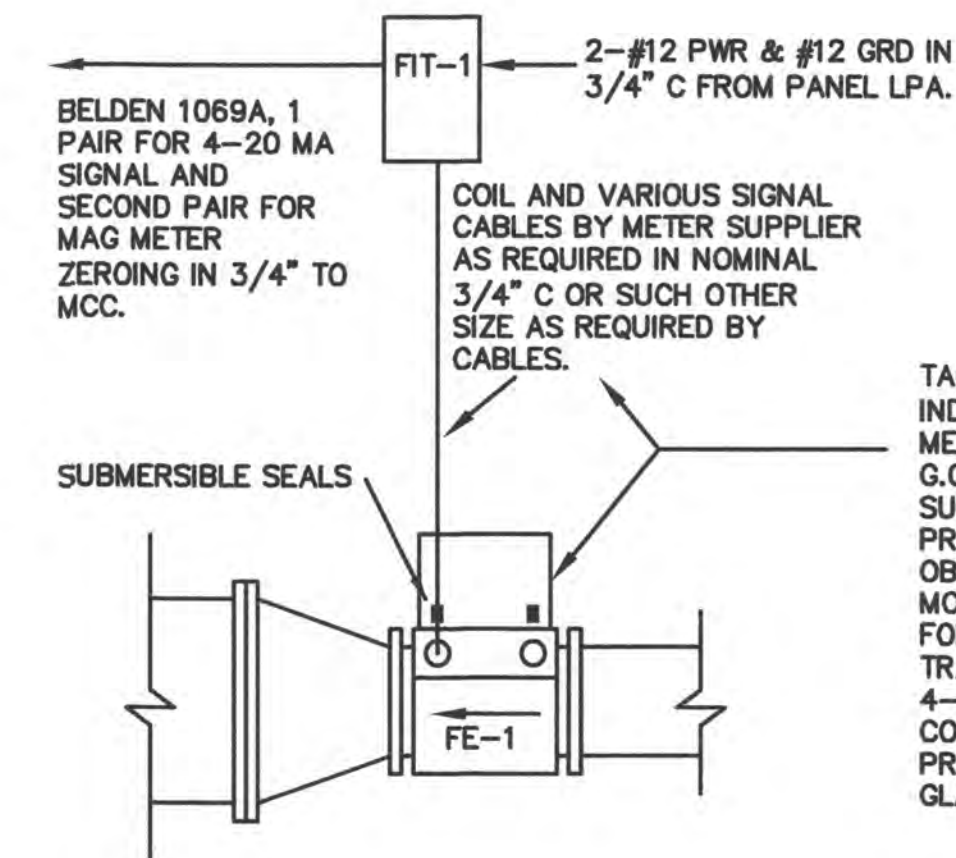
NOTES:

1. 1/2" MESH SCREEN ON EXHAUST PIPE AND THIMBLE OUT SIDE END ONLY
2. CONCENTRIC SCHEDULE 40 STEEL PIPE
3. OUTER PIPE 20" NOMINAL FOR EXHAUST PIPE SIZES 6" AND SMALLER
4. 8 HOLES, 3" DIAMETER ON 7" RADIUS CIRCLE, EACH END (FOR 6" AND SMALLER EXHAUST PIPES)
5. FIRE PROOF PACKING ROPE, NON-ASBESTOS
6. INNER PIPE SIZE TO BE CHOSEN TO FIT OVER EXHAUST PIPE. CONTRACTOR TO CONFIRM SIZE
7. INSULATE EXHAUST PIPE WITHIN BUILDING BUT DO NOT OBSTRUCT COOLING HOLES IN THIMBLE.
8. END PLATES NOMINAL 1/8" STEEL.
9. CONTINUOUS WELD END PLATES TO STEEL PIPE BOTH ENDS.
10. HOT DIP GALVANIZE THIMBLE AFTER COMPLETE FABRICATION AND DRILLING PER SPECIFICATION 05910 "GALVANIZING."
11. 1/2" WEEP HOLES, BOTH ENDS. INSTALL WEEP HOLES DOWN SO AS TO DRAIN.
12. CONTRACTOR TO CONFIRM WALL THICKNESS AND ADJUST TOTAL THIMBLE LENGTH TO BE W.T. + 18".
13. SUBMIT SHOP DRAWING FOR ENGINEER'S REVIEW BEFORE FABRICATION.

GENERATOR EXHAUST PIPE WALL THIMBLE DETAIL

NOT TO SCALE

2
E4



MAGNETIC FLOW METER

NOT TO SCALE

3
E4

STATE OF OHIO
RALPH B. HOFFMAN
37934
REGISTERED PROFESSIONAL ENGINEER
Signed: *Ralph B. Hoffman*
Date: *March 20, 2006*

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SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION

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Date: March 17, 2006
Scale:
Job No: 2004-0517
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MCC NO. 1 SPECIFICATIONS

WIRE
 NEMA CLASS/TYPE: 1-S
 NEMA TYPE: B-D
 DIAGRAM POCKET LOCATION: UNIT

ENCLOSURE
 DEPTH: FRONT MOUNTING, 15" DEEP
 NEMA TYPE: NEMA 1 GASKETED
 PAINT: ANSI 49
 WIREWAY TIE BARS

INCOMING SUPPLY 480/277 V, 4 WIRE WYE WHILE ON UTILITY;
 SUPPLY VOLTAGE: 480/277 V, 4 WIRE WYE WHEN ON STANDBY WIRE;
 GENERATOR

CONNECTION: 400 AMP MAIN LUGS
 PHASE CABLE NUMBER: 1
 PHASE CABLE SIZE EA.: 350 KMC
 PHASE CABLE MATERIAL: COPPER
 PHASE CABLE LUG TYPE: MECHANICAL PRESSURE
 PHASE CABLE ENTRY: TOP

BUS WORK
POWER BUS
 RATING AMPERES: 600
 MATERIAL: TIN PLATED ALUMINUM
NEUTRAL BUS NONE
 HORIZONTAL RATING: NO L-N LOADS
 VERTICAL RATING: N/A
 MATERIAL: N/A
 LOCATION N/A
 CONNECTION PLATE LOCATION: N/A
 NEUTRAL CABLE NUMBER: N/A
 NEUTRAL CABLE SIZE EA.: N/A
 NEUTRAL CABLE MATERIAL: N/A
 NEUTRAL CABLE LUG TYPE: N/A
 COMMENTS: REMARKS

GROUND BUS
 MATERIAL: TIN PLATED COPPER
 DIMENSIONS: 1/4" X 2"
 LOCATION: MFG'ER'S STD
 COPPER GROUND CABLE SIZE: #2/0 COPPER
 NUMBER OF GROUND CABLES: 1
 VERTICAL GROUND BUS: STEEL PLUG-IN

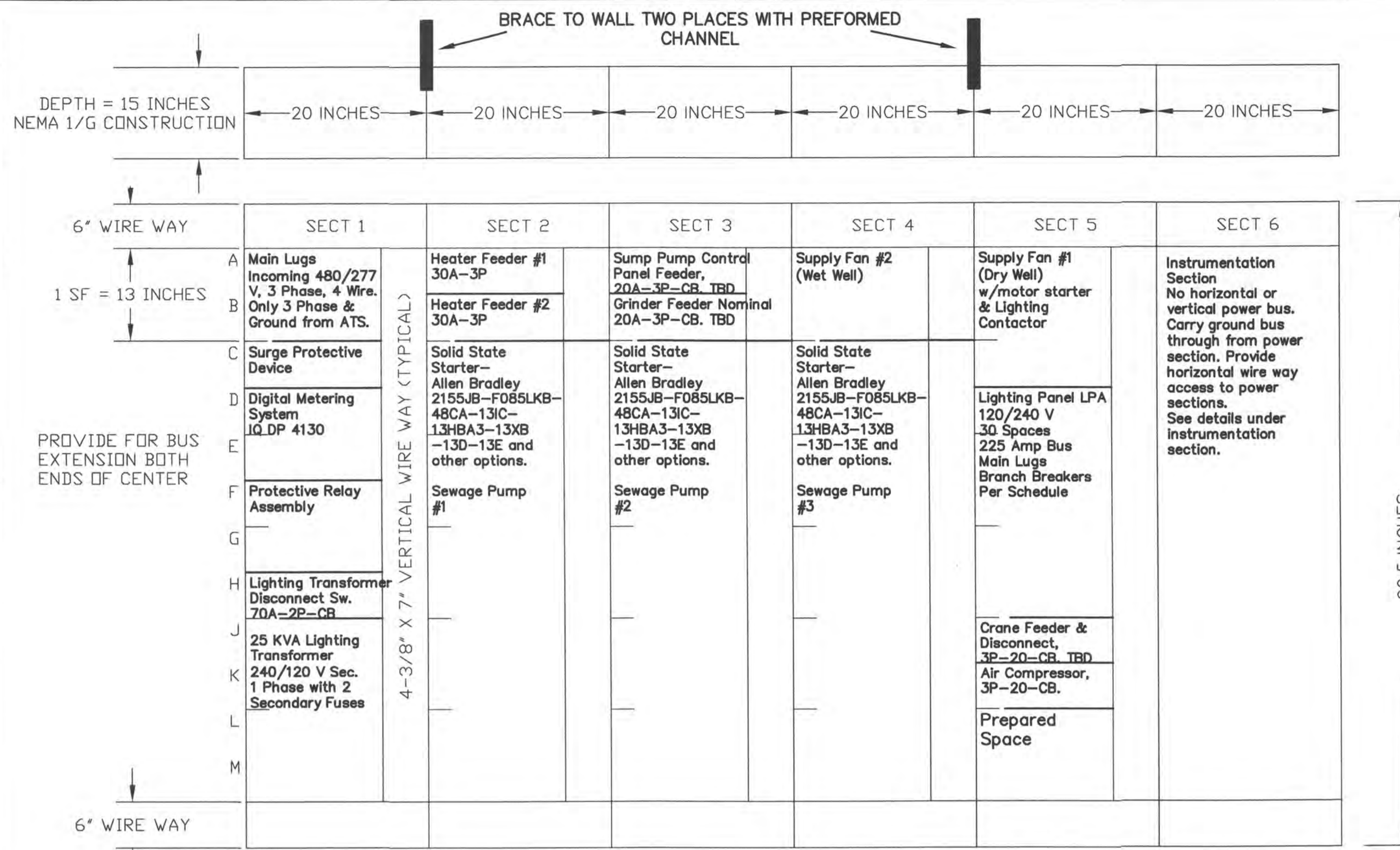
BRACING
 AVAILABLE SHORT CIRCUIT CURRENT (RMS SYMMETRICAL)
 25,000 AMPS. SYMMETRICAL
 FULLY RATED SYSTEM (AMPERES RMS SYMMETRICAL)
 42,000 AMPERES

ADDITIONAL REQUIRED FEATURES:
 PROTECTIVE CAPS FOR PLUG-IN STAB OPENINGS
 STAINLESS STEEL NAMEPLATE SCREWS
 INSULATE HORIZONTAL BUS
 INSULATE VERTICAL BUS OR PROVIDE GLASS FILLED POLYCARBONATE STRUCTURE AND SANDWICHED BY SIMILAR MOLDED COVER.
 S.E. PULL BOX: N/A
 FEEDER PULL BOX: N/A
 PULL BOXES TO MATCH MCC PAINT OR BE HOT DIP GALVANIZED
 PROVIDE FOR HORIZ. BUSS EXTENSION, BOTH ENDS

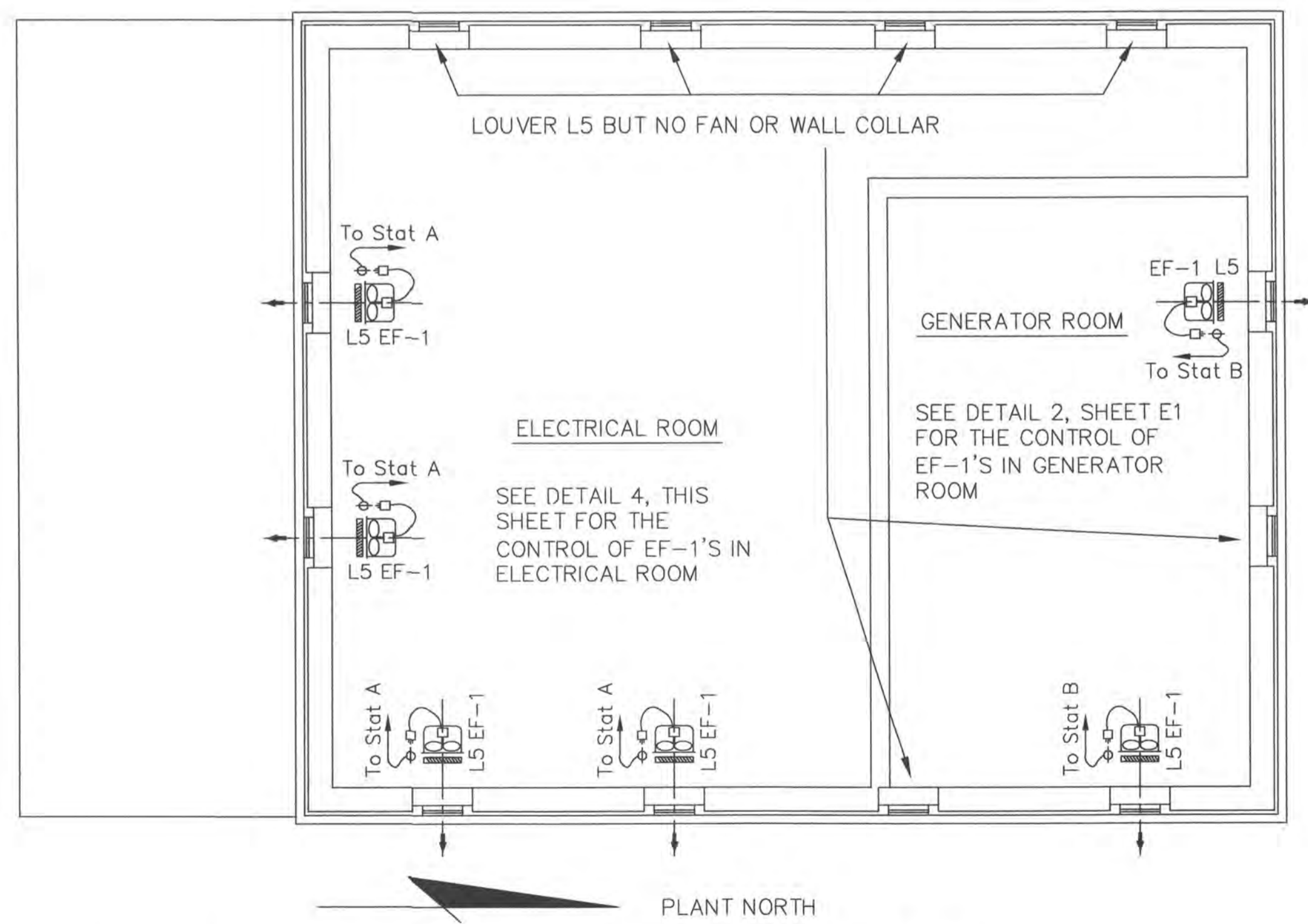
"TBD" INDICATES THAT THE REQUIREMENT IS TO BE DETERMINED BASED UPON OTHER EQUIPMENT. DATA WILL GENERALLY BE AVAILABLE AT SHOP DRAWING REVIEW TIME. IT IS UNDERSTOOD THAT QUOTATIONS ARE BASED UPON THE SIZE AND QUANTITY INDICATED ON THE DRAWINGS. CHANGES IN INTERRUPTING RATINGS, NEMA STARTER SIZES, AND SIMILAR INCREASED REQUIREMENTS WILL BE BASED UPON AN EQUITABLE PRICE INCREASE.

PROVIDE 2" X 6" PHENOLIC MASTER N.P.
 (WHITE BACKGROUND) READING:

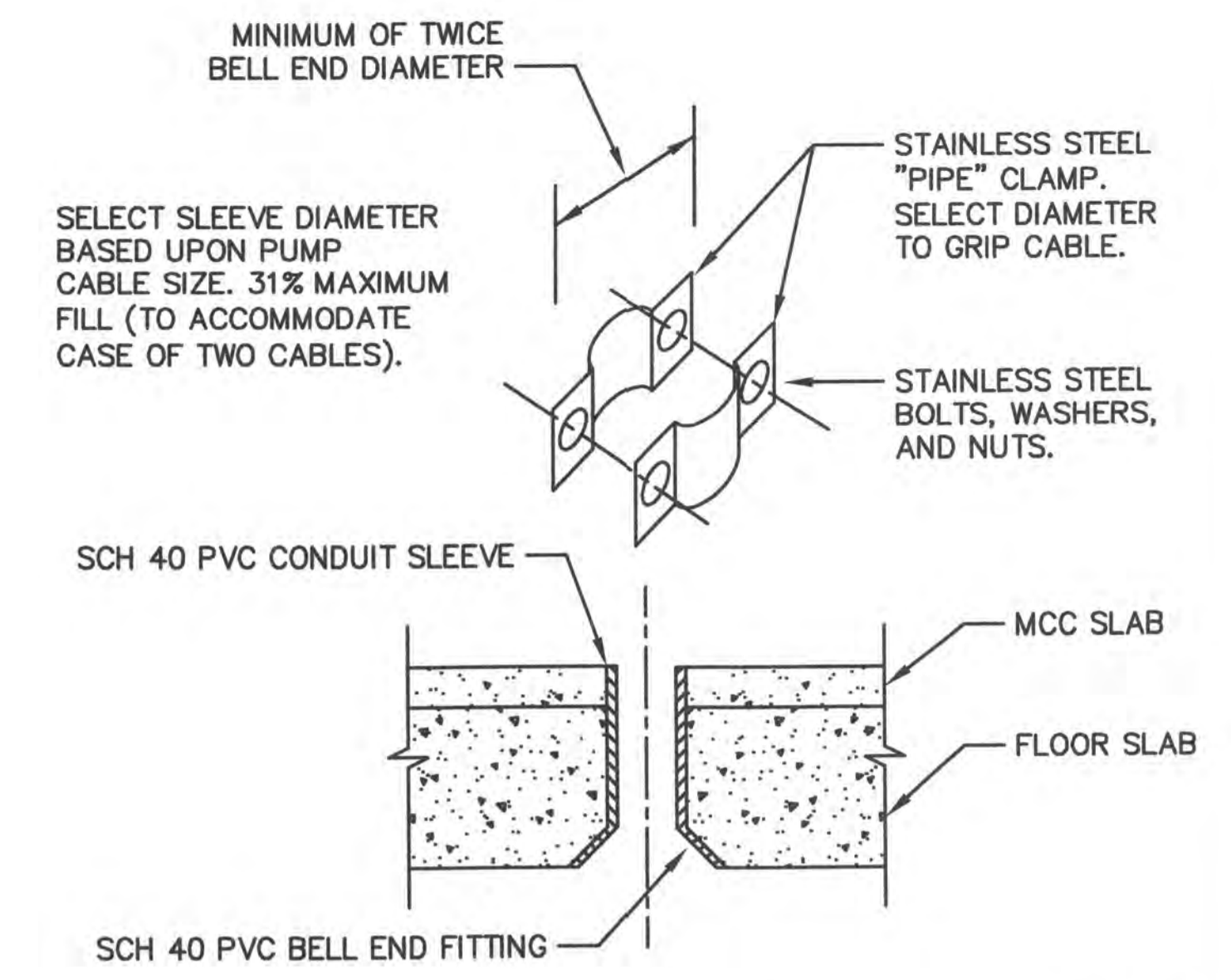
NORTHSTAR PUMP STATION
 MCC NO. 1
 480 / 277 VOLTS AC, 350 MAIN BREAKER
 4 WIRE WYE



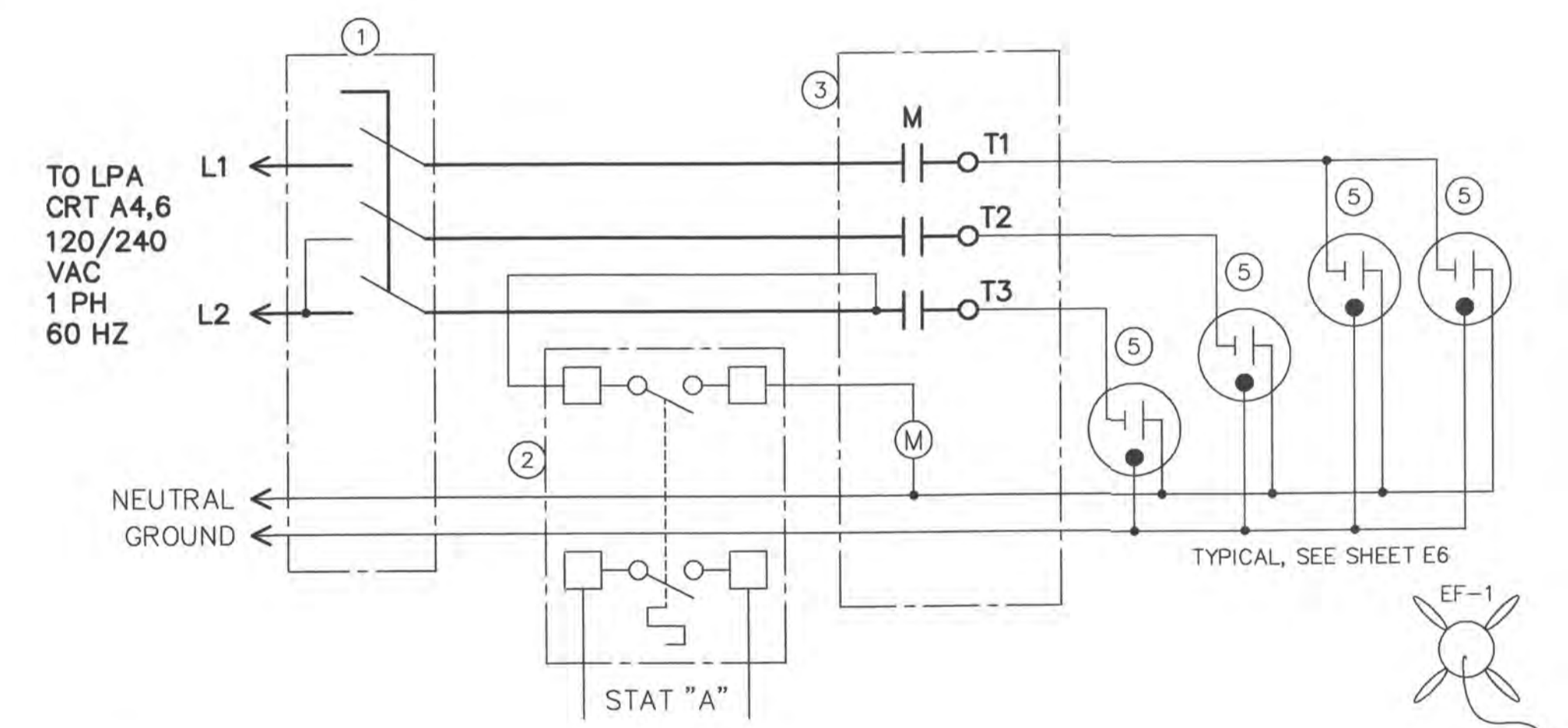
MCC 1, ELEVATION DETAIL 1
 NOT TO SCALE E6



CEILING LEVEL EXHAUST FANS & LOUVERS 3
 SCALE: 1/4" = 1' - 0" E6



PUMP CABLE SLEEVE & CLAMP 2
 NOT TO SCALE E6



NOTES:
 1. NON FUSED DISCONNECT, 3P, 240 V, 30 AMP, SQUARE D DU321
 2. THERMOSTAT, HONEYWELL T678C, 55 TO 85 DEG F. 2 SPDT, OPERATE IN UNISON. MOUNT 5" AFF. STRETCH CAPILLARY TUBE VERTICALLY ON WALL.
 3. MOTOR RATED CONTACTOR, NEMA SIZE 1, NEMA 1 ENCLOSURE. ALLEN BRADLEY 500-BAD93
 4. 2-#16 & #14 GRD TO SF-1 STARTER. SEE DETAIL 5 SHEET E9.
 5. HUBBELL SINGLE DEVICE RECEPTACLE, PART NO. HBL4710. TO SERVE AS LOCAL DISCONNECT FOR FAN.
 6. EQUIP FAN WITH HUBBELL PLUG, PART NO. HBL4720C.

EF-1 CONTROLLER IN ELE. ROOM 4
 NOT TO SCALE E6

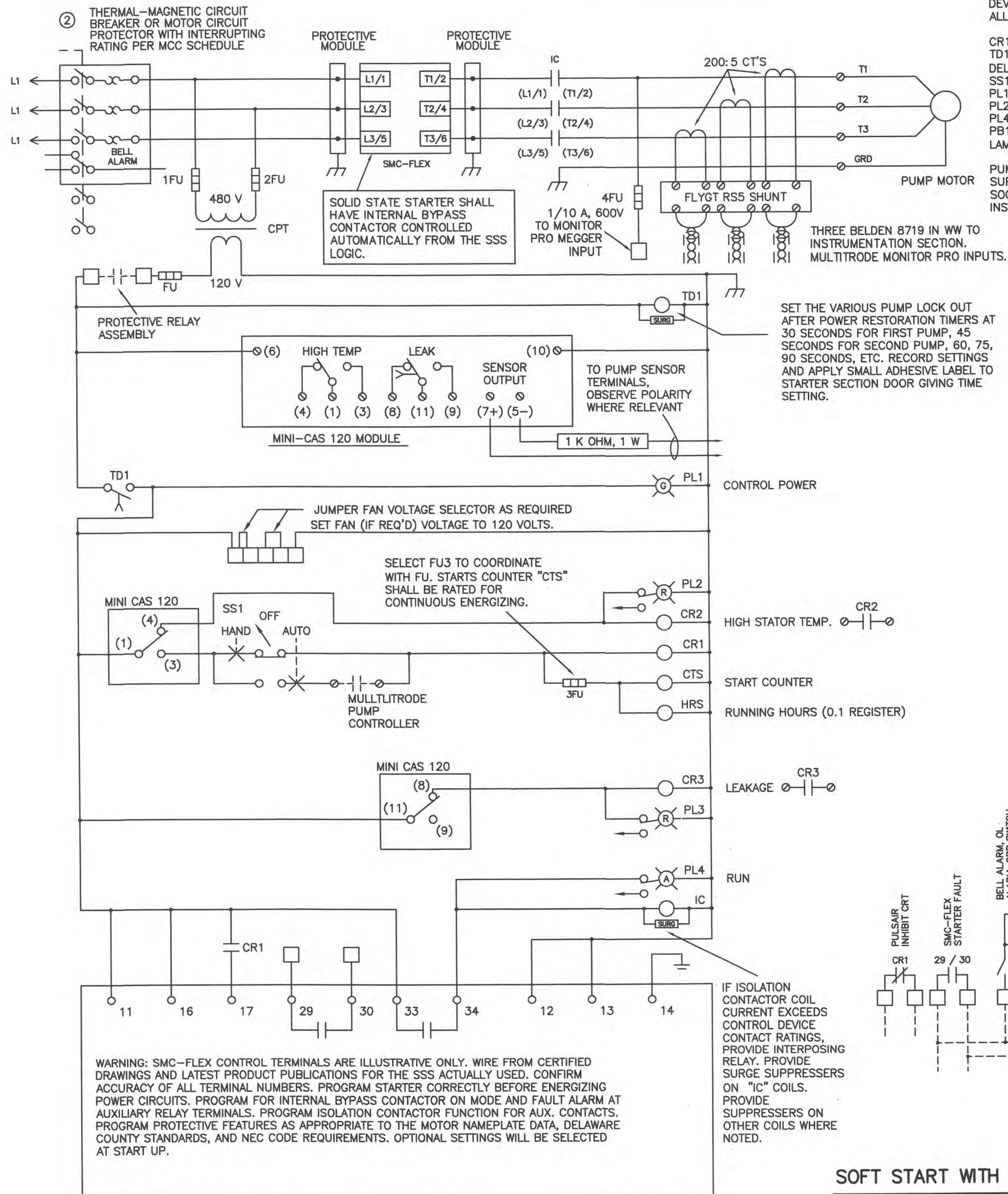
STATE OF OHIO
 RALPH B. HOFFMAN
 37934
 REGISTERED PROFESSIONAL ENGINEER

Signed: *Ralph B. Hoffman*
 Date: *March 20, 2006*

DELAWARE COUNTY, OHIO
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 FOR
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 PUMP STATION

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 Job No: 2004-0517
 Sheet: 22 of 30



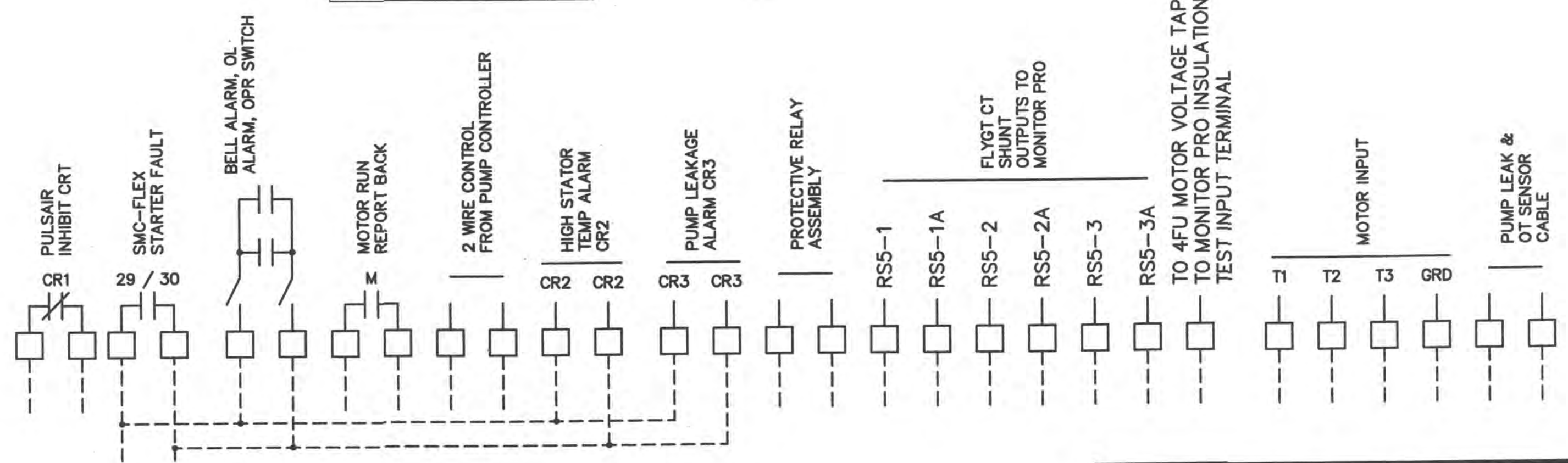
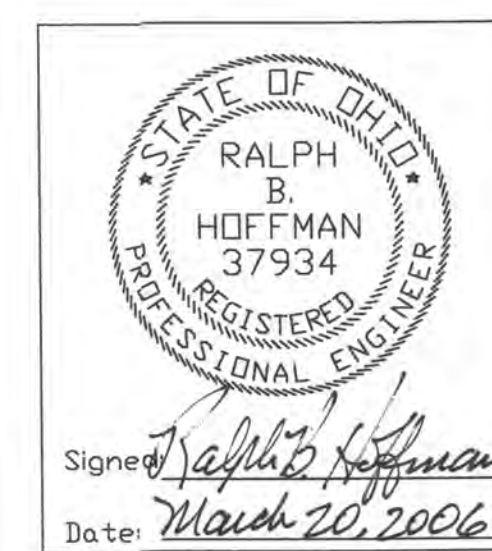
DEVICE DESCRIPTORS:
ALL DEVICES BY ALLEN-BRADLEY

CR1, CR2, CR3: 700-HB33A1
TD1: 700-P200A1 WITH 700-PSDA1 ON DELAY TIMING ATTACHMENT (6-120 SECONDS)
SS1: 800T-J2B
PL1: 800T-P16G
PL2, PL3: 800T-PT16R
PL4: 800T-PT16A
PB1: 800T-A2A
LAMPS: #755 LONG LIFE

PUMP SUPPLIER SHALL PROVIDE MCC SUPPLIER WITH MINI-CAS 120 MODULES, SOCKETS, APPURTENANCES AND WIRING INSTRUCTIONS.

NOTES

1. TERMINAL NUMBERS SHOWN ARE BASED UPON UNCERTIFIED DOCUMENTS. WIRE ONLY FROM CERTIFIED MANUFACTURER'S DRAWINGS. CORRECT WIRE DIAGRAMS AS REQUIRED BASED UPON CERTIFIED DRAWINGS.
2. INSERT SHORT CIRCUIT AND GROUND FAULT PROTECTION WITH INTERRUPTING RATING EQUAL TO OR EXCEEDING AVAILABLE FAULT CURRENT LISTED IN MCC SCHEDULE.
3. WIRING DIAGRAM IS BASED UPON THE USE OF FLYGT PUMPS AND FLYGT MINI-CAS 120 MODULE. USE OF OTHER PRODUCT MAY REQUIRE CHANGE IN STARTER LOGIC SHOWN ON DIAGRAM.
4. WIRING DIAGRAM IS BASED UPON THE USE OF AN ALLEN-BRADLEY (ROCKWELL) MODEL 2155 SMART MOTOR CONTROLLER PLUS WITH ISOLATION CONTACTOR. ISOLATION CONTACTOR SHALL BE RATED 600 VOLTS, AMPERE & HP RATING SELECTED BY MANUFACTURER AS REQUIRED CONSIDERING SPECIAL APPLICATION. NOTE THE ISOLATION CONTACTOR NON-STANDARD POSITION IN CIRCUIT. POSITION IS CHOSEN TO SUPPORT MOTOR INSULATION TESTING AFTER EACH MOTOR RUN. USE OF ANY OTHER BRANDS AND MODELS THAN THOSE SPECIFIED MAY REQUIRE CHANGE IN WIRING. CONFIRM WIRING AS COMPLYING WITH AND COMPATIBLE WITH CURRENT ALLEN-BRADLEY OFFERING.
5. PROVIDE INTERPOSING RELAYS WHERE CONTACT RATINGS ARE EXCEEDED BY ANY EQUIPMENT.
6. PROVIDE SURGE SUPPRESSORS ON ALL POWER CONTACTOR COILS.
7. INSURE THAT OVER LOAD RELAY CONTACT RATINGS ARE NOT EXCEEDED BY CONTROL CIRCUIT CURRENTS.
8. CHECK FAN VOLTAGE CONNECTION CORRECTNESS BEFORE ENERGIZING.
9. BECAUSE OF NON-STANDARD POSITION OF ISOLATION CONTACTOR AND INSULATION RESISTANCE MONITORING, APPLY WARNING LABELS TO EQUIPMENT (MCC INSERTS AND AT MOTOR TERMINAL COMPARTMENTS) DESIGNED IN ACCORDANCE WITH ANSI Z535.4-CURRENT EDITION, STATING: "WARNING: HAZARDOUS VOLTAGES ARE PRESENT AT MOTOR EVEN WHEN SOLID STATE MOTOR STARTER IS "OFF". LOCK OUT AND TAG OUT STARTER CIRCUIT BREAKER AND INSULATION TESTER MONITOR-PRO BEFORE ATTEMPTING MAINTENANCE ON MOTOR OR SOLID STATE STARTER".
10. APPLY WARNING LABELS TO EQUIPMENT (MCC INSERTS AND AT MOTOR TERMINAL COMPARTMENTS) DESIGNED IN ACCORDANCE WITH ANSI Z535.4-CURRENT EDITION, STATING: "WARNING: ARC FLASH HAZARD EXISTS IN AND ABOUT THIS EQUIPMENT WHEN WORKED ON LIVE. MAINTENANCE WORK SHALL ONLY BE PERFORMED BY QUALIFIED PERSONS. WEAR ARC FLASH PERSONAL PROTECTIVE EQUIPMENT DESIGNED FOR THE HAZARD INVOLVED WHENEVER WORKING ON THIS EQUIPMENT WHILE ENERGIZED. FAILURE TO ADHERE TO THIS REQUIREMENT MAY RESULT IN SEVERE BODILY INJURY, INCLUDING DEATH. CLOSE AND LATCH ALL EQUIPMENT DOORS AND COVERS TO MAINTAIN EQUIPMENT RATINGS AND PROTECTION."
11. PROVIDE MCC SUPPLIER FACTORY TRAINED AND CERTIFIED START UP TECHNICIAN. TECHNICIAN SHALL RECORD ALL SETTINGS IN A WRITTEN REPORT TO ENGINEER.
12. INCLUDE THE FOLLOWING MAJOR COMPONENTS AS PART OF COMBINATION STARTER:
2155J SMC-FLEX SMART MOTOR CONTROLLER WITH CIRCUIT BREAKER (HMCP)
F085 CURRENT RATING
L LINE CONNECTED
K NEMA 1 W/GASKET (MAY BE WAIVED IF NEEDED FOR HEAT DISSIPATION)
B CONTROL VOLTAGE (120 SEC.)
48CA FOR 60 HP MOTOR
13IC ISOLATING CONTACTOR (LOAD SIDE OF SMC)
13HBA3 HMI
13XB PUMP CONTROL OPTION
13D PROTECTIVE MODULE LINE SIDE
13E PROTECTIVE MODULE LOAD SIDE



SOFT START WITH MINI CAS 120 MODULE, DETAIL "B"

NOT TO SCALE

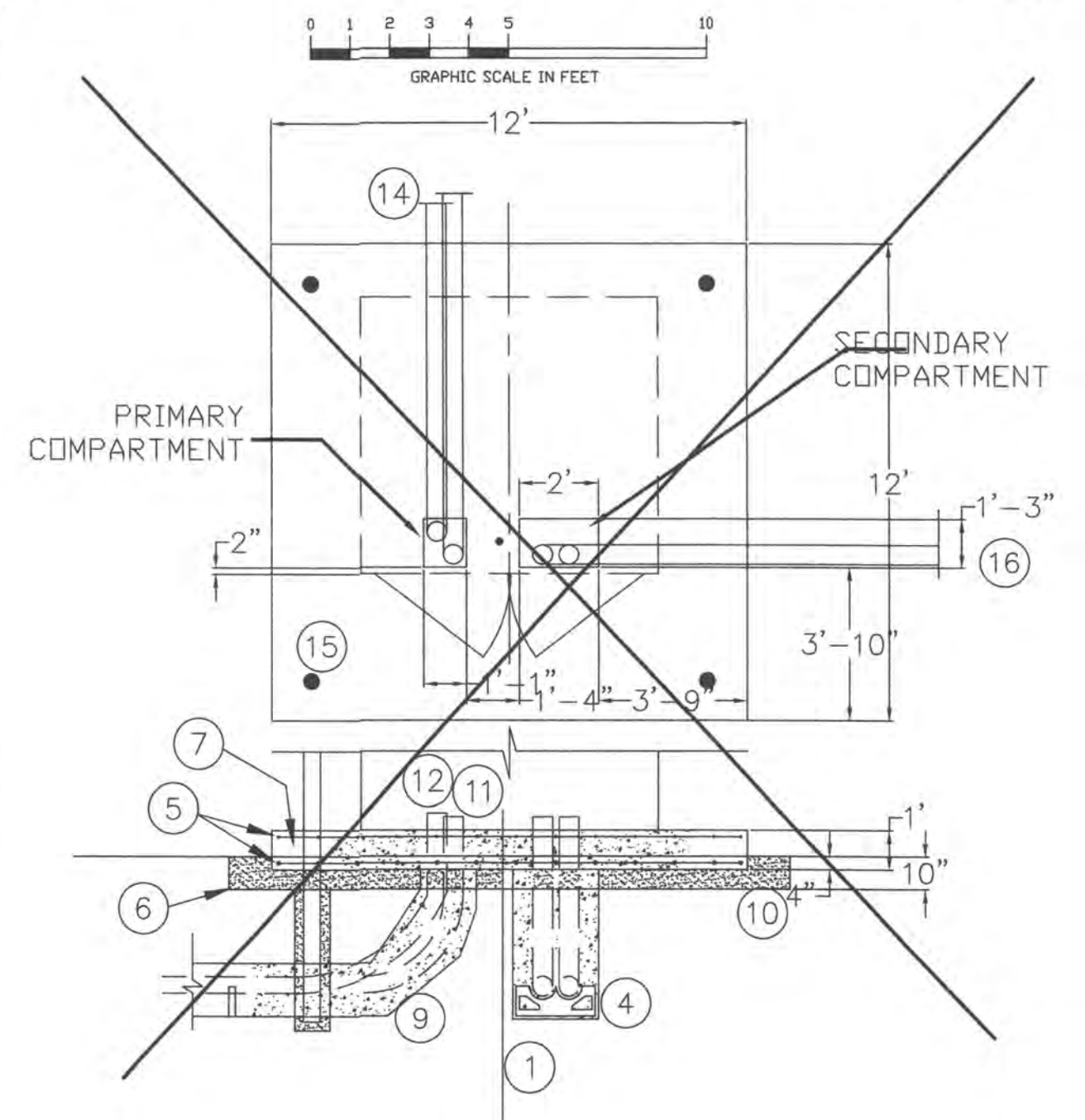


E8

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION

EMHT
Evans, Mechwart, Hombleton & Tillon, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43254
Phone: 614.775.4500 Fax: 614.775.4800

Date: March 17, 2006
Scale:
Job No: 2004-0517
Sheet: 24 of 30



NOTES

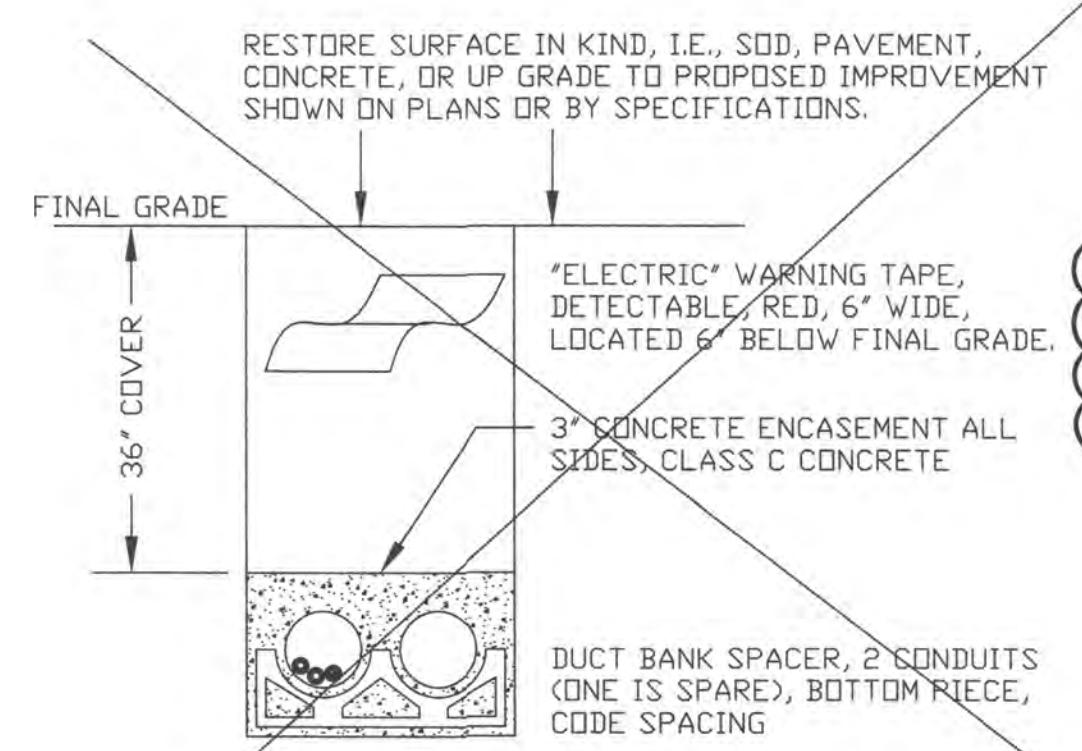
CONSOLIDATED ELECTRIC CO. (PWR. CO.) WILL SUPPLY A PREFABRICATED VAULT ALONG WITH ALL PRIMARY CABLE, CONDUIT, AND TRENCHING. CONTRACTOR TO PROVIDE ALL SECONDARY WORK INCLUDING CABLE, CONDUIT, TRENCHING AND ENCASEMENT. PWR. CO. CONTACT IS MR. CLAY HUEBNER, TEL. NO. 1-888-891-7224 X 3139, FAX (419) 949-2839, EMAIL CHUBNER@CONELEC.COM. CONTRACTOR TO STILL PROVIDE BOLLARDS. SECONDARY CONDUIT DEPTH SHALL BE SUFFICIENT TO GO UNDER VAULT BOTTOM AND 45 DEGREE UP INTO VAULT SUBTERRANEAN SPACE.

15. FOUR, BOLLARDS MADE WITH 4" DIA., 10' GALVANIZED THREADED PIPES, WITH THREADED MALLEABLE IRON CAPS. EMBED 4' AND BACK FILL WITH CLASS C CONCRETE.

16. SEE PLAN SCHEDULES FOR SECONDARY CONDUIT AND CABLE REQUIREMENTS. ELBOW POINTING DIRECTIONS ARE GENERIC, SEE SITE PLAN FOR ACTUAL PATH OF CONDUITS.

PAD TRANSFORMER FOUNDATION

SCALE 1/4" = 1' - 0"

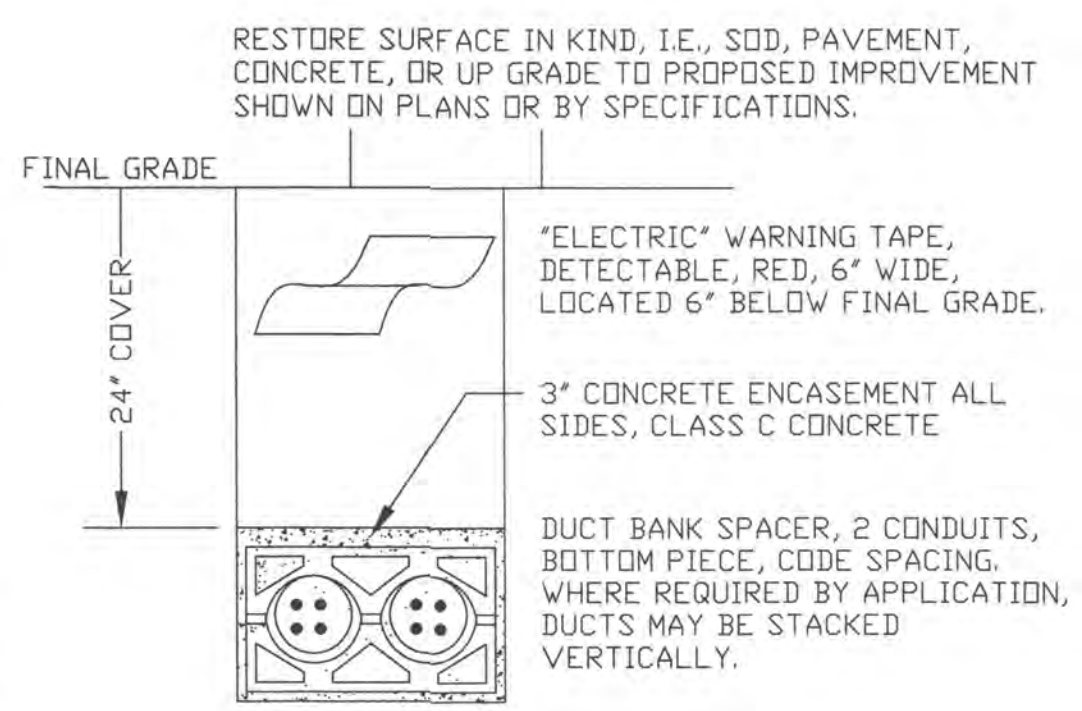


PRIMARY CABLE DUCT BANK

NOT TO SCALE

4
E9

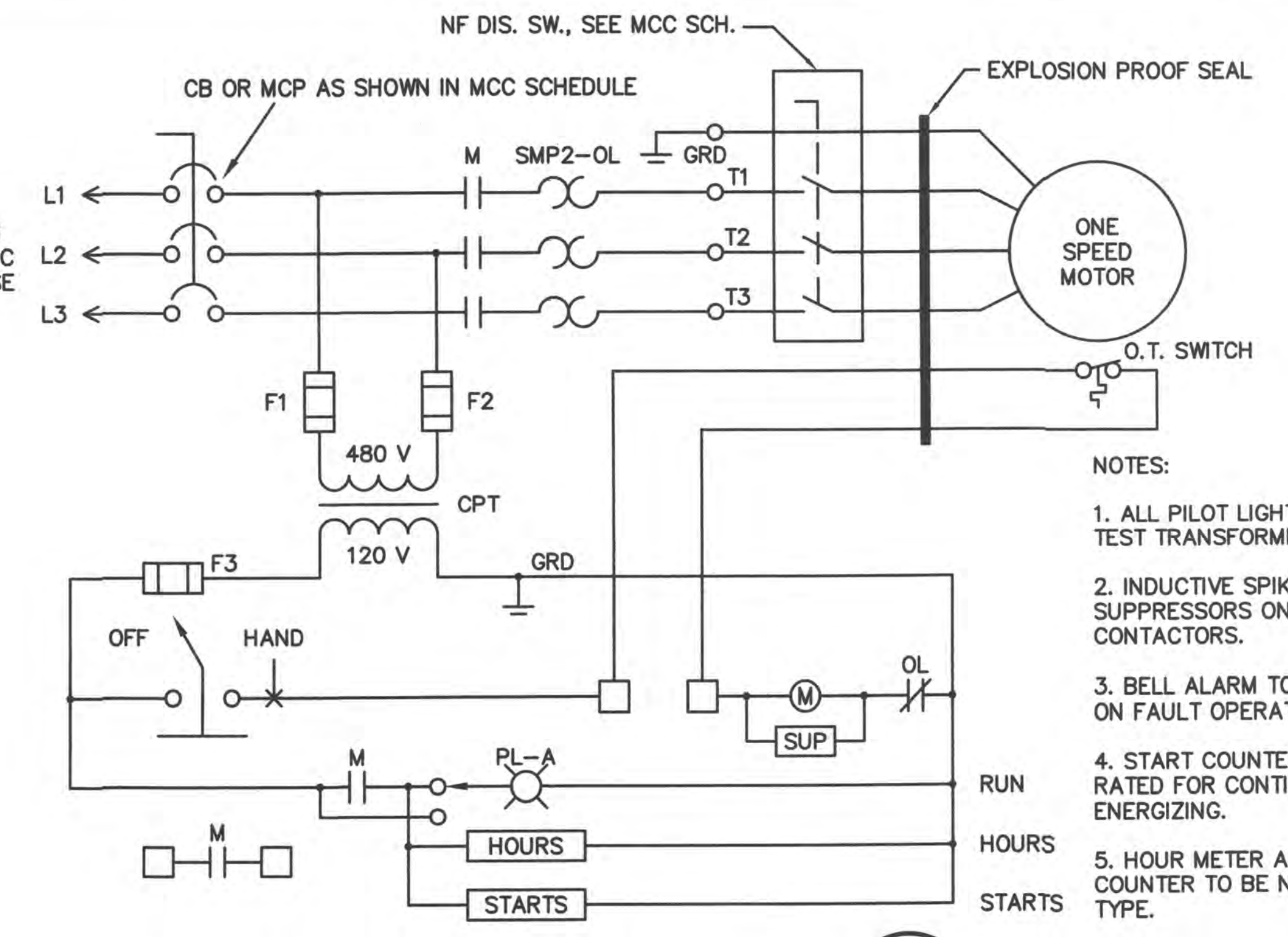
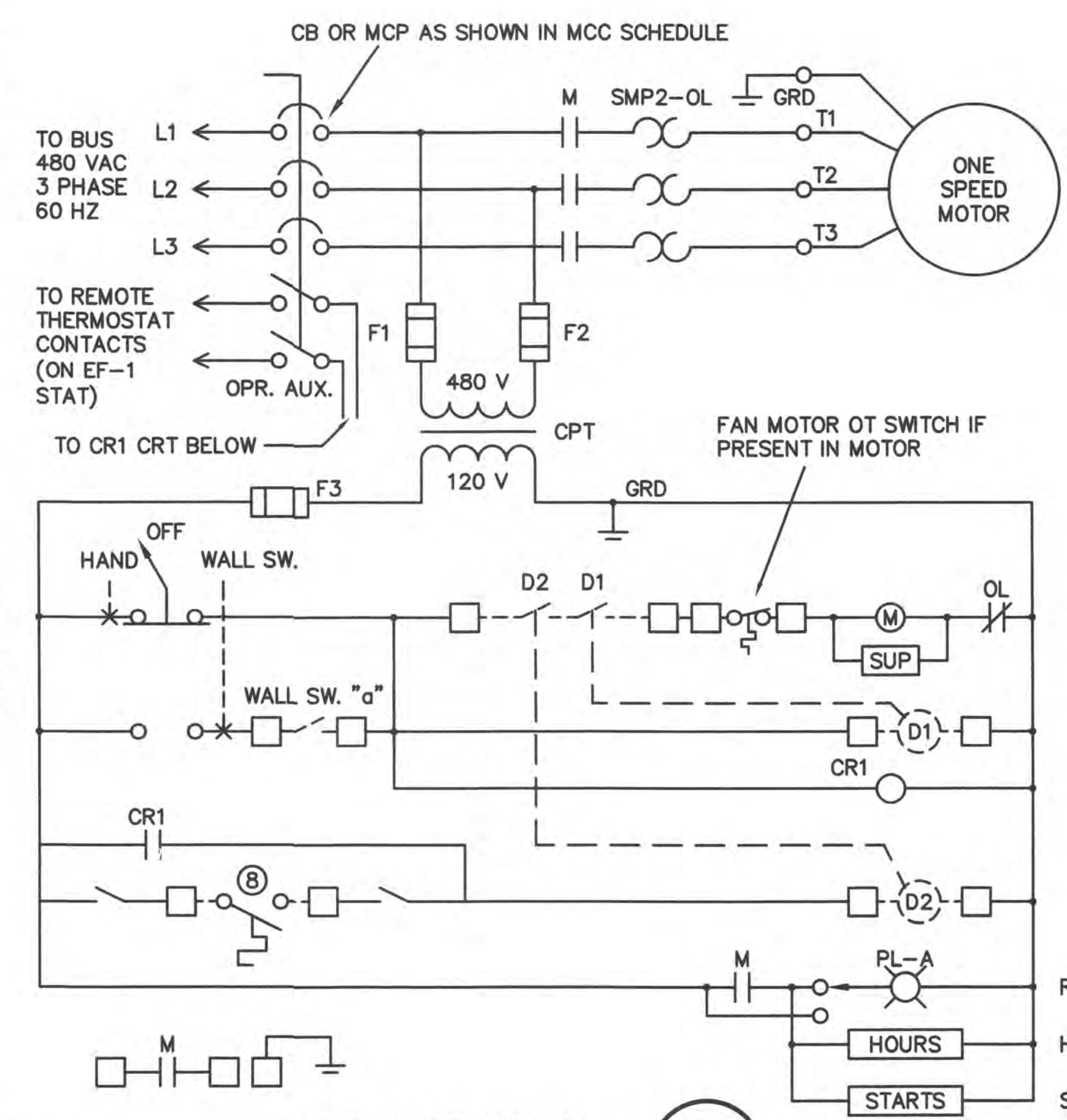
CONSOLIDATED ELECTRIC CO. (ELE. CO.) WILL PROVIDE ALL PRIMARY CABLE, CONDUIT AND TRENCHING.



SECONDARY CABLE DUCT BANK

NOT TO SCALE

2
E9

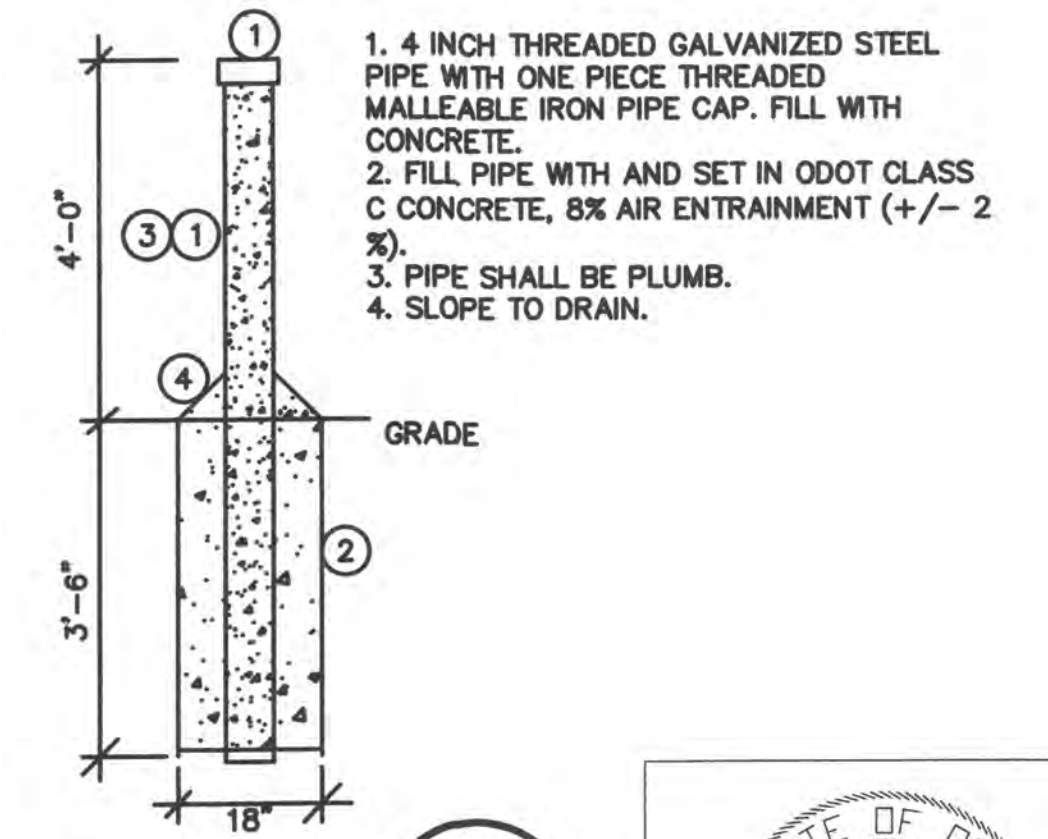


NOTES:

- ALL PILOT LIGHTS PUSH TO TEST TRANSFORMER.
- INDUCTIVE SPIKE SUPPRESSORS ON ALL CONTACTORS.
- BELL ALARM TO CLOSE ONLY ON FAULT OPERATION OF OCP.
- START COUNTER TO BE RATED FOR CONTINUOUS ENERGIZING.
- HOUR METER AND START COUNTER TO BE NON-RESET TYPE.
- PROVIDE DEVICE LABELS AS NOTED ON DRAWING.
- OL SHALL BE A-B SMP-2
- 2-#16, #14 GRD TO THERMOSTAT FOR FANS AT CEILING LEVEL. SEE DETAIL.
- OVERSIZE CONTROL POWER TRANSFORMER FOR ALL LOADS SHOWN. DAMPER MOTORS ARE RATED 120 VAC, 25 WATTS. VA RATING UNKNOWN. HONEYWELL M4182, M4185, M4186, ETC. MODUTROL IV MOTORS.
- PROVIDE ADEQUATE WIRING SPACE FOR LIGHTING LOAD IN AND OUT LEADS.
- PROVIDE WARNING SIGN ON COMPARTMENT DOOR READING: "CAUTION, UNIT DISCONNECT DOES NOT DE-ENERGIZE ALL SOURCES OF POWER. TURN OFF LIGHTING PANEL CIRCUIT BREAKERS LISTED: LPA A9, A11, A13, A15."

NOTES:

- ALL PILOT LIGHTS PUSH TO TEST TRANSFORMER.
- INDUCTIVE SPIKE SUPPRESSORS ON ALL CONTACTORS.
- BELL ALARM TO CLOSE ONLY ON FAULT OPERATION OF OCP.
- START COUNTER TO BE RATED FOR CONTINUOUS ENERGIZING.
- HOUR METER AND START COUNTER TO BE NON-RESET TYPE.
- PROVIDE DEVICE LABELS AS NOTED ON DRAWING.
- OL SHALL BE A-B SMP-2
- OVERSIZE CONTROL POWER TRANSFORMER FOR ALL LOADS SHOWN.



BOLLARD DETAIL

NOT TO SCALE

6
E9

STATE OF OHIO
RALPH B. HOFFMAN
37934
REGISTERED PROFESSIONAL ENGINEER

Signed: *Ralph B. Hoffman*
Date: *May 12, 2006*

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4500 Fax: 614.775.4900

Date: March 17, 2006
Scale:
Job No: 2004-0517
Sheet: 25 of 30

E9

LEADING ITEM DESCRIPTION (Not a complete Bill of Material)		
SYMBOL	QTY.	DESCRIPTION
CR1,2,3,4	6	RELAY, A-B, 700-HB33A1, 120 VAC COIL, 3PDT
TD1	1	RELAY, A-B, 700-FSB4UU23 RANGE 0.15 TO 3 MIN., SET BY TEST
TD2, TD3	2	RELAY, A-B, 700-FSA4UU23 RANGE 1.5-30 SEC., SET 15 SEC.
SS1	1	SELECTOR SWITCH, A-B, 800T-J2B
PL1	1	PILOT LIGHT, A-B 800T-P16G, GREEN, TRANSFORMER
PL2	2	PILOT LIGHT, A-B 800T-PT16R, RED, PUSH TO TEST, TRANSFORMER, 120 V INPUT
PL3,4,5	3	PILOT LIGHT, A-B 800T-PT16A, AMBER, PUSH TO TEST, TRANSFORMER, 120 VAC INPUT
N/A	10	PILOT LAMPS, #755 LONG LIFE LAMP (SPARES)
MINI-CAS120	4	PUMP MODULE, FLYGT, MINI-CAS 120, 120 VAC POWERED, ONE IS SPARE
MT3PC	1	MULTI-TRODE TRIPLEX PUMP CONTROLLER MODEL MT3PC
MONPRO3	1	MULTI-TRODE MONITOR PRO MODEL MONPRO3
N/A	1	MULTI-TRODE "OUTPOST" STATION LICENSE & SOFTWARE AS MAY BE REQUIRED BY MULTI-TRODE TO ADD TWO (2) STATIONS TO THE DELAWARE COUNTY SYSTEM. LICENSES SHALL COVER BOTH THE LIFT STATION AND THE WASTE WATER TREATMENT PLANT.
SR5	3	MULTI-TRODE, CT SHUNT, SR5 (ONE SHUNT FOR 3 CT'S)
PROBE	1	PROBE, MULTI-TRODE, MODEL 2.0/10/30; 2 METER LONG, 10 ZONES & 30 METER CABLE.
N/A	1	PROBE ACCESSORIES (STANDARD W/PROBE) MTAK-1, MOUNTING KIT
PSDC	1	POWER SUPPLY, REGULATED, 120 VAC TO 13.8 VDC, SOLA/HEVI-DUTY SLS-12-017T
X	X	X
RECEPTACLE	1	GFCI 20 AMP 120 CONVENIENCE RECEPTACLE IN HANDY BOX
LAP TOP	1	LAP TOP COMPUTER SUITABLE FOR RUNNING MULTITRODE SOFTWARE. DELL BRAND.
---	---	PROVIDE ALL NECESSARY ACCESSORIES SUCH AS HARD DRIVE, CABLES, POWER SUPPLY, BATTERIES AND MANUALS.
UPS-1	1	UNINTERRUPTABLE POWER SUPPLY, APC PART NUMBER BR1200
---	---	OUTPUT 780 WATTS, 1200 VA
PROBE	1	PROBE, MULTI-TRODE, MODEL 0.2/1-30; .2 METER LONG, 1 ZONE & 30 METER CABLE.
ISR1	1	INTRINSICALLY SAFE RELAY, WARRICKE (GEMS) 17A1X0 WITH SENSITIVITY RESISTORS SELECT APPROPRIATE SENSITIVITY RESISTOR BY TEST. SAVE UNUSED RESISTORS IN CP.
N/A	1	PROBE ACCESSORIES (STANDARD W/PROBE) MTAK-1, MOUNTING KIT
X	X	X
X	X	X
X	X	X
X	X	X
R1	1	YAGI ANTENNA, CUSHCRAFT PC9013N
R2	1	HOSITING GRIPS, ANDREW 43094
R3	1	HANGER KITS, ANDREW 43211
R4	AS REQ'D	COAXIAL CABLE, 1/2", HELIAX, ANDREW LDF4-50A W/WP N MALE CONNECTORS: L4PNMNM-XX
R5	1	GROUNDING KIT, ANDREW 204989-1
R6	2	SPARE GAS TUBE REPLACEMENTS, ANDREW GASTUBE-090
R7	1	BULKHEAD SURGE ARRESTER, ANDREW APG-BNMF-090
R8	1	JUMPER CABLE, (N MALE), ANDREW F1A-PNMNR-10
R9	1	COLD SHRINK WP KIT, ANDREW 24154B-TBD (TBD TO BE DETERMINED)
R10	1	CONNECTOR/SPLICE WP'ING TAPE KITS, ANDREW 221213
R11	1	MDS-EL805 TRANSNET 900 WITH NETWORK WIDE DIAGNOSTICS

NOTES:

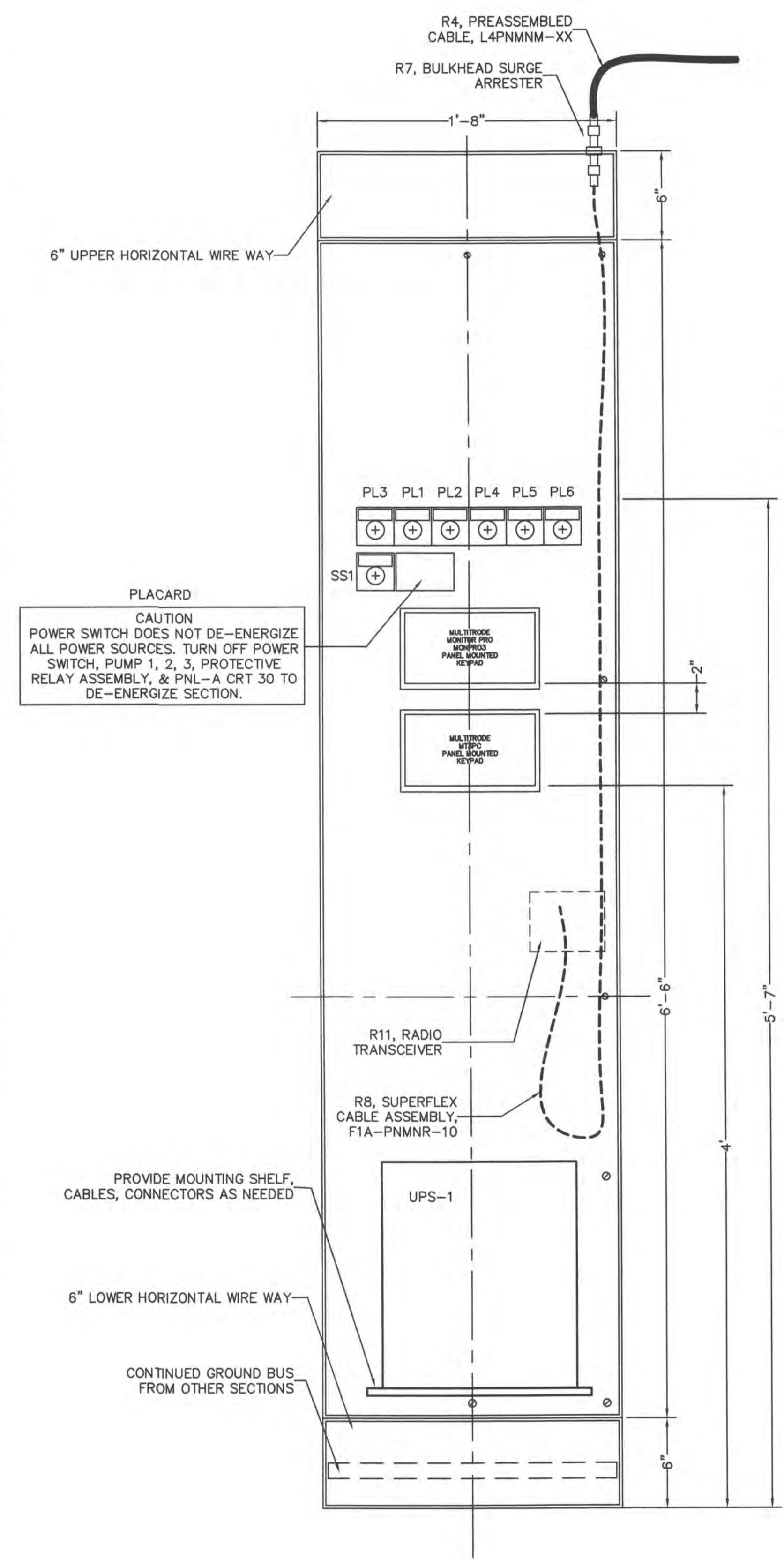
- XX = QUANTITY REQUIRED BUT TO BE DETERMINED BY FIELD MEASUREMENT BY THE CONTRACTOR. FOR EXAMPLE, XX IS OFTEN FEET OF CABLE REQUIRED.
- TBD = TO BE DETERMINED. QUANTITY OR TYPE TO BE DETERMINED DURING CONSTRUCTION BASED UPON OTHER EQUIPMENT SUPPLIED. CONTRACTOR TO NEEDED TYPE AND QUANTITY.
- THIS PARTIAL BILL OF MATERIAL DOES NOT INCLUDE MULTITRODE EQUIPMENT ASSOCIATED WITH THE SUMP PUMP CONTROLLER AND ITS MULTITRODE PROBE AND ACCESSORIES. SEE REQUIREMENTS FOR THESE COMPONENTS ELSEWHERE.

INSTRUMENTATION LEADING ITEMS 1
E11

NOT TO SCALE

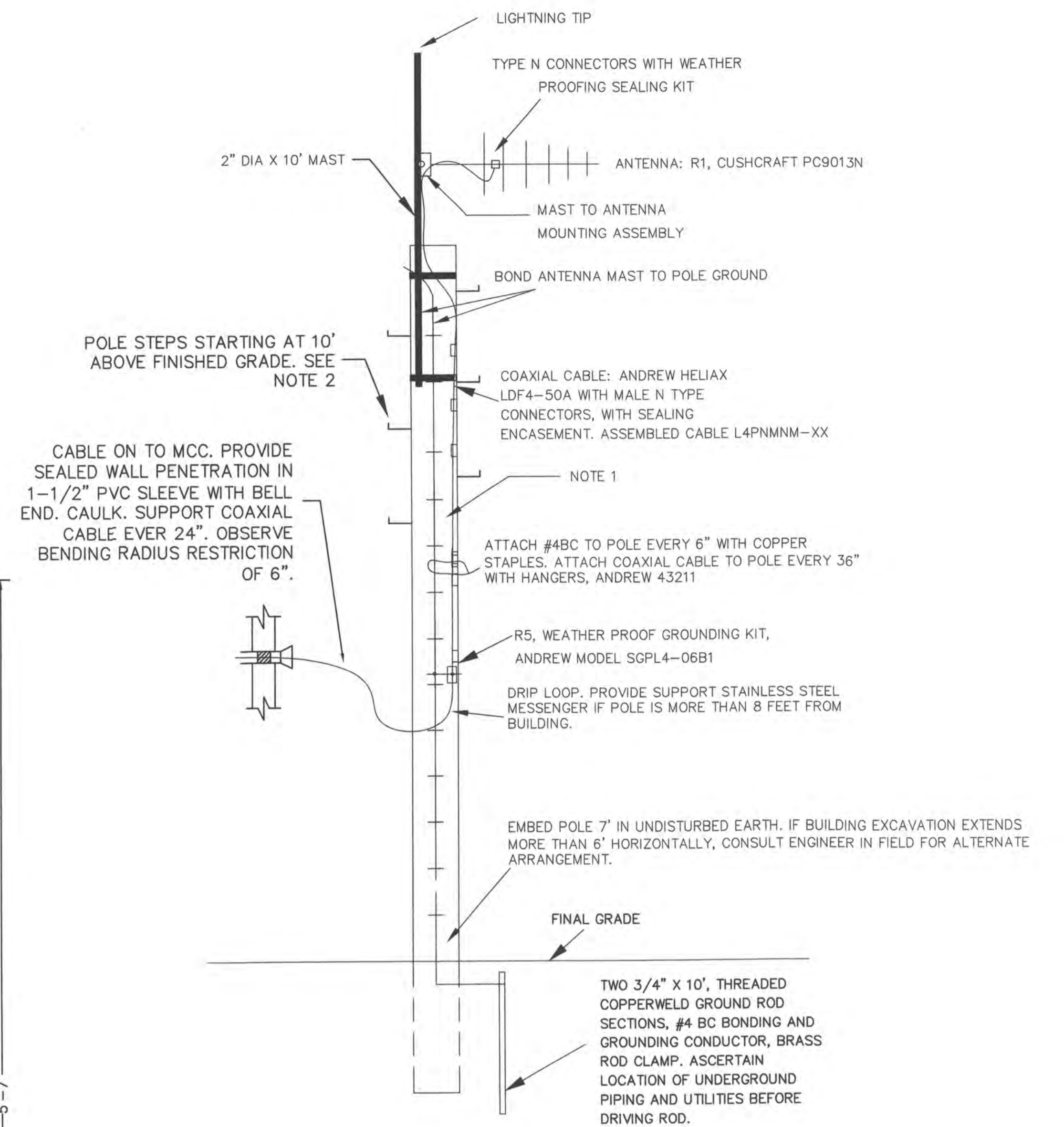
BIDDER / CONTRACTOR
TAKE NOTE OF OFF SITE WORK REQUIRED.

PROVIDE A SCADA ANTENNA, COAXIAL CABLE, WEATHER PROOF GROUNDING KIT, DRIP LOOP, BUILDING PENETRATION, SURGE ARRESTER, MDS TRANSNET 900 RADIO AND MODEM WITH ETHERNET PORT AND RS232 PORT AT THE NORTHSTAR WASTE WATER TREATMENT PLANT, LOCATED APPROXIMATELY TWO MILES FROM THE NORTHSTAR LIFT STATION. ANTENNA WORK IS SIMILAR TO THAT SHOWN IN DETAIL 3 SHEET E11. ALSO PROVIDE A MULTITRODE "OUTPOST" SOFTWARE PACKAGE AND LICENSE. THE ANTENNA WILL BE MOUNTED ON AN EXISTING MAST PROVIDED BY OTHERS. THE SOFTWARE PACKAGE WILL BE INSTALLED ON A BASE STATION COMPUTER SUPPLIED BY OTHERS. PROVIDE FOR COMPUTER PROGRAMMING SERVICES AT THE WASTE WATER TREATMENT PLANT. WORK SHALL INCLUDE COORDINATING AND PROGRAMMING LIFT STATION SCADA DATA REGISTERS WITH THE PLANT SYSTEM SCADA.



INSTRUMENTATION SECTION, MCC 2
E11

SCALE: 1" = 6"



NOTES:

- 50 FOOT CLASS 5, TREATED SYP. SUPPLY IN STRICT ACCORDANCE WITH REA SPEC. DT-5C. DEVELOPER SHALL BE THE REA BORROWER WITH REGARD TO THE INTERPRETATION OF RIGHTS UNDER REA SPEC. DT-5C. PROVIDE INDEPENDENT INSPECTION PLAN. PROVIDE EVIDENCE OF INSPECTION PLAN AND RECORD THAT SPECIFIC POLE WAS SO INSPECTED.
- POLE STEP TREAD SHALL BE AT LEAST 5-3/8" WIDE BUT NOT MORE THAN 8". OUTER ENDS SHALL TURN UPWARD AT LEAST 3/4". STEPS SHALL ALTERNATE, ONE STEP ON ONE SIDE OF THE POLE, THE NEXT STEP ON THE OTHER SIDE OF THE POLE, AND SHALL BE UNIFORMLY SPACED IN ELEVATION AT INTERVALS OF AT LEAST 24", BUT NOT MORE THAN 32" ON EACH SIDE OF THE POLE. STEPS ON EACH SIDE OF THE POLE SHALL BE IN VERTICAL ALIGNMENT.
- BENDING RADIUS OF COAXIAL CABLE SHALL BE NOT LESS THAN 6" OR MANUFACTURER'S RATED RADIUS, WHICH EVER IS GREATER.

SCADA ANTENNA SYSTEM 3
E11

NOT TO SCALE

STATE OF OHIO
 RALPH B. HOFFMAN
 37934
 REGISTERED PROFESSIONAL ENGINEER

Signed: *Ralph B. Hoffman*
 Date: *May 12, 2006*

DELAWARE COUNTY, OHIO
 SANITARY SEWER IMPROVEMENT
 FOR
NORTHSTAR GOLF RESORT
 PUMP STATION

EMHT
 Evans, Mechtwart, Hambleton & Titon, Inc.
 Engineers • Surveyors • Planners • Scientists
 5500 New Albany Road, Columbus, OH 43054
 Phone: 614.775.4500 Fax: 614.775.4600

Date: March 17, 2006
 Scale:
 Job No: 2004-0517
 Sheet: 27 of 30

LIGHTING PANEL "LP-A"					
PANEL DESIGNATION	LP-A	MAIN LUGS	225	ENCLOSURE	
VOLTAGE	120/240	MAIN CIRCUIT BREAKER	N/A	NEMA 1G	YES
NO. OF PHASES	1	INSULATED NEUT. BUS AMPS	YES	NEMA 3R	NO
NO. OF WIRES	3	GROUND BUS AMPS	100	NEMA 12	NO
CONNECTION	---	BRANCH BKRS BOLT ON	YES	NEMA 4X-SS	NO
BUS AMPERE RATING	225	BRANCH BKRS PLUG IN	NO	TOP ENTRY	?
FEED THRU LUGS	NO	UL S.E. LABEL	NO	BOTTOM ENTRY	?
SURFACE MOUNT	N/A	BOND NEUTRAL TO GRD	NO	10 KAIC STD	YES
FLUSH MOUNT	MCC	BKRS RATED "SWD"	YES	BRANCH SPACES	30
COPPER BUS	NO	ALUMINUM BUS	YES	BR BKRS "HCR"	NO

PANELS SHALL BE "PANEL BOARD" QUALITY, NOT LOAD CENTER. PROVIDE TYPED DIRECTORY CARD. PROVIDE DEAD FRONT INNER SHIELD, DOORS AND DR. LOCKS. ALL KEYED ALIKE. PROVIDE GFCI = GROUND FAULT CIRCUIT INTERRUPTER WHERE NOTED. PROVIDE LAMICOID NAMEPLATE.

CIRCUIT NUMBER	DIRECTORY ENTRY/COMMENT LOAD DESCRIPTION	PHASE AMPS		LOAD VA	BKR AMPS	# BKR POLES	WIRE SIZE	CONDUIT SIZE	NOTES
		L1	L2						
1	GENERATOR RM LTS	9.6		1152	20	1	12	3/4	X
3	GENERATOR RM RECEPT		3	360	20	1	12	3/4	X
5	ELECTRICAL RM LTS	10		1200	20	1	12	3/4	X
7	ELECTRICAL RM RECEPT		6	720	20	1	12	3/4	X
9	BASEMENT HI LVL LTS	7.5		900	20	1	12	3/4	X
11	BASEMENT HI LVL LTS		5	600	20	1	12	3/4	X
13	BASEMENT LOW LVL LTS	7.5		900	20	1	12	3/4	X
15	BASEMENT LOW LVL LTS		5	600	20	1	12	3/4	X
17	BASEMENT RECEPT	4.5		625	20	1	12	3/4	X
19	BASEMENT RECEPT		4.5	625	20	1	12	3/4	X
21	OUTSIDE LIGHTS	6.1		732	20	1	12	3/4	X
23	OUTSIDE RECEPT		3	360	20	1	12	3/4	X
25	GAS MONITORS	.25		25	20	1	12	3/4	X
27	OVER HEAD DOOR OPR.		9.8	1176	20	1	12	3/4	X
29	SPARE	X		X	20	1	X	X	X
31		X	X	X	X	X	X	X	X
33		X		X	X	X	X	X	X
35		X	X	X	X	X	X	X	X
37		X		X	X	X	X	X	X
39		X	X	X	X	X	X	X	X
41		X		X	X	X	X	X	X
2	POLE LIGHTS		4	350	20	1	12	1	X
4	ELE RM EXHAUST FANS	10		1200	20	2	12	3/4	X
6	ELE RM EXHAUST FANS		10	1200	20	---	12	---	X
8	SPARE	X		X	20	1	12	3/4	X
10	FLOW METER		1.3	150	20	1	12	3/4	X
12	GEN. LOUVER OPERATOR	.41		50	20	1	12	3/4	HANDLE LOCK
14	BATTERY CHARGER		1.7	200	20	1	12	3/4	HANDLE LOCK
16	GEN. COOLANT HEATER	10.4		2500	20	2	12	3/4	X
18	GEN COOLANT HEATER		10.4	---	20	---	12	3/4	X
20	SPARE	X		X	20	1	X	X	X
22	SPARE	X		X	20	2	X	X	X
24	SPARE	X		X	---	---	X	X	X
26	BIOXIDE PANEL		15		20	1	12	3/4	X
28	MCC INSTR. SECT. RECEPTACLE	1.5			20	1	12	WW	X
30	MCC INSTRUMENTATION		1	120	20	1	12	WW	HANDLE LOCK
32		X		X	X	X	X	X	X
34		X	X	X	X	X	X	X	X
36		X	X	X	X	X	X	X	X
38		X	X	X	X	X	X	X	X
40		X	X	X	X	X	X	X	X
42		X	X	X	X	X	X	X	X
TOTAL AMPS PER PHASE		67.5	79.7	---	TOTAL KVA		DEMAND KVA		
TOTAL KVA PER PHASE		8.1	9.6	17.7	17.7		---		

NOTES:
1. PROVIDE NEUTRAL WIRE AND EQUIPMENT GROUNDING CONDUCTOR FOR EACH CIRCUIT IN ADDITION TO WIRES LISTED. SIZE NEUTRAL TO MATCH PHASE CONDUCTOR. SIZE E.G.C. PER NEC TABLE 250.122. ADJUST SIZE OF BOTH FOR LONG RUNS WHEN PHASE CONDUCTOR HAS GREATER AMPACITY THEN BREAKER.

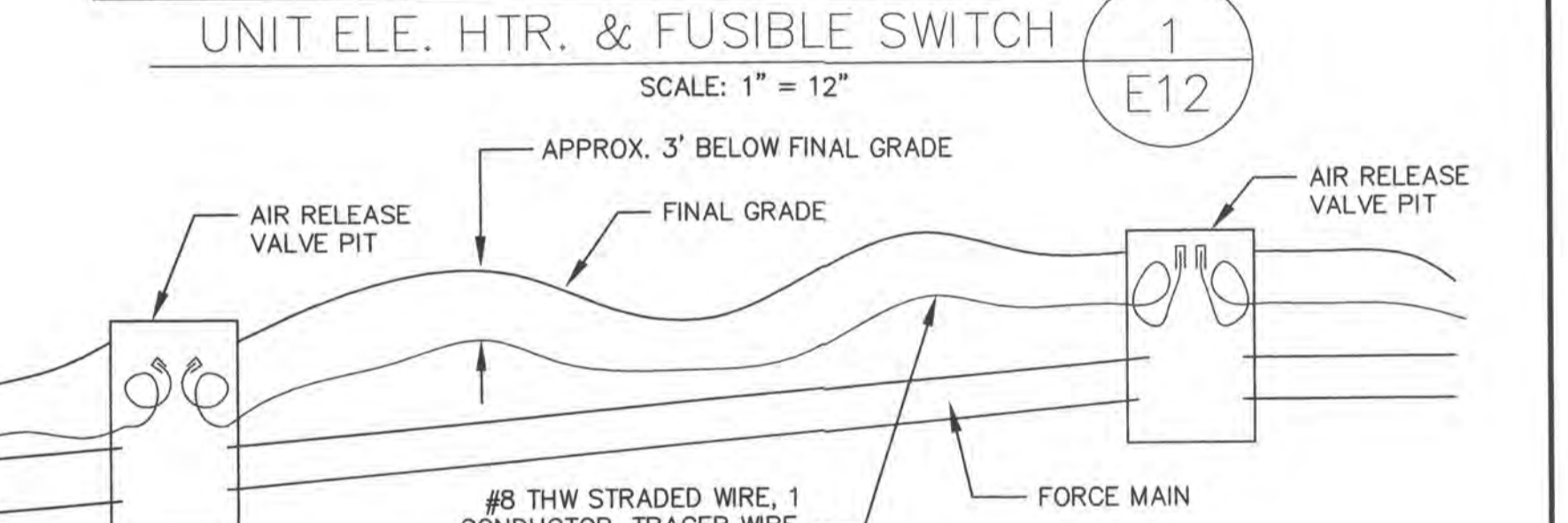
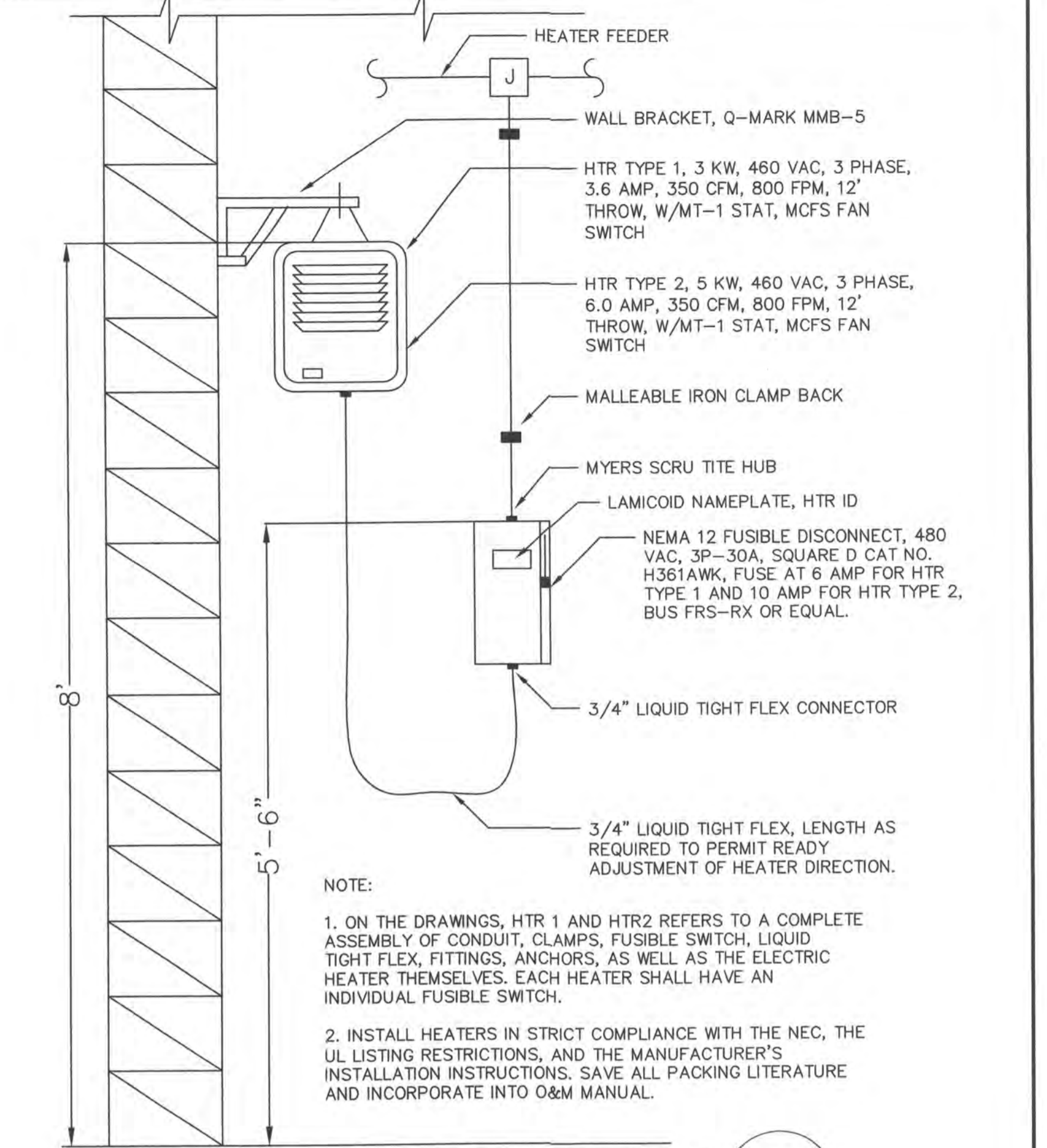
NOTE MANY SUBTLE CHANGES TO EACH ASSEMBLY. STUDY CAREFULLY.

LIGHTING FIXTURE SCHEDULE						
SYM-BOL	MANUFACTURER AND CATALOG NUMBER	LAMP(S)		VOL-TAGE	MOUNTING TYPE/HT.	REMARKS/OPTIONS
		NO.	WATT			
A	LITHONIA LIGHTING AF10-2-96HO-120-CW20-GLR-PO-ACEP	2	110	FLUORESCENT, 800 MA. HO, 96"	120	CEILING-SURFACE MOUNT LOW TEMP/ HI PWR FACTOR BALLAST/ WHITE PORCELAIN/ CEILING SPACER IF REQUIRED BY UL
B	LITHONIA LIGHTING TWH-250M-120-SF-CR-PE-LPI-FS-DNA	1	250	METAL HALIDE	120	WALL PACK MOUNT TOP OF FIXTURE AT 16' AFF.
C	LITHONIA LIGHTING, COMPACT FLUORESCENT, CEILING OR WALL MOUNT. VR2B-32TRT-120-GLR-PE WET LOCATION LISTED	1	32	32 W TRIPLE TWIN TUBE FLUORESCENT	120	OUTSIDE WALL MOUNT LOCATE AS SHOWN ON ARCHITECTURAL DRAWINGS
D	PARKING LOT LUMINAIRES, SEE DETAIL 4, SHEET E4 FOR REQUIREMENTS, INCLUDING MASTS.					
EG	LITHONIA LIGHTING, EGRESS LTG. IND1236-120V-GRAY-2-H1212-DLL-ELA IND CM	2	12	12 W, 12 V, HALOGEN	120	WALL MOUNT & CEILING MOUNT AS REQD. DAMP LOCATION FIXTURE. PROVIDE CEILING MOUNT KIT WHERE NEEDED.
EEG	LITHONIA LIGHTING, COMBINATION EXIT-EGRESS LTG. LHQM-S-W-1-R-120-N-HO	2	6	MFG STANDARD	120	WALL MOUNT PROVIDE NICKEL-CADMIUM BATTERY
RH	LITHONIA LIGHTING, REMOTE EGRESS HEAD, ELA NX H0606	2	6	MFG STANDARD	6	WALL MOUNT ON OUTLET BOX REMOTE EGRESS LTG HEAD. WIRE TO ADJACENT INDOOR UNIT EXIT/EGRESS LTG PACK.

ELECTRIC HEATER SCHEDULE													
SYMBOL	KILO-WATTS	VOLTS	PHASE	CEILING MT. BRACKET	WALL MOUNT BRACKET	BASEBOARD HTR.	SUMMER FAN SW.	INTEGRAL STAT/OFF SW.	REMOTE WALL STAT	HORZ. AIR THROW (FT)	INTEGRAL PWR. DISC. SWITCH	REMARKS	
												BRAND/CATALOG NUMBER	REMARKS
HTR1	3	480	3	X						12		Q-MARK CAT. NO. MUH03-41+MT-1+MMB-5	PROVIDE 3P-30A-480V NEMA 12 FUSED DISCONNECT, FUSE AT BUSSMAN FR5-R6 OR EQUAL
HTR2	5	480	3	X						12		Q-MARK CAT. NO. MUH05-41+MT-1+MMB-5	PROVIDE 3P-30A-480V NEMA 12 FUSED DISCONNECT, FUSE AT BUSSMAN FR5-R10 OR EQUAL

FAN SCHEDULE					
SYMBOL	CFM	SP("WG)	VOLTS/PH	REQUIRED EQUIPMENT & ACCESSORIES	
SF-1	13624	0.250	460V/3PH. 3 HP	TUBEAXIAL FAN, DIRECT DRIVE, MOTOR IN AIR STREAM, TOTALLY ENCLOSED MOTOR. ACME MODEL HDD30M. ACME CERTIFIED RATINGS. NAMEPLATE WITH MFG NAME, MODEL AND SERIAL NUMBER. 2 YEAR WARRANTY.	
SF-2	4198	0.25	460V/3PH 3/4 HP	TUBEAXIAL FAN, DIRECT DRIVE, MOTOR IN AIR STREAM, TOTALLY ENCLOSED MOTOR. ACME MODEL HDD18H. ACME CERTIFIED RATINGS. NAMEPLATE WITH MFG NAME, MODEL AND SERIAL NUMBER. 2 YEAR WARRANTY.	
EF-1	1295	0.25	120V/1PH 1/6 HP	DIRECT DRIVE, WALL MOUNTED PROPELLER FAN, ACME FQ12D4 WITH GUARD ON MOTOR SIDE OF PROPELLER. PROVIDE FANS WITH WALL COLLAR MODEL WC12FQ.	

LOUVER AND DAMPER SCHEDULE			
SYMBOL	WIDTH(")	HEIGHT(")	DESCRIPTION
L1	60	96	TWO SECTIONS WITH VISIBLE VERTICAL MULLION WITH "I" CONNECTOR. EACH SECTION 30" WIDE BY 96" HIGH. AIROLITE K8206A COMBINATION LOUVER/DAMPER WITH ALUMINUM 1/2" MESH BIRD SCREEN, BLADE EDGE SEAL, 0.8 MIL 215-R1 ANODIC FINISH PER AA-M10C22A41. SCREEN ON INSIDE. PROVIDE 1-1/2" EXTERIOR AL. ANGLE FLANGE FULL PERIMETER. STANDARD LEVER FOR EXPOSED OPERATOR. IT IS INTENDED THAT DAMPER BE POWERED TO CLOSE, SPRING TO OPEN ON POWER FAILURE. BELIMO AF120-S-US MAY SATISFY THIS REQUIREMENT. CONFIRM TO BE TRUE. PROVIDE ALL REQUIRED OPERATOR MOUNTING TRAYS/BRACKETS, RODS, PIVOTS, MISCELLANEOUS HARDWARE. DO NOT ENERGIZE GENERATOR UNTIL PROPER DAMPER OPERATION IS CONFIRMED AND APPROVED BY ENGINEER. WIRE OPERATORS IN PARALLEL.
L2	56	116	TWO SECTIONS WITH VISIBLE MULLION AND "I" CONNECTORS. EACH SECTION 28" WIDE BY 116" HIGH. AIROLITE KX827 COMBINATION LOUVER, GRAVITY DAMPER WITH ALUMINUM 1/2" MESH BIRD SCREEN, BLADE EDGE SEAL, 0.8 MIL 215-R1 ANODIC FINISH PER AA-M10C22A41. SCREEN ON INSIDE. PROVIDE 1-1/2" EXTERIOR AL. ANGLE FLANGE FULL PERIMETER. ENTIRE UNIT TO BE REMOVABLE FOR INSERTING AND REMOVING GENERATOR IN BUILDING.
L3	36	96	AIROLITE K8206A COMBINATION LOUVER/DAMPER WITH ALUMINUM 1/2" MESH BIRD SCREEN, BLADE EDGE SEAL, 0.8 MIL 215-R1 ANODIC FINISH PER AA-M10C22A41. SCREEN ON INSIDE. PROVIDE 1-1/2" EXTERIOR AL. ANGLE FLANGE FULL PERIMETER. STANDARD LEVER FOR EXPOSED OPERATOR. IT IS INTENDED THAT DAMPER BE POWERED TO OPEN, SPRING TO CLOSE ON POWER REMOVAL. PROVIDE END OF TRAVEL SWITCH IN OPERATOR TO "CLOSE" UPON REACHING FULLY OPEN POSITION FOR ENERGIZING FAN. BOLIMO MODEL AF120-S-US MAY SATISFY THIS REQUIREMENT. CONFIRM TO BE TRUE. PROVIDE ALL REQUIRED OPERATOR MOUNTING TRAYS/BRACKETS, RODS, PIVOTS, MISCELLANEOUS HARDWARE. DO NOT ENERGIZE FANS UNTIL PROPER DAMPER OPERATION IS CONFIRMED AND APPROVED BY ENGINEER.
L4	48	96	AIROLITE K8206A COMBINATION LOUVER/DAMPER WITH ALUMINUM 1/2" MESH BIRD SCREEN, BLADE EDGE SEAL, 0.8 MIL 215-R1 ANODIC FINISH PER AA-M10C22A41. SCREEN ON INSIDE. PROVIDE 1-1/2" EXTERIOR AL. ANGLE FLANGE FULL PRIMETER. STANDARD LEVER FOR EXPOSED OPERATOR. IT IS INTENDED THAT DAMPER BE POWERED TO OPEN, SPRING TO CLOSE ON POWER REMOVAL. PROVIDE END OF TRAVEL SWITCH IN OPERATOR TO "CLOSE" UPON REACHING FULLY OPEN POSITION FOR ENERGIZING FAN. BELIMO MODEL AF120-S-US MAY SATISFY THIS REQUIREMENT. CONFIRM TO BE TRUE. PROVIDE ALL REQUIRED OPERATOR MOUNTING TRAYS/BRACKETS, RODS, PIVOTS, MISCELLANEOUS HARDWARE. DO NOT ENERGIZE FANS UNTIL PROPER DAMPER OPERATION IS CONFIRMED AND APPROVED BY ENGINEER.
L5	16	16	ACME FLO MASTER AUTOMATIC WALL SHUTTERS, STANDARD DUTY, MODEL 1616.



FORCE MAIN TRACER CABLE 2 E12
NOT TO SCALE

STATE OF OHIO
RALPH B. HOFFMAN
REGISTERED PROFESSIONAL ENGINEER
37934
Signed: *Ralph B. Hoffman*
Date: 7/31/08

REVISIONS		
MARK	DATE	DESCRIPTION
▲	11/28/06	LOUVER & MOTOR CHANGES

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43254
Phone: 614.775.4500 Fax: 614.775.4600

Date: December 15, 2006
Scale:
Job No: 2004-0517
Sheet: 28 of 30

ELECTRICAL LEGEND

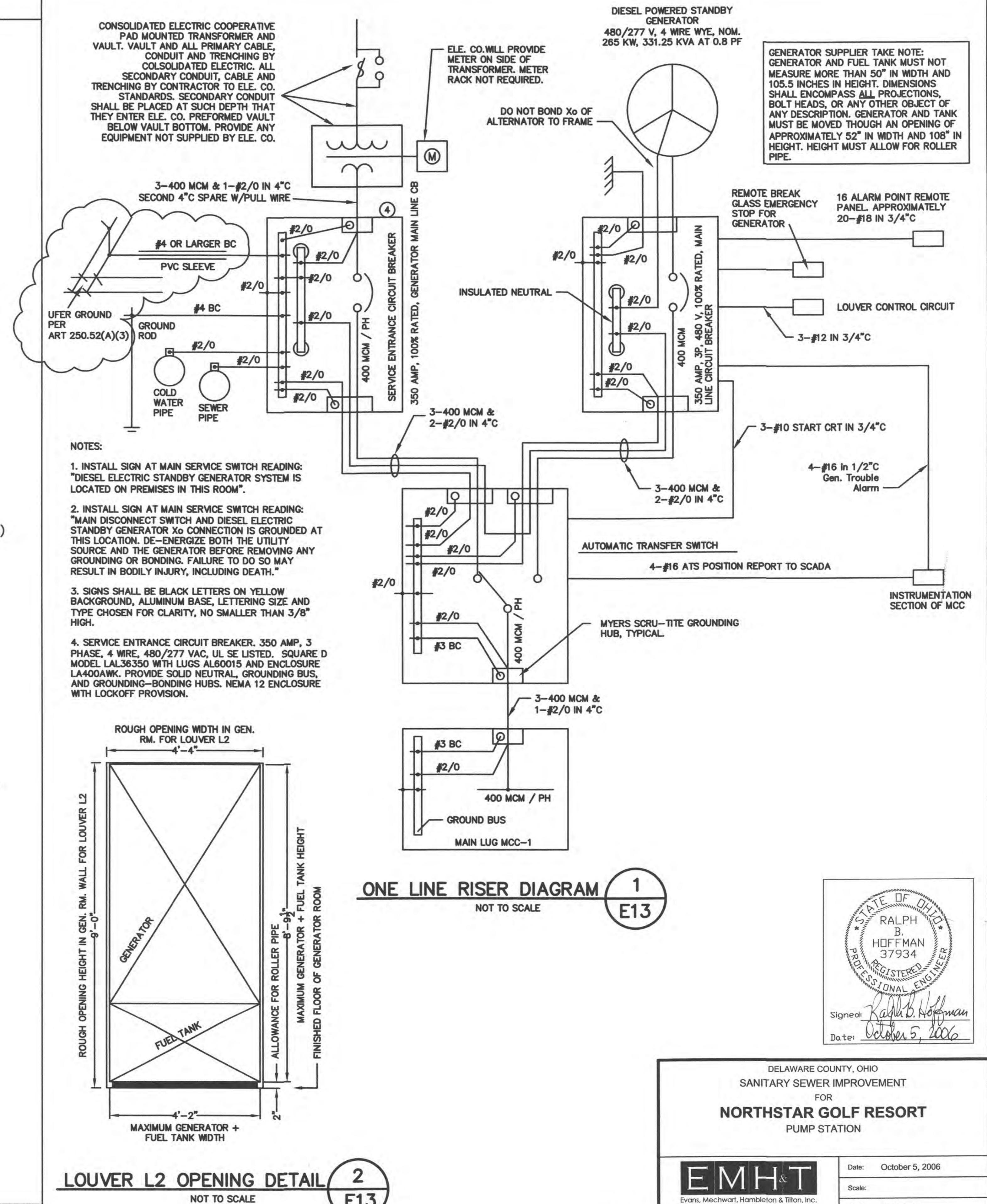
NOTE: ANY SYMBOL MAY BE MODIFIED BY WP=WEATHER PROOF. ANY SYMBOL USED IN A CLASSIFIED LOCATION SHALL BE NEMA 7, CLASS 1, DIV. 1, GROUP D AND LISTED FOR WP USE IF LOCATED OUTDOORS. (ALL SYMBOLS DO NOT NECESSARILY APPLY TO EVERY JOB.)

SYMBOL	DESCRIPTION
	CEILING OUTLET, INCANDESCENT LIGHTING FIXTURE
	WALL OUTLET, INCANDESCENT LIGHTING FIXTURE NOTE: INSCRIBED LETTER DENOTES FIXTURE TYPE. (SEE FIXTURE SCHEDULE) NUMBER DENOTES CRT. BKR. NO., LOWER CASE LETTER DENOTES CONTROLLING SWITCH.
	CONVENIENCE OUTLET, SINGLE (GFI=GROUND FAULT INTERRUPTER)
	CONVENIENCE OUTLET, DUPLEX (GFI=GROUND FAULT INTERRUPTER) NUMBER DENOTES CB, LOWER CASE LTR. DENOTES CONTROLLING SW. 'T' MEANS MOUNT ABOVE TABLE OR LAB BENCH HEIGHT. COORDINATE HEIGHT WITH OTHER TRADES.
	WIRED JUNCTION BOX
	BLANK OUTLET BOX (MAY HAVE PULLED WIRE FOR FUTURE LOAD)
	CLOCK OUTLET
	SPECIAL OUTLET, AS REQUIRED
	CEILING MOUNTED EXIT LIGHT (WITH ARROWS AS INDICATED) WIRE AHEAD OF AREA LTG. SW.
	WALL MOUNTED EXIT LIGHT (WITH ARROWS AS INDICATED) WIRE AHEAD OF AREA LTG. SW.
	THERMOSTAT
	TELEPHONE OUTLET (T=TABLE HEIGHT, SEE NOTE)
	SW. LOCATION 3=THREE WAY, 4=FOUR WAY, ETC. a,b,c, ETC. CORRESPONDS TO CONTROLLED OUTLETS
	MANUAL MOTOR STARTER (MP=WITH PILOT LIGHT)
	SWITCH LOCATION K=KEY OPERATED, P=PILOT LIGHT 3,4 & a,b,c ETC. AS ABOVE
	ELECTRIC PANEL SURFACE MOUNTED
	ELECTRIC PANEL FLUSH MOUNTED
	NON-FUSED SAFETY DISCONNECT SWITCH. INDOOR NEMA 12, OUTDOOR NEMA 4X-SS. HORSEPOWER, VOLTAGE & NO. OF POLES RATED FOR LOAD CONCERNED, NEMA HEAVY DUTY. (3P, 480 V, 30 AMP., IF NOT STATED)
	FUSED SAFETY DISCONNECT SWITCH. INDOOR NEMA 12, OUTDOOR NEMA 4X-SS. HORSEPOWER, VOLTAGE & NO. OF POLES RATED FOR LOAD CONCERNED, NEMA HEAVY DUTY. FUSE SIZE BY NOTE. (SWITCH 3P, 480 V, 30 AMP., IF NOT STATED OTHERWISE)
	SINGLE PHASE MOTOR OUTLET. INCLUDES LIQUID TIGHT FLEXIBLE METAL CONDUIT AND WIRED GROUND. NO. INDICATES MOTOR HORSE-POWER.
	POLYPHASE MOTOR OUTLET. INCLUDES LIQUID TIGHT FLEXIBLE METAL CONDUIT AND WIRED GROUND. NO. INDICATES MOTOR HORSE-POWER.
	CEILING OUTLET. FLEX. FLUORESCENT LIGHTING FIXTURE. INSCRIBED LETTER DENOTES FIXTURE TYPE. NUMBER DENOTES CRT. BKR. LOWER CASE LETTER DENOTES CONTROLLING SWITCH.
	CONTROL STATION. NEMA HEAVY DUTY. NEMA 12 INDOORS. NEMA 4X-SS OUTDOORS.
	WALL OR CEILING CONDUIT (EXPOSED OR CONCEALED BASED UPON ARCHITECTURAL TREATMENT OF ROOM CONCEALED) UNDERGROUND OR UNDER SLAB CONDUIT
	DUAL HEAD BATTERY POWERED EMERGENCY EGRESS LTG. WITH INTEGRAL CHARGER. WIRE AHEAD OF AREA LTG. SW.
	COMBINATION DUAL HEAD EGRESS LIGHT AND EXIT LTG., BATTERY POWERED, INTEGRAL CHARGER, WIRE AHEAD OF LOCAL LTG. SW.
	COMBINATION MOTOR STARTER. INDOOR NEMA 12. OUTDOOR NEMA 4X-SS. 2 HV FUSES, CPT, SEC. FUSE, PUSH TO TEST AMBER PILOT LIGHTS. CB OR FUSE BY NOTE. A-B SMP2 UNLESS OTHERWISE NOTED. H-O-A SS. ADDITIONAL DEVICES BY NOTE.

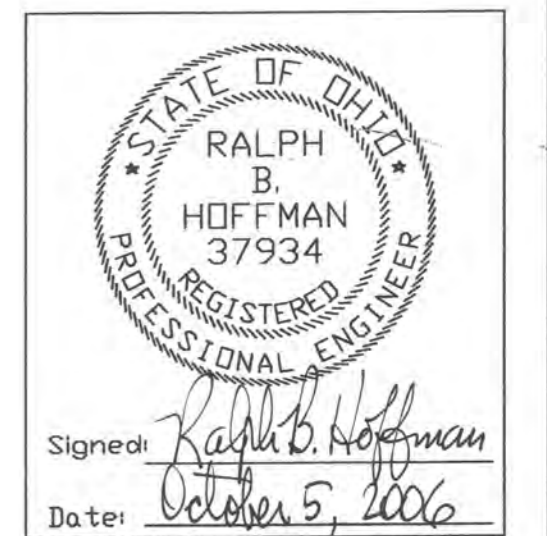
ELECTRICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINAL GRADE
AIC	AMPERE INTERRUPTING CAPACITY (SYMMETRICAL)
AL	ALUMINUM
AM	AMMETER
AS	AMMETER SELECTOR SWITCH
BFG	BELOW FINAL GRADE
C	CONDUIT, THREADED, GALVANIZED RIGID METAL UNLESS FURTHER MODIFIED. SEE SPECIFICATIONS FOR OTHER PERMITTED ALTERNATIVES UNDER SPECIFIED CONDITIONS.
CB	THERMAL-MAGNETIC TRIP CIRCUIT BREAKER (IT = WITH INTER-CHANGABLE TRIP UNIT)
CP	CONTROL PANEL (MAY BE FURTHER IDENTIFIED W/NUMBER)
CT	CURRENT TRANSFORMER
CU	COPPER
DS OR DCS	DISCONNECT SWITCH
EA	EACH
EXP	EXPLOSION PROOF (CLASS, DIV, GRP. CORROSION RESISTANCE, WEATHER RESISTANCE PER LOCATION INVOLVED.)
F	FUSED (APPLIED TO SWITCHES, COMBINATION STARTERS, ETC.)
FLEX	FLEXIBLE METAL CONDUIT
FS	FLOAT SWITCH
FURNISH	SUPPLY EQUIPMENT, INSTALLATION BY OTHERS
GFE	GROUND FAULT PROTECTION OF EQUIPMENT
GFCI OR GFI	PERSONNEL PROTECTIVE GROUND FAULT CIRCUIT-INTERRUPTER
GRD OR GRN	GROUND (ELECTRICAL SENSE -- AS IN ROD, EQUIP. GRD., NEC 250)
HP	HORSE POWER
INSTALL	INSTALL AND/OR CONNECT EQUIPMENT FURNISHED BY OTHERS.
J OR JB	JUNCTION BOX
KAIC	THOUSAND AMPERE INTERRUPTING CAPACITY (SYMMETRICAL)
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LP	LIGHTING PANEL OR PANEL BOARD
LTFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
LTG	LIGHT OR LIGHTING
MCC	MOTOR CONTROL CENTER
NF	NON-FUSED (AS APPLIED TO SWITCHES, COMBO. STARTERS, ETC.)
NP	NAME PLATE
OL	OVER LOAD
PB	PULL BOX OR PUSH BUTTON (CONTEXT SENSITIVE)
PP	POWER PANEL
PROVIDE	FURNISH AND INSTALL ALL MATERIAL AND LABOR.
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
REQ'D	REQUIRED BY APPLICATION, CODE, GOOD ENGINEERING PRACTICE
RNM	RIGID NON-METALLIC CONDUIT (SCHEDULE 40)
RMC	RIGID METAL CONDUIT, GALVANIZED, AND THREADED
TBD	TO BE DETERMINED AT A LATER DATE WHEN MISSING INFORMATION BECOMES AVAILABLE.
THW, THHN, ETC.	WIRE INSULATIONS WITH NEC CHAPTER 3 MEANING
UF	UNDERGROUND FEEDER CABLE
USE	UNDERGROUND SERVICE ENTRANCE CABLE
VA	VOLT AMPERES
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VM	VOLT METER
VS	VOLTMETER SELECTOR SWITCH
W/	WITH THE FOLLOWING FEATURE/...
WP	WEATHER PROOF

ABBREVIATIONS IN THE NATIONAL ELECTRICAL CODE SHALL ALSO APPLY.



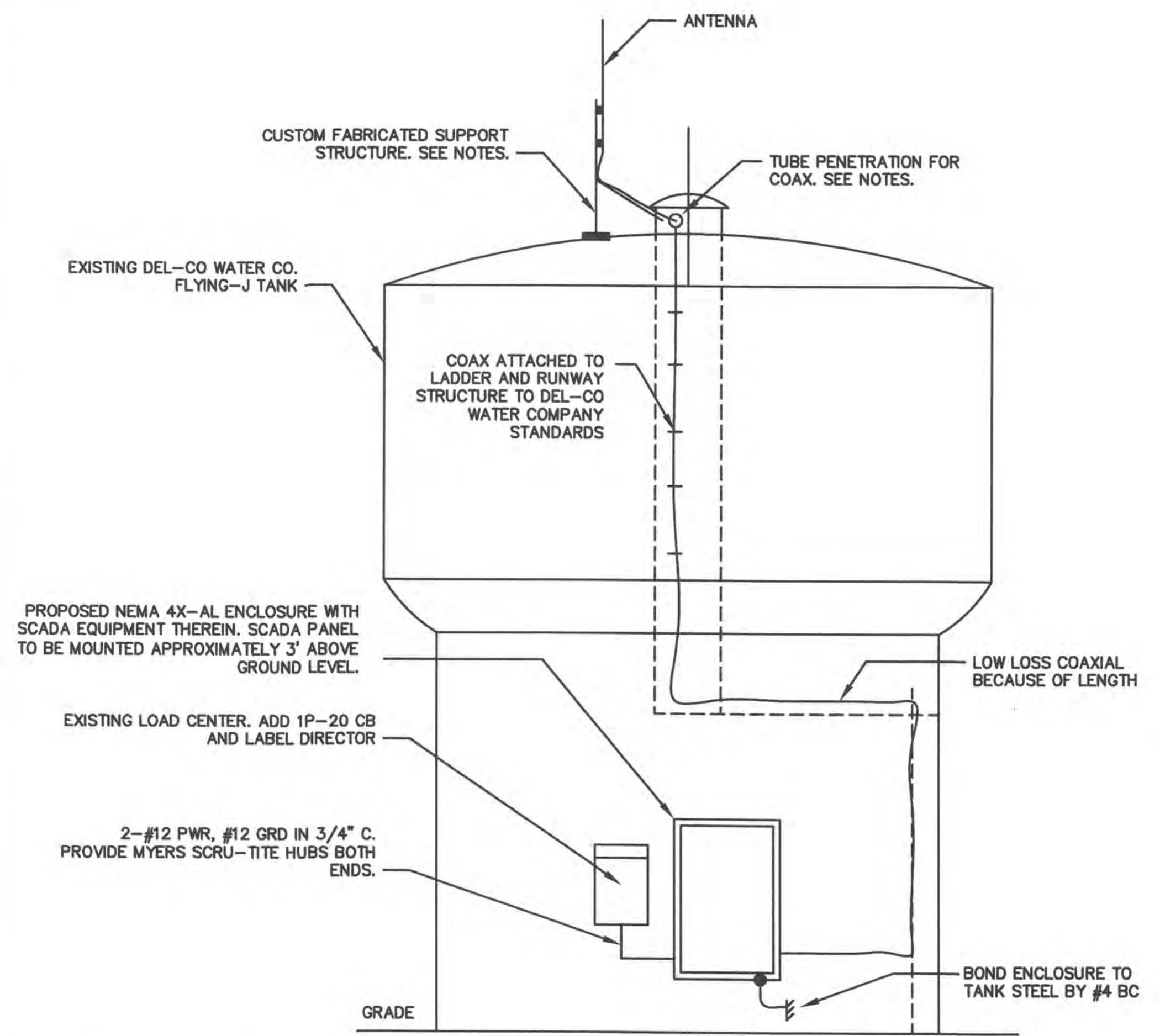
REVISED AS CONSTRUCTED 7/29/08



DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43054
Phone: 614.775.4000 Fax: 614.775.4000
M C M X X V I

Date: October 5, 2006
Scale:
Job No: 2004-0517
Sheet: 29 of 30



- NOTES:
1. ALL WORK IN THE DEL-CO WATER COMPANY TANK, LOCATED AT THE FLYING-J TRUCK STOP AT THE N.E. CORNER OF I-71 AND US 36, SR 37 INTERSECTION SHALL MEET WITH THE APPROVAL OF DEL-CO WATER CO. CONTACT MR. TONY WELLS, TEL. (740) 548-7746, X 2189.
 2. THERE IS NO HAND RAIL OR EXISTING MEANS TO SUPPORT AN ANTENNA MAST AT THE FLYING-J TANK. DEL-CO APPROVED WELDING CONTRACTOR, RURAL WATER STORAGE, CONTACT MR. BEN JOHNSON, TEL. (419) 435-6505 SHALL PROVIDE SUPPORT STRUCTURE APPROVED BY DEL-CO, DO ALL WELDING, PAINT REMOVAL, REPAINTING, AND SIMILAR WORK. SUPPORT STRUCTURE TO BE GALVANIZED 1-1/2" DIA. STEEL PIPE WITH TWO 1-1/4X1-1/4X1/4 GALVANIZED STEEL ANGLES (OR ALTERNATE AS APPROVED BY DEL-CO). PROVIDE 2" PIPE NIPPLE OR COUPLING PENETRATION OF TUBE FOR COAXIAL CABLE TO ENTER MANWAY. NORTHSTAR LIFT STATION CONTRACTOR SHALL INCLUDE COST OF "RURAL WATER STORAGE CO." WORK IN THEIR WORK.
 3. PROVIDE HOFFMAN ALUMINUM CONTINUOUS HINGE TYPE 4X ENCLOSURE MODEL AXHXKXKXLLP GENEROUSLY SIZED TO HOLD EQUIPMENT, ALONG WITH ALUMINUM PANEL. SUPPORT ENCLOSURE WITH ALUMINUM PREFORMED CHANNEL WITH STAINLESS STEEL FITTINGS AND HARDWARE. INSURE EFFECTIVE BONDING OF ENCLOSURE TO TANK STEEL FOR SURGE PROTECTION.
 4. PROVIDE THE SERVICES OF A PROFESSIONAL COMMUNICATIONS SERVICE COMPANY, AUTHORIZED TO SELL AND SERVICE MICROWAVE DATA SYSTEM (MDS) RADIOS, TO INSTALL AND PROGRAM THE EQUIPMENT.

FLYING-J TANK SCADA, PARTIAL BILL OF MATERIAL		
SYMBOL	QTY.	DESCRIPTION
HTR	1	HOFFMAN DAH1001A (120 V, 100 WATT)
RECEPTACLE	1	GFCI 20 AMP 120 CONVENIENCE RECEPTACLE IN HANDY BOX INSIDE PANEL
UPS-1	1	UNINTERRUPTABLE POWER SUPPLY, APC PART NUMBER BR1200
---	---	OUTPUT 780 WATTS, 1200 VA
DCPWR	1	12 VDC POWER SUPPLY, AMPERAGE AS REQUIRED
N/A	AS REQ'D	PANEL BUILDING SERVICES, MISC. HARDWARE & FITTINGS, DWGS., SUBMITTALS, O&M MANUALS
R1	1	8 dBI OMNI DIRECTIONAL ANTENNA
R2	AS REQ'D	HOSING GRIPS, ANDREW 43094
R3	AS REQ'D	HANGER KITS, ANDREW 43211
R4	AS REQ'D	COAXIAL CABLE, 1/2", HELIAX, ANDREW LDF4-50A W/WP N MALE CONNECTORS: L4PNMNM-XX
R5	1	GROUNDING KIT, ANDREW 204989-1
R6	2	SPARE GAS TUBE REPLACEMENTS, ANDREW GASTUBE-090
R7	1	BULKHEAD SURGE ARRESTER, ANDREW APG-BNPNF-090
R8	2	JUMPER CABLE, ("N" MALE), ANDREW F1A-PNMNR-10
R9	2	COLD SHRINK WP KIT, ANDREW 241548-TBD (TBD TO BE DETERMINED)
R10	2	CONNECTOR/SPLICE WP'ING TAPE KITS, ANDREW 221213
R11	1	MDS-EL805 TRANSNET 900 WITH NETWORK WIDE DIAGNOSTICS W/DIN RAIL

- NOTES:
1. XX = QUANTITY REQUIRED BUT TO BE DETERMINED BY FIELD MEASUREMENT BY THE CONTRACTOR. FOR EXAMPLE, XX IS OFTEN FEET OF CABLE REQUIRED.
 2. TBD = TO BE DETERMINED. QUANTITY OR TYPE TO BE DETERMINED DURING CONSTRUCTION BASED UPON OTHER EQUIPMENT SUPPLIED. CONTRACTOR TO NEEDED TYPE AND QUANTITY.

FLYING-J TANK ELEVATION 1
NOT TO SCALE E14



- NOTES:
1. NOTE THE WORK REQUIRED BY THIS DETAIL IS LOCATED AT THE NORTHSTAR WASTE WATER TREATMENT PLANT. THE NORTHSTAR WASTE WATER TREATMENT PLANT IS LOCATED APPROXIMATELY 1 MILE EAST, NORTH EAST OF THE NORTHSTAR SEWAGE LIFT STATION.
 2. INSTALL COMPUTER, MONITOR AND APPURTENANCES AT THE WWTP. RADIO EQUIPMENT IS UNDERSTOOD TO BE PROVIDED BY OTHERS.

NORTH STAR WASTEWATER TREATMENT PLANT PARTIAL BILL OF MATERIAL		
SYMBOL	QTY.	DESCRIPTION
SW	1	MULTITRODE "OUTPOST" SOFTWARE
DCL	1	DISPLAY CLIENT LICENSE
GC	1	GRAPHIC CHANGES FOR (1) SITE
TRAIN	2 DAYS	TWO DAYS ON SITE FOR START-UP AND TESTING
MAN	AS REQ'D	SUBMITTALS, MANUALS, O & M MANUALS
PC	1	MULTITRODE PERSONAL COMPUTER FOR "MULTITRODE OUTPOST" INCLUDING:

1. TOWER PC WITH A 420 WATT POWER SUPPLY (MINIMUM)
2. P4P800 MOTHERBOARD WITH 800 MHZ FSB
3. INTEL PENTIUM 4 (2.8 GHZ) CPU OR HIGHER
4. 512MB DDR 533MHZ 2X256MB SINGLE RANKED DIMM
5. ADAPTEC SERIAL ATA RAID 1210SA 2-PORT PCI CONTROLLER CARD
6. (2) 80GB 7200 RPM SATA HARD DISK DRIVE WITH 8MB BUFFER
7. (1) 1.44MB 3.5" FLOPPY DISK DRIVE
8. (1) CDRW/DVD COMBO DRIVE, 48X, INTERNAL
9. INTEGRATED ON-BOARD AUDIO (SOUND)
10. STEREO PC SPEAKER KIT
11. 10/100/1000 GIGABIT ETHERNET NETWORK CARD
12. DIGI INT'L HISPEED RS232/2 PCI CORN PORT CARD MODEL #ACCELEPORT 2R 920-PCI
13. "19" DIGITAL FLAT PANEL LCD MONITOR
14. WINDOWS XP (SERVICE PACK 2 OR HIGHER)
15. WINDOWS XP OFFICE SUITE (BASIC, STANDARD OR SMALL BUSINESS)
16. NORTON ANTI-VIRUS 2005 SOFTWARE OR HIGHER
17. PCANYWHERE 10.5 SOFTWARE OR HIGHER
18. PS/2 OR USB 104 KEY ENHANCED WINDOWS KEYBOARD
19. PS/2 OR USB OPTICAL SCROLL MOUSE
20. 3YR BRONZE SUPPORT, NEXT BUSINESS DAY ONSITE
21. 500VA UPS BACKUP WITH BUILT-IN SURGE PROTECTION OR BETTER

NORTHSTAR WWTP SCADA WORK 2
NOT TO SCALE E14

STATE OF OHIO
RALPH B. HOFFMAN
37934
REGISTERED PROFESSIONAL ENGINEER
Signed: *Ralph B. Hoffman*
Date: March 20, 2006

DELAWARE COUNTY, OHIO
SANITARY SEWER IMPROVEMENT
FOR
NORTHSTAR GOLF RESORT
PUMP STATION

EMHT
Evans, Mechwart, Hambleton & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43254
Phone: 614.775.4620 Fax: 614.775.4620

Date: March 17, 2006
Scale:
Job No: 2004-0517
Sheet: 30 of 30


MATERIAL LIST - WALL SECTION & DETAIL

1. MATCH SHINGLES TO BE USED ON CLUBHOUSE
2. 15# ROOFING FELT
3. 3/4" PLYWOOD SHEATHING W/10d NAILS@6" O.C.
4. METAL DRIP EDGE
5. 1x8 WOOD FASCIA
6. PREFINISHED ALUMINUM GUTTER, GUTTER TO MATCH CLUBHOUSE SPECIFICATION
7. 2x SUB-FASCIA
8. 3" CONTINUOUS SOFFIT VENT
9. FIBER CEMENT BOARD, SMOOTH FINISH, HARDI-PANEL OR EQUAL APPROVED BY ARCHITECT
10. 1x10 WOOD TRIM
11. 2x8 TREATED WOOD PLATE CONTINUOUS
12. 1/2" ANCHOR BOLT 24" O.C.
13. 1/2" GYPSUM WALLBOARD, EXTERIOR GRADE
14. BOND BEAM W/2-#5 REINFORCING BARS CONTINUOUS EACH END
15. 1" ANGLE 5x5x3/16 AND 1" ANGLE 5x3x3/16 LLV, 6" BEARING
16. FIBER CEMENT LAP SIDING, PRODUCT TO MATCH SIDING SPECIFIED FOR CLUBHOUSE, SIDING TO BE BLIND NAILED.
17. PAINTED METAL FLASHING
18. 1x8 WOOD TRIM
19. 1x4 WOOD TRIM
20. SINGLE PANEL WALL SHUTTER, OVERALL SIZE OF SHUTTER 16" x 16"
21. 1/2" PLYWOOD SHEATHING
22. 2x2 FURRING STRIPS 24" O.C.
23. 2x4 BLOCKING TO LOCATE SHUTTER
24. CUT LIMESTONE COPING
25. 12"x8"x16" CONCRETE BLOCK
26. CULTURED STONE TO MATCH STONE SPECIFIED FOR CLUBHOUSE
27. #7 DOWELS TO MATCH VERTICAL WALL REINFORCING, DOWELS TO HAVE LONG LEG OF 6'-6", SHORT LEG OF 6" AND LAP WALL REINFORCING 3'-6".
28. TRUSSES @ 24" O.C.
29. SIMPSON H3 ANCHOR AT EACH TRUSS
30. SIMPSON A35 ANCHOR AT EACH TRUSS
31. #7 WALL REINFORCING @ 48" VERTICAL GROUDED INTO BLOCK CORES FULL HEIGHT
32. 8"x8"x16" CONCRETE BLOCK
33. SIMPSON HTH CLIP AT EACH 2x4
34. 2x4 BLOCKING @ 24" O.C. PROVIDE 1/2" GAP BETWEEN BLOCKING AND TOP PLATE
35. 1x6 WOOD TRIM
36. 10"x8"x16" C.M.U.
37. CALK
38. STEEL DOOR FRAME
39. ANCHOR, MIN. 3 PER JAMB
40. GROUT FRAME CAVITY SOLID
41. WEEP HOLES
42. WALL FLASHING
43. WALL COLLAR MODEL WC12FQ
44. FAN FD1204 WHERE INDICATED ON ENGINEERING DOCUMENTS
45. PERLITE LOOSE MASONRY FILL INSULATION
46. INSULATION STOP
47. R-30 INSULATION

- LINTEL SCHEDULE**
- L-1: 1-1.5x5x3/16 + 1-1.5x3x3/16 LLV
6" BRG. EA. END
 - L-2: 3-1.4x3x3/16 LLV
6" BRG. EA. END
 - L-3: W8x18 + PL 3/4x11 CONT.
12" BRG. EA. END + 2-3/4x16 A.B. EA. END

- FLOOR PLAN NOTES**
1. 4-#7@8" O.C. VERTICAL GROUDED INTO BLOCK CORES FULL HEIGHT.
 2. SURFACE MOUNTED ROLLING INSULATED DOOR CONCRETE SLAB. SEE EMH&T'S DOCUMENTATION
 3. SEE ELECTRICAL DRAWINGS FOR LOUVER SIZE, LOCATION AND HEAD HEIGHT
 4. INSULATED STEEL DOOR, EXTRA HEAVE DUTY, 16 GAGE, 1 1/2" THICK, PAINTED WITH G60 ZINC COATING.
 5. 8" C.M.U., OBERFIELDS, SOUNDBLOX RSC/RF OR APPROVED EQUAL
 6. SINGLE PANEL WALL SHUTTER, FIXED IN CLOSED POSITION. G.C TO COORDINATE OPENING IN WOOD FRAMING WITH REQUIREMENTS OF WALL COLLAR MODEL WC12FQ.
 7. 3'-0" LONG REMOVABLE CEILING ACCESS PANEL, LOCATE BETWEEN TRUSSES
 8. 3-#7@8" O.C. VERTICAL GROUDED INTO BLOCK CORES FULL HEIGHT
 9. ELECTRIC DOOR OPERATOR
 10. SINGLE PANEL WALL SHUTTER WITH FAN BEYOND

NORTHSTAR SANITARY PUMPING STATION

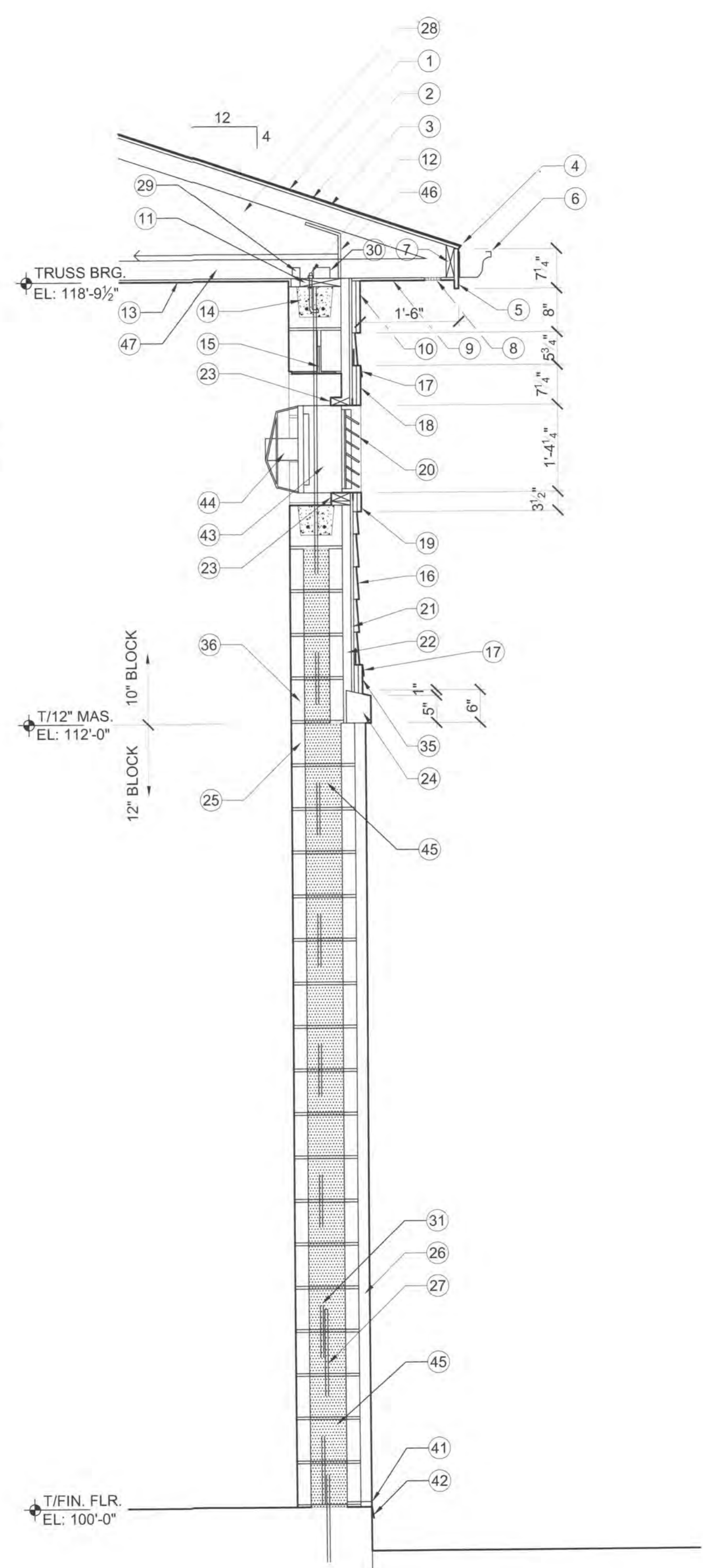


Gary J. Alexander,
Architect
1324 Dublin Road, Columbus, Ohio 43215
(614) 487-0637 Fax (614) 486-4040

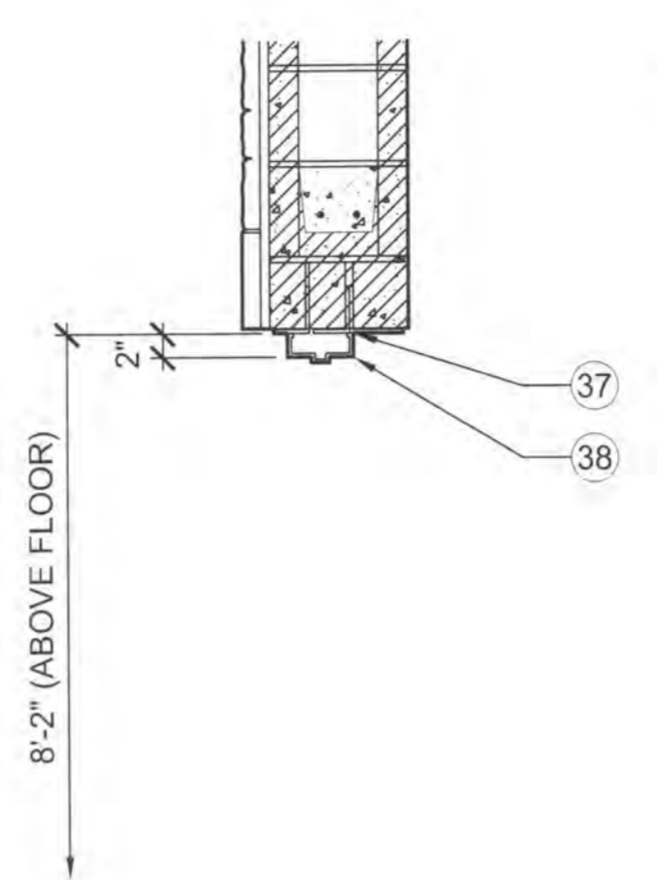
REVIEW: 11/11/04
REVISED: 03/11/05
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REVISED: 09/28/05
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REVISD: 12/13/06

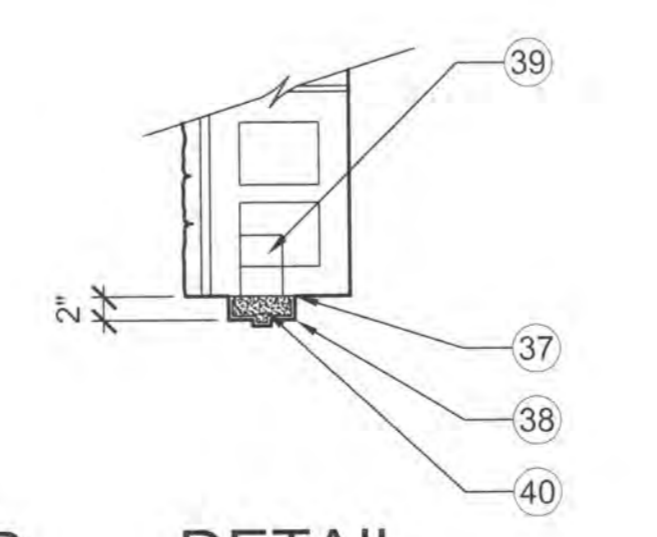
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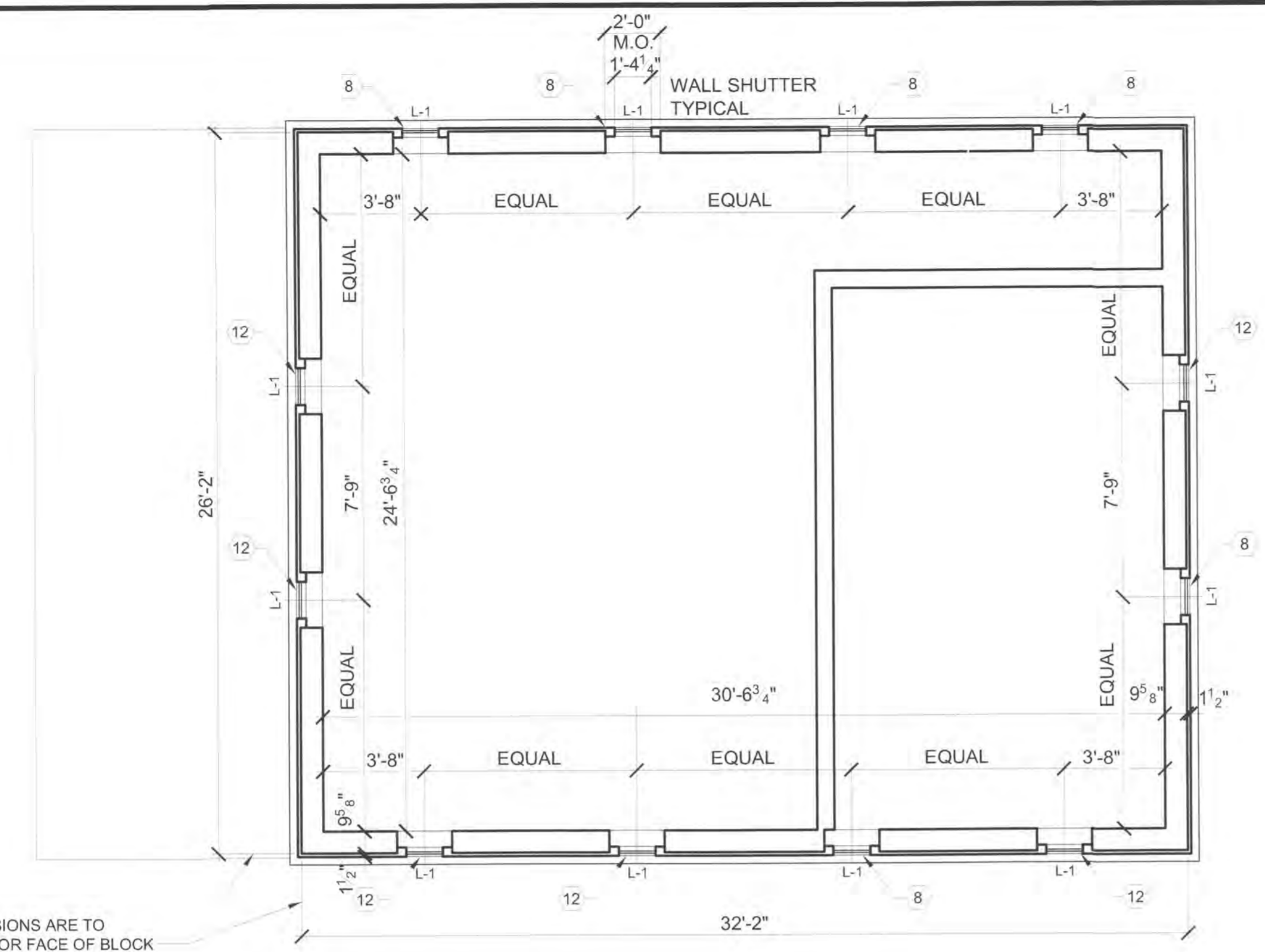
WALL SECTION
SCALE: 3/4" = 1'-0"



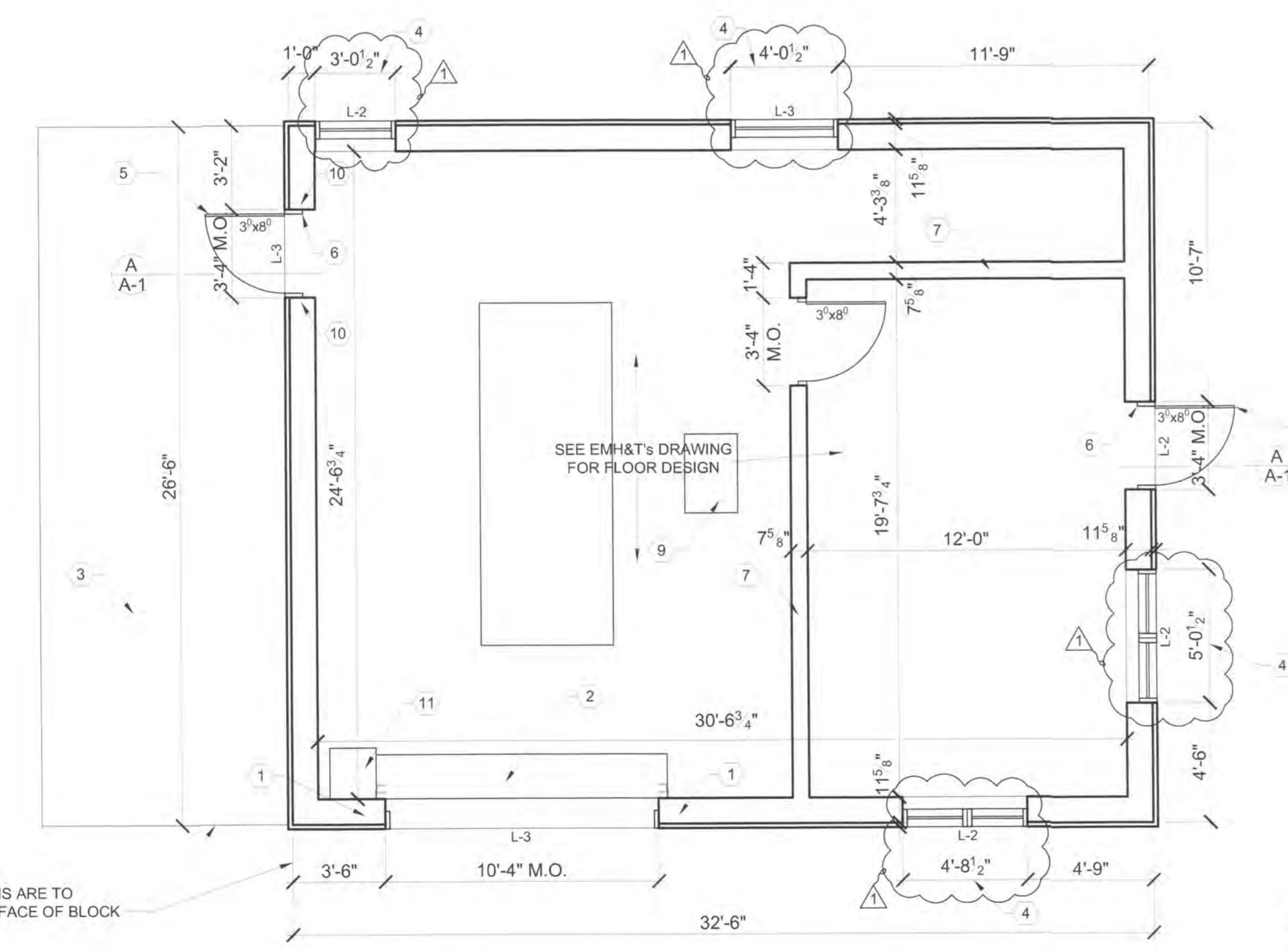
DETAIL DOOR HEAD
SCALE: 3/4" = 1'-0"



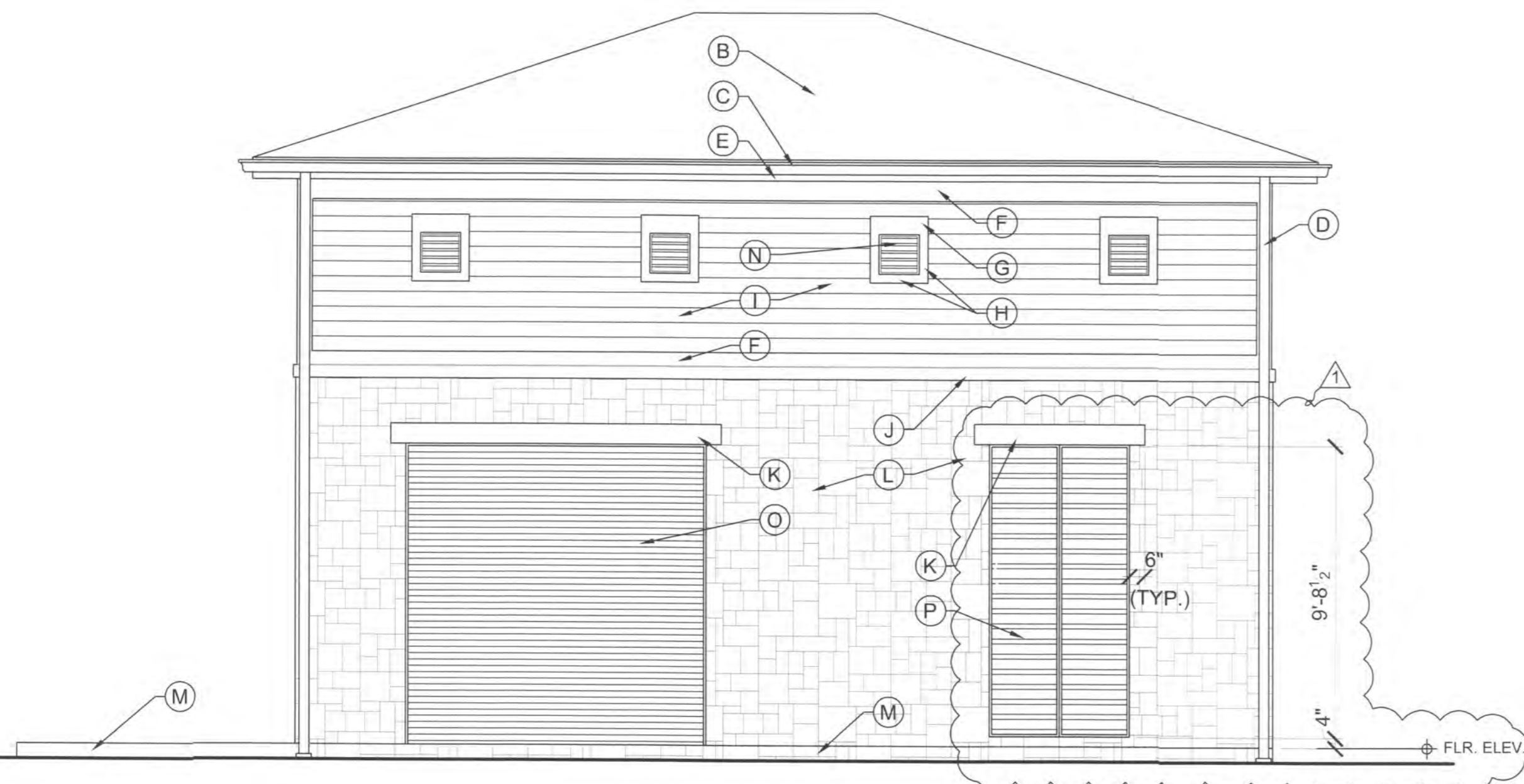
DETAIL DOOR JAMB
SCALE: 3/4" = 1'-0"



PLAN AT LOUVER LEVEL
SCALE: 1/4" = 1'-0"



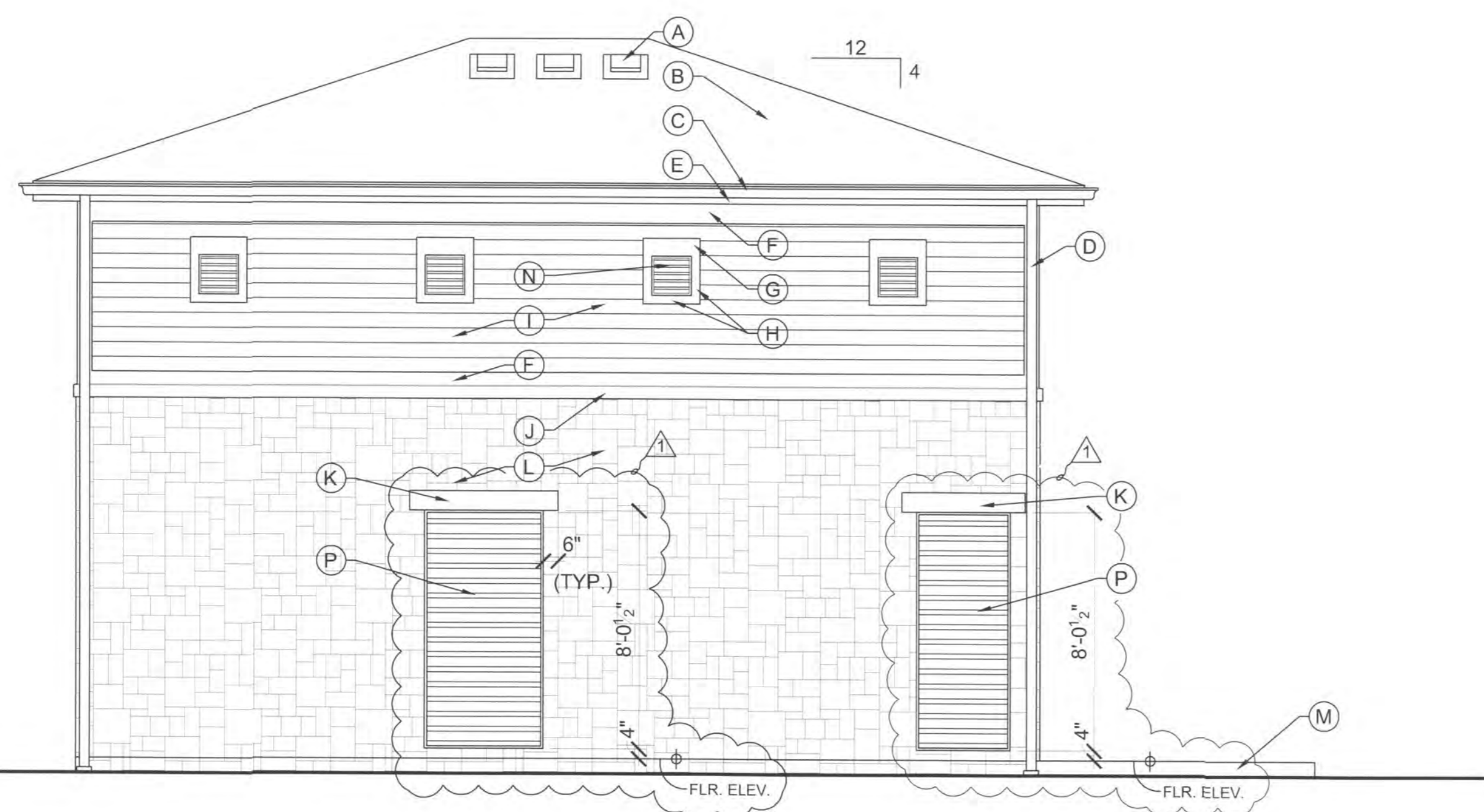
FLOOR PLAN
SCALE: 1/4" = 1'-0"



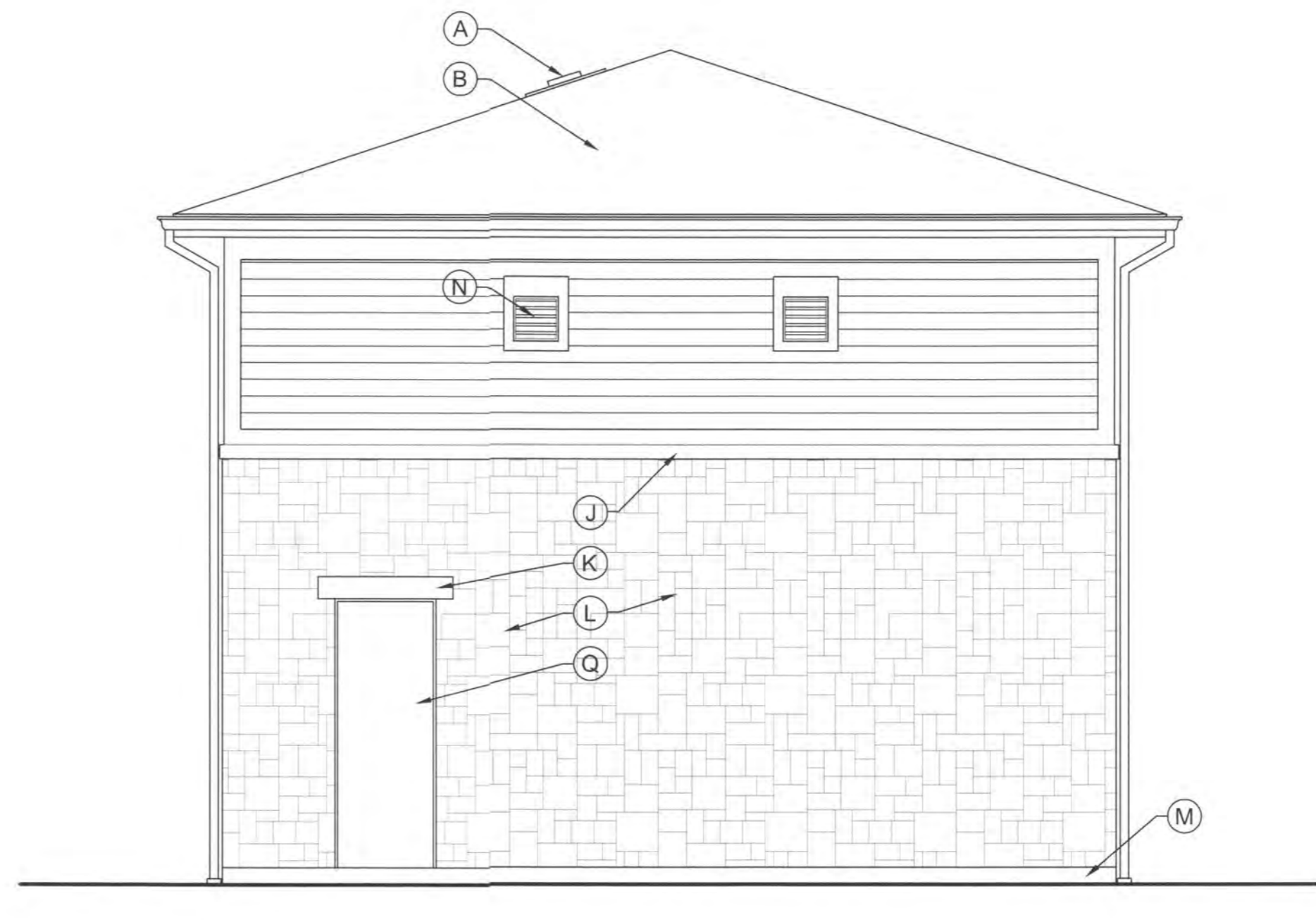
EAST ELEVATION
SCALE: 1/4" = 1'-0"



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



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



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

ELEVATION NOTES

- ALL EXPOSED EXTERIOR WOOD TRIM TO BE REDWOOD OR SMOOTH FINISH CEDAR. ALL SURFACES OF TRIM TO BE PRIMED PRIOR TO INSTALLATION. SAW CUTS AND NAIL HOLES ARE TO BE PRIMED.

- A. ROOF VENT. PAINT TO MATCH SHINGLES
- B. MATCH SHINGLES TO BE USED ON CLUBHOUSE
- C. PREFINISHED ALUMINUM GUTTER. GUTTER TO MATCH CLUBHOUSE SPECIFICATION.
- D. PREFINISHED ALUMINUM DOWNSPOUT. DOWNSPOUT TO MATCH CLUBHOUSE SPECIFICATION
- E. 1x8 WOOD FASCIA
- F. 1x10 WOOD TRIM
- G. 1x8 WOOD HEAD TRIM
- H. 1x4 WOOD TRIM AT JAMB AND SILL
- I. FIBER CEMENT LAP SIDING. PRODUCT IS TO MATCH SIDING SPECIFIED FOR CLUBHOUSE. SIDING IS TO BE BLIND NAILED.
- J. CUT LIMESTONE COPING
- K. 8" TALL CUT LIMESTONE LINTEL. THICKNESS OF THE MATERIAL IS TO MATCH THE CULTURED STONE
- L. CULTURED STONE. MATCH THE STONE SPECIFIED ON THE CLUBHOUSE
- M. CONCRETE SLAB. SEE DRAWINGS BY EMH&T
- N. SINGLE PANEL WALL SHUTTER, OVERALL SIZE OF SHUTTER 16" x 16"
- O. 10'-0"x10'-0" ROLL-UP METAL DOOR
- P. METAL LOUVER. SEE DRAWINGS BY EMH&T
- Q. 3'-0"x8'-0" METAL DOOR

**NORTHSTAR SANITARY
PUMPING STATION**



Gary

Architect

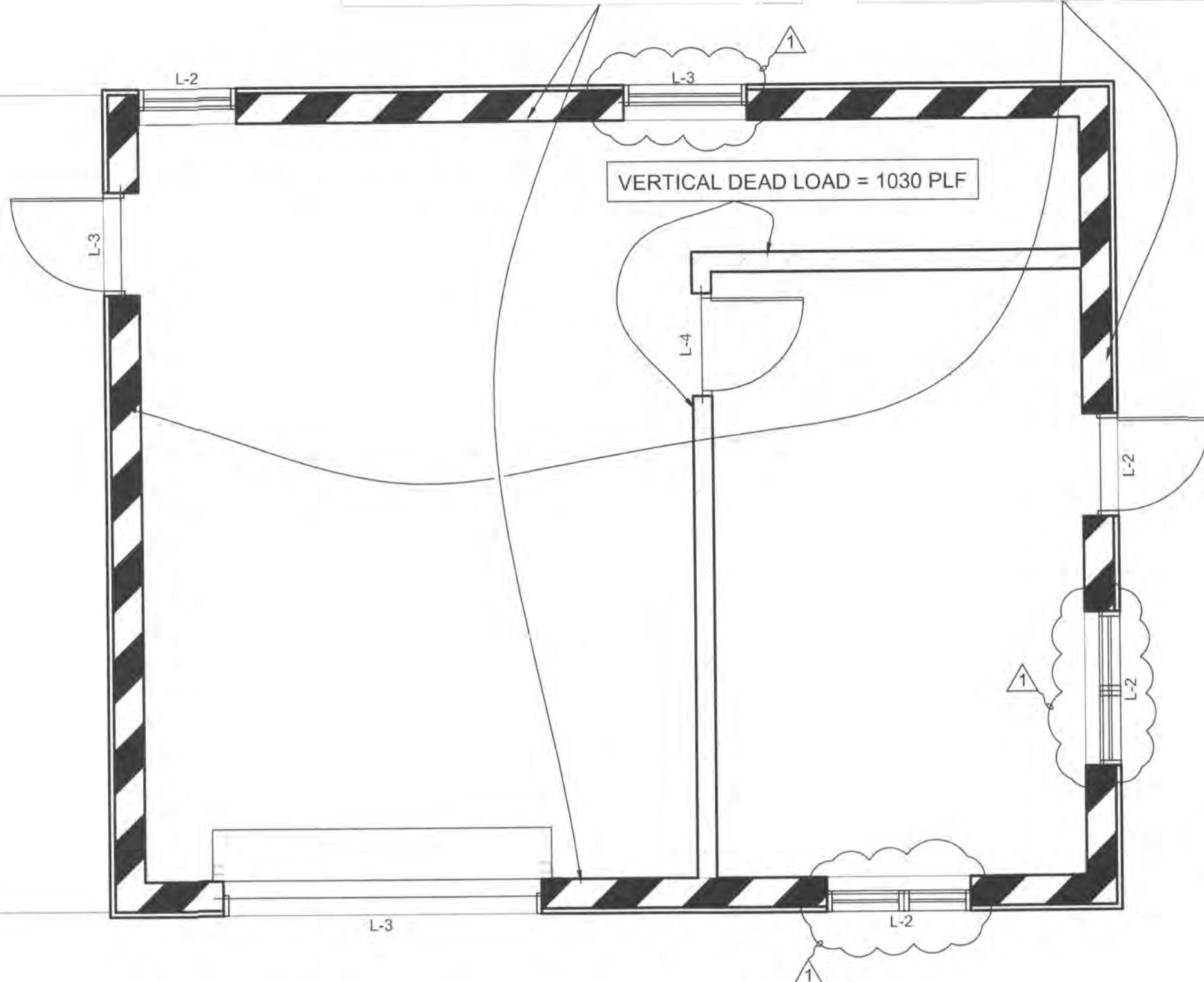
1324 Dublin Road, Columbus, Ohio 43215
(614) 487-0637 Fax (614) 486-4040

REVIEW: 11/11/04
REVISED: 03/11/05
REVISED: 09/28/05
REVISED: 12/13/06

A-2

VERTICAL DEAD LOAD = 1905 PLF
 VERTICAL LIVE LOAD = 375 PLF
 LATERAL (PARALLEL TO WALL) = 3140 # (WIND)
 = 5200 # (E.Q.)
 OVERTURNING MOMENT = 58.6 FT.-KIPS (WIND)
 = 97.1 FT.-KIPS (E.Q.)

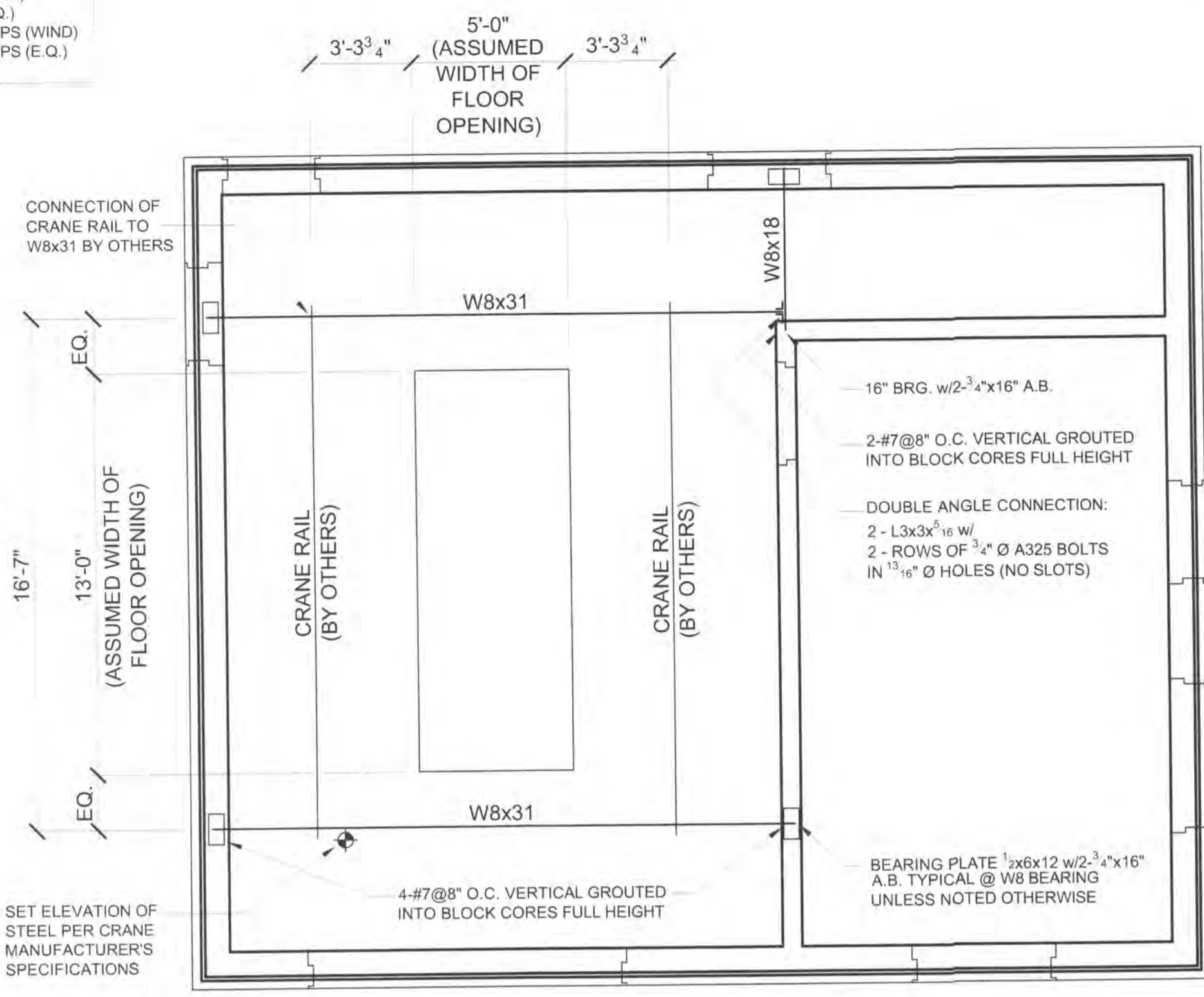
VERTICAL DEAD LOAD = 1715 PLF
 VERTICAL LIVE LOAD = 140 PLF
 LATERAL (PARALLEL TO WALL) = 3780 # (WIND)
 = 4780 # (E.Q.)
 OVERTURNING MOMENT = 70.6 FT.-KIPS (WIND)
 = 89.2 FT.-KIPS (E.Q.)



WALL LOADINGS PLAN
 SCALE: 1/4" = 1'-0"

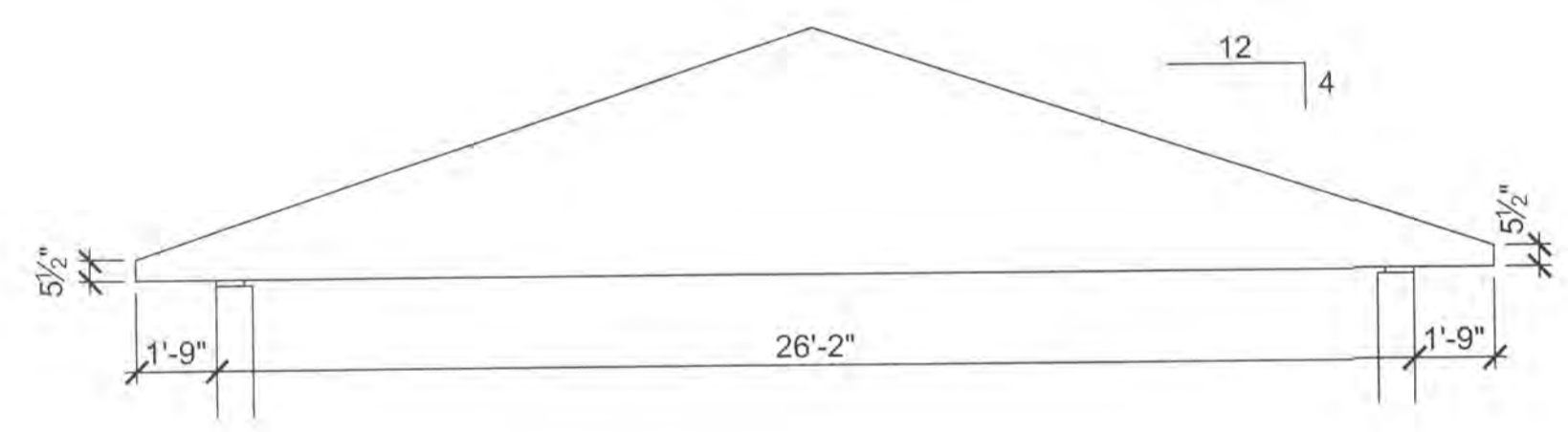
FOUNDATION DESIGN CRITERIA

FOUNDATION WALLS AND FOOTINGS ARE TO BE DESIGNED FOR THE VERTICAL LOADS, LATERAL LOADS AND OVERTURNING MOMENTS FROM THE ABOVE STRUCTURE GENERATED BY SNOW, WIND AND EARTHQUAKE LOADINGS AS DETERMINED BY SECTIONS 1608, 1609 AND 1617 OF THE OHIO BUILDING CODE.



STRUCTURAL FRAMING FOR CRANE
 SCALE: 1/4" = 1'-0"

ALL DIMENSIONS AND LOADING ARE BASED ON GORBEL CRANE SPECIFICATIONS. ASSUMED MAXIMUM LOAD CAPACITY FOR CRANE IS 4000 LBS. G.C. TO PROVIDE ARCHITECT SHOP DRAWINGS AND SPECIFICATIONS FOR CRANE SELECTED

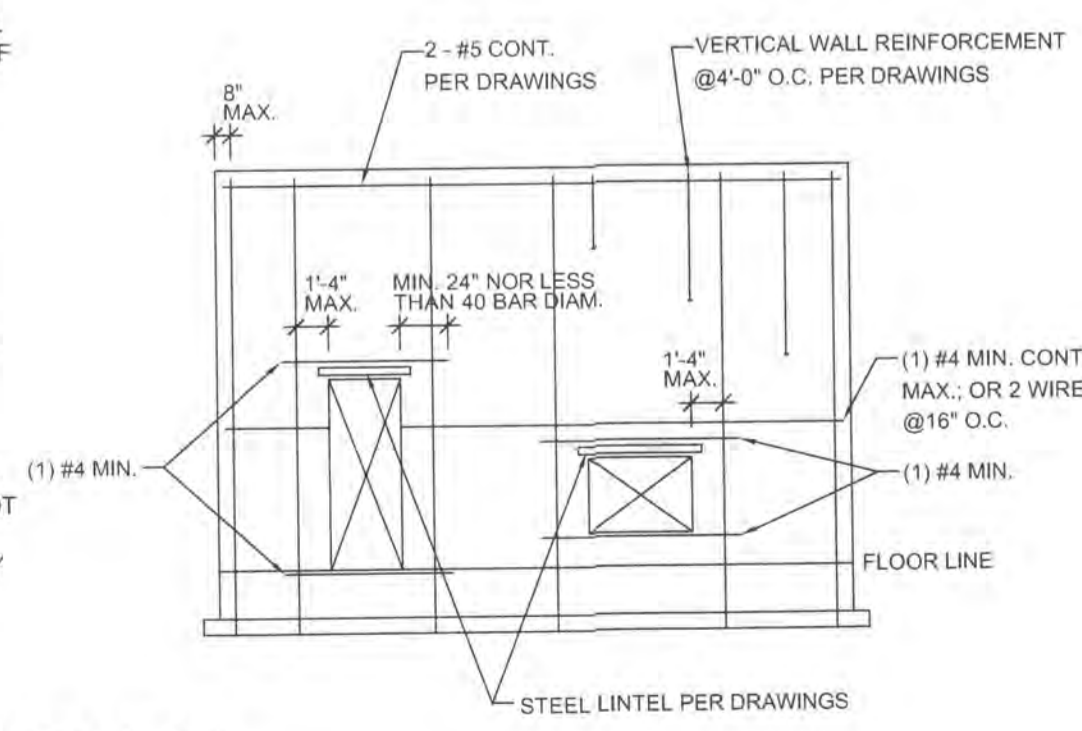


TRUSS PROFILE T-1
 SCALE: 1/4" = 1'-0"

VERTICAL REINFORCEMENT OF AT LEAST 0.20 SQUARE INCH IN CROSS-SECTIONAL AREA SHALL BE PROVIDED AT CORNERS, WITHIN 16 INCHES OF EACH SIDE OF OPENINGS, WITHIN 8 INCHES OF EACH SIDE OF MOVEMENT JOINTS, WITHIN 8 INCHES OF THE ENDS OF WALLS, AND AT A MAXIMUM SPACING OF 4 FEET (UNLESS NOTED OTHERWISE ON THE PLAN).

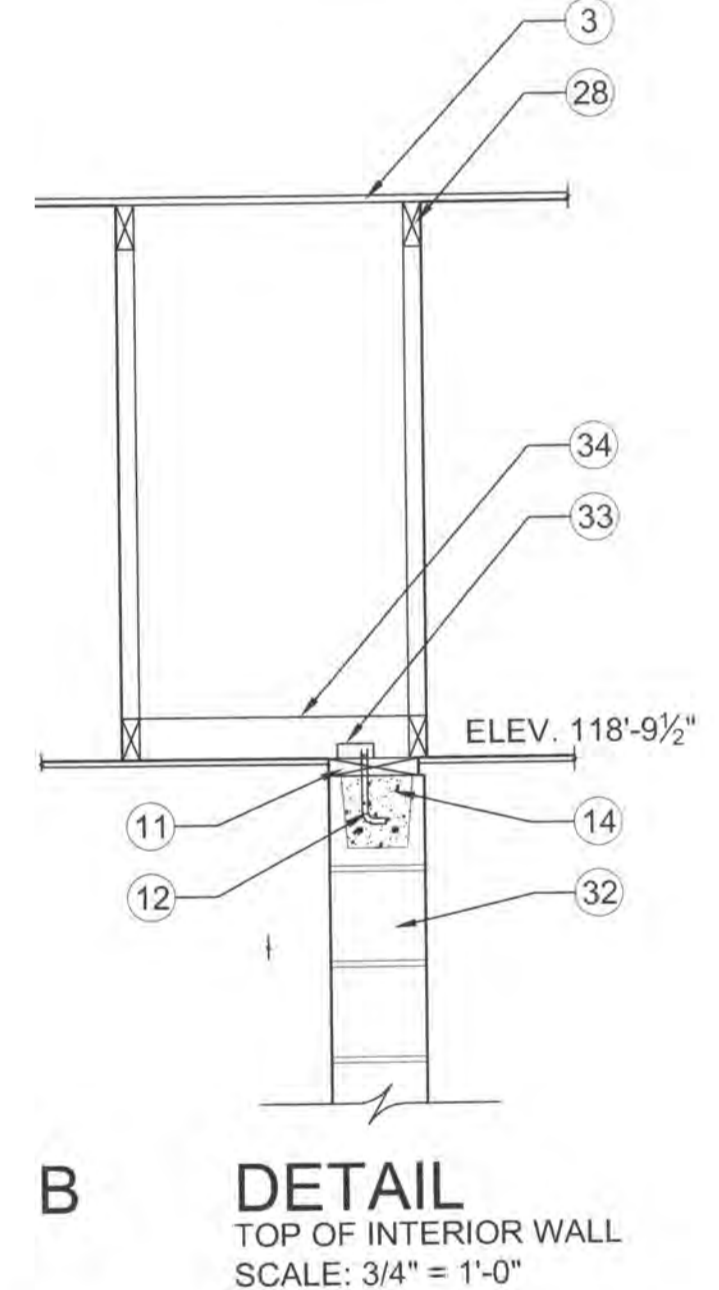
HORIZONTAL JOINT REINFORCEMENT SHALL CONSIST OF AT LEAST TWO WIRES OF W1.7 SPACED NOT MORE THAN 16 INCHES, OR BOND BEAM REINFORCEMENT SHALL BE PROVIDED OF AT LEAST 0.20 SQUARE INCH IN CROSS-SECTIONAL AREA SPACED NOT MORE THAN 10 FEET. HORIZONTAL REINFORCEMENT SHALL ALSO BE PROVIDED AT THE BOTTOM AND TOP OF WALL OPENINGS AND SHALL EXTEND NOT LESS THAN 24 INCHES NOR LESS THAN 40 BAR DIAMETERS PAST THE OPENING, CONTINUOUSLY AT STRUCTURALLY-CONNECTED ROOF AND FLOOR LEVELS, AND WITHIN 16 INCHES OF THE TOP OF WALLS.

REINFORCED MASONRY SHEAR WALL DETAIL
 SCALE: N.T.S.

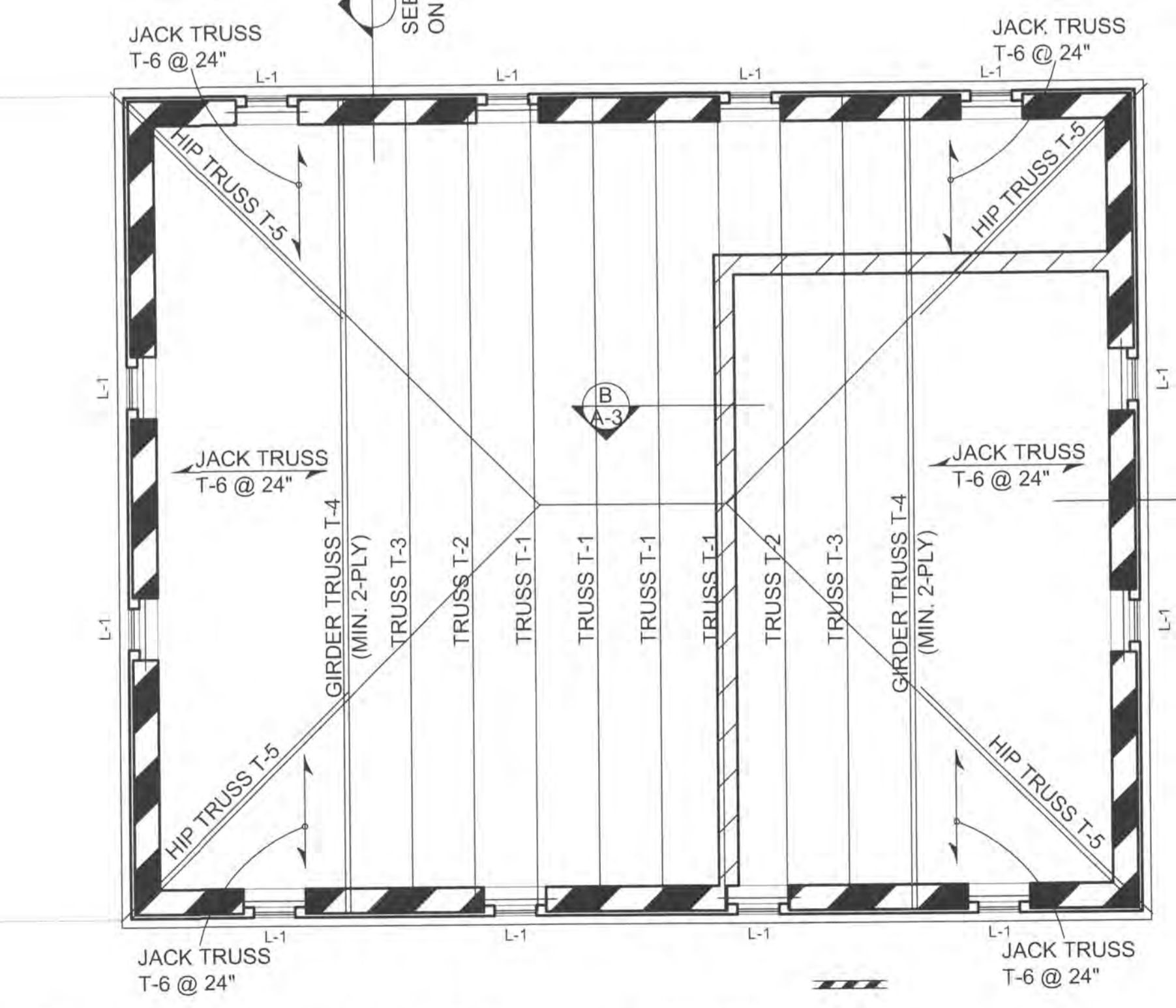


- MATERIAL LIST - WALL SECTION & DETAIL**
- MATCH SHINGLES TO BE USED ON CLUBHOUSE
 - 15# ROOFING FELT
 - 3/8" PLYWOOD SHEATHING W/10d NAILS @ 6" O.C.
 - METAL DRIP EDGE
 - 1x8 WOOD FASCIA
 - PREFINISHED ALUMINUM GUTTER, GUTTER TO MATCH CLUBHOUSE SPECIFICATION
 - 2x SUB-FASCIA
 - 3" CONTINUOUS SOFFIT VENT
 - FIBER CEMENT BOARD, SMOOTH FINISH, HARDI-PANEL OR EQUAL APPROVED BY ARCHITECT
 - 1x10 WOOD TRIM
 - 2x8 TREATED WOOD PLATE CONTINUOUS
 - 3/4" ANCHOR BOLT 24" O.C.
 - 1/2" GYPSUM WALLBOARD, EXTERIOR GRADE
 - BOND BEAM W/2-#5 REINFORCING BARS CONTINUOUS
 - 1 ANGLE 5x3x3/16 AND 1 ANGLE 5x3x3/16 LLV, 6" BEARING EACH END
 - FIBER CEMENT LAP SIDING, PRODUCT TO MATCH SIDING SPECIFIED FOR CLUBHOUSE. SIDING TO BE BLIND NAILED.
 - PAINTED METAL FLASHING
 - 1x8 WOOD TRIM
 - 1x4 WOOD TRIM
 - 1'-4"x1'-4" LOUVER WITH INSECT SCREEN BEHIND.
 - LOUVER TO BE 2 1/2" DEEP, GALVANIZED STEEL, STATIONARY.
 - 1/2" PLYWOOD SHEATHING
 - 2x2 FURRING STRIPS 24" O.C.
 - 2x4 BLOCKING TO LOCATE LOUVER
 - CUT LIMESTONE COPING
 - 12"x8"x16" CONCRETE BLOCK
 - CULTURED STONE TO MATCH STONE SPECIFIED FOR CLUBHOUSE
 - #7 DOWELS TO MATCH VERTICAL WALL REINFORCING. DOWELS TO HAVE LONG LEG OF 6'-6", SHORT LEG OF 6" AND LAP WALL REINFORCING 3'-6".
 - TRUSSES @ 24" O.C.
 - SIMPSON H3 ANCHOR AT EACH TRUSS
 - SIMPSON A35 ANCHOR AT EACH TRUSS
 - #7 WALL REINFORCING @ 48" VERTICAL GROUDED INTO BLOCK CORES FULL HEIGHT
 - 8"x8"x16" CONCRETE BLOCK
 - SIMPSON HITCH CLIP AT EACH 2x4
 - 2x4 BLOCKING @ 24" O.C. PROVIDE 1/2" GAP BETWEEN BLOCKING AND TOP PLATE
 - 1x6 WOOD TRIM
 - 10"x8"x16" C.M.U.
 - CAULK
 - STEEL DOOR FRAME
 - ANCHOR, MIN. 3 PER JAMB
 - GROUT FRAME CAVITY SOLID
 - WEEP HOLES
 - WALL FLASHING

- GENERAL STRUCTURAL INFORMATION**
- ROOF LIVE LOADING: 20 PSF
 ROOF SNOW LOADING:
- GROUND SNOW LOAD: 25 PSF
 FLAT ROOF SNOW LOAD: 20 PSF
 SNOW EXPOSURE FACTOR: 1.0
 SNOW IMPORTANCE FACTOR: 1.0
 THERMAL FACTOR: 1.1
- WIND LOADING:
- BASIC WIND SPEED (3-SECOND GUST): 90 MPH
 WIND LOAD IMPORTANCE FACTOR: 1.0
 BUILDING CATEGORY: I
 WIND EXPOSURE CLASSIFICATION: C
 INTERNAL PRESSURE COEFFICIENT: ± 0.18
 DESIGN WIND PRESSURE (COMPONENTS AND CLADDING): 24 PSF
- EARTHQUAKE DESIGN DATA:
- SEISMIC USE GROUP: I
 SPECTRAL RESPONSE COEFFICIENT, S_w: 0.181
 SPECTRAL RESPONSE COEFFICIENT, S_u: 0.112
 SITE CLASS: D
 BASIC SEISMIC-FORCE-RESISTING SYSTEM: ORDINARY REINFORCED MASONRY SHEAR WALLS
 DESIGN BASE SHEAR: 20.8 KIPS
 ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
- PREFABRICATED WOOD TRUSSES**
- WOOD TRUSSES TO BE DESIGNED IN ACCORDANCE WITH THE LATEST EDITION OF THE "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION" AS RECOMMENDED BY THE AMERICAN FOREST AND PAPER ASSOCIATION.
- DESIGN TRUSS LOADING: TOP CHORD DEAD LOADING = 10 PSF
 TOP CHORD LIVE LOADING = 25 PSF
 BOTTOM CHORD DEAD LOADING = 10 PSF
- DESIGN WIND LOADING TO BE 90 MPH, EXPOSURE C, (COMPONENTS AND CLADDING) IN ACCORDANCE WITH THE OHIO BUILDING CODE.
- TRUSS MANUFACTURER TO SUBMIT ERECTION PLAN AND SHOP DRAWINGS, BEARING THE SEAL OF AN ENGINEER REGISTERED IN THE STATE OF OHIO, CONFORMING TO THE DESIGN CRITERIA SPECIFIED HEREIN FOR APPROVAL AND PRIOR TO FABRICATION. SUBMITTED DATA TO CONTAIN:
- DESIGN LOADINGS AND ALLOWABLE STRESS INCREASES EMPLOYED
 - CALCULATED TRUSS MEMBER STRESSES
 - RATED LOAD CAPACITY OF THE TRUSS MEMBER CONNECTION
 - SIZE, SPECIES, AND STRESS-GRADE OF LUMBER EMPLOYED
 - FABRICATION DETAILS INDICATING LOCATION AND DETAILS OF CONNECTIONS
 - PERMANENT BRIDGING / BRACING MEMBERS, LOCATIONS, AND DETAILS
 - HANDLING AND ERECTION INSTRUCTIONS
 - TRUSS-TO-TRUSS CONNECTION DETAILS
- FAILURE TO FURNISH ANY OF THE ABOVE REQUIRED DATA WILL BE REGARDED AS AMPLE REASON FOR THE REJECTION OF THE SHOP DRAWINGS. THE CONTRACTOR SHALL APPROVE FABRICATION DRAWINGS INDICATING SIZE, SHAPE, AND LAYOUT PRIOR TO SUBMITTAL FOR REVIEW BY THE ARCHITECT.
- CONNECTOR PLATES SHALL BE A MINIMUM OF 0.036" IN THICKNESS AND SHALL BE MANUFACTURED FROM MATERIAL MEETING THE REQUIREMENTS OF ASTM A446 GRADE A STEEL, PLATED TO BE GALVANIZED IN ACCORDANCE WITH ASTM A525 G60 SPECIFICATIONS.
- LINTEL SCHEDULE**
- L-1: 1-L5x5x3/16 + 1-L5x3x3/16 LLV
 6" BRG. EA. END
- L-2: 3-L4x3x3/16 LLV
 6" BRG. EA. END
- L-3: W8x18 + PL 3/8"x11 CONT.
 12" BRG. EA. END + 2-1/4"x16 A.B. EA. END
- L-4: 2-L4x3x3/16 LLV
 6" BRG. EA. END



DETAIL TOP OF INTERIOR WALL
 SCALE: 3/4" = 1'-0"



ROOF FRAMING PLAN
 SCALE: 1/4" = 1'-0"

ROOF FRAMING PLAN NOTES

- DESIGN LIVE LOADING = 25 PSF
- FIGURES THUS INDICATE MASONRY WALLS
- W/7 @ 48" O.C. VERTICAL GROUDED INTO BLOCK CORES FULL HEIGHT
- 3/8" PLYWOOD SHEATHING W/10d NAILS @ 6" O.C. EDGES AND 10d NAILS AT 12" O.C. FIELD

NORTHSTAR SANITARY PUMPING STATION

STATE OF OHIO
 GARY J. ALEXANDER
 #8806
 REGISTERED ARCHITECT

Gary J. Alexander,
 Architect

1324 Dublin Road, Columbus, Ohio 43215
 (614) 487-0637 Fax (614) 486-4040

REVIEW: 11/11/04
 REVISED: 03/11/05
 REVISED: 08/11/05
 REVISED: 12/13/06

A-3

1.04102411 (LUBRICATOR) PROJECT 20040517 (WIND PUMP STATION) ENAL ARCHITECT/NORTHSTAR 9-29-05 DWG-4-4 - NO. XREETS - LAST SAVED BY: REBURKHART 17/29/2008 12:32:32 PM - EDITED BY: REBURKHART 17/29/2008 12:32:32 PM

PRODUCT SPECIFICATION

I. UNIT MASONRY

CONCRETE MASONRY MATERIALS

- A. CONCRETE MASONRY UNITS
1. LOAD-BEARING TYPE: ASTM C 90, STANDARD NORMAL WEIGHT UNITS...
2. PROVIDE MODULAR DIMENSION, STANDARD CONCRETE MASONRY UNITS...
B. AGGREGATE: ASTM C33 NORMAL WEIGHT AGGREGATE...
C. DRYING SHRINKAGE: ASTM C426...
D. SPECIAL SHAPES:
1. PROVIDE CLOSURES, HEADERS, BOND BEAMS, AND SPECIAL SHAPES AS REQUIRED...

MASONRY MORTAR AND GROUT

- A. CONCRETE FILL: COMPLY WITH SECTION 03300 - CAST-IN-PLACE MASONRY CONCRETE FILL REQUIREMENTS.
B. PORTLAND CEMENT: ASTM C150, TYPE I OR TYPE III, NATURAL COLOR.
C. MASONRY CEMENT: ASTM C91.
D. HYDRATED LIME: ASTM C207, TYPE S.
E. AGGREGATE: ASTM C144, CLEAN MASONRY SAND, NOT OVER 10% TO PASS No. 100 SIEVE.
F. WATER: CLEAN, FRESH AND FREE OF DELETERIOUS AMOUNTS OF ACIDS, ALKALIES AND FOREIGN OR ORGANIC MATERIALS...
G. WATER REPELLENT ADMIXTURE:
1. INTEGRAL POLYMERIC WATER-REPELLENT ADMIXTURE...
H. UNIT MASONRY MORTAR MIXES
1. TYPE S MORTAR: ASTM C270 PROPORTIONS BY VOLUME...
I. GROUT MIXES:
1. FINE MORTAR GROUT: ASTM C476 PROPORTIONS BY VOLUME...

MASONRY ACCESSORIES

- A. MANUFACTURER: DUR-O-WAL, INC., OR EQUAL BY HECKMANN BUILDING PRODUCTS, INC., HOHMANN & BARNARD, INC., OR MASONRY REINFORCING CORP. OF AMERICA, EXCEPT AS OTHERWISE INDICATED.
B. HORIZONTAL JOINT REINFORCEMENT: WELDED LADDER TYPE FABRICATED FROM ASTM A82 COLD-DRAWN STEEL WIRE...
C. REINFORCING BARS: ASTM A 615, GRADE 60, NEW DOMESTIC DEFORMED BILLET STEEL BARS OF SIZES INDICATED.
D. WALL WEEPS AND VENTS: DUR-O-WAL DIA 1006 "CELL VENT" OR AN APPROVED EQUAL WALL WEEP AND VENT...

- E. CONCEALED MASONRY FLEXIBLE MEMBRANE FLASHING: ILLINOIS PRODUCT CORP. TEL: 800-338-8183 "IPCO FLASHING SYSTEM" OR AN APPROVED EQUAL...
1. PRIMER: IPCO FLASHING PRIMER, RUBBER BASED SOLVENT SOLUTION.
2. MASTIC: IPCO FLASHING MASTIC, A RUBBERIZED ASPHALT BASED MATERIAL...
3. DRIP EDGE: IPCO TYPE "H" 1 1/2" x 3/4" DRIP EDGE AND HEMMED EXPOSED EDGE...

- F. BOND BREAKER STRIPS: ASTM D226 No. 15 ASPHALT SATURATED ROOFING FELT.

- G. CLEANING AGENTS: PROSOCO, INC., "SURE KLEAN NEW MASONRY CLEANERS" OR AN APPROVED EQUAL COMMERCIAL CLEANING SOLUTION THAT WILL NOT HARM MASONRY OR ADJACENT MATERIALS...

- H. LOOSE MASONRY FILL INSULATION: ASTM C549 PERLITE, LIGHTWEIGHT INORGANIC, FREE FLOWING, INERT VOLCANIC GLASS EXPANDED BY HEAT AND TREATED TO IMPROVE WATER REPELLENCY...
1. MANUFACTURER: MEMBER OF THE PERLITE INSTITUTE, TEL. 717-238-9723.
2. DENSITY RANGE OF 2-11 LBS/FT³.
3. NON-COMBUSTIBLE WHEN TESTED IN ACCORDANCE WITH ASTM E136.
4. PROVIDE GALVANIZED STEEL SCREENING AT ALL WEEP HOLES.

II. METAL FABRICATIONS

MATERIALS AND COMPONENTS

- A. METAL SURFACES: GENERAL: FOR FABRICATION OF WORK EXPOSED TO VIEW, USE ONLY MATERIALS THAT ARE SMOOTH AND FREE OF SURFACE BLEMISHES...
B. CARBON STEEL:
1. STRUCTURAL PLATES, SHAPES, BARS AND EMBEDDED ANCHORS: ASTM A36, 36 KSI STEEL.
2. STRUCTURAL TUBING: HOT-ROLLED ASTM A501 OR COLD-FORMED ASTM A500 WELDED AND SEAMLESS.
3. STRUCTURAL PIPE: ASTM A53, TYPE A AND GRADE SELECTED BY THE FABRICATOR...
C. WELDED ELECTRODES: COMPLY WITH AWS D1.1 WHEN APPLICABLE AND AWS D1.3 FOR WELDING BASE METALS...
D. NON-METALLIC GROUT: CORPS OF ENGINEERS CRD-C621, PRE-MIXED, SHRINKAGE RESISTANT...
E. CONCRETE FILL: COMPLY WITH REQUIREMENTS IN SECTION 03300 - CAST-IN-PLACE CONCRETE...
F. FASTENERS: PROVIDE STAINLESS STEEL OR ZINC-COATED FASTENERS ONLY FOR EXTERIOR USE...
G. GALVANIZED FINISHES: ASTM A123 FOR GALVANIZING ROLLED, PRESSED AND FORGED STEEL SHAPES, PLATES, BARS, AND STRIPS...

III. ROUGH CARPENTRY

- A. LUMBER:
1. NOMINAL LUMBER SIZES ARE INDICATED, EXCEPT AS SHOWN BY DETAIL DIMENSIONS...
2. PROVIDE DRESSED SEASONED DIMENSIONED LUMBER, S4S, AIR-DRIED WITH MAXIMUM 19% MOISTURE CONTENT...
3. DIMENSION LUMBER: LIGHT FRAMING, 2 TO 4 INCHES THICK, 2 TO 4 INCHES WIDE...
4. BLOCKING, NAILERS, FURRING AND SIMILAR MEMBERS: STANDARD GRADE WESTERN DIMENSION LUMBER...
B. PLYWOOD: PROVIDE EXTERIOR GRADE PLYWOOD FOR EXTERIOR USE AND INTERIOR TYPE WITH EXTERIOR GLUE FOR INTERIOR USE...

IV. FINISH CARPENTRY

MATERIALS

- A. EXTERIOR WOOD FASCIAS AND TRIM, SITE APPLIED PAINTED FINISH: S4S, KILN-DRIED, GRA-RIS CLEAR REDWOOD OR GRADE A WESTERN RED CEDAR, SIZES INDICATED.
1. FACTORY PRIMED, FINGER-JOINTED MATERIALS BONDED WITH EXTERIOR TYPE GLUE ARE ACCEPTABLE.

V. INSULATION

MANUFACTURERS

- A. MANUFACTURERS:
1. PLASTIC FOAM RIGID BOARD INSULATION: DOW CHEMICAL CO. (STYROFOAM) OR EQUAL BY PACTIV BUILDING PRODUCTS (GREENGUARD), OR OWENS-CORNING (FOAMULAR).
2. GLASS FIBER BATT/BLANKET INSULATION: OWENS-CORNING FIBERGLAS CORP. OR EQUAL BY CERTAINTED CORP., KNAUF FIBER GLASS GMBH, OR JOHNS MANVILLE.
3. LOOSE MASONRY FILL INSULATION (SEE MASONRY ACCESSORIES H)

INSULATION MATERIALS

- A. GENERAL: PROVIDE INSULATING MATERIALS THAT COMPLY WITH REQUIREMENTS AND WITH REFERENCE STANDARDS...
B. EXTRUDED POLYSTYRENE FOAM RIGID BOARD INSULATION: RIGID, CELLULAR POLYSTYRENE THERMAL INSULATION FORMED FROM POLYSTYRENE BASE RESIN...
C. GLASS FIBER BATT/BLANKET TYPE INSULATION: GLASS FIBERS AND BINDERS FORMED INTO FLEXIBLE BLANKETS OR BATTS...

ACCESSORY MATERIALS

- A. MECHANICAL FASTENERS: NON-CORROSIVE GALVANIZED STEEL WIRE STAPLES OR NAILS FOR WOOD FRAMING.
B. RIGID BOARD INSULATION ADHESIVES: PROVIDE INSULATION MANUFACTURER'S RECOMMENDED ADHESIVES...
C. VAPOR RETARDER MEMBRANE TAPE: PRESSURE SENSITIVE POLYESTER, POLYETHYLENE OR ALUMINUM FOIL...
D. SUPPLEMENTARY SUPPORT: PROVIDE GALVANIZED STEEL HEXAGON WIRE MESH WHERE REQUIRED...
E. INSULATION STOPS: JOHNS MANVILLE "VENT CHUTE", OR AN APPROVED EQUAL...

VI. JOINT SEALERS

MANUFACTURERS

- A. MANUFACTURER: AS SCHEDULED FOR TYPES OF JOINT SEALERS REQUIRED.
1. POLYURETHANE SEALANTS: BOSTIK CONSTRUCTION PRODUCTS, CHEMREX INC. SONNEBORN BUILDING PRODUCTS DIV., PECORA CORP. OR TREMCO INC.
2. EXTERIOR SILICONE SEALANTS: BOSTIK CONSTRUCTION PRODUCTS, DOW CORNING CORP., GE SILICONES, PECORA CORP. OR TREMCO INC.
3. INTERIOR SILICONE SEALANTS: DOW CORNING CORP., GE SILICONES OR PECORA CORP.
4. ACRYLIC LATEX SEALANTS: BOSTIK CONSTRUCTION PRODUCTS, CHEMREX INC. SONNEBORN BUILDING PRODUCTS DIV., PECORA CORP. OR TREMCO INC.

MATERIALS

- A. GENERAL:
1. COMPATIBILITY: PROVIDE JOINT SEALERS, JOINT FILLERS, AND OTHER RELATED MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND WITH JOINT SUBSTRATES...
2. COLORS: MATCHING OR COMPATIBLE WITH MATERIALS BEING SEALED AS SELECTED BY ARCHITECT...

ELASTOMERIC JOINT SEALANTS

- A. ELASTOMERIC SEALING STANDARD: MANUFACTURER'S STANDARD CHEMICALLY CURED, ELASTOMERIC SEALANT OF BASE POLYMER INDICATED WHICH COMPLIES WITH ASTM C920 REQUIREMENTS...
1. HARDNESS: SHORE A HARDNESS MINIMUM 15 AND MAXIMUM OF 50 OR AS RECOMMENDED BY SEALANT MANUFACTURER...
2. GRADE: PROVIDE NON-SAG GRADE AND TYPE FOR VERTICAL JOINTS AND SELF-LEVELING GRADE AND TYPE FOR HORIZONTAL JOINTS...

B. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:

- 1. MULTI-PART NON-SAG URETHANE SEALANT FOR USE NT: EXTERIOR JOINTS IN VERTICAL MASONRY SURFACES...
a. "CHEM-CALK 600"; BOSTIK CONSTRUCTION PRODUCTS DIV.
b. "SONOLASTIC NP 2"; CHEMREX INC. SONNEBORN BUILDING PRODUCTS DIV.
c. "DYNATROL II"; PECORA CORP.
d. "THERMOC 511"; TREMCO INC.
2. MULTI-PART NON-SAG URETHANE SEALANT FOR USE T: EXTERIOR AND INTERIOR JOINTS IN HORIZONTAL TRAFFIC SURFACES...
a. "CHEM-CALK 650"; BOSTIK CONSTRUCTION PRODUCTS DIV.
b. "SONOLASTIC SL 2"; CHEMREX INC. SONNEBORN BUILDING PRODUCTS DIV.
c. "DYNATROL II SC"; PECORA CORP.
d. "THC 901"; TREMCO INC.
3. LOW-MODULUS/MEDIUM MODULUS SILICONE SEALANT S (SINGLE COMPONENT), NS (NONSAG) CLASS 25 FOR USE O: EXTERIOR JOINTS...

ACRYLIC LATEX JOINT SEALANTS

- A. ACRYLIC LATEX SEALANTS: MANUFACTURER'S STANDARD, ONE PART, NON-SAG, MILDEW-RESISTANT, ACRYLIC-EMULSION SEALANT...
B. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
1. "CHEM-CALK 600"; BOSTIK CONSTRUCTION PRODUCTS DIV.
2. "SONOLAC"; CHEMREX INC. SONNEBORN BUILDING PRODUCTS DIV.
3. "AC209-SILICONE"; PECORA CORP.
4. "TREMCO ACRYLIC LATEX 834"; TREMCO INC.

INTERIOR SILICONE JOINT SEALANTS

- A. INTERIOR SILICONE SEALANTS: MANUFACTURER'S STANDARD, ONE PART, NON-SAG, MOLD AND MILDEW RESISTANT, SILICONE RUBBER BASED SEALANT...
B. PRODUCTS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE ONE OF THE FOLLOWING:
1. "786"; DOW CORNING CORP.
2. "SANITARY SCS1700 SEALANT"; GE SILICONES
3. "860"; PECORA CORP.

ACCESSORY MATERIALS

- A. JOINT PRIMER/SEALER: NON-STAINING TYPE, RECOMMENDED BY SEALANT MANUFACTURER...
B. JOINT CLEANER: NON-CORROSIVE AND NON-STAINING TYPE, RECOMMENDED BY SEALANT MANUFACTURER...
C. BOND BREAKER TAPE: PRESSURE SENSITIVE POLYETHYLENE OR PLASTIC TAPE...
D. JOINT BACKING: COMPRESSIBLE ROD STOCK OF POLYETHYLENE FOAM, POLYURETHANE FOAM, BUTYL RUBBER FOAM, NEOPRENE FOAM...

VII. STEEL DOORS AND FRAMES

MANUFACTURERS

- A. MANUFACTURER: STEELCRAFT-INGERSOLL-RAND OR EQUAL BY AMWELD BUILDING PRODUCTS DIV, CECO CORP, CURRIES DIV, ESSEX INDUSTRIES, OR REPUBLIC BUILDERS PRODUCTS CORP.

MATERIALS

- A. DOOR AND FRAME CLASSIFICATIONS: COMPLY WITH ANSI A250.8 MATERIAL AND FABRICATION RECOMMENDATIONS...
1. LEVEL 3, EXTRA HEAVY-DUTY, MODEL 1 FULL FLUSH DESIGN, PHYSICAL PERFORMANCE LEVEL A.
B. STANDARD STEEL DOORS:
1. TYPE: STEELCRAFT FLUSH SERIES L FULL FLUSH DOORS.
a. PROVIDE FULL-FLUSH TYPE DOORS WITH SEAMLESS FACES AND WITH VISIBLE EDGE SEAM...
2. DOORS: STEELCRAFT L-16 FABRICATED FROM ASTM A663, 16 GAGE, COMMERCIAL QUALITY, STRETCHER LEVEL, GALVANIZED STEEL FACE SHEETS...
3. CORES:
a. EXTERIOR DOORS: POLYURETHANE INSULATION, U-FACTOR 0.09, MINIMUM 1 1/2 LB. DENSITY...
4. HARDWARE REINFORCEMENTS: MEET OR EXCEED SDI 107 REQUIREMENTS.
5. EDGE PROFILE: 1/8" BEVEL IN 2" ON HINGE AND LOCK EDGES...

C. STANDARD STEEL FRAMES:

- 1. TYPE: STEELCRAFT STANDARD FLUSH SERIES, F 2" FACE FRAMES.
a. PROVIDE COMBINATION BUCK, JAMB AND TRIM TYPE FRAMES FOR 1 1/2" THICK DOORS...
b. MODULAR MASONRY CONSTRUCTION: WHERE SCHEDULED, PROVIDE BUTTED FRAMES WITH STANDARD 4" HEAD SECTION TO COORDINATE WITH MODULAR MASONRY CONSTRUCTION...
2. PROFILE: DOUBLE RABBIT, 2" FACE, JAMB DEPTHS INDICATED.
3. FRAMES: STEELCRAFT F16-4 FABRICATED FROM ASTM A663, 16 GAGE COMMERCIAL QUALITY GALVANIZED STEEL WITH G60 ZINC COATING, MILL PHOSPHATIZED.
4. HARDWARE REINFORCEMENTS: MEET OR EXCEED SDI 107 REQUIREMENTS.
5. SUPPORTS AND ANCHORS: MANUFACTURER'S STANDARD 1" WIDE, 18 GAGE CORRUGATED GALVANIZED SHEET STEEL MASONRY ANCHORS.
6. INSERTS, BOLTS AND FASTENERS: MANUFACTURER'S STANDARD UNITS, EXCEPT PROVIDE ASTM A153 HOT-DIP GALVANIZED FINISH.

VIII. OVERHEAD COILING DOORS

MANUFACTURERS

- A. MANUFACTURER: OVERHEAD DOOR CORP. OR EQUAL BY ATLAS ROLL-LITE DOOR CORP., COOKSON CO., CORNELL IRON WORKS INC. OR WAYNE-DALTON CORP.

MATERIALS AND COMPONENTS

- A. OVERHEAD COILING DOORS: OVERHEAD DOOR 825 SERIES STORMTITE INSULATED SERVICE DOOR, ALUMINUM, INSULATED COUNTERBALANCED OVERHEAD COILING DOOR...
B. DOOR CURTAIN: INTERLOCKING SLATS OF CONTINUOUS LENGTH FOR WIDTH OF DOOR WITHOUT SPLICES...
C. WEATHERSEALS: VINYL BOTTOM SEAL, EXTERIOR GUIDE AND INTERNAL HOOD SEALS.
D. BOTTOM BAR: TWO ALUMINUM ANGLES, EACH NOT LESS THAN 1 1/2" x 1 1/2" x 1/2" THICK...
E. CURTAIN JAMB GUIDES: GALVANIZED STEEL ANGLES, OR CHANNELS AND ANGLES WITH SUFFICIENT DEPTH AND STRENGTH...
F. BRACKETS: MANUFACTURER'S STANDARD DESIGN, GALVANIZED STEEL TO SUPPORT COUNTERBALANCE, CURTAIN AND HOOD.
G. COUNTERBALANCE MECHANISM: COUNTERBALANCE DOORS BY MEANS OF ADJUSTABLE STEEL HELICAL TORSION SPRING...
1. COUNTERBALANCE BARREL: FABRICATE SPRING BARREL OF HOT-FORMED STRUCTURAL QUALITY CARBON STEEL...
2. PROVIDE SPRING BALANCE OF ONE OR MORE OIL-TEMPERED, HEAT-TREATED HELICAL TORSION SPRINGS...

NORTHSTAR SANITARY PUMPING STATION
STATE OF OHIO REGISTERED ARCHITECT
GARY J. ALEXANDER #8806
Gary J. Alexander, Architect
1324 Dublin Road, Columbus, Ohio 43215
(614) 487-0637 Fax (614) 486-4040
REVIEW: 11/11/04
REVISED: 08/11/05
REVISED: 09/29/05
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- 3. FABRICATE TORSION ROD FOR COUNTERBALANCE SHAFT OF CASE-HARDENED STEEL, OR REQUIRED SIZE TO HOLD FIXED SPRING ENDS AND CARRY TORSIONAL LOAD.
- H. HOOD: FORM TO ENTIRELY ENCLOSE COILED CURTAIN AND OPERATING MECHANISM AT OPENING HEAD. CONTOUR TO SUIT END BRACKETS TO WHICH HOOD IS ATTACHED. ROLL AND REINFORCE TOP AND BOTTOM EDGES FOR STIFFNESS. PROVIDE CLOSED ENDS. PROVIDE INTERMEDIATE SUPPORT BRACKETS AS REQUIRED TO PREVENT SAG.
 - 1. FABRICATE HOODS OF NOT LESS THAN 0.040 ALUMINUM SHEET, COMPLYING WITH ASTM B209.
 - 2. FINISH: CLEAR ANODIZED FINISH MATCHING CURTAIN FINISH.
- I. ELECTRIC DOOR OPERATOR: PROVIDE MEDIUM-DUTY MODEL MD DOOR CONTROL SYSTEM FOR ROLLING DOORS AS PROVIDED BY OVERHEAD DOOR CORPORATION AND SUITABLE FOR THE TYPE AND SIZE OF DOOR SPECIFIED. MOTOR SHALL BE 1/2 HORSEPOWER WITH INSTANT REVERSE AND AUTOMATIC RESET THERMAL OVERLOAD. MOTOR SHALL BE UL LISTED. MOTOR SHALL COMPLY WITH NEMA 48, OPEN DRIP-PROOF CONSTRUCTION. PRIMARY REDUCTION IS V-BELT AND PULLEY. SECONDARY REDUCTION IS BY CHAIN AND SPROCKET. DUTY CYCLE SHALL ACCOMMODATE MEDIUM USAGE, UP TO 14 CYCLES PER HOUR AT A RATED LOAD OF 125 FT-LBS/SEC. BRAKE SHALL BE SOLENOID ACTUATED, DRUM AND SHOE TYPE, STANDARD ON JACKSHAFT VERSION. (ON TROLLEY VERSION, OPTIONAL BRAKE SHALL BE SOLENOID ACTUATED, DRUM AND SHOE TYPE.) LIMIT SYSTEM SHALL BE ADJUSTABLE LINEAR TYPE, SYNCHRONIZED WITH DOOR DURING RELEASE OPERATION. CONTROL SYSTEM SHALL PROVIDE A BUILT-IN SAFETY REVERSE SYSTEM THAT AUTOMATICALLY REVERSES DURING CLOSING CYCLE. SYSTEM SHALL ALSO INCLUDE A DUAL-RELAY CONTROL BOARD AND ACCOMMODATE CONNECTION OF A SENSING EDGE AND/OR PHOTOCCELL DEVICE; CONNECTION OF SINGLE AND/OR THREE-BUTTON CONTROL STATIONS; AND CONNECTION OF THREE-WIRE RADIO CONTROLS. MOUNTING SHALL BE BY JACKSHAFT THAT IS SIDE-MOUNTED. OPERATOR SHALL INCLUDE AN INTEGRAL ELECTRONIC REVERSING SAFETY SYSTEM THAT WILL REVERSE A CLOSING DOOR UPON DETECTION OF AN OBSTRUCTION.

IX. DOOR HARDWARE

- MANUFACTURERS
- A. REQUIREMENTS FOR DESIGN, GRADE, FUNCTION, FINISH, SIZE AND OTHER DISTINCTIVE QUALITIES OF EACH TYPE OF FINISH HARDWARE ARE INDICATED IN THE HARDWARE SCHEDULE AT THE END OF THIS SECTION. ITEMS LISTED ARE TAKEN FROM THE FOLLOWING MANUFACTURER'S CATALOGS AND REPRESENT SPECIFICATION STANDARDS.

ITEM	MANUFACTURER	ACCEPTABLE
HINGES	HAGER	STANLEY, MCKINNEY
LOCKSETS	BEST	NO SUBSTITUTION
OVERHEAD CLOSER	LCN	RUSSWIN, SARGENT
DOOR STOPS	IVES	HAGER, YALE
THRESHOLDS, WEATHER SEALS	NATIONAL GUARD	PEMCO,
REESE, ZERO		

MATERIALS AND FABRICATION

- A. PROVIDE HEAVY DUTY COMMERCIAL QUALITY HARDWARE OF HIGHEST GRADE CAST OR WROUGHT METAL. PROVIDE 10% ADDITIONAL SCREWS FOR ALL TYPES OF HARDWARE.
- B. HAND OF DOOR: THE DRAWINGS SHOW THE DIRECTION OF SLIDE, SWING, OR HAND OF EACH DOOR LEAF. FURNISH EACH ITEM OF HARDWARE FOR PROPER INSTALLATION AND OPERATION OF THE DOOR MOVEMENT SHOWN.
- C. MANUFACTURER'S NAMEPLATE: DO NOT USE MANUFACTURER'S PRODUCTS THAT HAVE MANUFACTURER'S NAME OR TRADE NAME DISPLAYED IN A VISIBLE LOCATION, OMIT REMOVABLE NAMEPLATES, EXCEPT IN CONJUNCTION WITH REQUIRED UL LABELS AND AS OTHERWISE ACCEPTABLE TO THE ARCHITECT. MANUFACTURER'S IDENTIFICATION WILL BE PERMITTED ON RIM OF LOCK CYLINDERS ONLY.
- D. FASTENERS:
 - 1. FURNISH SCREWS FOR INSTALLATION WITH EACH HARDWARE ITEM. PROVIDE PHILLIPS FLAT-HEAD SCREWS, EXCEPT AS OTHERWISE INDICATED. FINISH EXPOSED (EXPOSED UNDER ANY CONDITION) SCREWS TO MATCH THE HARDWARE FINISH OR, IF EXPOSED IN SURFACES OF OTHER WORK, TO MATCH THE FINISH OF SUCH OTHER WORK AS CLOSELY AS POSSIBLE, INCLUDING "PREPARED FOR PAINT" IN SURFACES TO RECEIVE PAINTED FINISH.
 - 2. PROVIDE CONCEALED FASTENERS FOR HARDWARE UNITS THAT ARE EXPOSED WHEN THE DOOR IS CLOSED, EXCEPT TO THE EXTENT NO STANDARD UNITS OF THE TYPE SPECIFIED ARE AVAILABLE WITH CONCEALED FASTENERS. ATTACH DOOR CLOSERS AND EXIT DEVICES ON WOOD OR PLASTIC LAMINATE FIRE DOORS WITH CLOSED HEAD SEX BOLTS EXCEPT AS OTHERWISE SPECIFICALLY INDICATED.
- E. AT COMPLETION OF PROJECT WORK, PROVIDE THE OWNER WITH A COMPLETE SET OF SPECIALIZED TOOLS FOR OWNER'S ADJUSTMENT, MAINTENANCE AND REMOVAL OR REPLACEMENT OF HARDWARE.
 - 1. PROVIDE INSTRUCTION SHEETS FOR LOCKS, DOOR CLOSERS AND OTHER SPECIAL HARDWARE ITEMS.
 - 2. PROVIDE SPECIAL CLOSER AND LOCK WRENCHES.

HARDWARE FINISHES

- A. FINISH: EXCEPT AS OTHERWISE INDICATED, PROVIDE DOOR HARDWARE WITH 630/US32D SATIN STEEL FINISH.
 - 1. PROVIDE MATCHING FINISHES FOR HARDWARE UNITS AT EACH DOOR OR OPENING, TO THE GREATEST EXTENT POSSIBLE.

HINGES

- A. HINGES: FIVE-KNUCKLE, WROUGHT-STEEL. PROVIDE BALL BEARING BUTTS FOR DOORS EQUIPPED WITH CLOSERS. BUTTS SHALL BE HEAVY DUTY, WITH 4 BB FOR EXTERIOR DOORS; STANDARD WEIGHT BUTTS WITH 2 BB FOR INTERIOR DOORS UP TO 3'-0" WIDE.
- B. PROVIDE DOORS WITH THREE HINGES. PROVIDE HINGE LEAVES OF SUFFICIENT WIDTH TO CLEAR ALL TRIM.
 - 1. SIZE: 4 1/2" x 4 1/2"

LOCK CYLINDERS AND KEYING

- A. HARDWARE SUPPLIER SHALL MEET WITH ARCHITECT AND OWNER TO FINALIZE KEYING REQUIREMENTS AND OBTAIN FINAL KEYING INSTRUCTIONS.
- B. ALL LOCKING DEVICES SHALL BE EQUIPPED WITH BEST LOCK CORP. CYLINDERS WITH REMOVABLE 7-PIN TUMBLER CORES. FOR SECURITY WHILE THE BUILDING IS UNDER CONSTRUCTION, PROVIDE LOCKS EQUIPPED WITH TEMPORARY CONSTRUCTION CORES.
 - 1. REMOVE AND TURN OVER CONSTRUCTION CORES TO THE OWNER UPON COMPLETION OF CONSTRUCTION.
 - 2. FURNISH AND INSTALL FINAL LOCK CYLINDER INSERTS.

- C. REVIEW THE KEYING SYSTEM WITH THE ARCHITECT AND OWNER AND PROVIDE THE TYPE REQUIRED, MASTER, KEYED AND GRAND MASTER KEYED AND INTEGRATED WITH OWNER'S EXISTING SYSTEM. VERIFY QUANTITY OF KEYS REQUIRED WITH OWNER.

MORTISE LOCKSETS

- A. PROVIDE MORTISE LOCKSETS MEETING ANSI A156.13, SERIES 1000, GRADE 1 OPERATIONAL AND GRADE 1 SECURITY REQUIREMENTS.
- B. MORTISE LOCKSETS: BEST 37H LEVER HIGH SECURITY SERIES, MORTISE LOCKS, 7 PIN CORE, LEVER 14, ESCUTCHEON J.
 - 1. FUNCTIONS: AS SELECTED BY THE OWNER.

CLOSERS

- A. PROVIDE CLOSERS MEETING ANSI A156.4, GRADE 1 REQUIREMENTS.
- B. CLOSERS: LCN *4110 SERIES SMOOTHIE™, HEAVY DUTY PARALLEL ARM CLOSER WITH METAL COVER AND POWDER COAT FINISH.

ACCESSORY ITEMS

- A. STOPS: IVES #408, WALL MOUNTED CONVEX RUBBER BUMPERS WITH CONCEALED FASTENERS.
- B. OVERHEAD STOPS AND HOLDERS: TYPE AND SIZE AS RECOMMENDED BY THE MANUFACTURER. DEGREE OF OPENING AS DETERMINED BY BUILDING CONDITIONS.
- C. DOOR MUTES: IVES #20 RUBBER, PROVIDE THREE PER STRIKE JAMB FOR SINGLE DOORS.
- D. THRESHOLDS: NATIONAL GUARD #513-SIA
 - 1. ALUMINUM WITH NON-SLIP SURFACE FINISH. MAXIMUM 1/4" HIGH, WITH STAINLESS STEEL FASTENERS, CONFORMING TO ANSI A117.1 REQUIREMENTS.
 - 2. FULL WIDTH OF OPENING.
- E. WEATHER-SEALS: NATIONAL GUARD #110NA
 - 1. ALUMINUM WITH NEOPRENE SEAL, WITH STAINLESS STEEL FASTENERS.

HARDWARE SCHEDULE

- A. GENERAL:
 - 1. QUANTITIES LISTED UNDER EACH HARDWARE SET NUMBER ARE FOR EACH SINGLE DOOR.
 - 2. THE SCHEDULE INDICATES THE GENERAL QUALITY AND TYPE OF HARDWARE REQUIRED FOR THE PARTICULAR OPENING LISTED, BUT SUCH DESCRIPTION OR SCHEDULE SHALL NOT BE CONSTRUED TO DENOTE THAT NO OTHER ITEMS OF HARDWARE WILL BE REQUIRED FOR THE PROJECT. ANY ITEM OF HARDWARE REQUIRED BY ESTABLISHED STANDARDS OR PRACTICES, OR TO MEET THE STATE OR LOCAL CODES SHALL BE FURNISHED WHETHER OR NOT SPECIFICALLY CALLED OUT IN THE FOLLOWING LISTED GROUPS.
- B. SINGLE DOOR SET (ENTRANCE DOOR)

1.	1/2" PAIR HINGES	HAGER	4 1/2" x 4 1/2"
2.	ONE LOCKSET	BEST	37H14J
3.	ONE CLOSER	LCN	4110 SERIES
4.	ONE WEATHER-SEAL	NAT	110NA
5.	ONE THRESHOLD	NAT	513-SIA
- C. SINGLE DOOR SET (INTERIOR DOORS)

1.	1/2" PAIR HINGES	HAGER	4 1/2" x 4 1/2"
2.	ONE LOCKSET	BEST	37H14J
3.	ONE CLOSER	LCN	4110 SERIES
4.	ONE WALL STOP	IVES	408

X. GYPSUM BOARD

- MANUFACTURERS
- A. GYPSUM BOARD AND ACCESSORIES MANUFACTURER: UNITED STATES GYPSUM CO. (USG), OR EQUAL BY GEORGIA-PACIFIC CORP., OR GOLD BOND BUILDING PRODUCTS DIV. NATIONAL GYPSUM CO.

MATERIALS AND COMPONENTS

- A. GYPSUM BOARD PANELS: UNITED STATES GYPSUM USG SHEETROCK EXTERIOR GYPSUM CEILING BOARD WEATHER-RESISTANT AND SAG-RESISTANT PANELS, TAPERED EDGE, 3/8" THICK, 48" WIDE IN MAXIMUM LENGTH AVAILABLE TO MINIMIZE END JOINT CONDITIONS.
- B. FASTENERS: COMPLY WITH GA 216 PROVIDE ASTM C1002 USG TYPE "W" BUGLE HEAD SCREWS FOR WOOD FRAMING, MANUFACTURER'S RECOMMENDED LENGTH FOR PANEL THICKNESS INDICATED.
- C. TRIM: PROVIDE MANUFACTURER'S STANDARD TRIM OF TYPES REQUIRED FOR GYPSUM BOARD WORK, GALVANIZED STEEL WITH KNURLED AND PERFORATED OR EXPANDED METAL FLANGES, BEADED FOR CONCEALMENT OF FLANGES IN JOINT COMPOUND. PROVIDE CORNER BEADS AND EDGE BEADS AS REQUIRED. SEMI-FINISHING J-TYPE TRIM NOT PERMITTED.
- D. JOINT TREATMENT: COMPLY WITH ASTM C475, PROVIDE USG SHEETROCK JOINT TREATMENT SYSTEM, UTILIZING JOINT TAPE AND READY-MIXED VINYL TYPE COMPOUND FOR TAPE BEDDING AND TOPPING.
 - 1. EXTERIOR GYPSUM BOARD-USG DURABOND SETTING-TYPE JOINT COMPOUND.

MISCELLANEOUS

- A. GENERAL: PROVIDE AUXILIARY MATERIALS FOR GYPSUM BOARD CONSTRUCTION THAT COMPLY WITH REFERENCED STANDARDS AND THE RECOMMENDATIONS OF THE MANUFACTURER OF THE GYPSUM BOARD.

XI. PAINT AND COATINGS

MANUFACTURERS

- A. PAINT: ICI DEVOE HIGH PERFORMANCE COATINGS OR EQUAL PRODUCTS BY SHERWIN-WILLIAMS CO., BENJAMIN MOORE & CO., OR TNE MEC COMPANY, INC.

MATERIALS

- A. MATERIAL COMPATIBILITY: PROVIDE BLOCK FILLERS, PRIMERS, UNDERCOATS, AND FINISH-COAT MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND THE SUBSTRATES INDICATED UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
- B. MATERIAL QUALITY: PROVIDE MANUFACTURER'S BEST QUALITY PAINT MATERIAL OF THE VARIOUS COATING TYPES SPECIFIED. PAINT-MATERIAL CONTAINERS NOT DISPLAYING MANUFACTURER'S PRODUCT IDENTIFICATION WILL NOT BE ACCEPTABLE.
 - 1. THE ACCEPTANCE OF EQUAL PRODUCTS SHALL BE BASED ON QUANTITATIVE ANALYSIS CRITERIA DESCRIBED IN THE PROJECT SUBMITTAL REQUIREMENTS AND CERTIFIED BY THE PROPOSED PAINT MANUFACTURER.
 - 2. COLOR PIGMENTS: PURE, NON-FADING, APPLICABLE TYPES TO SUIT SUBSTRATES AND SERVICES INDICATED. PROVIDE PIGMENTS FULLY GROUND, MAINTAINING A SOFT PASTE CONSISTENCY IN THE VEHICLE DURING STORAGE, READILY AND UNIFORMLY DISPERSED BY PADDLE TO A COMPLETE HOMOGENEOUS MIXTURE READY FOR USE.
 - 3. PROVIDE BASE AND INTERMEDIATE COAT PRODUCTS COMPATIBLE WITH FINISH COAT AND AS PRODUCED BY MANUFACTURER OF FINISH COAT.
 - 4. PROVIDE READY-MIXED PAINT, EXCEPT FOR FIELD CATALYZED COATINGS. JOB MIXING AND TINTING NOT ACCEPTABLE, EXCEPT AS DIRECTED BY ARCHITECT.
 - 5. PAINT MATERIALS SHALL HAVE GOOD FLOWING AND BRUSHING PROPERTIES, DRY OR CURE FREE OF STREAKS OR SAGS AND YIELD DESIRED FINISH SPECIFIED.
- C. MATCH COLORS INDICATED BY REFERENCE TO MANUFACTURER'S COLOR DESIGNATIONS.
- D. PAINT ACCESSORY MATERIALS: PROVIDE LINSEED OIL, SHELLAC, THINNERS, OR OTHER ACCESSORY MATERIALS REQUIRED FOR THE WORK. USE ONLY MATERIALS OF BEST QUALITY, APPROVED BY PAINT MANUFACTURER AND USED WITHIN PAINT MANUFACTURER'S RECOMMENDED LIMITS.

NORTHSTAR SANITARY PUMPING STATION



Gary J. Alexander, Architect

1324 Dublin Road, Columbus, Ohio 43215
(614) 487-0637 Fax (614) 486-4040

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