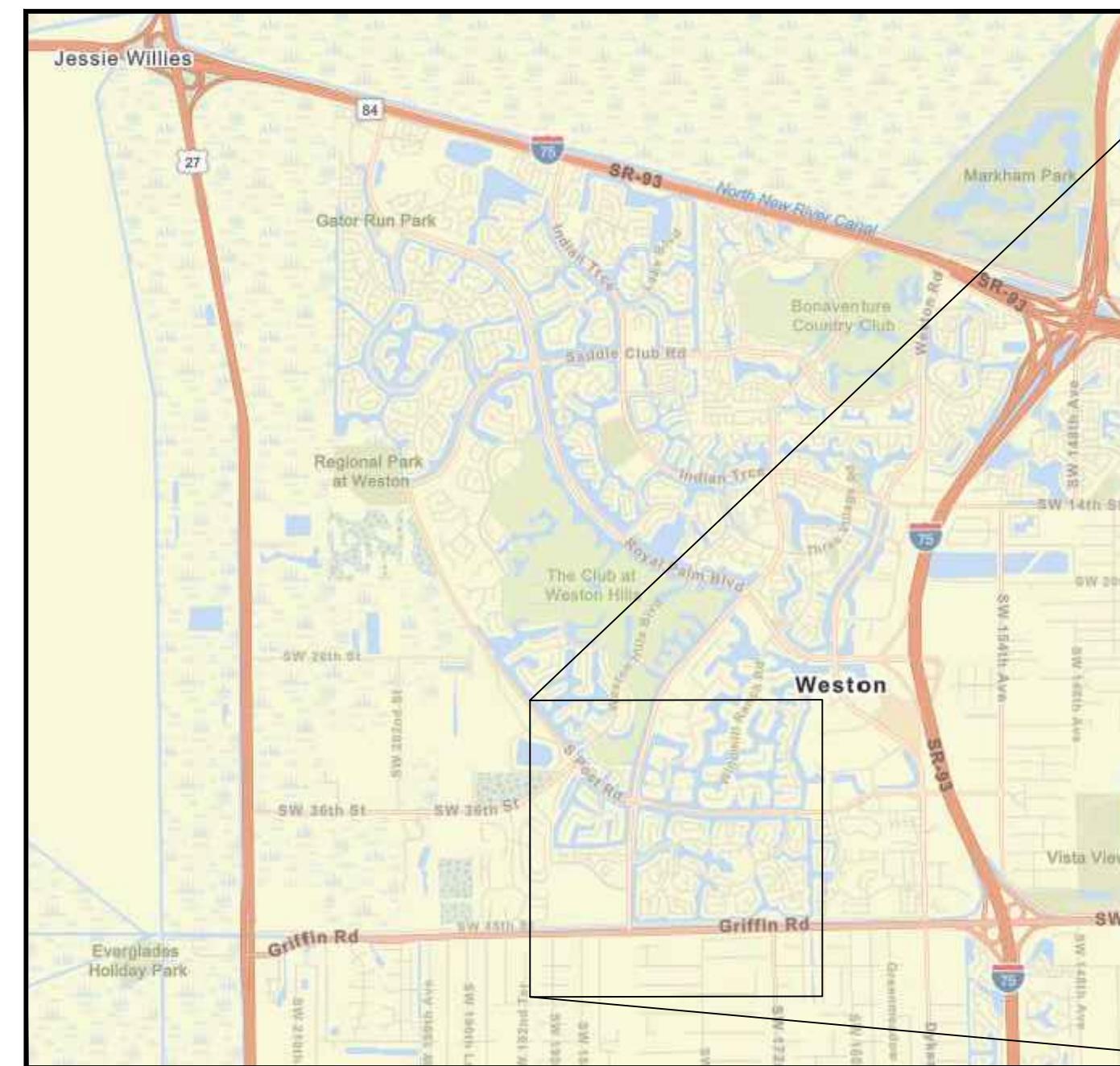


ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION

CITY OF WESTON, BROWARD COUNTY, FLORIDA



SHEET INDEX	
SHEET NUMBER	TITLE
CM-1.0	COVER SHEET
CM-1.1	GENERAL NOTES
CM-1.2	GENERAL NOTES
CM-1.3	GENERAL NOTES
CM-1.4	EXISTING CONDITIONS AND REPAIR KEY: PUMP STATION #1
CM-1.5	EXISTING CONDITIONS AND REPAIR KEY: PUMP STATION #2
CM-2.0	PUMP STATIONS #1 & #2 BULKHEAD ENCAPSULATION PLANS
CM-2.1	BULKHEAD ENCAPSULATION SECTIONS & DETAILS
CM-2.2	BULKHEAD ENCAPSULATION SECTIONS & DETAILS
CM-2.3	BULKHEAD ENCAPSULATION SECTIONS & DETAILS
CM-2.4	TYPICAL CONCRETE REPAIR DETAILS
CM-2.5	TYPICAL RIP RAP SECTION AND DETAIL
CM-2.6	FLAP GATE AND SLIDE GATE DETAILS AND SPECIFICATIONS
CM-2.7	TRASH RACK SUPPORT REPAIR, BLADE REPLACEMENT DETAILS

PUMP STATION #2

PUMP STATION #1

FOR REGULATORY REVIEW ONLY

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED & SEALED BY GEOFFREY M. PARKER, P.E. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

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REVISION:	DATE:	NOTE:	COVER
			SHEET 1 OF 14
			CM-1.0

1. GENERAL

- 1.1. THE WORK CONSISTS OF PROVIDING ALL CONSTRUCTION, LABOR, EQUIPMENT, MATERIAL AND OPERATIONS IN CONNECTION WITH THE REPAIR OF THE PUMP STATION FACILITIES AND RELATED IMPROVEMENTS AS SHOWN ON THESE DRAWINGS.
1.2. ANY DISCREPANCIES IN THE PLANS WITH THE FIELD CONDITIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER...
1.3. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING STRUCTURES IN THE PROJECT VICINITY...
1.4. UTILITIES ARE NOT SHOWN IN THE PLANS. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PRESENT UTILITIES PRIOR TO CONSTRUCTION.
1.5. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROPER CLEARANCE AND PROTECTION TO ALL OVERHEAD WIRES AND OBSTRUCTIONS.
1.6. THE CONTRACTOR SHALL EXCLUDE THE PUBLIC FROM THE WORK AREAS IN THE IMMEDIATE VICINITY OF OPERATIONS.
1.7. ALL NEW STRUCTURAL WORK INCLUDING CONCRETE, REINFORCEMENT, AND FRP PANELS SHALL BE ACCURATELY FIELD MEASURED AND DIMENSIONS VERIFIED...
1.8. NO CONSTRUCTION SHALL COMMENCE UNTIL ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN SECURED AND THE CONTRACTOR HAS BEEN ISSUED NOTICE TO PROCEED.
1.9. ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN CHANGED IN SIZE BY REPRODUCTION. THIS SHOULD BE CONSIDERED WHEN OBTAINING SCALED DATA.
1.10. CONSTRUCTION WORK SHALL BE EXECUTED IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL BUILDING CODES AND GOVERNING REGULATIONS, SFVMD, AND BROWARD COUNTY. CONTRACTOR SHALL ADHERE TO ALL CONDITIONS OF THE PERMITS AND EXEMPTIONS.

2. DESIGN CRITERIA

FBC 2020

3. SURVEY

- 3.1. ALL ELEVATIONS NGVD29.

4. GEOTECHNICAL (NOT USED)

5. WATER LEVEL DATA

- 5.1. CONTRACTOR MAY NEED TO ADJUST HIS WORK PLAN TO ACCOUNT FOR ACTUAL WATER LEVELS AND CHANGING WATER LEVELS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE TEMPORARY SUPPORT FOR MARINE STRUCTURES AND SHORELINE DURING CONSTRUCTION.

6. LAYOUT AND TESTING

- 6.1. ALL TESTING AND INSPECTION FOR CONCRETE MATERIALS SHALL BE IN ACCORDANCE WITH FDOT SPECIFICATIONS AND SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
6.2. ALL CONSTRUCTION TAKEOUT SHALL BE PERFORMED BY AND PAID FOR BY THE CONTRACTOR UNDER THE SUPERVISION OF A SURVEYOR REGISTERED IN THE STATE OF FLORIDA.
6.3. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A SET OF AS-BUILT DRAWINGS IN SUFFICIENT DETAIL TO ILLUSTRATE THE HORIZONTAL AND VERTICAL COMPONENTS OF ABOVE AND BELOW-GROUND STRUCTURES RELATIVE TO THE CONSTRUCTION BASELINE.
6.4. ALL TESTING AND LAYOUT TO BE COMPLETED BY CONTRACTOR AND INCLUDED IN BID.

7. SPECIES MONITORING (NOT USED)

8. DEMOLITION

- 8.1. CONTRACTOR SHALL VERIFY THE EXTENTS, LOCATION, AND QUANTITIES OF EXISTING ELEMENTS TO BE REMOVED.
8.2. ALL DEBRIS WITHIN THE LIMITS OF THE PROJECT SHALL BE HAULED OFF SITE BY THE CONTRACTOR, AS DIRECTED BY THE OWNER, AND DISPOSED OF AT AN APPROPRIATE FACILITY.
8.3. CONTRACTOR SHALL NOT DAMAGE ANY STRUCTURAL COMPONENTS BEYOND THE DEMOLITION REQUIREMENTS DEPICTED IN THESE DRAWINGS. ANY DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

9. ENVIRONMENTAL

- 9.1. EXCAVATED MATERIAL SHALL BE DE-WATERED ON SITE WHILE SURROUNDED BY EROSION CONTROL DEVICES (SUCH AS BERMS OR HAY BALES). THE CONTRACTOR SHALL COORDINATE THE DE-WATERING LOCATION WITH THE OWNER PRIOR TO COMMENCING EXCAVATION OPERATIONS.
9.2. STORAGE OF THE EXCAVATED MATERIAL SHALL BE COMPLETED IN A MANNER THAT PREVENTS SEDIMENTATION, EROSION, AND TURBIDITY DURING DE-WATERING, OVERFLOW, TRANSFER, AND STORAGE OF MATERIAL.
9.3. DISPOSAL DEVICES SHALL BE DEPLOYED FOR THE EXCAVATION TO MITIGATE RUNOFF INTO ADJACENT WATER BODIES.
9.4. TURBIDITY CURTAINS SHALL BE DEPLOYED FOR THE PROJECT ALONG THE ENTIRE AREA, PROJECT TURBIDITY CONTROL LIMITS AS DIRECTED BY APPROVED PERMITS.
9.5. TURBIDITY CURTAINS SHALL NOT BE RELOCATED/REMOVED FROM THE PROJECT AREA UNTIL LEVELS WITHIN ENCLOSED AREA RETURN TO BACKGROUND LEVELS OUTSIDE THE CURTAINS.
9.6. TURBIDITY CURTAINS SHALL EXTEND TO WITHIN 1 FOOT OF THE CANAL BOTTOM.
9.7. ALL TURBIDITY CURTAIN LINES SHALL BE TAUT AND NON-LOOPING TO PREVENT WILDLIFE ENTANGLEMENT.
9.8. CONSTRUCTION PERSONNEL WILL OBSERVE ANA ESA-LISTED SPECIES OR MARINE MAMMAL. IF ANY INTERACTION OCCURS, THE INCIDENT WILL BE IMMEDIATELY REPORTED TO THE APPROPRIATE AGENCY.
9.9. IF A VISIBLE PLUME IS OBSERVED BEYOND THE LIMITS OF THE TURBIDITY CURTAINS, IT SHALL BE SAMPLED.

10. SUBMITTALS

- 10.1. ALL SHOP DRAWINGS MUST BEAR EVIDENCE OF THE CONTRACTOR'S APPROVAL PRIOR TO SUBMITTING TO THE ENGINEER.
10.2. THE FOLLOWING MINIMUM SUBMITTALS SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO RELATED CONSTRUCTION ACTIVITY:
- SCHEDULE FOR COMPLETION OF WORK WITH TASKS AND DURATIONS DEFINED
- DEMOLITION AND EXCAVATION METHODS AND DISPOSAL PLAN
- ROCK WEIGHT TICKETS
- FRP OR POLYETHYLENE COMPONENTS
- LUMBER
- HARDWARE
- EPOXY
- GROUT
- BACKFILL
- ROCK MATERIAL TESTING PER SEC. 18.3
- TRASH RACK
- FLAP GATE ASSEMBLY
- SLIDE GATE ASSEMBLY
- INLEMENT WEATHER PLAN

11. EARTH WORKS (EXCAVATION AND BACKFILL)

- 11.1. EXCAVATED MATERIAL MAY BE TEMPORARILY STOCKPILED IN THE STAGING AREA FOR OFF-SITE DISPOSAL AT AN APPROVED UPLAND FACILITY.
11.2. BACKFILL SHALL BE FROM THE STOCKPILED EXCAVATED MATERIAL. IF DERELICT MATERIALS OR DEBRIS ARE WITHIN THE EXCAVATED SOIL, THE EXCAVATED MATERIAL IS NOT ACCEPTABLE FOR BACKFILL AND SHALL BE DISPOSED. BACKFILL SHALL BE CLEAN SOIL IF DERELICT MATERIALS OR

- DEBRIS ARE PRESENT.
11.3. BACKFILL SHALL BE SODDED TO MEET THE GRADES SPECIFIED HEREIN.

12. CONCRETE

- 12.1. CONCRETE REPAIRS REF. SHEET CM-2.4.

13. REINFORCEMENT

- 13.1. STEEL
13.1.1. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED BARS FREE FROM LOOSE RUST AND SCALE.
13.1.2. REINFORCING STEEL, SUPPORTS, AND TIE WIRE SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A767.
13.1.3. MIMF OR CHROMX 4100 STEEL CAN BE USED AS AN ALTERNATE TO HOT-DIPPED GALVANIZED STEEL AT CONTRACTORS OPTION.
13.1.4. STEEL SHALL BE PLACED AS SHOWN IN THE PLANS. ALL ACCESSORIES SHALL BE PLASTIC ONLY TO SUPPORT REINFORCING EXPOSED TO WEATHER.
13.1.5. CONTRACTOR SHALL ADVISE ENGINEER OF THE REQUIRED REINFORCING STEEL SITE REVIEW AT LEAST 24 HOURS PRIOR TO PLACING OF CONCRETE.
13.1.6. CONTRACTOR TO ALLOW FOR 5% ADDITIONAL REINFORCING FOR ENGINEER TO USE AT HIS DISCRETION DURING CONSTRUCTION. ANY UNUSED PORTION SHALL BE CREDITED BACK TO OWNER UPON COMPLETION OF PROJECT.

14. STRUCTURAL STEEL

- 14.1. STRUCTURAL STEEL SHALL CONFORM WITH THE FOLLOWING ASTM STANDARDS:
- CHANNELS & I-BEAMS: A572 GR. 50
- PLATE: A36
14.2. BOLTS SHALL BE ASTM A316 STAINLESS STEEL UNLESS OTHERWISE NOTED AND FIELD-COATED WITH COAL TAR BITUMEN AFTER INSTALLATION.

15. PILING (NOT USED)

16. FRAMING & DECKING (NOT USED)

17. HARDWARE

- 17.1. ALL HARDWARE, BOLTS, AND OTHER MISC. STEEL COMPONENTS SHALL BE ASTM A316 STAINLESS STEEL UNLESS OTHERWISE NOTED.
17.2. DOWELS OR ANCHORS EMBEDDED INTO CONCRETE SHALL BE ANCHORED WITH SIMPSON SET TWO-PART EPOXY OR ENGINEER APPROVED EQUIVALENT. ANCHOR HOLES SHALL BE DRIVEN TO MINIMUM DEPTH SHOWN ON THE PLANS, AND SHALL BE THOROUGHLY CLEANED OUT AND DRY PRIOR TO INJECTION OF EPOXY.
17.3. ALUMINUM SHALL BE 6061-T6 ALLOY. CONNECTORS

18. ROCK

- 18.1. PROPOSED ROCK SOURCE(S) MUST BE APPROVED FOR USE BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE WORK.
18.2. ALL ROCK SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS.
18.3. CLEAN, SOUND, AND DURABLE, AND FREE FROM FRACTURES, INCLUSIONS, VOIDS, OR OTHER DEFECTS.
18.3.1. MINIMUM SPECIFIC GRAVITY OF 2.25 (140 PCF).
18.3.2. SOUNDNESS 15% MAX LOSS (ASTM C88).
18.3.3. SUCH CHARACTER THAT IT WILL NOT DISINTEGRATE FROM THE ACTION OF AIR, WATER, OR THE CONDITIONS OF HANDLING AND PLACING.
18.3.4. ROUGH ANGULAR QUARRIED MATERIAL WITH A SHAPE THAT ASSURES INTERLOCKING WITH ADJACENT ROCK.
18.4. ALL ROCK WILL BE SUBJECT TO ON-SITE RANDOM SAMPLING AND TESTING.
18.5. ROCK USED FOR THE REVETMENT CONSTRUCTION SHALL CONFORM TO THE FOLLOWING SIZE RANGES:
18.5.1. WEIGHT: 140 LBS. - 475 LBS.
18.5.2. NOMINAL DIMENSION: 12" TO 18"; D50 = 15"
18.5.3. THE LEAST DIMENSION OF ANY ROCK SHALL NOT BE LESS THAN ONE-THIRD (1/3) OF THE GREATEST DIMENSION OF THAT ROCK.
18.6. THE TONNAGE OF ARMOR STONE IN THE BID ASSUMES THAT THERE ARE NO VOIDS.
18.7. EROSION CONTROL CURTAINS SHALL NOT BE PLACED WITHIN 12 INCHES OF MANGROVE ROOTS.
18.8. THE CONTRACTOR MAY REUSE ON-SITE RIPRAP PROVIDED IT MEETS THE GRADATION FOR THE WORK.

19. SAND (NOT USED)

20. GEOTEXTILE

- 20.1. GEOTEXTILE SHALL BE U.S. 670 (OR APPROVED EQUAL).
20.2. PROVIDE GEOTEXTILE IN ACCORDANCE WITH FDOT SPECIFICATION 514.

21. MARINE MATTRESSES (NOT USED)

22. GABIONS (NOT USED)

23. FLOATING DOCKS (NOT USED)

24. BOAT LIFTS (NOT USED)

25. VEGETATION (NOT USED)

26. UTILITIES

- 26.1. CONTRACTOR SHALL CALL SUNSHINE 1-800-432-4770, PRIOR TO CONSTRUCTION.
26.2. CONTRACTOR SHALL REPLACE ANY UTILITY LINES/CONDUITS THAT ARE TEMPORARILY REMOVED OR DISCONNECTED DURING REPAIR WORK.

27. DREDGING (NOT USED)

28. MISCELLANEOUS

- 28.1. FRP PANELS.
28.2. TRASH RACK SUPPORT MEMBERS & BLADES:

- 28.2.1. ALL CORRODED GALVANIZED STEEL TRASH RACK SUPPORT MEMBERS SHALL BE CLEANED OR BLASTED AND COATED PER ASTM STANDARD A780.
28.2.2. BLADES: THE MATERIAL SHALL BE EXTRA HIGH MOLECULAR WEIGHT HEXENE COPOLYMER (HXM POLYETHYLENE).

Table with 4 columns: PROPERTY, TEST METHOD (ASTM), UNIT, VALUE. Rows include DENSITY (D1505, LBS/FT, 59), TENSILE YIELD STRENGTH (D638, PSI, 3600), ULTIMATE ELONGATION (D638, %, >60), FLEXURAL MODULUS (D790, PSI, 170,000).

- 28.2.3. MATERIAL SHALL BE VIRGIN STOCK, IT SHALL INCORPORATE ANTIOXIDANTS AND BE RESISTANT TO UV RADIATION AND PETROLEUM FOR AT LEAST 30 YEARS. IT HAS EXCELLENT STRESS CRACKING RESISTANCE, RIGIDITY, AND IMPACT STRENGTH.

28.3. SPIRE PANEL SYSTEM

- 28.3.1. THICKNESS: 25"
28.3.1.2. CONSTRUCTION: PREASSEMBLED MULTI-LAYER FIBERGLASS SYSTEM WITH VINYL ESTER RESIN.
28.3.1.3. FLEXURAL STRENGTH: ASTM D790 - 25,000 PSI MINIMUM.
28.3.2. ALL EXTERNALLY BONDED LAMINATE FRP SYSTEM SHALL BE MANUFACTURED AS REQUIRED BY THE STRUCTURAL DRAWINGS AND SPECIFICATIONS.
28.3.3. THE WORK INCLUDES THE FURNISHING OF FINAL ENGINEERING, MATERIAL, EQUIPMENT AND SERVICES SUPPORTING THE INSTALLATION AND FINISH OF ALL STRUCTURAL STRENGTHENING AND MEMBER PROTECTION USING AN EXTERNALLY BONDED LAMINATE FRP SYSTEM.
28.3.4. CONTRACTOR SHALL PROVIDE LABOR, MATERIAL, TOOLS, AND EQUIPMENT REQUIRED FOR THE COMPLETION OF THE WORK.
28.3.4.1. PREPARE EXISTING AREAS, AS DEFINED BY THESE SPECIFICATIONS AND RELATED CONTRACTOR DRAWINGS, DESIGNATED TO RECEIVE PILE RESTORATION.
28.3.4.2. PREPARE AND PLACE SHOP DRAWINGS.
28.3.4.3. PREPARE DESIGN DRAWINGS FOR SHORES, AND BRACING IF REQUIRED.
28.3.4.4. FURNISH ALL SUBMITTALS REQUIRED BY THIS SECTION OF THE SPECIFICATION.
28.3.4.5. ENGINEERING AND DESIGN OF THE SPIRE® SYSTEM SHALL BE PROVIDED BY QUAKEWRAP, INC.
28.3.6. THE EXTENT OF THE SPIRE® SYSTEM COVERED HEREIN IS SHOWN ON THE PLANS.
28.3.6.1. ATTACHED TO STEEL SHEET PILE.
28.3.6.2. ATTACHED OF ANCHORS THROUGH THE SPIRE® SYSTEM.
28.3.7. MATERIALS FOR THE SPIRE® SYSTEM HAVE BEEN PRE-QUALIFIED AND SHALL BE MANUFACTURED BY QUAKEWRAP®, INC.
28.3.8. SHALL BE PROVIDED IN ACCORDANCE WITH THE SPECIFICATIONS.
28.3.8.1. DELIVER EPOXY MATERIALS IN FACTORY-SEALED CONTAINERS WITH THE MANUFACTURER'S LABELS IN TACT AND LEGIBLE WITH VERIFICATION OF THE DATE OF MANUFACTURER SHELF LIFE.
28.3.8.2. STORE MATERIALS IN A PROTECTED AREA AT A TEMPERATURE BETWEEN 40 DEGREES AND 100 DEGREES FAHRENHEIT.
28.3.8.3. PRODUCTS SHALL BE STORED ACCORDING TO THE MANUFACTURER'S REQUIREMENTS AND SHALL AVOID CONTACTS WITH SOIL AND MOISTURE.
28.3.9. STEEL SHEET PILE PREPARATION
28.3.9.1. USING HIGH PRESSURE WATER JETTING TO 1/4" SHELL BASE.
28.3.9.2. THE ELAPSED TIME BETWEEN THE CLEANING OF A STEEL PILE AND THE INSTALLATION OF THE ENCASEMENT ON THAT STEEL PILE SHALL NOT EXCEED 72 HOURS.
28.3.9.3. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
28.3.10. THE FIBER PILES SHALL BE ALIGNED ON THE STRUCTURAL MEMBER ACCORDING TO THE CONSTRUCTION DRAWINGS.
28.3.11. THE WORK TO BE PROVIDED IN ACCORDANCE WITH THIS SECTION OF THE SPECIFICATION SHALL BE SUBJECT TO INSPECTION BY OWNER AT ANY TIME(S) DURING THE PROGRESS OF THE WORK.
28.3.11.2. COMPLETED INSTALLATION SHALL BE VISUALLY INSPECTED TO CONFIRM THE INTEGRITY OF THE LAMINATE ENCASEMENT AND RESIN FILL.
28.3.11.3. ACCEPTANCE OF STRUCTURE SHALL BE CONTINGENT ON THE WORK MEETING ALL OF THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AS INDICATED BY THE RESULTS OF ALL TESTING, INSPECTION, AND OTHER QUALITY ASSURANCE PROCEDURES REQUIRED BY OWNER.
28.3.12. ENVIRONMENTAL CONDITIONS SHALL BE EXAMINED BEFORE AND DURING INSTALLATION OF THE SPIRE® SYSTEM TO ENSURE CONFORMITY TO THE CONTRACT DOCUMENTS AND MANUFACTURER'S RECOMMENDATIONS.
28.3.15. #10 SELF TAPPING STAINLESS STEEL SCREWS, HEX HEAD.
28.3.16. SEALING SPIRE SYSTEM PRIOR TO EPOXY GROUT INSTALLATION.
28.3.16.1. THE SPIRE @ SYSTEM SHALL BE SEALED WHERE REQUIRED TO ENSURE NO LEAKS AND LOSS OF EPOXY GROUT.
28.3.16.2. CORNERS SHALL BE FINISHED WITH A PRE-MOLDED/PREFABRICATED PIECE AS SHOWN.
28.3.16.3. PROPER ATTACHMENTS SHOULD BE USED TO HOLD THE FORCE OF THE WEIGHT OF THE EPOXY GROUT (140 PCF). FORMS SHOULD BE DESIGNED TO ALLOW FOR A HYDRAULIC HEAD TO FACILITATE THE PLACEMENT OF THE EPOXY GROUT.

PROJECT: ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION

CITY OF WESTON, FLORIDA

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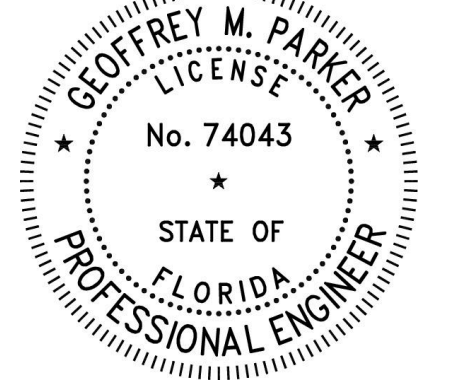


Table with 2 columns: ABBREVIATIONS and definitions. Rows include ACI (AMERICAN CONCRETE INSTITUTE), ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS), CONT (CONTINUOUS), FDEP (FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION), FDOT (FLORIDA DEPARTMENT OF TRANSPORTATION), KSI (KIPS PER SQUARE INCH), MHW (MEAN HIGH WATER), MIN (MINIMUM), MLW (MEAN LOW WATER), NAVD (NORTH AMERICAN VERTICAL DATUM), NGVD (NATIONAL GEODETIC VERTICAL DATUM), PERA (PERMITTING, ENVIRONMENT, AND REGULATORY AFFAIRS), PSI (POUNDS PER SQUARE INCH), TYP (TYPICAL), USACE (UNITED STATES ARMY CORPS OF ENGINEERS), W/C (WATER/CEMENT RATIO).

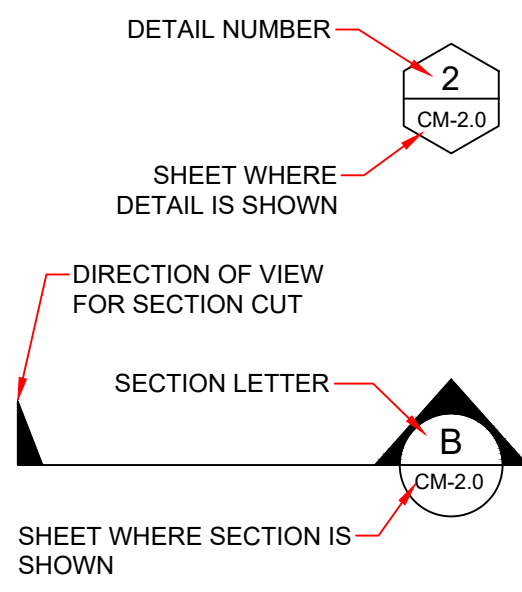


Table with 10 columns for submission/revision and 10 columns for date and issue.

CC PROJECT NO: 95600

DRAWN: JDR

CHECKED: GP

SCALE: AS SHOWN

SHEET TITLE: GENERAL NOTES

SHEET 2 OF 14

CM-1.1

\\Projects\95600 - Weston - Rip, Coat, V, U - Drawings\Working\2022-02-29\95600 ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION.dwg

<p>28.4.1 SUMMARY</p> <p>A. THIS SECTION APPLIES FOR ALL PLACEMENT OF CONCRETE (GROUT) ASSOCIATED WITH QA/KEWRAP MANUFACTURED AND PATENTED SYSTEMS, SUCH AS PILEMEDIC®, SPIRE® AND STIFFPIPE® SYSTEMS AND OTHER FRP ENCASEMENT/JACKETING SYSTEMS. SEE SPECIFICATIONS FOR THESE SYSTEMS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. CONCRETE AND GROUT TERMINOLOGY ARE USED THROUGHOUT THIS SPECIFICATION AND ARE INTERCHANGEABLE AS THEY APPLY TO STANDARDS, TESTING, USE AND REQUIREMENTS. SEE CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.</p> <p>B. THE WORK COVERED IN THIS SECTION INCLUDES THE FOLLOWING MATERIALS:</p> <ol style="list-style-type: none"> CEMENTITIOUS FLOWABLE GROUT EPOXY GROUT <p>C. THE WORK COVERED IN THIS SPECIFICATION INCLUDES, BUT IS NOT LIMITED TO, GROUT PLACEMENT, NON-SHRINK PRESSURE GROUTING, SURFACE PREPARATION, AND GROUT CURING.</p>	<p>ASTM C295 STANDARD GUIDE FOR PETROGRAPHIC EXAMINATION OF AGGREGATES FOR CONCRETE</p> <p>ASTM C307 STANDARD TEST METHODS FOR TENSILE STRENGTH OF CHEMICAL-RESISTANT MORTARS, GROUTS, AND MONOLITHIC SURFACINGS</p> <p>ASTM C441 STANDARD TEST METHOD FOR EFFECTIVENESS OF POZZOLANS OR GROUND BLAST-FURNACE SLAG IN PREVENTING EXCESSIVE EXPANSION OF CONCRETE DUE TO THE ALKALI-SILICA REACTION</p> <p>ASTM C494 CHEMICAL ADMIXTURES FOR CONCRETE</p> <p>ASTM C531 STANDARD TEST METHOD FOR LINEAR SHRINKAGE AND COEFFICIENT OF THERMAL EXPANSION OF CHEMICAL-RESISTANT MORTARS, GROUTS, MONOLITHIC SURFACINGS, AND POLYMER CONCRETES</p> <p>ASTM C566 STANDARD TEST METHOD FOR TOTAL MOISTURE CONTENT OF AGGREGATE BY DRYING</p> <p>ASTM C579 STANDARD TEST METHODS FOR COMPRESSIVE STRENGTH OF CHEMICAL-RESISTANT MORTARS, GROUTS, MONOLITHIC SURFACINGS, AND POLYMER CONCRETE</p> <p>ASTM C595 STANDARD SPECIFICATION FOR BLENDED HYDRAULIC CEMENTS</p> <p>ASTM C618 STANDARD SPECIFICATION FOR COAL FLY ASH AND RAW OR CALCINED NATURAL POZZOLAN FOR USE AS A MINERAL ADMIXTURE IN PORTLAND CEMENT CONCRETE</p> <p>ASTM C796 STANDARD SPECIFICATION FOR FOAMING AGENTS FOR USE IN PRODUCING CELLULAR CONCRETE USING PREFORMED FOAM</p> <p>ASTM C881 STANDARD SPECIFICATION FOR EPOXY-RESIN-BASE BONDING SYSTEMS FOR CONCRETE</p> <p>ASTM C869 STANDARD SPECIFICATION FOR FOAMING AGENTS USED IN MAKING PREFORMED FOAM FOR CELLULAR CONCRETE</p> <p>ASTM C989 STANDARD SPECIFICATION FOR SLAG CEMENT FOR USE IN CONCRETE AND MORTARS</p> <p>ASTM C1017 CHEMICAL ADMIXTURES FOR USE IN PRODUCING FLOWING CONCRETE</p> <p>ASTM C1107 PACKAGED DRY, HYDRAULIC-CEMENT GROUT (NON-SHRINK)</p> <p>ASTM C1157 PERFORMANCE SPECIFICATION FOR HYDRAULIC CEMENT</p> <p>ASTM C1202 STANDARD TEST METHOD FOR ELECTRICAL INDICATION OF CONCRETE'S ABILITY TO RESIST CHLORIDE ION PENETRATION</p> <p>ASTM D25 STANDARD SPECIFICATION FOR ROUND TIMBER PILES</p> <p>ASTM D512 STANDARD TEST METHODS FOR CHLORIDE ION IN WATER</p> <p>ASTM D516 STANDARD TEST METHOD FOR SULFATE ION IN WATER</p> <p>ASTM D638 STANDARD TEST METHOD FOR TENSILE PROPERTIES OF PLASTICS</p> <p>ASTM D790 STANDARD TEST METHODS FOR FLEXURAL PROPERTIES OF UNREINFORCED AND REINFORCED PLASTICS AND ELECTRICAL INSULATING MATERIALS</p> <p>ASTM D1179 STANDARD TEST METHODS FOR FLUORIDE ION IN WATER</p> <p>ASTM D1339 METHODS OF TEST FOR SULFATE ION IN WATER</p> <p>ASTM D2583 STANDARD TEST METHOD FOR INDENTATION HARDNESS OF RIGID PLASTICS BY MEANS OF A BARCOL IMPRESSOR</p> <p>ASTM D3867 STANDARD TEST METHODS FOR NITRITE-NITRATE IN WATER</p> <p>ASTM D4791 STANDARD TEST METHOD FOR FLAT OR ELONGATED PARTICLES IN COARSE AGGREGATE</p> <p>ASTM E329 STANDARD SPECIFICATION FOR AGENCIES ENGAGED IN THE TESTING AND/OR INSPECTION OF MATERIALS USED IN CONSTRUCTION</p>	<p>1. PRODUCT DATA</p> <ol style="list-style-type: none"> DESCRIPTION, PROPORTIONING, AND CATALOG CUTS OF PROPOSED EPOXY GROUT MANUFACTURER'S INSTRUCTIONS FOR PROPOSED EPOXY GROUT <p>III. EPOXY PASTE FOR SEALING THE TOPS OF THE ENCASEMENTS AND THE FORMS</p> <p>IV. FORMWORK SPACERS</p> <p>V. QUICK CONNECTION ADAPTER FOR END OF PUMP HOSE AND PUMPING PORTS</p> <p>2. QUALITY ASSURANCE DOCUMENTS</p> <ol style="list-style-type: none"> RESUMES OR OTHER SUPPORTING DOCUMENTS OF INSTALLATION COMPANY AND PERSONNEL EXPERIENCE PROPOSED METHOD OF SEALING AND RESEALING OF GROUT HOSE AND PUMP PORTS COLD AND/OR HOT WEATHER CONCRETING PROCEDURES NAME AND ADDRESS OF ALL TESTING COMPANIES ALL CONCRETE TESTING REPORTS ALL ON-SITE CONCRETE BATCHING REPORTS 	<p>6. MINIMUM PROPERTIES OF THE GROUT PER THE TABLE BELOW:</p> <table border="1"> <thead> <tr> <th colspan="3">GROUT PROPERTIES</th> </tr> <tr> <th>Property</th> <th>Standard</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Flowability CRD C-227, %</td> <td>---</td> <td>124-145</td> </tr> <tr> <td>Flexural Strength, psi (Flowable)</td> <td>ASTM C190</td> <td>1,200</td> </tr> <tr> <td>Tensile Strength, psi (Plastic)</td> <td>ASTM C190</td> <td>550</td> </tr> <tr> <td>Compressive Strength, psi</td> <td>ASTM C190</td> <td>5,000</td> </tr> <tr> <td>Initial Set Time (Flowable), hr</td> <td>ASTM C191</td> <td>3</td> </tr> <tr> <td>Final Set Time (Flowable), hr</td> <td>ASTM C191</td> <td>5</td> </tr> <tr> <td>Entrained Air, %</td> <td>ASTM C260</td> <td>7-May</td> </tr> <tr> <td>Maximum Aggregate Size, in</td> <td>ASTM C33</td> <td>8-Mar</td> </tr> </tbody> </table>	GROUT PROPERTIES			Property	Standard	Value	Flowability CRD C-227, %	---	124-145	Flexural Strength, psi (Flowable)	ASTM C190	1,200	Tensile Strength, psi (Plastic)	ASTM C190	550	Compressive Strength, psi	ASTM C190	5,000	Initial Set Time (Flowable), hr	ASTM C191	3	Final Set Time (Flowable), hr	ASTM C191	5	Entrained Air, %	ASTM C260	7-May	Maximum Aggregate Size, in	ASTM C33	8-Mar	<p>7. ADMIXTURES CAUSING ACCELERATED SETTING OF CONCRETE ARE NOT PERMITTED, WHERE NOT SHOWN OR SPECIFIED, ADMIXTURES MAY ONLY BE USED UPON SPECIFIC PRIOR WRITTEN APPROVAL BY THE ENGINEER OF RECORD. ADMIXTURES USED SHALL CONFORM TO ASTM C494.</p> <p>8. GROUT SHALL BE PROPORTIONED, PACKAGED, PRECISION CEMENT-BASED GROUT REQUIRING ONLY THE ADDITION OF POTABLE WATER. MEASUREMENT OF GROUT VOLUME SHALL BE AFTER ADDITIONAL OF WATER PER MANUFACTURER'S INSTRUCTIONS.</p> <p>9. THE NON-SHRINK GROUT SHALL NOT CONTAIN METALLIC AGGREGATE, EXPANSIVE CEMENT, OR GAS GENERATING ADDITIVES SUCH AS ALUMINUM POWDER. THE GROUT SHALL CONTAIN AN AIR RELEASE AGGREGATE TO GENERATE POSITIVE EXPANSION.</p>	<p>28.4.2 REFERENCES</p> <p>A. THE LATEST EDITION AND ADDENDA OF THE FOLLOWING PUBLICATIONS IN EFFECT ON THE DATE OF CONTRACT AWARD ARE PART OF THIS SPECIFICATION AND, WHERE REFERRED TO BY TITLE OR BASIC DESIGNATION ONLY, ARE APPLICABLE TO THE EXTENT INDICATED BY THE SPECIFIC REFERENCE:</p> <ol style="list-style-type: none"> AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) <ul style="list-style-type: none"> AASHTO R80 REACTIVITY OF CONCRETE AGGREGATES AND SELECTING APPROPRIATE PREVENTING DELETERIOUS EXPANSION IN NEW CONCRETE CONSTRUCTION AASHTO T259 STANDARD METHOD OF TEST FOR RESISTANCE OF CONCRETE TO CHLORIDE ION PENETRATION AASHTO T358 TEST FOR SURFACE RESISTIVITY INDICATION OF CONCRETE'S ABILITY TO RESIST CHLORIDE ION PENETRATION AMERICAN CONCRETE INSTITUTE (ACI) <ul style="list-style-type: none"> ACI 121 GUIDE FOR CONCRETE CONSTRUCTION QUALITY SYSTEMS IN CONFORMANCE WITH ISO 9001 ACI 117 SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION MATERIALS ACI 201.2R GUIDE TO DURABLE CONCRETE ACI 211.1 STANDARD PRACTICE FOR SELECTING PROPORTIONS OF NORMAL, HEAVYWEIGHT AND MASS CONCRETE ACI 214 EVALUATION OF STRENGTH TEST RESULTS OF CONCRETE ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE ACI 304 GUIDE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE ACI 304.2R PLACING CONCRETE BY PUMPING METHODS ACI 305R HOT WEATHER CONCRETING ACI 306R COLD WEATHER CONCRETING ACI 309 GUIDE FOR CONSOLIDATION OF CONCRETE ACI 311.4 GUIDE FOR CONCRETE INSPECTION ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE ACI 347R GUIDE TO FORMWORK FOR CONCRETE ACI 563 SPECIFICATION FOR REPAIR OF CONCRETE IN BUILDINGS ACI SP-86-04 ACI DETAILING MANUAL AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM) <ul style="list-style-type: none"> ASTM A123 STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS ASTM A153 STANDARD SPECIFICATION FOR ZINC COATING (HOT-DIP) ON IRON AND HARDWARE ASTM A370 STANDARD TEST METHODS AND DEFINITIONS FOR MECHANICAL TESTING OF STEEL PRODUCTS ASTM A615 STANDARD SPECIFICATION FOR DEFORMED AND PLAIN BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT ASTM A775 STANDARD SPECIFICATION FOR EPOXY-COATED REINFORCING STEEL BARS ASTM A884 STANDARD SPECIFICATION FOR EPOXY COATED STEEL WIRE AND WELDED WIRE FABRIC FOR REINFORCEMENT ASTM A1064 STANDARD SPECIFICATION FOR STEEL WELDED WIRE FABRIC, PLAIN, FOR CONCRETE REINFORCEMENT ASTM C31 STANDARD PRACTICE FOR MAKING AND CURING CONCRETE TEST SPECIMENS IN THE FIELD ASTM C33 CONCRETE AGGREGATES <ul style="list-style-type: none"> ASTM C39 COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMENS ASTM C94 READY-MIXED CONCRETE ASTM C138 TEST METHOD FOR DENSITY, YIELD AND AIR CONTENT OF CONCRETE ASTM C143 TEST METHOD FOR SLUMP OF HYDRAULIC-CEMENT CONCRETE ASTM C150 STANDARD SPECIFICATION FOR PORTLAND CEMENT ASTM C172 PRACTICE FOR SAMPLING FRESHLY MIXED CONCRETE ASTM C173 TEST METHOD FOR AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE VOLUMETRIC METHOD ASTM C192 STANDARD PRACTICE FOR MAKING AND CURING CONCRETE TEST SPECIMENS IN THE LABORATORY ASTM C227 STANDARD TEST METHOD FOR POTENTIAL ALKALI REACTIVITY OF CEMENT-AGGREGATE COMBINATIONS (MORTAR-BAR METHOD) ASTM C231 STANDARD TEST METHOD FOR AIR CONTENT OF FRESHLY MIXED CONCRETE BY THE PRESSURE METHOD ASTM C233 STANDARD TEST METHOD FOR AIR-ENTRAINING ADMIXTURES FOR CONCRETE ASTM C260 AIR-ENTRAINING ADMIXTURES FOR CONCRETE ASTM C289 STANDARD TEST METHOD FOR POTENTIAL ALKALI-SILICA REACTIVITY OF AGGREGATES (CHEMICAL METHOD) ASTM C294 DESCRIPTIVE NOMENCLATURE FOR CONSTITUENTS OF CONCRETE AGREGATES 	<p>28.4.3 SUBMITTALS</p> <p>A. COMPLY WITH PERTINENT PROVISIONS OF THE PROJECT MASTER SPECIFICATION AND SUBMITTAL REQUIREMENTS.</p> <p>B. CEMENTITIOUS GROUT (READY-MIX OR PRE-MIXED BAGGED GROUT):</p> <ol style="list-style-type: none"> PRODUCT DATA <ol style="list-style-type: none"> DESCRIPTION OF PROPOSED ADMIXTURES INCLUDING ANTI-WASHOUT AND CORROSION INHIBITORS SPACERS FOR PLACEMENT OF REINFORCING STEEL ANCHORING SYSTEM FOR SECURING REINFORCING DOWELS INTO EXISTING CONCRETE EXTENSIONS OR ENCASEMENTS QUICK CONNECTION ADAPTER FOR END OF PUMP HOSE AND PUMPING PORTS CEMENTITIOUS DRY PACK (REPAIR/PATCHING MATERIAL) CEMENTITIOUS REPAIR MORTAR MATERIAL TEST REPORTS FOR AGGREGATES FROM A QUALIFIED TESTING AGENCY, INCLUDING SERVICE RECORD DATA INDICATING ABSENCE OF DELETERIOUS EXPANSION OF CONCRETE DUE TO ALKALI AGGREGATE AND SUPPORT FROM FORMWORK. DESIGN DATA <ol style="list-style-type: none"> GROUT MIX PROPORTIONS: INDICATING STRENGTH, BRAND AND TYPE OF PORTLAND CEMENT, AMOUNTS OF ANY ADMIXTURES AND PROPORTIONS AND SIZE OF AGGREGATES PUMPING PLAN: INDICATE EQUIPMENT AND METHODS THAT WILL BE USED TO PLACE CONCRETE WITHIN FORMS, INCLUDING MAXIMUM TIME BETWEEN MIXING AND PLACEMENT OF CONCRETE. QUALITY ASSURANCE DOCUMENTS <ol style="list-style-type: none"> RESUMES OR OTHER SUPPORTING DOCUMENTS OF INSTALLATION COMPANY AND PERSONNEL EXPERIENCE PROPOSED METHOD OF SEALING AND RESEALING OF GROUT HOSE AND PUMP PORTS COLD AND/OR HOT WEATHER CONCRETING PROCEDURES NAME AND ADDRESS OF ALL TESTING COMPANIES ALL CONCRETE TESTING REPORTS ALL ON-SITE CONCRETE BATCHING REPORTS CLOSEOUT SUBMITTALS <ol style="list-style-type: none"> SUBMIT AS-BUILT DRAWINGS SHOWING LOCATIONS AND DETAILS OF ALL REPAIRS, MODIFICATIONS TO DETAILS, ETC. 	<p>28.4.4 QUALITY ASSURANCE</p> <p>A. INSTALLER QUALIFICATIONS: A QUALIFIED INSTALLATION COMPANY SHALL HAVE A MINIMUM OF THREE (3) YEARS OF EXPERIENCE WITH PLACING UNDERWATER GROUT, EPOXY GROUT AND/OR CELLULAR CONCRETE PER MANUFACTURERS REQUIREMENTS AND FIFTEEN (15) SUCCESSFULLY COMPLETED PROJECTS.</p> <p>THE INSTALLATION COMPANY SHALL PROVIDE A PROJECT MANAGER OR SUPERINTENDENT WITH A MINIMUM OF THREE (3) YEARS OF EXPERIENCE WITH PLACING UNDERWATER GROUT, EPOXY GROUT AND/OR CELLULAR CONCRETE.</p> <p>B. MANUFACTURER QUALIFICATIONS: A FIRM EXPERIENCED IN MANUFACTURING READY-MIXED CONCRETE PRODUCTS AND THAT COMPLIES WITH ASTM C 94/C 94M REQUIREMENTS FOR PRODUCTION FACILITIES AND EQUIPMENT.</p> <p>C. TESTING AGENCY QUALIFICATIONS: AN INDEPENDENT AGENCY, ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, QUALIFIED ACCORDING TO ASTM C 1077 AND ASTM E 329 FOR TESTING INDICATED.</p> <ol style="list-style-type: none"> PERSONNEL CONDUCTING FIELD TESTS SHALL BE QUALIFIED AS ACI CONCRETE FIELD-TESTING TECHNICIAN, GRADE 1, ACCORDING TO ACI CP-1 OR AN EQUIVALENT CERTIFICATION PROGRAM. PERSONNEL PERFORMING LABORATORY TESTS SHALL BE ACI-CERTIFIED CONCRETE STRENGTH TESTING TECHNICIAN AND CONCRETE LABORATORY TESTING TECHNICIAN, GRADE 1. TESTING AGENCY LABORATORY SUPERVISOR SHALL BE AN ACI-CERTIFIED CONCRETE LABORATORY TESTING TECHNICIAN, GRADE II. 	<p>28.4.5 QUALITY CONTROL TESTING DURING CONSTRUCTION</p> <p>A. UNACCEPTABLE GROUT PLACEMENT</p> <ol style="list-style-type: none"> THE ENGINEER OF RECORD (EOR) RESERVES THE RIGHT TO REJECT, AT CONTRACTOR'S EXPENSE, ANY PORTION OF THE WORK WHICH IS KNOWN TO CONTAIN DEFICIENT GROUT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO EVALUATE THE ACCEPTABILITY FOR PLACEMENT OF ALL GROUT CONTEMPLATED FOR USE ON THE PROJECT. FIELD TESTING INFORMATION SHALL BE PROMPTLY MADE AVAILABLE TO THE EOR. IN NO WAY SHALL THE DELIVERY OF OR THE FIELD INTERPRETATION OF THIS INFORMATION BY THE EOR BE CONSTRUED SO AS TO RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF DETERMINING THE ACCEPTABILITY OF THE GROUT FOR PLACEMENT. <p>28.4.6 DELIVERY, STORAGE, AND HANDLING</p> <p>A. PREMIXED AND BAGGED GROUT: DELIVER, STORE, AND HANDLE PREMIXED AND BAGGED GROUT TO PREVENT BREAKAGE, CONTACT WITH MOISTURE AND DAMAGE.</p> <p>B. CONTAINERS, BAGS, TOTES, ETC. OF COMPONENTS OF ANY SYSTEM SHALL BE STORED PER PRODUCT DATA SHEET REQUIREMENTS AND PROTECTED FROM EXPOSURE TO ENVIRONMENTAL CONDITIONS, DAMAGE AND SPOILAGE.</p> <p>28.4.7 FIELD CONDITIONS</p> <p>A. COLD-WEATHER PLACEMENT: COMPLY WITH ACI 306.1 AND AS FOLLOWS. PROTECT GROUT WORK FROM PHYSICAL DAMAGE OR REDUCED STRENGTH THAT COULD BE CAUSED BY FROST, FREEZING ACTIONS, OR LOW TEMPERATURES.</p> <ol style="list-style-type: none"> WHEN AVERAGE HIGH AND LOW TEMPERATURE IS EXPECTED TO FALL BELOW 40 DEG F (4.4 DEG C) FOR THREE SUCCESSIVE DAYS, MAINTAIN DELIVERED CONCRETE MIXTURE TEMPERATURE WITHIN THE TEMPERATURE RANGE REQUIRED BY ACI 301. DO NOT USE FROZEN MATERIALS OR MATERIALS CONTAINING ICE OR SNOW. ALL FROST AND ICE SHALL BE REMOVED FROM FORMWORK OR ANY AREA THAT COULD COME INTO CONTACT WITH FRESH GROUT DURING PLACEMENT. DO NOT USE CALCIUM CHLORIDE, SALT, OR OTHER MATERIALS CONTAINING ANTIFREEZE AGENTS OR CHEMICAL ACCELERATORS UNLESS OTHERWISE SPECIFIED AND APPROVED IN MIXTURE DESIGNS. <p>B. HOT-WEATHER PLACEMENT: COMPLY WITH ACI 301 AND ACI 305.1, AND AS FOLLOWS:</p> <ol style="list-style-type: none"> MAINTAIN CONCRETE TEMPERATURE BELOW 90 DEG F (32 DEG C) AT TIME OF PLACEMENT. CHILLED MIXING WATER OR CHOPPED ICE MAY BE USED TO CONTROL TEMPERATURE, PROVIDED WATER EQUIVALENT OF ICE IS CALCULATED TO TOTAL AMOUNT OF MIXING WATER. USING LIQUID NITROGEN TO COOL CONCRETE IS CONTRACTOR'S OPTION. <p>28.4.8 CEMENTITIOUS GROUT - UNDERWATER, FLOWABLE, NON-SHRINK</p> <p>A. READY MIX GROUT OR PRE-SACKED (PREMIXED) GROUT</p> <ol style="list-style-type: none"> ASTM C150, TYPE I OR TYPE II PORTLAND CEMENT WATER SHALL COMPLY WITH THE REQUIREMENTS OF ASTM C94 AND THE CHLORIDE AND SULFATE LIMITS IN ACCORDANCE WITH ASTM D512 AND ASTM D516. MIXING WATER SHALL NOT CONTAIN MORE THAN 500 PARTS PER MILLION OF CHLORIDES AS CL AND NOT MORE THAN 100 PARTS PER MILLION OF SULFATES AS SO4. WATER SHALL BE FREE FROM INJURIOUS AMOUNTS OF OILS, ACIDS, ALKALIS, SALTS, AND ORGANIC MATERIALS. WHERE WATER FROM REPROCESSED CONCRETE IS PROPOSED FOR USE IN THE WORK, SUBMIT RESULTS OF TESTS TO VERIFY THAT THE TREATMENT HAS NEGATED ADVERSE EFFECTS OF DELETERIOUS MATERIALS. COARSE AGGREGATE SHALL BE ASTM C33 #8 (MAX 3/8 IN. AGGREGATE). FINE AGGREGATE SHALL BE IN COMPLIANCE WITH ASTM C33. PROVIDE AGGREGATES FOR EXPOSED CONCRETE FROM ONE SOURCE, ASTM C227. DO NOT PROVIDE AGGREGATES THAT REACT DELETERIOUSLY WITH ALKALIS IN CEMENT. REFER TO APPENDIX, PARAGRAPH ENTITLED "TEST METHOD C227" OF ASTM C33 FOR EXPANSION LIMITS. PROVIDE AGGREGATE CONTAINING NO DELETERIOUS MATERIAL PROPERTIES AS IDENTIFIED BY ASTM C295. THE GROUT SHALL MEET THE US ARMY CORPS OF ENGINEERS CRD-C621 (ASTM-C1107) SPECIFICATIONS FOR PLASTIC/FLOWABLE CONDITIONS. GROUT CHARACTERISTICS <ol style="list-style-type: none"> "WASH-OUT" RESISTANT THIXOTROPIC CONSISTENCY FOR DEPENDABLE UNDERWATER REPAIRS (DISPLACES WATER) FREE-FLOWING AND/OR PUMPABLE CONSISTENCY FOR EACH APPLICATION HIGH EARLY AND ULTIMATE STRENGTH FOR FAST REPAIR AND TURN AROUND WITHOUT CHLORIDES POSITIVE EXPANSION FOR MAXIMUM DURABILITY AND ADHESION 	<p>PROJECT: ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION</p> <p>CITY OF WESTON, FLORIDA</p> <p>CLIENT: CITY OF WESTON 17200 Royal Palm Blvd Weston, FL 33326</p> <p>PROJECT MANAGER: EAC CONSULTING, INC. 5100 NW 33rd Avenue - Suite 243 Fort Lauderdale, FL 33309</p> <p>ENGINEER: CUMMINS CEDERBERG COASTAL & MARINE ENGINEERING 7550 RED ROAD, SUITE 217 SOUTH MIAMI, FLORIDA 33143 TEL: +1 305 741-6155 FAX: +1 305-974-1969 WWW.CUMMINSCEDERBERG.COM COA # 29062</p> <p>SEAL: GEOFFREY M. PARKER LICENSE No. 74043 STATE OF FLORIDA PROFESSIONAL ENGINEER</p> <table border="1"> <tr> <td>CC PROJECT NO:</td> <td>95600</td> </tr> <tr> <td>DRAWN</td> <td>JDR</td> </tr> <tr> <td>CHECKED</td> <td>GP</td> </tr> <tr> <td>SCALE</td> <td>AS SHOWN</td> </tr> </table> <p>SHEET TITLE: GENERAL NOTES</p> <p>SHEET 3 OF 14</p> <p>CM-1.2</p>	CC PROJECT NO:	95600	DRAWN	JDR	CHECKED	GP	SCALE	AS SHOWN
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E. TESTING AGENCY: ENGAGE A QUALIFIED TESTING AND INSPECTING AGENCY TO PERFORM TESTS AND INSPECTIONS AND TO SUBMIT REPORTS.

F. INSPECTIONS:

1. VERIFICATION OF USE OF REQUIRED MIX DESIGN.
2. CONCRETE PLACEMENT, INCLUDING CONVEYING AND DEPOSITING.
3. CURING PROCEDURES AND MAINTENANCE OF CURING TEMPERATURE.

G. TESTING:

1. CEMENTITIOUS GROUT - FOR EACH MIX DESIGN AND/OR EACH MIX BATCH PROVIDED, ACCORDING TO ASTM C39.
 - A. TESTING FREQUENCY: OBTAIN THREE OR MORE COMPOSITE SAMPLES FOR EACH DAY'S POUR OF EACH GROUT MIXTURE. SAMPLES PER ASTM C39 AND SHALL BE FOUR INCHES BY EIGHT INCH (4X8) CYLINDERS.
 - B. GROUT TEMPERATURE: ASTM C1064; ONE TEST HOURLY WHEN AIR TEMPERATURE IS 40 DEG F (4.4 DEG C) AND BELOW OR 80 DEG F (27 DEG C) AND ABOVE, AND ONE TEST FOR EACH COMPOSITE SAMPLE.
2. EPOXY GROUT - FOR EACH MIX DESIGN AND/OR EACH MIX BATCH PROVIDED, ACCORDING TO ASTM C579.
 - A. TESTING FREQUENCY: OBTAIN THREE OR MORE COMPOSITE SAMPLES FOR EACH DAY'S POUR OF EACH EPOXY GROUT MIXTURE. SAMPLES PER ASTM C579 AND SHALL BE TWO INCH BY TWO INCH (2X2) CUBES.
 - B. GROUT TEMPERATURE: ASTM C1064; ONE TEST HOURLY WHEN AIR TEMPERATURE IS 40 DEG F (4.4 DEG C) AND BELOW OR 80 DEG F (27 DEG C) AND ABOVE, AND ONE TEST FOR EACH COMPOSITE SAMPLE.

H. STRENGTH OF EACH CONCRETE MIXTURE WILL BE SATISFACTORY IF THE AVERAGE OF ANY THREE-CONSECUTIVE COMPRESSIVE-STRENGTH TESTS EQUALS OR EXCEEDS THE SPECIFIED COMPRESSIVE STRENGTH AND NO COMPRESSIVE-STRENGTH TEST VALUE FALLS BELOW THE SPECIFIED COMPRESSIVE STRENGTH BY MORE THAN 500 PSI (3.4 MPA).

I. TEST RESULTS SHALL BE REPORTED IN WRITING TO THE ENGINEER OF RECORD, CONCRETE MANUFACTURER, AND CONTRACTOR WITHIN 48 HOURS OF TESTING. REPORTS OF COMPRESSIVE-STRENGTH TESTS SHALL CONTAIN PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONCRETE TESTING AND INSPECTING AGENCY, LOCATION OF CONCRETE BATCH IN WORK, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIXTURE PROPORTIONS AND MATERIALS, COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK FOR BOTH 7- AND 28-DAY TESTS.

J. CORRECT DEFICIENCIES IN THE WORK THAT TEST REPORTS AND INSPECTIONS INDICATE DO NOT COMPLY WITH THE CONTRACT DOCUMENTS.

29. EXECUTION

29.1. CONTRACTOR SHALL ACCESS SITE VIA GATED ENTRANCE AT ORANGE ROAD AND WESTON ROAD FOR STATION #1 AND ORANGE ROAD AND BONAVENTURE BLVD FOR STATION #2 UNLESS OTHERWISE APPROVED BY CITY AND ENGINEER

PROJECT:
**ITDD PUMP STATIONS
1 & 2 REPAIRS AND
REHABILITATION**

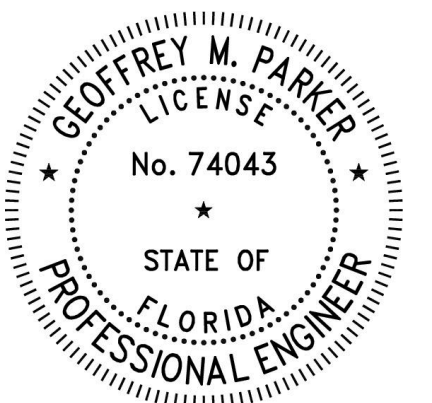
CITY OF WESTON, FLORIDA

CLIENT:
CITY OF WESTON
17200 Royal Palm Blvd
Weston, FL 33326

PROJECT MANAGER:
EAC CONSULTING, INC.
5100 NW 33rd Avenue - Suite 243
Fort Lauderdale, FL 33309

ENGINEER:
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COASTAL & MARINE ENGINEERING
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SOUTH MIAMI, FLORIDA 33143
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WWW.CUMMINSCEDERBERG.COM
COA # 29062

SEAL:

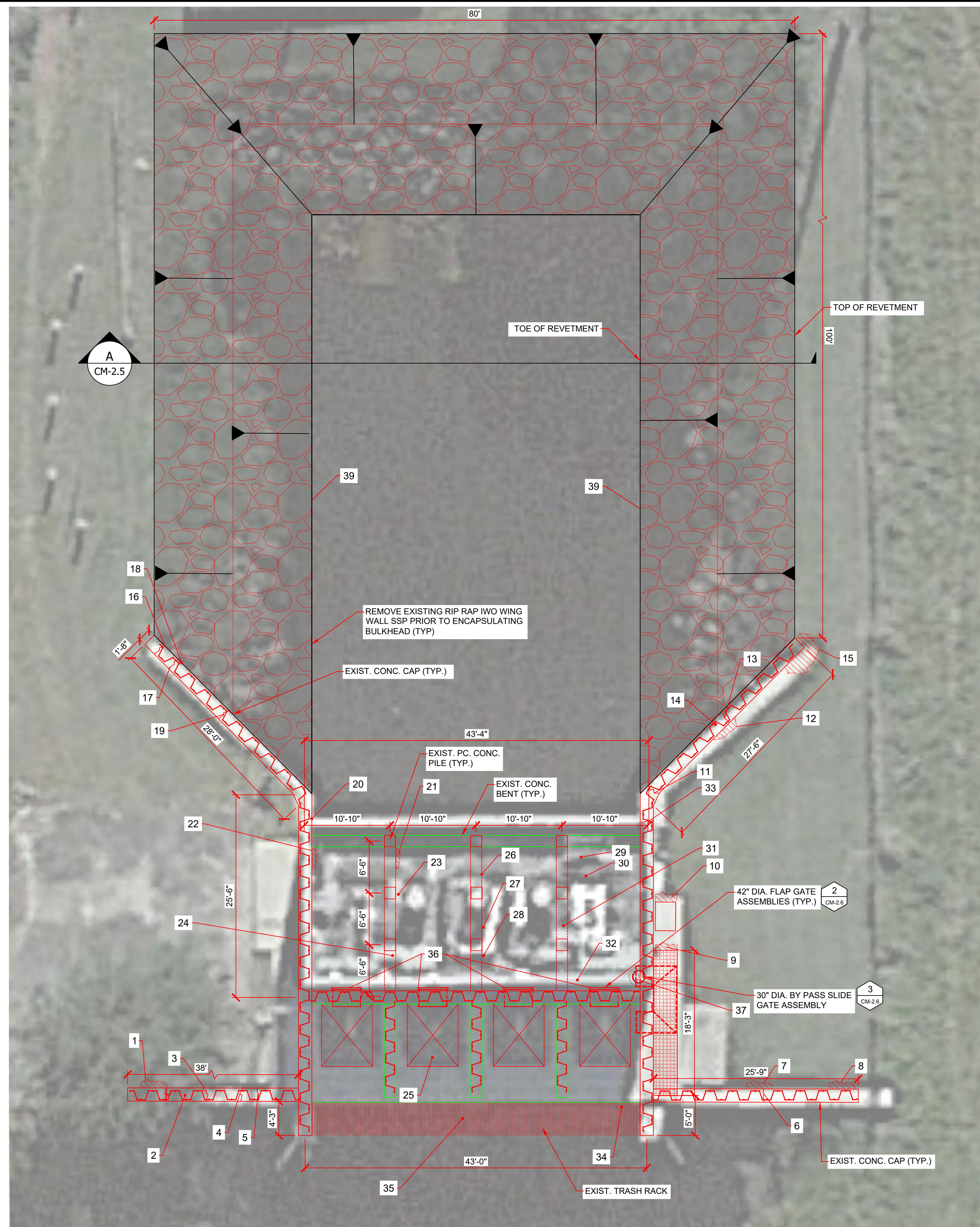


ISSUE	DATE	SUBMISSION / REVISION

CC PROJECT NO:	95600
DRAWN	JDR
CHECKED	GP
SCALE	AS SHOWN

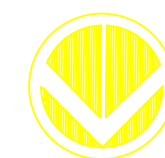
SHEET TITLE
GENERAL NOTES

SHEET 4 OF 14
CM-1.3



PUMP STATION #1 EXISTING CONDITIONS PLAN

SCALE: 22X34 1" = 8"
11X17 1" = 16"



PROPOSED REPAIR QUANTITY TABLE			
#	DAMAGE	PROPOSED REPAIR	QUANTITY
1	SOIL LOSS / SUBSIDENCE 16" Ø X 12" DEEP	GROUT INJECTION	0.18 CY
2	8" Ø SPALL TOP FACE OF CONC. CAP	CONC. SPALL REPAIR	0.34 SF
3	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 FT
4	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 FT
5	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 FT
6	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 FT
7	SOIL LOSS / SUBSIDENCE 20" Ø X 20" DEEP	GROUT INJECTION	0.30 CY
8	SOIL LOSS / SUBSIDENCE 20" Ø X 20" DEEP	GROUT INJECTION	0.30 CY
9	SOIL LOSS / SUBSIDENCE 17" Ø X 4" DEEP	GROUT INJECTION	0.10 CY
10	SOIL LOSS / SUBSIDENCE 16" Ø X 12" DEEP	GROUT INJECTION	0.10 CY
11	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 FT
12	SOIL LOSS / SUBSIDENCE 36" Ø X 7" DEEP	GROUT INJECTION	0.33 CY
13	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 FT
14	6' LONG X 16" WIDE AREA SPALL VERTICAL FACE OF CONC. CAP	CONC. SPALL REPAIR	1.5 SF
15	SOIL LOSS / SUBSIDENCE 7' Ø X 17" DEEP	GROUT INJECTION	0.10 CY
16	HAIRLINE CRACK VERTICAL FACE OF CONC. CAP	EPOXY INJECTION	1.3 FT
17	HAIRLINE CRACK VERTICAL FACE OF CONC. CAP	EPOXY INJECTION	1.3 FT
18	4" Ø SPALL TOP FACE OF CONC. CAP	CONC. SPALL REPAIR	0.20 SF
19	2mm WIDE CRACK VERTICAL TOP OF FACE CONC. CAP	EPOXY INJECTION	3.0 FT
20	12" LONG X 6" WIDE HONEYCOMB WITH CORRODED REBAR VERTICAL FACE CONC. CAP	CONC. SPALL REPAIR	0.5 SF
21	12" LONG X 3" WIDE SPALL VERTICAL BOTTOM OF FACE CONC. BENT	CONC. SPALL REPAIR	0.5 SF
22	5" LONG X 3" WIDE SPALL VERTICAL BOTTOM OF FACE CONC. CAP	CONC. SPALL REPAIR	0.20 SF
23	20" LONG X 3" HONEYCOMB VERTICAL FACE CONC. BENT	CONC. SPALL REPAIR	0.83 SF
24	8'-2" LONG X 24" WIDE SPALL WITH CORRODED REBAR BOTTOM/ VERTICAL FACES CONC. BENT	CONC. SPALL REPAIR	16.4 SF
25	6" LONG X 2" WIDE AREA SPALL BOTTOM FACE CONC. BENT	CONC. SPALL REPAIR	0.25 SF
26	9" LONG X 3" WIDE AREA SPALL BOTTOM FACE OF CONC. BENT	CONC. SPALL REPAIR	0.25 SF
27	9" LONG X 3" WIDE AREA SPALL BOTTOM FACE OF CONC. BENT	CONC. SPALL REPAIR	0.25 SF
28	(2) 3" Ø SPALLS BOTTOM FACE OF CONC. BENT	CONC. SPALL REPAIR	0.40 SF
29	12" Ø SPALL BOTT FACE CONC. SLAP @ PIPE PENETRATIONS	CLEAN & EPOXY PIPE / CONC. SPALL REPAIR	0.79 SF
30	8" Ø SPALL BOTTOM FACE OF CONC. CAP	CONC. SPALL REPAIR	0.35 SF
31	10' LONG X 4" WIDE AREA SPALL BOTTOM FACE OF CONC. BENT	CONC. SPALL REPAIR	5.0 SF
32	18" Ø SPALL @ ABANDON PIPE PENETRATION FACE CONC. SLAB	CONC. SPALL REPAIR	1.8 SF
33	HAIRLINE CRACK BOTTOM FACE OF CONC. CAP	EPOXY INJECTION	1.0 SF
34	4' LONG X 6" WIDE AREA OF CORRODED GALV. STEEL TRASH RACK BEAM (TOP BEAM)	REPAIR TRASH RACK ASSEMBLY	(1) LS
35	MISSING / ROTTED TRASH RACK TIMBERS	REPLACE TRASH RACK BLADES W/ COMPOSITE OR POLYMER MATERIAL	(1) LS
36	SEVERELY CORRODED 42" DIA. FLAP GATE ASSEMBLIES	REPLACE FLAP GATE ASSEMBLIES	(4) LS
37	SEVERELY CORRODED 30" DIA. SLIDE GATE ASSEMBLY & STEM	REPLACE SLIDE GATE ASSEMBLY & STEM	(1) LS
38	SEVERELY CORRODED SSP BULKHEADS	ENCAPSULATE SSP BULKHEADS	350 LF
39	REPLACE BASIN PERIMETER RIP RAP REVETMENT	REPLACE RIP RAP	280 LF

NOTE:
CONCRETE REPAIRS DETAILED ON THIS SHEET SHALL BE PERFORMED PER SHEET CM-2.4.

PROJECT:
ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION

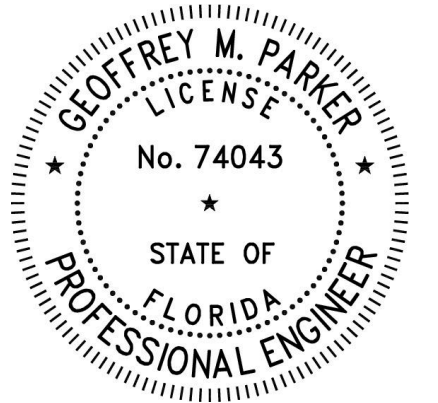
CITY OF WESTON, FLORIDA

CLIENT:
CITY OF WESTON
17200 Royal Palm Blvd
Weston, FL 33326

PROJECT MANAGER:
EAC CONSULTING, INC.
5100 NW 33rd Avenue - Suite 243
Fort Lauderdale, FL 33309

ENGINEER:
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COASTAL & MARINE ENGINEERING
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TEL: +1 305 741-6155 FAX: +1 305-974-1969
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COA # 29062

SEAL:



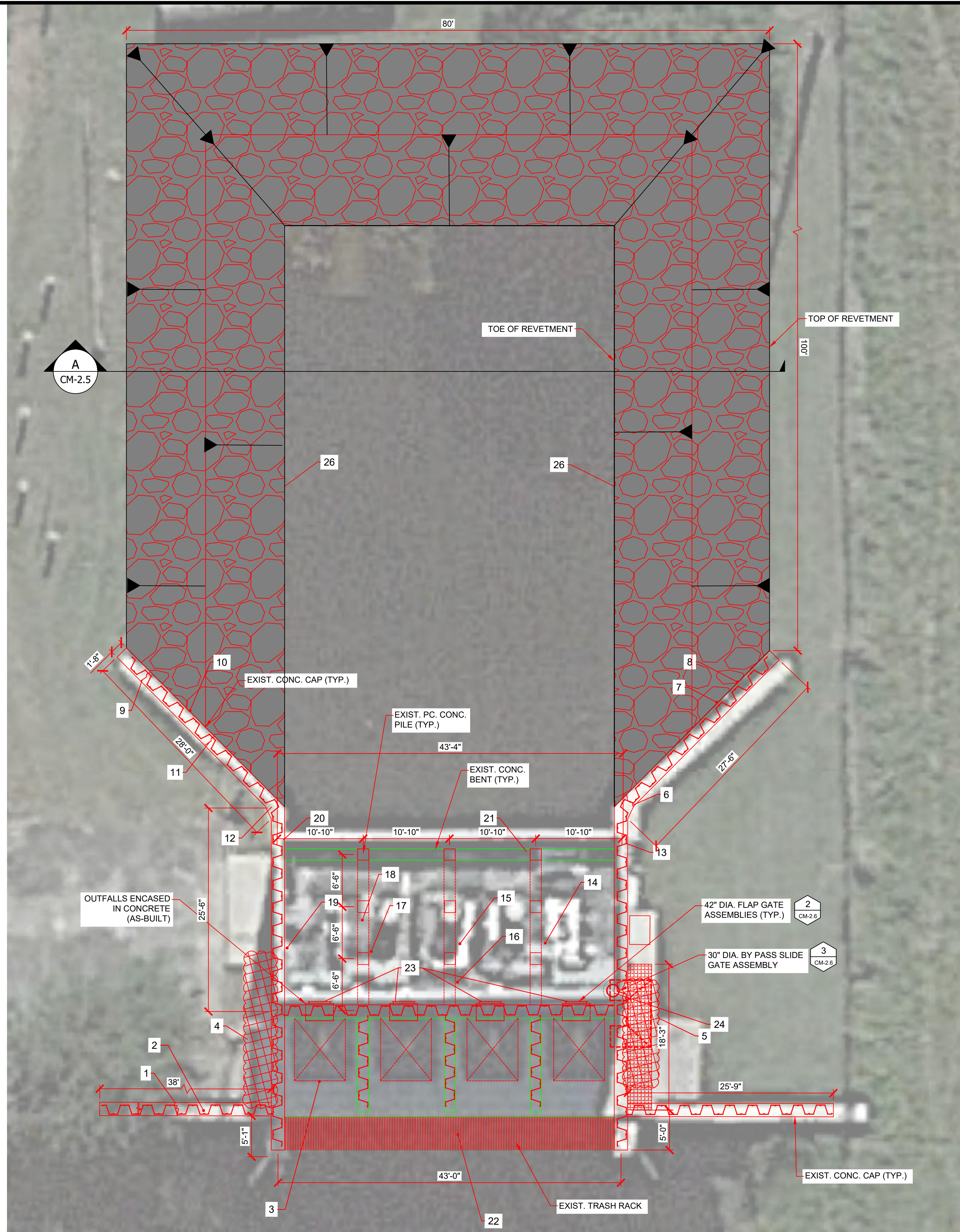
DATE	ISSUE	SUBMISSION / REVISION

CC PROJECT NO: 95600
DRAWN: JDR
CHECKED: GP
SCALE: AS SHOWN

SHEET TITLE
EXISTING CONDITIONS AND REPAIR KEY: PUMP STATION #1

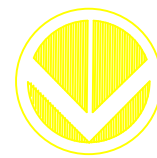
SHEET 5 OF 14

CM-1.4



PUMP STATION #2 EXISTING CONDITIONS PLAN

SCALE: 22X34 1' : 5"
11X17 1' : 10"



PROPOSED REPAIR QUANTITY TABLE			
#	DAMAGE	PROPOSED REPAIR	QUANTITY
1	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 FT
2	3" Ø SPALL TOP FACE/VERTICAL OF CONC. CAP	CONC. SPALL REPAIR	0.20 SF
3	4" Ø SPALL TOP FACE/VERTICAL OF CONC. CAP	CONC. SPALL REPAIR	0.20 SF
4	18'-3" X 5' UNDERMINED CONC. SLAB	GROUT INJECTION	4.0 CY
5	18'-3" X 5' UNDERMINED CONC. SLAB	GROUT INJECTION	4.0 CY
6	HAIRLINE CRACK TOP & VERTICAL FACE OF CONC. CAP	EPOXY INJECTION	3.3 FT
7	4" Ø SPALL BOTTOM & VERTICAL OF CONC. CAP	CONC. SPALL REPAIR	0.20 SF
8	4" Ø SPALL BOTTOM & VERTICAL OF CONC. CAP	CONC. SPALL REPAIR	0.20 SF
9	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 SF
10	4" Ø SPALL BOTTOM & VERTICAL OF CONC. CAP	CONC. SPALL REPAIR	0.30 SF
11	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 SF
12	HAIRLINE CRACK TOP FACE OF CONC. CAP	EPOXY INJECTION	1.7 SF
13	2mm WIDE CRACK BOTTOM FACE CONC. CAP	EPOXY INJECTION	1.5 SF
14	SPALLS @ (4) ABANDONED PENETRATORS THRU SLAB 10" Ø	CONC. SPALL REPAIR	0.8 SF
15	SPALLS @ (4) ABANDONED PENETRATORS THRU SLAB 10" Ø	CONC. SPALL REPAIR	0.8 SF
16	24" Ø SPALL BOTTOM FACE CONC. CAP	CONC. SPALL REPAIR	3.2 SF
17	SPALLS @ (4) ABANDONED PENETRATORS THRU SLAB 10" Ø	CONC. SPALL REPAIR	0.8 SF
18	(6) 3" Ø SPALLS BOTTOM FACE OF CONC. BENT	CONC. SPALL REPAIR	7.1 SF
19	SPALLS @ (4) ABANDONED PENETRATORS THRU SLAB 10" Ø	CONC. SPALL REPAIR	0.8 SF
20	2mm WIDE CRACK BOTTOM FACE CONC. CAP	EPOXY INJECTION	1.7 SF
21	CRACK VERT. FACE CONC. BENT	EPOXY INJECTION	1.7 SF
22	MISSING / ROTTED TRASH RACK TIMBERS	REPLACE TRASH RACK BLADES W/ COMPOSITE OR POLYMER MATERIAL	(1) LS
23	SEVERELY CORRODED 42" DIA. FLAP GATE ASSEMBLIES	REPLACE FLAP GATE ASSEMBLIES	(4) LS
24	SEVERELY CORRODED 30" DIA. SLIDE GATE ASSEMBLY & STEM	REPLACE SLIDE GATE ASSEMBLY & STEM	(1) LS
25	SEVERELY CORRODED SSP BULKHEADS	ENCAPSULATE SSP BULKHEADS	230 LF
26	REPLACE BASIN PERIMETER RIP RAP REVETMENT	REPLACE RIP RAP	280 LF

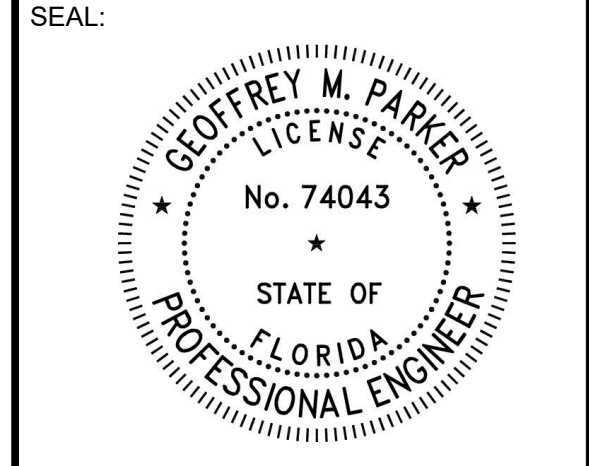
NOTE:
CONCRETE REPAIRS DETAILED ON THIS SHEET SHALL BE PERFORMED PER SHEET CM-2.4.

PROJECT:
ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION
CITY OF WESTON, FLORIDA

CLIENT:
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17200 Royal Palm Blvd
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PROJECT MANAGER:
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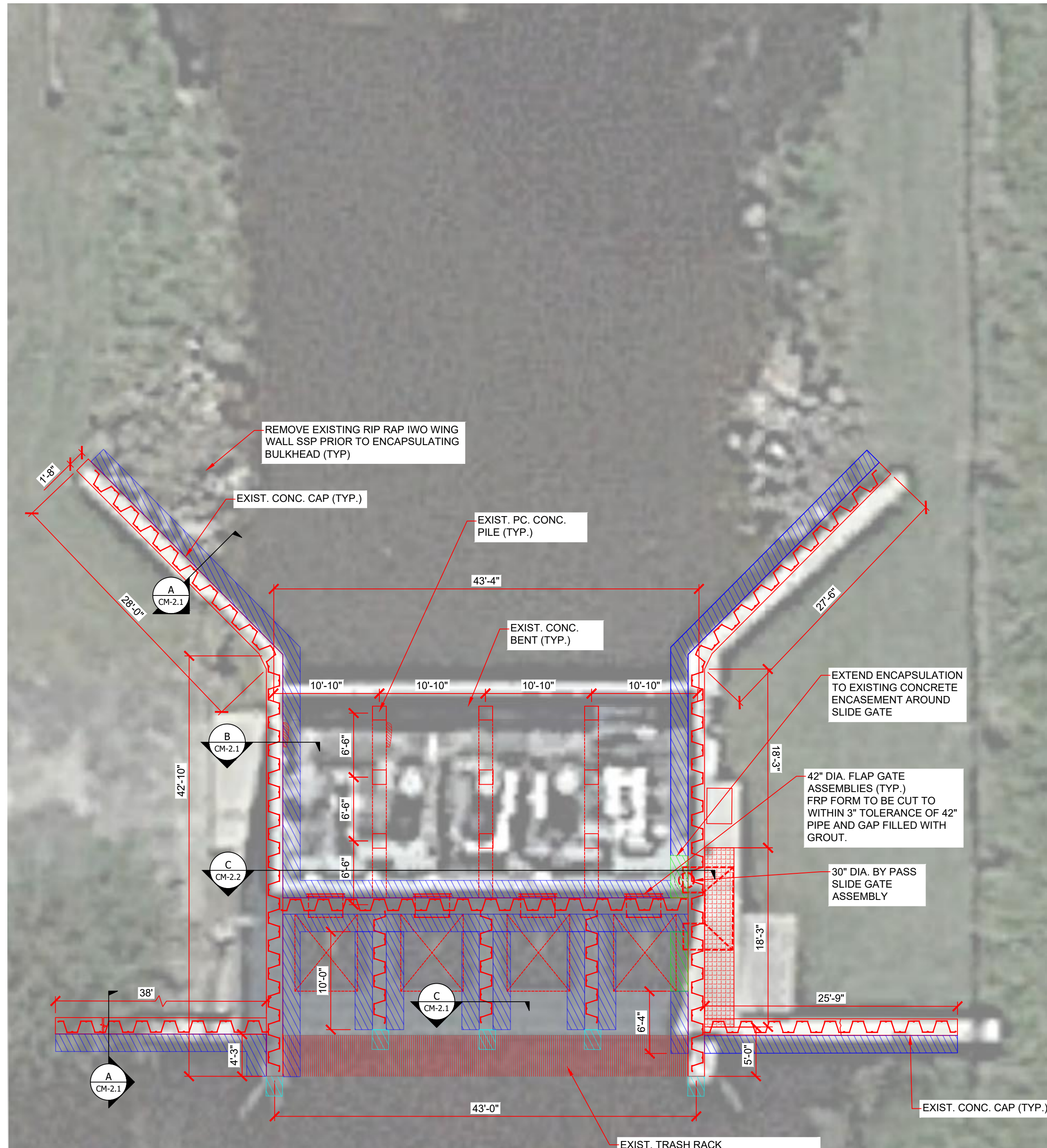
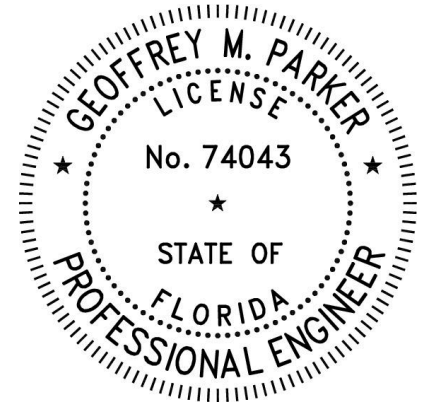


NO.	DATE	ISSUE	SUBMISSION / REVISION

CC PROJECT NO: 95600
DRAWN: JDR
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SCALE: AS SHOWN
SHEET TITLE:
EXISTING CONDITIONS AND REPAIR KEY: PUMP STATION #2

SHEET 6 OF 14
CM-1.5

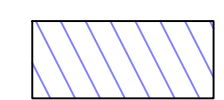
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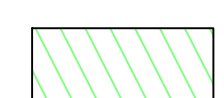
PUMP STATION #1 BULKHEAD ENCAPSULATION PLAN

SCALE: 22X34 1" : 5"
11X17 1" : 10"

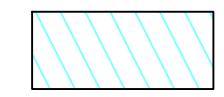
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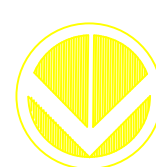
ENCAPSULATE EXPOSED LENGTH OF STEEL SHEET PILES APPROX. 350' LF. CONTRACTOR SHALL VERIFY LENGTH AND DEPTH TO BE ENCAPSULATED



ENCAPSULATE EXPOSED STEEL SHEET PILES BENEATH CONCRETE ENCASED OUTFALL PIPES APPROX. 46 LF. CONTRACTOR SHALL VERIFY LENGTH AND DEPTH TO BE ENCAPSULATED.



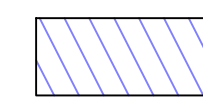
INSTALL FRP CLOSURE ANGLE BY MANUFACTURER. SET IN PLACE WITH EPOXY, FASTEN TO THE SPIRE PANELS, AND SEAL JOINTS WITH EPOXY PER MANUFACTURER RECOMMENDATIONS.



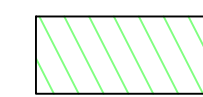
PUMP STATION #2 BULKHEAD ENCAPSULATION PLAN

SCALE: 22X34 1" : 5"
11X17 1" : 10"

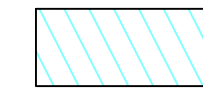
LEGEND:



ENCAPSULATE EXPOSED LENGTH OF STEEL SHEET PILES APPROX. 230 LF. CONTRACTOR SHALL VERIFY LENGTH AND DEPTH TO BE ENCAPSULATED



ENCAPSULATE EXPOSED STEEL SHEET PILES BENEATH CONCRETE ENCASED OUTFALL PIPES APPROX. 46 LF. CONTRACTOR SHALL VERIFY LENGTH AND DEPTH TO BE ENCAPSULATED.



INSTALL FRP CLOSURE ANGLE BY MANUFACTURER. SET IN PLACE WITH EPOXY, FASTEN TO THE SPIRE PANELS, AND SEAL JOINTS WITH EPOXY PER MANUFACTURER RECOMMENDATIONS.



NO.	DATE	ISSUE	SUBMISSION / REVISION

CC PROJECT NO:	95600
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SCALE	AS SHOWN

SHEET TITLE	
PUMP STATIONS #1 & #2 BULKHEAD ENCAPSULATION PLANS	

PROJECT:
**ITDD PUMP STATIONS
 1 & 2 REPAIRS AND
 REHABILITATION**

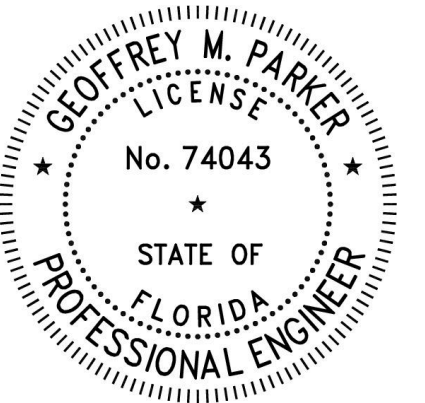
CITY OF WESTON, FLORIDA

CLIENT:
 CITY OF WESTON
 17200 Royal Palm Blvd
 Weston, FL 33326

PROJECT MANAGER:
 EAC CONSULTING, INC.
 5100 NW 33rd Avenue - Suite 243
 Fort Lauderdale, FL 33309

ENGINEER:
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 WWW.CUMMINSCEDERBERG.COM
 COA # 29062

SEAL:



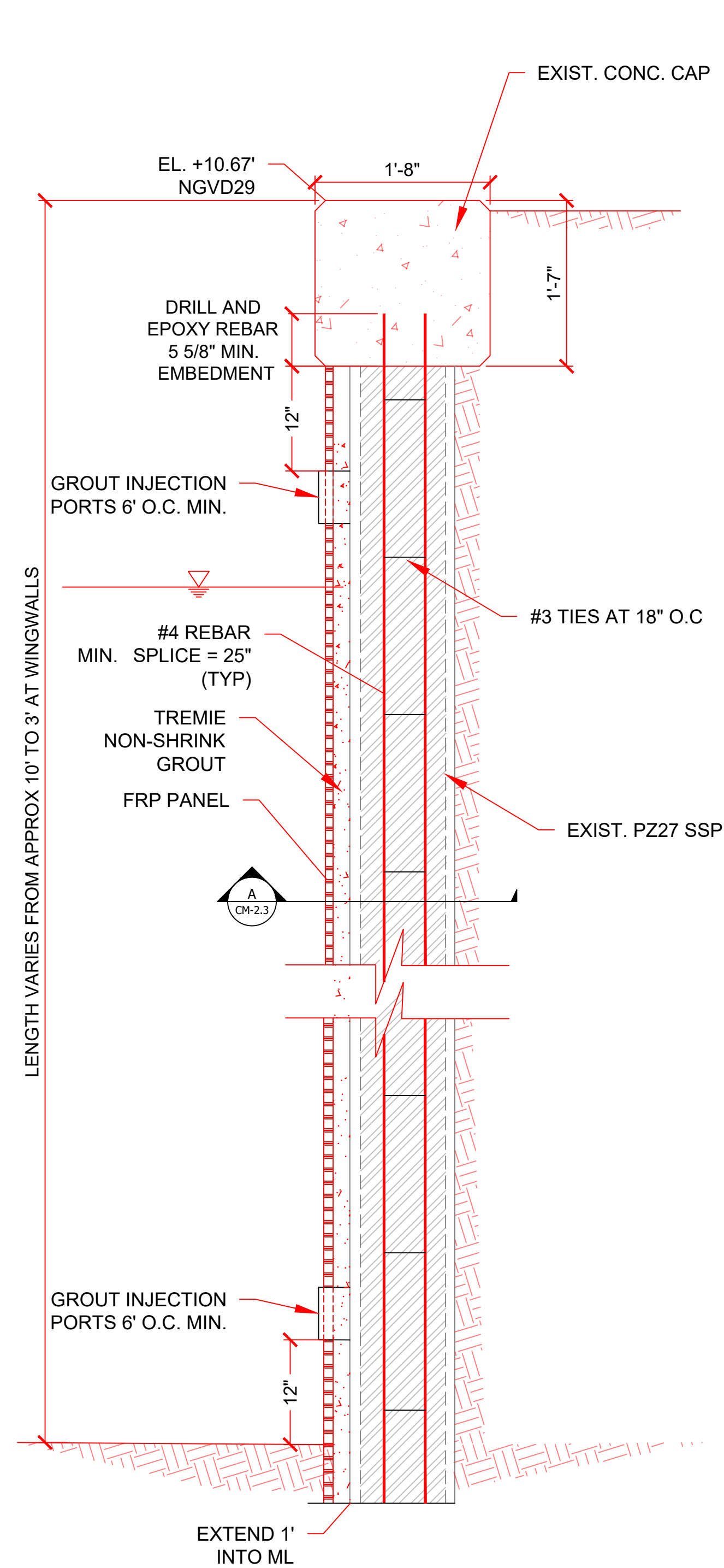
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CC PROJECT NO:	95600
DRAWN	JDR
CHECKED	GP
SCALE	AS SHOWN

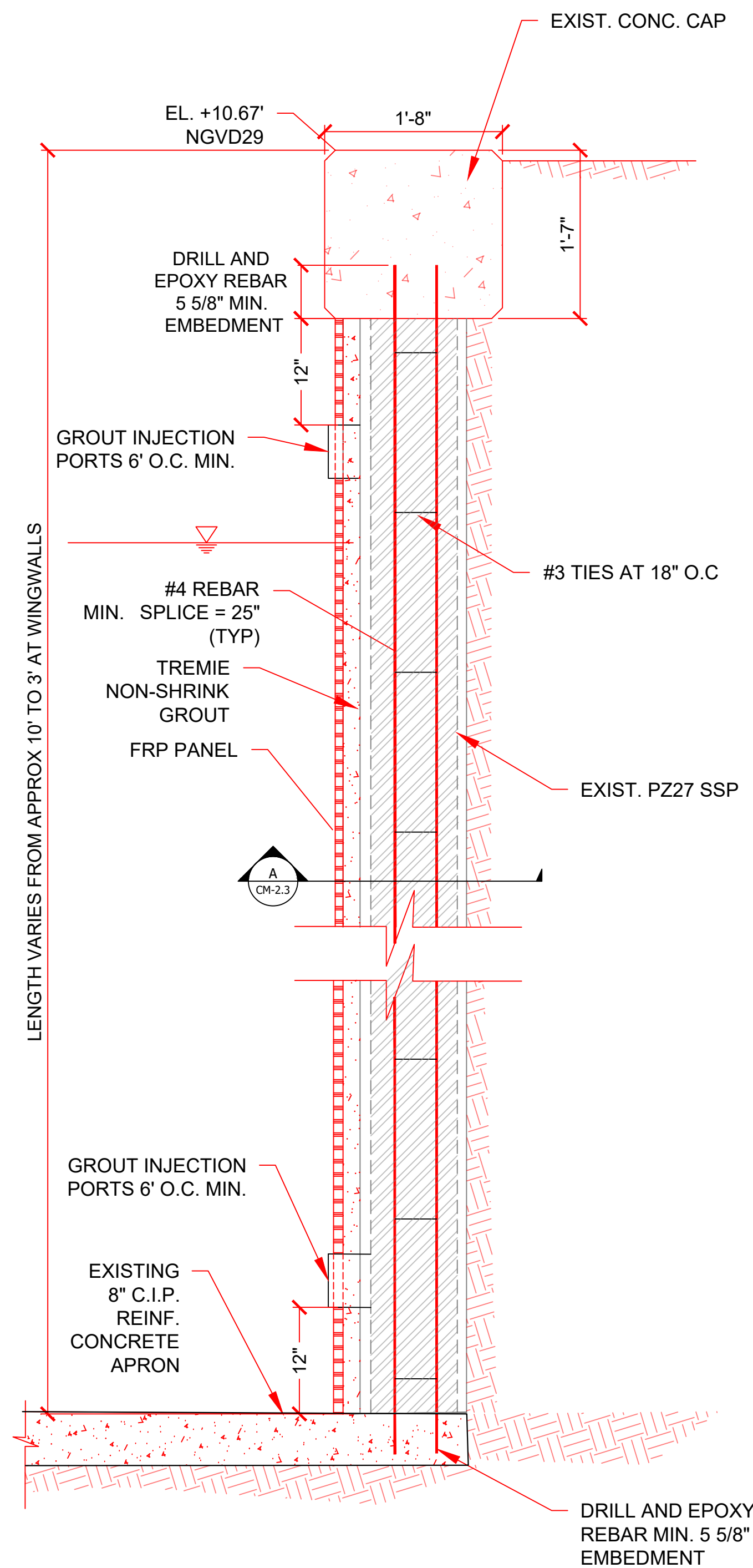
SHEET TITLE
**BULKHEAD
 ENCAPSULATION
 SECTIONS & DETAILS**

SHEET 8 OF 14

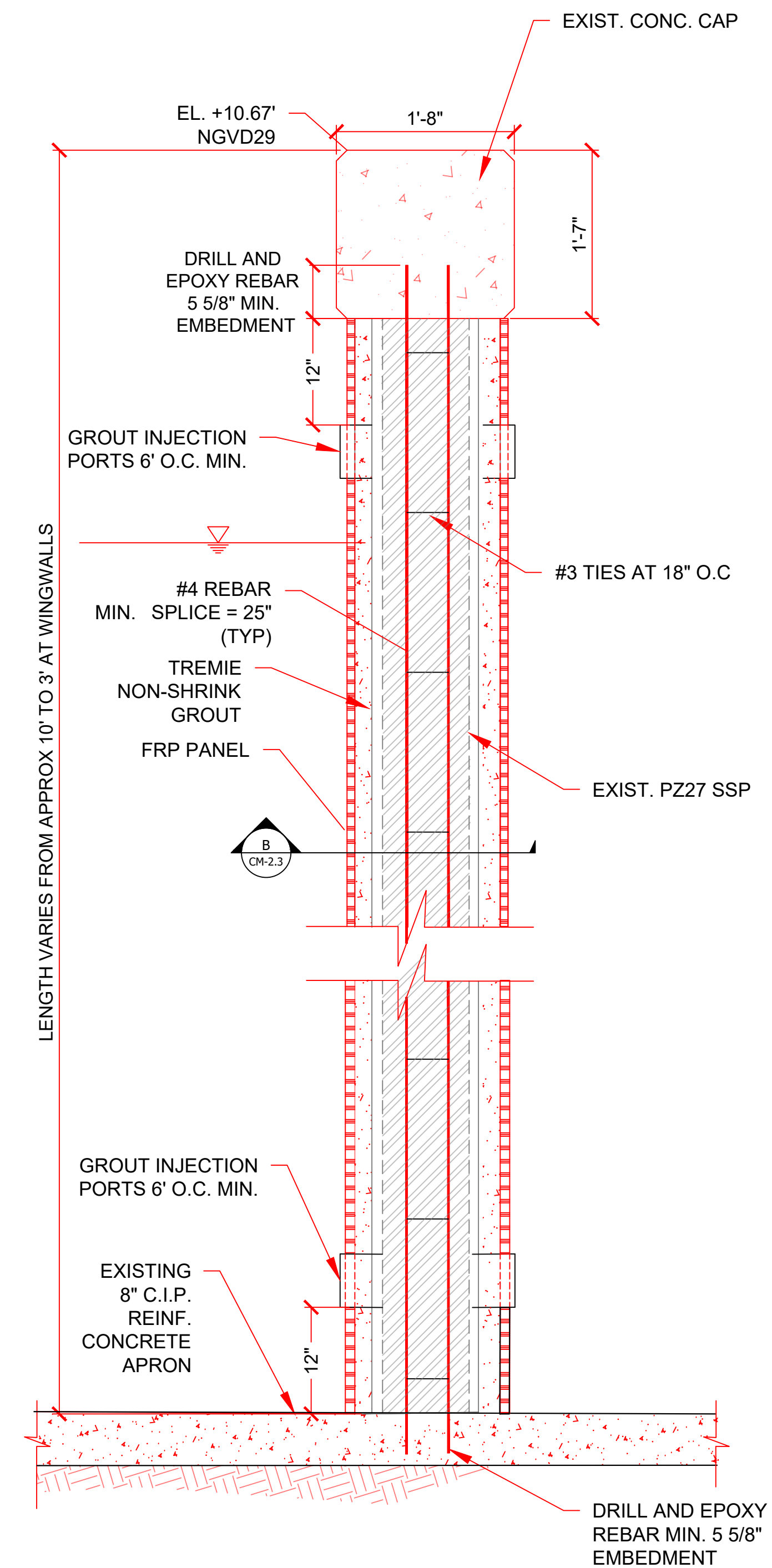
CM-2.1



**STEEL SHEET PILE WING WALL BULKHEAD
 ENCAPSULATION SECTION DETAIL** A
CM-2.0
 SCALE: 22X34 1"= 1'
 11X17 1"= 2'



**STEEL SHEET PILE DISCHARGE SIDE BULKHEAD
 ENCAPSULATION SECTION DETAIL** B
CM-2.0
 SCALE: 22X34 1"= 1'
 11X17 1"= 2'



**STEEL SHEET PILE SUCTION SIDE
 ENCAPSULATION DETAIL** C
CM-2.0
 SCALE: 22X34 1"= 1'
 11X17 1"= 2'

PROJECT:
ITDD PUMP STATIONS
1 & 2 REPAIRS AND
REHABILITATION

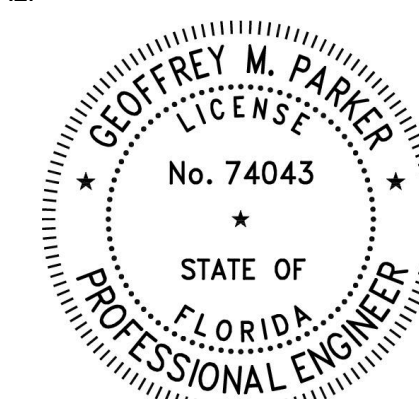
CITY OF WESTON, FLORIDA

CLIENT:
 CITY OF WESTON
 17200 Royal Palm Blvd
 Weston, FL 33326

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 COA # 29062

SEAL:

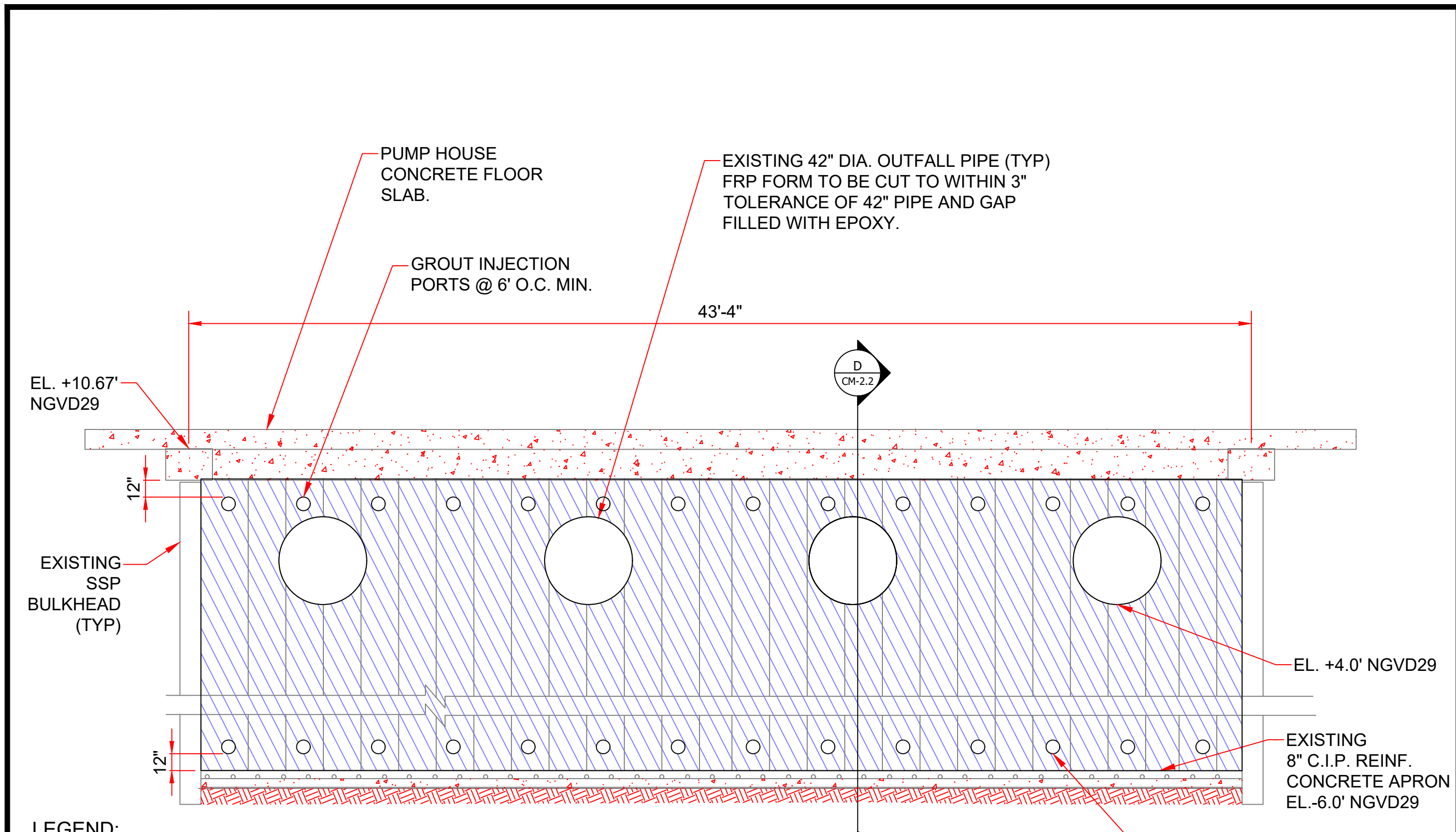


NO.	DATE	ISSUE	SUBMISSION / REVISION

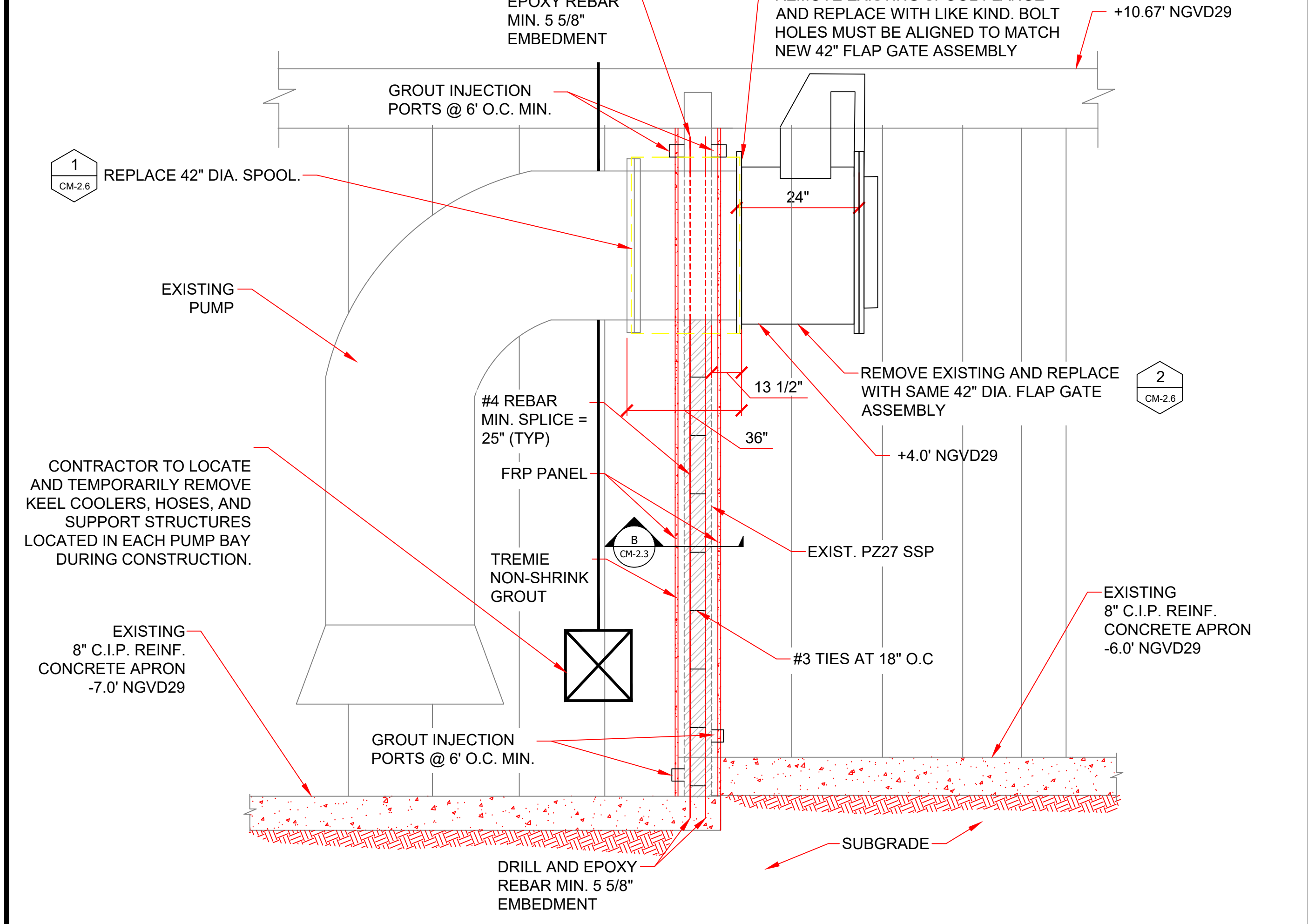
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 DRAWN: JDR
 CHECKED: GP
 SCALE: AS SHOWN

SHEET TITLE
BULKHEAD
ENCAPSULATION
SECTIONS & DETAILS

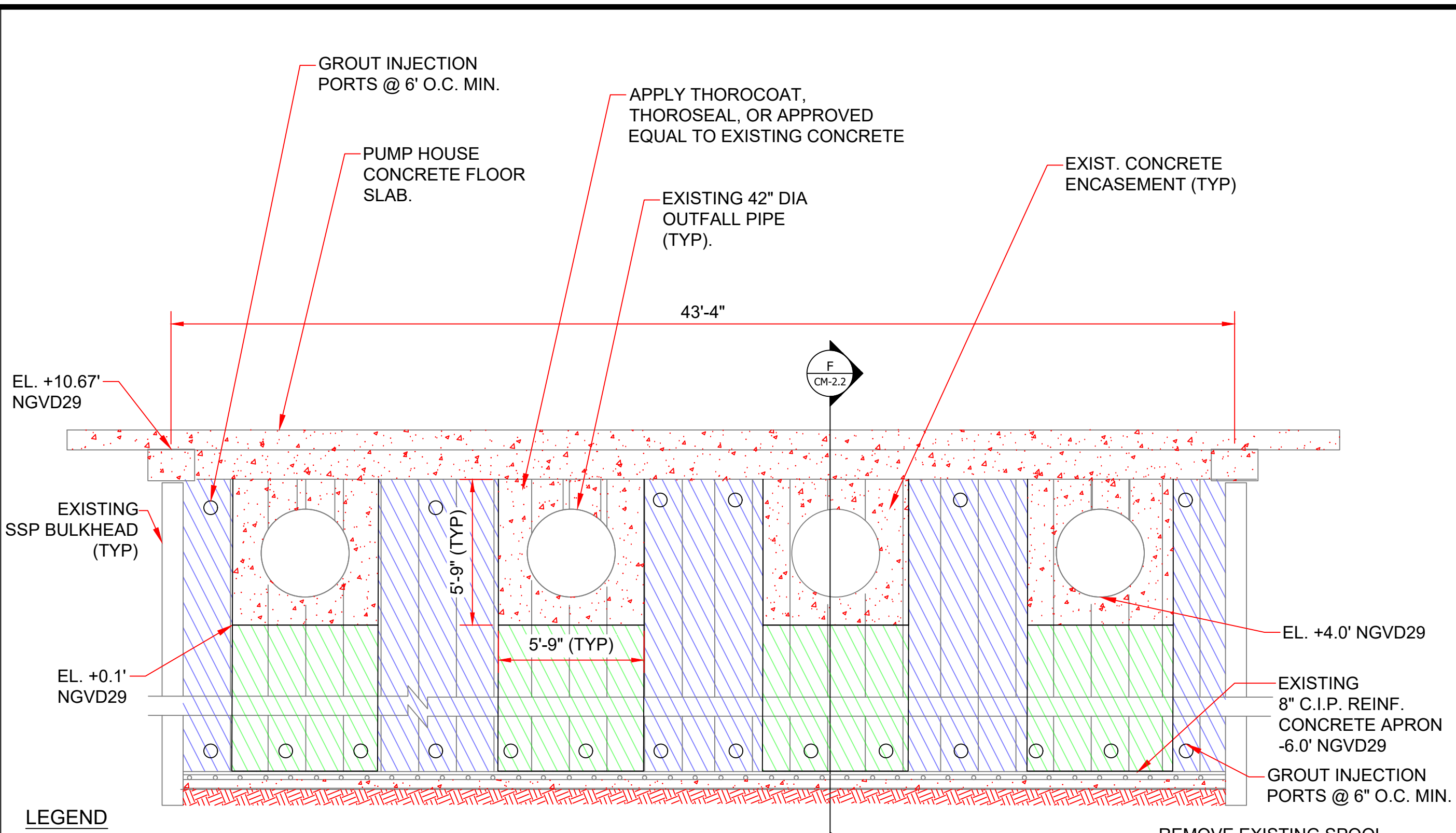
SHEET 9 OF 14
CM-2.2



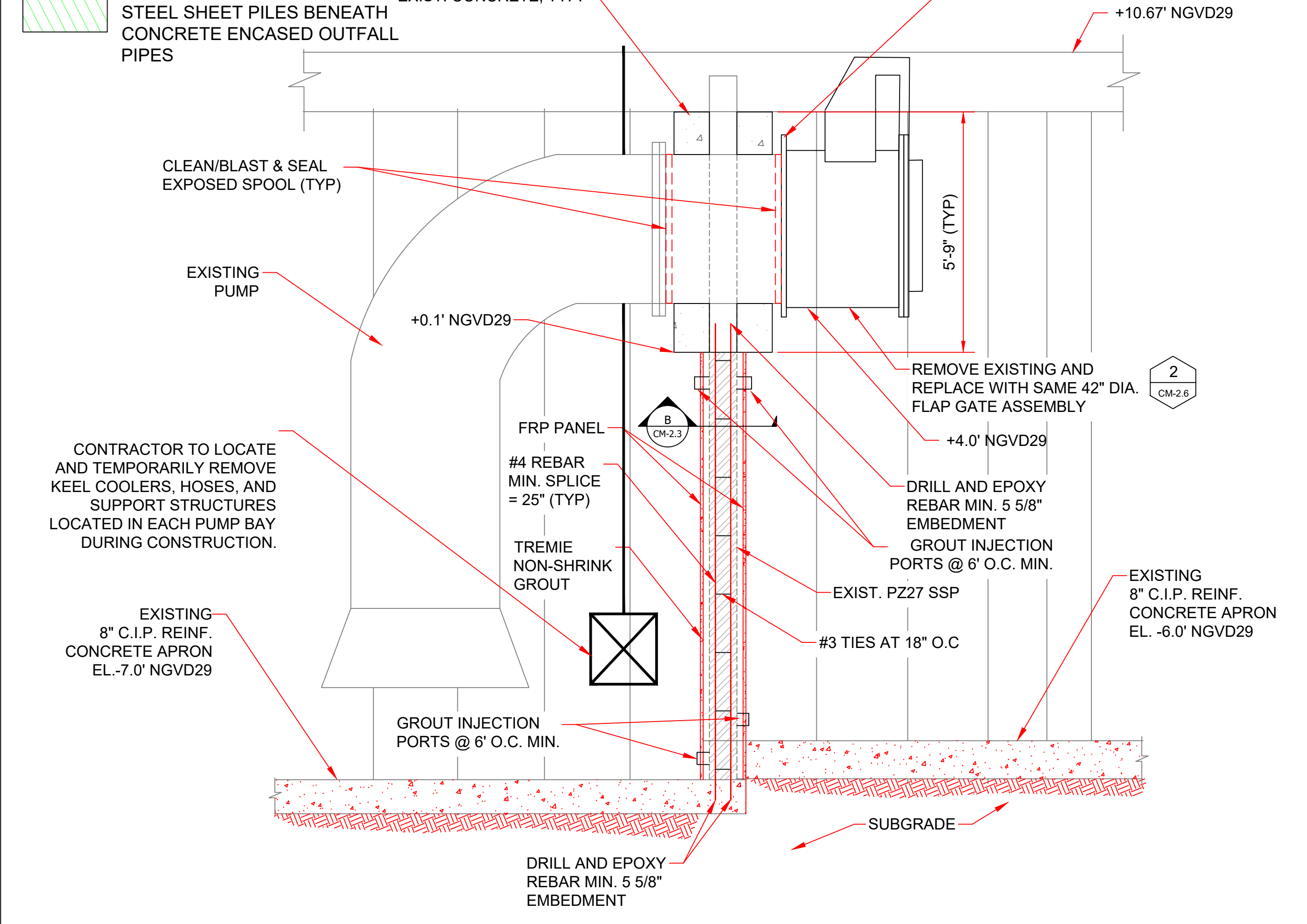
ENCAPSULATION SECTION C
 N.T.S. CM-2.0



ENCAPSULATION SECTION D
 N.T.S. CM-2.2

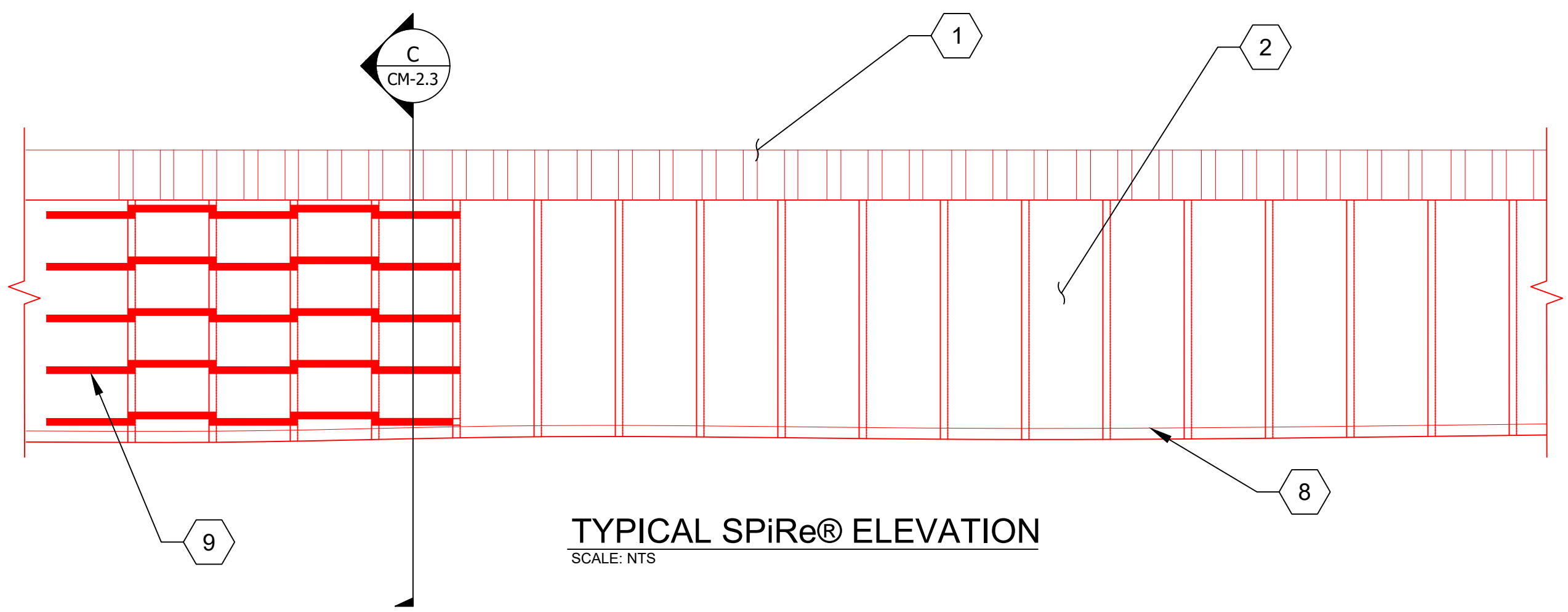


ENCAPSULATION SECTION E
 N.T.S. CM-2.0



ENCAPSULATION SECTION F
 N.T.S. CM-2.2

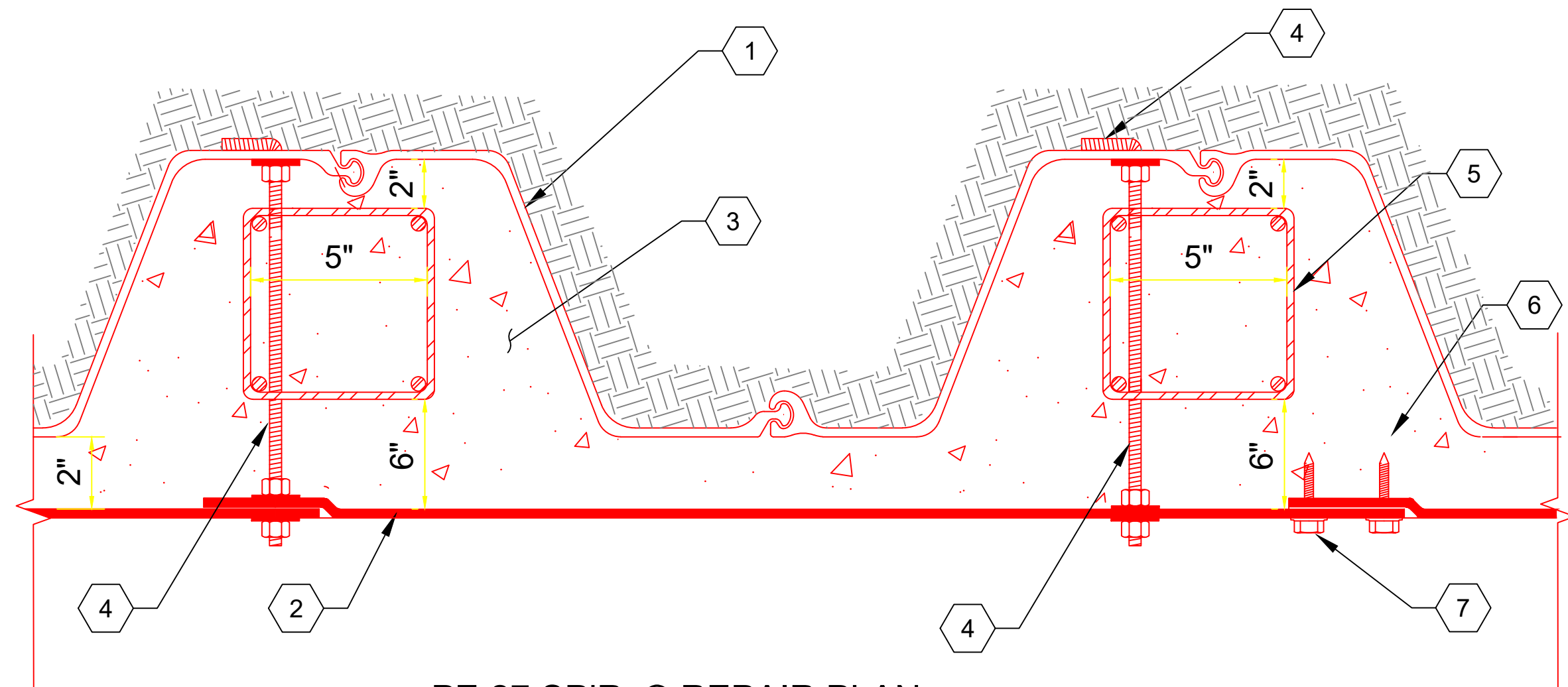
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TYPICAL SPIRe® ELEVATION
SCALE: NTS

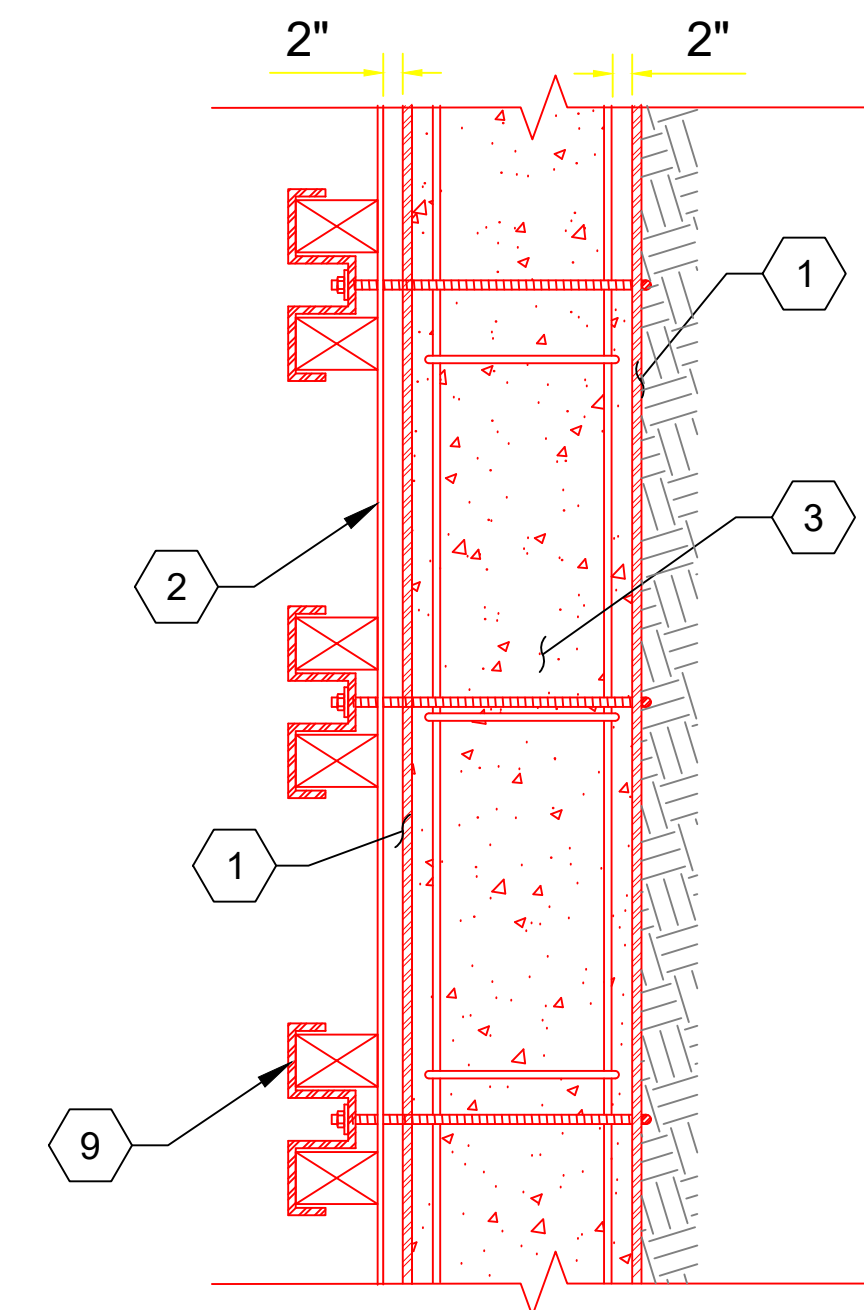
KEYNOTES:

1. EXISTING PZ-27 STEEL SHEET PILE.
2. TYPICAL 48" SPIRe® PANEL. MINIMUM 4" OVERLAP.
3. FILL ANNULAR SPACE WITH NON-SHRINK GROUT.
4. TYPICAL J-BOLT ANCHORAGE WITH WASHERS AND NUTS AS REQUIRED.
5. #4 LONG. REBAR & #3 TIES.
6. SPIRe® SEAM SHALL BE SEALED WITH EPOXY.
7. STAINLESS STEEL SCREWS AS REQUIRED.
8. MUDLINE. PANEL EMBEDMENT MINIMUM 1'-0".
9. SHORING USED DURING CONCRETE PLACEMENT. REMOVED AFTER PLACEMENT.



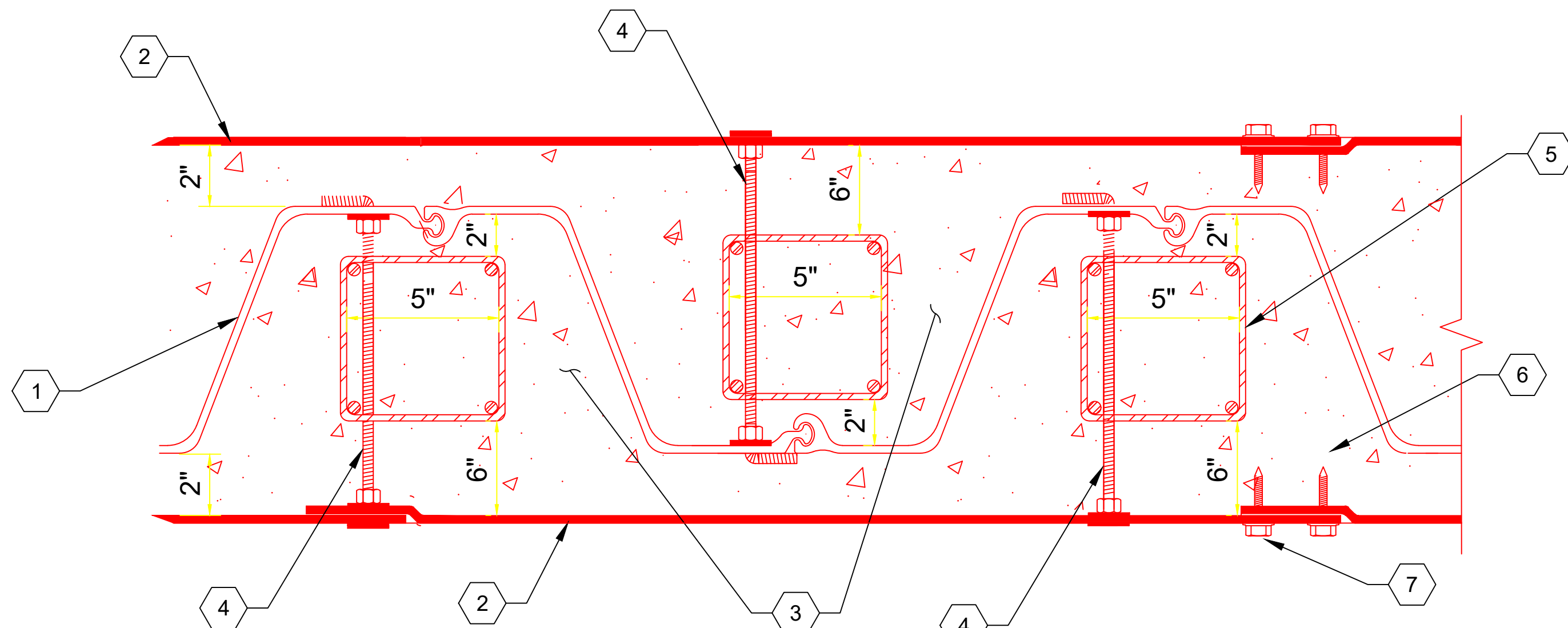
PZ-27 SPIRe® REPAIR PLAN
ONE SIDE ENCAPSULATION
SCALE: NTS

A
CM-2.0



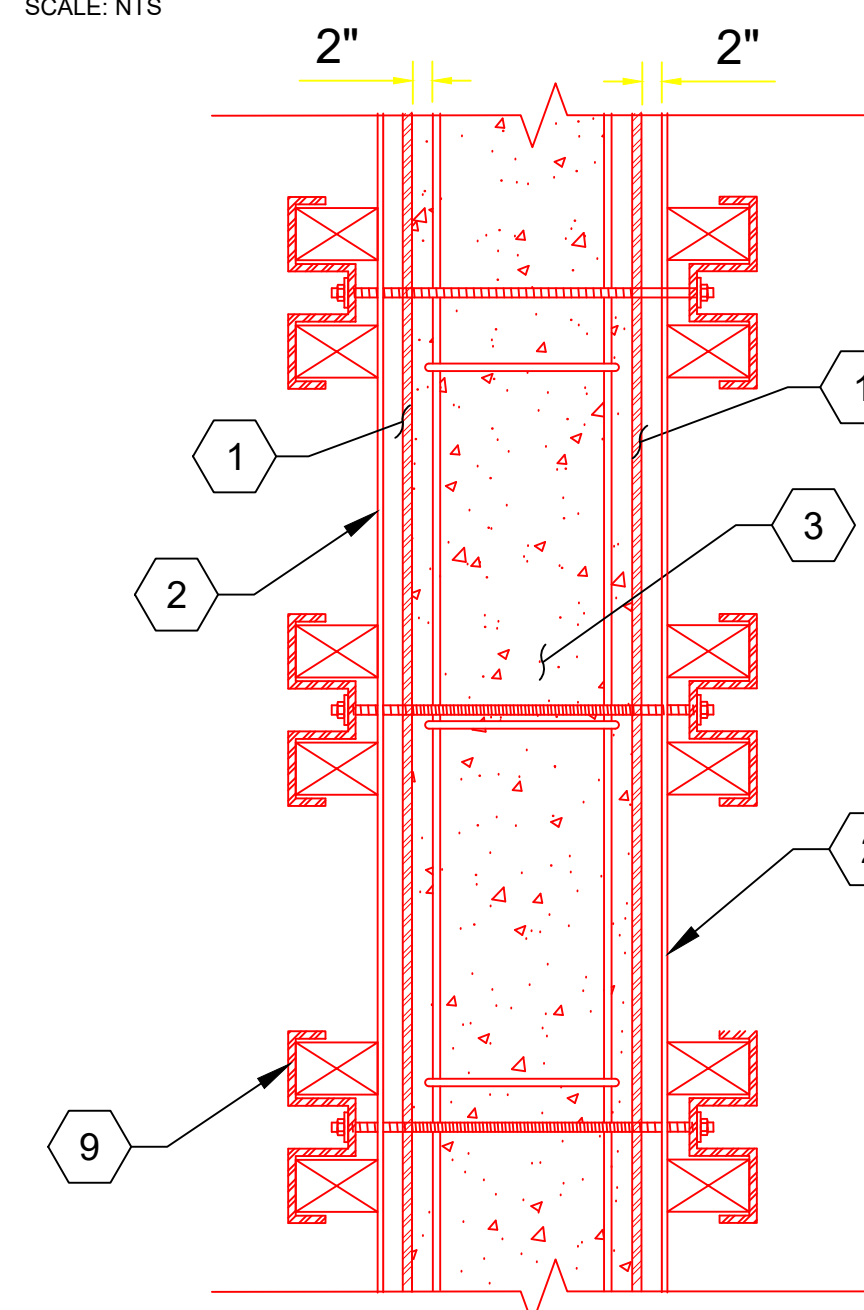
PZ-27 SPIRe® REPAIR SECTION
ONE SIDE ENCAPSULATION
SCALE: NTS

C
CM-2.3



PZ-27 SPIRe® REPAIR PLAN
BOTH SIDES ENCAPSULATION
SCALE: NTS

B
CM-2.0



PZ-27 SPIRe® REPAIR SECTION
BOTH SIDES ENCAPSULATION
SCALE: NTS

C
CM-2.3

PROJECT:
**ITDD PUMP STATIONS
1 & 2 REPAIRS AND
REHABILITATION**

CITY OF WESTON, FLORIDA

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SEAL:

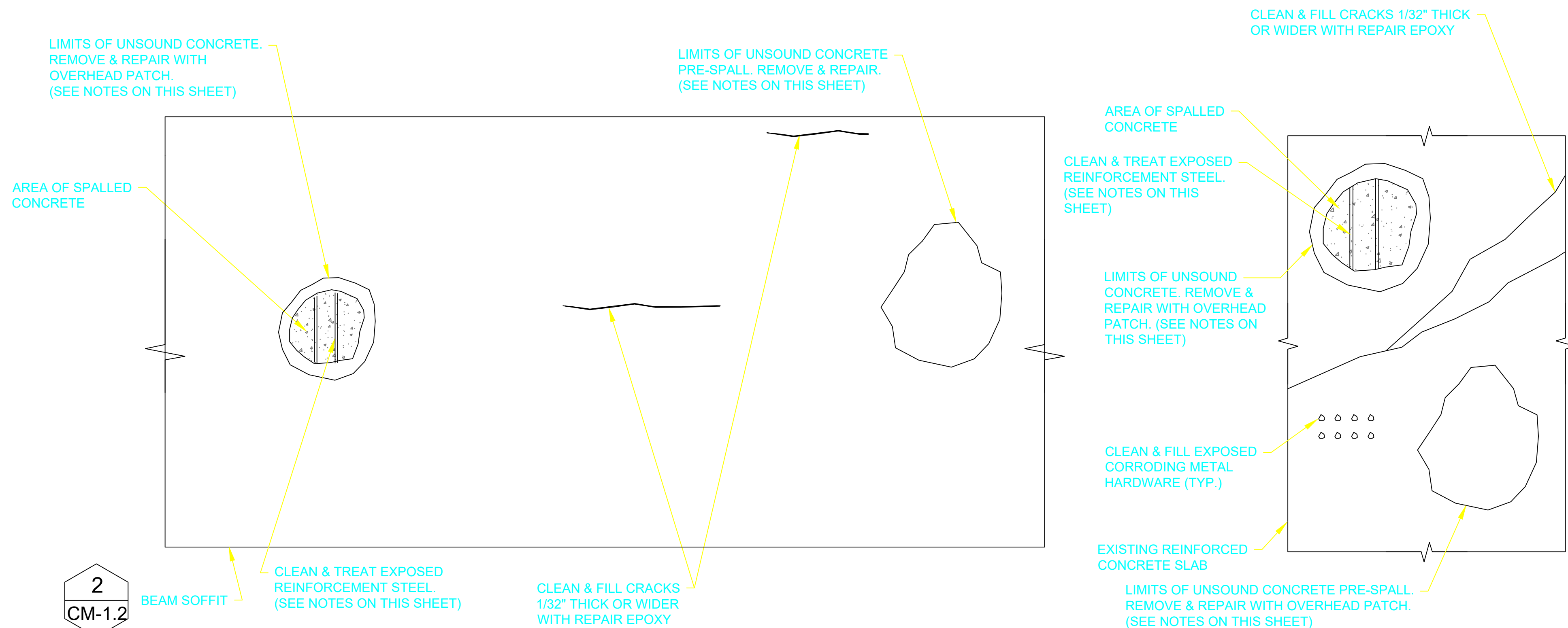


ISSUE	DATE	SUBMISSION / REVISION

CC PROJECT NO: 95600
DRAWN: JDR
CHECKED: GP
SCALE: AS SHOWN

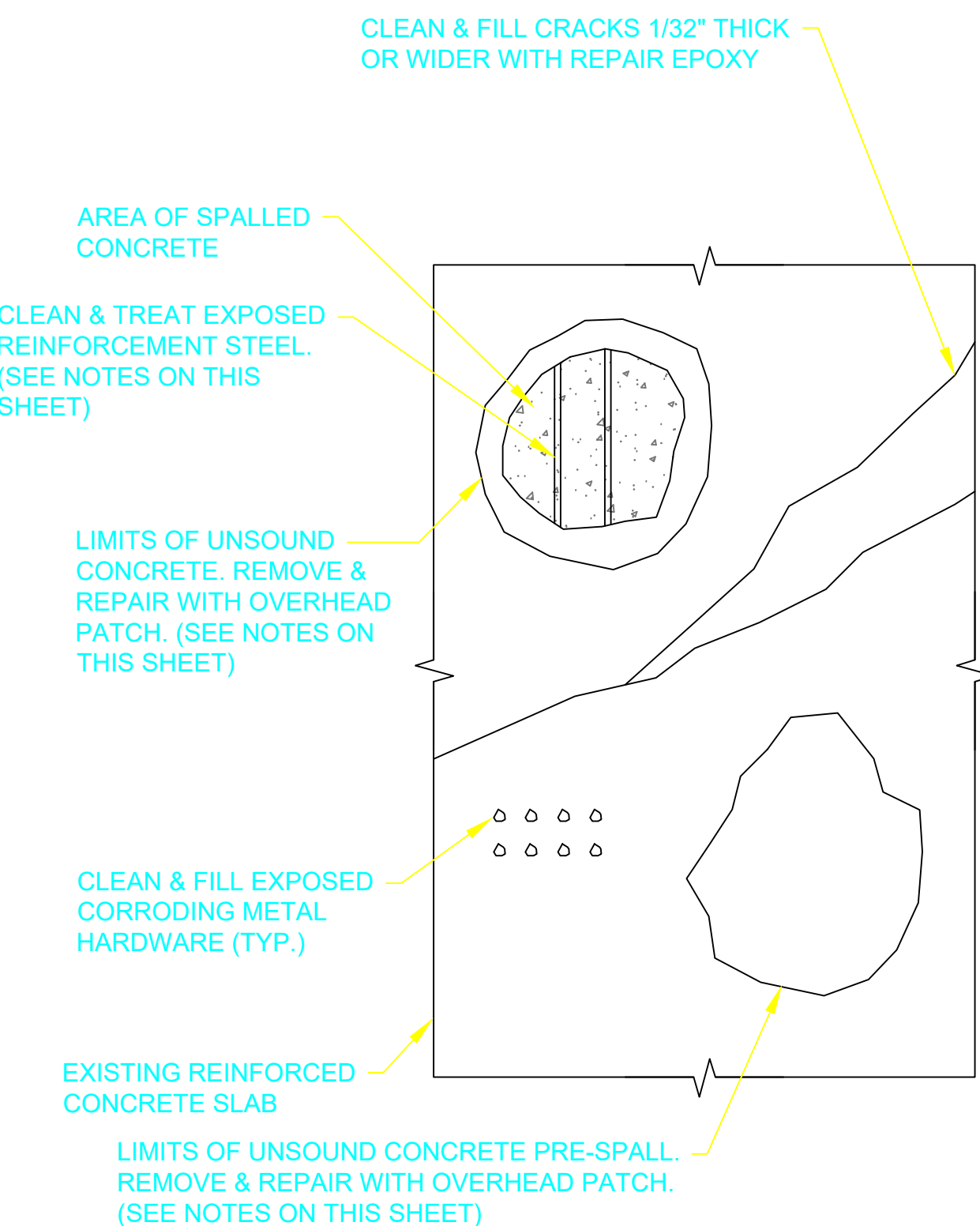
SHEET TITLE
**BULKHEAD
ENCAPSULATION
SECTIONS & DETAILS**

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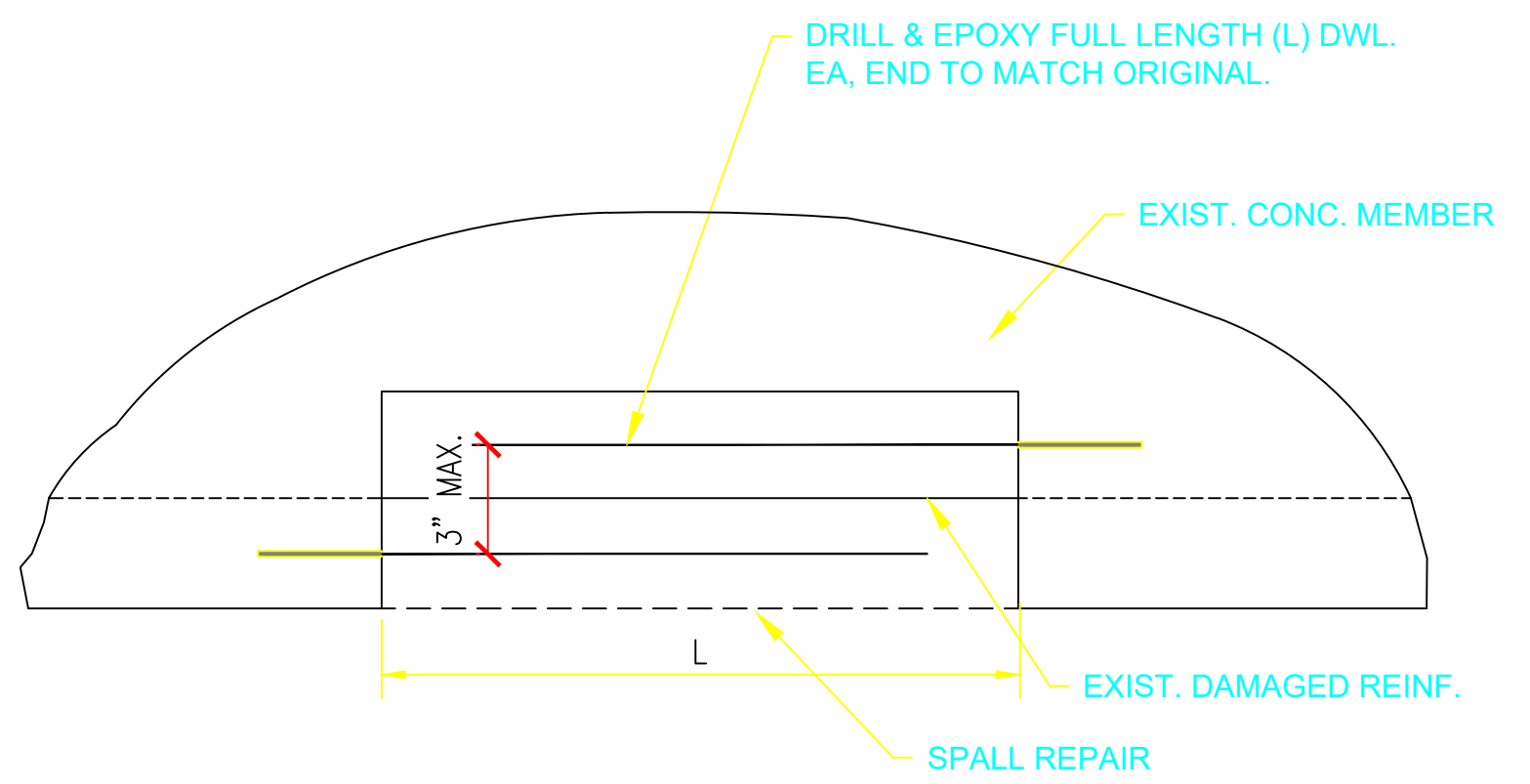
2
CM-1.2
3
CM-1.3

BEAM REPAIR DETAIL (TYP)

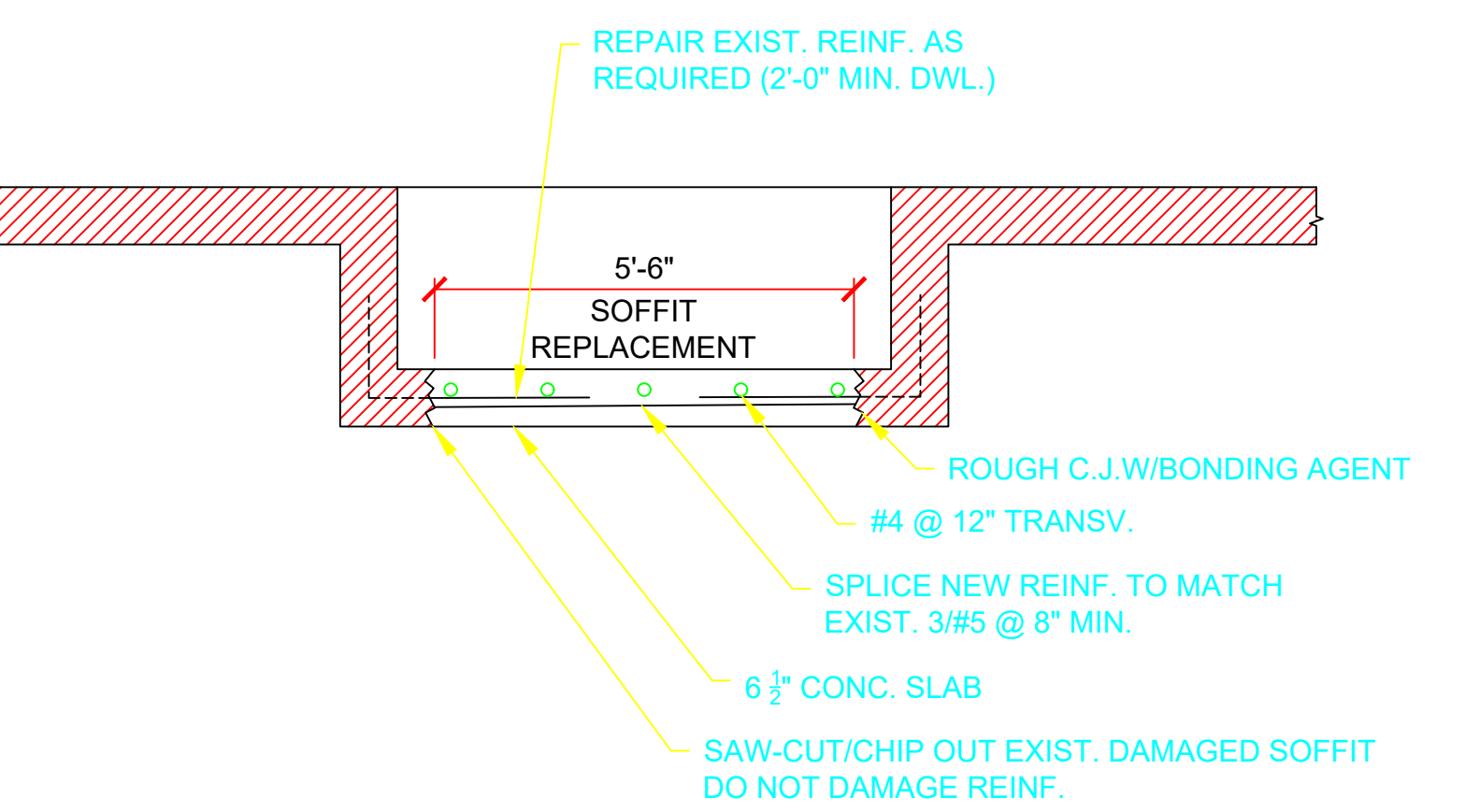


2
CM-1.2

SOFFIT BEAM REPAIR (TYP)



REINFORCEMENT SPLICE DETAIL
N.T.S.



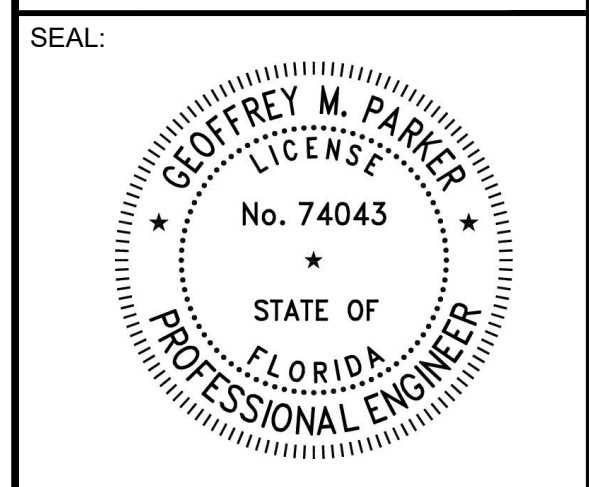
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CM-1.3

ALTERNATIVE SOFFIT REPAIR DETAIL
N.T.S.

CONCRETE REPAIR PRODUCT SCHEDULE			
APPLICATION DESCRIPTION	CONCRETE REPAIR PRODUCT	MANUFACTURER	REMARKS
BONDING	ARMATEC 110	SIKA	ONLY FOR OVERHEAD APPLICATIONS. USE SCRUB COAT FOR VERTICAL AND HORIZONTAL APPLICATIONS (OPNE AND UNCLOG PORE STRUCTURE)
	PLANIBOND	MAPEI	
CEMENTITIOUS ANTI-CORROSION INHIBITING PRIMER	ARMATEC 110	SIKA	APPLY TO ALL EXPOSED SURFACES OF STEEL REINFORCEMENT AND OTHER EMBEDDED STEEL
	PLANIBOND	MAPEI	
HORIZONTAL REPAIRS	ZICATOP 122 PLUS	SIKA CORP	TROWEL APPLIED IN LIFTS. LIFT THICKNESS = 1/8" MIN. AND 1" MAX. (NEAT) OR 4" MAX. (EXTENDED - SEE MFR. DATA SHEET)
	MAPECEM 202	MAPEI	
VERTICAL REPAIRS	SIKATOP 123	SIKA CORP	TROWEL APPLIED IN LIFTS. LIFT THICKNESS = 1/8" MIN. AND 1-1/2" MAX. DO NOT EXCEED 8" TOTAL THICKNESS.
	SIKAQUICK VOH	SIKA CORP	
	PLANITOP XS	MAPEI	
FORM-AND-CAST REPAIRS (FULL-DEPTH)	SIKACRETE 211 SCC PLUS	SIKA CORP	UP TO 8" THICK APPLICATIONS. FOR APPLICATIONS GREATER THAN 8" THICK, NOTIFY ENGINEER.
	PLANITOP 11 SCC	MAPEI	
EPOXY CRACK INJECTION	SIKADUR 31, HI-MOD GEL & SIKADUR 32	SIKA CORP	SEAL PORTS AND CRACKS W/ SIKADUR 31, HI-MOD GEL AND LET CURE, THEN INJECT SIKADUR 52 W/ STEADY PRESSURE
	PLANIBOND AE & EPOJET LV	MAPEI	SEAL PORTS AND CRACKS W/ PLANIBOND AE AND LET CURE, THEN INJECT EPOJET LV W/ STEADY PRESSURE

NOTES:
1. COORDINATE AND SCHEDULE A PRE-CONSTRUCTION MEETING W/ GENERAL CONTRACTOR, CONCRETE REPAIR CONTRACTOR, PRODUCT MANUFACTURER REPRESENTATIVE, SPECIAL INSPECTOR AND ENGINEER PRIOR TO COMMENCEMENT OF THIS WORK.
2. SUBMIT PRODUCT DATA SHEETS FOR PRODUCTS TO BE USED TO ENGINEER.
3. SUBSTITUTIONS WILL BE CONSIDERED. PROPOSED SUBSTITUTIONS SHALL BE REVIEWED AND APPROVED BY ENGINEER PRIOR TO USE. USE PRODUCTS IN STRICT ACCORDANCE W/ MANUFACTURER'S WRITTEN RECOMMENDATIONS.

- CONCRETE SPALL REPAIR NOTES**
- REPAIR CONCRETE SPALLS AT AREAS INDICATED ON SHEETS S-3.1 THROUGH S-3.7, AND AS DIRECTED BY ENGINEER.
 - CONTRACTOR TO NOTIFY ENGINEER OF ADDITIONAL DAMAGE AREAS.
 - REMOVE ALL UNSOUND CONCRETE AROUND SPALL AREA BY CHIPPING WITH PICKS OR LIGHTWEIGHT PNEUMATIC IMPACT TOOLS TO EXPOSE SOUND CONCRETE FREE OF LOOSE AND UNSOUND MATERIALS. CARE SHALL BE TAKEN TO AVOID DAMAGE TO SOUND CONCRETE BEYOND THE LIMITS OF THE DEMOLITION AND TO AVOID DISLODGING OR DAMAGING EXPOSED, EXISTING REINFORCING STEEL.
 - SAW CUT EDGES OF REPAIR AREA TO A DEPTH OF AT LEAST 1/2" TO PROVIDE SQUARE EDGE.
 - CLEAN ALL EXPOSED SURFACES, INCLUDING THE EXPOSED SURFACES OF THE REINFORCEMENT STEEL BY POWER WIRE BRUSH. SURFACES SHALL BE FREE OF ANY BOND INHIBITING OR OTHER DELETERIOUS MATERIALS. IF REINFORCING HAS LOST MORE THAN 25% SECTION, SPLICE NEW REINFORCEMENT TO MATCH ORIGINAL. ALL EXPOSED REINFORCEMENT STEEL SHALL BE TREATED WITH APPROVED CORROSIVE INHIBITOR.
 - APPLY THORTEX EPOXY MORTAR (OR EQUIVALENT) IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS. CONTRACTOR TO SUBMIT SPECIFICATIONS TO ENGINEER FOR APPROVAL.
 - CURE REPAIR MATERIAL IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.
- CONCRETE CRACK REPAIR NOTES**
- REPAIR CRACKS GREATER THAN 1/32" AT AREAS INDICATED ON SHEETS S-3.1 THROUGH S-3.7.
 - CONCRETE SURROUNDING THE CRACKS SHALL BE TESTED FOR SOUNDNESS BY HAND USING A HAMMER. IN THE EVENT THAT THE CONCRETE SPALLS, PROPER SPALL REPAIRS SHALL BE CONDUCTED.
 - CRACKS SHALL BE CLEANED TO ENSURE THAT CRACKS ARE SOUND, CLEAN, DRY AND FREE OF DELETERIOUS MATERIALS.
 - INJECT REPAIR EPOXY INTO CRACKS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.



NO.	DATE	ISSUE	REVISION

CC PROJECT NO:	95600
DRAWN	JDR
CHECKED	GP
SCALE	AS SHOWN

SHEET TITLE
TYPICAL CONCRETE REPAIR DETAILS

J:\Projects\95600 - Weston - Pump Station Repairs - Drawings\Working\2022-02-28\95600 ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION.dwg

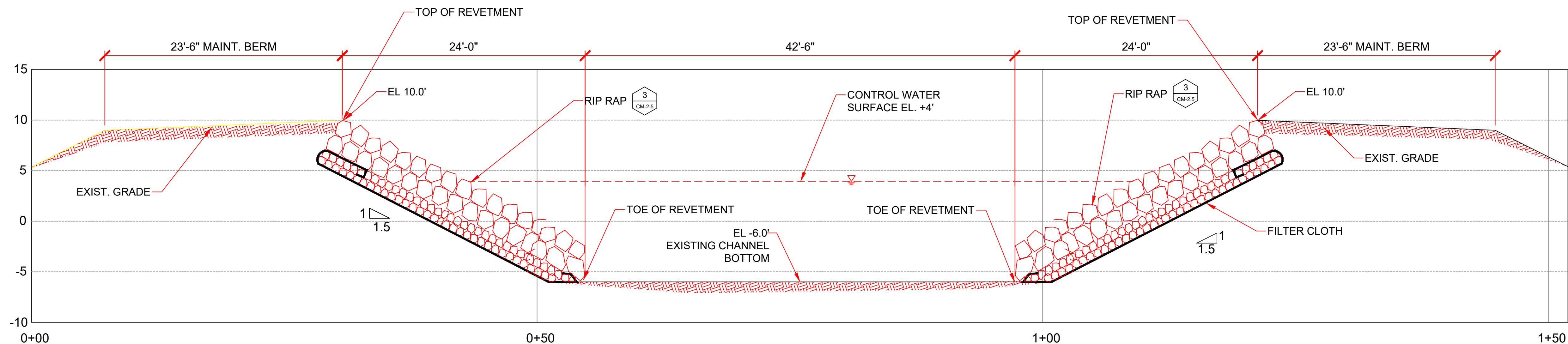
PROJECT:
ITDD PUMP STATIONS
1 & 2 REPAIRS AND
REHABILITATION

CITY OF WESTON, FLORIDA

CLIENT:
 CITY OF WESTON
 17200 Royal Palm Blvd
 Weston, FL 33326

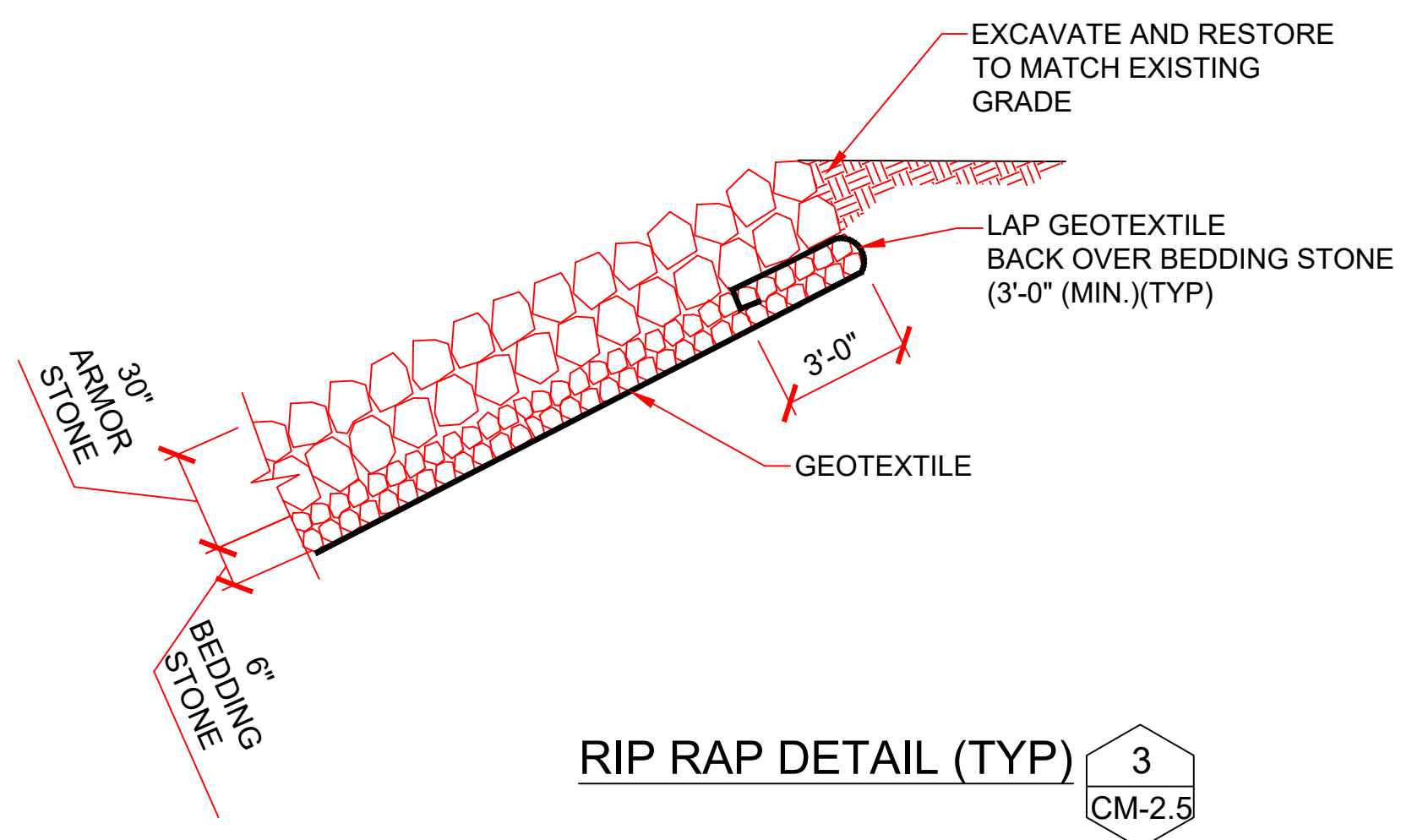
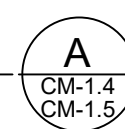
PROJECT MANAGER:
 EAC CONSULTING, INC.
 5100 NW 33rd Avenue - Suite 243
 Fort Lauderdale, FL 33309

ENGINEER:
CUMMINS CEDERBERG
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TYPICAL RIP RAP SECTION

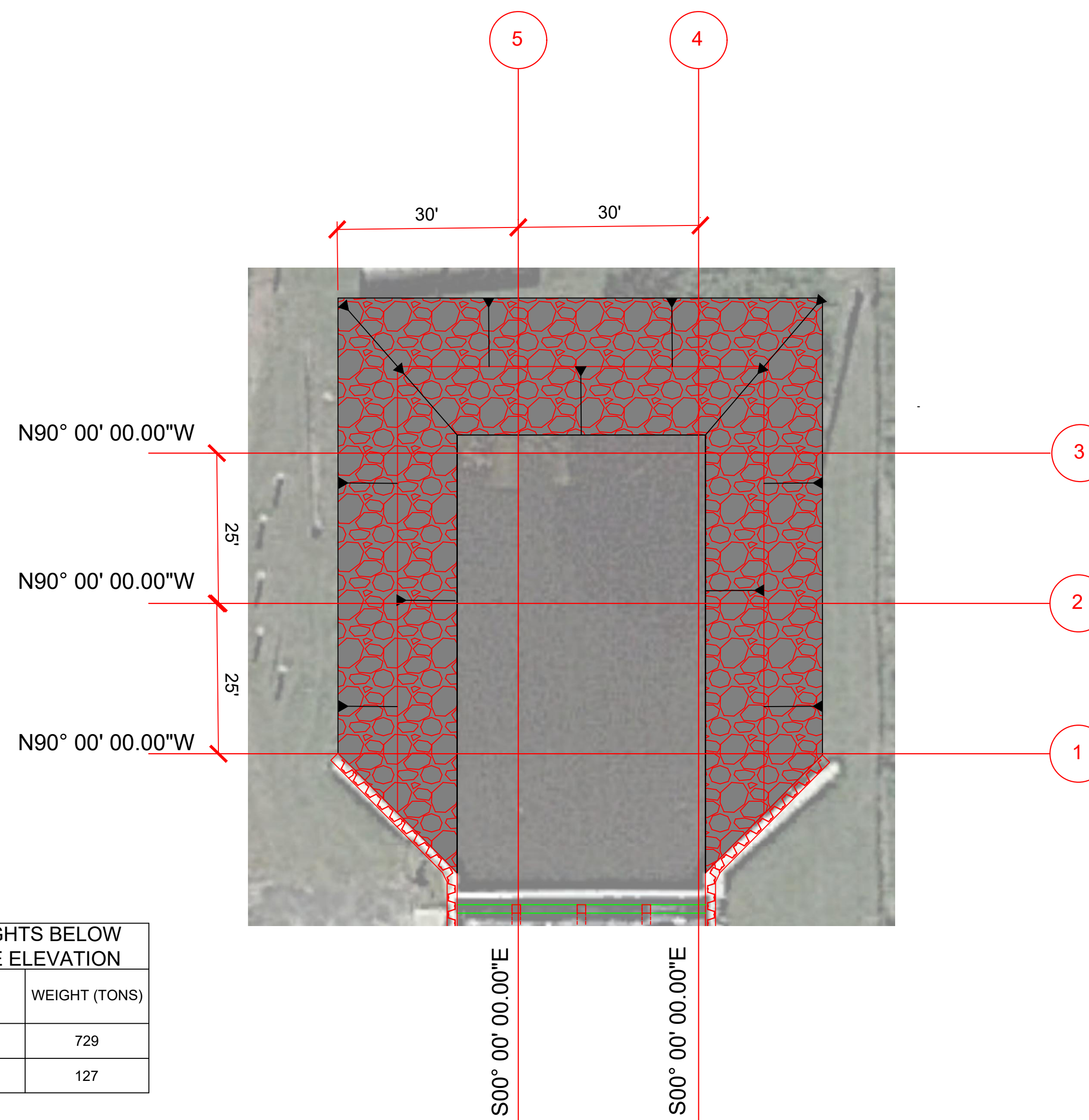
SCALE: 22X34 1"= 6'
 11X17 1"= 12'



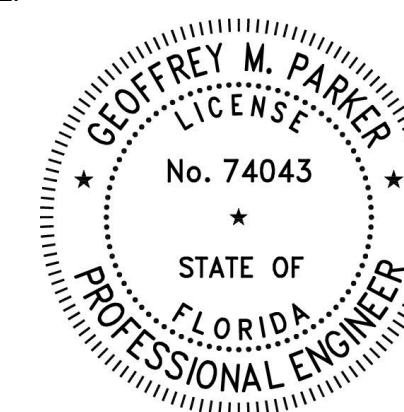
RIP RAP NOTES:

1. GEOTEXTILE SHALL BE U.S. 670 (OR APPROVED EQUAL). PROVIDE GEOTEXTILE IN ACCORDANCE WITH FDOT SPECIFICATION 514. INSTALL GEOTEXTILE AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTION.
2. LAP EDGES OF GEOTEXTILE 3'-0" (MIN.).
3. ARMOR STONES SHALL BE 12" TO 18", D50 = 15", AND SHALL BE PLACED IN A LAYER NOT LESS THAN 30" THICK.
4. BEDDING STONE SHALL BE UNIFORMLY GRADED FROM 2" TO 4" WITH AT LEAST 50% LARGER THAN 3" AND SHALL BE PLACED IN A LAYER NOT LESS THAN 6" THICK.
5. CONTRACTOR TO SURVEY EXISTING REVETMENT AND BASIN ACCORDING TO THE SURVEY LINE LOCATIONS PLAN AS SEEN ON THIS PAGE AFTER THE REMOVAL OF THE EXISTING RIP RAP TO VERIFY EXISTING EXTENT OF RIPRAP AND AGAIN UPON THE PLACEMENT OF THE NEW RIP RAP CROSS SECTION TO VERIFY AS-BUILT CONDITION.

STONE VOLUMES AND WEIGHTS BELOW CONTROL WATER SURFACE ELEVATION		
STONE LAYER	VOLUME (CY)	WEIGHT (TONS)
ARMOR STONE	467	729
BEDDING STONE	94	127



SEAL:



NO.	DATE	ISSUE	SUBMISSION / REVISION

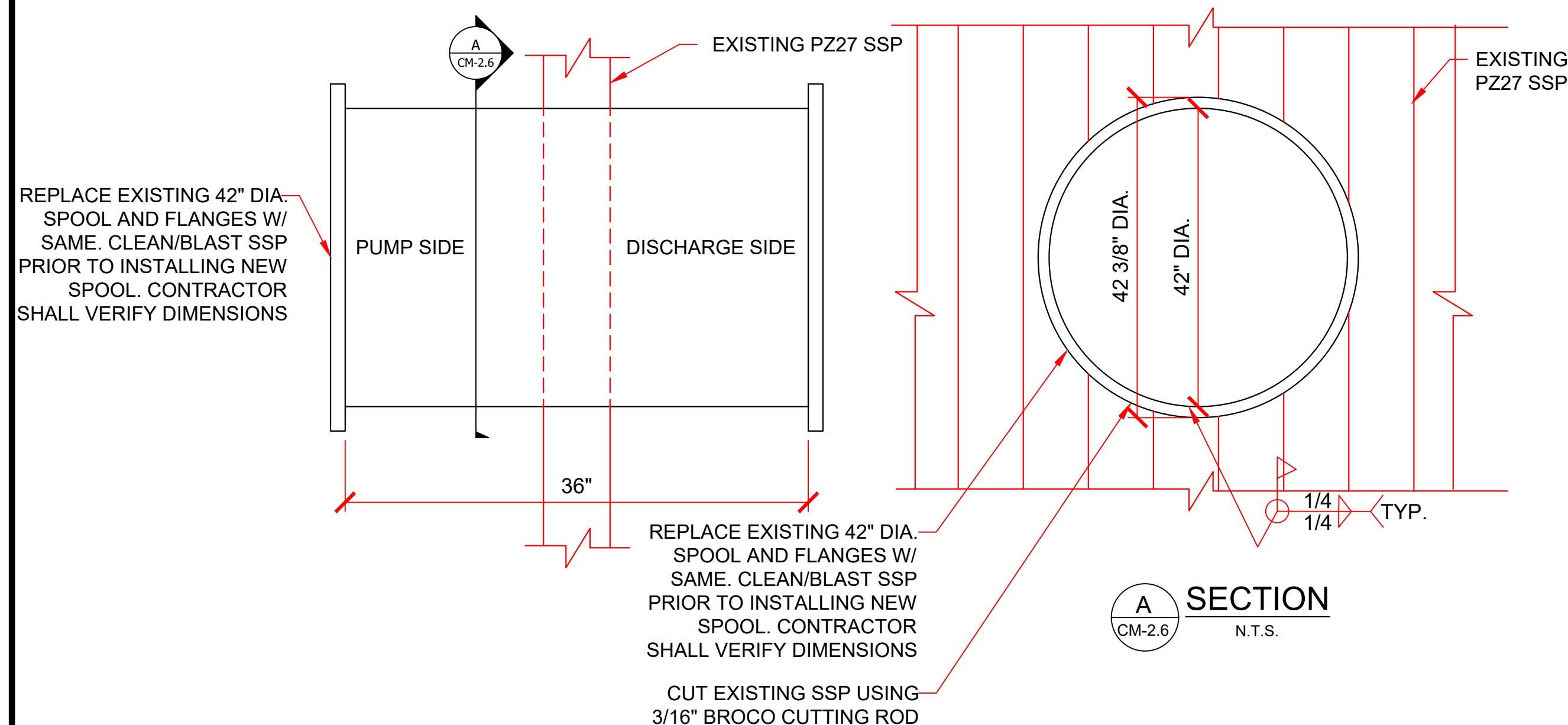
CC PROJECT NO:	95600
DRAWN	JDR
CHECKED	GP
SCALE	AS SHOWN

TYPICAL RIP RAP SECTION AND DETAIL

SHEET 12 OF 14

CM-2.5

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SPOOL REPLACEMENT DETAILS
N.T.S. 1 CM-2.2

C-20 CAST IRON ROUND GATES

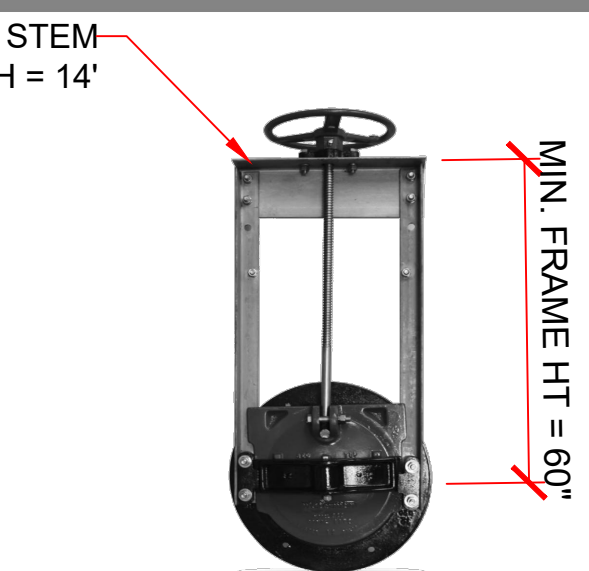
FOR HEADWALL, PIPE OR FLANGE MOUNTING. SUITABLE FOR BOTH SEATING AND UN-SEATING HEAD APPLICATIONS.

C-20 gates offer reliable water control on canal, drainage control and pipeline systems which operate at low and medium heads. They may be used on applications where the gate sees head pressure on both the front (seating) and back (unseating) surfaces, if sized based on the table provided. They are designed for years of reliable service, offering a typical life exceeding 40 years. These gates offer superior performance to "look alike" products and best-in-class construction available only from Waterman.

Typical installations include: water delivery canals and channels, farm turnouts, control of industrial wastes, drainage and tide control.

STANDARD FEATURES

- The cover, frame ring, adjustable wedges, arch, and handwheel are made of cast iron.
- The lift nut is cast bronze and utilizes rugged acme type threads.
- A solid rim "easy-grip" cast iron handwheel is standard.
- Adjustable cast iron wedge blocks feature two machine bolts for dependable seating and water tightness.
- Machine-threaded stem provides ease of operation and extended life, choice of stem thread patterns for clockwise or counter-clockwise operation.
- Precision-machined iron-to-iron seating for long life and debris tolerance.
- Painted metal rails.
- Choice of mounting options accommodate different installation requirements:
 - F = Flat-back: for mounting to concrete headwall / structure with anchors
 - S = Spigot-back: for mounting to corrugated steel pipe



- FLG = Flanged: for mounting to standard ANSI pipe flanges, 25# or 125# drilling available
- C = Mounting to concrete pipe (gate will be shipped with galvanized steel tapered setting collar)
- Pipe adapters for corrugated HDPE or PVC pipe

OPTIONAL FEATURES

- Bronze seats.
- Upgrade rails to galvanized steel.
- Upgrade rails to stainless steel, plus all stainless hardware.
- Upgrade cast-iron finish to special epoxy, coal tar or total galvanized.
- Non-Rising Stem Extensions position the gate handwheel at convenient static operating elevations, eliminating hardware which might otherwise rise into traffic areas.

Recommended Maximum Seating & Unseating Heads

Gate Size	Maximum Seating Head (face of gate)	Recommended Maximum Unseating Head
8" to 12"	35 feet	10 feet
14" to 18"	32 feet	10 feet
20" to 24"	26 feet	10 feet
30" to 42"	20 feet	10 feet



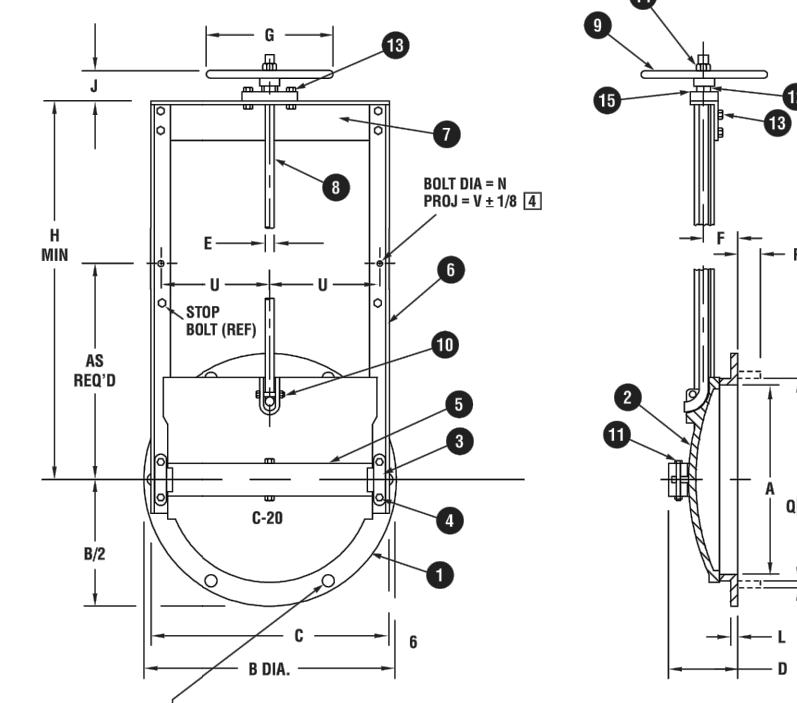
MPW-1019-1 Rev. 4/21

- NOTES:**
- INSTALL MIN. 3' TALL RISING STEM VALVE WHEEL ASSEMBLY WITH FLOOR MOUNTED HOUSING. DRILL AND EPOXY BOLTS PER MANUFACTURER'S SPECIFICATIONS.
 - DRILL AND EPOXY GATE FRAME BOLTS PER MANUFACTURER'S SPECIFICATIONS.

WATERMAN VALVE

C-20 CAST IRON ROUND GATES

FOR HEADWALL, PIPE OR FLANGE MOUNTING. SUITABLE FOR BOTH SEATING AND UN-SEATING HEAD APPLICATIONS.



PARTS LIST

No.	Name
1	Frame
2	Cover
3	Wedge (R&L)
4	Wedge Bolts
5	Arch
6	Guide Rail
7	Head Rail
8	Stem
9	Handwheel
10	Stem Bolt
11	Arch Bolt & Nut
12	Lift Nut
13	Atch. HDW.
14	Lift Nut (optional)
15	Lift Collar

NOTES:

- TYPE 2 lubricated ball bearing lift used on 42" gates.
- Applies to spigotback gate only. Optional spigot, shown in phantom.
- Drilling for mounting to 25 or 125 lb. pipe flange available for all gates. Due to gate design, bolt hole location (orientation) is straight center drilling.
- Add groud pad thickness to anchor bolt projection.

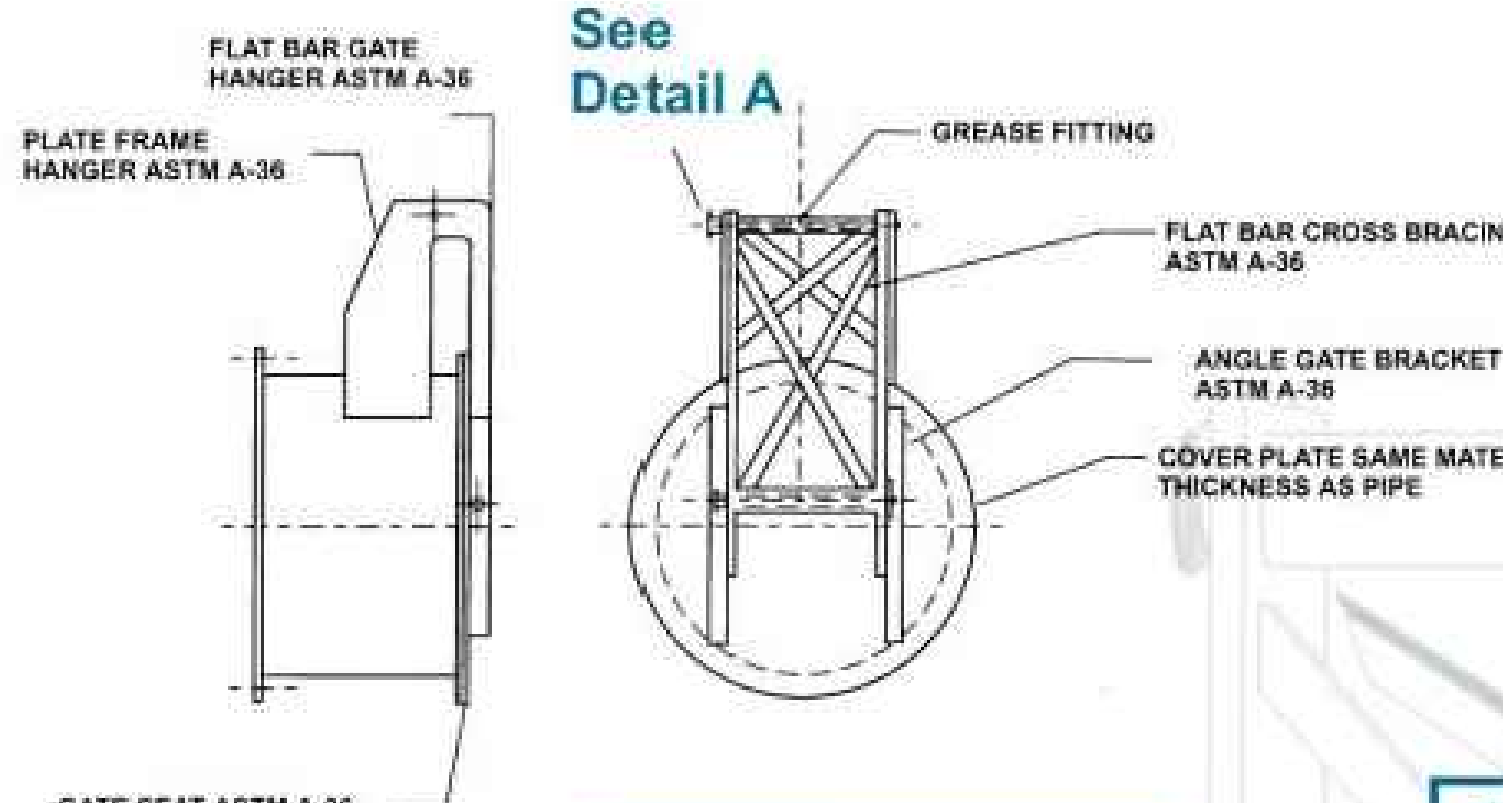
GATE DIMENSIONS IN INCHES

SIZE	B	C	D	E	F	G	H	J	L	M	N	P	Q	R	T	U	V
8	13 1/2	13 1/4	5 7/8	7/8	3 1/2	12	24	2 7/8	5/8	11 9/16	1/2	2 1/4	9	5/16	1 1/2	5 9/16	3 3/4
10	16	14 1/2	6	7/8	3 1/2	12	24	2 7/8	5/8	14	1/2	2 1/4	11	3/8	1 1/2	6 5/16	3 3/4
12	19	17 1/2	6 7/16	7/8	3 1/2	12	30	2 7/8	5/8	16 1/4	1/2	2 1/4	13	3/8	1 1/2	7 1/2	3 3/4
14	21	19 1/4	6 3/8	7/8	3 3/4	12	32	2 7/8	5/8	18 7/8	1/2	2 1/4	15	3/8	1 1/2	8 1/2	3 1/2
15	22 1/2	20 3/4	6 3/4	7/8	3 3/4	12	32	2 7/8	5/8	20	1/2	2 1/4	16	7/16	1 1/2	9	3 1/2
16	23 1/2	21 1/8	7 1/8	7/8	3 3/4	12	32	2 7/8	5/8	21	1/2	2 1/4	17	3/8	1 1/2	9 5/16	3 3/4
18	25	24	8 1/8	1 1/8	4 3/8	15	36	4	7/8	23	5/8	2 1/4	19	3/8	2	10 7/8	3 3/4
20	27 1/2	26	8 3/4	1 1/8	4 3/8	15	42	4	7/8	25 1/8	5/8	2 1/4	21	3/8	2	11 3/4	4 1/2
21	28 1/4	26 3/4	9	1 1/8	4 1/2	15	42	4	7/8	26 3/4	5/8	2 1/4	22	3/8	2	12 1/8	4 3/4
24	32	30 1/4	9 7/8	1 1/8	4 1/4	15	48	4	7/8	30	5/8	2 1/4	25	3/8	2	13 7/8	4 1/2
30	39 1/4	36 1/2	10	1 1/2	5 3/8	18	60	4 1/2	1	37 1/2	3/4	2 1/4	31	1/2	1 3/4	17	4 3/4
36	46	42 1/2	12	1 1/2	4 1/2	18	70	4 1/2	1	43 1/2	3/4	2 1/4	37	1/2	2	20	4 1/2
42	53	49 3/4	1	1 1/2	5 5/8	24	84	6	1 1/8	49 1/2		2 1/2	43	5/8		23 1/8	

FLAP GATE FOR DISCHARGE



AVAILABLE AS MWI COUCH FLANGE, 125 LB. FLANGE OR PLAIN END FOR WELDING

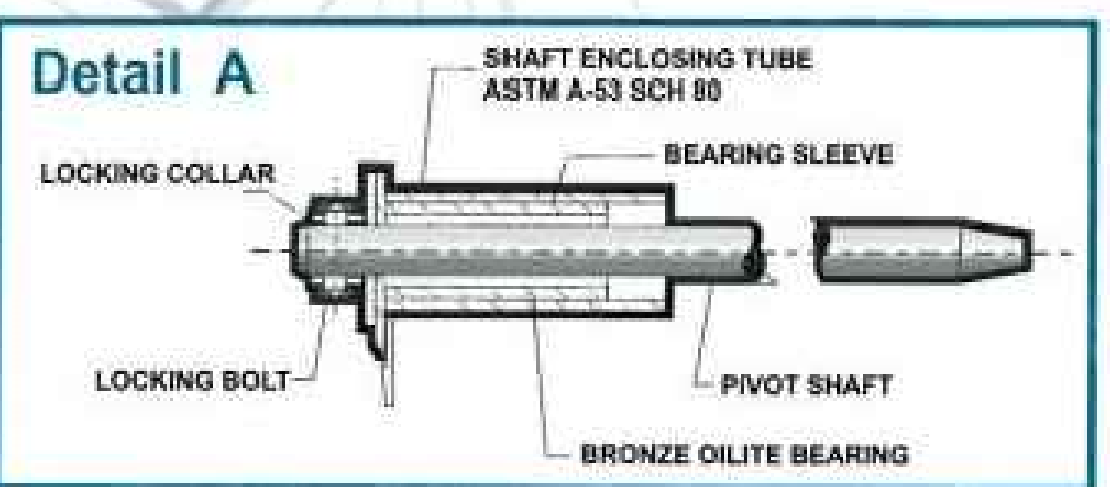


Standard Material Thickness

6" - 12"	- SCH 20
14" - 30"	- 3/16"
36" - 48"	- 1/4"
54" - 60"	- 5/16"

Size Range	Max. Head Loss Feet - Water (estimated)
6" - 12"	0.05
14" - 24"	0.10
30" - 48"	0.20
60" - 72"	0.30

Other sizes available on request. Head losses vary with valve and flowrate. Head losses are estimated.



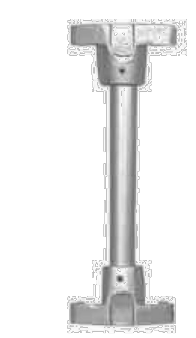
FLAP GATE DETAILS
N.T.S. 2 CM-1.4 CM-1.5

SLIDE GATE DETAILS

N.T.S. 3 CM-1.4 CM-1.5

SPECIAL OPTIONS - STEM EXTENSIONS

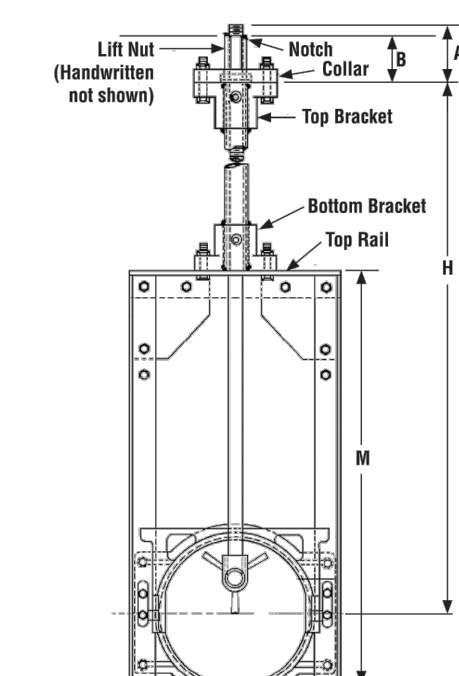
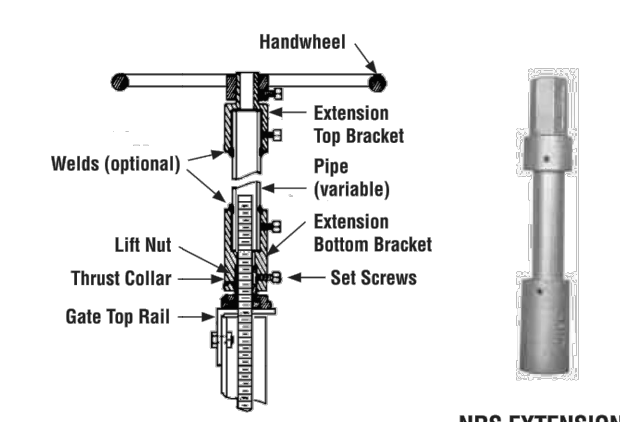
Waterman Rising-Stem Extensions (RSE) are factory installed to the height required, providing a rising stem and handwheel, keeping threads and lifts above the water level and allowing the amount of gate opening to be readily determined. Cast iron brackets, fastened to the top and bottom of standard galvanized steel pipe, are secured to the frame headrail and mount to the standard handwheel and stem hardware. The stem extends through the entire length of pipe. With the addition of oil seals, these rising stem extensions can be used where weather conditions require that the stem operate in oil to prevent freezing.



RIISING STEM EXTENSIONS DIMENSIONS

GATE SIZE	A	B	M
8	3 7/8	2 7/8	24
10	3 7/8	2 7/8	24
12	3 7/8	2 7/8	24
14	3 7/8	2 7/8	24
15	3 7/8	2 7/8	27 1/2
16	3 7/8	2 7/8	30
18	4 1/8	3 1/8	32
20	4 1/8	3 1/8	34
21	4 1/8	3 1/8	38
24	4 1/8	3 1/8	40
30	5	4	54
36	5	4	62
42	6	5	84

Non-Rising Stem Extensions position the gate handwheel at convenient static operating elevations, eliminating hardware which might otherwise rise into traffic areas. The extensions are readily installed in the field. The upper and lower brackets are joined by a section of standard galvanized steel pipe (normally customer furnished) by means of threads, set screws, pins or welds. The length of pipe inserted determines the elevation of the hand-wheel.



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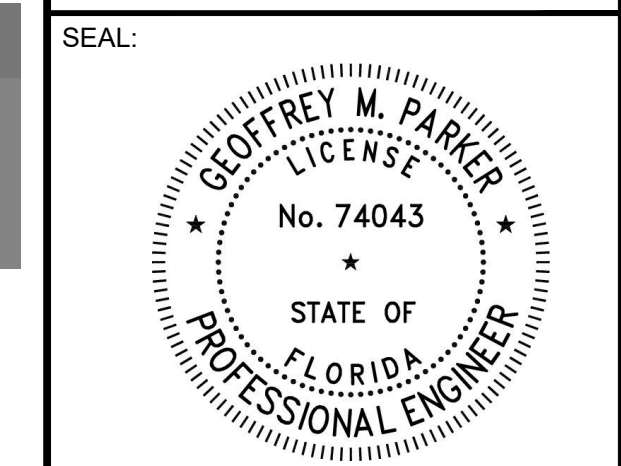
PROJECT:
ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION

CITY OF WESTON, FLORIDA

CLIENT:
CITY OF WESTON
17200 Royal Palm Blvd
Weston, FL 33326

PROJECT MANAGER:
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5100 NW 33rd Avenue - Suite 243
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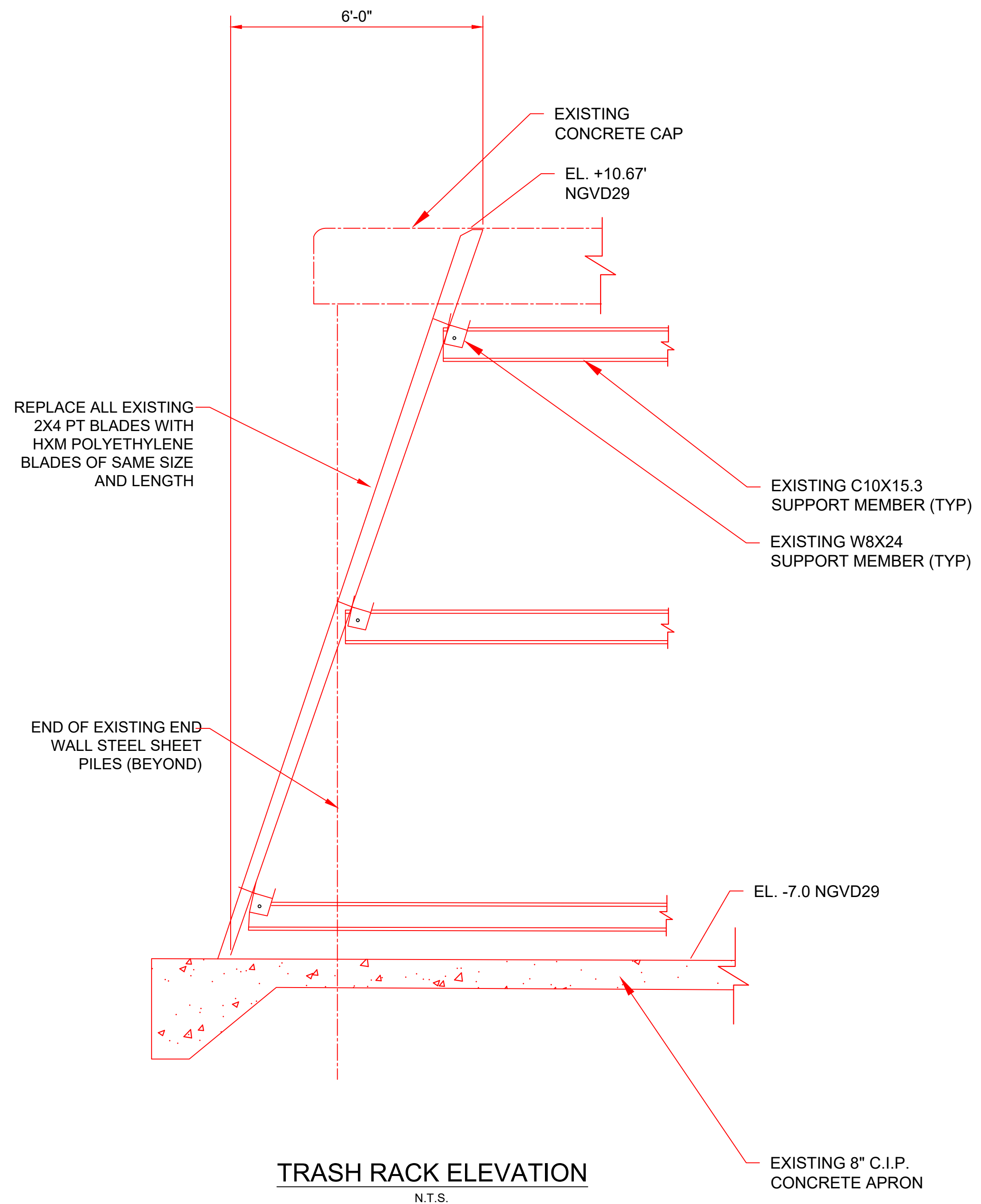
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CHECKED: GP
SCALE: AS SHOWN

SHEET TITLE
FLAP GATE AND SLIDE GATE DETAILS

SHEET 13 OF 14

CM-2.6

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NOTE: ALL CORRODED GALVANIZED STEEL TRASH RACK SUPPORT MEMBERS SHALL BE CLEANED OR BLASTED AND COATED PER ASTM STANDARD A780

PROJECT:
ITDD PUMP STATIONS 1 & 2 REPAIRS AND REHABILITATION

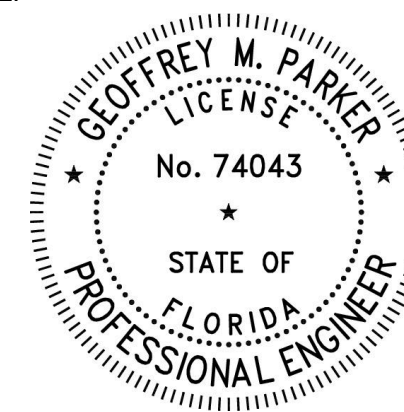
CITY OF WESTON, FLORIDA

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SEAL:



ISSUE	DATE	SUBMISSION / REVISION

CC PROJECT NO:	95600
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CHECKED	GP
SCALE	AS SHOWN

SHEET TITLE
TRASH RACK SUPPORT REPAIR, BLADE REPLACEMENT DETAILS

SHEET 14 OF 14

CM-2.7