

PHILADELPHIA REGIONAL PORT AUTHORITY
 3460 NORTH DELAWARE AVENUE
 PHILADELPHIA, PA 19134-6311



EMERGENCY LANDSIDE REPAIRS AT
 TIOGA I MARINE TERMINAL

PHILADELPHIA, PENNSYLVANIA
 PROJECT #16-146.1



NO SCALE
 VICINITY MAP



NO SCALE
 LOCATION MAP

DRAWING INDEX

GENERAL

1 OF 7 C-001 COVER SHEET

STRUCTURAL

2 OF 7 S-001 GENERAL STRUCTURAL NOTES
 3 OF 7 S-002 GENERAL STRUCTURAL NOTES AND ABBREVIATIONS
 4 OF 7 S-100 SITE PLAN
 5 OF 7 S-101 PLAN OF CELLS 27 THROUGH 29
 6 OF 7 S-102 PLAN OF CELLS 33 THROUGH 34
 7 OF 7 S-103 TYPICAL DETAILS



Mark	Description	Date	Appr.

CONTRACT 16-146.1
 EMERGENCY LANDSIDE REPAIRS AT TIOGA I MARINE TERMINAL
 COVER SHEET

Designed by: LD	Checked by: LD	Date: DEC. 02, 2016	Rev.:
Dwn by: KGM	Reviewed by: DMS	Project No. 16-146.1	16-146.1
Submitted by: DMS	Submitted by: DMS	Drawing code: 16-146.1	16-146.1
		Drawing Scale: AS NOTED	AS NOTED
		Plot scale:	1:1

Pennoni
 SURVEYORS AND CIVIL ENGINEERS
 PENNONI ASSOCIATES INCORPORATED
 3001 MARKET STREET, SECOND FLOOR
 PHILADELPHIA, PENNSYLVANIA 19104

PHILADELPHIA REGIONAL PORT AUTHORITY

SEAL

Sheet Reference Number:
C-001

Sheet 1 of 7

GENERAL STRUCTURAL AND CONSTRUCTION NOTES

10 GENERAL

- 1. ALL WORK SHALL CONFORM TO THE "2004 INTERNATIONAL BUILDING CODE" AND TO ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS...
2. EXISTING UTILITIES BASED ON TIOPA MARINE TERMINAL OVERALL GRADINGS AND SITE PLAN...
3. IN CASE OF CONFLICT BETWEEN THE GENERAL NOTES AND DETAILS, THE MOST RIGID REQUIREMENTS SHALL GOVERN...
4. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED...
5. JOB SITE SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR...
6. THE CONTRACTOR SHALL PROVIDE FOR DENATURING AS REQUIRED DURING EXCAVATION AND CONSTRUCTION...
7. ALL COSTS OF INVESTIGATION AND/OR REDESIGN DUE TO CONTRACTOR IMPROPER INSTALLATION OF STRUCTURAL ELEMENTS OR OTHER ITEMS NOT IN CONFORMANCE WITH THE CONTRACT DOCUMENTS SHALL BE AT THE CONTRACTOR'S EXPENSE...
8. THE CONTRACTOR SHALL VERIFY ALL EXISTING INFORMATION SHOWN (DIMENSIONS, ELEVATIONS, ETC.) AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO FABRICATION OF ANY STRUCTURAL COMPONENT...
9. THE CONTRACTOR SHALL VERIFY AND/OR ESTABLISH ALL EXISTING CONDITIONS AND DIMENSIONS AT THE SITE. FAILURE TO NOTIFY ENGINEER OF UNSATISFACTORY CONDITIONS CONSTITUTES ACCEPTANCE OF UNSATISFACTORY CONDITIONS...
10. IF THE EXISTING FIELD CONDITIONS DO NOT PERMIT THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THE DETAILS SHOWN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND PROVIDE A SKETCH OF THE CONDITION WITH HIS PROPOSED MODIFICATION OF THE DETAILS GIVEN ON THE CONTRACT DOCUMENTS. DO NOT COMMENCE WORK UNTIL CONDITION IS RESOLVED AND MODIFICATION IS APPROVED BY THE ARCHITECT...
11. WHERE ALTERATIONS INVOLVE THE EXISTING SUPPORTING STRUCTURE, THE CONTRACTOR SHALL PROVIDE SHORING AND PROTECTION REQUIRED TO ENSURE THE STRUCTURAL INTEGRITY OF THE EXISTING STRUCTURE...
12. THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING, AND SHORING, ETC...
13. CONTRACTOR SHALL TAKE MEASURES NOT TO EXCEED THE LIVE LOAD CAPACITY OF THE EXISTING WHARF AS INDICATED IN PENNONI BOP REPORT DATED AUG. 23, 2010, PRPA #10-007-B...
14. CONTRACTOR TO PROVIDE SHEETINGS, BRACING, AND UNDERPINNINGS AS NECESSARY TO PREVENT ANY LATERAL OR VERTICAL MOVEMENTS OF EXISTING BUILDINGS, AND ANY EXISTING UTILITY LINES...
15. NO BLASTING SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL...
16. ALL SUBMITTALS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW WITHIN THREE (3) DAYS OF NOTICE TO PROCEED. SUBMITTAL REVIEW PERIOD SHALL BE A MAXIMUM OF ONE (1) WEEK...
17. REPRODUCTION OF ANY PORTION OF THE STRUCTURAL CONTRACT DRAWINGS FOR RESIDENTIAL AS SHOP DRAWINGS IS PROHIBITED. SHOP DRAWINGS PRODUCED IN SUCH A MANNER WILL BE REJECTED AND RETURNED...
18. SHOP DRAWINGS SUBMITTED FOR STRUCTURAL REVIEW SHALL CONSIST OF TWO (2) SETS OF PRINTS AND ONE (1) SET OF REPRODUCIBLES. ONLY ONE (1) MARKED UP SET OF REPRODUCIBLES WITH THE STRUCTURAL ENGINEER'S COMMENTS WILL BE RETURNED TO THE CONTRACTOR...
19. SHOP DRAWINGS SHALL BEAR THE CONTRACTOR'S STAMP OF APPROVAL WHICH SHALL CONSTITUTE CERTIFICATION THAT THE CONTRACTOR HAS VERIFIED ALL CONSTRUCTION CRITERIA, MATERIALS, AND SIMILAR DATA AND HAS CHECKED EACH DRAWING FOR COMPLETENESS, COORDINATION, AND COMPLIANCE WITH THE CONTRACT DOCUMENTS...
20. THE DRAWINGS HAVE BEEN PRODUCED ENTIRELY ON PENNONI CADD SYSTEM. ANY OTHER LETTERING, LINES OR SYMBOLS, OTHER THAN PROFESSIONAL STAMPS AND SIGNATURES, HAVE BEEN MADE WITHOUT THE AUTHORIZATION OF PENNONI ARE INVALID...
21. INSPECTION IS REQUIRED OF ALL CONSTRUCTION DELINEATED ON THE STRUCTURAL DRAWINGS AND/OR SPECIFICATIONS. THE CONTRACTOR SHALL EMPLOY A TESTING/INSPECTION AGENCY WHICH SHALL PROVIDE PERSONNEL WITH THE FOLLOWING MINIMUM QUALIFICATIONS:
A. CERTIFIED BY INSTITUTE OF CERTIFIED ENGINEERING TECHNICIANS, OR OTHER RECOGNIZED COMPARABLE ORGANIZATION, AND:
* FOR INSPECTION, SAMPLING, TESTING CONCRETE AND MASONRY: ACI CERTIFIED CONCRETE FIELD-TESTING TECHNICIAN, GRADE I, AND CONSTRUCTION INSPECTOR, LEVEL II.
22. SUBMIT PERIODIC REPORTS WITHIN ONE BUSINESS DAY AFTER RECEIPT BY THE CONTRACTOR TO ENGINEER. SUBMIT FINAL INSPECTION REPORT SUMMARY FOR EACH DIVISION OF WORK CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER. THE INSPECTIONS WERE PERFORMED AND THAT WORK WAS PERFORMED IN ACCORDANCE WITH CONTRACT DOCUMENTS...
23. THE OWNER SHALL ENGAGE A TESTING AGENCY TO PROVIDE TESTING SERVICES AS INDICATED IN EACH SECTION OF THESE GENERAL NOTES...
24. ALL MATERIALS SHALL BE STORED TO PROTECT THEM FROM EXPOSURE TO THE ELEMENTS...
25. EARTHWORK
1. SEE THE SPECIFICATIONS AND GEOTECHNICAL REPORT FOR BACKFILL AND PREPARATION OF THE SLAB-ON-GRADE SUBGRADE, INCLUDING COMPACTION REQUIREMENTS...
2. SATISFACTORY FILL MATERIALS ARE THOSE COMPLYING WITH ASTM D2487, GROUPS GP, GM, SW, SM, SA, AND SP. ON SITE BORROW MATERIAL SHALL BE TESTED TO DETERMINE SUITABILITY FOR USE AS FILL MATERIAL...
3. COMPACT SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DENSITY OF MODIFIED PROCTOR (ASTM D1557):
UNDER BUILDING SLABS, STEPS, PAVEMENTS - 95%
3.1 SOIL MOISTURE CONTROL
A. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL SOIL LAYER BEFORE COMPACTION TO WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT.
1. DO NOT PLACE BACKFILL OR FILL SOIL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE.
2. REMOVE AND REPLACE, OR SCARIFY AND AIR DRY, OTHERWISE SATISFACTORY SOIL MATERIAL THAT EXCEEDS OPTIMUM MOISTURE CONTENT BY 2 PERCENT AND IS TOO WET TO COMPACT TO SPECIFIED DRY UNIT WEIGHT.
4. THE OWNER SHALL RETAIN THE SERVICES OF A PROFESSIONAL GEOTECHNICAL ENGINEER TO PERFORM SOIL TESTING AND INSPECTION. THEY SHALL INSPECT THE SUBGRADE TO VERIFY EXTENT OF SOIL IMPROVEMENT AND SUBGRADE PREPARATION. REPORTS SHALL BE SUBMITTED TO ENGINEER OUTLINING THE WORK PERFORMED AND TEST RESULTS...
30. FOUNDATIONS
1. SLABS ON GRADE SHALL BEAR ON MECHANICALLY COMPACTED SOIL CAPABLE OF SUPPORTING 1500 PSF. DRAINAGE FILL UNDER SLABS SHALL BE COMPACTED GRAVEL OR CRUSHED STONE...
2. UTILITY LINES SHALL NOT BE PLACED THROUGH OR BELOW FOUNDATIONS WITHOUT THE STRUCTURAL ENGINEER'S APPROVAL...
3. THE CONTRACTOR SHALL OBSERVE WATER CONDITIONS AT THE SITE AND TAKE THE NECESSARY PRECAUTIONS TO ENSURE THAT THE FOUNDATION EXCAVATIONS REMAIN DRY DURING CONSTRUCTION. ANY SHEETING OR SHORING REQUIRED FOR DENATURING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR...
40. SHEETING AND SHORING
1. SHEETING, SHORING, AND ASSOCIATED EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH OSHA GUIDELINES...
50. CAST-IN-PLACE CONCRETE
1. CONCRETE SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI-318-08), AND CONSTRUCTED IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE...
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE 28-DAY STRENGTH OF 4000 PSI. AIR ENTRAINMENT SHALL BE 6% IN ALL EXPOSED CONCRETE WORK. MAXIMUM WATER/CEMENT RATIO OF 0.45...
3. REINFORCING STEEL: ASTM A615 GRADE 60...
4. WELDED WIRE REINFORCEMENT (WWR) ASTM A-185...
5. REINFORCING STEEL CLEAR COVER SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
REINFORCING STEEL IN CONCRETE CAST AGAINST SOIL 3"
REINFORCING STEEL IN CONCRETE EXPOSED TO SOIL OR WEATHER 1 1/2"
#5 BARS AND SMALLER 1 1/2"
#6 BARS AND LARGER 2"
NOTE: TOLERANCE FOR CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 117
6. SUBMIT TO ENGINEER REINFORCING STEEL SHOP DRAWINGS FOR APPROVAL AND MIX DESIGNS FOR REVIEW PRIOR TO PLACING ANY CONCRETE.
A. REINFORCING STEEL PLACING DRAWINGS SHALL BE PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 314-12, "DETAILS AND DETAILING OF CONCRETE REINFORCING". THE PLACING DRAWINGS SHALL SHOW ALL INFORMATION NECESSARY TO FABRICATE AND PLACE THE REINFORCING STEEL...
B. THE SPACING OF ALL REINFORCING STEEL MUST BE COMPUTED BY THE REINFORCING STEEL DETAILER AND MUST BE INDICATED ON THE PLACING DRAWINGS. EXTENT ARROWS MUST BE USED TO CLEARLY INDICATE THE LOCATIONS WHERE GROUPS OF REINFORCING BARS ARE TO BE INSTALLED...
C. A LIST OF ALL APPLICABLE REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE INDICATED ON ALL REINFORCING STEEL PLACING DRAWINGS. PLACING

DRAWINGS THAT DO NOT SHOW SUFFICIENT INFORMATION NECESSARY TO PLACE THE REINFORCING STEEL WILL BE REJECTED

- 7. ALL REINFORCEMENT SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS, STIRRUPS OR CHAIRS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT FOR ALL BARS...
8. LAP WELDED WIRE REINFORCEMENT TWO (2) FULL WIRE SPACES AT SPLICES AND WIRE TOGETHER...
9. PROVIDE ELASTIC TIPPED BOLSTERS AND CHAIRS AT ALL LOCATIONS WHERE THE CONCRETE SURFACE IN CONTACT WITH THE BOLSTERS OR CHAIRS IS EXPOSED...
10. PLACING OF CONCRETE SHALL NOT START UNTIL THE PLACEMENT OF REINFORCING HAS BEEN APPROVED BY THE INSPECTION AGENCY...
11. EPOXY ADHESIVE SHALL BE USED WHERE DONNELS ARE TO BE INSTALLED INTO EXISTING CONCRETE. SUBMIT MANUFACTURER INFORMATION FOR ENGINEER REVIEW...
12. NO SLEEVE SHALL BE PLACED THROUGH ANY CONCRETE ELEMENT UNLESS SHOWN ON THE APPROVED SHOP DRAWINGS OR SPECIFICALLY AUTHORIZED IN WRITING BY THE STRUCTURAL ENGINEER. THE CONTRACTOR SHALL VERIFY DIMENSIONS AND LOCATIONS OF ALL SLOTS, PIPE SLEEVES, ETC. AS REQUIRED FOR MECHANICAL TRASSES BEING INSTALLED...
13. PIPES OR CONDUITS PLACED IN SLABS SHALL NOT HAVE AN OUTSIDE DIAMETER LARGER THAN 1/3 THE SLAB THICKNESS AND SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTER. ALUMINUM CONDUITS SHALL NOT BE PLACED IN CONCRETE. NO CONDUITS SHALL BE PLACED IN SLABS WITHIN 12 INCHES OF COLUMN FACE OR FACE OF BEARING WALL. NO CONDUITS MAY BE PLACED IN EXTERIOR SLABS OR SLABS SUBJECTED TO FLUIDS...
14. PRIOR TO PLACING CONCRETE, THE CONTRACTOR SHALL SUBMIT FOR REVIEW BY THE STRUCTURAL ENGINEER, A CONCRETE POUR SCHEDULE SHOWING LOCATION OF ALL PROPOSED CONSTRUCTION JOINTS...
15. PRIOR TO CONCRETE PLACEMENT, THE CONTRACTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER FOR REVIEW, CONCRETE MIX DESIGNS PREPARED IN ACCORDANCE WITH THE SPECIFICATIONS AND REQUIREMENTS INDICATED IN THE GENERAL NOTES...
16. CONCRETE SHALL NOT BE PUMPED THROUGH ALUMINUM PIPES AND SHALL NOT BE PLACED IN CONTACT WITH ALUMINUM FORMS, MIXING DRUMS, BUCKETS, CHUTES, CONVEYORS OR OTHER EQUIPMENT MADE OF ALUMINUM...
17. WHEN INSTALLING EXPANSION BOLTS OR ADHESIVE ANCHORS, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID DRILLING OR CUTTING OF ANY EXISTING REINFORCING AND SHALL BE CAREFULLY GUARDED AGAINST. ALL SURFACES SHALL BE MOIST CURED OR PROTECTED USING A MEMBRANE CURING AGENT APPLIED AS SOON AS FORMS ARE REMOVED. IF MEMBRANE CURING AGENT IS USED, EXERCISE CARE NOT TO DAMAGE COATING...
18. EARLY DRYING OUT OF CONCRETE, ESPECIALLY DURING THE FIRST 24 HOURS, SHALL BE CAREFULLY GUARDED AGAINST. ALL SURFACES SHALL BE MOIST CURED OR PROTECTED USING A MEMBRANE CURING AGENT APPLIED AS SOON AS FORMS ARE REMOVED. IF MEMBRANE CURING AGENT IS USED, EXERCISE CARE NOT TO DAMAGE COATING...
19. COLD WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI-306. HOT WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI-309R...
20. THROUGHOUT CONSTRUCTION, THE CONCRETE WORK SHALL BE ADEQUATELY PROTECTED FROM EXCESSIVE DUE TO EXCESSIVE LOADING, CONSTRUCTION EQUIPMENT, MATERIALS OR METHODS, ICE, RAIN, SNOW, EXCESSIVE HEAT, AND FREEZING TEMPERATURES...
21. PREPARE CONCRETE TEST CYLINDERS FROM EACH DAY'S POUR. CYLINDERS SHALL BE PROPERLY CURED AND STORED. SAMPLE FRESH CONCRETE IN ACCORDANCE WITH ASTM C173...
22. RETAIN LABORATORY TO PROVIDE TESTING SERVICE. SLUMP PER ASTM 143 AIR CONTENT PER ASTM C231 OR C173, CYLINDER TESTS PER ASTM C31 AND C34. ONE SET OF SIX (6) CYLINDERS FOR EACH 50 CUBIC YARDS FOR EACH MIX USED. REPORTS OF ALL TESTS TO BE SUBMITTED TO THE ENGINEER...
60. CONCRETE ANCHORS
EPOXY-INSTALLED ANCHORS
1. EXCEPT WHERE INDICATED ON THE DRAWINGS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES AS PROVIDED BY HILTI, INC. OR APPROVED EQUAL:
ADHESIVE ANCHORS INTO CONCRETE
HILTI HIT RE 500-SD OR HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM WITH SAFE SET HILTI HIT-Z ANCHORS
OR
HILTI HAS-E THREADED ROD INSTALLED IN HAMMER-DRILLED HOLES, DRY OR WATER SATURATED.
REBAR INTO CONCRETE
HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM

Table with 2 columns: ADHESIVE ANCHORS INTO CONCRETE, REBAR INTO CONCRETE and HILTI HIT RE 500-SD OR HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM WITH SAFE SET HILTI HIT-Z ANCHORS, HILTI HAS-E THREADED ROD INSTALLED IN HAMMER-DRILLED HOLES, DRY OR WATER SATURATED, HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM

- 2. ANCHOR CAPACITY USED IN DESIGN SHALL BE BASED ON THE TECHNICAL DATA PUBLISHED BY HILTI OR SUCH OTHER METHOD AS APPROVED BY THE STRUCTURAL ENGINEER OR RECORD. SUBSTITUTION REQUEST FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE...
3. THE ANCHOR MANUFACTURER SHALL MAKE A REPRESENTATIVE AVAILABLE TO PROVIDE ON-SITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED ON THE STRUCTURAL DRAWINGS. TRAINING SHALL BE AT THE CONTRACTOR'S REQUEST AND AT NO ADDITIONAL CHARGE TO THE CONTRACTOR, OWNER OR ENGINEER...
4. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO THE EDGE OF CONCRETE OR MASONRY SURFACE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE DISTANCE CLEARANCES INDICATED ON THE DRAWINGS...
5. DRILL AND GROUT REINFORCING BAR DONNELS AS SHOWN ON THE PLANS AND AS APPROVED, UNLESS NOTED OTHERWISE. EMBED BARS AS REQUIRED TO DEVELOP THE FULL TENSION CAPACITY OF THE BAR...
6. THE ANCHOR MANUFACTURER SHALL MAKE A REPRESENTATIVE AVAILABLE TO PROVIDE ON-SITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED ON THE STRUCTURAL DRAWINGS. TRAINING SHALL BE AT THE CONTRACTOR'S REQUEST AND AT NO ADDITIONAL CHARGE TO THE CONTRACTOR, OWNER OR ENGINEER...
7. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO THE EDGE OF CONCRETE OR MASONRY SURFACE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE DISTANCE CLEARANCES INDICATED ON THE DRAWINGS...
TO JET GROUTING

- 1. JET GROUTING AND RELATED WORK AS INDICATED ON THE DRAWINGS, THE WORK CONSISTS OF FURNISHING ALL PLANT, LABOR, EQUIPMENT, AND MATERIALS AND OF PERFORMING ALL OPERATIONS AS REQUIRED TO CONSTRUCT THE SOILRETE STABILIZATION VIA JET GROUTING METHOD...
2. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING INFORMATION WITHIN (2) DAYS OF NOTICE TO PROCEED:
A. THE CONTRACTOR WILL DESIGNATE THE ORGANIZATION RESPONSIBLE FOR THE JET GROUTING WORK (THE JET GROUTING CONTRACTOR). THIS ORGANIZATION MAY BE THE CONTRACTOR'S OWN COMPANY, A SPECIALTY SUBCONTRACTOR OR AN ORGANIZATION PROVIDING TECHNICAL ASSISTANCE TO THE CONTRACTOR TO DO THE WORK. IN ANY CASE, THE JET GROUT CONTRACTOR SHALL SUBMIT EVIDENCE THAT IT IS EXPERIENCED AND COMPETENT TO CONSTRUCT IN-SITU SOILRETE VIA JET GROUTING. THE JET GROUTING CONTRACTOR SHALL HAVE AT LEAST [FIVE] YEARS OF PRIOR EXPERIENCE IN SUCCESSFUL COMPLETION OF JET GROUTING PROJECTS. THIS EVIDENCE MUST INSURE THAT THE CONTRACTOR WILL HAVE SUFFICIENT COMPETENT EXPERIENCED PERSONNEL TO CARRY OUT THE OPERATIONS SPECIFIED...
B. THE JET GROUT SPECIALIST SHALL SUPERVISE THE CONSTRUCTION, GROUT PREPARATION, AND QUALITY CONTROL. THE JET GROUT SPECIALIST SHALL HAVE AT LEAST [FIVE] YEARS OF EXPERIENCE AND [TEN] OR MORE PROJECTS IN SUCCESSFUL COMPLETION OF JET GROUTING...
C. THE COMPANY NAME, KEY CONTACT, AND QUALIFICATIONS OF THE CONTRACTOR'S OFF-SITE LABORATORY SHALL BE SUBMITTED. THE LABORATORY WILL HAVE PREVIOUS EXPERIENCE WITH SOILRETE MATERIALS AND EXPERIENCED LABORATORY TECHNICIANS...
3. THE CONTRACTOR SHALL SUBMIT A DETAILED OPERATING WORK PLAN DESCRIBING HIS PROPOSED CONSTRUCTION EQUIPMENT, PROCEDURES, AND SCHEDULES. THIS SHALL INCLUDE:
A. COORDINATING THE CONSTRUCTION, MAINTENANCE AND REMOVAL OF WORKING PLATFORMS, MIXING PADS, AND HAUL ROADS WITH THE OWNER...
B. EQUIPMENT SET-UP AND SITE USE LAYOUT INCLUDING STORAGE AREAS, HAUL ROADS AND WORK PLATFORM DIMENSIONS...
C. EQUIPMENT SPECIFICATIONS INCLUDING: CAPABILITY OF JET GROUT RIG; AND SPECIFICATIONS OF GROUT MIXING EQUIPMENT...
D. GROUTING PLAN OUTLINING THE SPACING, LOCATION, DEPTH, AND QUANTITY OF GROUT TO ACHIEVE THE SPECIFIED CRITERIA. GROUT HOLE LOCATIONS SHALL BE DIMENSIONALLY REFERENCED TO THE CONTRACT DRAWINGS, INCLUDING THE GEOMETRY OF THE FINISHED COLLUMS, SIZE AND OVERLAP...
E. JET GROUTING PROCEDURES- METHOD OF DRILLING, JET GROUTING (I.E. SINGLE, DOUBLE, TRIPLE, JET SYSTEMS), FLUID INJECTION PRESSURE(S), ROTATIONAL SPEED AND WITHDRAWAL RATE FOR JET GROUTING THROUGH THE SOIL STRATA...
F. MATERIAL PROPERTIES, SOURCES, AND MANUFACTURER'S CERTIFICATES OF QUALITY...
G. CONTROL OF DRAINAGE, SPILLS, WASTES, ETC...
H. CLEAN-UP, SPOILS DISPOSAL, GROUT DISPOSAL...
I. MONITORING PLAN- A GROUND MOVEMENT MONITORING PLAN TO MEASURE VERTICAL MOVEMENTS OR HEAVE/SETTLEMENT OF UTILITIES, STRUCTURES, AND ROADWAYS IN THE VICINITY OF THE JET GROUTING OPERATIONS...
4. THE CONTRACTOR SHALL SUBMIT A QUALITY CONTROL PLAN WITH DETAILS ON PERSONNEL, RESPONSIBILITIES, INSPECTIONS, AND ORGANIZATION FOR INSURING THE QUALITY OF CONSTRUCTION REQUIRED BY THESE SPECIFICATIONS. THE PLAN SHALL PROVIDE A TABLE LISTING TESTING METHODS, FREQUENCIES, AND MINIMUM ACCEPTABLE VALUES. THE PLAN SHALL EXPLAIN THE METHODS AND LOCATIONS FOR

OBTAINING SAMPLES FOR TESTING AND REPORTING SCHEDULES, COPIES OF QUALITY CONTROL FORMS SHALL BE SUBMITTED FOR APPROVAL

- 5. THE CONTRACTOR SHALL SUBMIT A DETAILED SCHEDULE AND SEQUENCE OF OPERATIONS IN A BAR CHART FORMAT. THE SUBMITTAL SHALL INCLUDE A DESCRIPTION OF THE SCHEDULE INCLUDING TYPICAL WORKING HOURS AND DAYS, SEQUENCE OF OPERATIONS, AND MAINTENANCE SCHEDULES...
6. REPORTS: THE FOLLOWING INFORMATION SHALL BE SUBMITTED TO THE ENGINEER ON A REGULAR SCHEDULE DURING THE PROGRESS OF THE WORK. DAILY REPORTS SHALL BE SUBMITTED BY NOON OF THE DAY FOLLOWING THE DATE OF THE REPORT...
A. AS-BUILT PROFILE: A RECORD OF COLLUMS CONSTRUCTED INCLUDING THE DEPTH, SET, AND LOCATION OBTAINED EACH MORNING AND EVENING. THE INFORMATION SHALL BE USED TO GENERATE AN AS-BUILT COLLUM PROFILE, AS CONSTRUCTED...
B. GROUT MIX: A RECORD OF PLANT-MIXED GROUT SLURRY QUANTITIES, PROPORTIONS, PROPERTIES, AND ADJUSTMENTS MADE DURING CONSTRUCTION. ADJUSTMENTS TO THE SLURRY MIXTURE SHALL BE NOTED...
C. QUALITY CONTROL DATA: A RECORD OF QUALITY CONTROL SAMPLES, TESTS AND TEST RESULTS...
7. IT SHALL BE THE GROUTING SUBCONTRACTOR'S RESPONSIBILITY TO DETERMINE AND IMPLEMENT THE SYSTEMS AND CRITERIA TO ENSURE THAT SPECIFIED IMPROVEMENT IS ACHIEVED BY MEANS OF TEST BORINGS, SPT DATA OR DYNAMIC CPT DATA ETC...
8. MATERIALS: JET GROUT SLURRY: THE GROUT SLURRY SHALL CONSIST OF A STABLE HOMOGENEOUS MIXTURE OF CEMENT/BENTONITE IN WATER. THE GROUT SHALL BE CONTROLLED IN ACCORDANCE WITH THE MOST CURRENT API RECOMMENDED PRACTICE (R3)-H, AND THE FOLLOWING REQUIREMENTS:
A. IF BENTONITE SLURRY IS USED, THE SLURRY SHALL BE A MIXTURE OF NOT LESS THAN 12% BENTONITE IN WATER. ADDITIONAL BENTONITE OR ADJUSTMENTS MAY BE REQUIRED DEPENDING ON THE HARDNESS AND THE QUALITY OF THE BENTONITE. THE SLURRY SHALL HAVE PROPERTIES AS DESCRIBED IN TABLE I (ALTERNATIVELY, THE CONTRACTOR MAY USE BENTONITE OR OTHER ADDITIVES AS REQUIRED TO SUSPEND CEMENT PARTICLES AND CONTROL VISCOSITY OF THE MIXED GROUT)...
B. CEMENT GROUT: PROPERTIES SHOULD INCLUDE A CALCULATED DESIGN DENSITY AND A PLANNED VISCOSITY...
9. BENTONITE: BENTONITE USED IN PREPARING SLURRY SHALL BE FULVERIZED (POWDER OR GRANULAR) PREMIUM GRADE SODIUM-CATION MONTMORILLONITE AND SHALL MEET THE MOST CURRENT API STANDARD 13A, SECTION 4. THE YIELD OF THE BENTONITE SHALL BE 90% BARRELS PER TON...
10. CEMENT: CEMENT USED IN PREPARING GROUT SHALL CONFORM TO ASTM C150, PORTLAND TYPE I OR I/A OR ASTM C494, GROUND GRANULAR BLAST FURNACE SLAG OR A MIXTURE OF BOTH...
11. WATER: FRESH WATER, FREE OF EXCESSIVE AMOUNTS OF DELETERIOUS SUBSTANCES THAT ADVERSELY AFFECT THE PROPERTIES OF THE GROUT SHALL BE USED TO MANUFACTURE GROUT SLURRY. THE WATER SHALL BE POTABLE, CLEAN AND FREE FROM SEWAGE, OIL, ACID, ALKALI, SALTS AND ORGANIC MATERIALS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR THAT THE GROUT/SLURRY RESULTING FROM THE WATER SHALL ALWAYS MEET THESE STANDARDS...
12. ADMIXTURES: FOR BENTONITE SLURRY, ADMIXTURES OF THE TYPE USED IN THE CONTROL OF OIL-FIELD DRILLING SLURRIES SUCH AS SOFTENING AGENTS, DISPERSANTS, RETARDER OR PLUGGERS OR BRIDGING AGENTS MAY BE ADDED TO THE WATER OR THE SLURRY TO PERMIT EFFICIENT USE OF MATERIALS AND PROPER WORKABILITY OF THE SLURRY. THE ENGINEER SHALL BE ADVISED OF ALL ADDITIVES USED...
13. JET GROUTING OPERATIONS:
A. JET GROUTING SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED GROUT INJECTION AREA LAYOUT SCHEME TO ACHIEVE THE FOLLOWING ANCHORING CRITERIA:
1. A MINIMUM OF TEN (10) BPF THROUGHOUT TREATMENT ZONE...
2. INSTALL SOILRETE COLLUMS, ENSURING THAT CONTINUOUS SPOIL RETURN UP THE BOREHOLE ANNULUS IS ACHIEVED DURING ALL WORK...
14. EQUIPMENT:
A. ALL EQUIPMENT USED FOR DRILLING BOREHOLES, LOWERING, RAISING AND ROTATING JET MONITORS, MIXING GROUT, AND AIR-WATER TO JET MONITORS SHALL HAVE PROVEN PERFORMANCE RECORDS FOR USE IN JET GROUTING WORK...
B. SPARE PARTS AND EQUIPMENT SHALL BE AVAILABLE ON SITE TO MAINTAIN JET GROUTING EQUIPMENT IN SATISFACTORY OPERATION CONDITION AT ALL TIMES DURING EXECUTION OF THE JET GROUTING WORK...
C. USE DRILLING EQUIPMENT OF A TYPE AND CAPACITY SUITABLE FOR DRILLING REQUIRED HOLE DIAMETERS AND DEPTHS, AND LOWERING, RAISING, AND ROTATING JET GROUT MONITORS TO THE DEPTHS AND AT THE RATES REQUIRED TO PERFORM THE WORK AS SHOWN ON THE CONTRACT DRAWINGS...
D. USE JET GROUTING MONITORS HAVING CAPACITY SUITABLE FOR PRODUCING SOILRETE COLLUMS IN THE WORK SITE SOIL TYPES IDENTIFIED IN THE GEOTECHNICAL DATA REPORT BY PENNONI, DATED DECEMBER 2, 2016, AND OF THE SIZE AND DEPTH SHOWN ON THE CONTRACT DRAWINGS...
E. THE GROUT/SLURRY BATCHING PLANT SHALL INCLUDE THE NECESSARY EQUIPMENT INCLUDING A HIGH SHEAR MIXER, CAPABLE OF PRODUCING HOMOGENEOUS MIXTURES OF CEMENT/BENTONITE IN WATER, PUMPS, VALVES, HOSES, SUPPLY LINES, AND ALL OTHER EQUIPMENT AS REQUIRED TO ADEQUATELY SUPPLY SLURRY TO THE JET GROUT RIG. ALL GROUT/SLURRY FOR USE SHALL BE PREPARED USING A SUITABLE MIXER, MIXING OF WATER AND CEMENT/BENTONITE SHALL CONTINUE UNTIL THE RESULTING GROUT/SLURRY IS HOMOGENEOUS...
15. EXECUTION OF WORK:
A. JET GROUTING MAY CONSIST OF A SINGLE JET (GROUT INJECTION ONLY), DOUBLE JET (GROUT AIR INJECTION, OR TRIPLE JET (WATER, AIR AND GROUT INJECTION) SYSTEMS. ANY OF THESE SYSTEMS WILL BE ACCEPTABLE, PROVIDING THE STATED PERFORMANCE REQUIREMENTS ARE MET...
B. THE JET GROUTING OPERATIONS FOR INSTALLATION OF PRODUCTION COLLUMS MUST CONFORM TO THE APPROVED JET GROUTING PLAN...
C. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH SITES WITH LOCATION OF THE EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES THAT MIGHT AFFECT HIS OPERATIONS...
D. EXPOSE ALL NEAR-SURFACE UTILITIES IN THE VICINITY OF THEIR JET GROUTING OPERATIONS TO ENSURE THAT THE DRILL-RIG DOES NOT PENETRATE THESE UTILITIES...
E. MAINTAIN GOOD CONTROL OF THE JET GROUTING PROCESS IN REGARD TO SPOIL RETURN SO AS TO MINIMIZE OR ELIMINATE GROUND HEAVE...
F. AT ALL TIMES DURING AND AT COMPLETION OF JET GROUTING OPERATIONS, THE SITE SHALL BE THOROUGHLY CLEANED OF ALL DEBRIS, WATER, RETURN FLOW AND SPILLED MATERIAL. THE CONTRACTOR SHALL DISPOSE OF ALL SUCH WASTE MATERIALS IN A MANNER ACCEPTABLE TO ALL AGENCIES HAVING JURISDICTION...
G. PREVENT ALL MATERIAL FROM ENTERING STORM DRAINS OR OTHER DRAINAGE COURSES, OR LEAVING THE SITE VIA RUNOFF...
H. COMPLY WITH APPLICABLE REQUIREMENTS OF ALL REGULATORY AUTHORITIES HAVING JURISDICTION...
1. JET GROUT COLLUMS SHALL BE INSTALLED AT LOCATIONS WHERE JET GROUTING IS INDICATED ON THE DRAWINGS (I.E. JET GROUTING AREA) TO CREATE A FULLY GROUTED ZONE MEETING THE PERFORMANCE REQUIREMENTS...
J. CREATE SOILRETE COLLUMS BY JET GROUTING PROCESS FROM THE BOTTOM TO THE TOP OF THE GROUT AREA AS SHOWN ON THE DRAWINGS. THE BOTTOM OF THE JET GROUT AREA IS DEFINED, THE TOP OF THE JET GROUT AREA IS TO BE DETERMINED BY THE CONTRACTOR, MEETING THE REQUIREMENTS OF THE ENGINEER...
K. GROUTING FOR AN INDIVIDUAL JET GROUT COLLUM SHALL BE CONTINUOUS AND WITHOUT INTERRUPTION...
CLEANUP
L. AT THE COMPLETION OF DAILY JET GROUTING OPERATIONS, THOROUGHLY CLEAN SITE AND DISPOSE OF ALL SPOIL, DEBRIS, WATER, AND SPILLED MATERIAL. SPOIL STOCKPILING OVERNIGHT IS PERMITTED PROVIDED THAT THE MATERIAL IS TO BE PREDETERMINED WASTE OR FILL LOCATION...
16. QUALITY CONTROL:
A. ALL JET GROUTING SHALL BE PERFORMED UNDER THE FULL-TIME OBSERVATION OF THE FIELD QUALITY CONTROL REPRESENTATIVE (FQCR). THE OWNER WILL RETAIN THE FQCR AND PAY ASSOCIATED COSTS...
B. MONITORING AND LOGGING OF JET GROUTING OPERATIONS SHALL BE DONE BY THE FIELD QUALITY CONTROL REPRESENTATIVE...
C. ANY JET GROUT HOLE LOST OR DAMAGED AS THE RESULT OF MECHANICAL FAILURE OF EQUIPMENT, INADEQUACY OF GROUT OR WATER SUPPLIES, OR IMPROPER DRILLING OR INJECTION PROCEDURES SHALL BE BACKFILLED WITH CEMENT GROUT AND REPERFORED BY ANOTHER HOLE, DRILLED AND INJECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER...
D. GROUT INJECTION AND MONITORING OF ROTATION AND EXTRACTION RATES SHALL BE SUFFICIENT TO PRODUCE GROUT COLLUMS MEETING THE DIAMETER, DEPTH, OVERLAP, AND MATERIAL PROPERTY REQUIREMENTS SPECIFIED HEREIN...
E. PROPORTION AND INJECT GROUT MIX SO THAT THE SOILRETE COLLUM PRODUCED MEETS THE FOLLOWING REQUIREMENTS: MINIMUM COMPRESSIVE STRENGTH OF 500PSI AT 7 DAYS...
F. EQUIPMENT FOR MIXING, HOLDING, AND PUMPING GROUT SHALL BE IN A SECURE LOCATION AND SHALL BE OPERATED TO MINIMIZE SPILLAGE OF MATERIAL. NO MATERIAL WILL BE ALLOWED TO ENTER STORM DRAINS OR OTHER DRAINAGE COURSES...
G. DAILY RECORDS SHALL BE MAINTAINED BY THE GROUTING CONTRACTOR AND SUBMITTED TO THE FQCR...
H. ENSURE CONTINUOUS SPOIL RETURN DURING ALL JET GROUTING OPERATIONS. THE GROUTING CONTRACTOR WILL MONITOR SPOIL RETURN BY STRUCTURES AND UTILITIES IN ACCORDANCE WITH THE APPROVED MONITORING PLAN...
I. BENTONITE: CERTIFICATE OF COMPLIANCE WITH THE SPECIFICATION SHALL BE OBTAINED FROM THE MANUFACTURER FOR EACH SHIPMENT OF BENTONITE DELIVERED TO THE SITE...
J. CEMENT: CERTIFICATE OF COMPLIANCE WITH THE SPECIFICATION SHALL BE OBTAINED FROM THE MANUFACTURER FOR EACH SHIPMENT OF CEMENT DELIVERED

TO THE SITE.

- K. WATER: WATER FOR SLURRY MIXING SHALL BE POTABLE...
L. FRESH SLURRY: A COMPLETE SERIES OF TESTS SHALL BE CONDUCTED FROM THE MIXER OR TANK CONTAINING FRESH GROUT SLURRY READY FOR INTRODUCTION IN THE TRENCH AT LEAST TWICE PER SHIFT...
M. FIELD TESTING: NET SAMPLE METHOD- NET SAMPLES OF THE IN-SITU SOILRETE MATERIALS SHALL BE OBTAINED WITH THE IN-SITU SAMPLER. THE SAMPLES SHALL BE TAKEN PRIOR TO THE SOILRETE BEING ALLOWED TO CURE IN-SITU. THE NET SAMPLES SHALL BE PLACED IN MOLDS (ASTM D4932) AND ALLOWED TO CURE. NOTE THE LOCATION, DEPTH, AND COLUMN OF NET SAMPLE. NET SAMPLES WILL BE OBTAINED FOR EVERY [1000] LIN FT OF COLLUM FORMED...
N. SAMPLING REQUIREMENTS:
* THE SOILRETE SAMPLES SHALL BE PLACED IN BOXES AND PROPERLY LABELED TO INDICATE THE DEPTH AND COLLUMS FROM WHICH THE SAMPLE ORIGINATES...
* OBTAIN 6 SAMPLES FOR TESTING FROM EACH DAY'S GROUTING OPERATIONS...
* THE SAMPLES SHALL BE WRAPPED IN PLASTIC FILM (E.G., CLEAR PLASTIC WRAP) TO PREVENT MOISTURE LOSS...
* THE SAMPLES SHALL BE STORED IN A COOL, DRY LOCATION (PREFERABLY IN A CLIMATE CONTROLLED TRAILER ON SITE THE DAY THAT THEY DRILLED)...
* NET SAMPLES SHALL BE STORED IN MOISTURE CONTROLLED ATMOSPHERE TO BE ALLOWED TO CURE AND STABILIZE FOR SHIPPING TO A LABORATORY FOR TESTING...
* THE SAMPLES SHALL NOT BE ALLOWED TO FREEZE...
* THE CONTRACTOR WILL MAKE THE SAMPLES ACCESSIBLE TO THE ENGINEER FOR VIEWINGS...
* STRENGTH BY NET SAMPLING/CAST MOLDS TO MEET THE PERFORMANCE REQUIREMENT LISTED ABOVE...
O. QUALITY CONTROL: TESTING EQUIPMENT: THE FIELD LABORATORY SHALL BE EQUIPPED WITH THE FOLLOWING EQUIPMENT, AT A MINIMUM:
* MARSH FUNNEL AND CUP - 2 SETS
* MUD BALANCE - 2 SETS
* PH TAPE - 1 SET
P. OWNER SHALL ENGAGE A QUALIFIED OFF-SITE LABORATORY TO PERFORM THE TESTS LISTED BELOW. SAMPLES SHALL BE DELIVERED TO THE LABORATORY ON AN EXPEDITED SCHEDULE AND TEST RESULTS SHALL BE REPORTED THE SAME WEEK AS THE SAMPLES ARE TESTED...
* UNCONFINED COMPRESSIVE STRENGTH BY ASTM 1633. TESTING TO BE CARRIED OUT AT 1 DAY, 3 DAY, 7 DAY 14 DAY AND 28 DAY WITH ONE HOLD.
17. DOCUMENTATION:
A. RESULTS OF ALL TESTS PERFORMED SHALL BE RECORDED ON FORMS ACCEPTABLE TO THE ENGINEER AND SIGNED BY THE JET GROUT SPECIALIST. THESE FORMS WILL BE AVAILABLE TO THE ENGINEER AT ALL TIMES FOR HIS INSPECTION. COPIES OF ALL QUALITY CONTROL DOCUMENTS WILL BE SUBMITTED DAILY TO THE ENGINEER FOR HIS VERIFICATION...
B. AN AS-BUILT PROFILE DRAWING SHALL BE CONTINUOUSLY MAINTAINED BY THE CONTRACTOR. THE PROFILE SHALL INDICATE THE EXTENT OF TREATMENT AT THE END OF EACH WORKING DAY. THE DAILY PROFILE SHALL BE DRAWN IN AN ELECTRONIC FORMAT OR BY HAND, AS DIRECTED BY THE ENGINEER.



Table with 4 columns: Date, Description, Mark, and other fields.

CONTRACT 16-146.1 EMERGENCY LANDSIDE REPAIRS AT TIOPA MARINE TERMINAL GENERAL STRUCTURAL NOTES

Table with 4 columns: Date, Rev., Project No., Drawing code, Drawing Scale, Plot scale.



SEAL, Sheet Reference Number: S-001, Sheet 2 of 7

8.0 COMPACTION GROUTING

- 1. COMPACTION GROUTING AND RELATED WORK AS INDICATED ON THE DRAWINGS...
2. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING INFORMATION WITHIN TWO (2) DAYS OF NOTICE TO PROCEED...
3. THE CONTRACTOR SHALL SUBMIT A DETAILED OPERATING WORK PLAN...
4. THE FOLLOWING SHALL BE SUBMITTED TO THE PROFESSIONAL, DURING THE WORK...
5. THE COMPACTION GROUTING PROGRAM, INCLUDING INSTALLATION OF GROUT PIPES...
6. IT SHALL BE THE GROUTING SUBCONTRACTOR'S RESPONSIBILITY TO DETERMINE AND IMPLEMENT THE SYSTEMS AND CRITERIA TO ENSURE THAT SPECIFIED IMPROVEMENT IS ACHIEVED...
7. THE GROUTING SUBCONTRACTOR SHALL PROVIDE EXPERIENCED MANAGEMENT, SUPERVISORY AND KEY PERSONNEL AS REQUIRED...
8. THE CONTRACTOR SHALL SUBMIT A DETAILED SCHEDULE AND SEQUENCE OF OPERATIONS...
9. REPORTS. THE FOLLOWING INFORMATION SHALL BE SUBMITTED TO THE ENGINEER...
10. EQUIPMENT AND MATERIALS...
11. EXECUTION...
12. FIELD QUALITY CONTROL...

- QUANTITIES TO VERIFY THE GROUTING SUBCONTRACTOR'S GROUT MIX, AS FOLLOWS...
D. LAYOUT OF GROUT INJECTION POINTS SHALL BE BY THE GROUTING SUBCONTRACTOR AND CHECKED BY THE FGCR WITH SUFFICIENT CONTROL POINTS...
E. AS DETAILED ABOVE DAILY RECORDS SHALL BE MAINTAINED BY THE GROUTING SUBCONTRACTOR AND SUBMITTED TO THE ENGINEER AND FGCR...
F. THE GROUTING SUBCONTRACTOR SHALL MONITOR SURFACE MOVEMENT AS FOLLOWS...
6. ESTIMATED QUANTITIES AND GROUTING LOCATIONS AND DEPTH. SEE PLANS FOR FURTHER DETAILS.
9.0 FLOWABLE FILL (AKA CONTROLLED LOW STRENGTH MATERIAL-CLSM)
1. GENERAL...
2. MANUFACTURERS...
3. SUBMITTALS...
4. MATERIALS...
5. MIXTURES...
6. CLSM SHALL HAVE A MAXIMUM NET DENSITY OF 120PSF AND A MAXIMUM DRY DENSITY OF 110PSF...
7. PLACEMENT...
8. CONTRACTOR SHALL SECURE SITE DURING THE PLACEMENT AND CURING PERIOD...
9. FLOWABLE FILL SHALL BE BATCHED AT CONCRETE PLANTS AND HAULED TO JOB SITES...
10. TANKS, PIPES AND ALL OTHER MEMBERS TO BE ENCASED IN FLOWABLE FILL SHALL BE TEMPORARILY SECURED IN PLACE TO PREVENT DISPLACEMENT...
11. CLSM SHALL BE MIXED TRANSPORTED AND PLACED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 304...
12. CLSM SHALL NOT BE PLACED ON FROZEN GROUND...
13. CLSM SHALL BE PLACED UNDER THE OBSERVATION AND TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEERING CONSULTANT OF RECORD.

STRUCTURAL ABBREVIATIONS

Table with 4 columns: Abbreviation, Full Name, Abbreviation, Full Name. Includes terms like ADDL, ARCH, B.F., B.S., BLDG., BOT., B.O.F., BY, CANT., CTR., CLSM, etc.



Table with 3 columns: Mark, Description, Date. Includes rows for A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

CONTRACT 16-146.1
EMERGENCY LANDSIDE REPAIRS AT TIOGA MARINE TERMINAL
GENERAL STRUCTURAL NOTES AND ABBREVIATIONS

Table with 2 columns: Date, Rev. Includes fields for Date, Dec, 02, 2016 and Rev. 1.

Pennoni logo and contact information: SURVEYORS AND CIVIL ENGINEERS, PENNONI ASSOCIATES INCORPORATED, 3001 MARKET STREET, SECOND FLOOR, PHILADELPHIA, PENNSYLVANIA, 19104

SEAL

Sheet Reference Number: S-002
Sheet 3 of 7

ISSUED FOR BID 12-2-16

Mark	Description	Date	Appr.

**CONTRACT 16-146.1
EMERGENCY LANDSIDE REPAIRS AT TIOGA I
MARINE TERMINAL**

SITE PLAN

Designed by:	LD	Checked by:	LD
Dwn by:	KGM	Reviewed by:	DMS
Submitted by:	DMS	Plot scale:	1:1

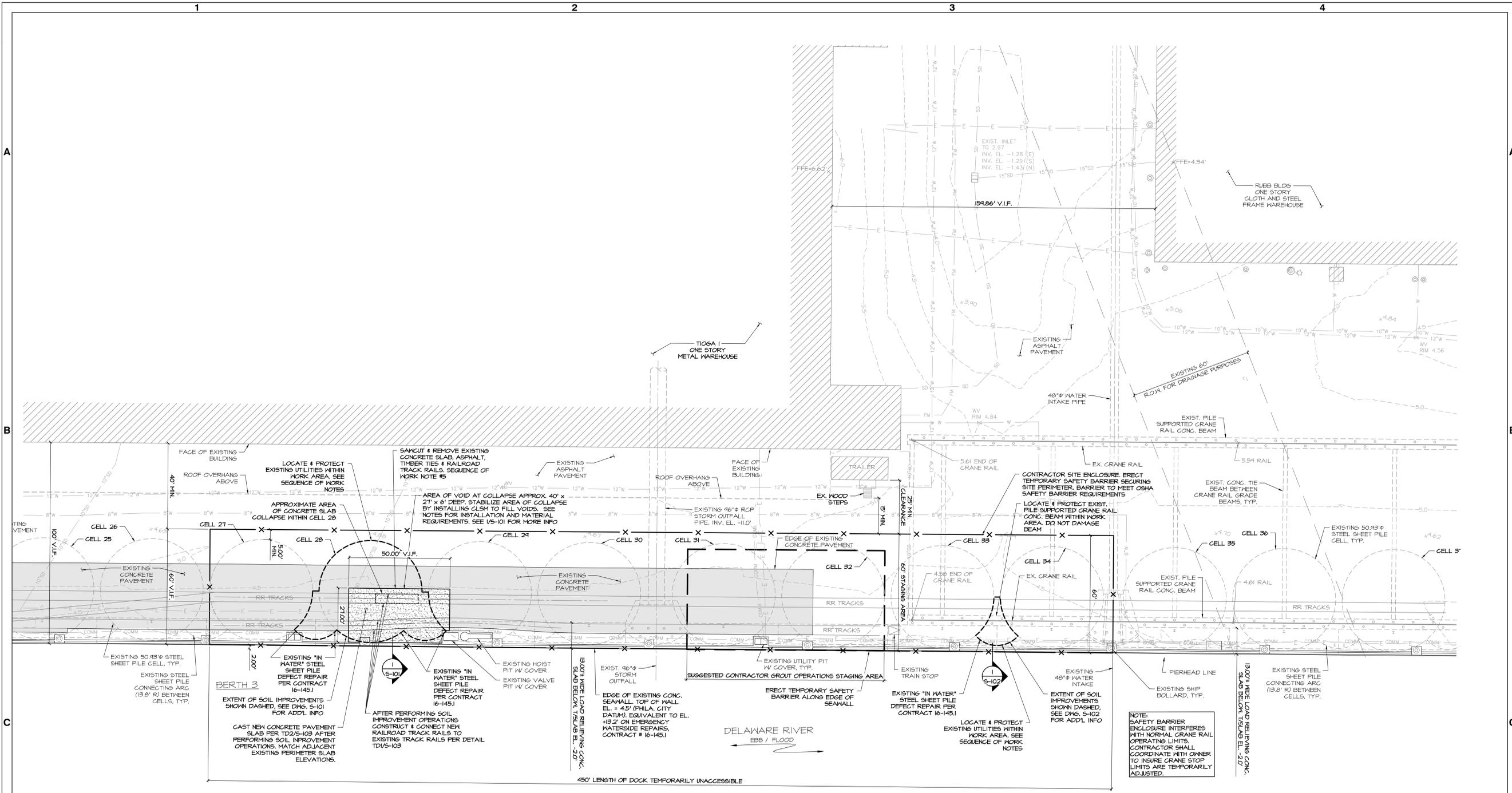
Pennoni
SURVEYORS AND CIVIL ENGINEERS
PENNONI ASSOCIATES INCORPORATED
3001 MARKET STREET, SECOND FLOOR
PHILADELPHIA, PENNSYLVANIA, 19104

PHILADELPHIA REGIONAL PORT AUTHORITY

SEAL

Sheet Reference Number:
S-100

Sheet 4 of 7



LEGEND

- E — EXISTING ELECTRIC UTILITY
- COMM — EXISTING COMMUNICATION UTILITY
- 10"SD — EXISTING 10" STORM DRAINAGE UTILITY
- 8"W — EXISTING WATER LINE (DIAMETER VARIES)
- X — CONTRACTOR SITE ENCLOSURE TO MEET OSHA SAFETY BARRIER REQUIREMENTS
- 4.5' — EXISTING GRADE CONTOURS
- DENOTES EXISTING CONCRETE PAVEMENT
- DENOTES NEW CONCRETE PAVEMENT, SEE TD2/S-103

SOIL IMPROVEMENT QUANTITIES

ITEM	LOCATION	APPROXIMATE PLAN AREA (S.F.)	ESTIMATED DEPTH (FT.)	TOTAL CUBIC YARDS (CY)
JET GROUTING	CELL 28	261	45	435
	ARC 21-28	238	45	347
	ARC 28-29	238	45	347
	ARC 33-34	238	45	347
	CELL 28	1176	45	2460
COMPACTION GROUTING	CELL 28	1176	45	2460

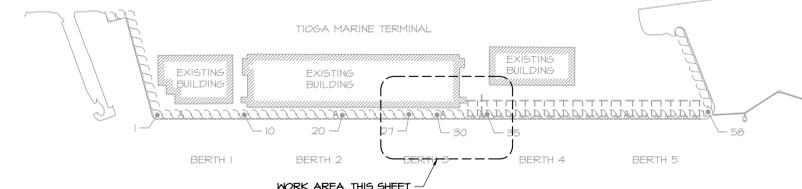
- PARTIAL SITE PLAN**
SCALE: 1" = 20'-0"
- NOTE: SEQUENCE OF WORK TO OCCUR AFTER COMPLETION OF CONTRACT 16-145.1
- MOBILIZATION: CONTRACTOR SHALL SET UP SITE ENCLOSURE AND TEMPORARY FACILITIES.
 - ERECT TEMPORARY SAFETY BARRIER SECURING SITE PERIMETER. BARRIER SHALL MEET OSHA SAFETY BARRIER REQUIREMENTS.
 - TEMPORARY SITE FACILITIES: CONNECTION TO WATER AND POWER.
 - LOCATE EXISTING STRUCTURE: CONTRACTOR SHALL ESTABLISH THE LOCATION OF COFFERDAM CELLS AND ARCS TO BE REPAIRED USING PREVIOUSLY DELINEATED (CONTRACT 16-145.1) CELLULAR AND CELLULAR CONNECTING ARCS STRUCTURAL EXTENTS FOR CELLS 26 TO 36.
 - LOCATE USING NOT METHODS AND PROTECT EXISTING UTILITIES AND UTILITY PITS AND DUCTS WITHIN WORK AREA.
 - LOCATE USING NOT METHODS AND PROTECT EXISTING PILE SUPPORTED CRANE RAIL STRUCTURE WITHIN WORK AREA.
 - SAN CUT AND REMOVE EXISTING CONCRETE SLAB ON GRADE, ASPHALT, TIMBER TIES AND RAILROAD TRACK RAILS. APPROXIMATE PLAN AREA 50-FT X 21-FT. ACTUAL SIZE TO BE DETERMINED IN FIELD DURING DEMOLITION WORK. EXISTING CONCRETE SLAB ON GRADE THICKNESS VARIES BETWEEN 0 AND 18-INCHES THICK.
 - STABILIZE AREA OF COLLAPSE BY INSTALLING CLSM TO FILL VOIDS. SEE NOTES AND GEOTECH REPORT FOR INSTALLATION AND MATERIAL REQUIREMENTS.
 - CARRY OUT SOIL IMPROVEMENT USING JET GROUT AND COMPACTION GROUT SOIL STABILIZATION TO THE EXTENT INDICATED ON PLAN DETAILS AND IN ACCORDANCE WITH GENERAL NOTES AND GEOTECH REPORT.
 - NET GROUT ESTIMATED VOLUME OF SOIL IMPROVEMENT.
 - COMPACTION GROUT ESTIMATED VOLUME OF SOIL IMPROVEMENT.
 - REINSTATEMENT OF SURFACES.
 - CONSTRUCT AND CONNECT NEW RAILROAD TRACK TO EXISTING. SEE PLANS FOR DETAILS.
 - INSTALL NEW CONCRETE SLAB ON GRADE. SEE PLANS FOR DETAILS. MATCH EXISTING ADJACENT PERIMETER SLAB ELEVATIONS.
 - CARRY OUT CONCRETE PATCH REPAIRS TO GROUT INJECTION CORE HOLES. SEE PLANS FOR DETAIL.
 - CARRY OUT ASPHALT PATCH REPAIRS TO GROUT INJECTION HOLES. SEE PLANS FOR DETAIL.
 - LOCALIZED AREAS OF ASPHALT REPAIRS TO AREAS OF DAMAGED ASPHALT.
 - DEMOLITION AND SITE CLEAN UP: CONTRACTOR SHALL REMOVE TEMPORARY BUILDINGS, FENCES, EXCESS MATERIALS, TRASH AND DEBRIS FROM THE SITE. THE CONTRACTOR SHALL BROOM CLEAN ALL AREAS AFFECTED BY THE WORK TO THE SATISFACTION OF THE OWNER.
 - RECORD DRAWINGS: CONTRACTOR SHALL PRODUCE AS BUILT RECORD DRAWINGS SHOWING THE EXTENT OF REPAIRS AT THE COMPLETION OF THE PROJECT.

NOTE:

- EXISTING FENDER SYSTEM NOT SHOWN ON THIS PLAN.
- ELEVATIONS SHOWN RELATE TO PHILADELPHIA CITY DATUM.
- CONTRACTOR SHALL NOTIFY & COORDINATE WITH PHILADELPHIA GAS WORKS (PG&W) WHEN WORKING NEAR THE 48" WATER INTAKE CHAMBER. PHILADELPHIA GAS WORKS (PG&W) 3100 E. VENANGO STREET PHILADELPHIA, PA. 19134 ATTN: MR. CURT MALKEMES, ENGINEER PH: 215-781-5818 EMAIL: CURT.MALKEMES@PG&W.COM

NOTE:

THE OWNER SHALL RETAIN UNDERWATER DIVER TO CONDUCT VISUAL INSPECTION OF EXISTING WATER SIDE STEEL SHEET PILES BETWEEN MUD LINE & BOTTOM OF EXISTING "BELLY BAND" REPAIRS DURING THE INITIAL STAGE OF JET GROUTING TO DETECT LEAKS AND FOR AT LEAST 25% OF THE REMAINING JET GROUTING OPERATIONS.



KEY PLAN
SCALE: 1" = 400'-0"



ISSUED FOR BID 12-2-16

Rev.	Date	Description

**CONTRACT 16-146.1
EMERGENCY LANDSIDE REPAIRS AT TIOGA I
MARINE TERMINAL**

PLAN OF CELLS 27 THROUGH 29

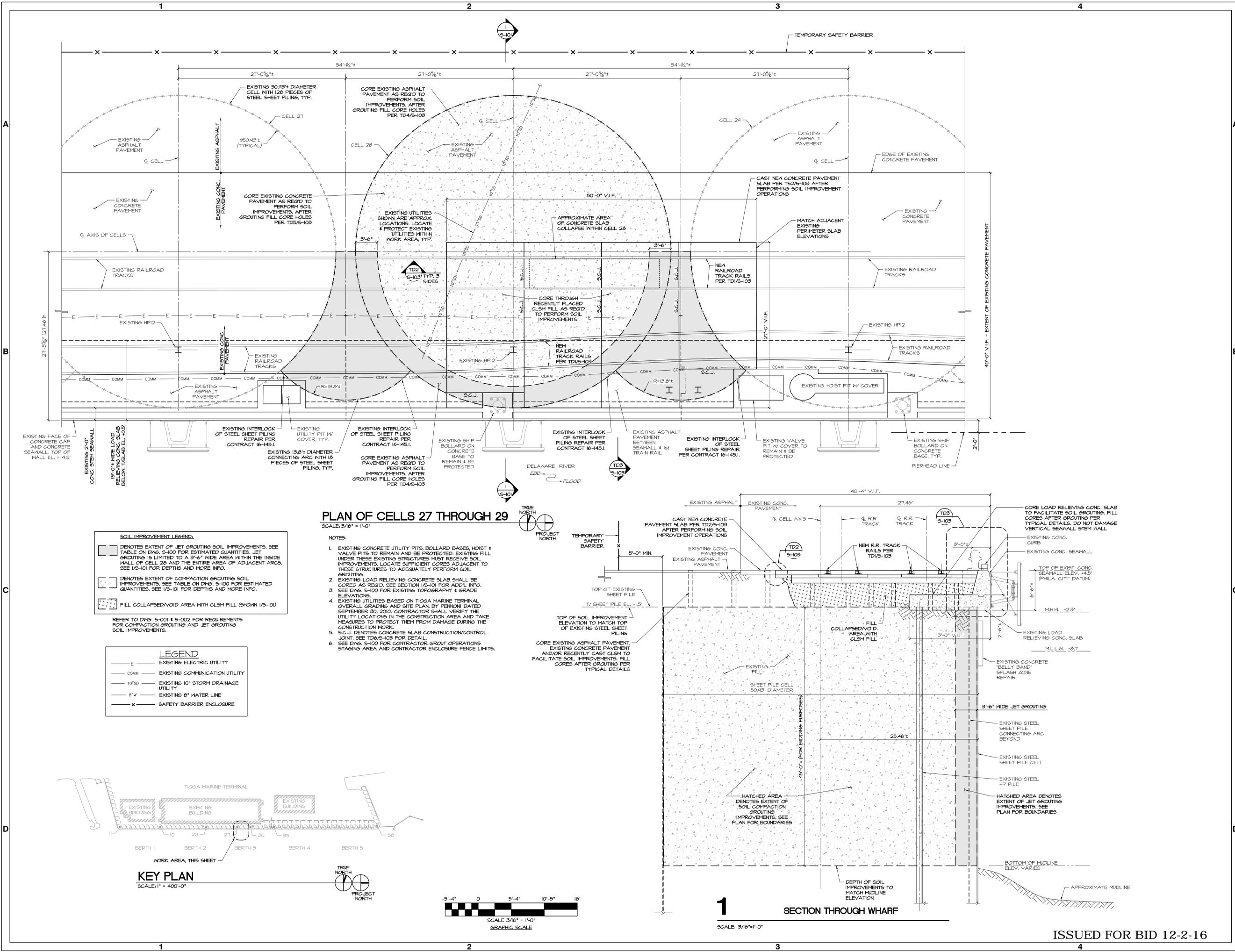
Rev.	1
Date	DEC. 02, 2016
Project No.	16-146.1
Drawing Code	16-146.1
Drawing Scale	AS NOTED
Plot Scale	1:1

Pennoni

PHILADELPHIA REGIONAL PORT AUTHORITY

SURVEYORS AND CIVIL ENGINEERS:
PENNONI ASSOCIATES INCORPORATED
3001 MARKET STREET, SECOND FLOOR
PHILADELPHIA, PENNSYLVANIA, 19104

SEAL
Sheet Reference Number: S-101
Sheet 5 of 7



P:\2016\16-146.1\CONTRACT 16-146.1\DWG\16-146.1-S-101.dwg, December 02, 2016, 3:24:45 PM
 User: jkennedy

Appr.	Date	Description	Mark

CONTRACT 16-146.1
EMERGENCY LANDSIDE REPAIRS AT TIOGA MARINE TERMINAL
PLAN OF CELLS 33 THROUGH 34

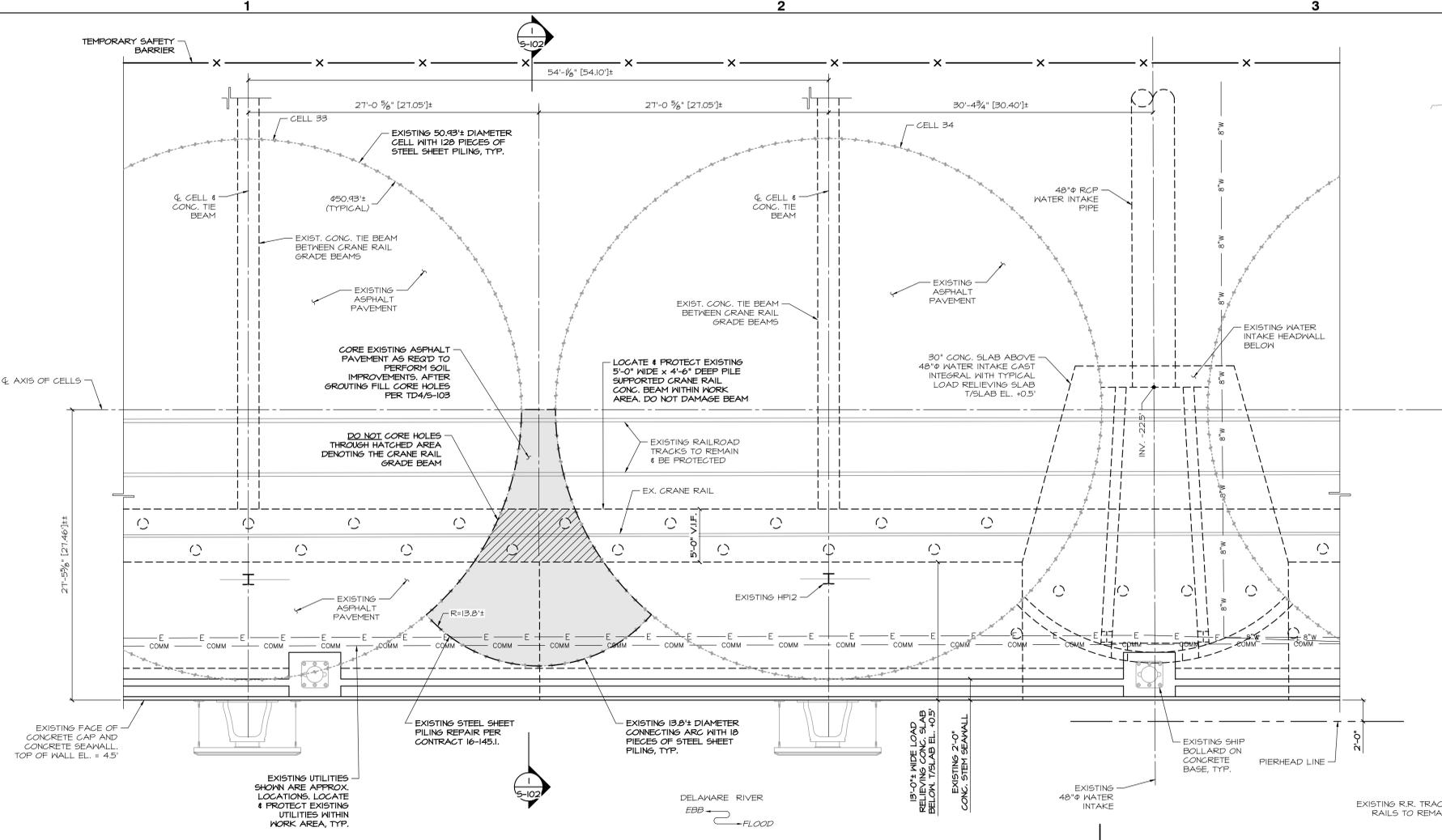
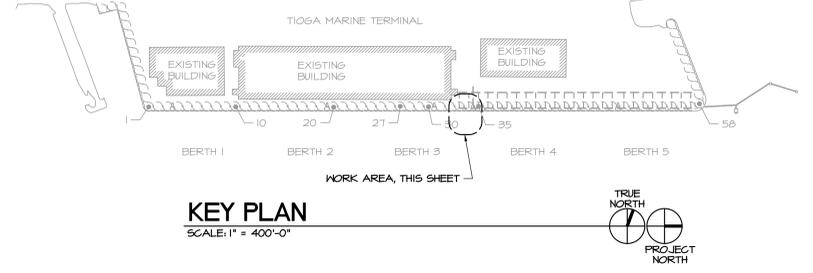
Rev.	Date	Description
1	DEC. 02, 2016	

Project No: 16-146.1
 Drawing code: 16-146.1
 Drawing Scale: AS NOTED
 Plot scale: 1:1

Pennoni
 PHILADELPHIA REGIONAL PORT AUTHORITY
 SURVEYORS AND CIVIL ENGINEERS
 PENNONI ASSOCIATES INCORPORATED
 3001 MARKET STREET, SECOND FLOOR
 PHILADELPHIA, PENNSYLVANIA, 19104

SEAL

Sheet Reference Number:
S-102
 Sheet 6 of 7



PLAN OF CELLS 33 THROUGH 34
 SCALE: 3/16" = 1'-0"

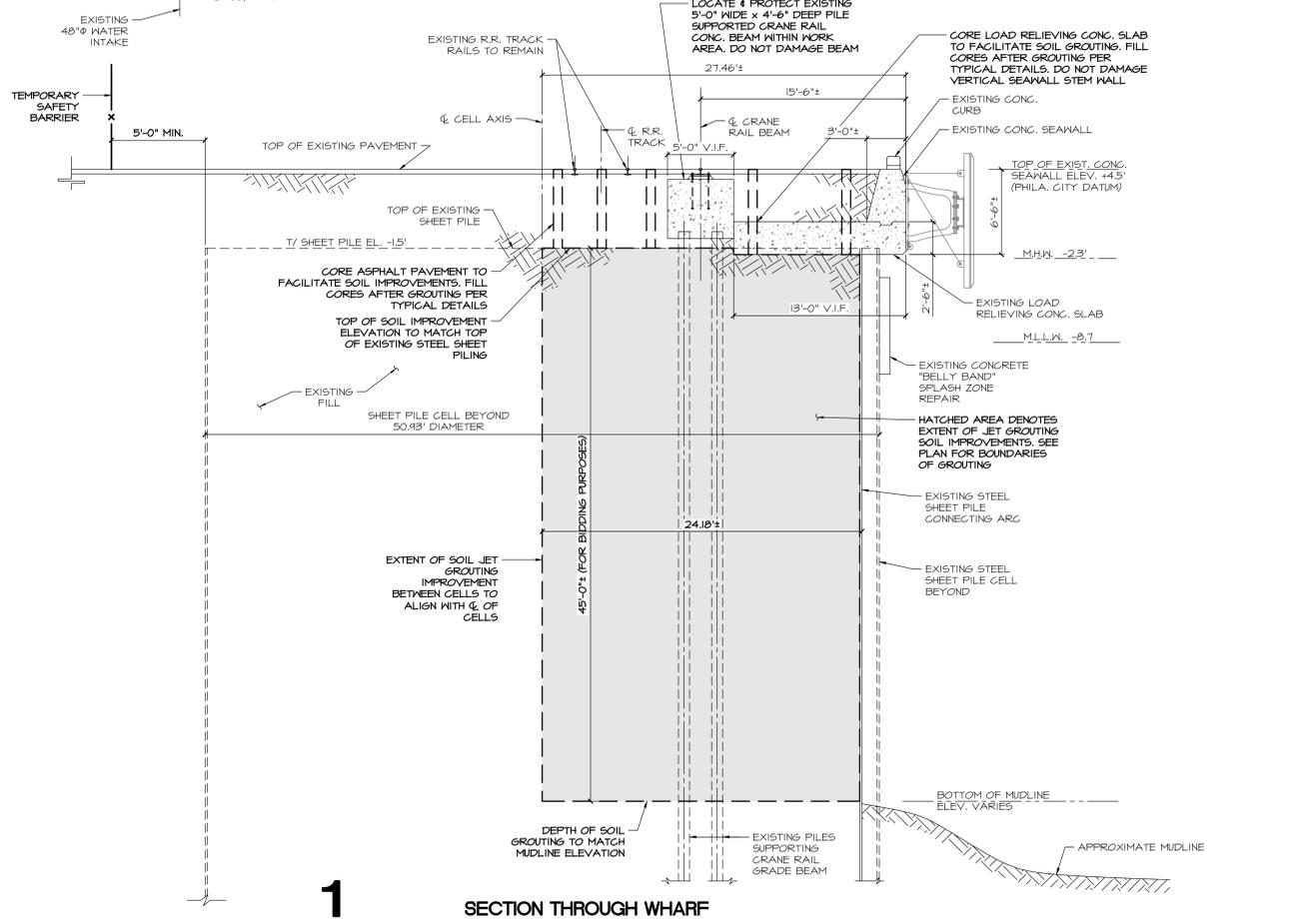
SOIL IMPROVEMENT LEGEND:
 [Hatched Area] DENOTES EXTENT OF JET GROUTING SOIL IMPROVEMENTS. SEE TABLE ON DWG. S-100 FOR ESTIMATED QUANTITIES. SEE 1/5-102 FOR DEPTHS AND MORE INFO.

REFER TO DWG. S-001 & S-002 FOR REQUIREMENTS FOR COMPACTION GROUTING AND JET GROUTING SOIL IMPROVEMENTS.

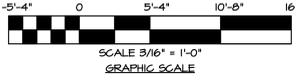
LEGEND

—E—	EXISTING ELECTRIC UTILITY
—COMM—	EXISTING COMMUNICATION UTILITY
—10"SD—	EXISTING 10" STORM DRAINAGE UTILITY
—8"W—	EXISTING 8" WATER LINE
—X—	SAFETY BARRIER ENCLOSURE

- NOTES:**
- EXISTING CONCRETE UTILITY PITS, BOLLARD BASES, CRANE RAIL GRADE BEAMS, HOIST & VALVE PITS TO REMAIN AND BE PROTECTED. EXISTING FILL UNDER THESE EXISTING STRUCTURES MUST RECEIVE SOIL IMPROVEMENTS. LOCATE SUFFICIENT CORES ADJACENT TO THESE STRUCTURES TO ADEQUATELY PERFORM SOIL IMPROVEMENTS.
 - EXISTING LOAD RELIEVING CONCRETE SLAB SHALL BE CORED AS REQ'D. SEE SECTION 1/5-102 FOR ADD'L INFO. SEE DWG. S-100 FOR EXISTING TOPOGRAPHY & GRADE ELEVATIONS.
 - EXISTING UTILITIES BASED ON TIOGA MARINE TERMINAL OVERALL GRADING AND SITE PLAN BY PENNONI DATED SEPTEMBER 30, 2010. CONTRACTOR SHALL VERIFY THE UTILITY LOCATIONS IN THE CONSTRUCTION AREA AND TAKE MEASURES TO PROTECT THEM FROM DAMAGE DURING THE CONSTRUCTION WORK.
 - VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS IN THE FIELD PRIOR TO PERFORMING WORK.



1 SECTION THROUGH WHARF
 SCALE: 3/16" = 1'-0"



ISSUED FOR BID 12-2-16

PLOTTED BY: CHANG, DATE: 12/02/2016, TIME: 09:00 AM, PLOT: S-102.DWG, PLOT SCALE: 1/8" = 1'-0", PLOT ORIGIN: 0,0

