

GUAM WATERWORKS AUTHORITY

Gloria B. Nelson Public Service Building | 688 Route 15, Mangilao, Guam 96913

P.O. Box 3010, Hagåtña, Guam 96932

Tel. No. (671) 300-6846/48 Fax No. (671) 648-3290

IFB No. 2025-35

Northern District Wastewater Treatment Plant (NDWWTP) Facility Damage Mawar Repairs Response for Inquiries No. 1

This document addresses inquiries regarding IFB 2025-35. It provides clarifications and additional information for informational purposes. In the event that any responses result in modifications to the bid documents, they should be considered as amendments to the original IFB 2025-35.

QUESTION/INQUIRY AS SUBMITTED:		GWA RESPONSE:
Questions from August 26, 2025		
1.	Requesting 2 weeks' time extension for bid submission in order to material outsource, inquiry and requesting Bid bond for this project.	Please note that the bid submission and opening dates have been amended as follows: Bid Submission: Thursday, October 16, 2025, at 10:00 a.m. Bid Opening: Thursday, October 16, 2025, at 10:30 a.m.
2.	It is specified in the General Scope Requirements that the entire scope of works must be completed within Ninety (90) Calendar days. This time frame looks not enough especially if materials will be ordered off island with at least 2-3 Months lead time. 1.0 Facility Damage, HVAC Admin Building - Kindly provide specifications of the Exhaust Fan for replacement, this area is not visited during site visit. Area 2- Gravity Belt Thickeners - Kindly provide complete specifications of the Exhaust Fan for replacement. 3.0 Facility Damage, Mechanical Area 2 - Bio Filters- Requesting complete specifications of the aluminum Biofilter covers. Area 2 - Primary Clarifier #1 - Requesting As built Drawing detail of Feedwell Baffle and Rake Arm Mechanism.	The project timeline has been revised, and the entire scope of works must now be completed within One (1) Year from the Notice to Proceed. See attached drawings. See attached drawings. See attached drawings. See attached drawings.



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Area 2 - Reservoir Tank - Request detail drawing of the Reservoir Tank roof detail showing the dimension and specs of the cover including connection detail. Area 2 - Utility Hatch - The complete specifications and Detail Plan of the Utility Hatch Hydraulic Guides, Hatch connectors & Hatch Levers Area 2 - UV Area - Requesting complete specification of Channel Covers. Requesting as-built plans on those areas requiring the replacement of covers. 5.0 Facility Damage, Fencing Area 2 - Fencing- Requesting clarification if the Main Gate 2 will be replaced or repaired only. Section 5- Fencing- Clarification if the 10 each stands for aluminum wire ties or replacement of 10 line posts including aluminum Wire Ties.	See attached drawings. See attached drawings. See attached drawings Main Gate 2 shall be replaced, see attached drawings Provide 10 line posts, see attached drawings.
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GWA hereby amends the following due dates as follows:

Revised Bid Submission and Opening Dates

The bid submission date originally was scheduled for **Thursday, September 18, 2025, at 10:00 a.m.** and has been changed to: **Thursday, October 16, 2025, at 10:00 a.m.**

The bid opening date originally scheduled for **Thursday, September 18, 2025, at 10:30 a.m.** and has been changed to: **Thursday, October 16, 2025, at 10:30 a.m.**

All other terms and conditions remain unchanged.

Bidders are also notified to visit the GWA website: www.guamwaterworks.org to ensure that any addenda to the bid, answers to questions, and reminders are communicated to all bidders during the solicitation process.



Brett Railey, P.E.
Acting General Manager

9/4/2025

Date



HEREBY
THIS PLAN
BY ME OR
DIRECT SU

PROJECT TITLE

**WATERWORKS AUTHORITY
NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT**

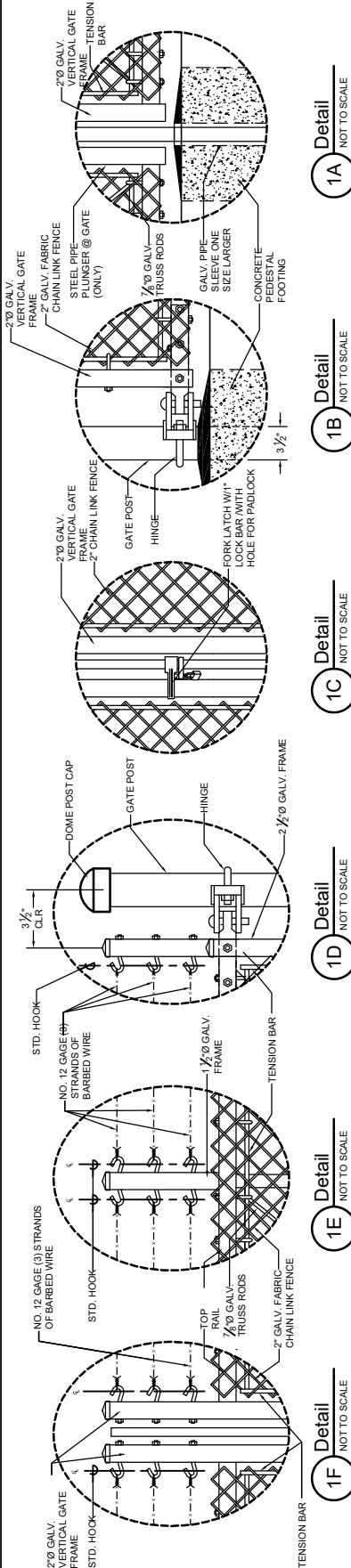
RAMSAY

RECORD DRAWINGS

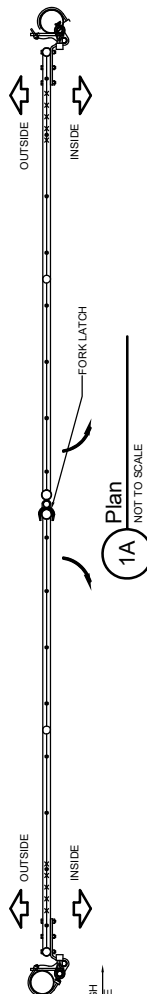
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PERIMETER FENCE DETAILS

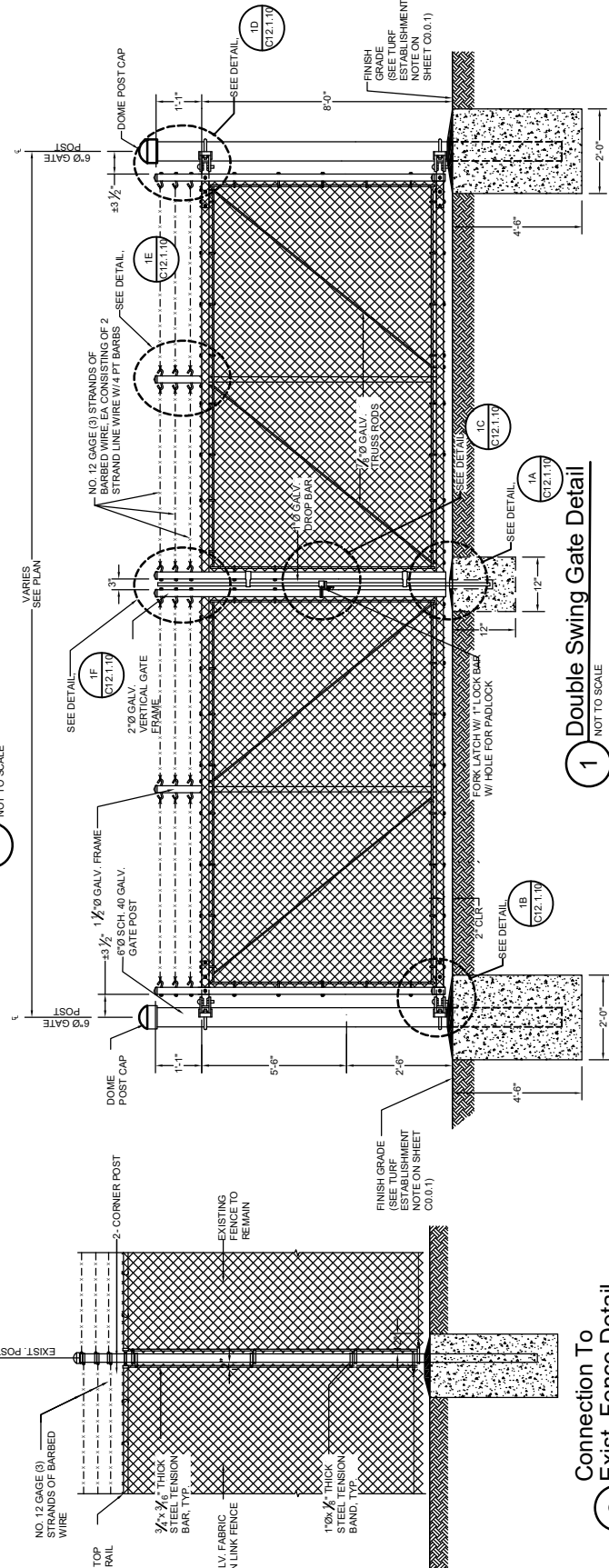
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Chain Link Fence Detail



1A Plan



1 Double Swing Gate Detail
NOT TO SCALE

2 Connection To
Exist. Fence Detail
NOT TO SCALE

RECORD DRAWINGS

SECTION 067000 – FIBERGLASS REINFORCED CHANNEL COVERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes the fiberglass reinforced solid channel covers. Refer to the Drawings for specific locations.

1.3 DEFINITIONS/STANDARDS

- A. FRP: Glass-fiber-reinforced plastic.

1.4 COORDINATION

- A. Coordinate installation of anchorages for gratings, grating frames, supports, and channel covers. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.
- B. Contractor shall coordinate and submit shop drawings of the channel covers to ensure that the products will fit to the final installation for approval by Owner and Engineer prior to fabrication.

1.5 SUBMITTALS

- A. Prepare submittals per requirements of Division 01 Section “Submittal Procedures”.
- B. Product Data: FRP channel cover systems.
 - 1. Include information on chemical resistance.
 - 2. Include information on UV resistance
 - 3. Include information on solid surface.
- C. Shop Drawings: Provide stamp and seal of design engineer and statement of conformance to performance requirements.
 - 1. Include plans, sections, details, and attachments to other work.
 - 2. Indicate sizes and locations of loads imposed on other construction.
 - 3. Include structural calculations sealed by a licensed Professional Engineer.
- D. Samples for Selection: Available standard colors for FRP components.

Upgrade of Northern District Wastewater Treatment Plant

- E. At the time of submission, the manufacturer shall, in writing, call the Owner's and Engineer's attention to any deviations that the submittal may have from the requirements of these specifications.
- F. A complete description of the warranty to be provided.

1.6 QUALITY ASSURANCE

- A. Engineering Design: Structural calculations and Shop Drawings shall be prepared by a Professional Engineer registered in state of the manufacturer and experienced in structural design of FRP structural assemblies.
- B. Manufacturer and Fabrication Qualifications: Manufacturer and fabricator shall have a minimum of five (5) years of proven successful experience supplying and fabricating FRP covers with sufficient capacity to meet the project schedule requirements.
- C. Fabrication shall be done in compliance with all applicable ASTM standards or equivalent international standards.

1.7 FIELD CONDITIONS

- A. Field Measurements: Coordinate with Drawings for exact size and locations of channel covers. Contractor shall field measure dimensions required for all FRP items prior to ordering exact sizes.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Prevent damage by abrasion, cracking, chipping, and permanent deformation.
- B. Comply with manufacturer's written instructions for storage and handling. All parts shall be properly protected per manufacturer's instructions so that no damage or deterioration occurs during shipping or installation.

1.9 WARRANTIES AND BONDS

- A. The contractor shall provide a warranty against defective or deficient materials and workmanship for at least one (1) year in accordance with the requirements of Division 01.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved manufacturers are listed below:
 1. Fibergrate Composite Structures Inc;
 2. Strongwell Corporation;
 3. GEF Inc. ;
 4. MFG Water Treatment Products

5. Or approved equivalent

2.2 PERFORMANCE REQUIREMENTS

- A. Channel Covers: Withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
 1. Channel Covers: Uniform load of at least 100 lbf/sq. ft. (4.79 kN/sq. m).
 2. Limit deflection to ¼ inch (6.4 mm)
- B. Seismic Performance: Design assemblies and anchorages to withstand effects of seismic loads stated on Structural Drawings.

2.3 DESIGN REQUIREMENTS

- A. Sizes and configurations of components shown on Drawings are intended only for diagrammatic purposes to convey design intent and are not intended to limit design of FRP assemblies.
- B. Provide complete, stable assemblies with adequate supports, bracing, and anchorages.

2.4 FRP STRUCTURAL COMPONENTS

- A. Description: Structural shapes manufactured for supporting live loads and suitable for exterior applications.
 1. Colors: Standard colors selected by Engineer.
- B. Chemical Resistance: Components shall be resistant to damage, including weakening, from exposure to hydrogen sulfide or any other volatile organic compounds found in wastewater and all chemicals utilized at the wastewater treatment plant as demonstrated by testing.
- C. Manufacturing Process: Pultrusion.
- D. Material: Glass fiber reinforced polyester or vinyl ester matrix.
 1. Fire retardant additive to meet Class I flame rating of ASTM E84 and the self-extinguishing requirement of ASTM D635.
 2. UV inhibitors in exterior components and UV-resistant coating.
 3. Corrosion-resistant.
 4. Glass Content: Minimum 45 percent by weight, maximum 55 percent.
- E. Finished Surfaces: Smooth surfaces with fully-embedded glass fibers that are free of voids and without cracks, crazes, unreinforced areas, delamination, or protruding glass fibers.
- F. Fasteners: 316 Stainless Steel bolts and nuts
- G. Anchorage Devices: 316 Stainless Steel bolts or studs in structural polymer anchoring cement suitable for exterior chemical-resistant applications.
- H. Grout: Non-metallic, chemical-resistant type for exterior applications.

2.5 FRP CHANNEL COVERS

A. Solid Channel Covers

1. The FRP channel covers shall be a pre-engineered system capable of meeting all loading and deflection conditions specified herein and on the Drawings.
2. The covers shall have a solid top and help contain any gasses or orders within the channels. The covers shall be chemically resistant to hydrogen sulfide or any other volatile organic compounds found in wastewater.
3. The covers sections shall not weigh over 50 lbs. each and shall be able to be removed by a single person.
4. The covers shall have recessed handles allowing for easy cover removal.
5. Installed channel covers shall sit flush to all adjacent walkways and surfaces to prevent all types of tripping hazards.
6. Traffic Surface: The covers shall have an anti-slip surface capable of withstanding heavy traffic use.
7. The cover sections shall seal tightly to prevent the release of odors

2.6 FABRICATION

- A. Shop fabricate components to minimize site cutting.
- B. Coat cut surfaces and drilled holes to provide same performance and appearance as manufactured surfaces.
- C. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- D. Fabricate components indicated to be cast into concrete with integral anchors.
- E. Form connections that are flush, smooth, and arranged to prevent accumulation of water.
- F. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- G. Panel Joints: Maximum 1/4 inch width.
- H. Except where to be removable or hinged, fasten cover panels rigidly to supporting framework.
- I. Fabricate cutouts in covers sections for penetrations indicated. Arrange cutouts to permit cover removal without disturbing items penetrating gratings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine materials for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install assemblies plumb, level, and accurately aligned with other construction elements.
- B. Install components to form rigid, stable assemblies securely anchored to supporting construction.
- C. Coat field-cut surfaces and drilled holes to provide same performance and appearance as manufactured surfaces.
- D. Make mechanical connections accurately aligned, rigid, and securely fastened.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.
- F. Install channel cover panels to form level planes with maximum 1/8 inch vertical offsets in walking surfaces at joints.
- G. Channel covers and anchorage devices shall be installed with channel cover panels level with adjacent floor or deck surface with a maximum of 1/8 inch vertical offsets in walking surfaces at cover/floor interface.

3.3 CLEANING AND PROTECTION

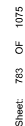
- A. Clean all fiberglass components following installation and protect components by covering or other suitable means until acceptance by the Owner.

END OF SECTION 067000

15. LABEL AND IDENTIFY ALL DUCT, PIPING AND EQUIPMENT PER SECTION 230553.

SYMBOL	ABBREVIATION	DESCRIPTION
	EAD	EXHAUST AIR DUCT (SECTION)
	OAD/AAU	OUTSIDE/AIRAKE UP AIR DUCT (SECTION)
	RAD	RETURN AIR DUCT (SECTION)
	SAD	SUPPLY AIR DUCT (SECTION)
	F.C.	FLEXIBLE CONNECTION (DUCT)
	SF/M	SHEET METAL DUCT (1ST FIGURE, SIZE SHOWN; 2ND FIGURE, SIZE NOT SHOWN)
	MARK	SUPPLY DIFFUSER, AIR GRILL, LOUVER, OR WALL CAP TAG
	H	DOOR UNDERCUT TAG
	DUC	(H = HEIGHT, INCHES)
	SD	SUPPLY DIFFUSER (CEILING/4-WAY)
	SD	SUPPLY DIFFUSER (CEILING/2-WAY)
	SD	SUPPLY DIFFUSER (SIDEWALL)
	RYEG	RETURN/EXHAUST GRILLE (CEILING)
	RYEG	RETURN/EXHAUST GRILLE (SIDE WALL)
	RAL	RETURN AIR LOUVER
	OAL	OUTSIDE AIR LOUVER
	EAL	EXHAUST AIR LOUVER
	DL	DOOR LOUVER
	⊙	DUCT SMOKE DETECTOR
	⊙	THERMOSTAT
	⊙	COMBUSTIBLE GAS SENSOR
	AD	ACCESS DOOR
	⊙	THERMOMETER
	ACD	A/C CONDENSATE DRAIN
	WC	WALL CAP
	EF	EXHAUST FAN
	OAD	OUTSIDE AIR DUCT
	RAD	RETURN AIR DUCT
	SAD	SUPPLY AIR DUCT
	VD	VOLUME DAMPER

MARK	MAX CFM	NOMINAL SIZE	USE	NOTES	REMARKS
SD-1	300	8" x 8"	SUPPLY AIR	SQUARE GRILLE	W/ OPPOSED BLADE DAMPER
SD-2	400	12" x 12"	SUPPLY AIR	4-WAY SQUARE DIFFUSER	W/ OPPOSED BLADE DAMPER
SC-1	500	18" x 6"	SUPPLY AIR	DOUBLE DEFLECTION	W/ OPPOSED BLADE DAMPER
SC-2	1,000	24" x 12"	SUPPLY AIR	DOUBLE DEFLECTION	W/ OPPOSED BLADE DAMPER
SC-3	1,750	24" x 18"	SUPPLY AIR	DOUBLE DEFLECTION	W/ OPPOSED BLADE DAMPER
SC-4	2,500	36" x 18"	SUPPLY AIR	DOUBLE DEFLECTION	W/ OPPOSED BLADE DAMPER
SC-5	3,250	36" x 24"	SUPPLY AIR	DOUBLE DEFLECTION	W/ OPPOSED BLADE DAMPER
EG-1	400	10" x 10"	EXHAUST AIR	45° FIXED DEFLECTION GRILLE	W/ OPPOSED BLADE DAMPER
EG-2	1,000	24" x 12"	EXHAUST AIR	45° FIXED DEFLECTION GRILLE	W/ OPPOSED BLADE DAMPER
EG-3	1,750	24" x 18"	EXHAUST AIR	45° FIXED DEFLECTION GRILLE	W/ OPPOSED BLADE DAMPER
EG-4	2,500	36" x 18"	EXHAUST AIR	45° FIXED DEFLECTION GRILLE	W/ OPPOSED BLADE DAMPER
EG-5	3,250	36" x 24"	EXHAUST AIR	45° FIXED DEFLECTION GRILLE	W/ OPPOSED BLADE DAMPER
DL-1	250	12" x 12"	MAKE-UP AIR	DOOR LOWER	STAINLESS STEEL, COORDINATE W/ ARCH DOOR SCHEDULE
IL-21/2	2	96" x 60"	OUTSIDE AIR	WALL INTAKE LOWER	STAINLESS STEEL W/ INSECT SCREEN
IL-14/12	2	96" x 48"	OUTSIDE AIR	WALL INTAKE LOWER	STAINLESS STEEL W/ INSECT SCREEN
IL-20/12	1	96" x 108"	OUTSIDE AIR	WALL INTAKE LOWER	STAINLESS STEEL W/ INSECT SCREEN
BL-20/1	1	96" x 96"	EXHAUST AIR	RADIATOR EXHAUST LOWER	STAINLESS STEEL W/ INSECT SCREEN



MARK	ROOM	COOLING CAPACITY			ELECTRICAL			REFRIGERANT			REMARKS							
		TOTAL	SENSIBLE	潜	SA	OA	COMP.	COND. FAN	EVAP. FAN	FAN		CYCLE	RL	RS	TYPE	ACD		
PROCESS 11 - INFILTRANT PUMP STATION																		
ACCU-1.1	ELECTRICAL ROOM	20,000	20,000	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-1.1	(SOUTHERN LINK)	20,000	20,000	600	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
ACCU-1.2	ELECTRICAL ROOM	20,000	20,000	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-1.2	(SOUTHERN LINK)	20,000	20,000	600	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
ACCU-1.11	ELECTRICAL ROOM	24,000	24,000	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-1.11	(ROUTE 3)	24,000	24,000	600	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
PROCESS 12 - HEADWORKS																		
ACCU-2.1	ELECTRICAL ROOM	22,000	22,000	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-2.1	(SOUTHERN LINK)	22,000	22,000	600	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
ACCU-2.2	ELECTRICAL ROOM	22,000	22,000	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-2.2	(SOUTHERN LINK)	22,000	22,000	600	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
ACCU-2.3	ADMIN. OFFICE	34,200	31,300	-	-	16.8 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-2.3	(SOUTHERN LINK)	34,200	31,300	800	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
PROCESS 16 - UV DISINFECTION																		
ACCU-6.1	ELECTRICAL ROOM	33,000	33,000	-	-	16.8 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-6.1	(SOUTHERN LINK)	33,000	33,000	800	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
ACCU-6.2	ELECTRICAL ROOM	30,000	30,000	-	-	16.8 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-6.2	(SOUTHERN LINK)	30,000	30,000	800	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
ACCU-6.3	ELECTRICAL ROOM	33,000	33,000	-	-	16.8 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-6.3	(SOUTHERN LINK)	33,000	33,000	800	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
PROCESS 17 - AIR-TO-AIR EXCHANGER																		
ACCU-9.1	ELECTRICAL ROOM	4,800	4,800	-	-	8.2 A	-	0.5 A	-	-	208-230	1	60	1/4"	3/8"	R410A	5/8"	MITSUBISHI MUZ-FH63NA
FCU-9.1	(SOUTHERN LINK)	4,800	4,800	300	-	-	-	0.67 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-FH63NA
PROCESS 10 - THICKENING FACILITY																		
ACCU-10.1	BLOWER ROOM	22,500	22,500	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-10.1	(SOUTHERN LINK)	22,500	22,500	600	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
ACCU-10.2	BLOWER ROOM	22,500	22,500	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60	3/8"	5/8"	R410A	5/8"	MITSUBISHI MUZ-GE24NA
FCU-10.2	(SOUTHERN LINK)	22,500	22,500	600	-	-	-	0.76 A	-	-	-	-	-	-	-	-	-	MITSUBISHI KMS-GE24NA
PROCESS 11 - AT-RAD BUILDINGS																		
ACCU-11.1	ELECTRICAL ROOM	24,000	24,000	-	-	13.7 A	-	0.93 A	-	-	208-230	1	60					



**Design Services
For The Built
Environment**

Carrollton, OK Nashville, TN
Dallas, TX Richmond, VA
Ft. Lauderdale, FL Tallahassee, FL
Jackson, MS Tampa, FL
Jacksonville, FL



DATE: 03-18-2019

PROJECT SUPERVISOR



ATTAL-
RECORD DRAWING

#	Date	Description
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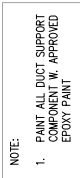
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HVAC AC UNITS SCHEDULE

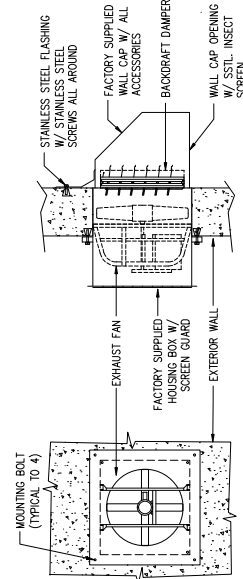
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2 DUCT SUPPORT □ ROOF
NOT TO SCALE



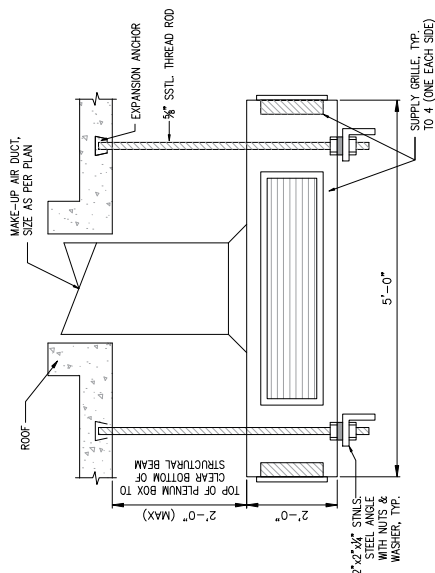
ELEVATION SECTION

HVAC DETAILS

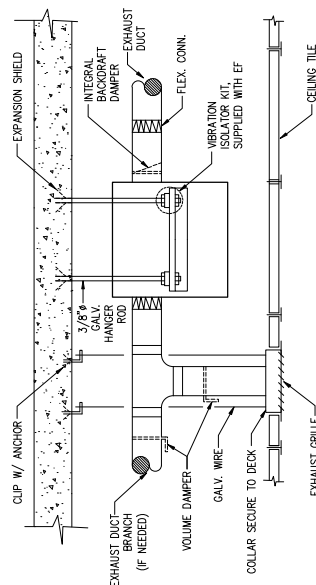
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Sheet: 787 OF 1075



1 PLENUM SUPPLY BOX
NOT TO SCALE



3 INLINE EXHAUST FAN
NOT TO SCALE

ENGINEERING (CIVIL/STRUCTURAL)
CONSTRUCTION MANAGEMENT • PLANNING
ENVIRONMENTAL SERVICES • SURVEYING
GEOTECHNICAL CONSULTATION
GEOGRAPHIC INFORMATION SYSTEMS
O. Box 8900
Tampa, Fla 33603

CONSULTANTS



**Design Services
For The Built**

For more information:

Birmingham AL	Louisville KY
Cincinnati OH	Muskegon MI
Cleveland OH	Nashville TN
Dallas TX	Richmond VA
Ft. Lauderdale FL	Tallahassee FL
Jackson MS	Tempe AZ

Decker, Gendreau



DATE: 03-18-2019

BY ME OR UNDER MY
DIRECT SUPERVISION

GUAM WATERWORKS AUTHORITY
NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT

RECORD DRAWING
SUBMITTAL:[illegible]

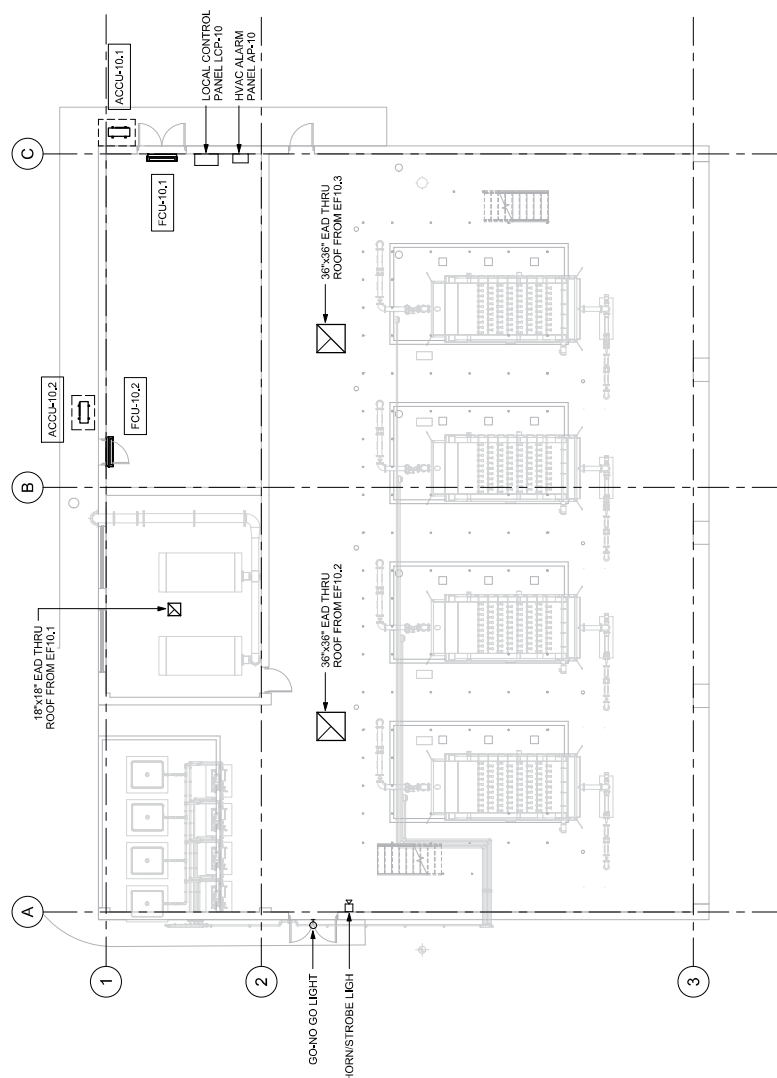
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CHICKENING FACILITY

HVAC LEVEL 1 PLAN

M10.2.1

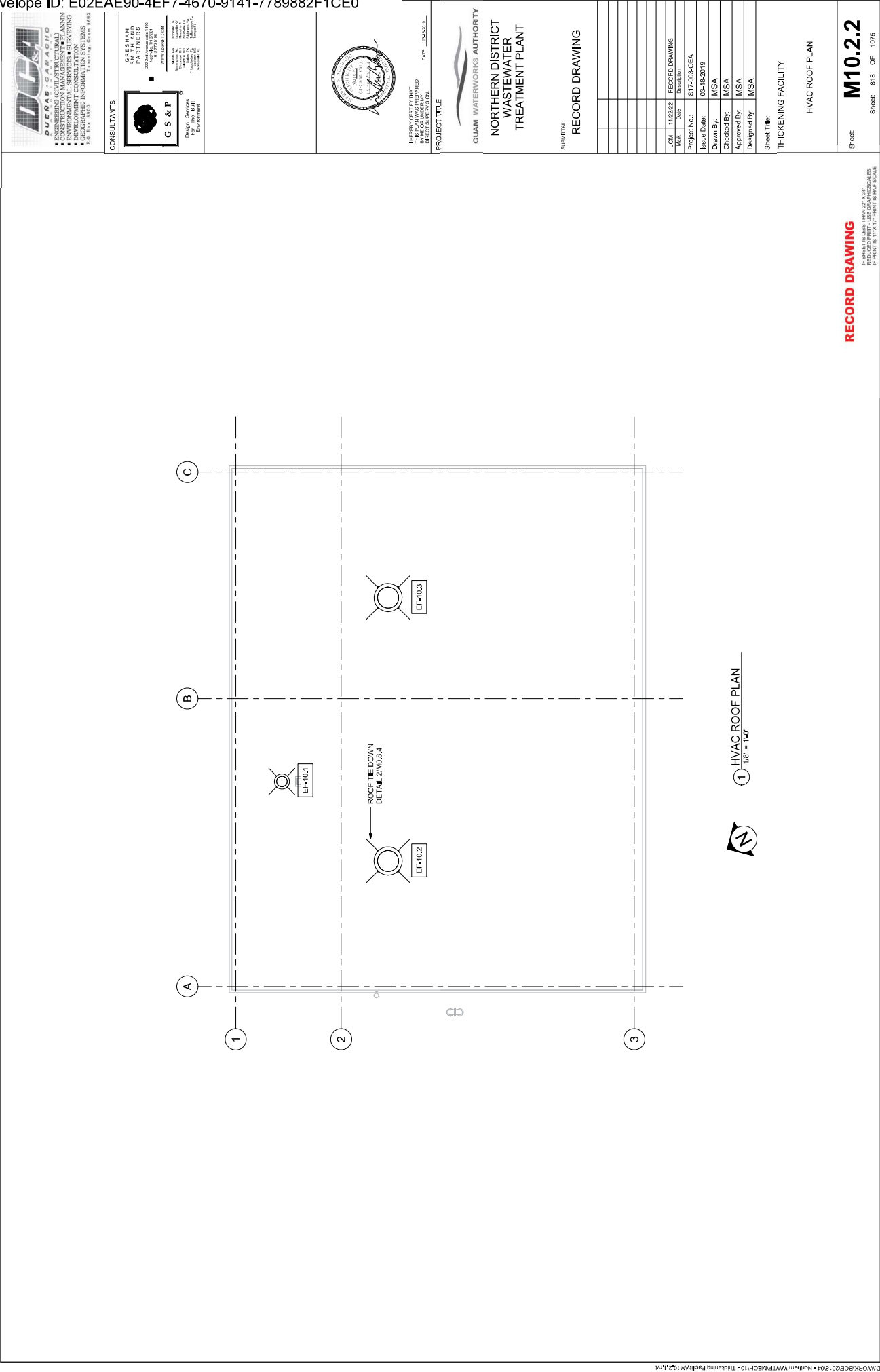
Sheet: 817 OF 1075



1 HVAC LEVEL 1 PLAN
1/8" = 1'-0"

RECORD DRAWING

IF SHEET IS LESS THAN 22" X 34"
REDUCED PRINT - USE GRAPHIC SCALES
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PROJECT TITLE: _____ DATE: 03/18/2019

GUAM WATERWORKS AUTHORITY
NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT

SUBMITTAL:
RECORD DRAWING

JCM	11/22/22	RECORD DRAWING
Project No.	S17-003-00A	
Issue Date:	03-18-2019	
Drawn By:	MSA	
Checked By:	MSA	
Approved By:	MSA	
Designed By:	MSA	

Sheet Title:
THICKENING FACILITY
HVAC ROOF PLAN

Sheet: **M10.2.2**
Sheet 818 OF 1075

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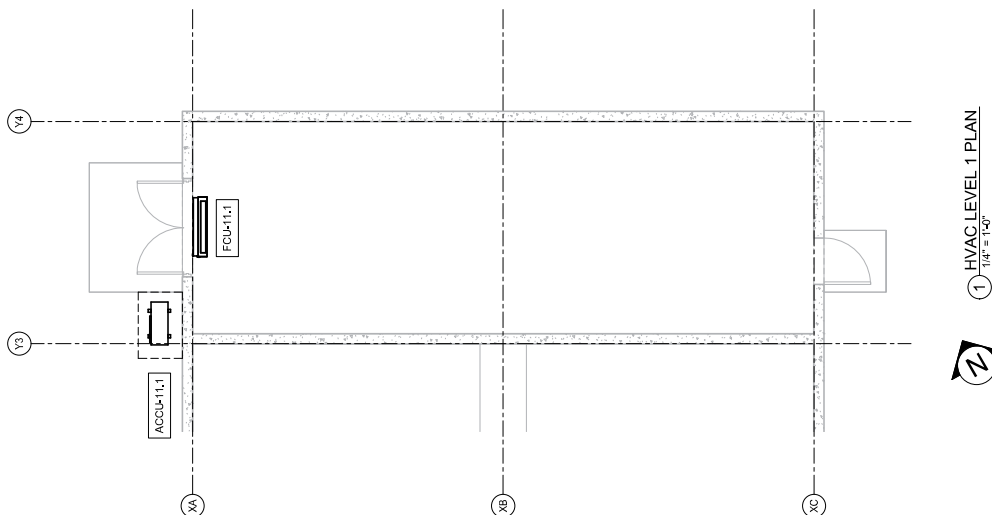
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Sheet Title:
UNITAD (ELECTRICAL BUILDING)
HVAC LEVEL 1 PLAN

RECORD DRAWING

M11.2.1

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① HVAC LEVEL 1 PLAN
1/4" = 1'-0"

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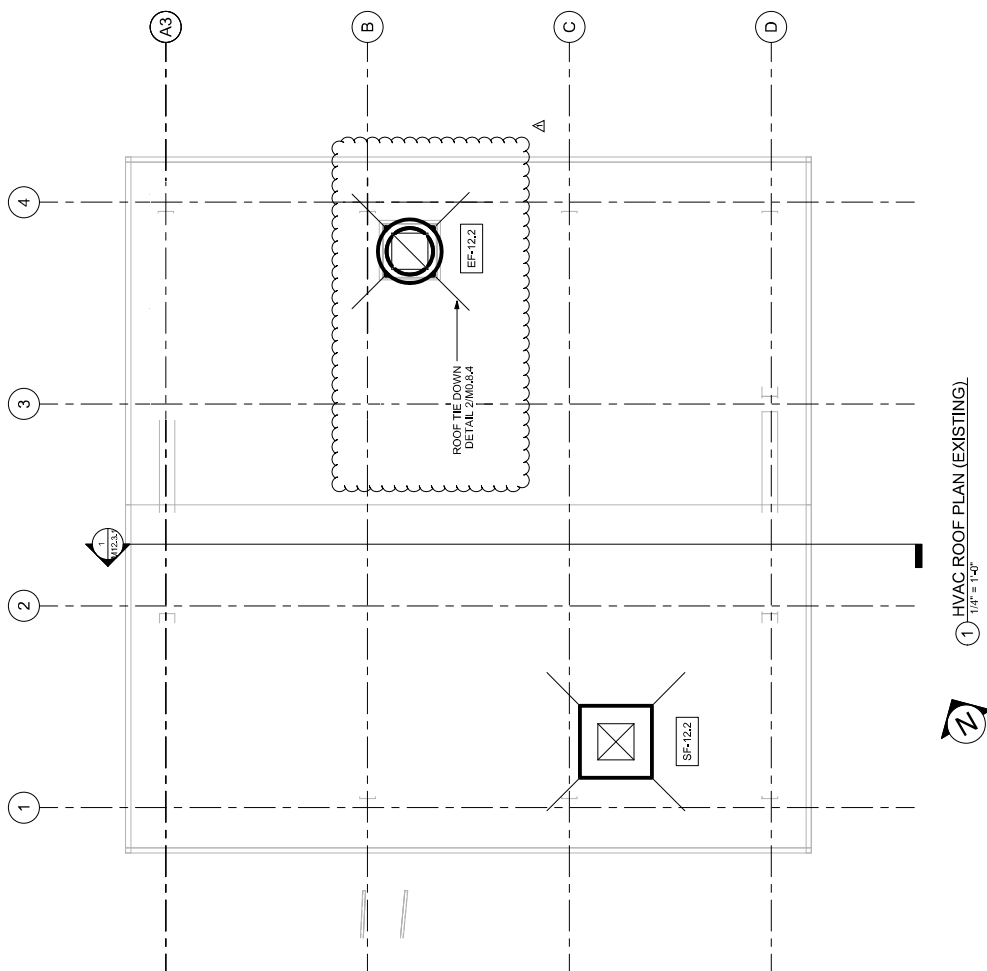
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Sheet Title:
DIGESTER EQUIPMENT BUILDING
(ATAD)
HVAC ROOF PLAN
(EXISTING)

feet:

M12.2.2

Sheet: 821 OF 1075



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CHECKED BY: J. SMITH
DATE: 05/20/2024

PROJECT TITLE

GUAM WATERWORKS AUTHORITY
NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT

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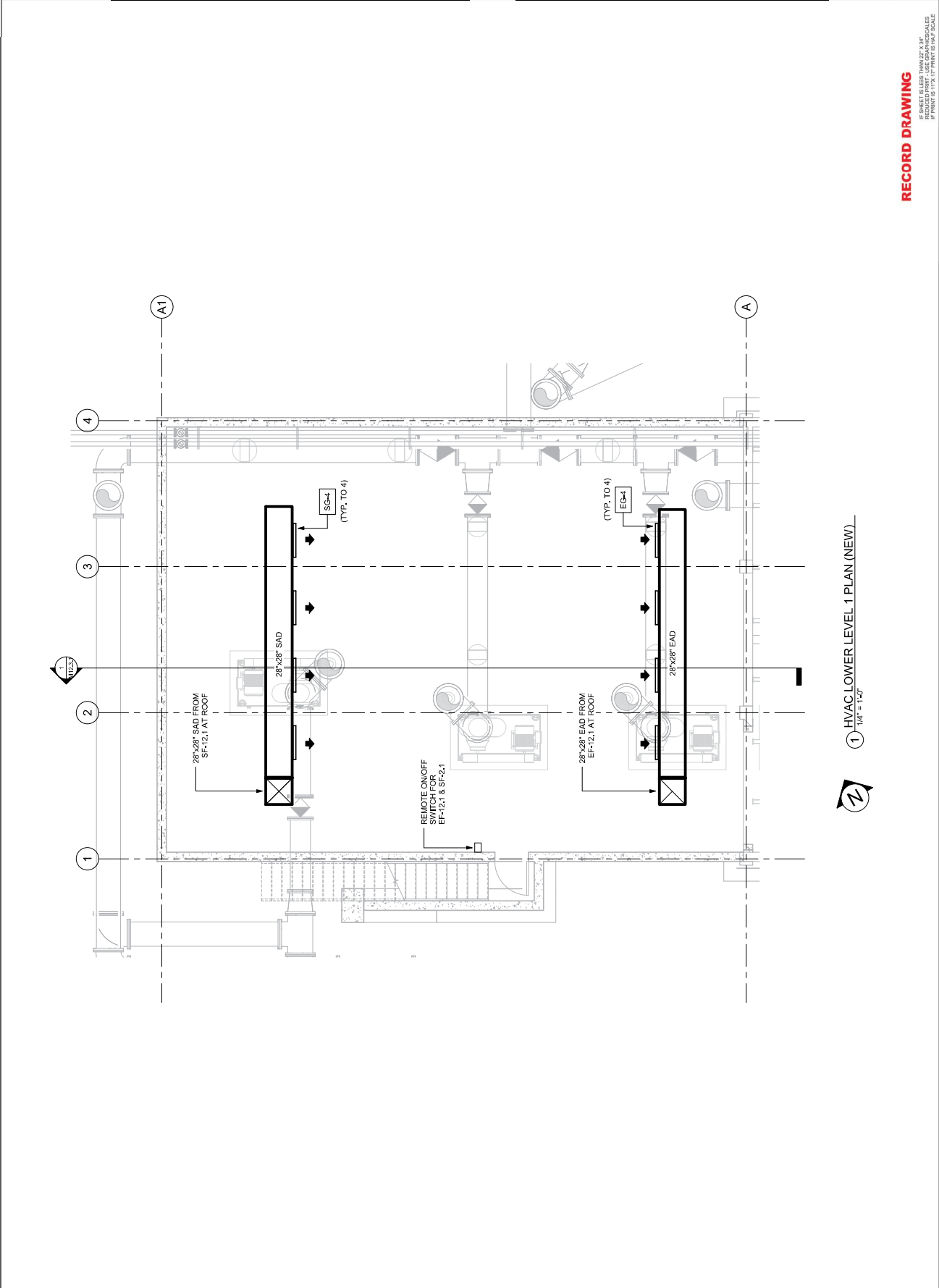
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PROJECT NO.	S17-003-005A	
ISSUE DATE	03-18-2019	
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APPROVED BY	MSA	
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Sheet Title:

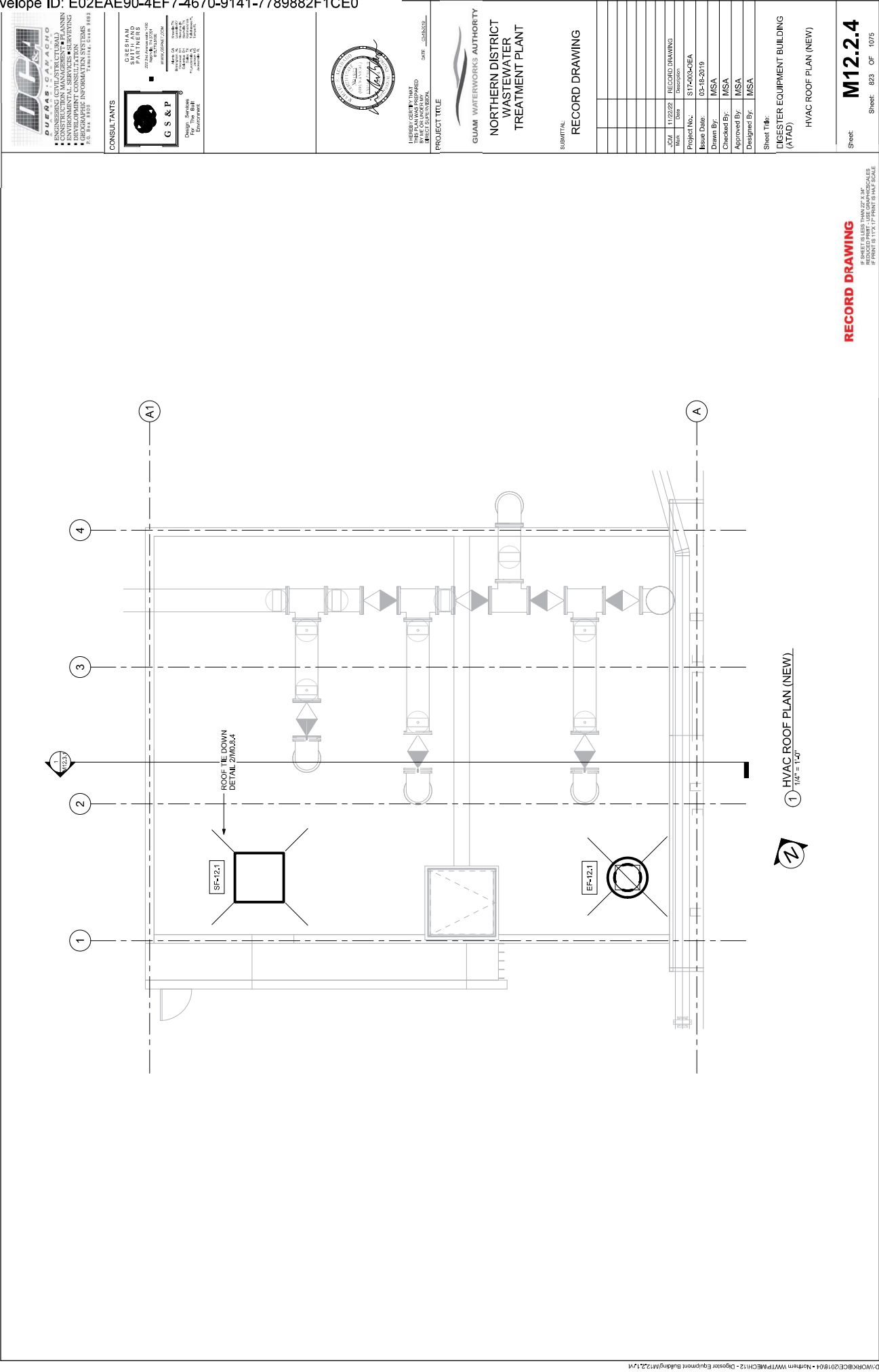
DIGESTER EQUIPMENT BUILDING
(ATAD)
HVAC LOWER LEVEL 1
PLAN (NEW)

Sheet: **M12.2.3**
Sheet 822 OF 1075



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PROJECT TITLE

GUAM WATERWORKS AUTHORITY
NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT

SUBMITTAL
RECORD DRAWING

JCM	11/23/22	RECORD DRAWING
Project No.	SIT-200-00EA	
Issue Date:	03-18-2019	
Drawn By:	MSA	
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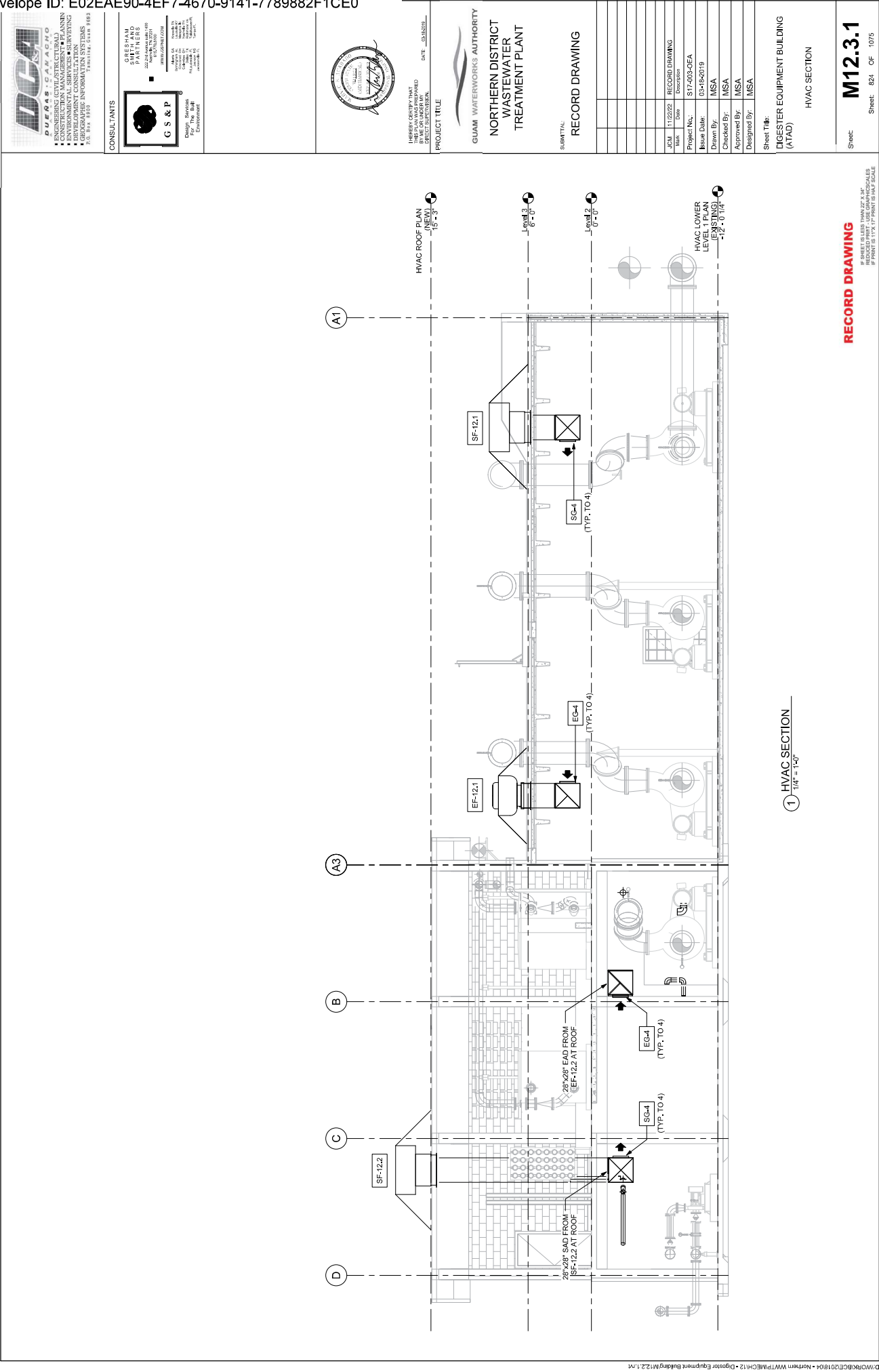
Sheet Title:
DIGESTER EQUIPMENT BUILDING
(ATAD)
HVAC ROOF PLAN (NEW)

RECORD DRAWING

Sheet **M12.2.4**

Sheet 823 OF 1075

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DATE 05/20/2018

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NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT

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JOB	1112222	RECORD DRAWING
Project No.	517-003-CEA	
Issue Date	05/15/2019	
Drawn By	MSA	
Checked By	MSA	
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Sheet Title:
**DIGESTER EQUIPMENT BUILDING
(ATAD)**
HVAC SECTION

Sheet: **M12.3.1**

Sheet 82 OF 1075

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DATE 05/26/2019

GUAM WATERWORKS AUTHORITY
NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT

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NO.	DATE	DESCRIPTION
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Sheet Title:
DEWATERING FACILITY

HVAC LEVEL 2 PLAN

Sheet: **M14.2.1**
Sheet: 625 OF 1075

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DATE: 05-18-2019

PROJECT TITLE

GUAM WATERWORKS AUTHORITY
NORTHERN DISTRICT
WASTEWATER
TREATMENT PLANT

SUBMITTAL:

RECORD DRAWING

		JCM	11/22/22	RECORD DRAWING	
		Marks	Date	Description	
		Project No:	S174003-CREA		
		Issue Date:	03-16-2019		
		Drawn By:	MSA		
		Checked By:	MSA		
		Approved By:	MSA		
		Designed By:	MSA		

Sheet Title:

SEWATERING FACILITY

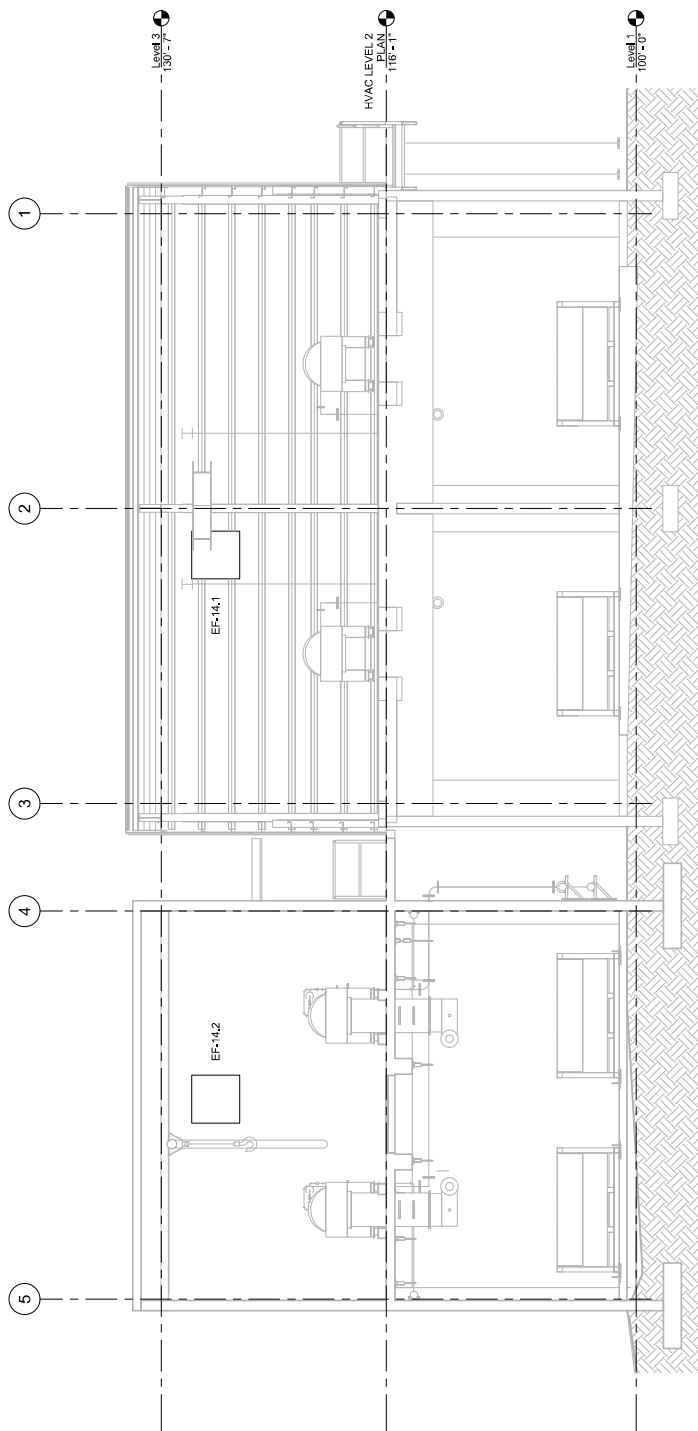
HVAC SECTION

Meet: **M14.3.1**

Sheet: 826 OF 1075

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1 HVAC SECTION
1 1/4" = 1'-0"

EPOXY-COATED BOLTED STEEL TANK SPECIFICATION FOR WATER SERVICE

REV 1

12/1/2020

PART 1 - GENERAL

1.1 SUMMARY

- A. This section specifies design requirements for one epoxy-coated bolted steel tank.
- B. The tank will be used for process water and potable water storage.

1.2 WORK COORDINATION

- A. The Supplier shall provide a package including the bolted steel tank, nozzles, access ladder tank appurtenances, embedded starter wall, and tank installation. The Supplier shall sign a Certificate of Proper Installation verifying proper and satisfactory installation.

PART 2 - PRODUCTS

2.1 SUPPLIER SUBMITTALS

- A. Action Submittals:
 - 1. Preliminary outline drawing with weights, dimensions and nozzle locations.
 - 2. Dimensional outline and arrangement drawings.
 - 3. Record drawings.
 - 4. Design calculations.
 - 5. Sealed Structural Calculations: environmental loads and anchorage.
- B. Informational Submittals:
 - 1. Test and Inspection reports.
 - 2. Instructional Manuals.

2.2 QUALITY ASSURANCE

- A. All equipment furnished under this specification shall be new and shall be the standard product of a manufacturer who is fully experienced, reputable, qualified and regularly engaged for at least 5 years in the manufacture of the equipment to be furnished.
- B. Supplier's Field Representative Qualifications: Individual who has previously provided onsite services for installation, testing, and startup of Supplier's identical system with a minimum of five tanks designed to AWWA D103 Standard, of equal or greater size as specified herein, operating satisfactorily for a minimum of 5 years.
- C. Operational Test: Following installation, Engineer may conduct preliminary operational tests to determine that equipment meets specified operational requirements. Should Engineer's field tests indicate that equipment does not meet specified performance requirements, Supplier shall make its field service representative available, at Supplier's published field service rates, for consultation purposes and to assist in identifying the root cause of the performance discrepancy. If such root cause is within Supplier's specified responsibility, then the cost of

Supplier's field service representative shall be at the expense of Supplier and Contract warranty provisions shall apply.

2.3 DESIGN REQUIREMENTS

- A. Owner will provide water for use in the leak test. Contractor shall provide the Work necessary for delivery to and removal of water from the Tank.
- B. Size and Capacity of the water storage tank:
 - 1. Nominal Diameter 47.6 feet.
 - 2. Nominal Height of Structure to Eave 33 feet.
 - 3. Nominal volume equal to 375,000 gal with 4.6 feet of freeboard, or as required by AWWA D103.
- C. Tank foundation will be designed by Others. Manufacturer shall provide starter panel embedment detail to Engineer for the purpose of design coordination. Manufacturer shall provide all components associated with starter panel.
- D. Tank Design Standards:
 - 1. Design, materials, and fabrication of bolted steel tank in accordance with ANSI/AWWA D103.
 - 2. Tank coating system in accordance with ANSI/AWWA D103, Section 10.4. Coating shall be NSF 61 certified for potable water service.
- E. Design Loads:
 - 1. Specific Gravity: 1.0.
 - 2. Wind:
 - a. Basic Wind Speed: 180 mph.
 - b. Importance Factor: 1.15.
 - c. Exposure Category: C.
 - d. Gust Effect Factor: 0.85.
 - 3. Passive Soil Pressure: 250 PSF.
 - 4. Roof Snow Load: Not applicable.
 - 5. Seismic:
 - a. Site Class: C.
 - b. Seismic Use Group: III.
 - c. $S_s=1.5\%$, $S_1=0.6\%$; $S_{DS}=1.0g$, $S_{D1}=0.52g$.
 - d. Response Modification Factor: $R_i = 3.0$, $R_e = 1.5$.
 - e. Transition Period for Longer-Period Ground Motion: $T_L = 12$.

2.4 MATERIALS

- A. Materials of the epoxy-coated bolted steel tank shall meet AWWA D103 requirements.
- B. Plates and Sheets:
 - 1. All steel shall be smelted and produced in the United States of America.
 - 2. Plates and sheets used in construction for the tank shell shall comply with the minimum standards of American Water Works Association (AWWA) D103, Section 2.4.
 - 3. Design requirements for mild strength steel shall be American Society for Testing and Materials (ASTM) A1011 Grade 30 with a maximum allowable tensile stress of 14,566 psi.

4. Design requirements for high strength steel shall be ASTM A607 Grade 50 with a maximum allowable tensile stress of 26,000 psi.
- C. Horizontal Wind Stiffeners:
 1. Intermediate horizontal wind stiffeners “web truss” design.
 2. Steel web truss stiffeners with hot-dipped galvanized coating.
 3. Do not furnish rolled steel angles for intermediate stiffeners.
- D. Tank Roof:
 1. Aluminum Dome.
- E. Bolt Fasteners:
 1. Bolts shall meet the requirements of AWWA D103
 2. Bolt Finish:
 - a. Zinc, mechanically deposited.
 - 1) 2.0 mils under bolt head, on shank and threads.
 3. Bolt Head Encapsulation:
 - a. High impact polypropylene copolymer encapsulation of entire bolt head up to the splines on the shank.
 - b. Resin shall be stabilized with an ultraviolet light resistant material such that the color shall appear black.
- F. Lap Joint Sealant:
 1. Per manufacturer’s recommendations

2.5 FABRICATION

- A. Plates and Sheets:
 1. Surface Preparation:
 - a. Following decoiling and shearing process, grit-blast steel sheets on both sides to equivalent of Steel Structures Painting Council (SSPC) SP10. Do not sandblast or chemically pickle steel sheets.
 - b. Surface anchor pattern no less than 1.0 mil.
 - c. Evenly oil sheets on both sides for protection from corrosion during fabrication.
- B. Cleaning:
 1. After fabrication and prior to application of coating system, clean sheets thoroughly with caustic wash and hot rinse process followed immediately by hot air drying.
 2. Inspect sheets for traces of foreign matter or rust, and re-cleaned or grit-blast to remove foreign matter and rust.
- C. Coating:
 1. The tank coating system shall conform to AWWA D103, Section 12.5 or 12.6.
- D. Fabrication Inspection and Testing:
 1. The Supplier’s quality system shall be ISO 9001 compliant.
 2. Inspect coated sheets for mil thickness.
 3. Check coated sheets for color uniformity by an electronic colorimeter.
 4. Perform a Factory Leak Test on sheets. Reject sheets with excessive electrical leakers to minimize field touchup.

5. Perform an Impact Adherence Test in accordance with ISO standards. Any sheet that has poor adherence shall be rejected.

2.6 TANK APPURTENANCES

- A. Provide tank appurtenances as follows:
- B. Pipe Connections (to be coordinated with final design). Connections shall be 150lb, double flanged and provided as follows:
 1. Water Supply Inlet Pipe Size and Centerline Elevation: 6-inch, ~29 feet.
 2. Suction Pipe Size and Centerline Elevation: 16-inch, ~ 2 feet (as low as possible).
 3. Drain Piping: 2-inch located at tank invert elevation.
 4. Overflow Pipe size and centerline location: 10-inch, 29.5 feet.
 5. Altitude Valve sensing line: 1-inch, ~ 1.0 feet.
 6. Support brackets for elevated connections (items 1 and 4 above).
- C. Exterior Tank Ladder.
- D. Manway
 1. Manway opening shall be a minimum of 24 inches in diameter.
 2. Vertical manways shall have hinges.
 3. Manways and tank shell reinforcing shall comply with AWWA D103, Section 5.1.
- E. Identification Plate:
 1. A manufacturer's nameplate shall list the tank equipment number, tank serial number, tank diameter and height, and maximum design capacity. 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.

2.7 OPTIONAL ACCESSORIES.

- A. Provide additive bid prices to include the following items: (additive bids will be selected by Owner and may include any combination of the following items:
 1. Interior access ladder
 2. Float and Board Tank Gauge including the gauge, board, access nozzle, supports and accessories.

PART 3 - EXECUTION

3.1 ERECTION

- A. Tank Floor:
 1. Contractor is responsible for ground improvements.
 2. Engineer is responsible for tank foundation design.
 3. Manufacturer shall size and furnish embedded starter for placement in foundation forms.
- B. Embedded Starter:
 1. Provide embedded steel starter sheet in accordance with manufacturer's design. Embedded starter sheet shall be constructed by the tank Supplier using manufacturer trained personnel regularly engaged in this type of tank foundation.

2. Leveling of the starter ring shall be required and the maximum differential elevation within the ring shall not exceed 1/8-inch, nor exceed 1/16-inch within any 10 feet of length.
 3. A leveling plate assembly (per manufacturer's standard), consisting of two anchor rods and a slotted plate shall be used to secure the starter ring, prior to encasement in concrete. Install starter ring on concrete blocks or bricks, do not use shims for adjustment.
 4. Place two water stop seals made of butyl rubber elastomer on inside surface of starter ring below concrete floor line. Place on bentonite impregnated water seal below butyl rubber seal. Install materials in accordance with tank manufacturer's instructions.
- C. Sidewall Structure:
1. Field erection of the bolted steel tank shall be in strict accordance with the procedures outlined in the manufacturer's erection manual, and performed by an authorized dealer of the tank manufacturer, regularly engaged in erection of these tank, using factory trained erectors.
 2. Provide erection jacks and building equipment developed by tank manufacturer for erection of tank.
 3. Take particular care in handling and bolting of tank panels and members to avoid abrasion of coating system.
- D. All bolts on the vertical tank wall shall be installed such that the head portion is located inside the tank, and the washer and nut are on the exterior.
- E. All lap joint bolts shall be properly selected such that threaded portions of the bolts will not be exposed to the "shear plane" between tank sheets.
- F. Bolt lengths shall be sized to achieve a neat and uniform appearance. Excessive threads extending beyond the nut after torqueing will not be permitted.
- G. All lap joint bolts shall include a minimum of four splines on the underside of the bolt head at the shank in order to resist rotation during torqueing.

3.2 TESTS AND INSPECTIONS

- A. Leak Test:
1. Prior to liquid testing, Engineer will visually inspect surface areas.
 2. Conduct an electrical leak test using a 9-volt leak detection device.
 3. Repair electrical leak points found on inside surface in accordance with manufacturer's instructions.
- B. Hydrostatic:
1. Following completion of erection and cleaning of tank, test structure for liquid tightness by filling tank to overflow elevation.
 2. Leaks disclosed shall be corrected in accordance with tank manufacturer's instructions.
 3. Provide all temporary blind flanges and gasket kits necessary to seal all open penetrations or pipes on the tank to achieve water tightness.
 4. Hydrostatic testing shall be done with clean water at a temperature of at least 50 degrees F and a maximum temperature of 110 degrees F.
 5. Test pressure shall be held for a minimum of 1 hour prior to inspection. Test pressure shall be maintained during inspection.

3.3 WARRANTY

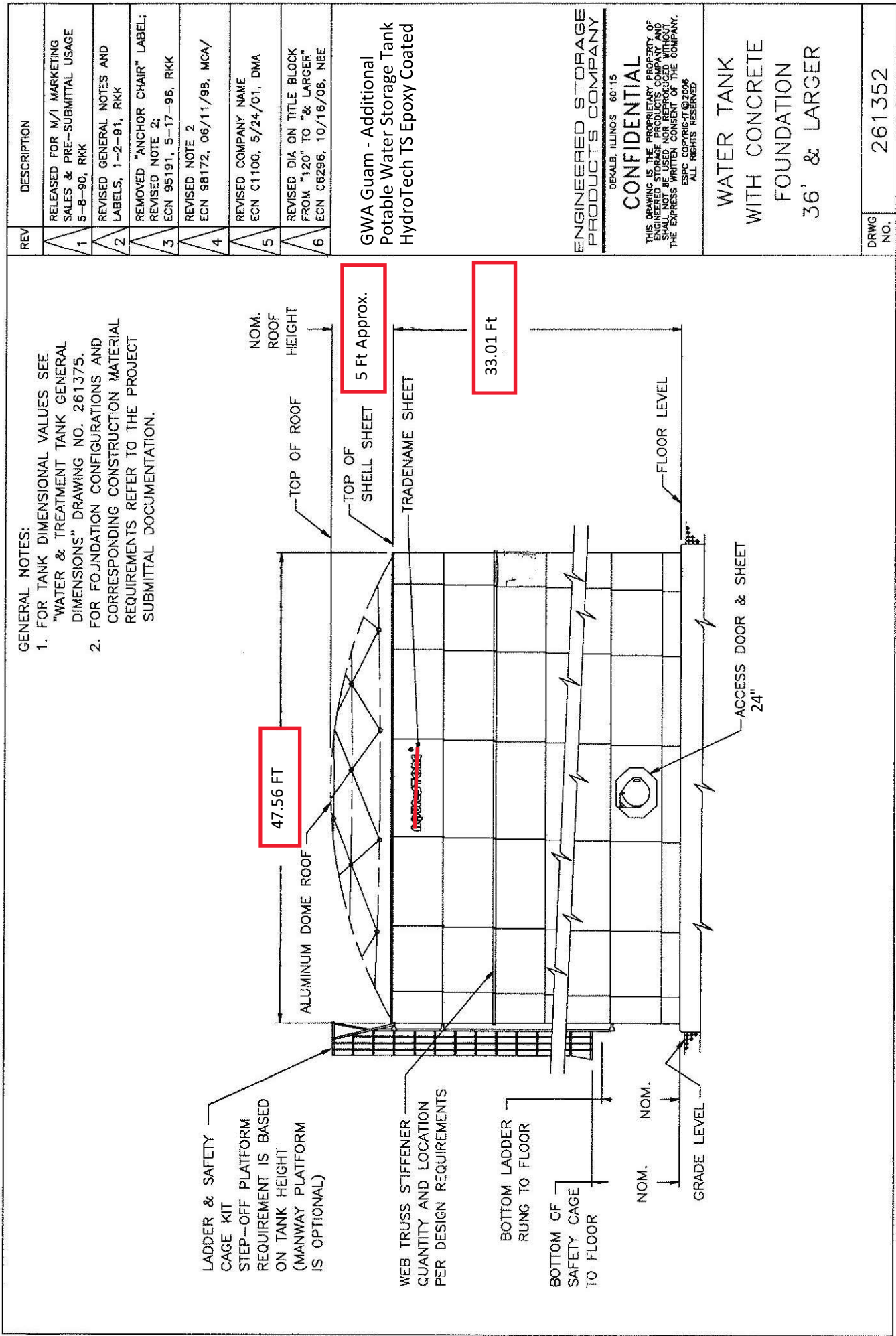
- A. The tank manufacturer shall include a warranty for the tank materials and coating. As a minimum, this warranty shall provide assurance against defects in materials or workmanship for the period of 1 year.

3.4 CLEANING

- A. Following completion of erection, tank floor and sidewall panels shall be cleaned to remove dirt, oil, debris, or any other foreign substance. The tank shall be inspected for any foreign debris and level of cleanliness prior to commissioning and startup.

END OF SECTION

TYPICAL TANK DRAWING - ALUMINUM DOME ROOF (PRELIMINARY)



GWA Guam - Additional Potable Water Storage Tank HydroTech TS Epoxy Coated

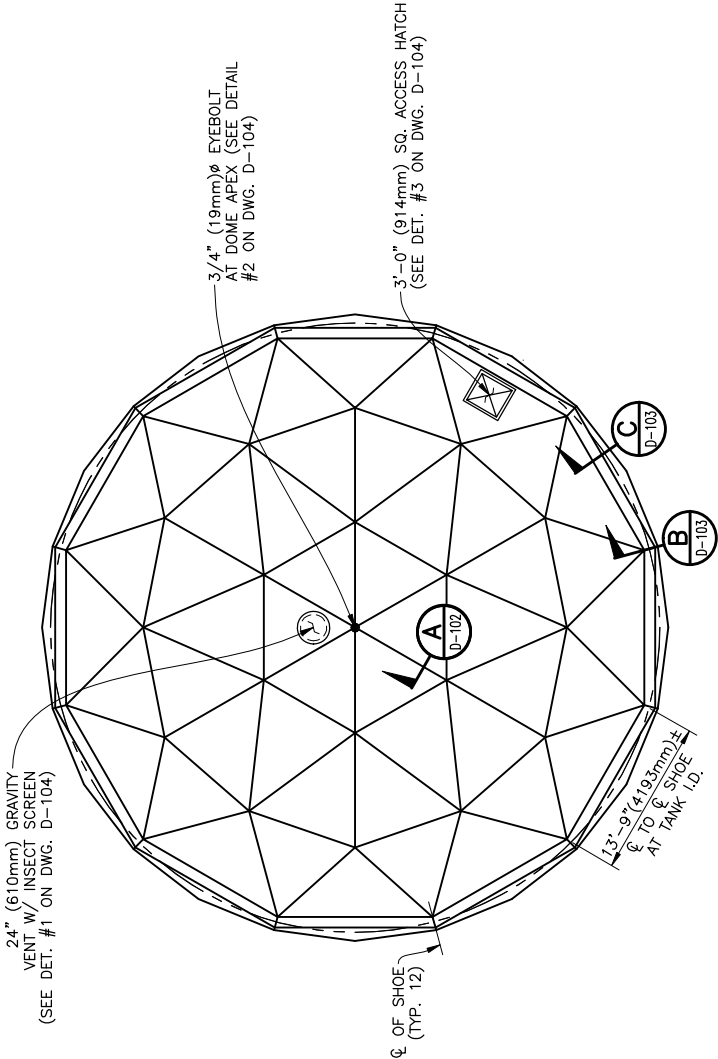
ENGINEERED STORAGE PRODUCTS COMPANY
DEKALB, ILLINOIS 60115
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WATER TANK WITH CONCRETE FOUNDATION 36' & LARGER

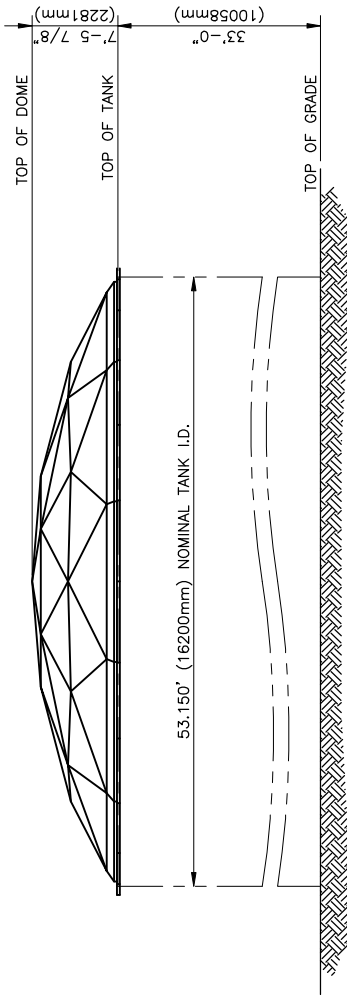
DRWG NO. 261352

(NOT TO SCALE - NOT FOR CONSTRUCTION)

JOB NO.		D-100	REVISION	0	CUST. CONTR. NO.	DOME PLAN AND ELEVATION	
PROJECT DESCRIPTION		(1) DOME FOR 53.15'± I.D. TANK					
DWG. TITLE		DOME PLAN AND ELEVATION					
CST covers		ALL DESIGNS, IDEAS, PROCESSES OR DEVELOPMENTS ORIGINATED OR DISCLOSED BY CST COVERS ARE PROPRIETARY, PATENTED OR THE SUBJECT MATTER FOR PATENT APPLICATION, AND MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION FROM CST COVERS					
CUSTOMER		GARDEN, CA CONROE, TX					
REV.	DATE:	DRWN BY	CHKD BY	DESCRIPTION			
0	01/06/16	kmm		FOR APPROVAL			

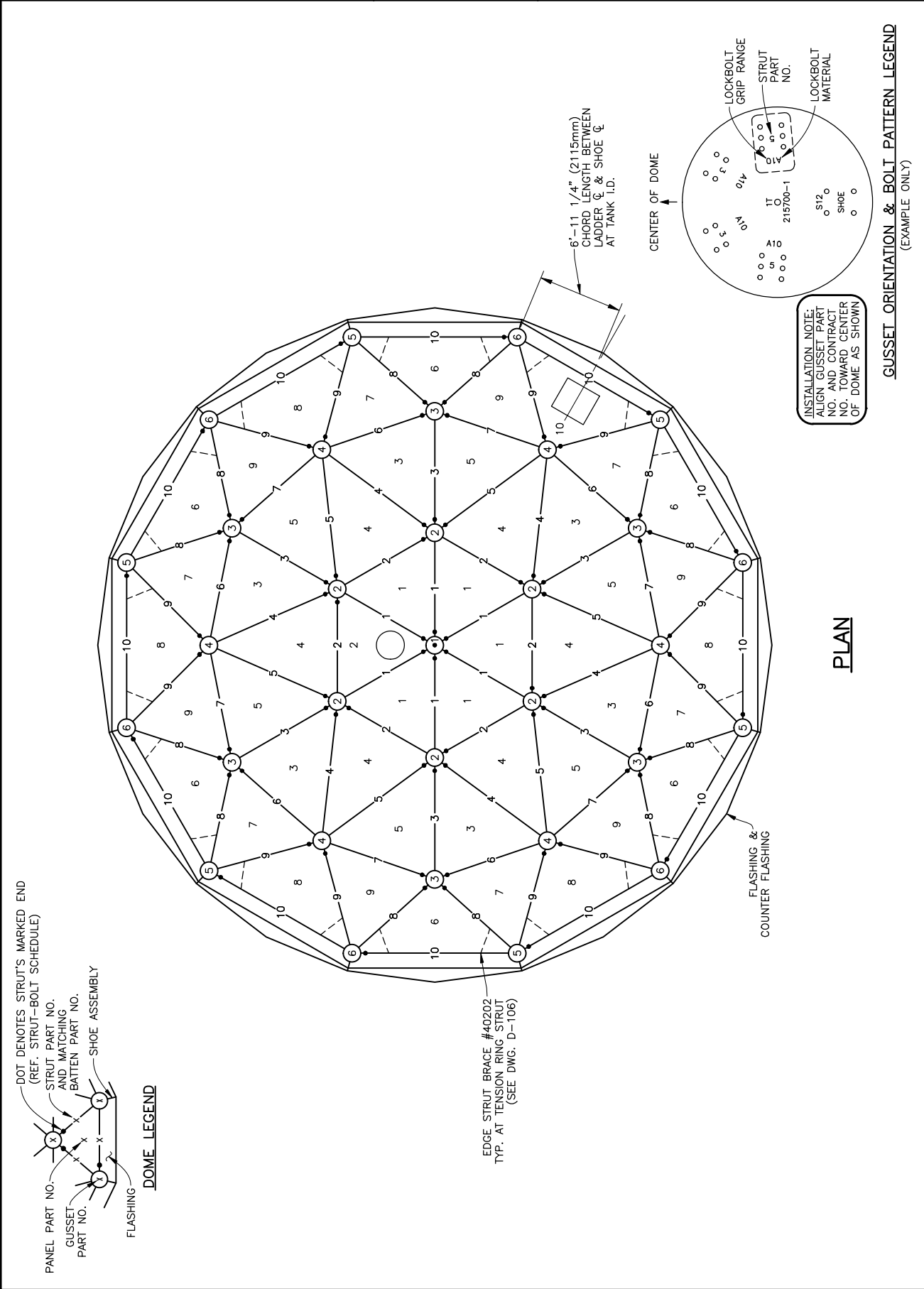


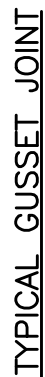
PLAN



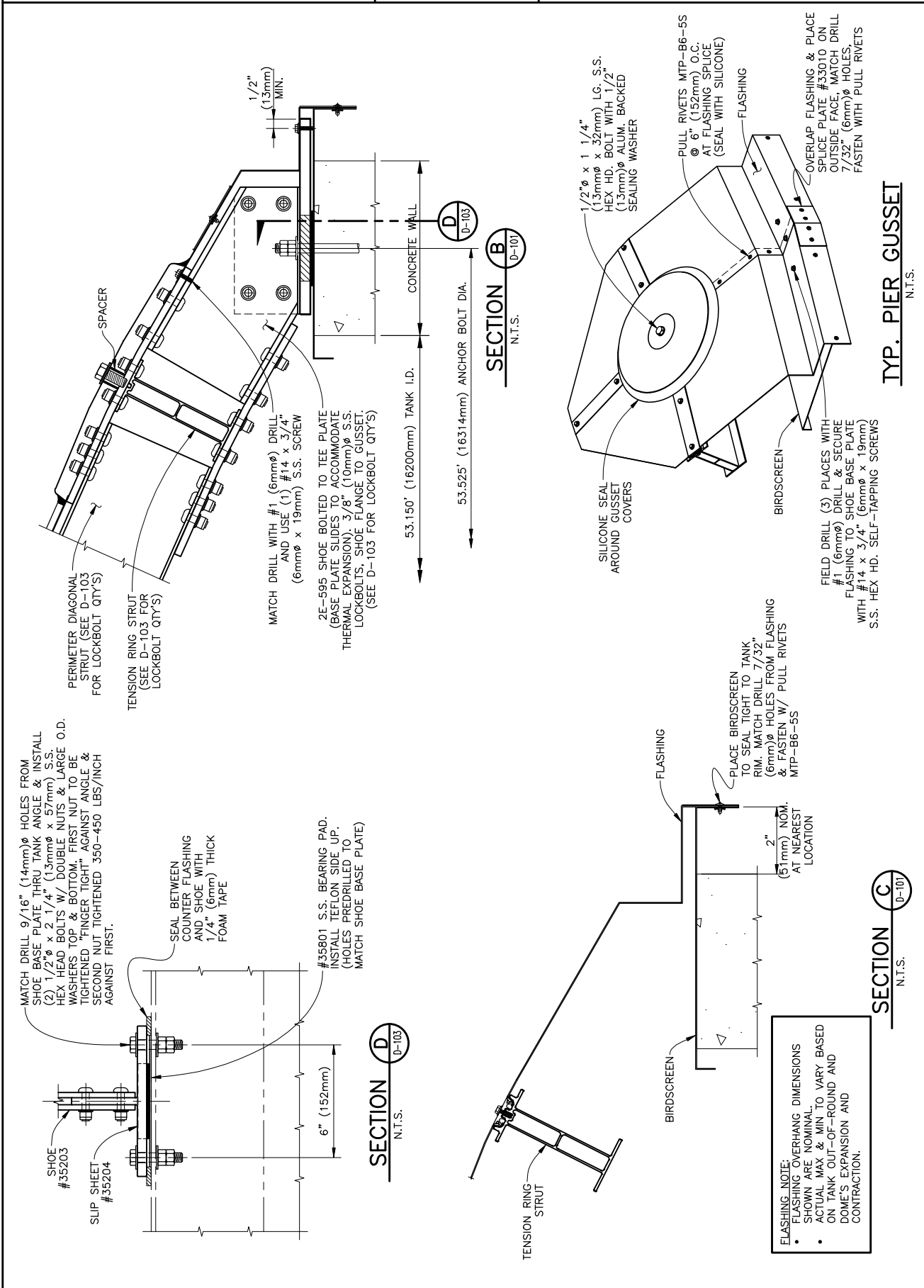
ELEVATION

JOB NO.		DRAWING NO.		CUST. CONTR. NO.	
		D-101		0	
PROJECT DESCRIPTION (1) DOME FOR 53.15'± I.D. TANK					
DOME ASSEMBLY					
DWG. TITLE					
CST opndome ALL DESIGNS, IDEAS, PROCESSES OR DEVELOPMENTS ORIGINATED OR DISCLOSED BY CST COVERS ARE PROPRIETARY, PATENTED OR THE SUBJECT MATTER FOR PATENT APPLICATION, AND MAY NOT BE REPRODUCED WITHOUT WRITTEN PERMISSION FROM CST COVERS					
CUSTOMER					
REV. 0 DATE: 01/06/16 DRWN BY: kmw CHKD BY: FOR APPROVAL					





TYPICAL DOME STRUT





VENT ISOMETRIC VIEW



DETAIL 2
S.S. EYEBOLT AT D-101

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

