



Town of Simsbury

Office of Community Planning and Development - Zoning Commission Application

DATE: 10/12/22 FEE: \$ 240.00 CK #: 365234 APP #:

PROPERTY ADDRESS: 267 Bushy Hill Rd

NAME OF OWNER: The Ethel Walker School

MAILING ADDRESS: 230 Bushy Hill Rd, Simsbury, CT 06070

EMAIL ADDRESS: tdimartino@my.ethelwalker.org TELEPHONE # 860-408-4349

NAME OF AGENT: Thomas Knowlton, P.E. - SLR International

MAILING ADDRESS: 99 Realty Dr, Cheshire, CT 06410

EMAIL ADDRESS: tknowlton@slrconsulting.com TELEPHONE # 203-848-8718

ZONING DISTRICT: R-40 LOT AREA: 44,748 SQ FT/ACRES

Does this site have wetlands? YES NO Have you applied for a wetlands permit? YES NO

REQUESTED ACTION (PLEASE CHECK APPROPRIATE BOX):

- ZONE CHANGE:** The applicant hereby requests that said premises be changed from zone _____ to zone _____.
- TEXT AMENDMENT:** Please attach proposed changes, including Sections and purposes.
- SPECIAL EXCEPTION:** The applicant hereby requests a public hearing pursuant to Section _____.
- SITE PLAN APPROVAL:** The applicant hereby requests
 - PRELIMINARY
 - FINAL
 - SITE PLAN AMENDMENT** pursuant to Section 11
- SIGN PERMIT**
- OTHER (PLEASE EXPLAIN):** Map D15, Block 318, Lot 007

NOTE: Each application must fully comply with the requirements of the Zoning Regulations prior to receipt by the Commission. Each application for zone change and/or special exception shall include a list of names and addresses of abutting property owners and all property owners within 100 feet of the subject site.

A check payable to the Town of Simsbury must accompany this original signed and dated application. Five (5) complete (folded) sets of plans, one (1) paper copy, and a digital copy of the completed application and correspondence must also be included. If you have a PDF of your plans, we would appreciate a copy of that sent to plbills@simsbury-ct.gov, as well.

Tom Dimartino 10/3/22 Thomas Knowlton 10-12-22
 Signature of Owner Date Signature of Agent Date

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH

Manisha Juthani, MD
Commissioner



Ned Lamont
Governor
Susan Bysiewicz
Lt. Governor

Drinking Water Section

APPROVAL FOR CONSTRUCTION OR INSTALLATION OF WATER AND TREATMENT WORKS

11/1/2022

Mr. Tom DiMartino
230 Bushy Hill RD
Simsbury, CT 06070

Public Water System/Applicant: Ethel Walker School
PWS ID: CT1280051
Project Location: Simsbury, CT
Project Name: Ethel Walker School Water Storage Tank

DPH Project #: 2022-0122

Date of Project Submission: 8/25/2022

Project Description:

The following is a brief project description and is not inclusive of all project components. Ethel Walker School proposed to replace the existing 110,000-gallon buried concrete atmospheric tank with a new above grade 75,000 gallon glass fused steel bolted atmospheric storage tank. The existing 110,000-gallon concrete tank will be abandoned in place. The new tank will be connected to the existing water supply, the existing 75,000-gallon glass fused steel bolted storage tank, and the existing pump station. The floor elevation of the existing 75,000-gallon tank was selected to provide flooded suction to the pump station suction pipe header. The new 75,000-gallon tank will have the same floor and overflow elevations as the existing 75,000-gallon tank. Each 75,000-gallon glass fused steel bolted storage tank have 93,500 gallons of storage from the floor of the tank to the overflow, with 81,000 gallons of usable storage. Therefore, the system will have an initial total storage capacity of about 162,000-gallon, which 120,000-gallon is reserved for fire protection. The system average daily demand is about 38,500 gpd, which is within the reserved 42,000-gallon for potable drinking water.

The following are proposed:

1. 36' D x 12' H side wall glass fused to steel tank from Aquastore, which is ANSI/NSF 61 certified, with a useable volume of 81,000-gallon. The tank will be equipped with an aluminum dome roof.
2. 4" ductile iron inlet pipe.
3. 10" ductile iron outlet pipe
4. 24" dome vent with aluminum bird screen and 24 mesh poly insect screen



Phone: (860) 509-7333 • Fax: (860) 509-7359
Telecommunications Relay Service 7-1-1
410 Capitol Avenue, P.O. Box 340308, MS#12DWS
Hartford, Connecticut 06134-0308
www.ct.gov/dph/publicdrinkingwater

Affirmative Action/Equal Opportunity Employer



5. 6" overflow pipe with stainless steel 24 mesh insect screen and air gapped 12" above grade
6. 30" overlapping lockable hatch with curb frame on dome and continuous gasket
7. 24" side manway
8. PAX electric tank mixer inside tank to eliminate thermal stratification and circulates the water to reduce stagnant water
9. Two roof nozzles for mixer and tank level telemetry
 - a. Overflow level: 11'
 - b. Tank level alarms with dialer to notify operator:
 - i. Low level: ½'
 - ii. High level: 10 ½'
10. Access ladder with hinged, lockable cage guard
11. Tank drain will be the 4" inlet pipe with isolation valves using the hydrant
12. Sample taps on inlet and outlet pipes located in booster station
13. Perimeter fencing with lockable access gate
14. Emergency fill pipe with locked cap

The tank will be disinfected with accordance to AWWA C652 method 1, 2, or 3 with sodium hypochlorite. After flushing and chlorine residual returns to the normal operating range, water samples from the tank will be collected for total coliform bacteria, total and free chlorine residual, physical parameters, and VOCs.

This project is approved for construction or installation in accordance with the following terms:

1. This project is approved for construction based on the project being constructed in accordance with received plans and specifications dated August 25, 2022, project applications and the Department of Public Health's (DPH) terms stated herein. Any substantial deviation from the approved design must be reviewed and approved by the DPH in accordance with Section 19-13-B102(d)(2) of the Regulations of Connecticut State Agencies (RCSA). Failure to do so may result in an enforcement action and possible reconstruction of the project to conform to the DPH's technical approval.
2. This project approval is void 12 months after the date of this project approval if construction has not started. If no construction is started, the DPH must be notified and re-approval from the DPH must be sought and obtained.
3. All work implemented for this project must be effectively disinfected pursuant to Section 19-13-B47 of the RCSA. Upon completion of the project and prior to placing into active use, the water must be sampled and tested for at least total coliform bacteria to verify that the work completed was effectively disinfected. Additionally, since the project includes a paint system or installation of components that may release organic chemicals, testing for organic chemicals is also being required. All test results must be in compliance of Section 19-13-B102(e) of the RCSA, indicate the water is safe for consumption and be submitted to the DPH.
4. After construction/installation is completed for this project and prior to placing the project into active use, a Certification of Completed Water or Treatment Works Construction/Installation form, which can be found on the DPH's website <http://www.ct.gov/dph/publicdrinkingwater>, must be completed and submitted to the DPH along with water test results as required.
5. The DPH must be contacted to make arrangements for a site visit of the project or project components prior to placing it into active use. Submission of photos may be substituted for the site visit upon concurrence with the DPH.

6. The project should not be placed into active use until an Acknowledgement of Project Completion correspondence is received from DPH.
7. If a Stage 2 Disinfection Byproduct Rule sampling location is in an area served by this tank, the system must re-evaluate if the sampling location is still appropriate for conducting compliance monitoring, and if not seek approval from the DPH for a substitute location.

This approval only covers applicable public drinking water regulations and guidelines of the DPH and the U.S. Environmental Protection Agency (EPA). The DPH’s approval however does not guarantee that the proposed treatment and/or components to be installed as part of this project will operate as proposed or achieve the proposed treatment objectives. This approval additionally does not cover approvals or permits which may be necessary by other state or local agencies.

Approval of Ethel Walker School - Gravel Packed Well '99 for 4-log Inactivation of Viruses using Chlorine as a Disinfectant

The Department of Public Health (DPH) has reviewed a project submission from Ethel Walker School received on August 25, 2022, seeking approval for 4-log inactivation of viruses using chlorine as a disinfectant. The DPH approves the Ethel Walker School - Gravel Packed Well '99 Water Treatment Plant (WTP) for 4-log inactivation of viruses in accordance with Section 19-13-B102(j)(14)(B)(i) and (ii) of the Regulations of Connecticut State Agencies (RCSA) and based on the WTP operating under the following terms and maintaining compliance with applicable operating, monitoring and reporting requirement of the RCSA.

- 1) A minimum residual disinfectant concentration (RDC)/free chlorine residual as identified in the following table must be maintained before or at a first customer/consumer and confirmed at the identified compliance sampling location, in order to achieve 4-log inactivation of viruses. The maximum flow rate of the WTP cannot be increased above the rate also identified in the table.

Water Treatment Plant:	Minimum Chlorine Residual ^a : mg/L	Maximum Flow Rate: (gpm)	Minimum Water Temperature °C (“CT” Required mg-min/L)
Ethel Walker Existing Treatment Plant	0.20	56	10 (6.0)

a. Minimum RDC value calculated rounded up to nearest 0.05 mg/L

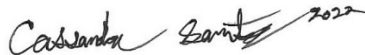
- 2) The pH level of the water disinfected shall be within the range of 6.0 to 9.0.
- 3) Compliance RDC monitoring will be taken at the following sample location:

- sample tap (daily grab sample)
- continuously monitoring analyzer

- 4) The RDC measured by taking a daily grab sample during a peak hour of water use must be recorded each day this WTP serves water to the public. A monthly summary of the daily RDC measurements must be retained for reference and submitted to DPH no later than nine calendar days following the end of each month the results were collected on a form prescribed by the DPH.

- 5) The DPH must be notified immediately if there is an interruption of treatment in accordance with Section 19-13-B46 of the Regulations of Connecticut State Agencies (RCSA).
- 6) If any daily grab sample RDC measurement falls below the DPH approved minimum RDC, Ethel Walker School must take follow-up samples every four hours until the RDC is restored to the DPH approved minimum RDC. If the level cannot be restored within four hours of the determination, the DPH must be notified within 24 hours by phone.
- 7) The arrangement, location and operation of the WTP's piping, chlorination system and the sampling location used to monitor the compliance RDC as was identified, must not be modified such as to change "CT" without obtaining approval from the DPH.
- 8) A spare chemical metering pump or an adequate inventory of spare parts in order to avoid or allow for a minimal interruption of treatment shall be maintained at a location readily available at any time.
- 9) Well providing water to this WTP is exempt from the triggered and assessment source water monitoring and requirements of Section 19-13-B102(e)(12)(C)(v)(III) and Section 19-13-B102(e)(12)(D)(ii)(II) of the RCSA, respectively as long as the WTP is operated and maintained to achieve 4-log disinfection treatment, as approved herein by the DPH.

Sincerely,



Cassandra Santos
Sanitary Engineer 2
Drinking Water Section

cc: Jennifer Kertanis, Director of Health, Farmington Valley Health District
Thomas A. Knowlton, Consultant
Sean Yucha, Chief Operator

SECTION 13000

POTABLE WATER GLASS FUSED TO STEEL BOLTED STORAGE TANK

PART 1 - GENERAL

1.1 SUMMARY

- 1.1.1 Under this section the manufacturer's authorized tank dealer (MATD) shall furnish all required labor, materials, and equipment for providing and erecting a quantity **93,250 gallon**, Glass-Fused-to-Steel Bolted Water Storage Tank constructed of factory prefabricated glass-coated, bolt-together steel panels.
- 1.1.2 Each tank structure shall include a foundation, floor, free span dome, and other accessory components as shown on the contract drawings and described herein. Note that painted, powder coat, stainless steel, or galvanized bolt-together tanks are not acceptable.
- 1.1.3 All required tank materials and principal appurtenances shall be supplied by the tank manufacturer. Tank materials and appurtenances shall be new and not previously used.
- 1.1.4 A site and project specific foundation designed by the tank manufacturer with the applicable state PE stamp must be provided with the bid documents. No third-party designs will be allowed. The tank manufacturer shall be solely responsible for the tank structural steel and foundation design.
- 1.1.5 Tanks shall be designed, manufactured, and glass coated in the United States of America, by a tank manufacturer specializing in the production of glass-coated, bolt-together steel tank systems. All structural steel utilized in the tank structure shall be produced and glass coated in the United States of America.

1.2 REFERENCES

- 1.2.1 Comply with the latest revision of the following codes, standards, and specifications, except where more stringent requirements have been specified herein:
- a. American Society for Testing and Materials (ASTM)
 - b. American Water Works (AWWA)
 - i. Tank steel panel materials, design, fabrication, and erection shall comply with AWWA D103-19 and D108-19 for bolted steel tanks, unless specified otherwise herein.
 - ii. Disinfection of water storage facilities shall comply with AWWA C652-19, unless specified otherwise herein.
 - c. American National Standards Institute (ANSI)
 - d. National Sanitation Foundation (NSF)
 - i. All material furnished by the tank manufacturer (which is in contact with the stored water), including vitreous glass-coated steel panels, joint sealant, encapsulated bolt heads, etc., shall be certified and listed by the NSF to meet NSF Additive Standard No. 61. Tank as a complete system needs to be certified; certification of a coating type alone will not be sufficient to meet this requirement.
 - e. Factory Mutual (FM)
 - i. Certification of annual review of quality control procedures of the manufacturing plant by FM is required upon request.
 - f. International Organization for Standardization (ISO)
 - i. The tank manufacturer's quality assurance program shall be certified to comply with ISO 9001 standards.

- g. NACE International (NACE)
- h. American Institute of Steel Construction (AISC)
- i. Occupational Safety and Health Administration (OSHA)
- j. American Welding Society (AWS)

1.3 SUBMITTALS

- 1.3.1 Before executing any work in this section, the tank manufacturer shall submit for documentation, job specific structural calculations for tank and foundation, general arrangement drawings and specifications for the tank structure, foundation, joint sealant, and all appurtenances. There shall be no deviation from the drawings and specifications, except upon written order from the engineer. Submittal documentation for the tank and foundation shall be sealed by the tank manufacturers Professional Engineer licensed and registered in the applicable state.
- 1.3.2 Product Data “catalog cuts” and spec sheets provided shall be marked to specifically indicate the equipment and materials proposed for this project. Indicate selections with arrows, and cross out irrelevant data.
- 1.3.3 NSF 61 (National Sanitation Foundation) certification of tank system and individual components (tank, sealant, anodes, and bolts) shall be provided with submittals.
- 1.3.4 Submittals shall include certification that each applicable Section of AWWA D103-19, D108-19, and C652-19 is met. Any exceptions taken shall be noted with full explanation given for the deviation. Provide a copy of this specification with a check mark next to each item where the proposed equipment does not adhere to the specification (with the bid), and provide information on the exception and how the proposed equipment would be brought into adherence with the item required.
- 1.3.5 All engineering costs which cause changes in design from the plans and specifications are to be borne entirely and unconditionally by the General Contractor. Approval by the Engineer of the shop drawings submitted by the General Contractor shall in no way relieve the General Contractor of full responsibility for the accuracy and completeness of the design and of the shop drawings.
- 1.3.6 A submittal substitution review deposit in the amount of \$2,000, payable to the owner, shall be submitted, upon engineer request, with the request for review of any substitution deviations from the plans and specifications. The deposit will be used by the engineer at a rate of \$150/hour to review such requests, regardless of whether the substitution is approved or rejected. The owner will return any unused funds to the petitioner within 45 days of approval of submittals.
- 1.3.7 Submit documentation certifying tank design and manufacture in the United States. Submit documentation certifying steel produced and glass coated in United States.
- 1.3.8 Copy of Builder Certification Program sponsored by the tank manufacturer certifying factory training and experience of the MATD building employees.
- 1.3.9 Documented qualifications of MATD building employees including their project construction foreman shall be submitted upon request, for review. MATD foreman shall have construction experience of at least five years in bolted glass fused to steel construction of the manufacturer’s tank being provided and at least three (3) of that manufacturer’s specific glass fused to steel tank projects that are fully complete. Construction experience shall be for tanks of similar size and climate as to the one specified herein. Owner reserves the right to reject without penalty proposed foreman that does not meet the prior experience requirements.

- 1.3.10 The tank manufacturer shall provide a standard Operation and Maintenance Manual upon approval of the drawings and completion of the tank installation.

1.4 QUALITY ASSURANCE

1.4.1 Qualifications

- a. Tank manufacturer's Professional Engineer experienced, licensed, and registered in the applicable state is responsible to sign and seal documentation for tank manufacturer's tank and foundation design. Evidence of professional liability insurance shall be provided (\$1,000,000) policy.
- b. The tank manufacturer shall be a specialist in the design and fabrication with a minimum of 15 years documented glass fused to steel tank manufacturing experience in the United States of projects in similar climates, sizes, and applications. The tank manufacturer shall employ a staff of full time design engineers, and shall own and operate its steel fabrication and glass coating facilities.
- c. The MATD shall have built on its own, at least 15 of the specific manufacturer's glass fused to steel tanks designed to AWWA D103, latest revision, that are equal or greater in size than the specified tank, operating satisfactorily in a similar application within the United States for a minimum of ten (10) years. The MATD shall provide with bid, the project name, location, application, size, capacity, contact information, and year of supply/operation of their erected tank.
- d. Manufacturers and MATD lacking the experience requirements listed in this section or elsewhere in the contract documents will NOT be considered without prior approval. Strict adherence to the standards of design, fabrication, erection, product quality, and long-term performance established in this specification will be required by the engineer and owner.
- e. Builders lacking the experience requirement will not be considered unless they provide a satisfactory 5-year 100% performance bond in lieu of evidence of experience and long-term operation.

1.4.2 Source Limitations

- a. Tank and dome in this Section shall be furnished and erected by a single MATD.
- b. Tank and dome in this Section shall be manufactured and fabricated by a single source with all fabrication and engineering design done in house.

1.5 PACKAGING, DELIVERY AND HANDLING

- 1.5.1 All sheets that pass factory inspection and quality control checks shall be protected from damage prior to packaging for shipment.

- 1.5.2 Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet-to-sheet abrasion during shipment.

- 1.5.3 Individual stacks of panels will be wrapped in heavy waterproof cover and steel banded to special wood pallets built to the roll-radius of the tank panels. Shipment from the factory shall be by truck, exclusively hauling the tank components. This procedure minimizes contact or movement of finished panels during shipment.

1.6 WARRANTY

- 1.6.1 If within a period of one (1) year from date of completion (or 14 months after delivery), the tank structure or any part thereof shall prove to be defective in material or workmanship upon examination by the manufacturer, the manufacturer will supply a replacement part, will repair, or allow a credit for same.
- 1.6.2 The warranty shall be further extended with the use of a Manufacturer supplied Cathodic Protection system as follows: the glass coated product zone surfaces, that portion of the tank interior below the normal high elevation of the contained liquid will not corrode under normal and proper use, maintenance and operation during the period expiring on the earlier of (i) 60 months after liquid is first introduced into the tank or (ii) 62 months after shipment from the factory.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- 2.1.1 The tank will be supplied by Statewide Aquastore, Inc. located in East Syracuse, New York. Tank manufacturer will be CST Industries of DeKalb, IL or pre-approved alternate. No other manufacturer will be acceptable for the base bid. This requirement is intended to protect the owner so that no one bidder gains an unfair price advantage by quoting a lesser product that does not comply with the minimum performance and salient features set forth in these specifications.
- 2.1.2 All pre-approval requests must be made at least ten (10) business days prior to the specified bid date or they will not be considered. Only bids from tank manufacturers and MATD who have successfully prequalified will be considered. Bidders will be notified via addendum allowing or disallowing the pre-approval request. If bidder fails to pre-qualify and provide the documentation deemed necessary by the engineer to evaluate proposed alternate equipment, the proposed tank will be rejected.
- 2.1.3 The engineer is the sole authority for determining conformance to the specifications and whether to pre-qualify a proposed supplier. Under no circumstances will they be required to prove that an alternate product is not equal to the specified equipment. The engineer's decision or judgment on these matters will be final, conclusive, and binding.
- 2.1.4 Naming of a manufacturer does not relieve them from complying with the performance features, the salient features, and any made in the USA requirements of the contract documents. The contract documents represent the minimum acceptable standards that will be allowed.
- 2.1.5 The Engineer's selection of factory applied glass-fused-to-steel bolt together tank construction for this project has been predicated upon specific criteria, construction methods, and an optimum coating resistance to internal and external tank corrosion. Deviations from the specified design, construction, or coating details will not be permitted. To assure the greatest ease of availability of tank and appurtenant components, and/or spare parts, preference will be given to U.S. manufacturers.
- 2.1.6 The Engineer/owner reserves the right to evaluate all bids based on long term, 40-50 year operation, coating, and maintenance costs. Values to be used in this evaluation will be at the discretion of the Engineer to determine which tank best fits the owner's needs. The Engineer will add such costs, dependent upon the type of tank offered, to the bidder's price to determine the effective low bid for purposes of making the award.
- 2.1.7 An authorized dealer of the tank manufacturer shall provide and install the tank. Sub-contracting of the tank erection by the MATD shall not be permitted. Building crews shall comply with the tank manufacturer's requirements for building practices and equipment used on the job.

2.1.8 In order to assure uniform quality and ease of maintenance and obtaining service or spare parts from as few places to the maximum extent possible, it is the intent of these specifications that equipment under this section, tank, foundation design, cathodic protection system, and dome shall be supplied by a single manufacturer. The equipment manufacturer and MATD assume the responsibility for proper installation and functioning of equipment.

2.2 DESIGN REQUIREMENTS

2.2.1 Tank structures shall be vertical, cylindrical, flat bottom, glass coated, bolt together steel construction. Epoxy, powder coated, galvanized or stainless steel are not considered equal and will not be considered.

2.2.2 Tank design per **AWWA D103-19/ASCE 7-16**. BS EN ISO 28765 and other foreign designs or codes are not considered equal and will not be accepted.

2.2.3 The factory coated glass-fused-to-steel bolt together tank shall have a nominal diameter of **approximately 36** feet, with a nominal sidewall height (to roof eave) of **12** feet.

2.2.4 Tank capacity shall be **81,000** gallons minimum (useable, U.S. gallons) at **10.5** feet liquid depth, **including 12 inches of freeboard and a 6-inch tall silt stop on the outlet pipe through the floor.**

2.2.5 Finished floor elevation shall be set at Elev. **432 (to be finalized).**

2.2.6 Loads to be considered in the tank and roof design shall include basic live, seismic and snow loads.

2.2.7 Specific Gravity **1.0**

2.2.8 Net allowable soil bearing capacity **6,000** PSF (per Geotechnical report)

2.2.9 Seismic Design

a. Map Spectral Response

i. S_s **0.238**

ii. S_1 **0.065**

b. Importance Factor based on Category **IV** (I_E)

c. Site Class **D**

d. Long Period Transition Period **6 seconds** (T_L)

2.2.10 Snow Load

a. Ground Snow Load **35** PSF.

b. Importance Factor **1.0** (I_s)

c. Thermal Factor **1.2** (C_t)

d. Exposure Factor **1.0** (C_e)

2.2.1 Wind Load

a. Basic Wind Speed **129 mph**

b. Risk Category **I**

c. Exposure Category **C**

2.2.11 Frost Depth **3.5 feet**

2.2.12 Load cases (include the self-weight of the structure in all of the following load combinations) shall be analyzed to determine the controlling stresses, as follows:

- a. Normal operating conditions (full tank) with a full snow load.
- b. Empty tank, no snow.
- c. Wind, or earthquake, on empty tank, full snow.
- d. Wind, or earthquake, on empty tank, snow on leeward side of dome.
- e. Wind, or earthquake, on empty tank, no snow

2.2.13 Concrete Floor

- a. The tank floor shall be constructed of reinforced concrete as shown on contract drawings. If fill is used, the fill under the floor/footing shall be compacted and tested to a minimum of 95% of proctor.
- b. The floor design shall include an embedded glass-coated starter sheet ring per the manufacturers design and in accordance with AWWA D103. The floor and foundation are an integral part of the tank assembly: therefore the tank foundation and floor slab shall be constructed by the MATD.

2.2.14 Aluminum Geodesic Dome Roof

- a. The tank roof shall be furnished and manufactured by CST Industries, the tank manufacturer. Roofs shall be designed to AWWA D108, latest revision, and ADM – 2010 and be constructed of triangular aluminum panels as shown on contract drawings. Roofs shall be clear span and self-supporting. Center post supports are not permitted. Materials shall be AA6005A-T1, AA6061-T6, or AA3003-H16. All metal components of the aluminum dome structure shall be aluminum or 300 series stainless steel. Alternate aluminum dome manufacturers wishing to be considered must pre-qualify with the engineer in order to register as an acceptable alternate.
- b. Connection forces shall be transferred through gusset plates connected to the top and bottom flanges of the beam struts. The connections shall be designed as moment connections; a minimum of four bolts shall be used to connect the gusset plate to each strut flange. The structural analysis shall be performed using non-linear, second order, stiffness analysis models in accordance with ADM 2010 Chapter C. Stability shall be provided for the structure as a whole and for each of its components. The available strengths of members and connections determined in accordance with Section C.3 shall equal or exceed the required strengths determined in accordance with Section C.2.
- c. No galvanized, aluminized, painted, or plated steel shall be used anywhere in the dome above the mounting bracket base plates. Dissimilar materials in the supporting structure shall be isolated from the aluminum dome by means of a composite elastomeric gasket. Designs that incorporate raised battens, overlapping panels, and/or designs that incorporate fasteners which penetrate panels and attach to structural members are expressly prohibited.
- d. Roof live loads and dead loads shall be carried by tank sidewalls, without additional support. A roof hatch, with a hinged gasket cover and locking hasp, shall be provided near the outside tank ladder.
- e. Roofs are aluminum in color and shall be constructed of non-corrugated, triangular geodesic aluminum panels, which are sealed and firmly clamped in an interlocking manner within a fully triangulated aluminum space truss system of wide flange extrusions, thus forming a dome structure. Fabric type flashing is not allowed.

- f. The dome shall be self-supporting from the periphery structure with horizontal thrust contained by an integral tension ring. The entire structure shall be designed as a watertight system under all design loads and temperature conditions. The design shall include sealant to be completely encapsulated by applying it to the gusset covers inner circumference, beneath the gusset covers top closure plates.
- g. The top surface of the batten bars must be completely flush with the triangular panel surfaces so that no ponding of water occurs at cover joints. Raised batten bars, overlapping panels, and/or panel attachment fasteners that penetrate panels are expressly prohibited.
- h. The walkway and handrail, if supplied with the roof, shall be constructed of aluminum.
- i. The roof manway opening shall be at least 30 inches square. The opening shall have a curb of at least 4 inches in height, and the cover shall have a downward overlap of at least 2 inches. The manway shall be aluminum.
- j. Dome Materials
 - i. Triangulated dome frame struts: 6061-T6 aluminum or 6005A-T61.
 - ii. Structural frame gussets: 6061-T6 aluminum, 0.3125 inch nominal thickness.
 - iii. Triangular closure panels: 0.050-inch nominal thickness, 3003-H16 aluminum Sheet.
 - iv. Perimeter tension/compression ring: 6061-T6 aluminum or 6005A-T61T61.
 - v. Fasteners: Fasteners shall be designed with a factor of safety of 2.34 on ultimate strength and 1.65 on yield strength. Threaded fasteners shall be 304 stainless steel. Lockbolts shall be 7075-T73 aluminum, 304 or 305 stainless steel. Screws shall be aluminum or 300 series stainless steel.
 - vi. Sealant: Silicone by Pecora, General Electric Silpruf or equal and shall be resistant to ozone and UV. Sealer shall conform to Federal Specification TT-S-00230.
 - vii. Gaskets: Silicone, General Electric SE-44/88 or equal. Gaskets shall conform to ZZ-R-765, Class 2, Grade 50 or equal. Neoprene may be substituted but only if shielded from UV light. Gaskets must be 1/8 inch thickness minimum.
 - viii. Anchor Fasteners: Series 300 stainless steel.
 - ix. Dormers, doors, and hatches: 6061-T6, 5086-H34, 5052-H36 or 5052-H32 aluminum, 0.090inch nominal thickness.
 - x. The tank supplier shall perform all manufacturing work described herein with mechanics skilled and experienced in the fabrication of aluminum dome roof structures. Fabrication shall be done in an ISO 9001 certified facility.
 - xi. All field work shall be completed by the MATD qualified erection crew. Sub-contracting of the roof manufacturing or erection is not allowed.
 - xii. Field re-fabrication of structural components or panels will not be accepted. Forcing of the structure to achieve fit-up during construction is expressly forbidden and not acceptable. Any indication of improper fit-up of parts shall be immediately reported to the fabricator.
 - xiii. All sealant joints shall be tooled slightly concave after sealant is

installed. Care shall be taken to keep sealant confined to the joint in a neat manner. Any sealant applied outside of the joint shall be removed so that the panels will be free from misplaced sealant. All gasket materials shall be continuous, splices will not be allowed.

2.3 MANUFACTURING PROCESS

2.3.1 Glass Coating

- a. The glass coating system shall be in full accordance with the requirements of AWWA D103, latest revision. Coating frits shall be individually tested in accordance with PE1 Test T-2. (Citric acid at room temperature). The coating process shall employ equipment that evenly coats the sheet surface and all four exposed sheet edges.

2.3.2 Surface Preparation

- a. Following the de-coiling and shearing process, sheets shall be steel grit blasted on both sides to the equivalent of SSPC PC-10 (near white metal blast cleaning). Sandblasting and chemical pickling of steel sheets is not acceptable. The surface anchor pattern shall be not be less than 1.0 mils. (0.0001 inches). Sheets shall be evenly oiled on both sides to protect them from corrosion during fabrication.

2.3.3 Cleaning

- a. After fabrication and prior to application of the coating system, all sheets shall be thoroughly cleaned by Coral COR Clene 16 caustic wash with 140°F hot water, then a two stage rinse followed immediately by hot air drying. Inspection of the sheets shall be made for traces of foreign matter, soil particles, grease, or rust. Any such sheets shall be re-cleaned or grit-blasted to an acceptable level of quality.

2.3.4 Coating Application

- a. Manufacturer shall maintain and use supplementary directional spray nozzles using an automated machine process to consistently coat the sheet edge profiles per PE 101 standard. The sheet edges shall be coated with the same vitreous enamel glass coating as the panel surface.
- b. All sidewall sheets shall receive one coat of a catalytic nickel oxide glass pre-coat to both sides, followed by air-drying.
- c. A second coat of milled cobalt blue glass shall be made to both sides of the sheets and then dried.
- d. A third cover coat of milled titanium dioxide white glass shall then be applied to the inside of the sheet. This milled glass shall be formulated with 18% to 22% titanium dioxide to produce a finish interior surface with optimum toughness and resistance to conditions normally found in potable water storage tanks. This specific coating shall be Aquastore Vitrium. Any alternate three coat system must be submitted for approval and acceptance prior to bid.
- e. The sheets shall then be fired at a minimum temperature of 1500 °F in strict accordance with ISO 9001 quality process control procedures, including firing time, furnace humidity, temperature control, etc.
- f. The 4 continuous sheet edge enamel thickness shall be 5 mils.
- g. The dry film interior coating thickness shall be 10-18 mils min. The dry film exterior coating thickness shall be 7-15 mils min. This is a three-coat process.

- h. The finished tank inside sidewall glass coating shall be white. Cobalt Blue finished interior color will not be accepted. The standard tank sidewall finished outside color shall be Cobalt Blue. (Munsell standard 7.5 PB 2/4.) Finished outside colors shall not vary noticeably among tank panels. Off color panels will be rejected; replacement panels of matching color shall be supplied by the tank manufacturer.

2.3.5 Sheet Edge Coating

- a. Prior to sheet glassing all four (4) exposed rectangular continuous sheet edges, including starter sheets, for each specific sheet radii shall be mechanically rounded in profile resulting in an optimized radius and adhere to The Porcelain Enameling Institute's Technical Manual PEI-101.
- b. The sheet surface next to the edge must remain flat, post process, to prevent "bulging" to less than 0.030 inches (0.79 mm) relative to the flat, while being rolled. All (4) exposed sheet edges will then be directionally sprayed by nozzles, using an automated machine process, and coated with the same vitreous enamel glass coating as the sheet surface.
- c. Sheet edge encapsulation will have an enamel coating minimum DFT (dry film thickness) of 5 mils (127 microns). Coating adhesion shall be tested in accordance with ISO 28765 Class 2 or better. Sheet face and sheet edge must meet the same glass quality test. Rounded sheet edge encapsulation will not have exposed uncoated steel.
- d. The process shall be equal in all respects to Edge Coat II by CST Industries. Sealer or glass overspray as edge coating shall not be an acceptable alternative and nozzle spray must be directionally oriented toward the edges to ensure consistency of coverage. The coating shall have a tensile strength of 1500 psi.

2.4 SOURCE QUALITY CONTROL

- 2.4.1 The manufacturer's quality system shall be ISO 9001 certified and refer to ISO (International Organization of Standardization) for the following testing and procedures.
- 2.4.2 Coated sheets shall be inspected for mil thickness using a calibrated magnetic induction type electronic dry film thickness gage with a valid calibration record. Test frequency shall be a minimum of every gage change and/or a minimum of every half hour.
- 2.4.3 Coated sheets shall be measured for color using an electronic colorimeter with a valid calibration record and must fall within the specified tolerance or it shall be rejected. Test frequency shall be a minimum of every gage change and/or every half hour.
- 2.4.4 An electrical leak detection test shall be performed on the interior and exterior surface of each panel after fabrication. Inside wet sheet surfaces shall be inspected using a low voltage wet sponge holiday tester in accordance with ASTM D5162-91 Method A. The tester shall be used at a voltage of 67.5 volts (+/- 10 %) and set so the alarm is sounded if the electrical resistance of the glass coating falls below 125,000. The tester shall have a valid calibration record. The testing solution used to wet the sponge shall contain a low suds-wetting agent added at a ratio of not more than 1/2 fluid oz. per gallon of water. Every sheet shall be 100% tested for holidays in the factory and any sheet with a discontinuity shall be rejected.
- 2.4.5 Adherence of the glass coating to the tank steel shall be tested in accordance with ISO standards. Any sheet that has poor adherence will be rejected. Coating adhesion shall be tested in accordance with ISO 28765 Class 2 or better. Sheet face and sheet edge must meet the same glass quality test.

2.4.6 Glass coating shall be tested for fishscale by placing the full size production sheets in an oven 400°F for one hour. The sheets will then be examined for signs of fishscale. Any sheet exhibiting fishscale shall be rejected and all sheets from that gage lot will be similarly tested. The minimum frequency of testing for this shall be five times per month.

2.4.7 The tank manufacturer shall provide documentation upon request (prior to tank fabrication), of the above tests including mill reports and traceable documents to demonstrate the source of steel used in the manufacture of this project specific tank.

2.5 MATERIALS

2.5.1 Plates and Sheets

- a. Plates and sheets used in the construction of the tank shell, floor, or roof shall comply with the minimum standards of AWWA D103, latest revision. All steel shall be smelted and produced in the United States of America.
- b. The annealing effect created from the glass coated firing process shall be considered in determining ultimate steel strength and yield strength of the steel used for calculations detailed in AWWA D103, latest revision. In no event shall a yield strength greater than 50,000 psi be utilized for such calculations detailed in AWWA D103 unless the tank manufacturer can substantiate the use of higher values because of a documented testing program.
- c. The tank manufacturer shall have and provide for the Engineer's review, upon request, published ultimate tensile and yield strength values for the proposed steel. In addition, per AWWA D103, latest revision, the tank manufacturer shall have test results for the most recent two (2) year period to substantiate the use of Fu and Fy values used in the tank manufacturer's design calculations if the values exceed 70% of the published values.
- d. Design requirements for mild strength steel shall be ASTM A-1011 Grade 30 with a max. allowable tensile stress of 12,135 psi. High strength steel shall be ASTM A-1011 Grade 50 with a max. allowable tensile stress of 21,167 psi.
- e. When multiple vertical bolt line sheets and plates of ASTM A-1011 Grade 50 are used, the effective net section area shall not be taken as greater than 85% of the gross area. Several vertical bolt line sheets and plates shall be manufactured such that holes are staggered in the vertical bolt lines and that no two adjoining holes are in-line horizontally, except at the center of the sheet or plate.
- f. When Rolled Structural Shapes are used, the material shall conform to minimum standards of ASTM A36 or ASTM A992.
- g. Minimum acceptable sheet thicknesses is determined by manufacturer's design.
- h. Chemical compositions for mild steel and high strength steel shall be stated in the submitted mill certifications. Raw steel for plates and sheets shall conform to the following composition requirements. These specifications refer to the design tensile strength after firing. The steel shall have the following chemical composition:
 - i. Carbon (Mild) 0.06% maximum
 - ii. Carbon (HSS) 0.10% maximum
 - iii. Manganese 1.50% maximum
 - iv. Phosphorus 0.04% maximum
 - v. Sulfur 0.05% maximum
 - vi. Aluminum 0.08% maximum

- i. Vertical tank seams shall be offset. Straight seam 4 corner joints are not acceptable.

2.5.2 Horizontal Web Stiffeners

- a. Stiffeners shall be of the "web truss" design, with extended tail to create multiple layers of stiffener, permitting wind loads to be distributed around the tank. Stiffeners should be fabricated of steel with hot dipped galvanized or epoxy coating. Rolled angle stiffeners shall not be permitted for intermediate horizontal wind stiffeners.
- b. Maximum web stiffeners allowed is **per manufacturer**. Additional stiffeners may be desired at the time of tank erection if telecommunications equipment mounting will be required per contract documents.

2.5.3 Bolt Fasteners

- a. Bolts used in tank lap joints shall be 1/2-13 UNC-2A rolled thread and shall meet the minimum requirements of AWWA D103, latest revision. Bolt material shall be SAE J429 Grade 5 (1 inch bolt length) with a tensile strength of 74,000 psi min., a proof load of 55,000 psi min., and an allowable shear stress with threads excluded from the shear plane of 18,163 psi min.
- b. SAE J429 Grade 5/ASTM A325 (1-1/4 inches bolt length) and heat treated to a tensile strength of 120,000 psi min., a proof load of 85,000 psi min., and an allowable shear stress with threads excluded from the shear plane of 29,454 psi min.
- c. SAE J429 Grade 8/ASTM A490 (bolts greater than 1-1/4 inches) and heat treated to a tensile strength of 150,000 psi min., a proof load of 120,000 psi min., and an allowable shear stress with threads excluded from the shear plane of 36,818 psi min.
- d. The bolt finish shall be zinc coated, mechanically deposited 2.0 mils minimum per ASTM B695.
- e. The entire bolt head shall be encapsulated up to the splines on the shank with high impact polypropylene copolymer. Resin shall be stabilized with an ultraviolet light resistant material such that the color shall appear black. The bolt head encapsulation shall be certified to meet the ANSI/NSF Standard 61 for indirect additives.
- f. All lap joint bolts shall be properly selected such that threaded portions will not be exposed in the "shear plane" between the sheets. In addition, bolt lengths shall be sized as to achieve a neat and uniform appearance. Excessive threads extending beyond the nut will not be permitted.
- g. All lap joint bolts shall include a minimum of four (4) splines, 0.002 inches minimum on the underside of the bolt head at the shank in order to resist rotation during torque wrench application.

2.5.4 Sealants

- a. The lap joint sealant shall be a one component, moisture cured, polyurethane compound. The sealant shall be manufactured by a United States supplier as well as be suitable for contact with potable water and shall be certified to meet ANSI/NSF Additives Standard No. 61.
- b. The sealant shall be used to seal lap joints, bolt connections and for sheet edge fillets. The sealant shall be CST Industries, Manus Bond 98 Sealer. The sealant should have a curing rate at 73°F and 50% RH and be tack free in 6 to 8 hours.

Final cure time should be 10 to 12 days. Sealer shall be resistant up to 100-ppm chlorine concentration during disinfection. Neoprene gaskets and tape type sealer shall not be used.

- c. The sealant shall cure to a rubber like consistency, have excellent adhesion to the glass coating, low shrinkage, and be suitable for interior and exterior use.
- d. Due to poor compatibility with chlorine, the sealant Sika 1A shall not be used on potable water storage tanks.

2.5.5 Roof Vent

- a. A properly sized aluminum vent assembly in accordance with AWWA D103, latest revision, shall be furnished and installed above the maximum water level. A curbed opening shall be provided at the apex of the dome. At maximum possible rate of water fill or withdrawal, the resulting interior pressure or vacuum will not exceed 0.5-inch water column.
- b. Protection against birds and protection against ice plugging shall be provided. An insect screen shall be provided and designed to open should the screen become plugged by ice formation.
- c. The vent shall be constructed of aluminum such that the hood can be unbolted and used as a secondary roof access.

2.5.6 Pipe Connections

- a. Where pipe connections are shown to pass through tank panels, they shall be field located, be saw cut (acetylene torch cutting or welding is not permitted), and utilize an interior and exterior flange assembly. Tank shell reinforcing shall comply with AWWA D103, latest revision. CST Industries Manus Sealer shall be applied on any cut panel edges or bolt connections.
- b. Overflow piping shall be irrigation grade seamless aluminum tubing. Twenty-four mesh, non-corrodible screen shall be installed within the pipe.

2.5.7 Ladder Assemblies

- a. An AWWA D103, latest revision, and OSHA 1910 compliant external tank ladder shall be furnished and installed as shown on the contract drawings. Ladders shall be aluminum and utilize grooved, skid-resistant rungs.
- b. Personal fall arrest system, safety cage, and step-off platforms (as required by OSHA 1910 or customer submittal drawings) shall be fabricated of galvanized steel. Ladders shall be equipped with a hinged lockable entry device at the bottom of the ladder. Step off platform shall be at maximum intervals of every 30 feet.

2.5.8 Access Doors

- a. Each tank shall be provided with one (1) 30-inch diameter bottom access door as shown on contract drawings. The access door and tank shell reinforcing shall comply with AWWA D103, latest revision.
- b. A davit to hold the cover plate is required.

2.5.9 Identification Plate

- a. A manufacturer's nameplate shall list the tank serial number, tank diameter and height, maximum design capacity, intended storage use, and date of installation. The nameplate shall be affixed to the tank exterior sidewall at a location approximately 5 feet from grade elevation in a position of unobstructed view.

2.5.10 Cathodic Protection System

- a. The tank manufacturer will provide a passive cathodic protection system designed specifically for the project tank, consisting of sacrificial anodes which provide protection for the portion of the structure immersed in liquid. The anodes are attached to the floor, and bolted through existing shell sheet bolt holes. Lead wires and buss bars are used to ensure continuity between anodes and all structure shell sheets.
- b. The cathodic protection system shall be designed by a licensed professional engineer employed by the tank manufacturer. The system shall be designed to protect the tank.
- c. The resistivity of the water to be stored in the tank will determine the type and number of anodes.

2.5.11 Plastic Encapsulated Cap

- a. High density polyethylene co-polymer caps and sealant shall be used to cover the bolts, nuts, and washers exposed on the exterior sidewall of the tank.

PART 3 - EXECUTION

3.1 INSTALLATION

3.1.1 Employees of the MATD shall be experienced in the construction of the specified glass fused to steel tank, should be trained in a factory training program receiving builder certification by the tank manufacturer, and shall be employed full time by the authorized dealer.

3.1.2 Supervisory personnel of the erection crew shall identify themselves to responsible personnel of the Engineer or Inspector upon initially entering the job site. Only trained and certified personnel will be allowed on site.

3.1.3 Tank Foundation

- a. The tank foundation shall be built in accordance with the contract drawings and/or approved shop drawings. Foundation shall be designed by the manufacturers licensed engineer and built by the MATD to safely sustain the structure and its live loads. Floor rebar shall be epoxy coated.

3.1.4 Concrete Floor

- a. Only embedded starter ring designs are acceptable for concrete floors. Slot mount base foundations, rebate base, and flat base designs which do not include an embedded base ring will not be allowed.
- b. Leveling of the starter ring shall be required and the maximum differential elevation with the ring shall not exceed 1/8 inch, nor exceed 1/16 inch within any 10 feet of circumference.
- c. In no case shall the backfill elevation vary more than one (1) foot around the periphery of the tank shell.
- d. A leveling plate assembly, consisting of two anchor rods and a slotted plate shall be used to secure the starter ring, prior to encasement in concrete. Installation of the starter ring on concrete blocks or bricks, using shims for adjustment, is not permitted.
- e. Place one butyl rubber elastomeric waterstop seal on the inside surface of the starter ring below the concrete floor line. Place one bentonite impregnated water

seal below the butyl rubber seal. After the previous water seals have been installed, install a continuous fillet of "Sika Swell" on top of the butyl rubber elastomeric waterstop at the juncture of the tank sidewall and butyl waterstop. Install materials in accordance with CST Industries instructions.

- f. Tank footing design shall be based on the soil bearing capacity given by the engineer, as determined by geotechnical analysis performed by a licensed soils engineer. Copies of the soil report will be provided to the bidder prior to bid date by the Owner or Engineer.
- g. Concrete floors may be poured monolithically for all tank diameters. For larger structures, floors shall be quadrant poured. Concentric ring pouring shall not be allowed. Floors shall be designed ACI 350.

3.1.5 Tank Structure

- a. Field erection of the glass-coated, bolted-steel structures and components shall be in strict accordance with the procedures established by the manufacturer and performed by MATD who is regularly engaged in erection of the manufacturers glass fused to steel tanks, using experienced factory-trained certified erectors fully employed by the Dealer.
- b. Only specialized erection jacks and building equipment developed and supplied by the tank manufacturer shall be used to erect the tanks. Every sheet shall be 100% tested for interior holidays in the field.
- c. Particular care shall be taken in handling and bolting of the glass-coated steel tank panels, appurtenances and members to avoid abrasion of the coating system. Prior to liquid test, all surface areas shall be visually inspected. Chips or scrapes in the glass coating shall be repaired per the tank manufacturer's recommended procedure.
- d. An electrical coating leak test shall be performed during erection using a wet sponge nine-volt leak detection device. All electrical leak points found on the inside surface shall be repaired in accordance with manufacturers published touch-up procedures.
- e. No backfill is to be placed against the tank sidewall without prior written approval of the tank manufacturer. Any backfill allowed shall be placed strictly in accordance with the instructions of the tank manufacturer.

3.2 FIELD TESTING

- 3.2.1 Following completion of erection and cleaning of the tank, the structure shall be tested for liquid tightness by filling to its overflow elevation.
- 3.2.2 Any leaks disclosed by this test shall be corrected by the MATD in accordance with the manufacturer's recommendations.
- 3.2.3 Water required for testing following completion of tank erection will be furnished by the owner. Disposal of water, if required, following testing is by the Owner. Labor and equipment necessary for hydrostatic tank testing shall be included in the contract price of the tank.

3.3 DISINFECTION

- 3.3.1 The tank structure shall be disinfected at the time of testing by chlorination in accordance with AWWA C652, latest revision, "Disinfection of Water Storage Facilities."
- 3.3.2 Acceptable method of disinfection: Chlorination Method 1, 2, or 3 per AWWA C652, latest revision.
- 3.3.3 Acceptable form of chlorine for disinfection: Sodium Hypochlorite, as specified in AWWA C652, latest revision.
- 3.3.4 Disinfection shall not take place until the tank sealant is fully cured (10 to 12 days at 73°F and 50% relative humidity or equivalent).

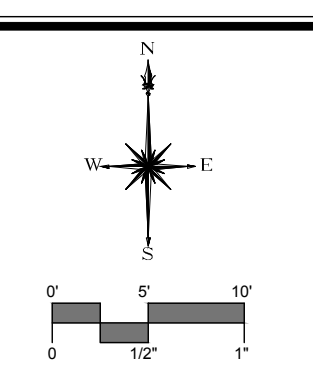
3.4 FIRST YEAR INSPECTION

- 3.4.1 On or near the (1) year anniversary date of initial tank use (but not more than (14) months from date of delivery of tank materials to job site), the MATD shall make a visual inspection of the tank interior coating and appurtenances, tank exterior coating and appurtenances, and the immediate area surrounding the tank for evidence of leakage. A written summary of the inspection report will be filed with the tank owner and the tank manufacturer.
- 3.4.2 Water required for the inspection process will be furnished and disposed of by the Owner.

END OF SECTION

Revised 9-22-2020

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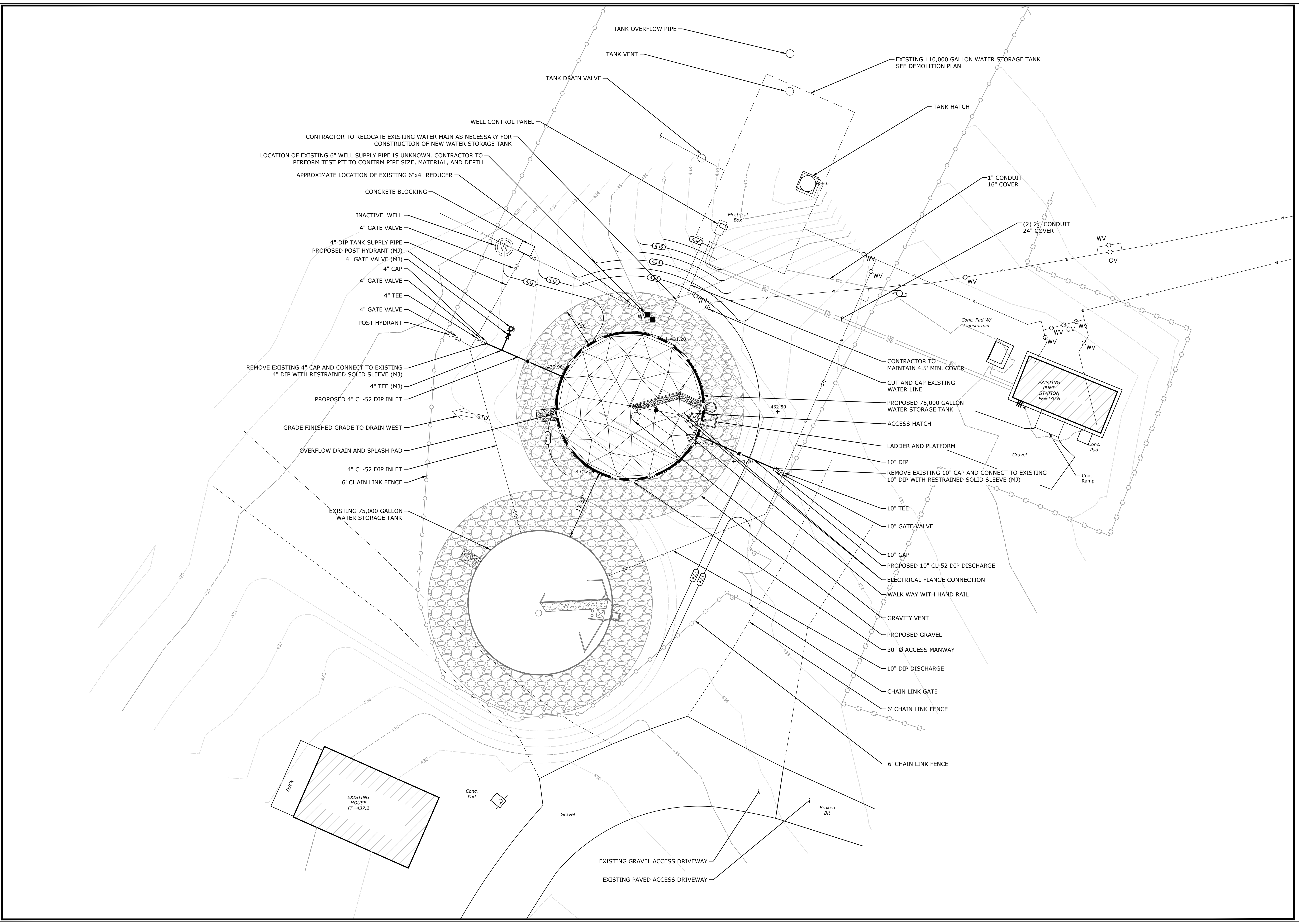


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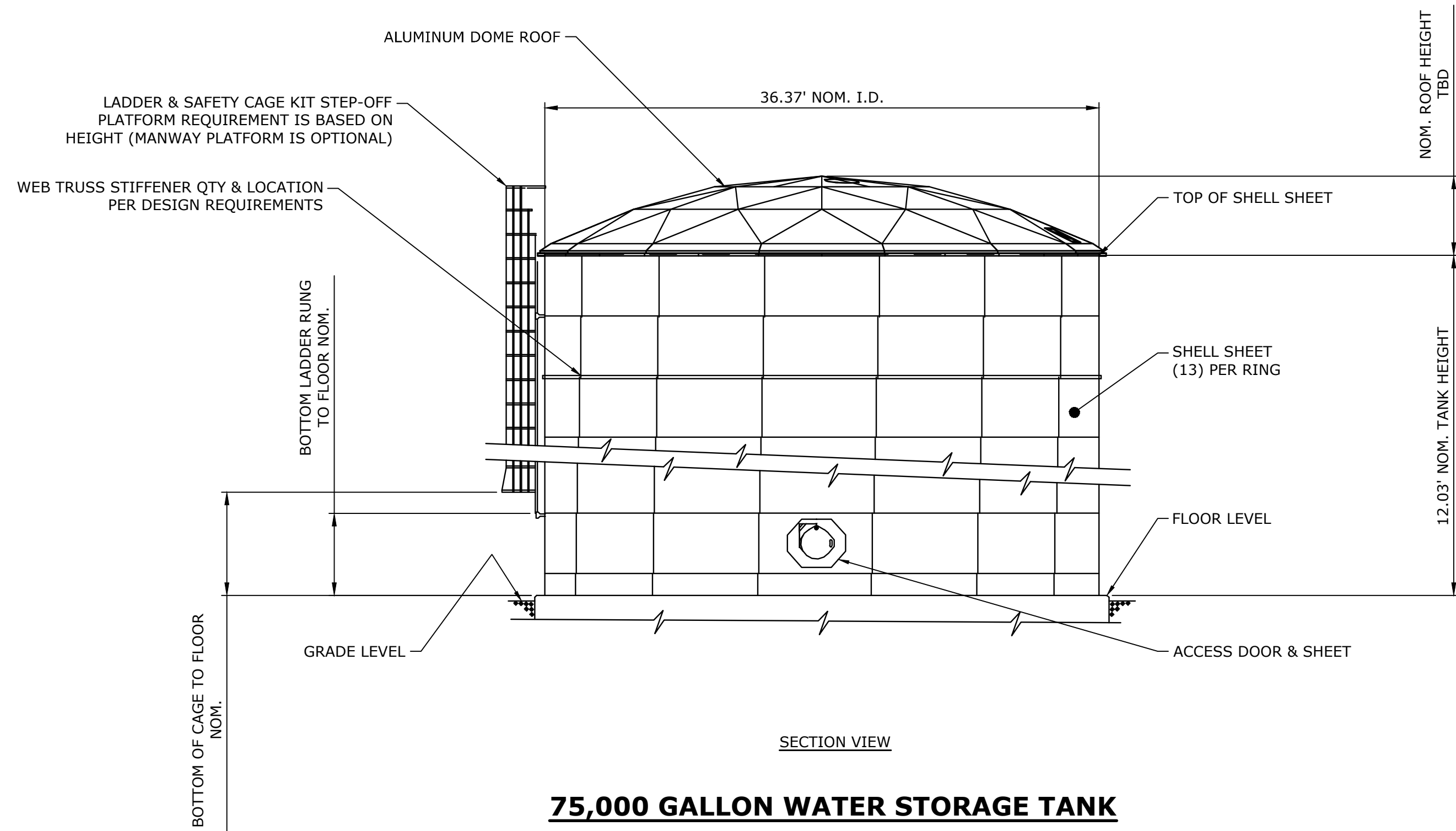
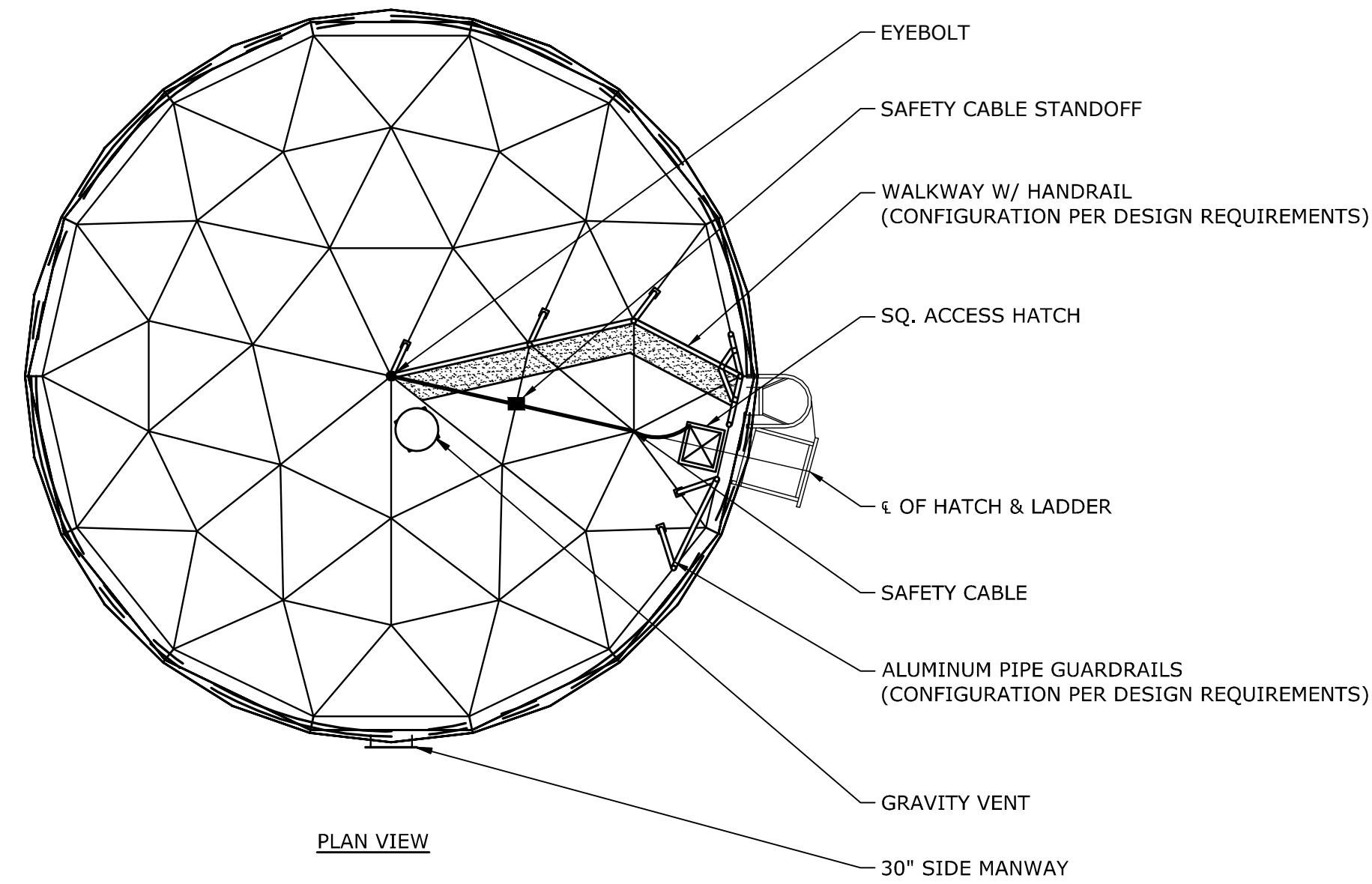
GRADING AND UTILITIES SITE PLAN
75,000 GALLON WATER STORAGE TANK
AT THE ETHEL WALKER SCHOOL
 267 BUSHY HILL ROAD
 SIMSBURY, CONNECTICUT

TAK	KVN	SRD
DESIGNED	DRAWN	CHECKED
1"=10'		
AUGUST 17, 2022		
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PROJECT NO.		
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SHEET NO.		

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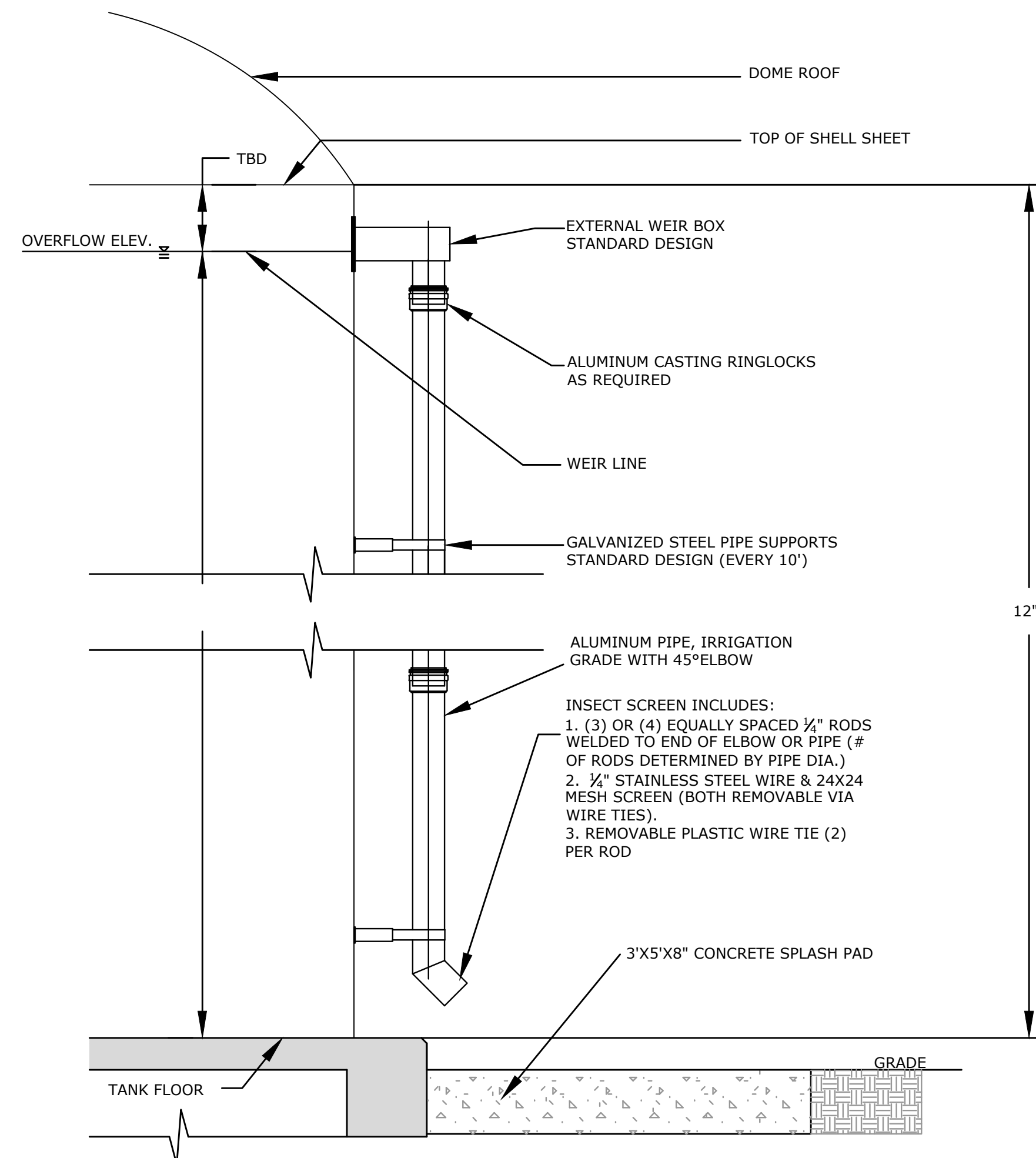
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75,000 GALLON WATER STORAGE TANK

N.T.S.

- NOTES:
1. MATCH FLOOR ELEVATION AND OVERFLOW ELEVATION ON EXISTING 75,000 GALLON TANK. PROVIDE NECESSARY TANK DIAMETER TO PROVIDE 81,000 GALLONS OF USABLE STORAGE.



- NOTES:
1. ADJUST THE ELEVATION SETTINGS ON THE RCI-800 WELL PUMP CONTROLS INSIDE THE PUMP STATION AS FOLLOWS:
 OVERFLOW = X
 HIGH LEVEL ALARM = X
 PUMP OFF = X-0.1'
 PUMP ON = X-0.8'
 LOW LEVEL ALARM = X-1.3'

OVERFLOW PIPE

N.T.S.



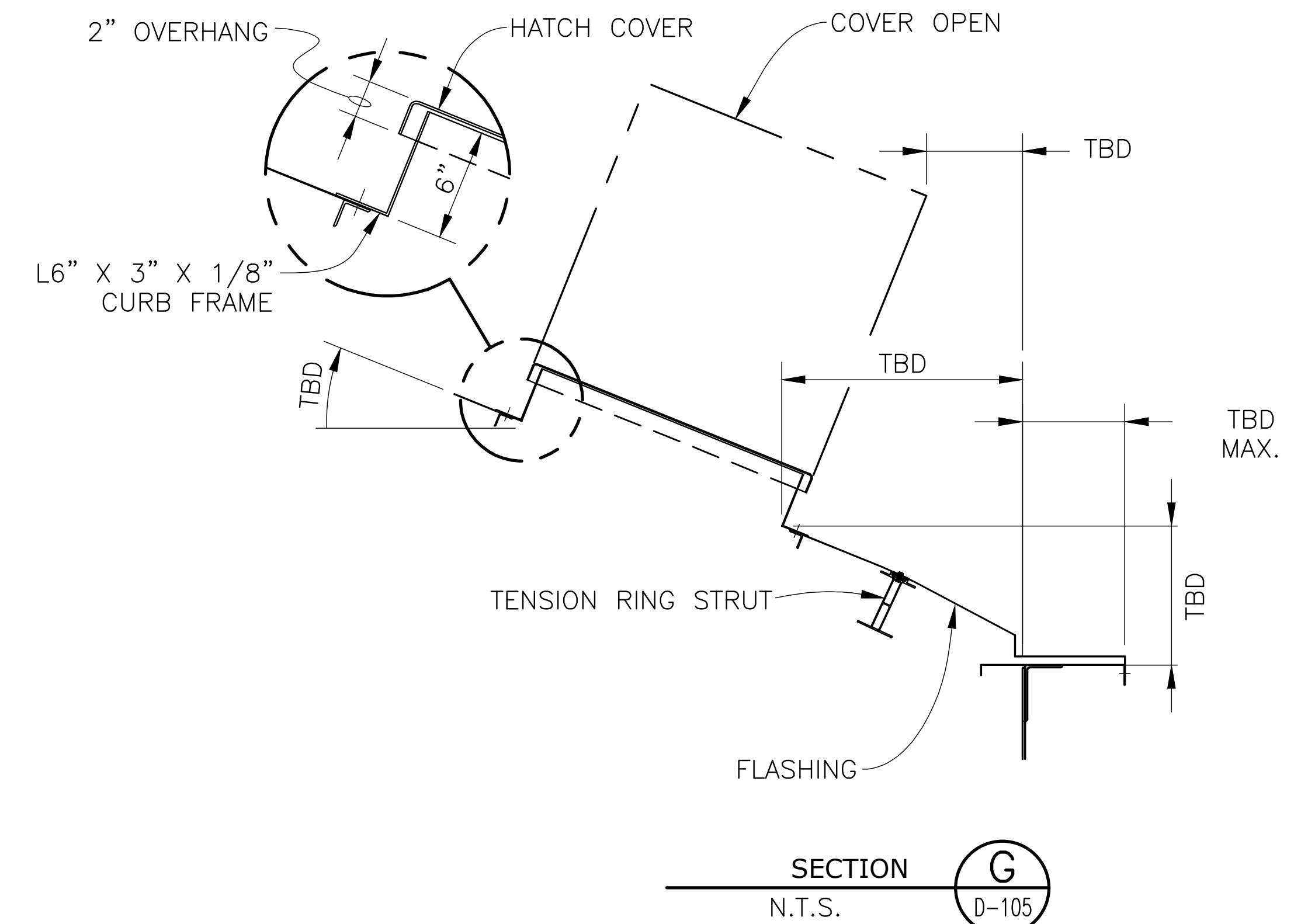
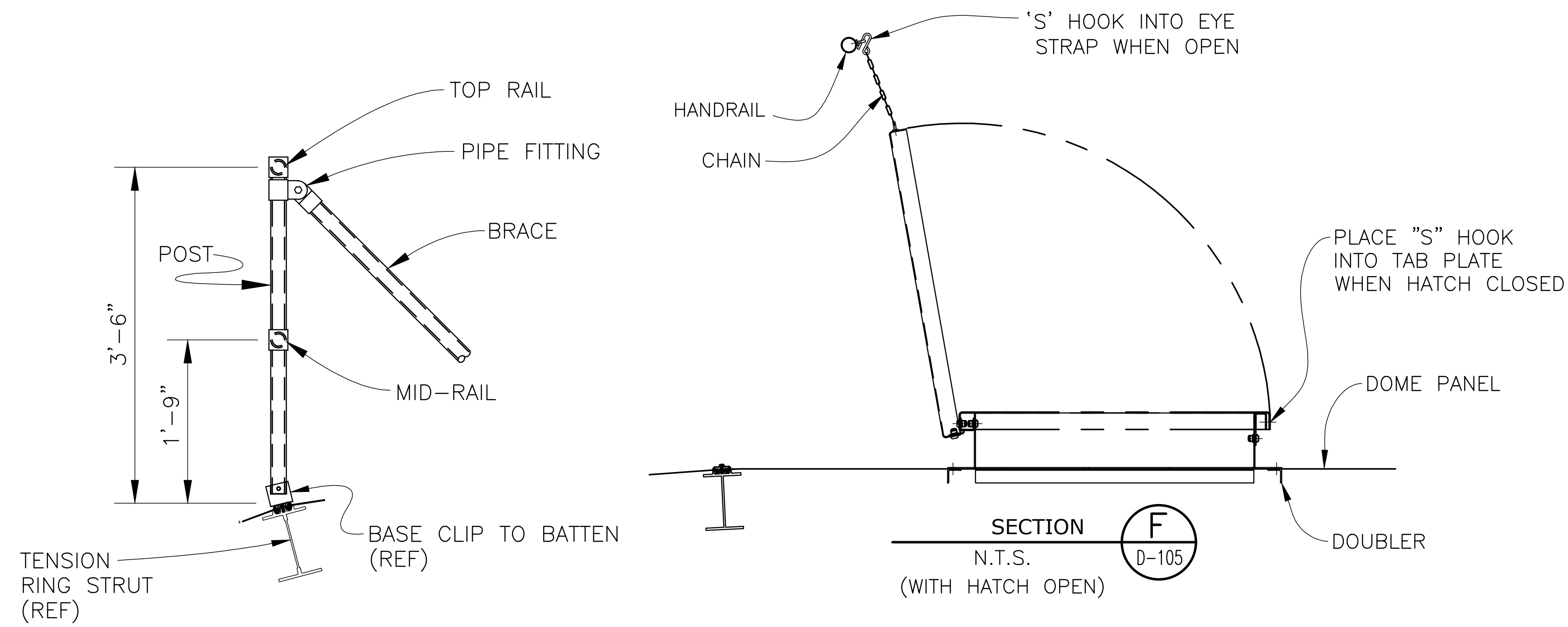
DESCRIPTION	DATE	BY

75,000 GALLON WATER STORAGE TANK
AT THE ETHEL WALKER SCHOOL
 267 BUSHY HILL ROAD
 SIMSBURY, CONNECTICUT

TAK	KVN	SRD
DESIGNED	DRAWN	CHECKED
AS NOTED		
AUGUST 17, 2022		
DATE		
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5 OF 10		
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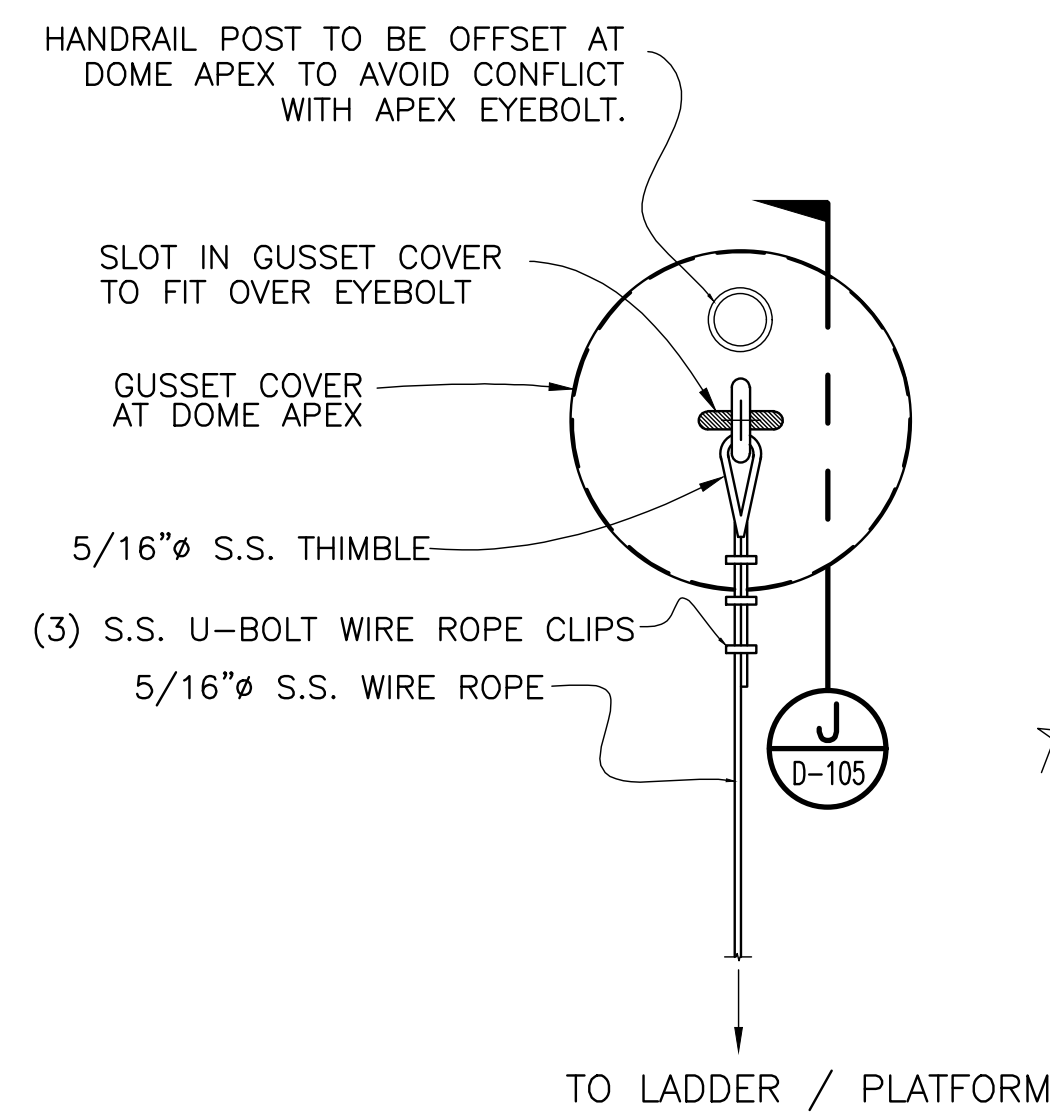
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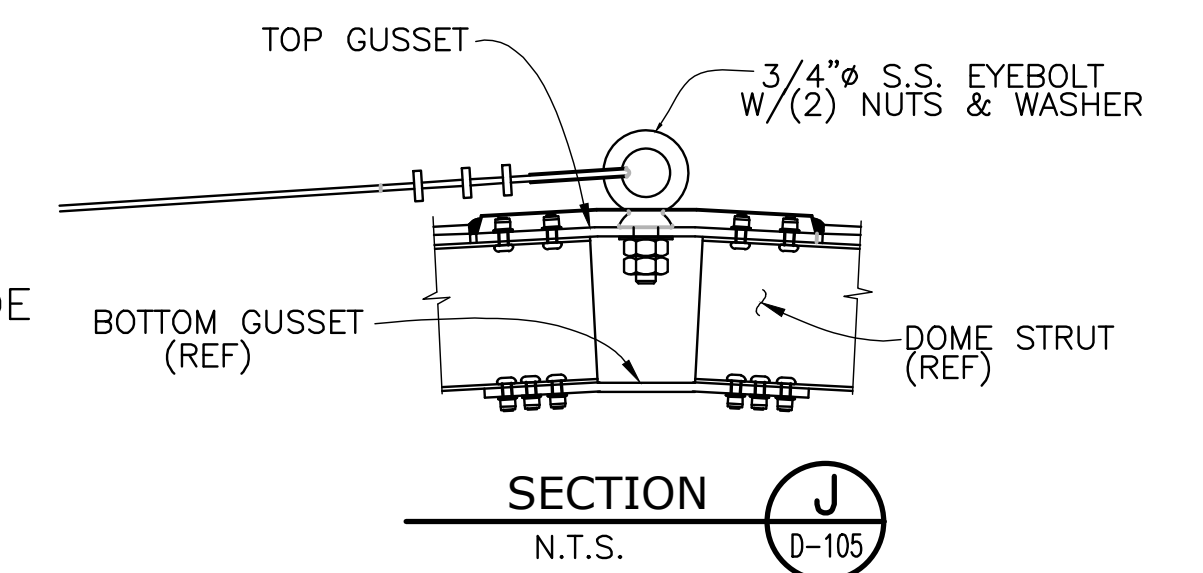
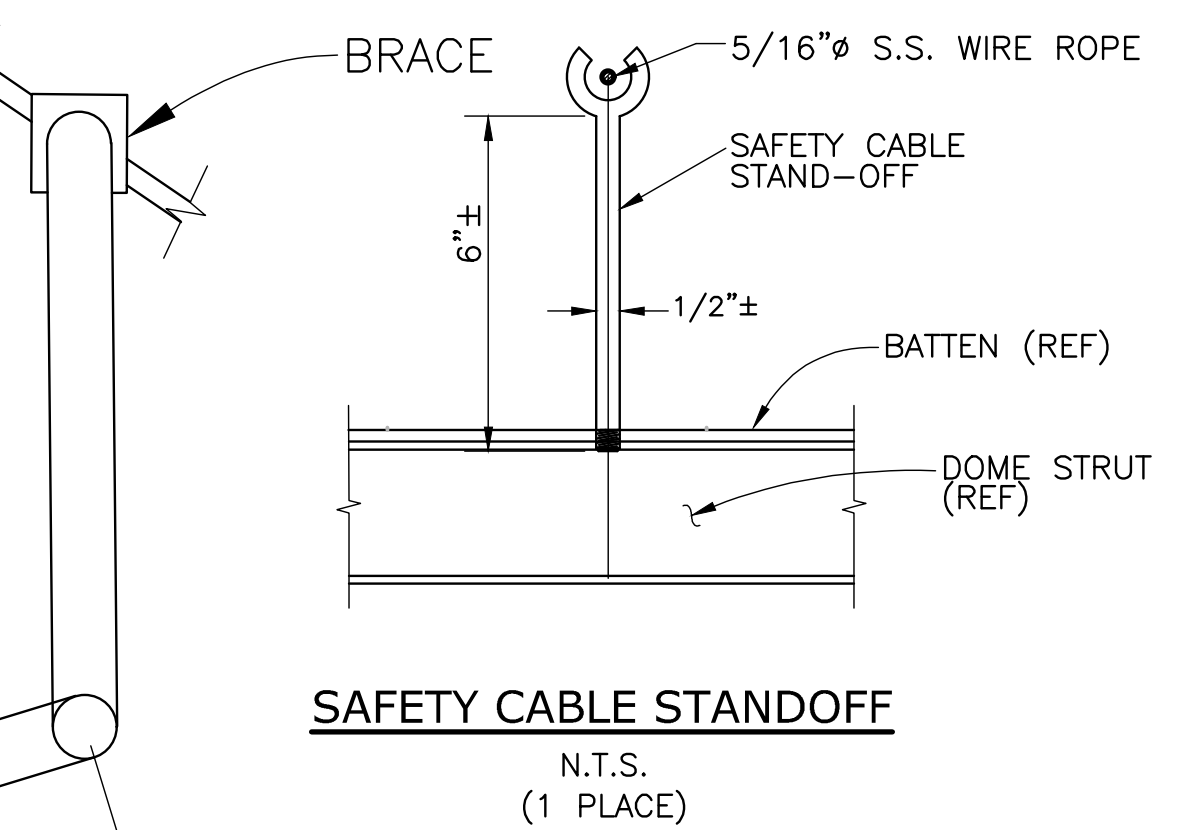
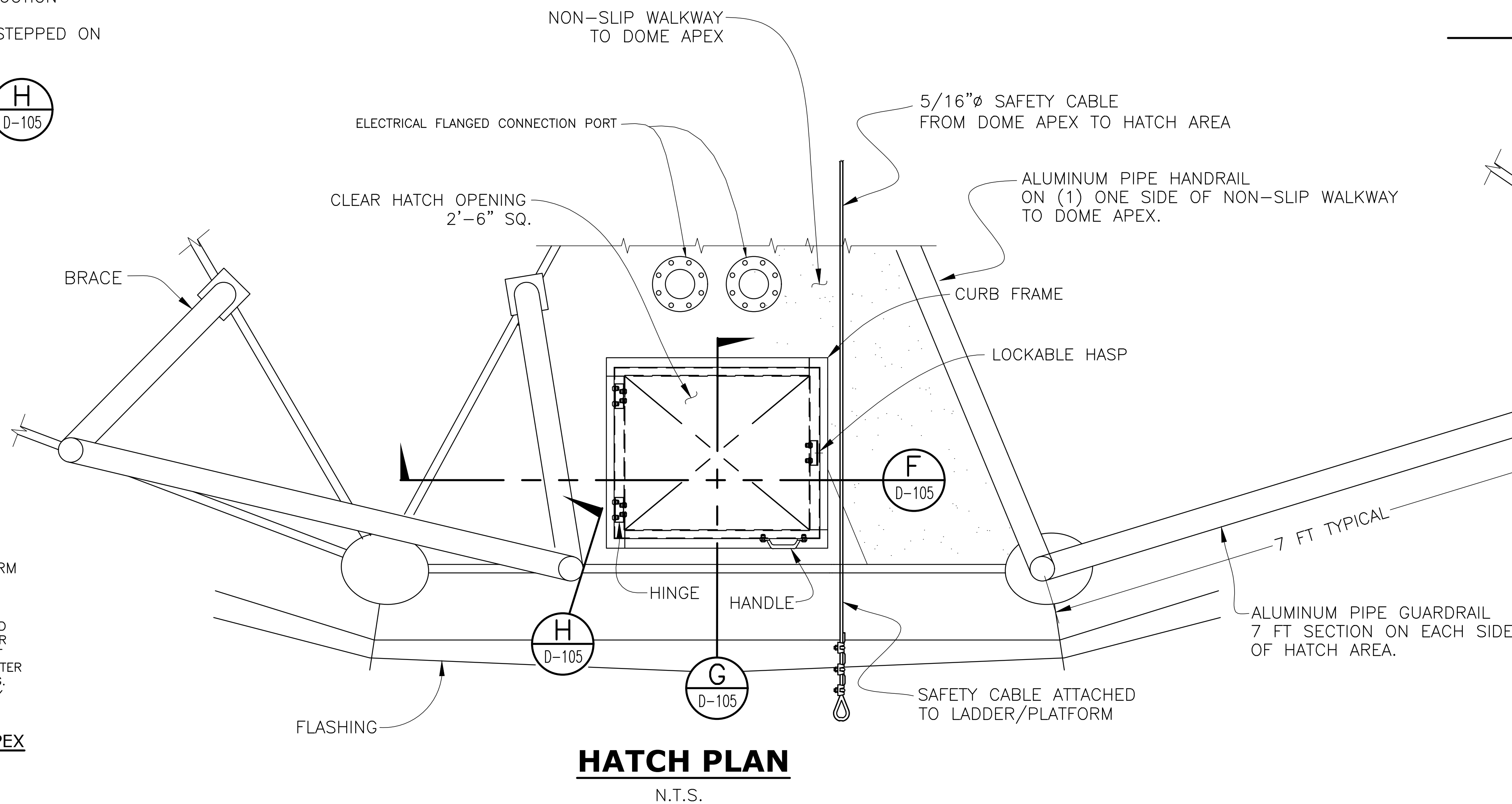
NOTES:

- HATCH FRAME AND COVER ARE ALL ALUMINUM CONSTRUCTION
- FLASHING NOT TO BE STEPPED ON



NOTE:
 EYEBOLT FOR DOME ACCESS MAINTENANCE ONLY BY QUALIFIED PERSONNEL. EYEBOLT RATED FOR OSHA FALL PROTECTION - MUST BE INSPECTED OR REPLACED AFTER FALL OR OTHER SHOCK LOADING. REMOVE ANY TEMPORARY SAFETY LINE IMMEDIATELY AFTER USE.

CABLE AND EYEBOLT AT APEX
 N.T.S.



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99 REALTY DRIVE SUITE 100 203211717 SLRCONSULTING.COM		
DESCRIPTION	DATE	BY

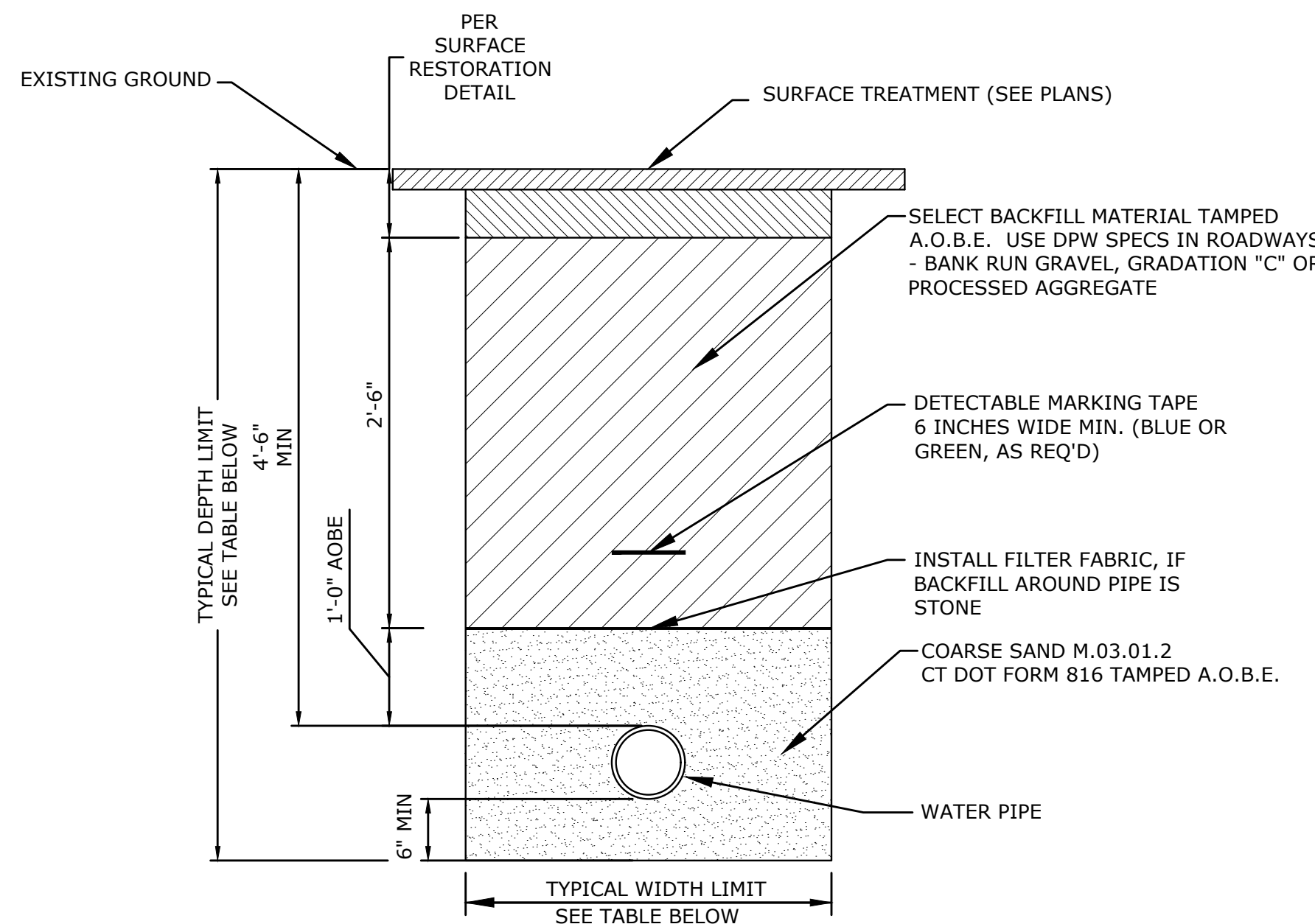
DETAILS
 75,000 GALLON WATER STORAGE TANK
 AT THE ETHEL WALKER SCHOOL
 267 BUSHY HILL ROAD
 SIMSBURY, CONNECTICUT

TAK	KVN	SRD
DESIGNED	DRAWN	CHECKED
SCALE		
AS NOTED		
DATE		
AUGUST 17, 2022		
PROJECT NO.		
141.12628.00022		
SHEET NO.		
8 OF 10		

SD-4

SHEET NAME

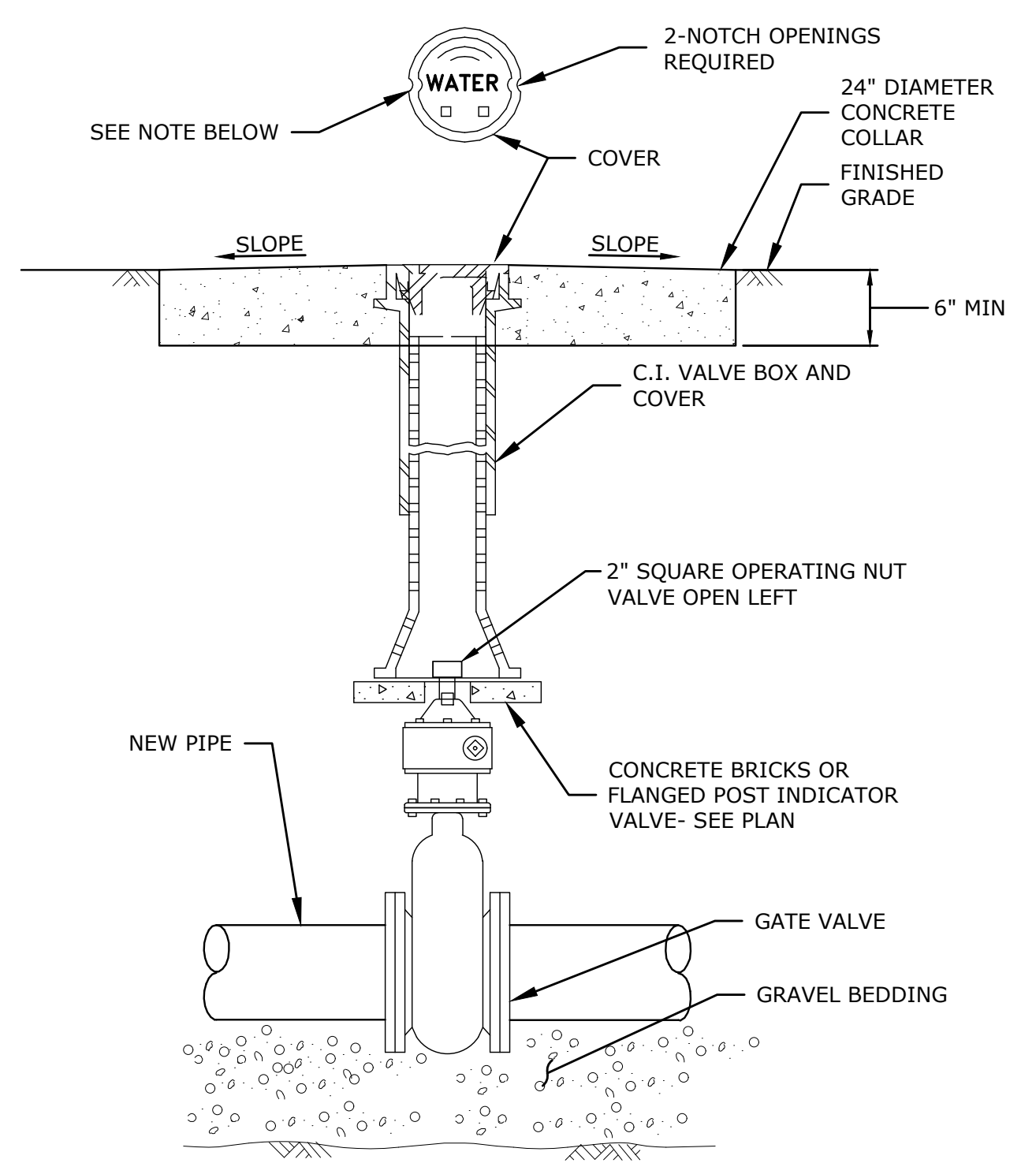
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STANDARD LIMITS

PIPE SIZE	WIDTH	DEPTH
2"	3.0'	5.5'
6"	3.0'	5.5'
8"	3.0'	5.6'
12"	3.0'	5.9'
16"	3.4'	6.2'
20"	3.9'	6.6'
24"	4.3'	6.9'

TYPICAL WATER LINE TRENCH DETAIL
N.T.S.



GATE VALVE & CURB BOX DETAIL
N.T.S.

*ALWAYS INSTALL RESTRAINED JOINTS ON BOTH SIDES OF FITTINGS AND VALVES, EVEN WHEN THRUST BLOCKS ARE ALSO SHOWN ON PLANS.

MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF BEND (FEET)

D.I. PIPE (in.)	HORIZONTAL BENDS				VERTICAL BENDS	
	90°	45°	22.5°	11.25°	45°	22.5°
4"	63	5	2	1	6	3
10"	13	6	3	2	13	7

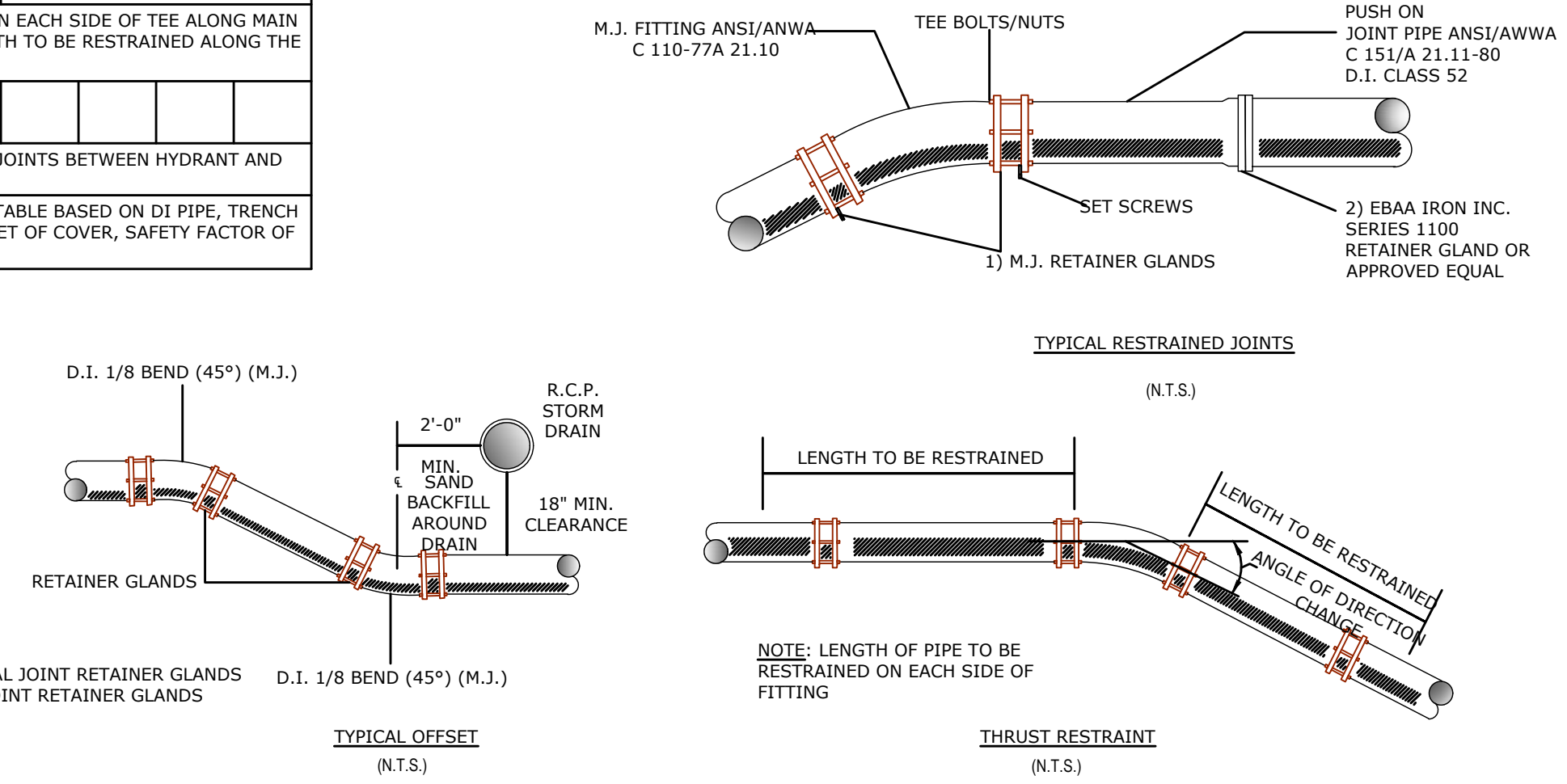
MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF VALVE OR FROM CAP OR PLUG (FEET)

D.I. PIPE (in.)	VALVE, CAP OR PLUG
4"	14
10"	31

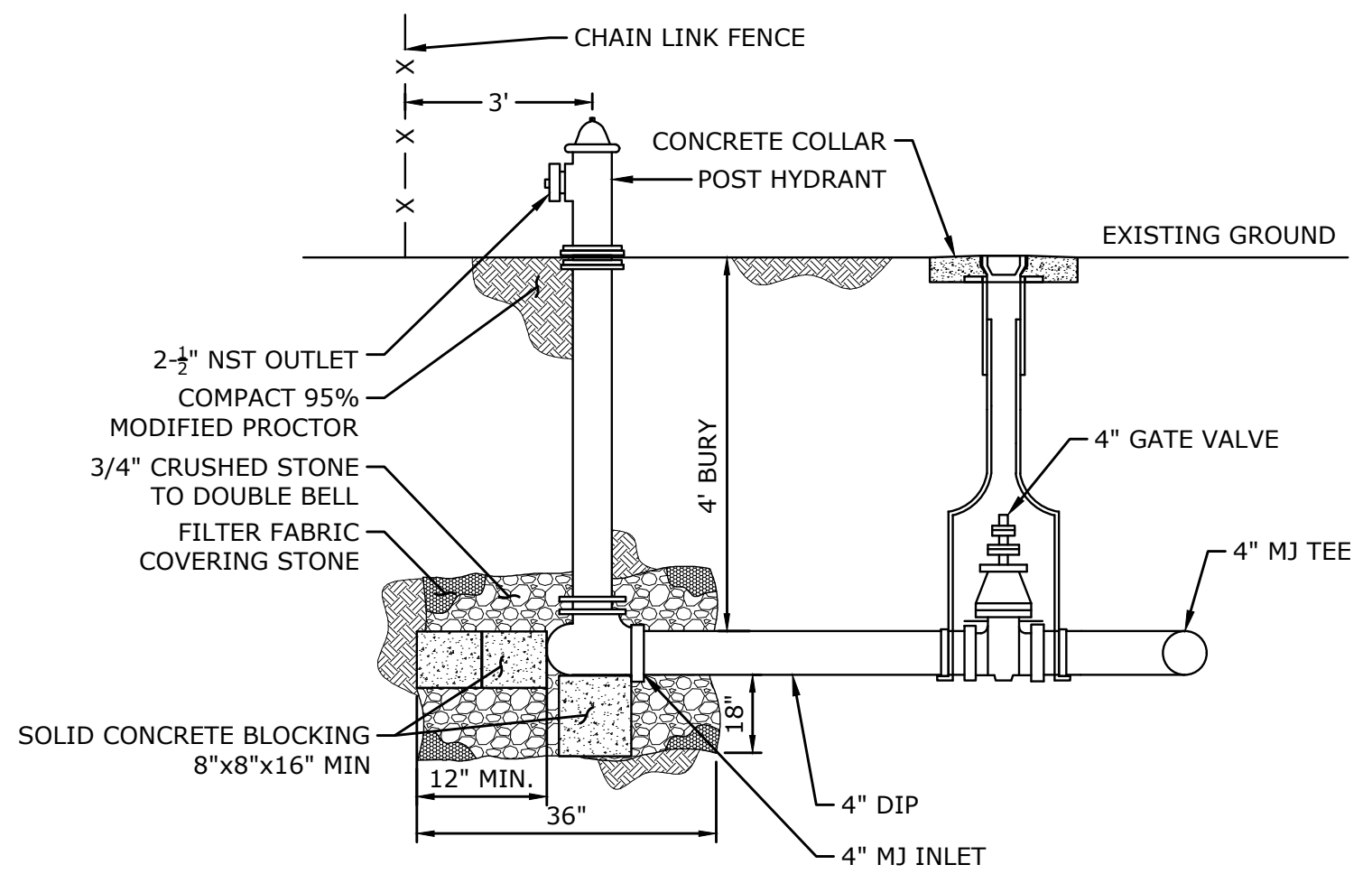
MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF TEE ALONG MAIN RUN IS 1 FEET AND THE MINIMUM LENGTH TO BE RESTRAINED ALONG THE TEE BRANCH IS AS FOLLOWS (FEET):

TEE	BRANCH LENGTH
4"x4"x4"	*RESTRAIN ALL JOINTS BETWEEN HYDRANT AND TEE

*RESTRAINT LENGTHS SHOWN IN THIS TABLE BASED ON D.I. PIPE, TRENCH TYPE 5, 150 PSI TEST PRESSURE, 4.5 FEET OF COVER, SAFETY FACTOR OF 1.5 AND GW SOIL TYPE.

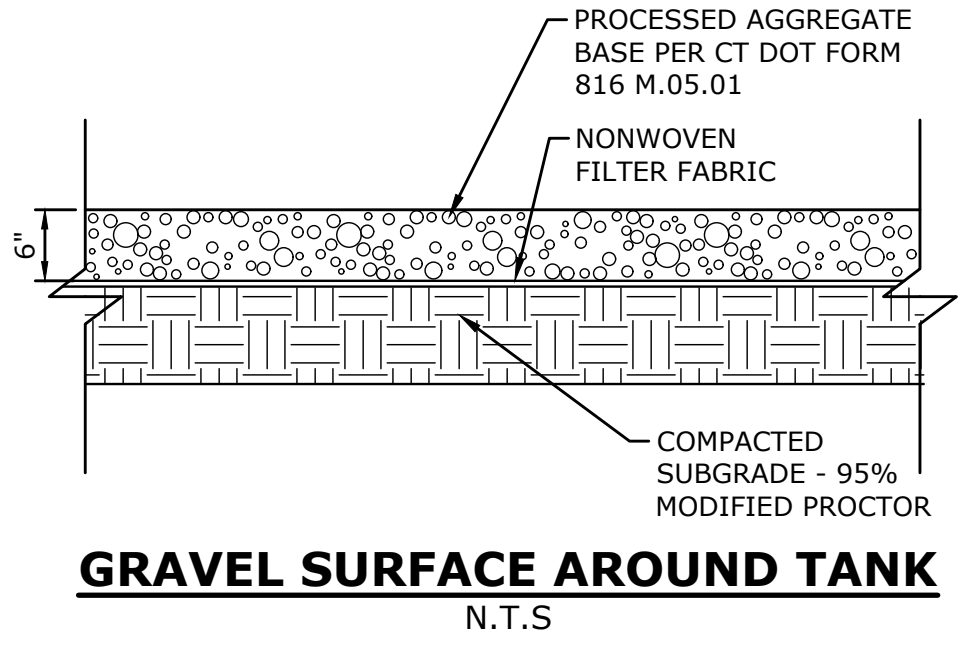


DUCTILE IRON PIPE RESTRAINT LENGTH TABLE
N.T.S.

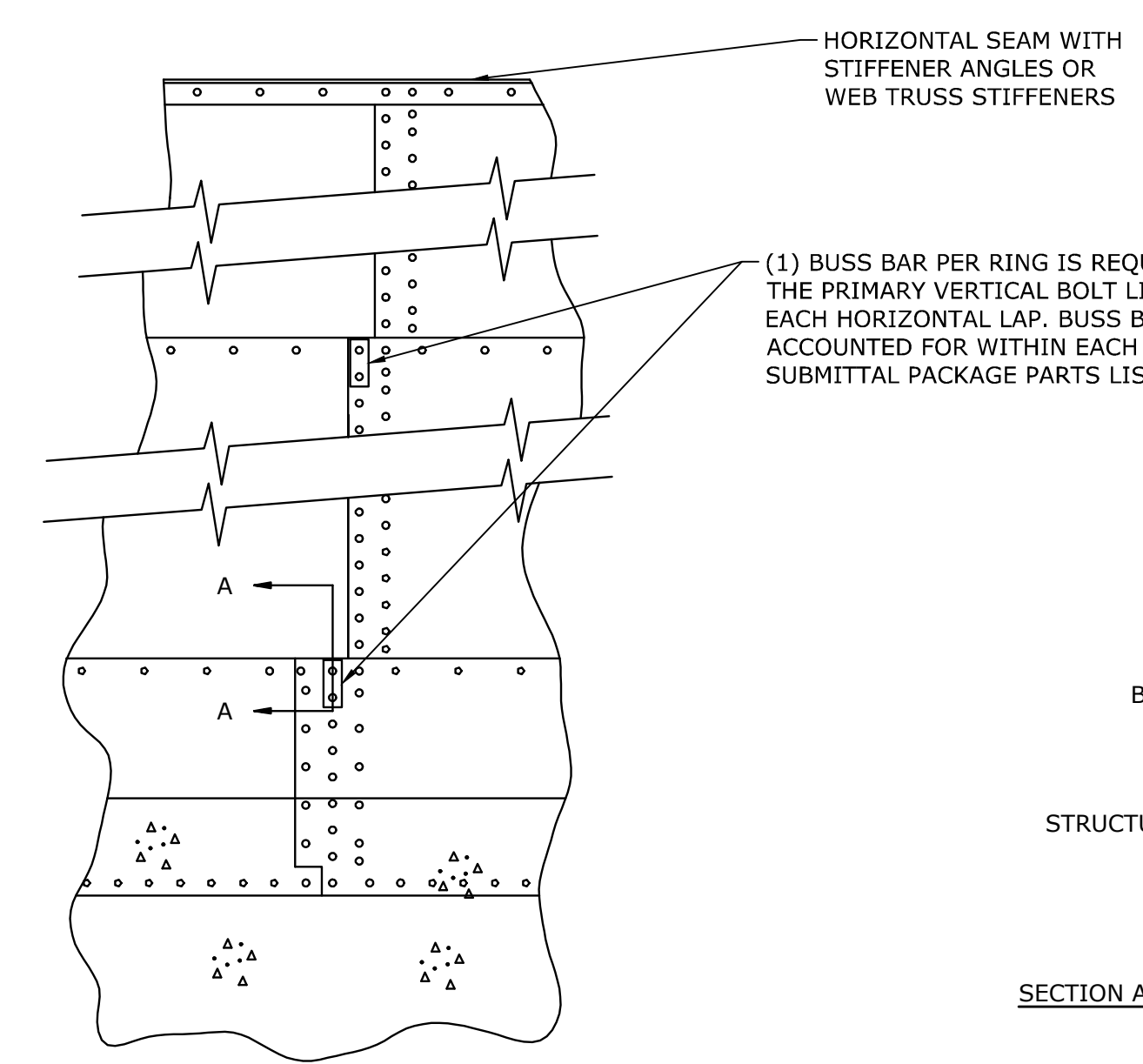


- NOTES:**
1. INSTALL POST HYDRANT, ECLIPSE NO.2 BY KUPFERLE FOUNDRY, WITH 4" MJ INLET, 2 1/2" NST THREADED OUTLET, AND TAMPER PROOF.
 2. PLACE MINIMUM OF 6 CUBIC FEET OF 3/4" STONE FOR HYDRANT BLEED OFF BELOW WEEP HOLE.
 3. RESTRAIN ALL JOINTS

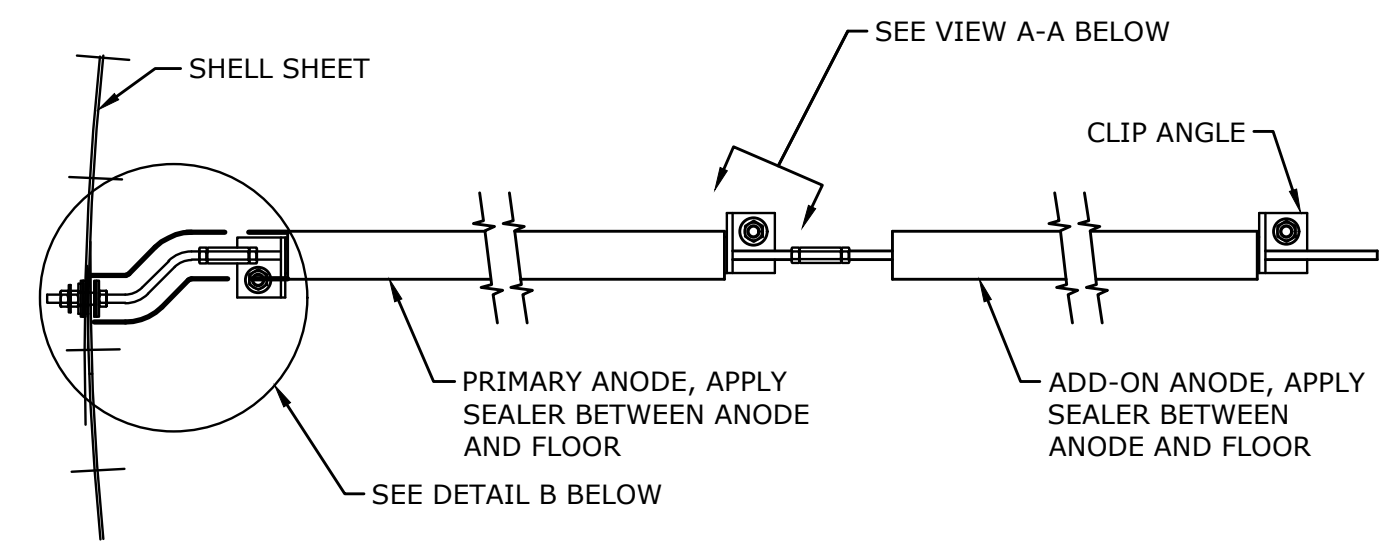
POST HYDRANT
N.T.S.



GRAVEL SURFACE AROUND TANK
N.T.S.

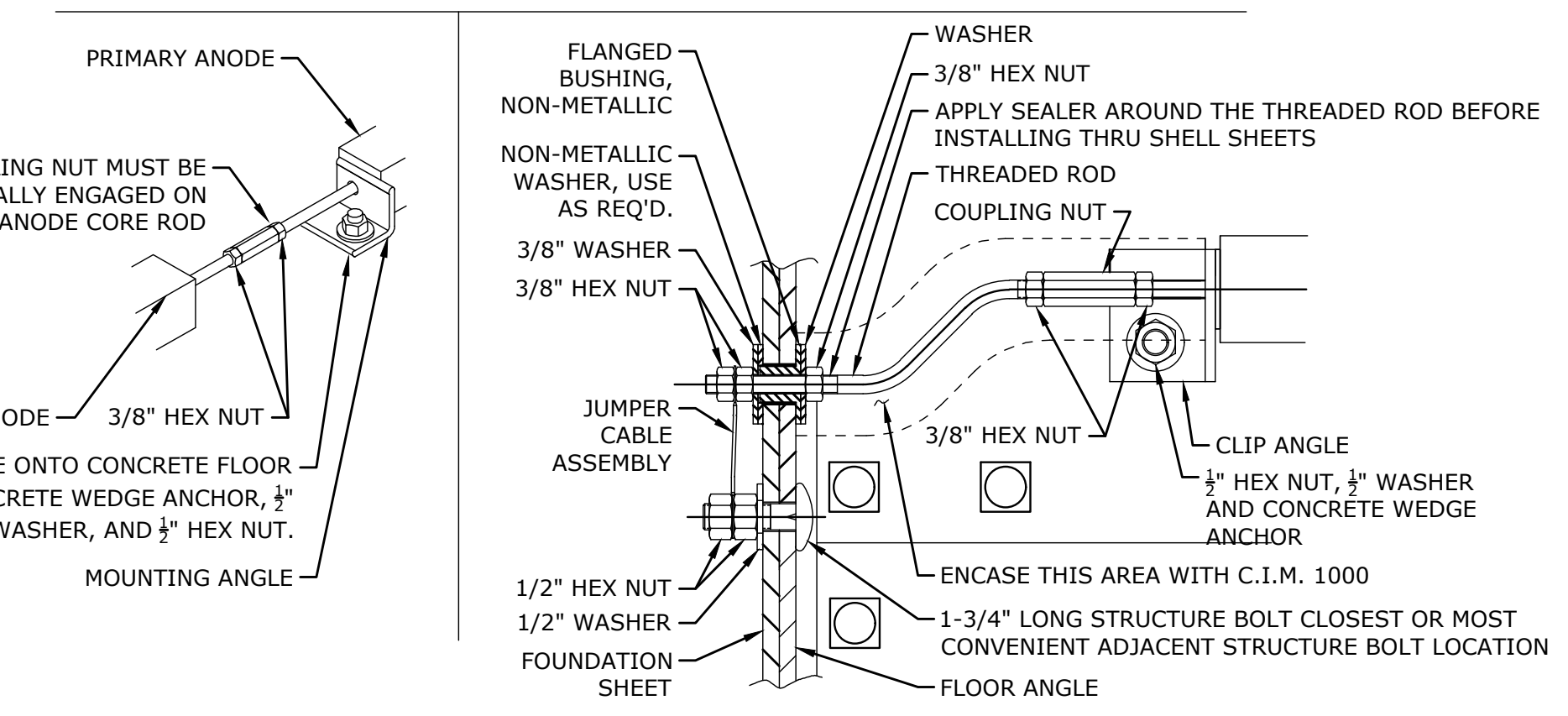


CATHODIC PROTECTION BUSS BAR
N.T.S.



PLAN

USAGE AQUASTORE CONCRETE FOUNDATION PLAN VIEW OF ANODE IN ASSEMBLED POSITION



DETAIL B

VIEW A-A

- NOTES:**
1. THIS CONSTRUCTION DETAIL IS INTENDED TO SHOW THE CATHODIC PROTECTION SYSTEM AS INSTALLED.

CATHODIC PROTECTION
N.T.S.



DESCRIPTION	DATE	BY

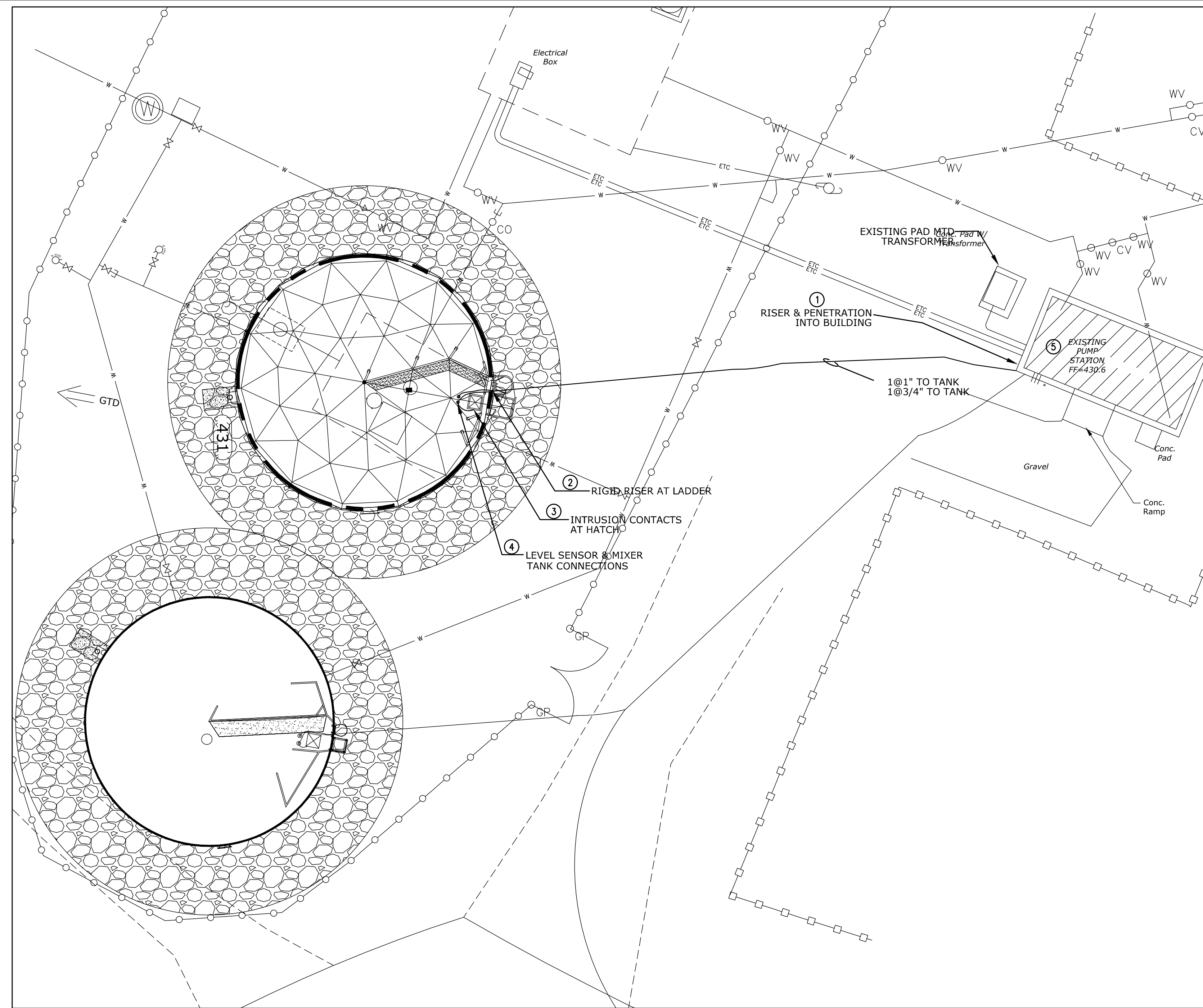
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9 OF 10		

SD-5

ELECTRICAL SPECIFICATIONS

- I. ELECTRICAL GENERAL REQUIREMENTS**
- ALL WORK SHALL COMPLY WITH CONNECTICUT STATE BUILDING CODE AND CONNECTICUT STATE FIRE SAFETY CODE AND SHALL BE ACCOMPLISHED IN A NEAT AND WORKMAN LIKE MANNER.
 - MATERIAL & EQUIPMENT SHALL BE NEW UNLESS SPECIFICALLY NOTED OTHERWISE AND SHALL BE LISTED BY UNDERWRITERS LABORATORIES.
 - SUBMITTALS:**
 - SUBMIT PRODUCT DATA, SHOP DRAWINGS, RECORD DRAWINGS AND O&M MANUALS WHERE REQUIRED BY INDIVIDUAL SPECIFICATION SECTIONS.
 - SUBMIT THREE COPIES TO OWNER.
 - ELECTRICAL INSTALLATION:**
 - COORDINATE ELECTRICAL SYSTEMS, EQUIPMENT AND MATERIALS INSTALLATION WITH OTHER BUILDING COMPONENTS. REFER ALL CONFLICTS TO ENGINEER BEFORE CONTINUING WITH WORK.
 - INSTALL SYSTEMS TO PROVIDE MAXIMUM HEADROOM POSSIBLE UNLESS INDICATED OTHERWISE.
 - INSTALL SYSTEMS LEVEL, PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS.
 - INSTALL EQUIPMENT TO FACILITATE REPAIR, MAINTENANCE OR REPLACEMENT.
 - PERFORM CUTTING AND PATCHING REQUIRED TO REMOVE AND REPLACE DEFECTIVE WORK OR WORK NOT CONFORMING TO REQUIREMENTS OF CONTRACT DOCUMENTS.
 - CONTRACTOR SHALL LEAVE THE ENTIRE ELECTRICAL SYSTEM IN PROPER WORKING ORDER AND SHALL, WITHOUT ADDITIONAL CHARGE, REPLACE ANY WORK, MATERIALS, OR EQUIPMENT FURNISHED & INSTALLED BY HIM UNDER THIS WHICH DEVELOP DEFECTS, EXCEPT FROM NORMAL WEAR & TEAR, WITHIN ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY OWNER.
- II. RACEWAYS, BOXES AND FITTINGS**
- COMPONENTS AND INSTALLATION SHALL COMPLY WITH NFPA 70 & NEMA AND SHALL BE UL LISTED.
 - INTERIOR RACEWAYS SHALL BE ELECTRICAL METALLIC TUBING.
 - EXTERIOR RACEWAYS ABOVE GROUND SHALL BE RIGID METAL CONDUIT OR LIQUID-TIGHT FLEXIBLE METAL CONDUIT (MAX. LENGTH 5').
 - EXTERIOR RACEWAYS BELOW GROUND SHALL BE RIGID METAL CONDUIT OR SCHEDULE 40 PVC.
 - USE RACEWAY FITTINGS COMPATIBLE WITH ASSOCIATED RACEWAY AND APPLICATION.
 - BOXES SHALL BE STEEL CONFORMING TO UL 514A AND NEMA OS1. FITTINGS SHALL CONFORM TO UL 514B.
- III. BUILDING WIRE**
- WIRE SHALL COMPLY WITH UL 83 AND NEMA WC-5. CONNECTORS SHALL COMPLY WITH UL 486A.
 - CONDUCTORS SHALL BE COPPER AND INSULATION SHALL BE THHN/THWN.
 - INTERIOR WIRING SHALL BE BUILDING WIRE IN CONDUIT WHERE EXPOSED.
- IV. SUPPORTING DEVICES**
- SUPPORTS, HARDWARE AND FASTENERS SHALL BE PROTECTED WITH ZINC COATING UNLESS STAINLESS IS SPECIFIED.
 - SLEEVES SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE.
 - CONFORM TO MANUFACTURER'S RECOMMENDATIONS FOR SELECTION AND INSTALLATION OF SUPPORTS AND CONFORM TO THE FOLLOWING:
 - SUPPORT INDIVIDUAL HORIZONTAL RACEWAYS BY SEPARATE PIPE HANGERS.
 - SUPPORT RACEWAY WITHIN ONE FOOT OF ANY UNSUPPORTED BOX.
 - INSTALL SLEEVES IN CONCRETE SLABS AND WALLS, AND FIRE RATED WALLS AND FLOORS. APPLY UL LISTED FIRE STOPPING MATERIAL WHERE REQUIRED.
- V. ELECTRICAL IDENTIFICATION**
- PROVIDE EQUIPMENT IDENTIFICATION LABELS OF ENGRAVED PLASTIC LAMINATE FOR CONTROL PANELS, PANELBOARDS & DISCONNECTS.
 - CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NFPA 70 AND ANSI A13.1.
 - PROVIDE TYPED PANELBOARD CIRCUIT DIRECTORY FOR EACH PANELBOARD.
 - PROVIDE UNDERGROUND WARNING TAPE FOR ALL BURIED ELECTRICAL SERVICES.
- VI. PANELBOARDS**
- ELECTRICAL DISTRIBUTION IS BUILT WITHIN THE EXISTING PUMPSTATION CONTROL PANEL. MATCH EXISTING MATERIALS AND IDENTIFICATION METHODS.
- VII. WIRING DEVICES**
- MANUFACTURERS:**
 - LEVITON
 - HUBBELL
 - APPLETON
 - WIRING DEVICES SHALL CONFORM TO NEMA WD 1.
 - WALL SWITCHES SHALL BE NEMA WD 1 GENERAL DUTY, AC ONLY GENERAL USE SNAP SWITCH. RATED FOR 120/277 VOLTS/20 AMPS.
 - RECEPTACLES SHALL BE NEMA WD 1, GENERAL DUTY, PLASTIC BODY, 120 VOLTS, 20 AMPS, TYPE 5-20 GENERAL USE RECEPTACLE.
 - GFCI RECEPTACLES SHALL BE EQUIPPED WITH INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER.
 - COVER PLATES SHALL BE BRUSHED STAINLESS UNLESS OTHERWISE DIRECTED BY OWNER OR INDICATED ON THE DRAWINGS.
 - COORDINATE DEVICE COLORS WITH OWNER PRIOR TO ORDERING MATERIALS.
 - PROVIDE PRODUCT DATA SUBMITTALS.

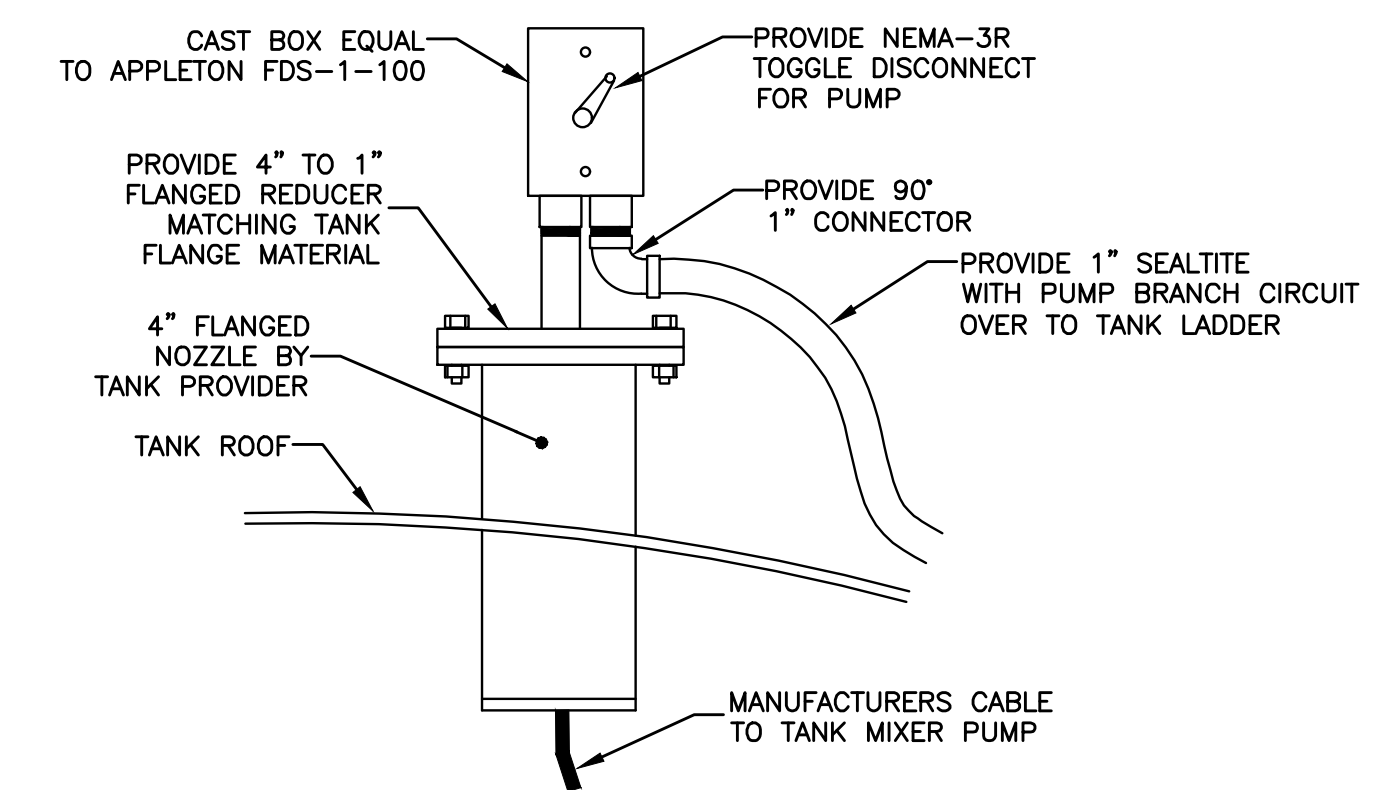
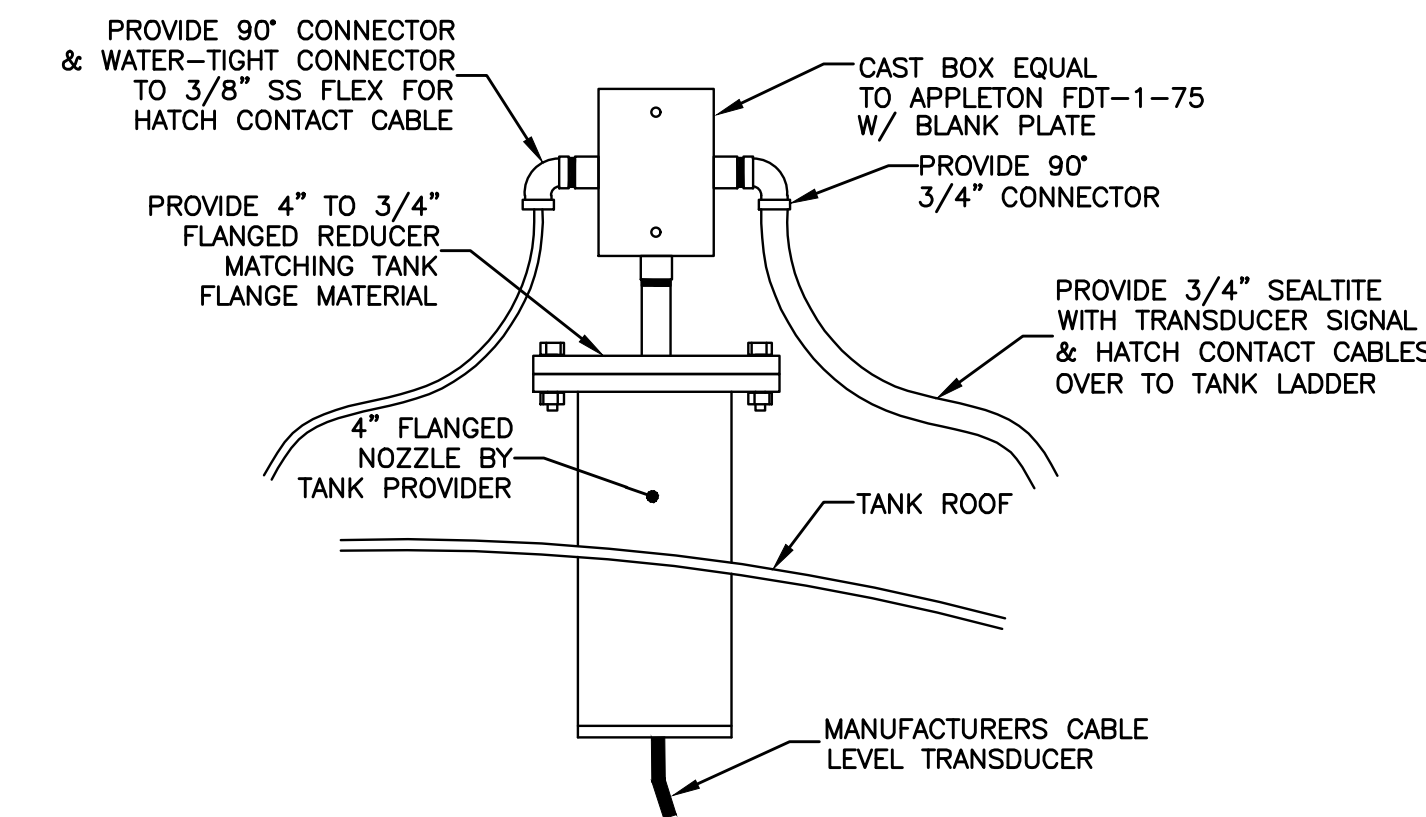
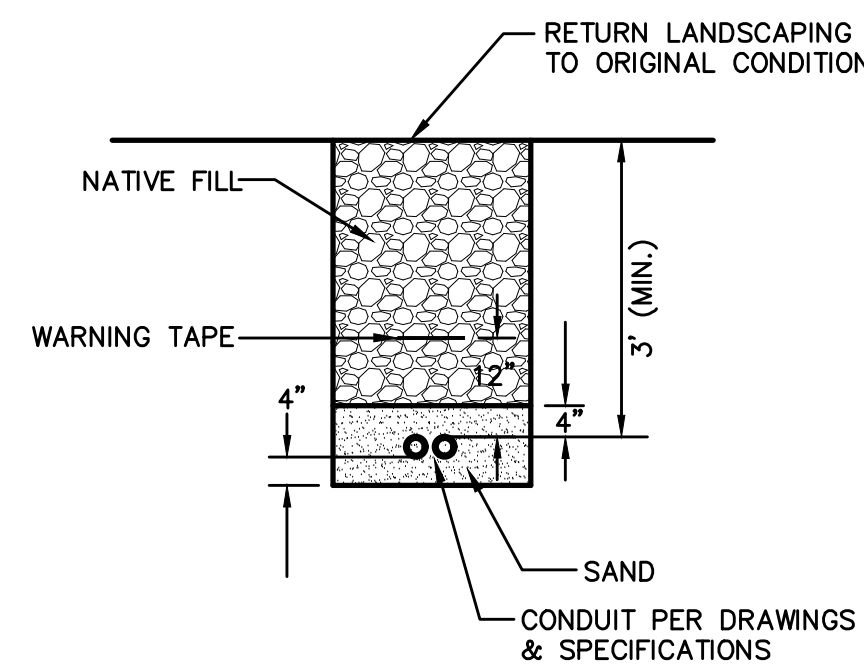


GENERAL NOTES

- SPECIFICATION SECTIONS, GENERAL CONDITIONS, SUPPLEMENTAL GENERAL CONDITIONS AND DRAWINGS ARE INTEGRAL PARTS OF CONTRACT DOCUMENTS.
- SYSTEM COMPONENTS ARE LOCATED APPROXIMATELY ON DRAWINGS. BASE ACTUAL LOCATIONS ON FIELD VERIFICATION OF EXISTING BUILDING CHARACTERISTICS INCLUDING BUT NOT LIMITED TO STRUCTURAL, MECHANICAL, ELECTRICAL & ARCHITECTURAL COMPONENTS.
- ALL WORK AND ACTION DEPICTED AND DESCRIBED IN CONTRACT DOCUMENTS SHALL BE PERFORMED BY THE CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE.
- REFERENCE TO SPECIFIC SUB-CONTRACTORS SUCH AS "MECHANICAL", "ELECTRICAL", ETC. ARE INTENDED TO SUGGEST POSSIBLE DIVISION OF RESPONSIBILITY. PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND EXECUTION OF ALL WORK.
- OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND INSPECTIONS.
- ALL EQUIPMENT, MATERIALS AND RELATED SYSTEM COMPONENTS SHALL BE NEW UNLESS NOTED OTHERWISE.
- REPAIR AND REPLACE AT NO COST TO OWNER ALL EQUIPMENT AND MATERIALS DAMAGED DURING CONSTRUCTION.
- CIRCUITING DEPICTED FOR EQUIPMENT AND LIGHTING FIXTURES DEFINES GROUPING OF FIXTURES, DEVICES AND COMPONENTS AND REQUIRED CONDUCTORS. CIRCUITING IS NOT INTENDED TO DEFINE CONDUIT LOCATIONS.
- STUDY THE PROJECT MANUAL & DRAWINGS OF OTHER DISCIPLINES INCLUDING ARCHITECTURAL, STRUCTURAL, CIVIL & MECHANICAL.
- ELECTRICAL CONDUITS & BOXES SHALL BE CONCEALED IN WALLS OR ABOVE CEILINGS WHEREVER POSSIBLE.
- ALL PENETRATIONS THRU RATED CEILINGS SHALL BE SEALED USING U.L. LISTED METHODS APPROPRIATE FOR INDICATED RATING.
- ALL INSTALLATIONS ON NEW WALLS SHALL BE FULLY RECESSED. INSTALLATIONS ON EXISTING MASONRY WALLS SHALL BE RUN WITH SURFACE RACEWAY PAINTED TO MATCH WALL FINISH AND SURFACE BOXES. INSTALLATIONS ON EXISTING STUD WALLS SHALL CUT IN OLD-WORK STYLE BOXES AND FISH WIRING IN WALL CAVITY.

ELECTRICAL DWG. KEY NOTES

- PROVIDE RIGID 90 AND RISER TO LB FOR BUILDING PENETRATION. COORDINATE EXACT LOCATION AND HEIGHT OF PENETRATION IN FIELD.
- PROVIDE RIGID 90 AND RIGID RISER. COORDINATE EXACT DETAIL OF ATTACHMENT TO LADDER IN FIELD WITH TANK PROVIDER. ALL MOUNTING HARDWARE SHALL BE STAINLESS.
- PROVIDE INDUSTRIAL STAINLESS STEEL CONTACTS FOR INTRUSION MONITORING AT HATCH. USE GE 2500 SERIES OR EQUAL.
- REFER TO TANK CONNECTION DETAILS ON THIS SHEET FOR CONNECTION TO MIXER & LEVEL SENSOR.
- WORK WITHIN THE EXISTING PUMPHOUSE SHALL CONSIST OF THE FOLLOWING: CONNECT TANK MIXER TO EXISTING BREAKER IN THE FSCP. MOUNT AND WIRE MIXER CONTROL PANEL FURNISHED WITH MIXER. PULL LEVEL SENSOR SIGNAL CABLE TO PUMPSTATION CONTROL PANEL FOR TERMINATION BY OTHERS. PROVIDE WIRING, RELAYS, PROGRAMMING AND ANY OTHER WORK REQUIRED TO TIE IN THE TANK HATCH INTRUSION CONTACT TO THE EXISTING BOSCH D7412GV4 SECURITY PANEL. COORDINATE WITH OWNER'S MONITORING SERVICE.



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August 17, 2022 - RFB.dwg
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 CHESTER, CT 06410
 06818-2340
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 FAX: 203.239.0247
 www.SUBCONTRACTING.COM

DATE	BY	DESCRIPTION

WATER TANK ELECTRICAL PLAN
75,000 GALLON WATER STORAGE TANK
AT THE ETHEL WALKER SCHOOL
267 BUSHY HILL ROAD
SIMSBURY, CONNECTICUT

D.R. DESIGNED	D.R. DRAWN	R.R.B. CHECKED

AS NOTED
 DATE: **AUGUST 17, 2022**
 PROJECT NO: **141.12628.00022**
 SHEET NO: **10 OF 10**

E-1

SHEET NAME