

PERSIGO WASTE WATER TREATMENT PLANT SLUDGE PROCESSING UNIT REPAIRS

Owner: City of Grand Junction
Grand Junction, Colorado

Owners Representative: Kirsten Armbruster, PE
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Engineer-of-Record: Wiss, Janney, Elstner Associates, Inc. (WJE)
3609 South Wadsworth Boulevard, Suite 400
Lakewood, Colorado 80232

Engineer-of-Record: Mr. Terry McGovern, PE
Representative
303.914.4300
tmcgovern@wje.com

Project Address: Persigo Wastewater Treatment Plant
2145 River Road
Grand Junction, Colorado 81505

PROJECT DESCRIPTION

The work at the Sludge Processing Unit includes repairs to the blending tank framing located at the northwest corner of the building. Repair work consists of replacement of stainless steel bolted connection hardware with new hot-dipped galvanized connections at the perimeter of the tank (perimeter beams and main beams), removal and inspection of bolted connections not at the perimeter, and cleaning and coating of all existing steel framing and connection hardware.

SPECIAL CONSIDERATIONS

The Sludge Processing Unit will be taken out-of-service during the repairs. The mechanical equipment used within the tank will be locked out by the Owner prior to the contractors access to the site. Limited cleaning of the Sludge Processing Unit will be performed by the Owner. Limiting the time of shutdown is critical for the work at the Sludge Processing Unit. Contractors are encouraged to take reasonable steps to limit shutdown time.

Blending tank walls are suffering from alkali silica reaction (ASR) distress. As such, it may be elected to install a coating on the interior of the blending tank walls and base/slab.

DRAWING SUBMITTALS

- Access plan, 2/6.1. Submit with bid.
- Shutdown plan for taking structures offline to perform the work. Submit with bid.

REQUIRED MOCKUP SUMMARY

A steel coating mockup on a beam shall be prepared and tested prior to full coating installation. Mockup shall include a connection and a minimum of 3-feet of beam length. See Specification Section 09 97 23.

GENERAL NOTES

- Drawings and associated Specifications (referred to in general as the Construction Documents) apply only to the specific project identified in Titleblock, and shall not be used for any other purpose without specific written consent of Engineer, Engineer's sub-consultants, and Owner. Any unauthorized use of Engineer's work product shall be at user's sole risk and user shall indemnify Engineer against any liability or legal exposure related to the unauthorized use.
- Drawings and Specifications are complementary, are to be taken as a whole, and should include sufficient information necessary for the execution and completion of the work in a manner consistent with the design intent. In the absence of explicit or reasonably inferable information on drawings or in specifications, promptly seek clarification from Engineer as a request for information.
- Contractor is solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work. Engineer has no such responsibilities beyond its own employees.
- In an emergency affecting safety of persons or property, act to prevent or stop further damage, injury, or loss.
- If a hazardous material or substance not addressed in the Construction Documents is encountered, immediately stop work in affected area and notify Owner and Engineer of the condition.
- Temporarily relocate and restore existing equipment and appurtenances (whether or not shown on the drawings) that obstruct access to portions of the Work. Notify and coordinate with Owner prior to doing so.
- Develop, implement, erect, and maintain safeguards to prevent damage, injury, or loss resulting from the work to (a) workers, occupants, passers-by, and other persons; (b) in-progress work, materials, and equipment under care, custody, and control of the contractor (whether on or off site); and (c) other property at the site or adjacent thereto not designated as part of the work for removal, relocation, or replacement. In the event of damage, injury, or loss, promptly notify Engineer and Owner and present proposed remedy. All damage to these elements must be repaired to the satisfaction of the Owner.
- Promptly correct work rejected by Engineer or failing to conform to requirements of the Construction Documents. Associated costs (including additional testing or inspections, cost of uncovering and correction, and compensation for Engineer's services and expenses made necessary thereby) shall be the Contractor's responsibility.
- Dimensions, quantities, and geometries provided for existing construction are based on original drawings and limited field documentation by Engineer. Field verify applicable information prior to submitting a bid, ordering materials, or otherwise committing resources to the Work. Provided dimensions take precedence over scaled dimensions. Dimensions of the new construction shall be adjusted as necessary to fit the existing conditions. The Engineer shall be notified in writing of any significant deviations from the dimensions or conditions shown on these drawings.
- Drawings illustrate the completed work with elements in their final intended positions. Provide shoring, bracing, support, and sequence work as required to maintain the structural integrity of new or existing construction during the work.
- Contractor is solely responsible for, and shall have sole control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the work. Engineer has no such responsibilities. Specific instruction that may be given in Construction Documents concerning construction means, methods, techniques, sequences, or procedures shall not relieve contractor of its responsibility for control and coordination.
- Provide labor, materials, equipment, supervision, and coordination directly and incidentally necessary to perform the work in accordance with Construction Documents.
- Promptly report to Engineer as a request for information known or suspected errors, inconsistencies, or omissions within or between Construction Documents, as well as known or suspected variance of the Construction Documents from existing conditions. Await direction from Engineer prior to proceeding with Work. For bidding purposes only, and unless otherwise directed by Engineer, the more stringent requirement or better quality shall take precedence as determined by Engineer.
- Activities or duties of Engineer, or tests, inspections, or approvals required or performed by third parties shall not relieve Contractor of its obligation to perform the Work in accordance with Construction Documents.
- Secure and pay for all permits, fees, licenses, and inspections by government agencies necessary for proper and compliant execution and completion of the work. Contractor shall be properly licensed to perform the specified Work.
- Comply with and give notices required by laws, statutes, ordinances, codes, rules and regulations, and lawful orders of authorities having jurisdiction applicable to the Work.

Keyed Note Schedule							
Callout	Plan Hatch/Symbol	Name	Unit	Total Estimated Quantity	Description	Reference Specification Section(s)	Reference Detail(s)
6-1	None	Installation of Coating System	LUMP SUM	1	Removal of surface contaminants, preparation of steel substrates, and the application of new coating system.	09 97 13	N/A
6-2	None	Replace S.S threaded rod connections at perim. beams - north & west elevations	LUMP SUM	1	Remove and replace existing stainless steel threaded rod and nut connections with new hot-dipped galvanized threaded rods and nuts at perimeter beams at west and north elevations.	05 04 00	N/A
6-3	None	Replace S.S threaded rod connections at perim. beams - south & east elevations	LUMP SUM	1	Remove and replace existing stainless steel threaded rod and nut connections with new hot-dipped galvanized threaded rods and nuts at perimeter beams at east elevation.	05 04 00	N/A
6-4	None	Replace S.S threaded rod connections at main beams - north & west elevations	LUMP SUM	1	Remove and replace existing stainless steel threaded rod and nut connections with new hot-dipped galvanized threaded rods and nuts at main beams at north and west elevations.	05 04 00	N/A
6-5	None	Replace S.S threaded rod connections at main beams - south & east elevations	LUMP SUM	1	Remove and replace existing stainless steel threaded rod and nut connections with new hot-dipped galvanized threaded rods and nuts at main beams at south and east elevations.	05 04 00	N/A
6-6	None	Sealant Installation	LF	160	Install new sealant joint at top edge of perimeter steel framing at 3/4" maximum width.	07 92 00	5/6.2
Alternate 6-7	None	Concrete Coating	SF	4,500	Properly prepare concrete surface and install immersion grade concrete coating at inside of blending tank, sump pit, etc. as noted on Sheet 6.1.	09 97 23	N/A

- The Work will be performed at an occupied and operational facility. Coordinate construction activities and procedures with Owner to (a) maintain unobstructed existing means of egress from facility; (b) comply with facility's existing security procedures and requirements; and (c) provide not less than 48 hours advance notice to and gain approval from Owner prior to construction activities that will disrupt normal use of facility (including exceptional noise and/or vibrations, uncontrolled dust, obtrusive odors, or interruptions of utilities). Work not coordinated and approved in advance that disrupts the normal use of the facility may be stopped until proper coordination and approval is achieved. Contractor shall be responsible for any costs incurred as a consequence of stoppage.
- Coordinate locations of on-site storage of materials and equipment with Owner so as to not unreasonably encumber facility or site. Do not allow construction materials, equipment, or procedures to overload or exceed the structural capacity of existing construction to remain, partially completed work, or completed work. Make inspections and/or perform analyses and tests necessary to verify that existing elements have adequate capacity to support proposed construction loads.

BUILDING CODES AND LOADS

- Original Building Code Under Which the Structures were Constructed: Not Specified
 - Original Construction Documents prepared by Henningson, Durham and Richardson (HDR), Inc. dated May 1985, are available for review from Owner's Representative.
- Current Building Code and Basis for Repair Work: The 2018 International Existing Building Code (IEBC), as adopted by the Mesa County Building Inspection Department, shall serve as the Governing Building Code for the Work.

INSPECTIONS AND OBSERVATIONS

- Observations are performed by the Engineer, or licensed design professional.
- Special inspections shall be performed by a qualified Testing Agency or Special Inspector. Additional inspections may be performed by the local building authority.
- All construction shall be subject to review (observation) by the Engineer before it is concealed from view. Coordinate expected review items with the Engineer prior to the start of construction. Provide reasonable notification to the Engineer to allow for such review as the Work proceeds, 48 hours minimum unless noted otherwise.
- Contractor to pay for and provide access for all inspections and observations, regardless of the entity retaining such services.

MATERIAL PROPERTIES

- Original Construction
 - All original structural steel: ASTM A36
 - Blending tank structural steel: Unknown
- Repair Construction
 - New steel plates shall be ASTM A36, minimum.
 - Connection bolts shall be ASTM A325, hot-dip galvanized (ASTM A 143)

Quality Control Testing Summary				
Item or Test	Keyed Note(s)	Frequency	Reference Specification Section(s)	Reference Standard(s)
Coating adhesion testing (Puck Pull-Off)	6-1	1 Addit'l location during production	09 97 13	ASTM D4541
Sealant Adhesion Testing	6-6	Every 200 LF	07 92 00	ASTM C1521

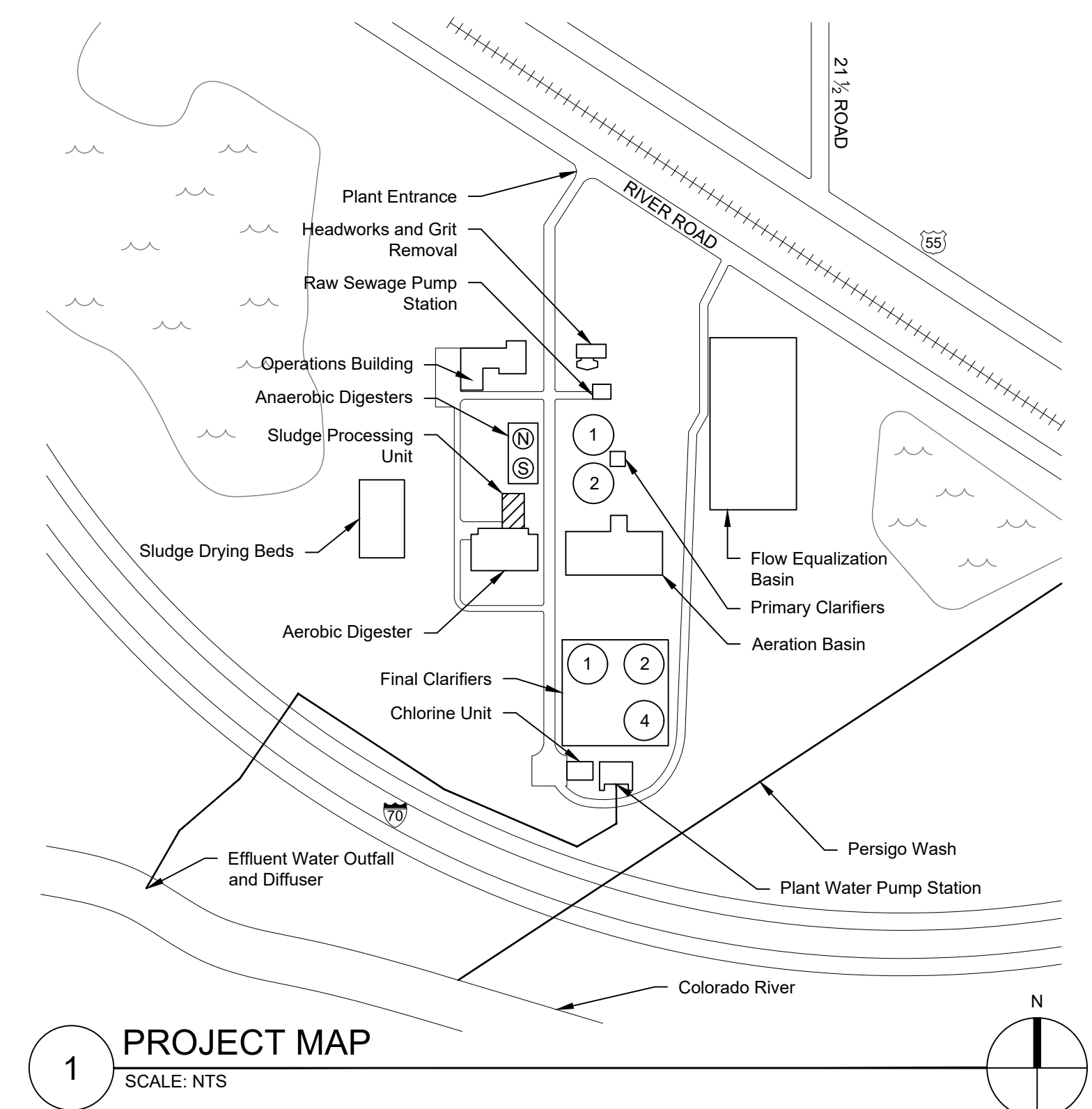
Notes:
1. This testing shall be performed by the Testing Agency, Coating Inspector or Engineer, with assistance from the Contractor as noted in the Specification Sections.

Special Inspection Schedule				
Verification And Inspection	Frequency	Inspector	IBC Reference	Referenced Standard
Steel Construction				
Inspection Of Bolts	TABLE 1	QA & QC	1705.2.1	AISC 360

NOTES:
A. Quality control (qc) shall be provided by the erector and fabricator. Quality Assurance (QA) shall be provided by the Special Inspector retained by Owner. Inspections shall be made by both parties in accordance with the table below.
B. Tasks marked "P" shall be performed for 100% of all joints or members. Tasks marked "O" shall be observed on a random basis but including not less than 20% of the total population.
C. The Engineer may specify more or less stringent inspection requirements for specific connections and details as noted in the construction documents. Where noted otherwise, follow the detail specific inspection requirements.
D. For inspection tasks with frequencies less than 100%, inspection frequency shall be increased to 100% if failure is observed in more than 1 out of 20 tests, or 5% of the test population.

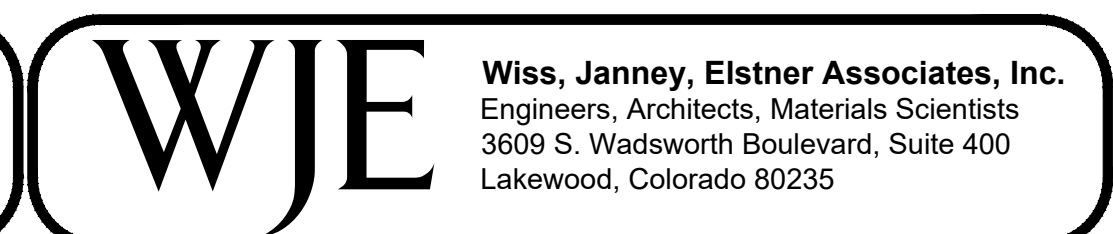
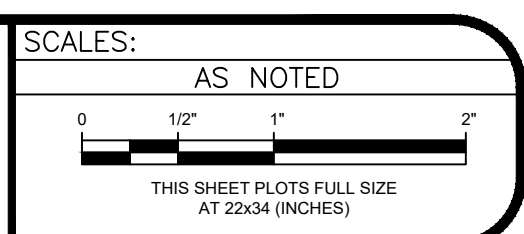
TABLE 1: Inspection Of Bolts		
Inspection Tasks Prior To Bolting	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Proper bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Proper storage provided for bolts, nuts, washers and other fastener components	O	O
Inspection Tasks During Bolting	QC	QA
Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required	O	O
Joint brought to the snug-tight condition	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Inspection Tasks After Bolting	QC	QA
Document acceptance or rejection of bolted connections	P	P

ABBREVIATIONS:		INDEX TO DRAWINGS:		SYMBOLS LEGEND:	
CLR	CLEAR	6.0	COVER SHEET AND GENERAL NOTES		EXISTING FULL HEIGHT WALL
(E)	EXISTING	6.1	PLANS		SLOPE
FV	FIELD VERIFY	6.2	REPAIR DETAILS		GUARDRAIL
HDG	HOT-DIPPED GALVANIZED				
LF	LINEAL FEET				
MAX	MAXIMUM				
MIN	MINIMUM				
(N)	NEW				
PL	PLATE				
RE	REFERENCE				
SIM	SIMILAR				
SF	SQUARE FEET				
TYP	TYPICAL				
W	WITH				

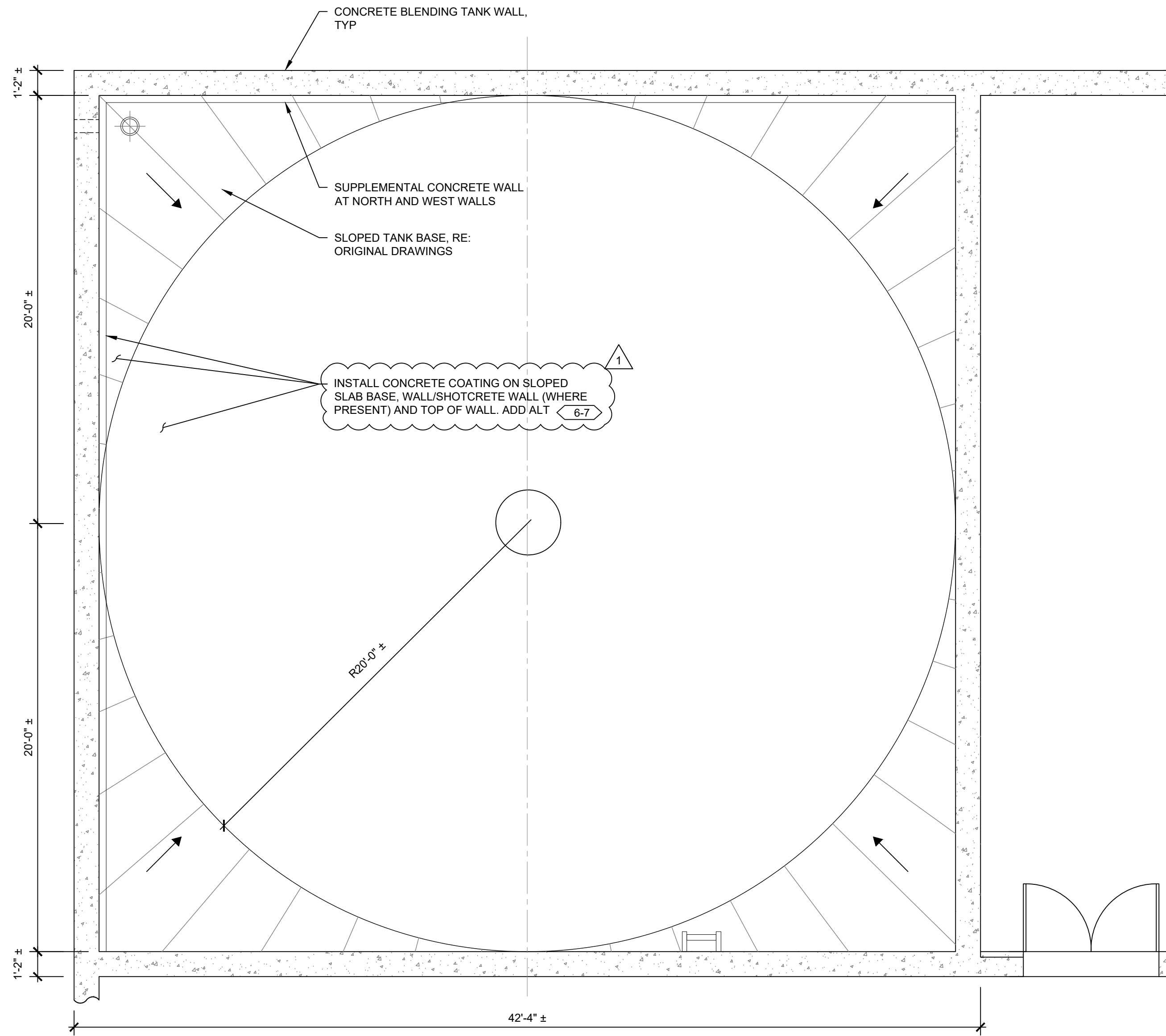


REVISION	DESCRIPTION	DATE
REVISION A	SLAB CONNECTIONS DUE TO ASR	5/28/2021
REVISION B		
REVISION C		
REVISION D		

DRAWN BY	BRS/CRS	DATE	04/07/21
DESIGNED BY	AGL/TMM	DATE	04/07/21
CHECKED BY	SWF	DATE	04/07/21
APPROVED BY	TMM	DATE	04/07/21

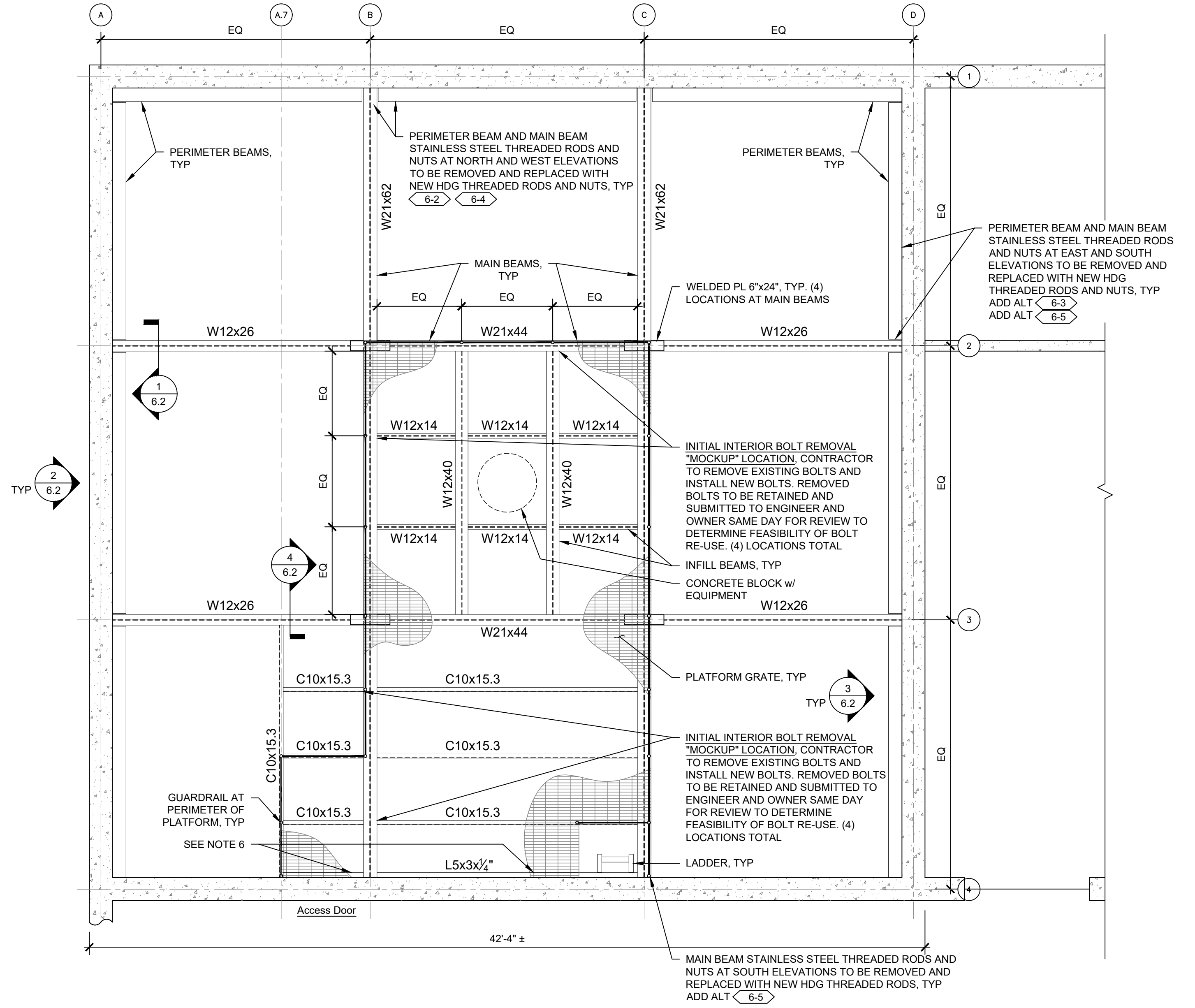
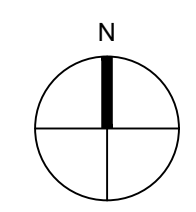


SLUDGE PROCESSING UNIT
COVER SHEET & GENERAL NOTES



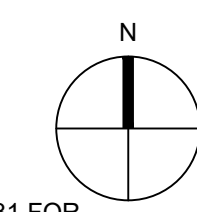
1 Sludge Processing Unit - Ground Floor Plan

- SCALE: 1/4" = 1'-0"
- PLAN NOTES:**
1. REFERENCE ORIGINAL DRAWING SHEETS III-20, III-23, III-24, III-25, IV-30 AND IV-31 FOR ADDITIONAL INFORMATION.
 2. CONTRACTOR SHALL VERIFY EXTENT OF SLOPING BASE AND MECHANICAL EQUIPMENT FOR CONFLICTS WITH THEIR PROPOSED ACCESS PLAN.

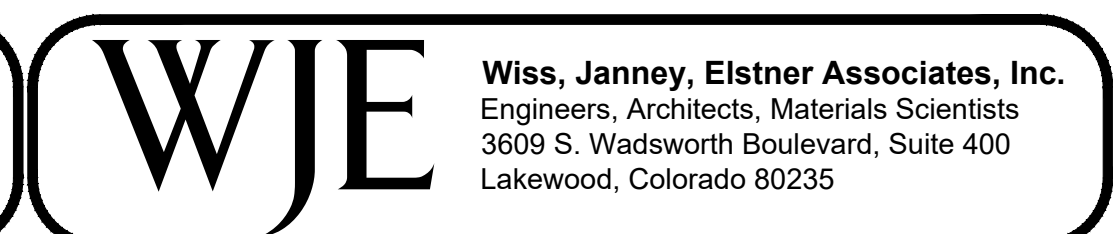
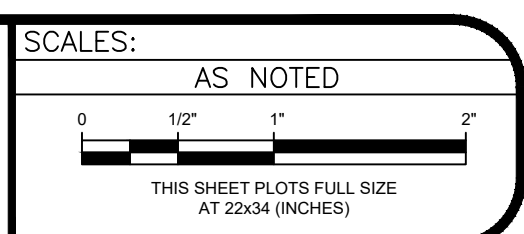


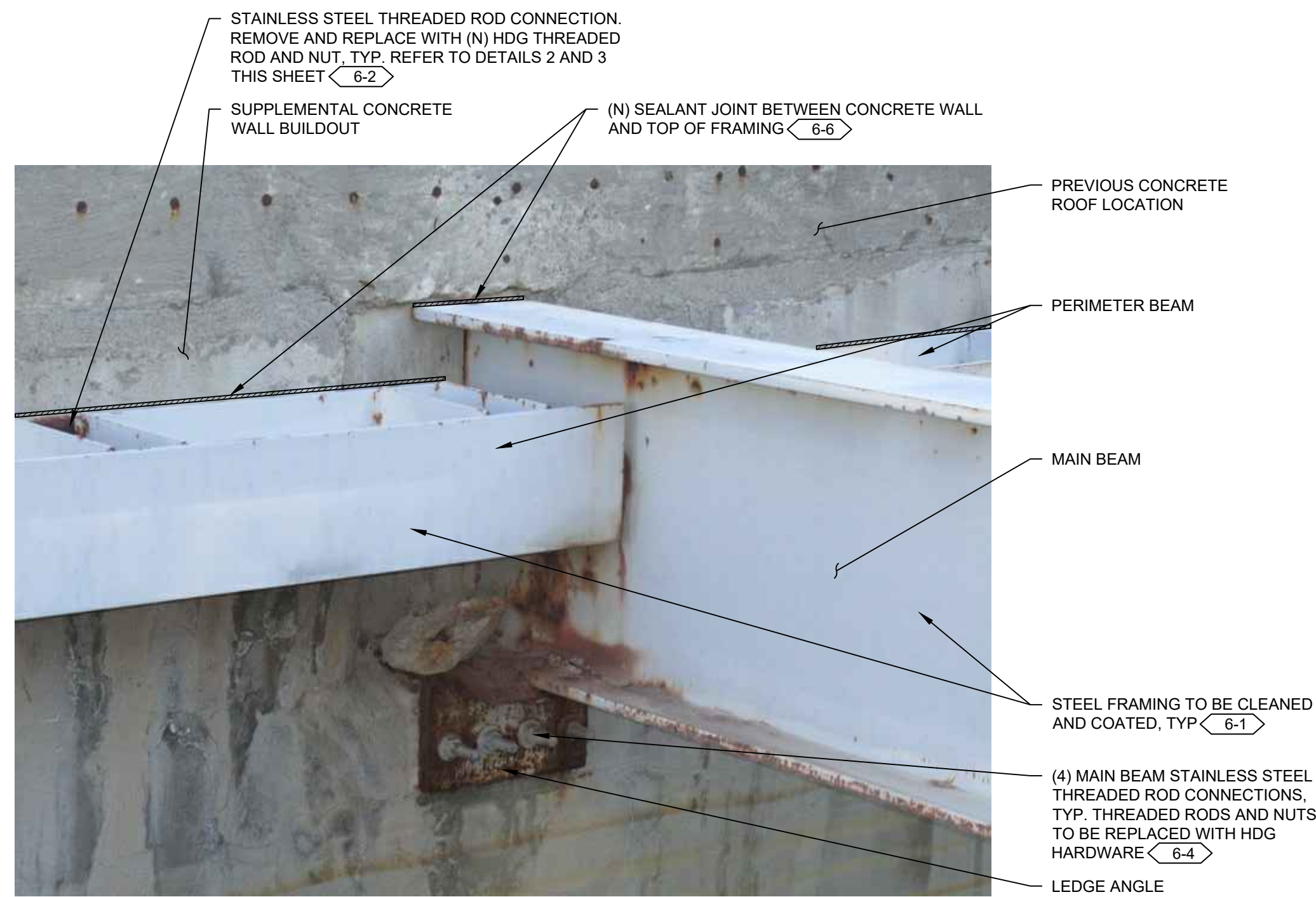
2 Sludge Processing Unit - Roof Framing Plan

- SCALE: 1/4" = 1'-0"
- PLAN NOTES:**
1. REFERENCE ORIGINAL DRAWING SHEETS III-20, III-23, III-24, III-25, IV-30 AND IV-31 FOR ADDITIONAL INFORMATION.
 2. ORIGINAL CONCRETE ROOF FRAMING WAS REPLACED WITH STEEL FRAMING SHOWN, AND NO ORIGINAL DESIGN INFORMATION IS AVAILABLE FOR THE STEEL FRAMING.
 3. BEAM SIZES ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY AS NECESSARY FOR ANY QUANTITIES INCLUDED IN BIDS.
 4. NORTH AND WEST SUPPLEMENTAL CONCRETE WALL BUILDOUT NOT SHOWN FOR CLARITY.
 5. PLATFORM GRATE AND GUARDRAILS SHALL BE REMOVED, STORED, PROTECTED AND RE-INSTALLED AFTER COATING WORK IS COMPLETED. PROVIDE SUPPLEMENTAL CONNECTION HARDWARE AS NECESSARY.
 6. REMOVE L5 FROM WALL. REMOVE, SALVAGE, AND REPLACE PORTIONS OF EXISTING GRATING AS NECESSARY TO REMOVE L5 ANGLE. TAKE CARE TO CLEAN AND COAT INSIDE OF EXISTING BOLT HOLES. RE-INSTALL L5 USING EXISTING CONNECTION BOLTS.
 7. CONTRACTOR SHALL SUBMIT AN ACCESS PLAN TO PROVIDE ACCESS TO COMPLETE THE COATING WORK WITHIN THE INTERIOR OF THE STRUCTURE WITH THEIR BID. THE PLAN SHALL INCLUDE A WRITTEN DESCRIPTION OF THE MEANS AND METHODS PROPOSED TO PROVIDE SAFE ACCESS TO COMPLETE THE FRAMING COATING AND BOLTED CONNECTION INSTALLATIONS.



REVISION	DESCRIPTION	DATE	DRAWN BY	DATE
REVISION A	SLAB CONNECTIONS DUE TO ASR	5/28/2021	BRS/CRS	04/07/21
REVISION B			AGL/TMM	04/07/21
REVISION C			SWF	04/07/21
REVISION D			TMM	04/07/21





1 Main Beam Edge Connection Detail
SCALE: NOT TO SCALE



2 Typical Exterior Edge Beam Connection Detail
SCALE: NOT TO SCALE

TYPICAL CONNECTION REPLACEMENT (AND INSPECTION) NOTES:

- ONLY ONE BOLT/CONNECTOR MAY BE REMOVED FROM ANY ONE MEMBER AT A TIME. IF THE CONTRACTOR WISHES TO REMOVE ADDITIONAL BOLTS FROM MEMBERS AT THE SAME TIME, THEY SHALL SUBMIT FOR REVIEW A PROPOSED PROCEDURE/PLAN TO THE ENGINEER FOR REVIEW WHICH IS SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF COLORADO. INCLUDE SEQUENCE, PLAN, AND CORRESPONDING CALCULATIONS FOR PROPOSED BOLT REMOVAL.
- AT INITIAL INTERIOR BOLT REMOVAL "MOCK-UP" LOCATION, CONTRACTOR TO REMOVE EXISTING BOLTS AND INSTALL NEW BOLTS. REMOVED BOLTS TO BE RETAINED AND SUBMITTED TO ENGINEER AND OWNER SAME DAY FOR REVIEW TO DETERMINE FEASIBILITY OF BOLT RE-USE. ALL REMOVED AND RETAINED CONNECTIONS SHALL BE GROUPED AND LABELED BY CONNECTION LOCATION BASED ON GRIDLINES (FOR EXAMPLE, 2/B 3).
- AFTER REMOVAL OF BOLT, CLEAN AND PRIME STEEL FRAMING AT CONNECTION LOCATION. AT EXTERIOR PLATE WASHERS, INSTALL FULL COATING SYSTEM ON PLATES PRIOR TO RE-INSTALLATION.
- RE-INSTALL BOLT/CONNECTOR. ALL BOLTS SHALL BE TIGHTENED TO "SNUG-TIGHT" CONDITION, NO PRE-TENSIONING IS REQUIRED.
- PERFORM SPECIAL INSPECTION OF CONNECTION(S) AS REQUIRED. INSPECTIONS MAY BE COMPLETED AFTER ALL CONNECTION HARDWARE IS COMPLETED, BUT PRIOR TO REMOVAL OF ACCESS.
- INSTALL REMAINDER OF COATING SYSTEM OVER BOLTS AND STEEL FRAMING. AT EXTERIOR PLATE WASHERS, INSTALL COATING OVER BOLTS AFTER INSTALLATION TO MATCH ADJACENT PLATE WASHER FINISH COAT.

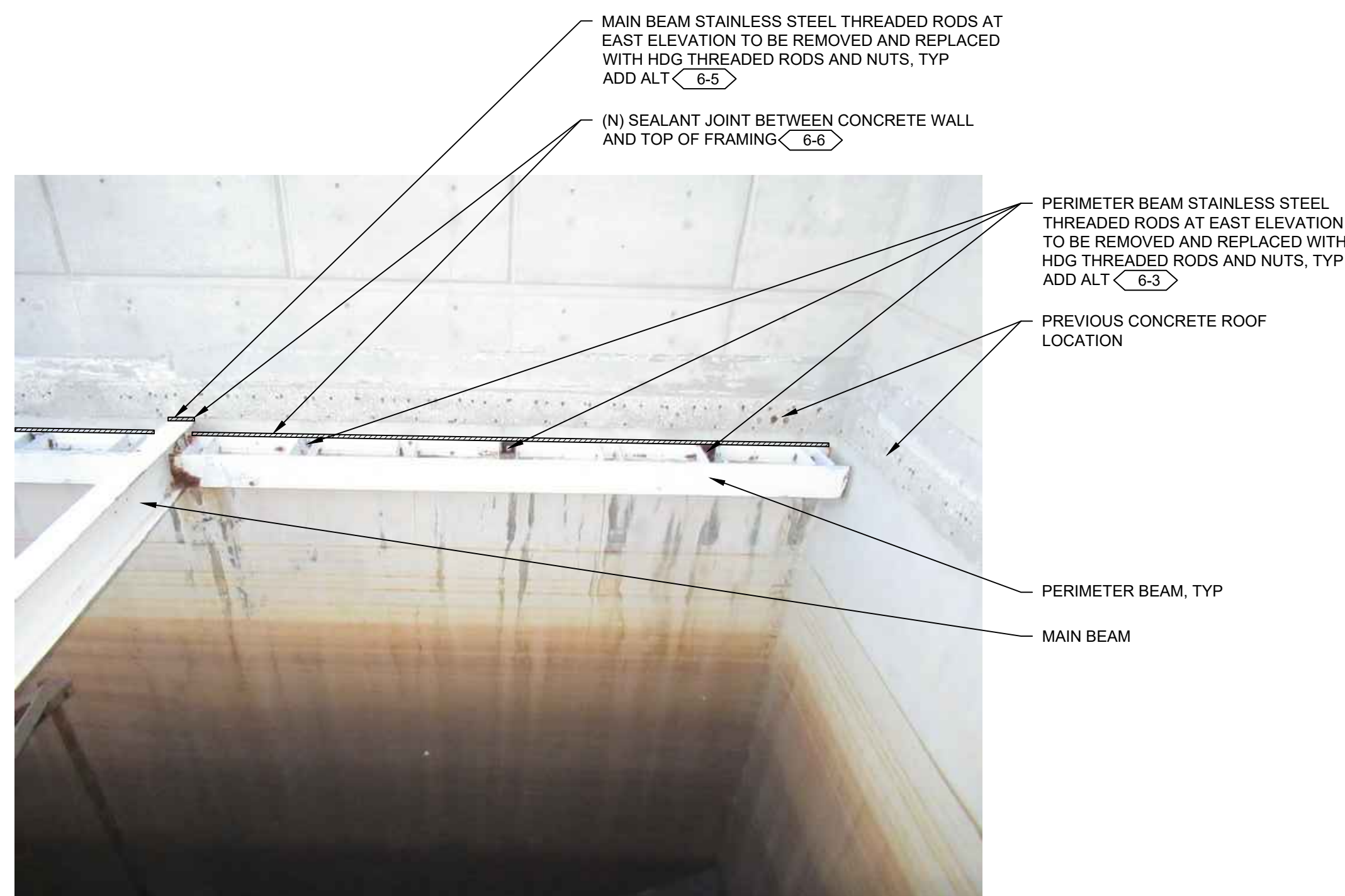
TYPICAL COATING NOTES:

- COATING SHALL BE INSTALLED ON ALL STEEL SURFACES AS DEFINED BELOW.
 - FOR PERIMETER BEAMS, THE BACKSIDE ADJACENT TO THE CONCRETE WALL SHALL NOT BE COATED.
 - FOR PLATE WASHERS, THEY SHALL BE REMOVED, COATED ON ALL SIDES AND RE-INSTALLED.
- TAKE CARE TO COAT DIFFICULT TO REACH AREAS.
- AT SHARP CORNERS, OR INTERFACES BETWEEN ADJACENT ELEMENTS WHERE A SHARP CORNER OR GAP EXISTS, INSTALL SURFACING COMPOUND TO SMOOTH TRANSITION AND ENSURE COMPLETE COATING COVERAGE.
- INSTALL A STRIPE OR DETAIL COAT AT ALL CORNERS AND CONNECTION HARDWARE PIECES. STRIPE OR DETAIL COAT SHALL BE OF INTERMEDIATE COATING LAYER.

TYPICAL SEALANT NOTES:

THESE NOTES SHALL APPLY TO ALL SEALANT JOINT WORK UNLESS NOTED OTHERWISE ON A SPECIFIC DETAIL. THESE NOTES SERVE TO SUPPLEMENT THE SPECIFICATIONS. REFERENCE SPECIFICATION SECTION 07 92 00 FOR ADDITIONAL INFORMATION.

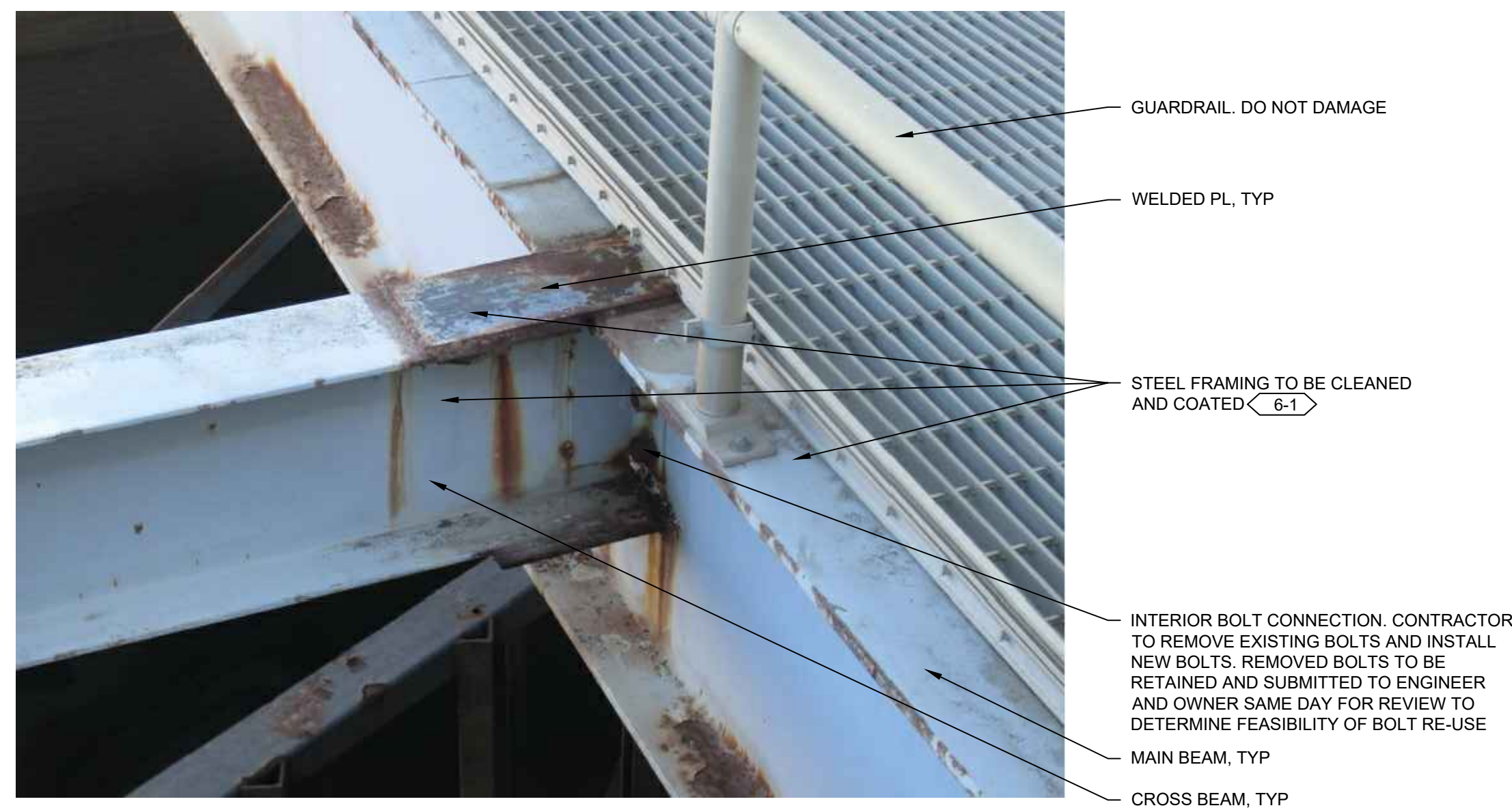
- ABBREVIATIONS: h = SEALANT HEIGHT, AND b = BOND LINE.
- REMOVE ALL GROUT, SEALANT, BACKER ROD, BOND BREAKER TAPE, ETC. AT JOINT LOCATION.
- SLIGHTLY GRIND THE CONCRETE SURFACES TO RECEIVE SEALANT WITH A GRINDING WHEEL.
- PROVIDE PROPER JOINT DEPTH PER DETAILS.
- AFTER GRINDING, CLEAN DEBRIS FROM THE JOINT USING A STIFF BRUSH AND OIL-FREE COMPRESSED AIR. VACUUM THE JOINT AND SURFACES WITHIN 6 INCHES OF JOINT.
- INSTALL PRIMER ON ALL SURFACES. POROUS SURFACES SHALL BE PRIMED REGARDLESS OF MANUFACTURER RECOMMENDATIONS TO EXCLUDE PRIMER.
- PREPARE NEW STEEL COATING PER MANUFACTURER'S RECOMMENDATIONS TO RECEIVE SEALANT.
- CONFIRM REQUIREMENTS OF SEALANT MANUFACTURER PRIOR TO SUBMITTING BID. NOTIFY ENGINEER OF DISCREPANCIES BETWEEN THESE DOCUMENTS AND MANUFACTURERS TYPICAL DETAILS, WRITTEN RECOMMENDATIONS, OR INSTRUCTIONS. ENGINEER SHALL DETERMINE WHICH APPLY.



3 Typical Perimeter Beam Connection Detail
SCALE: NOT TO SCALE

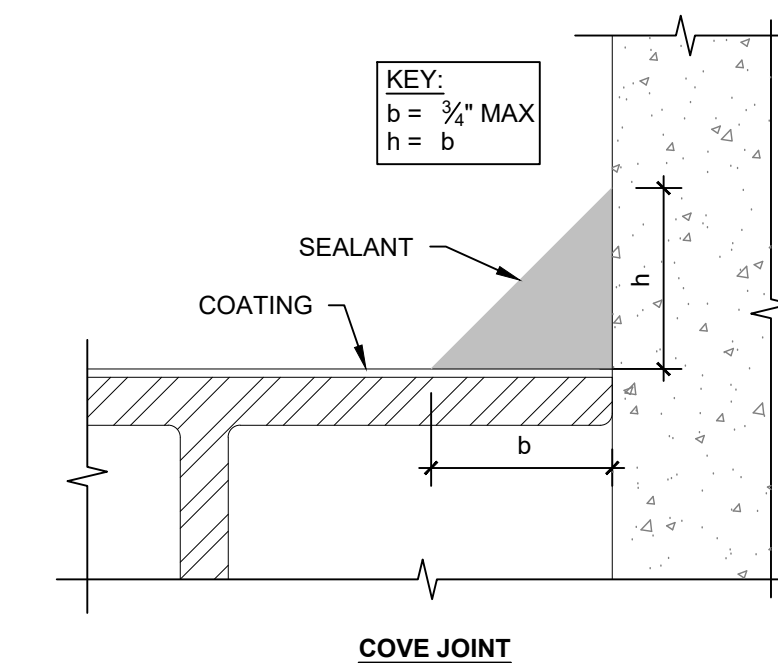
DETAIL NOTES:

- EAST WALL SHOWN, SIMILAR ON NORTH, EAST AND WEST WALLS.
- REMOVE AND REPLACE STAINLESS STEEL BOLTS.
- CLEAN AND COAT STEEL FRAMING.



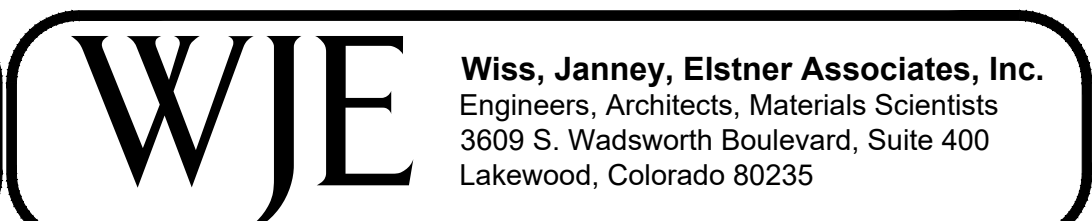
4 Typical Interior Connection Detail
SCALE: NOT TO SCALE

5 Typical Sealant Joint
SCALE: NOT TO SCALE



ADD ALTERNATE NOTE: $\langle 6-7 \rangle$
CONCRETE COATING TERMINATIONS TO BE DETAILED IF ADD ALTERNATE IS ELECTED. FOR BID ASSUME THAT CONCRETE COATING WILL TERMINATE AND START ON EITHER SIDE OF THE STEEL EDGE BEAMS AND ANGLE, AND ON TOP OF WALL, PER 4 ON SHEET 5.7 (PRIMARY CLARIFIER). ASSUME A COVE SEALANT JOINT SHALL BE USED TO BRIDGE BETWEEN STEEL AND CONCRETE COATINGS AT EDGE BEAMS AND ANGLE. REFERENCE PRIMARY CLARIFIER DETAILS FOR TYPICAL CONCRETE COATING TRANSITION DETAILS.

REVISION	DESCRIPTION	DATE	DRAWN BY	BRS/CRS	DATE	04/07/21	SCALES:
REVISION Δ	SLAB CONNECTIONS DUE TO ASR	5/28/2021	DESIGNED BY	AGL/TMM	DATE	04/07/21	AS NOTED
REVISION Δ			CHECKED BY	SWF	DATE	04/07/21	0 1/2" 1" 2"
REVISION Δ			APPROVED BY	TMM	DATE	04/07/21	THIS SHEET PLOTS FULL SIZE AT 22x34 (INCHES)



SLUDGE PROCESSING UNIT
REPAIR DETAILS