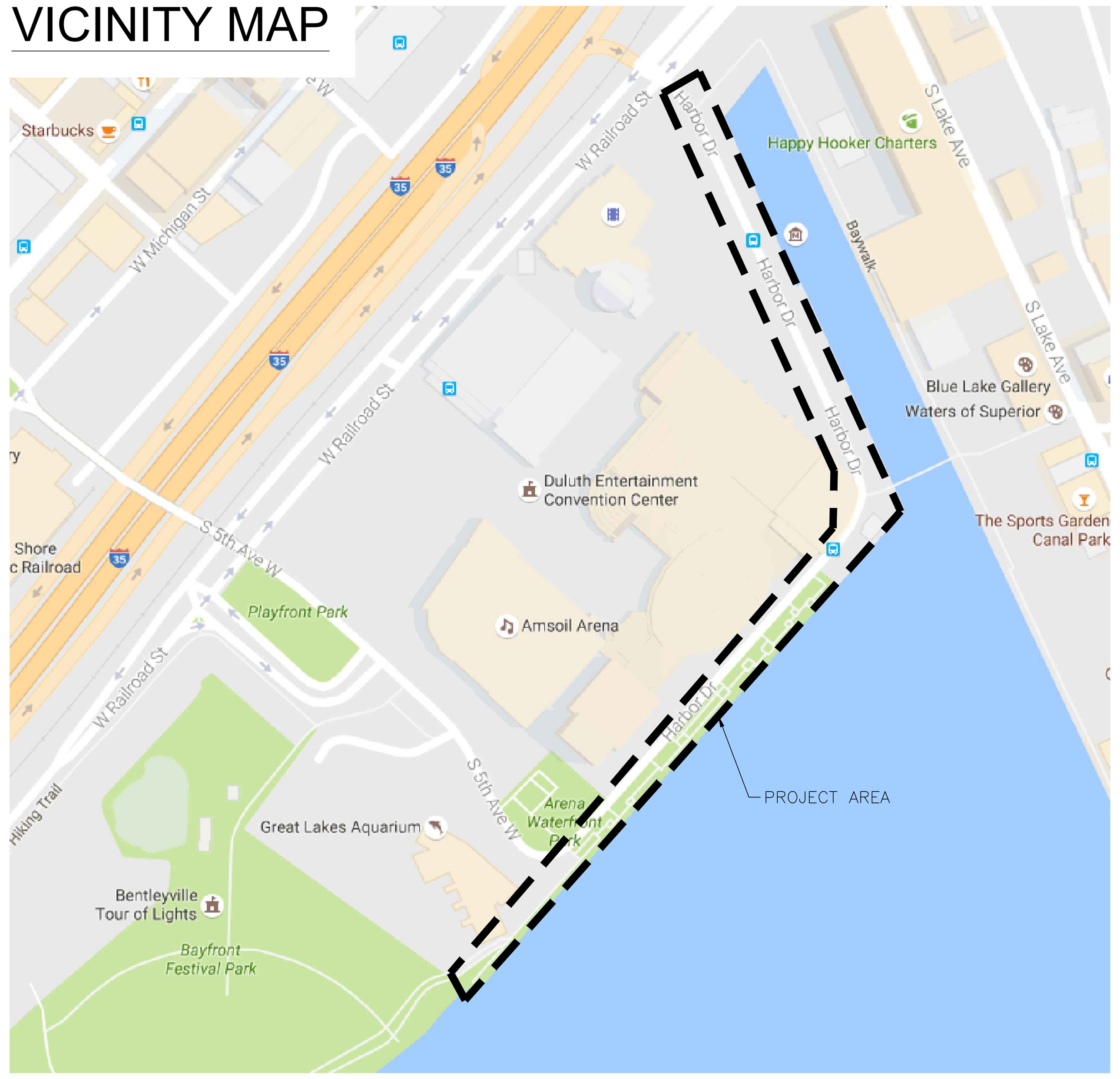
DECC SEAWALL PROJECT

DULUTH, MN

VICINITY MAP



RENDERING

OWNERS

CITY OF DULUTH	DECC
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SHAEDTKE@GAUSMAN.COM
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DULUTH, MN 55802

SURVEY/LAYOUT INFORMATION:

COORDINATE SYSTEM: MN COUNTY COORDINATE SYSTEM
DATUM: ST. LOUIS TRANVERS MERCATOR 96
GEOID: G12B
USGS BENCHMARK HELD: AA9913

EXISTING CONDITIONS LEGEND:

- TELEPHONE BOX
- ELECTRIC BOX
- STORM MANHOLE
- CATCH BASIN
- LIGHT POLE AND BASE
- ANCHOR
- BENCH
- FLAG POLE
- FIRE HYDRANT
- ELECTRICAL BOX
- SIGN
- GATE POST
- DECIDUOUS TREE/BUSH
- CONIFEROUS TREE/BUSH
- LARGE CLEAT
- SMALL CLEAT
- EXISTING BUILDING
- EXISTING STORM
- EXISTING SANITARY
- EXISTING WATERMAIN
- EXISTING OVERHEAD
- EXISTING FIBEROPTIC
- EXISTING ELECTRIC
- EXISTING GAS
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

GENERAL PROJECT NOTES:

1. BIDDER WILL VISIT THE SITE TO UNDERSTAND THE SCOPE OF WORK. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR ITEMS THAT COULD HAVE BEEN IDENTIFIED BY A SITE VISIT, STUDYING THE TOPOGRAPHIC SURVEY, THOROUGHLY REVIEWING ALL PLANS AND REPORTS, AND ADDITIONAL INFORMATION REQUESTED FOR CLARIFICATION PRIOR TO BIDDING.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS PRIOR TO STARTING WORK.
3. EXISTING TOPOGRAPHIC AND BOUNDARY INFORMATION TAKEN FROM A SURVEY DATED 07/26/2016. SUPPLEMENTAL INFORMATION, GATHERED FROM SITE VISITS, RECORD DRAWINGS, PLANS OBTAINED FROM CLIENT, ARE SHOWN AS APPROXIMATE LOCATIONS ONLY AND SHALL BE FIELD VERIFIED PRIOR TO OR DURING CONSTRUCTION. CONTACT ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED.
4. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE AND ARE GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THEIR ACCURACY. PRIOR TO THE START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES FOR ONSITE LOCATIONS OF EXISTING UTILITIES. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY EXISTING UTILITIES OR STRUCTURES LOCATED AT THE WORK SITE.
5. PROVIDE AND MAINTAIN TRAFFIC CONTROL DEVICES WHERE NECESSARY (INCIDENTAL). PLACEMENT OF THESE DEVICES SHALL BE APPROVED BY THE CITY AND ENGINEER PRIOR TO PLACEMENT. TRAFFIC CONTROL DEVICES SHALL MEET THE REQUIREMENTS OF THE MMUTCD, CURRENT ADDITION.
6. CONTRACTOR SHALL MAINTAIN FULL ACCESS TO ADJACENT PROPERTIES DURING CONSTRUCTION AND TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES.
7. ALL CONSTRUCTION WORK SHALL BE COMPLETED WITHIN CITY APPROVED WORKING HOURS.
8. INSTALL CONTROL FENCING AND BARRICADING AS NECESSARY TO PROTECT THE PUBLIC.

811
Know what's below. Call before you dig.

GOVERNING SPECIFICATIONS

THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND THE 2016 VERSION OF THE DULUTH STANDARD CONSTRUCTION SPECIFICATIONS SHALL GOVERN.

THE LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN PROVIDED BY THE UTILITY OWNER, ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING CONSTRUCTION PER STATE LAW.

AMI Consulting Engineers P.A.
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715.718.2193 - amiengineers.com
TWIN CITIES - IRON RANGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

NAME: ELI RUPNOW
SIGNATURE:
DATE: 9/27/2017 LIC. No: 46681

DATE:	REV:	DESCRIPTION	REV. BY:
10/25	1	BIDDING CLARIFICATION	ECR
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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

TITLE SHEET

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
COVER

DECC SEAWALL PROJECT

ST. LOUIS COUNTY
DULUTH, MINNESOTA

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TWIN CITIES - IRON RANGE

DATE:	REV:	DESCRIPTION	REV. BY:
10-31-17	0	Issued for Bid	

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

Sheet Index

JOB No: 161080
DATE: 10-31-17
DRAWN BY: DLB
DESIGNED BY: CWS

SHEET:
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SUBMITTALS:

1. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A "SITE SAFETY AND SITE CONTINGENCY PLAN" TO ADDRESS THE REQUIREMENTS OF 29 CFR 1910.120
2. CONTRACTOR MUST SUBMIT A SCHEDULE INDICATING WORK SEQUENCE UNDER THE FOLLOWING GUIDELINES:
   - 2.1. COORDINATE THE SCHEDULE TO ALLOW SUFFICIENT TIME FOR REQUIRED TESTING, INSPECTIONS, AND INSTALLATION OF WORK RELATED ITEMS.
   - 2.2. COORDINATE WITH CONTINUATION OF OWNERS ON SITE OPERATIONS.
   - 2.3. SUBMIT PRODUCT DATA FOR ALL MATERIALS REQUIRED FOR A COMPLETE INSTALLATION PRIOR TO INSTALLATION DEMONSTRATING THAT MATERIALS MEET THE SPECIFICATIONS.
3. PROVIDE PLANS INDICATING LOCATION OF SALVAGEABLE ITEMS, LOCATIONS AND CONSTRUCTION OF BARRICADES, FENCES, AND TEMPORARY WORK.
4. SUBMIT PRE-DEMOLITION PHOTOGRAPHS OR VIDEO BEFORE BEGINNING WORK
5. SUBMIT COPIES OF ALL PERMITS RECEIVED ALONG WITH ANY SPECIAL CONDITIONS OR REQUIREMENTS OF COMPLIANCE.
6. SUBMIT THE NAME AND PHONE NUMBER OF THE SWPPP COORDINATOR AND FILL OUT THE SWPPP PLAN SHEET WITH SAME.
7. SUBMIT THE NAME AND TELEPHONE NUMBER OF A PROJECT SUPERINTENDENT WHO WILL BE ON SITE DURING REGULAR WORK HOURS AND ALSO AVAILABLE ON CALL 24 HOURS A DAY FOR THE DURATION OF THE PROJECT. THIS PERSON SHALL BE THE CONTACT FOR MAINTENANCE OF THE BARRICADES, LIGHTING, AND SAFETY.
8. SUBMIT TEST REPORTS FROM THE INDEPENDENT TESTING FACILITY FOR MATERIALS AND COMPACTION SHOWING COMPLIANCE WITH THE SPECIFICATIONS.
9. MATERIAL SUBMITTALS AND SHOP DRAWINGS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   - 9.1. THE CONTRACTOR AND BITUMINOUS ASPHALT PROVIDER SHALL JOINTLY PROVIDE CERTIFICATES CERTIFYING THAT MATERIALS COMPLY WITH SPECIFICATION REQUIREMENTS
   - 9.2. THE BITUMINOUS MIX PLANT SHALL HAVE, ON FILE, A REPORT BY AN APPROVED TESTING LABORATORY THAT INDICATES THE PROPORTIONS OF MATERIALS USED IN EACH TYPE OF BITUMINOUS PROVIDED AND THE TEMPERATURE OF THE MIX.
   - 9.3. SUBMIT SUBSTANTIATING DATA FOR CONCRETE MIX DESIGN TO THE OWNER AND INDEPENDENT TESTING AGENCY NOT LESS THAN TWO WEEKS PRIOR TO CONCRETE PLACEMENT.
   - 9.4. SAMPLES FROM OFF SITE BORROW SHALL BE OBTAINED WITH SUFFICIENT TIME TO PERMIT TESTING, REVIEW AND APPROVAL PRIOR TO DELIVERY TO SITE.
   - 9.5. GRADATIONS FOR ALL GRANULAR AND AGGREGATE MATERIALS USED DURING THE PROJECT.
   - 9.6. CASTINGS AND MANHOLE SCHEDULES FOR ALL STORM AND SANITARY STRUCTURES, HYDRANTS, VALVES, AND ALL UTILITY APPURTENANCES
   - 9.7. ALL PIPE MATERIALS
   - 9.8. PAVIEMENT MARKING PAINT

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" CONCURRENT WITH THE PERMIT DATE.
2. BY SUBMISSION OF BID, THE CONTRACTOR ACKNOWLEDGES THAT THEY HAVE THOROUGHLY EXAMINED THE LOCATION OF THE WORK TO BE PERFORMED, AND IS FAMILIAR WITH LOCAL CONDITIONS, AND HAS THE RESOURCES TO LAY OUT AND CONSTRUCT THESE PLANS.
3. ALL WORK AND MATERIALS WHICH DO NOT CONFORM TO THE SPECIFICATIONS AND/OR PLANS ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE. THE QUANTITIES AND SITE CONDITIONS DEPICTED IN THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE SUBJECT TO ERROR AND OMISSION. THE CONTRACTOR SHALL CONFIRM TO THEMSELVES AS TO ACTUAL QUANTITIES AND SITE CONDITIONS PRIOR TO BIDDING THE WORK FOR THE CONSTRUCTION COVERED BY THESE PLANS. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OR SAFETY PRECAUTIONS OR PROGRAMS UTILIZED IN CONNECTION WITH THE WORK. THE ENGINEER OR OWNER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION.
4. CONTRACTOR SHALL ACQUIRE ALL NECESSARY PERMITS BEFORE BEGINNING CONSTRUCTION.
5. ANY DIFFERENCES BETWEEN THE PLANS AND SPECIFICATIONS OR QUESTIONS REGARDING INTERPRETATION OF THE PLANS AND SPECIFICATIONS SHALL BE RESOLVED BY THE ENGINEER OR OWNER. THE CONTRACTOR WILL NOT BE PERMITTED TO TAKE ADVANTAGE OF ANY ERRORS OR OMISSIONS IN THE PLANS AND SPECIFICATIONS. THE GENERAL INTENT AND MEANING WILL GOVERN. THE ENGINEER OR OWNER WILL PROVIDE FULL INSTRUCTIONS WHEN CHANGED CONDITIONS, ERRORS OR OMISSIONS ARE DISCOVERED BY THE CONTRACTOR.
6. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING GOPHER 811
7. ALTHOUGH SUCH WORK MAY NOT BE SPECIFICALLY BE NOTED ON THESE PLANS, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL SUPPLEMENTARY OR MISCELLANEOUS FITTINGS, APPURTENANCES AND DEVICES INCIDENTAL TO OR NECESSARY FOR A SOUND, SECURE, AND COMPLETE INSTALLATION.
8. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL SURVEY CONTROL STAKES SET FOR LINE, GRADE, OR CONTROL IN THEIR ORIGINAL LOCATIONS. ANY EXPENSES INCURRED IN REPLACING ANY SURVEY STAKES WHICH THE CONTRACTOR OR CONTRACTORS SUB CONTRACTORS MAY HAVE FAILED TO PRESERVE SHALL BE THE FINANCIAL RESPONSIBILITY OF THE CONTRACTOR.
9. CONTRACTOR SHALL AT ALL TIMES COORDINATE WORK WITH OTHER CONTRACTORS INVOLVED WITH ONGOING CONSTRUCTION OF THIS PROJECT.
10. ALL CONSTRUCTION REMOVAL ITEMS SHALL BE DISPOSED OF AT AN APPROVED WASTE SITE.
11. ALL MATERIALS USED AND ALL WORK DONE BY THE CONTRACTOR SHALL BE SUBJECT AT ALL TIME TO THE INSPECTION, TESTING, AND APPROVAL OF THE OWNER OR OWNER'S REPRESENTATIVE AND THE ENGINEER.
12. ALL CONTRACTOR AND SUBCONTRACTOR PERSONNEL, VEHICLES, EQUIPMENT, AND MATERIALS SHALL REMAIN WITHIN THE LIMITS OF CONSTRUCTION AND WITHIN THE SITE ACCESS AND HAUL ROUTES.
13. DUMP TRUCKS SHALL USE LOAD COVER AND SHALL BE LOADED BY THE CONTRACTOR SUCH THAT NO SPILLAGE OCCURS DURING TRANSIT.
14. CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE, REPAIR, AND RESTORATION OF HAUL ROADS.
15. OPEN TRENCHES AND EXCAVATIONS AT THE CONSTRUCTION SITE SHALL BE PROMINENTLY MARKED WITH BARRICADES.
16. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 72 HOURS MINIMUM IN ADVANCE OF THE DATE WHEN UTILITIES ARE PROPOSED TO BE SHUT DOWN OR DISCONNECTED.
17. ACCESS TO ALL FIRE HYDRANTS AND STAND PIPES SHALL BE MAINTAINED AT ALL TIMES.

MATERIALS:

1. CONCRETE MATERIALS:
   - 1.1. AIR-ENTRAINING ADMIXTURE SHALL BE PER MNDOT SPECIFICATION 3113.
   - 1.2. CONCRETE CURBING SHALL BE PER MNDOT SPECIFICATION 2531.
     - 1.2.1. USE CONCRETE MIX NO. 3F52 PER MNDOT SPECIFICATION 2461 FOR HAND PLACEMENT OF CONCRETE FOR CURBING.
     - 1.2.2. USE CONCRETE MIX NO. 3F32 PER MNDOT SPECIFICATION 2461 FOR MACHINE PLACEMENT OF CONCRETE FOR CURBING.
   - 1.3. CONCRETE SIDEWALK SHALL BE PER MNDOT 2521.
     - 1.3.1. USE CONCRETE MIX NO. 3F52 PER MNDOT SPECIFICATION 2461 FOR PLACEMENT OF CONCRETE FOR SIDEWALK.
     - 1.3.2. USE CONCRETE MIX NO. 3F52EX OR 3F53EX PER MNDOT SPECIFICATION 2461 FOR PLACEMENT OF CONCRETE FOR SIDEWALK WITH EXPOSED AGGREGATE.
   - 1.4. CONCRETE PAVEMENT SHALL BE PER MNDOT SPECIFICATION 2301.
     - 1.4.1. HAVE A MINIMUM 4,000 POUNDS PER SQUARE INCH (PSI) COMPRESSIVE STRENGTH AT 28 DAYS AND A MODULUS OF RUPTURE OF AT LEAST 600PSI.
     - 1.4.2. HAVE 3/4 INCH MAXIMUM COARSE AGGREGATE PER MNDOT SPECIFICATION 3137 AND ASTM C33.
     - 1.4.3. FINE AGGREGATE SHALL BE PER MNDOT SPECIFICATION 3126.
       - 1.4.3.1. FINE AGGREGATE SHALL BE WASHED FREE OF SILT, CLAY, LOAM, FRIABLE OR SOLUBLE MATERIALS.
       - 1.4.3.2. FINE AGGREGATE SHALL BE GRADED IN ACCORDANCE WITH ANSI/ASTM C136 AND MNDOT 3126 WITH LESS THAN 2.5 PERCENT PASSING NO. 200 SIEVE.
     - 1.4.4. HAVE TYPE 1 PORTLAND CEMENT MEETING THE REQUIREMENTS OF ASTM C150.
     - 1.4.5. PROVIDE 6.0 PERCENT, PLUS OR MINUS ONE PERCENT AIR CONTENT AIR ENTRAINMENT PER ASTM C260.
     - 1.4.6. PROVIDE 0.5:1.0 MINIMUM CEMENT PLUS AIR ENTRAINMENT TO WATER RATIO.
     - 1.4.7. HAVE ONE INCH TO THREE INCHES SLUMP.
     - 1.4.8. HAVE BETWEEN 530 POUNDS TO 850 POUNDS CEMENT PER CUBIC YARD OF CONCRETE.

2. ASPHALT MATERIALS:
   - 2.1. THE BITUMINOUS TACK COAT SHALL BE RC LIQUID ASPHALT OR EMULSIFIED ASPHALT AND SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATIONS 2357 & 3151.
   - 2.2. FINE AGGREGATE SHALL BE PER MNDOT SPECIFICATION 2360.
     - 2.2.1. FINE AGGREGATE SHALL BE FREE OF SILT, CLAY, LOAM, FRIABLE OR SOLUBLE MATERIALS.
     - 2.2.2. FINE AGGREGATE SHALL BE GRADED IN ACCORDANCE WITH ANSI/ASTM C136 AND MNDOT 2360.
     - 2.2.3. FINE AGGREGATE CAN BE NATURAL RIVER OR BANK SAND.
   - 2.3. THE BITUMINOUS PAVEMENT SHALL BE PRODUCED IN ACCORDANCE WITH MNDOT SPECIFICATION 2360 PLANT MIXED ASPHALT PAVEMENT.
   - 2.4. THE BITUMINOUS MIX SHALL BE AS SHOWN ON THE PLANS.
   - 2.5. MIX PLANT AND MIX DESIGN TO BE MNDOT CERTIFIED.

3. AGGREGATE MATERIALS:
   - 3.1. AGGREGATE SHALL MEET THE REQUIREMENTS OF MNDOT 3138, FOR CLASS 5 AGGREGATE.
   - 3.2. GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 3149
   - 3.3. SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 3149
   - 3.4. MODIFIED SELECT GRANULAR MATERIAL SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 3149
   - 3.5. TOPSOIL SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 3877.

4. WATER UTILITIES:
   - 4.0 MECHANICAL SPECIFICATIONS GOVERN IF ANY CONFLICT.
   - 4.1. DUCTILE IRON PIPE
     - 4.1.1. PIPE THREE TO TWELVE INCHES INSIDE DIAMETER SHALL COMPLY WITH ANSI A-21.51, CLASS 52
     - 4.1.2. PIPE LARGER THAN TWELVE INCHES DIAMETER SHALL BE CLASS 51
     - 4.1.3. PIPE SHALL HAVE WORKING PRESSURE OF NOT LESS THAN 150 PSI UNLESS OTHERWISE SHOWN OR SPECIFIED
   - 4.2. COPPER TUBING
     - 4.2.1. ALL FITTINGS FOR COPPER TUBING SHALL BE CAST BRASS, HAVING UNIFORMITY IN WALL THICKNESS AND STRENGTH AND SHALL BE FREE OF DEFECTS AFFECTING SERVICEABILITY.
     - 4.2.2. ALL FITTINGS TO BE FLARED OR COMPRESSION TYPE
   - 4.3. FIRE HYDRANTS
     - 4.3.1. FIRE HYDRANTS SHALL BE TYPE, SIZE, AND CONSTRUCTION AS REQUIRED BY THE CITY, TOWNSHIP, TRIBE, OR APPLICABLE REGULATORY ENTITY(S)
     - 4.3.2. FIRE HYDRANTS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AWWA C-502

5. SANITARY SEWER UTILITIES: NA

6. STORM SEWER UTILITIES:
   - 6.1. REINFORCED CONCRETE PIPE (RCP) AND APRON SECTION
     - 6.1.1. PIPE SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 3236 AND MNDOT STANDARD DETAILS
     - 6.1.2. APRON SECTIONS SHALL BE TIED BACK A MINIMUM OF THREE PIPE JOINTS, PIPE TIES SHALL BE PER MNDOT DETAIL 3145E
     - 6.1.3. THE LENGTHS OF STORM PIPES INDICATED ON PLANS ARE APPROXIMATE FROM END TO END OF PIPE, AND INCLUDED APRONS AND OTHER SPECIAL SECTIONS.
     - 6.1.4. RIPRAP PLACED AT APRONS SHALL CONFORM TO MNDOT SPECIFICATION 2511 AND 3601
     - 6.1.5. PROVIDE GEOTEXTILE FABRIC UNDER RIPRAP IN ACCORDANCE WITH MNDOT SPECIFICATION 2511 AND 3733
   - 6.2. PRECAST CONCRETE MANHOLE/CATCH BASINS
     - 6.2.1. ALL STORM STRUCTURES SHALL BE PRECAST REINFORCED CONCRETE AS SHOWN ON THE PLANS AND DETAILS
     - 6.2.2. FOLLOW CITY, COUNTY, TOWNSHIP, TRIBAL, OR ANY APPLICABLE REGULATORY ENTITY(S) STANDARDS AND SPECIFICATION WHEN IN PUBLIC RIGHT-OF-WAY.

7. EROSION AND SEDIMENT CONTROL:
   - 7.1. SILT FENCE SHALL BE PER MNDOT SPECIFICATION 3886
   - 7.2. TEMPORARY ROCK CONSTRUCTION ENTRANCE SHALL BE COARSE AGGREGATE IN ACCORDANCE WITH MNDOT 3137 CLASS 1 OR CLASS 2
   - 7.3. EROSION CONTROL BLANKETS SHALL BE PER MNDOT SPECIFICATION 3885
   - 7.4. SEEDING:
     - 7.4.1. SEED MIXTURE, UNLESS INDICATED OTHERWISE ON PLANS, TO BE AS FOLLOWS:
       - 7.4.1.1. FOR LAWN TYPE AREAS: MNDOT MIXTURE NO. 25-131
       - 7.4.1.2. FOR PRAIRIE GRASS SEEDED AREAS: MNDOT MIXTURE NO. 35-241
       - 7.4.1.3. FOR POND EROSION CONTROL AREAS: MNDOT MIXTURE NO. 33-261 OR 33-361
       - 7.4.1.4. FOR TEMPORARY SEEDING: MNDOT MIXTURE NO. 22-111
     - 7.4.2. MULCH PER MNDOT SECTION 3882, TYPE 1.
     - 7.4.3. FERTILIZER SHALL BE PER RECOMMENDATION OF THE MANUFACTURER OF THE SPECIFIED SEED MIXTURE
     - 7.4.4. TOPSOIL SHALL MEET THE REQUIREMENTS OF MNDOT SPECIFICATION 3877
     - 7.4.5. WATER MUST BE CLEAN, FRESH, AND FREE OF SUBSTANCE OR MATTER THAT COULD INHIBIT VIGOROUS GROWTH OF THE GRASS.

8. SIGNAGE:
   - 8.1. SIGN MATERIALS SHALL BE ACCORDANCE WITH MNDOT SPECIFICATION 3352 AND THE CURRENT VERSION OF MN MUTCD
     - 8.1.1. SHEET SIGN PANELS OF ALUMINUM ALLY 6061-T6 OR 5052-H38 CONFORMING TO ASTM B209
   - 8.2. POST
     - 8.2.1. SHALL BE IN ACCORDANCE WITH MNDOT SPECIFICATION 3401 AND THE CURRENT VERSION OF MN MUTCD

FIELD QUALITY CONTROL:

1. CONCRETE MATERIALS:
   - 1.1. FIELD TESTING AND INSPECTION SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY EMPLOYED BY THE OWNER. THE TESTING FIRM SHALL PREPARE CYLINDERS AND PERFORM SLUMP AND AIR ENTRAINMENT TESTS IN ACCORDANCE WITH ACI 301.
   - 1.2. THE TESTING FIRM SHALL PERFORM SEVEN DAY COMPRESSION TESTS AND 28 DAY COMPRESSION TESTS.
   - 1.3. FIVE CONCRETE TEST CYLINDERS SHALL BE TAKEN FOR EVERY 75 OR LESS CUBIC YARDS OF EACH CLASS OF CONCRETE PLACED EACH DAY.
   - 1.4. ONE ADDITIONAL TEST CYLINDER SHALL BE TAKEN DURING COLD WEATHER (BELOW 40°F) AND CURED ON SITE UNDER THE SAME CONDITIONS AS THE CONCRETE IT REPRESENTS.
   - 1.5. ONE SLUMP TEST SHALL BE TAKEN FOR EACH SET OF TEST CYLINDERS TAKEN.
   - 1.6. THE TESTING FIRM TO MAINTAIN RECORDS OF PLACED CONCRETE ITEMS.
   - 1.7. THE TESTING FIRM TO RECORD DATE, LOCATION OF POUR, QUANTITY, AIR TEMPERATURE AND TEST SAMPLES TAKEN.
2. ASPHALT MATERIALS:
   THE FOLLOWING METHODS OF TESTING BITUMINOUS COURSES ARE ACCEPTABLE:
   - 2.0.1. PORTABLE NUCLEAR DENSITY METHOD:
   - 2.0.2. A PORTABLE NUCLEAR DENSITY DEVICE SHALL BE USED WHILE THE MIXTURE IS BEING PLACED AND COMPACTED.
   - 2.0.3. THE ROLLING PATTERN SHALL BE ESTABLISHED TO OBTAIN THE SPECIFIED COMPACTION LEVEL.
   - 2.1. THIS IS THE PREFERRED METHOD OF TESTING.
     - 2.1.1. CORE SAMPLES:
       - 2.1.1.1. CUT SAMPLES FROM ANY COURSE OR FINISHED PAVEMENT, NOT TO EXCEED FIVE IN NUMBER, FROM ANY DAY'S RUN FOR TESTS OF DENSITY AND COMPOSITION.
       - 2.1.1.2. THE SAMPLES SHALL BE TAKEN AT POINTS DESIGNATED BY THE OWNER BY SAWING WITH A POWER DRIVEN MASONRY SAW OR DIAMOND CORE DRILL.
       - 2.1.1.3. THE SAMPLES SHALL BE SUFFICIENTLY LARGE ENOUGH TO MEET THE NEEDS OF THE TESTING LABORATORY.
       - 2.1.1.4. THE SURFACES FROM WHICH SAMPLES ARE TAKEN SHALL BE RESTORED BY THE CONTRACTOR NO LATER THAN THE NEXT SUCCEEDING DAY OF PLANT OPERATION.
       - 2.1.1.5. THE SAMPLES SHALL BE PAID FOR BY THE CONTRACTOR.
     - 2.1.2. THIS METHOD SHALL BE USED IF THE PORTABLE NUCLEAR DENSITY METHOD INDICATES THAT THE LIFT DOES NOT MEET THE MINIMUM SPECIFIED DENSITY.
       - 2.1.2.1. THIS METHOD SHALL BE CARRIED OUT IN ACCORDANCE WITH MNDOT 2360.
       - 2.1.2.2. COMPACTED THICKNESS FOR EACH LIFT AND TOTAL THICKNESS SHALL BE WITHIN 1/4 INCH AS SHOWN ON THE PLANS.
     - 2.1.3. TEST FINISHED SURFACE OF EACH ASPHALT COURSE FOR SMOOTHNESS, USING A TEN FOOT STRAIGHT EDGE APPLIED AT RIGHT ANGLES IN PAVED AREAS.
     - 2.1.4. CHECK SURFACE AREAS AT INTERVALS AS DIRECTED BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
     - 2.1.5. MAXIMUM VARIATION OF FLATNESS IS 1/4 INCH MEASURED WITH A TEN FOOT STRAIGHT EDGE.
   - 2.2. FLOOD TEST:
     - 2.2.1. FLOOD TEST SHALL BE WITNESSED BY OWNER'S REPRESENTATIVE AND/OR ENGINEER.
     - 2.2.2. AFTER COMPLETION, FLOOD THE ENTIRE ASPHALT PAVED AREAS WITH WATER BY USE OF A TANK TRUCK OR HOSES.
     - 2.2.3. IF A DEPRESSION IS FOUND WHERE WATER PONDS TO A DEPTH OF MORE THAN 1/8 INCH, FILL DEPRESSIONS OR OTHERWISE CORRECT TO PROVIDE PROPER DRAINAGE.
     - 2.2.4. FEATHER AND SMOOTH THE EDGES OF FILL SO THAT THE JOINT BETWEEN THE FILL AND THE ORIGINAL SURFACE IS INVISIBLE.
     - 2.2.5. IF TESTS INDICATE THAT THE WORK DOES NOT MEET THE SPECIFIED REQUIREMENTS, REMOVE THE WORK, REPLACE AND RETEST AT NO ADDITIONAL COST TO THE OWNER.
     - 2.2.6. TAKE ASPHALT MIXTURE SAMPLES AND PERFORM TESTS IN ACCORDANCE WITH ASPHALT INSTITUTE MS-2.
   - 2.3. TOLERANCES:
     - 2.3.1. MINIMUM ACCEPTABLE DENSITY OF IN-PLACE COURSE MATERIAL IS 95 PERCENT OF THE RECORDED LABORATORY SPECIMEN DENSITY.
     - 2.3.2. IN-PLACE COMPACTED THICKNESS WILL NOT BE ACCEPTED IF EXCEEDING THE FOLLOWING ALLOWABLE VARIATION FROM THICKNESS INDICATED.
       - 2.3.2.1. BASE COURSE: MINUS 1/4 INCH.
       - 2.3.2.2. SURFACE COURSE: MINUS 1/4 INCH.
       - 2.3.2.3. TOTAL THICKNESS: MINUS 1/4 INCH
3. TRENCHING, BACKFILL AND GRADING
   - 3.1. COMPACTION TESTING FREQUENCY
     - 3.1.1. PARKING LOTS:
       - 3.1.1.1. ONE PER LIFT PER 5,000 SQUARE FEET BUT NOT LESS THAN THREE PER LIFT TOTAL.
     - 3.1.2. ROADWAYS, DRIVES, AND TRAILS:
       - 3.1.2.1. ONE PER LIFT PER LANE AT FIFTY FOOT INTERVALS BUT NOT LESS THAN TWO PER LIFT TOTAL.
     - 3.1.3. STRUCTURES:
       - 3.1.3.1. ONE PER LIFT PER 2,500 SQUARE FEET BUT NOT LESS THAN THREE PER LIFT TOTAL.
     - 3.1.4. FOUNDATION TRENCHES:
       - 3.1.4.1. ONE PER LIFT AT 25 FOOT INTERVALS.
     - 3.1.5. LAWNS, OPEN AREAS:
       - 3.1.5.1. ONE PER LIFT PER 10,000 SQUARE FEET BUT NOT LESS THAN THREE PER LIFT TOTAL.
   - 3.2. COMPACTION SHALL BE NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR TEST (ASTM D698), OR EQUIVALENT DENSITY STANDARD DETERMINED BY OTHER METHOD(S).
     - 3.2.1. ALL SUBSOIL, EXCEPT THE UPPER THREE FEET AND EMBANKMENTS FOR STRUCTURES AND PAVEMENTS: 95 PERCENT.
     - 3.2.2. EMBANKMENTS FOR STRUCTURES AND PAVEMENTS, EXCEPT THE UPPER ONE FOOT AND SUBSOIL BENEATH PAVEMENTS AND SLABS ONE FOOT TO THREE FEET IN DEPTH: 98 PERCENT
     - 3.2.3. UPPER ONE FOOT OF EMBANKMENTS FOR STRUCTURES AND ALL SURFACE COMPACTION BENEATH FOOTINGS, STRUCTURES AND PAVEMENTS: 100 PERCENT
   - 3.3. TOLERANCES
     - 3.3.1. PONDS AND BASINS
       - 3.3.1.1. SUBGRADE AND FINISHED SURFACES: 0.10 FEET.
       - 3.3.1.2. THICKNESS OF SOIL LINERS: 0.05 FEET.
       - 3.3.1.3. THICKNESS OF SAND CUSHIONS: 0.10 FEET.
       - 3.3.1.4. THICKNESS OF DRAINAGE LAYER: 0.10 FEET.
     - 3.3.2. DITCHES, SWALES, AND DIVERSIONS
       - 3.3.2.1. SUBGRADE SURFACES: 0.10 FEET.
       - 3.3.2.2. FINISHED SURFACES: 0.05 FEET.
       - 3.3.2.3. DEVIATION FROM DESIGN SLOPE: NOT GREATER THAN 0.2 PERCENT IN 25 FEET.
     - 3.3.3. STRUCTURES AND SLABS ON GRADE
       - 3.3.3.1. SUBGRADE SURFACES: MINUS 0.10 FEET TO PLUS 0.05 FEET.
       - 3.3.3.2. THICKNESS OF SAND COVER: 0.05 FEET.
     - 3.3.4. ASPHALT AND EXTERIOR CONCRETE PAVEMENTS
       - 3.3.4.1. SUBGRADE SURFACES: MINUS 0.10 FEET TO PLUS 0.05 FEET.
       - 3.3.4.2. THICKNESS OF GRANULAR MATERIALS: 0.05 FEET.
       - 3.3.4.3. DEVIATION FROM DESIGN SLOPE: NOT GREATER THAN 0.2 PERCENT IN FIFTY FEET.
     - 3.3.5. LAWNS AND OPEN AREAS
       - 3.3.5.1. SUBGRADE SURFACES: 0.10 FEET.
       - 3.3.5.2. THICKNESS OF TOPSOIL: 0.05 FEET.
       - 3.3.5.3. DEVIATION FROM DESIGN SLOPE: NOT GREATER THAN 0.4 PERCENT IN FIFTY FEET.

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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

NAME: ELI RUPNOW — LIC. No: 46681

SIGNATURE:

DATE: 9/27/2017

REV. BY:	DESCRIPTION	REV:	DATE:
ECR	BIDDING CLARIFICATION	1	10/25
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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

GENERAL NOTES

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: G1.0

ASPHALT PLACEMENT:

1. ENVIRONMENTAL REQUIREMENTS:
   - 1.1. APPLY BITUMINOUS TACK COAT ONLY WHEN THE AMBIENT TEMPERATURE IS AT LEAST FIFTY DEGREES FAHRENHEIT AND WHEN THE TEMPERATURE HAS NOT BEEN BELOW THIRTY–FIVE DEGREES FAHRENHEIT FOR TWELVE HOURS IMMEDIATELY PRIOR TO APPLICATION.
   - 1.2. DO NOT APPLY MATERIALS WHEN THE SUBBASE OR BASE SURFACE IS WET OR CONTAINS AN EXCESS OF MOISTURE WHICH WOULD PREVENT UNIFORM DISTRIBUTION OF BITUMINOUS TACK COAT AND THE REQUIRED COMPACTION OF ASPHALT PAVING.
   - 1.3. PLACE ASPHALT PAVING ONLY WHEN ATMOSPHERIC TEMPERATURE IS ABOVE 45 DEGREE FAHRENHEIT, WHEN THE UNDERLYING BASE IS DRY AND WHEN WEATHER IS NOT RAINY.
   - 1.4. THE CONTRACTOR SHALL PROTECT ALL ADJACENT CONCRETE SURFACES FROM CHIPPING, STAINING, DISCOLORATION, AND ANY OTHER DEFECTS OR DAMAGE DURING ASPHALT PAVING OPERATIONS.
2. PLACING THE MIX – MULTIPLE COURSES:
   - 2.1. PLACE ASPHALT MIXTURE ON PREPARED SURFACES, SPREAD AND STRIKE–OFF USING PAVING MACHINE.
   - 2.2. INACCESSIBLE AND SMALL AREAS MAY BE PLACED BY HAND.
   - 2.3. PLACE EACH COURSE AT THICKNESS SO THAT WHEN COMPACTED IT WILL CONFORM TO THE INDICATED GRADE, CROSS–SECTION, FINISH THICKNESS, TOLERANCE AND DENSITY INDICATED.
   - 2.4. UNLESS OTHERWISE DIRECTED, BEGIN PLACING BASE COURSE AT HIGH SIDE OF SECTION ON ONE–WAY SLOPE.
   - 2.5. AFTER FIRST STRIP HAS BEEN PLACED AND ROLLED, PLACE SUCCEEDING STRIPS.
   - 2.6. COMPLETE BASE COURSES FOR A SECTION BEFORE PLACING WEARING COURSES.
   - 2.7. PLACE MIXTURE IN CONTINUOUS OPERATION AS PRACTICABLE.
   - 2.8. PLACE TACK COAT BEFORE PLACING WEAR COURSE.
   - 2.9. BASE COURSE SHALL BE SWEPT AS REQUIRED BEFORE PLACING WEAR COURSE.
   - 2.10. THE HEATED SCREED OR STRIKE–OFF ASSEMBLY SHALL PRODUCE A FINISHED SURFACE OF THE REQUIRED EVENNESS AND TEXTURE WITHOUT TEARING, SHOVING OR GOUGING.
   - 2.11. HEATED SCREED EXTENSIONS ARE REQUIRED IF THE PAVING WIDTH ON EITHER SIDE OF THE PAVER IS GREATER THAN THE BASIC SCREED.
   - 2.12. STRIKE–OFF ONLY EXTENSIONS ASSEMBLIES ARE NOT ALLOWED FOR WEAR COURSE PAVING.
   - 2.13. SPREAD, TAMP AND FINISH MIXTURE USING HAND GUIDED MECHANICAL TOOLS IN AREAS WHERE MACHINE SPREADING IS NOT POSSIBLE, AS ACCEPTABLE TO THE OWNER'S AUTHORIZED REPRESENTATIVE.
   - 2.14. PLACE MIXTURE AT A RATE THAT WILL ENSURE HANDLING AND COMPACTION BEFORE MIXTURE BECOMES COOLER THAN ACCEPTABLE WORKING TEMPERATURE.
   - 2.15. GRADUALLY MAKE JOINTS BETWEEN OLD AND NEW PAVEMENTS, OR BETWEEN SUCCESSIVE DAY'S WORK, TO ENSURE A CONTINUOUS BOND BETWEEN ADJOINING WORK.
   - 2.16. CONSTRUCT JOINTS TO HAVE SAME TEXTURE, DENSITY AND SMOOTHNESS AS ADJACENT SECTIONS OF ASPHALT COURSE.
   - 2.17. CLEAN CONTACT SURFACES FREE OF SAND, DIRT OR OTHER OBJECTIONABLE MATERIAL AND APPLY TACK COAT.
   - 2.18. OFFSET TRANSVERSE JOINTS IN SUCCEEDING COURSES NOT LESS THAN FIVE FEET.
   - 2.19. CUT BACK EDGE OF PREVIOUSLY PLACED COURSE TO EXPOSE AN EVEN, VERTICAL SURFACE FOR FULL COURSE THICKNESS.
   - 2.20. OFFSET LONGITUDINAL JOINTS IN SUCCEEDING COURSES NO LESS THAN SIX INCHES.
   - 2.21. WHEN THE EDGES OF LONGITUDINAL JOINTS ARE IRREGULAR, HONEYCOMBED, OR INADEQUATELY COMPACTED, CUT BACK UNSATISFACTORY SECTION TO EXPOSE AN EVEN, VERTICAL SURFACE FOR THE FULL COURSE THICKNESS.
3. COMPACTING THE MIX
   - 3.1. PROVIDE SUFFICIENT NUMBER OF ROLLERS TO OBTAIN THE REQUIRED MINIMUM PAVEMENT DENSITY OF NINETY–FIVE PERCENT OF THE RECORDED LABORATORY SPECIMEN DENSITY.
   - 3.2. BEGIN ROLLING OPERATIONS AS SOON AFTER PLACING MIX WHEN THE MIXTURE WILL BEAR WEIGHT OF ROLLER WITHOUT DISPLACEMENT.
   - 3.3. DO NOT PERMIT HEAVY EQUIPMENT, INCLUDING ROLLERS, TO STAND ON FINISHED SURFACE BEFORE IT HAS THOROUGHLY COOLED OR SET.
   - 3.4. COMPACT MIXTURE WITH HOT HAND TAMPERS OR VIBRATING PLATE COMPACTORS IN AREAS INACCESSIBLE TO ROLLERS.
   - 3.5. ROLL TO SLIGHTLY DIFFERENT LENGTHS ON ALTERNATE ROLLER RUNS.
   - 3.6. DO NOT ROLL CENTERS OF SECTION FIRST UNDER ANY CIRCUMSTANCES.
   - 3.7. ACCOMPLISH BREAKDOWN OR INITIAL ROLLING IMMEDIATELY FOLLOWING ROLLING OF TRANSVERSE AND LONGITUDINAL JOINTS AND OUTSIDE EDGE.
   - 3.8. OPERATE ROLLERS AS CLOSE AS POSSIBLE TO PAVEMENT OR PAVERS WITHOUT CAUSING DISPLACEMENT.
   - 3.9. CHECK CROWN, GRADE AND SMOOTHNESS AFTER BREAKDOWN ROLLING.
   - 3.10. REPAIR DISPLACED AREAS BY LOOSENING AT ONCE WITH LUTES OR RAKES AND FILLING, IF REQUIRED, WITH HOT LOOSE MATERIAL BEFORE CONTINUING ROLLING.
   - 3.11. FOLLOW BREAKDOWN ROLLING WITH SECOND ROLLING AS SOON AS POSSIBLE, WHILE MIXTURE IS HOT AND IN CONDITION FOR COMPACTION.
   - 3.12. CONTINUE SECOND ROLLING UNTIL MIXTURE HAS BEEN THOROUGHLY COMPACTED.
   - 3.13. A PNEUMATIC TIRED ROLLER SHALL BE USED FOR FINISH ROLLING.
   - 3.14. PERFORM FINISH ROLLING WHILE MIXTURE IS STILL WARM ENOUGH FOR REMOVAL OF ROLLER MARKS.
   - 3.15. CONTINUE ROLLING UNTIL ROLLER MARKS ARE ELIMINATED AND COURSE HAS ATTAINED SPECIFIED DENSITY.
   - 3.16. REMOVE AND REPLACE DEFECTIVE AREAS.
     - 3.16.1. CUT–OUT AND FILL WITH FRESH, HOT ASPHALT CONCRETE.
     - 3.16.2. REMOVE DEFICIENT AREAS FOR FULL DEPTH OF COURSE.
   - 3.17. CUT SIDES PERPENDICULAR AND PARALLEL TO DIRECTION OF TRAFFIC WITH EDGES VERTICAL.
   - 3.18. COMPACT BY ROLLING TO SPECIFIED SURFACE DENSITY AND SMOOTHNESS.
   - 3.19. BITUMINOUS PATCHING OF THE BASE COURSE SHALL BE COMPLETED AT LEAST 24 HOURS PRIOR TO THE PLACEMENT OF THE WEAR COURSE IN ORDER TO PROVIDE BASE COURSE STABILITY BY ALLOWING THE BASE COURSE TO COOL TO AMBIENT TEMPERATURE.
   - 3.20. APPLY TACK COAT TO EXPOSED SURFACES BEFORE PLACING NEW ASPHALT CONCRETE MIXTURE.
4. MAINTENANCE HOLE AND GATE VALVE PROTECTION
   - 4.1. COVER MAINTENANCE HOLES, CATCH BASINS AND GATE VALVES WITHIN THE SURFACE TO BE SEALED TO PROHIBIT THE BITUMINOUS MATERIAL FROM BEING PLACED THEREON.
   - 4.2. CLEAN THE SURFACE OF THESE STRUCTURES FOLLOWING THE APPLICATION OF THE COVER AGGREGATE.
5. ADJUSTING CASTINGS
   - 5.1. CASTINGS SHALL BE RAISED AFTER THE BITUMINOUS BASE COURSE IS PLACED AND PRIOR TO INSTALLING THE WEAR COURSE.
   - 5.2. CASTINGS FOR CATCH BASINS IN CURB SHALL BE ADJUSTED WHEN THE CONCRETE CURB AND GUTTER IS CONSTRUCTED.
   - 5.3. THE BITUMINOUS BASE SHALL BE SAWCUT AROUND THE COVER PLATE.
   - 5.4. THE BITUMINOUS AGGREGATE AND COVER PLATE SHALL BE REMOVED.
   - 5.5. ALL EXCAVATIONS SHALL BE OVERSIZED ON ALL SIDES, AT LEAST ONE FOOT GREATER THAN THE ITEM TO BE ADJUSTED TO PROVIDE FOR MECHANICAL COMPACTION OF BACKFILLED MATERIALS.
   - 5.6. EXCAVATION AND PATCH WORK SHALL BE CIRCULAR IN NATURE TO AVOID SQUARE CORNERS AND REDUCE PAVEMENT CRACKING.
   - 5.7. THE CASTING SHALL BE SET TO FINAL GRADE USING ADJUSTING RINGS AND MORTAR.
   - 5.8. THE AGGREGATE BASE SHALL BE PLACED TO THE DESIGN DEPTH AROUND THE CASTING.
   - 5.9. THE MIX SHALL BE PLACED AND TAMPED AROUND THE CASTING TO BRING THE GRADE UP TO THE SURFACE OF THE BITUMINOUS BASE.
   - 5.10. THE FINAL GRADE OF CASTINGS IN PAVED AREAS SHALL BE 1/4 INCH TO 1/2 INCH BELOW THE TOP OF THE COMPLETED WEAR COURSE.
   - 5.11. THE CASTINGS SHALL BE SET TO THE CONTOUR OF THE FINISHED SURFACE SO THAT THE REQUIRED TOLERANCE IS UNIFORM AROUND THE CIRCUMFERENCE OF THE CASTING.
   - 5.12. THE TOLERANCE SHALL BE MEASURED AT THE IMMEDIATE EDGE OF THE CASTING AND NO "STRAIGHTEDGE" MEASUREMENTS SHALL BE ACCEPTED.
   - 5.13. A PLYWOOD TEMPLATE, 1/2 INCH THICK, SHALL BE FASTENED TO THE TOP OF ALL NON–ADJUSTABLE CASTINGS DURING PLACING AND ROLLING OF THE WEAR COURSE TO ENSURE THAT THE REQUIRED TOLERANCES ARE MET.
   - 5.14. ALL FINAL ADJUSTMENTS TO THE ADJUSTABLE CASTINGS SHALL BE MADE BY MEANS OF THE CASTING ADJUSTMENT BOLTS.
   - 5.15. ALL CASTINGS, WHICH DO NOT MEET THE REQUIRED TOLERANCES, SHALL BE REMOVED AND RE–ADJUSTED AT THE CONTRACTOR'S EXPENSE.
6. CLEANING
   - 6.1. AFTER COMPLETION OF PAVING OPERATIONS, CLEAN SURFACES OF EXCESS OR SPILLED ASPHALT MATERIALS TO THE SATISFACTION OF THE OWNER.
   - 6.2. IMMEDIATELY AFTER PLACEMENT OF ASPHALTIC PAVING, PROVIDE TRAFFIC CONES, BARRICADES AND OTHER DEVICES NEEDED TO PROTECT PAVEMENT FROM MECHANICAL INJURY FOR A MINIMUM OF 24 HOURS.

CONCRETE PLACEMENT:

1. ENVIRONMENTAL REQUIREMENTS
   - 1.1. DURING COLD WEATHER, PLACE AND PROTECT CONCRETE IN ACCORDANCE WITH ACI 306.
   - 1.2. DURING HOT WEATHER, PLACE AND PROTECT CONCRETE IN ACCORDANCE WITH ACI 305
   - 1.3. DO NOT PLACE CONCRETE IN RAIN, SLEET, OR SNOW WITHOUT PROVIDING ADEQUATE PROTECTION.
   - 1.4. CLEANING OF EQUIPMENT AND DISPOSAL OF EXCESS CONCRETE SHALL BE PER BEST MANAGEMENT PRACTICES (BMPS).
2. CASTINGS
   - 2.1. CASTINGS IN CONCRETE AREAS SHALL BE RAISED PRIOR TO THE PLACEMENT OF CONCRETE
   - 2.2. CASTINGS FOR CATCH BASINS IN CURB SHALL BE ADJUSTED WHEN THE CONCRETE AND GUTTER IS CONSTRUCTED
   - 2.3. THE FINAL GRADE OF CASTINGS IN PAVED AREAS SHALL BE 1/4 INCH TO 1/2 BELOW THE TOP OF THE COMPLETED CONCRETE.
3. FORMING
   - 3.1. PLACE AND SECURE FORMS TO CORRECT LOCATION, DIMENSION, AND PROFILES
   - 3.2. ASSEMBLE FORMWORK TO PERMIT EASY STRIPING AND DISMANTLING WITHOUT DAMAGING CONCRETE
   - 3.3. PLACE JOINT FILLER IN VERTICAL POSITION, IN STRAIGHT LINES. SECURE TO FORMWORK DURING CONCRETE PLACEMENT
   - 3.4. INSTALL FORMS TO ALL CONTINUOUS PROGRESS OF WORK AND SO THAT FORMS CAN REMAIN IN PLACE AT LEAST 24 HOURS AFTER CONCRETE PLACEMENT.
4. REINFORCEMENT
   - 4.1. PLACE REINFORCEMENT AS INDICATED ON THE PLANS.
   - 4.2. INTERRUPT REINFORCEMENT AT EXPANSION JOINTS, UNLESS NOTED OTHERWISE.
   - 4.3. PLACE DOWELS AND REINFORCEMENT TO ACHIEVE PAVEMENT AND CURB ALIGNMENT AS DETAILED ON THE PLANS.
   - 4.4. PROVIDE DOWELED JOINTS 24 INCHES ON CENTER AT INTERRUPTIONS OF CONCRETE WITH ONE END OF DOWEL SET IN CAPPED SLEEVE TO ALLOW LONGITUDINAL MOVEMENT.
5. MAINTENANCE HOLE AND GATE VALVE PROTECTION
   - 5.1. COVER MAINTENANCE HOLES, CATCH BASINS AND GATE VALVES LYING WITHIN THE SURFACE TO BE SEALED TO AS TO PROHIBIT THE CONCRETE MATERIAL FROM BEING PLACED THEREON.
   - 5.2. CLEAN THE SURFACE OF THESE STRUCTURES FOLLOWING THE APPLICATION OF THE COVER AGGREGATE.
6. PLACING CONCRETE
   - 6.1. PLACE CONCRETE IN ACCORDANCE WITH ACI 301 AND COMPLY WITH THE REQUIREMENTS FOR MIXING AND PLACING CONCRETE AS HEREIN SPECIFIED.
   - 6.2. ENSURE REINFORCEMENT, INSERTS, EMBEDDED PARTS AND FORMED JOINTS ARE NOT DISTURBED DURING CONCRETE PLACEMENT.
   - 6.3. INSTALL SAFETY STAIR NOSINGS TO BE CAST INTO ALL EXTERIOR POURED CONCRETE STAIR TREADS.
   - 6.4. PLACE CONCRETE CONTINUOUSLY BETWEEN PREDETERMINED CONSTRUCTION JOINTS.
   - 6.5. DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR.
   - 6.6. PLACE CONCRETE TO PATTERN INDICATED ON THE PLANS OR AS DIRECTED BY THE OWNER'S AUTHORIZED REPRESENTATIVE.
   - 6.7. PLACE CONCRETE BY METHODS THAT PREVENT SEGREGATION OF THE MIX.
   - 6.8. CONSOLIDATE CONCRETE ALONG THE FACE OF THE FORMS AND ADJACENT TO TRANSVERSE JOINTS WITH INTERNAL VIBRATOR.
   - 6.9. KEEP VIBRATOR AWAY FROM JOINT ASSEMBLIES, REINFORCEMENT AND SIDE FORMS.
7. JOINTS
   - 7.1. EXPANSION JOINTS SHALL BE FILLED WITH 1/2 INCH THICK PREFORMED JOINT FILLER MATERIAL AND SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS
     - 7.1.1. CURB AND GUTTER
       - 7.1.1.1. AT THE BEGINNING AND END OF ALL CURVED SECTIONS
       - 7.1.1.2. AT SIXTY FEET MAXIMUM SPACING
       - 7.1.1.3. AT TEN FEET EACH SIDE OF CATCH BASINS
     - 7.1.2. SIDEWALK
       - 7.1.2.1. AT THE THE BEGINNING AND END OF ALL CURVED SECTIONS
       - 7.1.2.2. AT SIXTY FEET MAXIMUM SPACING
       - 7.1.2.3. AT DRIVEWAYS
       - 7.1.2.4. AT CURBS
     - 7.1.3. WHERE ALL NEW CONCRETE SURROUNDS, ADJOINS OR ABUTS ANY EXISTING OR NEW FIXED OBJECTS, SUCH AS FIRE HYDRANTS, VALVE BOXES, MAINTENCE HOLES, LIGHT POLES, CURBS, WALKS, BUILDING FACE OR OTHER RIGID STRUCTURES.
   - 7.2. CONTRACTION JOINTS
     - 7.2.1. SHALL BE 1/3 OR MORE THE DEPTH OF THE CONCRETE
     - 7.2.2. CURBING SHALL BE PROVIDED WITH CONTRACTION JOINTS TEN FEET ON CENTER MINIMUM OR AS INDICATED ON THE PLANS
     - 7.2.3. SIDEWALKS SHALL BE PROVIDED WITH CONTRACTION JOINTS MATCHING THE WIDTH OF THE SIDEWALK OR AS INDICATED ON THE PLANS
     - 7.2.4. TRUCK PARKING PADS, APRONS, AND DRIVEWAYS SLABS SHALL BE CUT TO UNIFORMS SECTIONS NOT GREATER THAN EIGHT FEET.
     - 7.2.5. ALL JOINTS SHALL BE VERTICAL AND STRAIGHT.
8. FINISHING
   - 8.1. AFTER STRIKING OFF AND CONSOLIDATING CONCRETE, SMOOTH SURFACES BY SCREEDING AND FLOATING
   - 8.2. AFTER FLOATING AND BEFORE FINAL FINISHING, CHECK THE CONCRETE WITH A TEN FOOT STEEL STRAIGHTEDGE TO ENSURE THERE IS NO VARIATION GREATER THAN 3/16 INCH FROM THE STRAIGHTEDGE
   - 8.3. WORK EDGES OF SLABS, GUTTERS, BACK TOP EDGE OF CURBS AND FORMED JOINTS WITH AN EDGING TOOL, AND ROUND TO 1/2 INCH RADIUS, UNLESS OTHER WISE INDICATED
   - 8.4. AFTER COMPLETION OF FLOATING AND WHEN EXCESS MOISTURE OR SURFACE SHEEN HAS DISAPPEARED, COMPLETE TROWLING AND FINISH SURFACES AS FOLLOWS:
     - 8.4.1. MEDIUM BROOM CURBS AND GUTTERS
     - 8.4.2. MEDIUM BROOM PERPENDICULAR TO SLOPE TRUCK PARKING PADS, APRONS, AND DRIVEWAYS
     - 8.4.3. LIGHT BROOM SIDEWALKS AND STAIRS
     - 8.4.4. MEDIUM BROOM PEDESTRIAN RAMPS
9. CONCRETE CURING
   - 9.1. CURING SHALL BE PERFORMED BY APPLYING A MEMBRANE CURING COMPOUND TO THE EXPOSED SURFACE OF THE CONCRETE WITHIN ONE HOUR OF FINISHING THE CONCRETE
   - 9.2. THE CURING COMPOUND SHALL BE APPLIED BY AN APPROVED AIRLESS SPRAYING MACHINE AT THE APPROXIMATE RATE OF ONE GALLON OF COMPOUND PER 150 SQUARE FEET OF SURFACE CURING AREA
   - 9.3. IN ALL CASES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE CONCRETE FROM EXCESSIVE HOT OR COLD TEMPERATURES, AND PEDESTRIANS DURING THE CURE PERIOD.

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TWIN CITIES - IRON RANGE

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NAME: ELI RUPNOW
SIGNATURE:
DATE: 9/27/2017
LIC. No: 46681

DATE:	REV:	DESCRIPTION	REV. BY:
10/25	1	BIDDING CLARIFICATION	ECR

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

GENERAL NOTES

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: G1.1

SCHEDULE OF PRICES

ITEM NO.	DESCRIPTION	ESTIMATED BASE QUANTITY	ESTIMATED ALT 1 QUANTITY	ESTIMATED ALT 2 QUANTITY	ESTIMATED DEDUCT 2 QUANTITY	UNIT	MN DOT SPEC#	BID UNIT PRICE	BASE BID PRICE	ALT 1 BID PRICE	ALT 2 BID PRICE	DEDUCT 2 BID PRICE
1	MOBILIZATION	1	0	0	0	LS	-					
2	TRAFFIC CONTROL	1	0	0	0	LS	-					
3	MAINTENANCE AND RESTORATION OF HAUL ROADS	1	0	0	0	LS	-					
5	TREE REMOVAL	2	8	0	0	EA	2101.507					
6	REMOVE CURB & GUTTER	0	1167	0	0	LF	2104.501					
7	SAWCUT CONCRETE WALK (FULL DEPTH)	40	4	0	0	LF	2104.511					
8	SAWCUT BITUMINUOUS PAVEMENT (FULL DEPTH)	0	97	0	0	LF	2104.513					
9	SAWCUT CONCRETE PAVEMENT (FULL DEPTH)	0	1036	0	0	LF	2104.511					
10	REMOVE BITUMINOUS PAVEMENT	0	32	0	0	SY	2104.505					
11	REMOVE CONCRETE PAVEMENT	0	1394	0	0	SY	2104.505					
12	PAVEMENT MARKING REMOVAL	0	2	0	0	LS	2102					
13	BUILDING REMOVAL	1	0	0	0	EA	2103					
14	REMOVE WALKS	17084	461	380	0	SF	2104.503					
15	REMOVE SHIP CLEAT AND IRVIN BOLLARDS	14 / 8	0	0	0	EA	2104.509					
16	REMOVE STORM PIPE	20	21	0	0	LF	2104.501					
17	REMOVE STORM STRUCTURE	0	1	0	0	EA	2104.509					
18	REMOVE WATER PIPE	22	0	0	0	LF	2104.504					
19	REMOVE WATER HYDRANT	0	0	0	0	EA	2104.509					
20	SALVAGE ITEMS FOR STORAGE (BENCH, BELL, ANCHOR, ETC)	1	0	0	0	LS	2104.523					
21	REMOVE AND RE-INSTALL SIGN	9	1	0	0	EA	2104.523 3352					
22	ADJUST FRAME AND RING CASTING	0	2	0	0	EA	2506					
23	REMOVE ELECTRICAL APPURTENANCES	1	0	0	0	LS	2104					
24	REMOVE TELEPHONE APPURTENANCES	1	0	0	0	LS	2104					
25	REMOVE LIGHT POLE	1	0	0	0	LS	2104.509					
26	REMOVE AND REPLACE STEEL PLATE	2	0	0	0	EA	2104.509					
27	REMOVE CABLE FENCE	705	0	0	0	LF	2104.501					
28	REMOVE PIPE FENCE	480	0	0	0	LF	2104.501					
29	CURB & GUTTER (B618)	0	1164	0	0	LF	2531					
30	8" WIDE CURB	0	0	0	0	LF	2531					
31	PEDESTRIAN RAMP	0	6	0	0	EA	2301					
32	CONCRETE WALK (4")	14074	1240	10700	0	SF	2531					
33	TRUNCATED DOME (WARNING PANEL)	0	48	0	0	SF	2531					
34	BITUMINOUS WEARING COURSE MIXTURE (3")	0	200	0	0	TON	2357, 3151					
35	REGULATORY SIGN (STOP, YIELD, ETC.)	0	1	0	0	EA	3352, 3401					
36	AGGREGATE BASE COURSE	75	249	223	0	CY	2105					
37	PEDESTRIAN CROSSING PAVEMENT MARKING	0	4	0	0	EA	2582, 2568					
38	STORM SEWER STRUCTURES (MH'S, CB'S)	0	1	0	0	EA	2506					
39	36" RCP STORM SEWER	0	17	0	0	LF	3235					
40	CONNECT TO EXISTING DRAINAGE STRUCTURE	0	1	0	0	EA	3145E					
41	PLANTER BOX-RETAINING WALL-STIARS	25	0	0	0	CY	-					
42	PAVEMENT SYMBOL (TRAFFIC ARROW)	0	8	0	0	EA	2582					
43	BIKE LANE STRIPE (6" SOLID WHITE)	0	1193	0	0	LF	2582					
44	BIKE LANE PAVEMENT MARKINGS	0	1	0	0	EA	2582					
45	SEDIMENT CONTROL LOG TYPE MNDOT	2167	0	0	0	LF	3897 2573.533					
46	SOD	1172	0	0	670	SY	3878					
47	INLET PROTECTION	2	0	0	0	EA	2574					
	NOTE: CONTRACTOR SHALL DETERMINE EARTHWORK QUANTITIES NECESSARY TO CONSTRUCT THE PROJECT PER THE CONSTRUCTION DOCUMENTS AND AS INDICATED IN THE GEOTECHNICAL REPORT.											
	TOTAL OF ALL BID PRICES = TOTAL BID PRICE											

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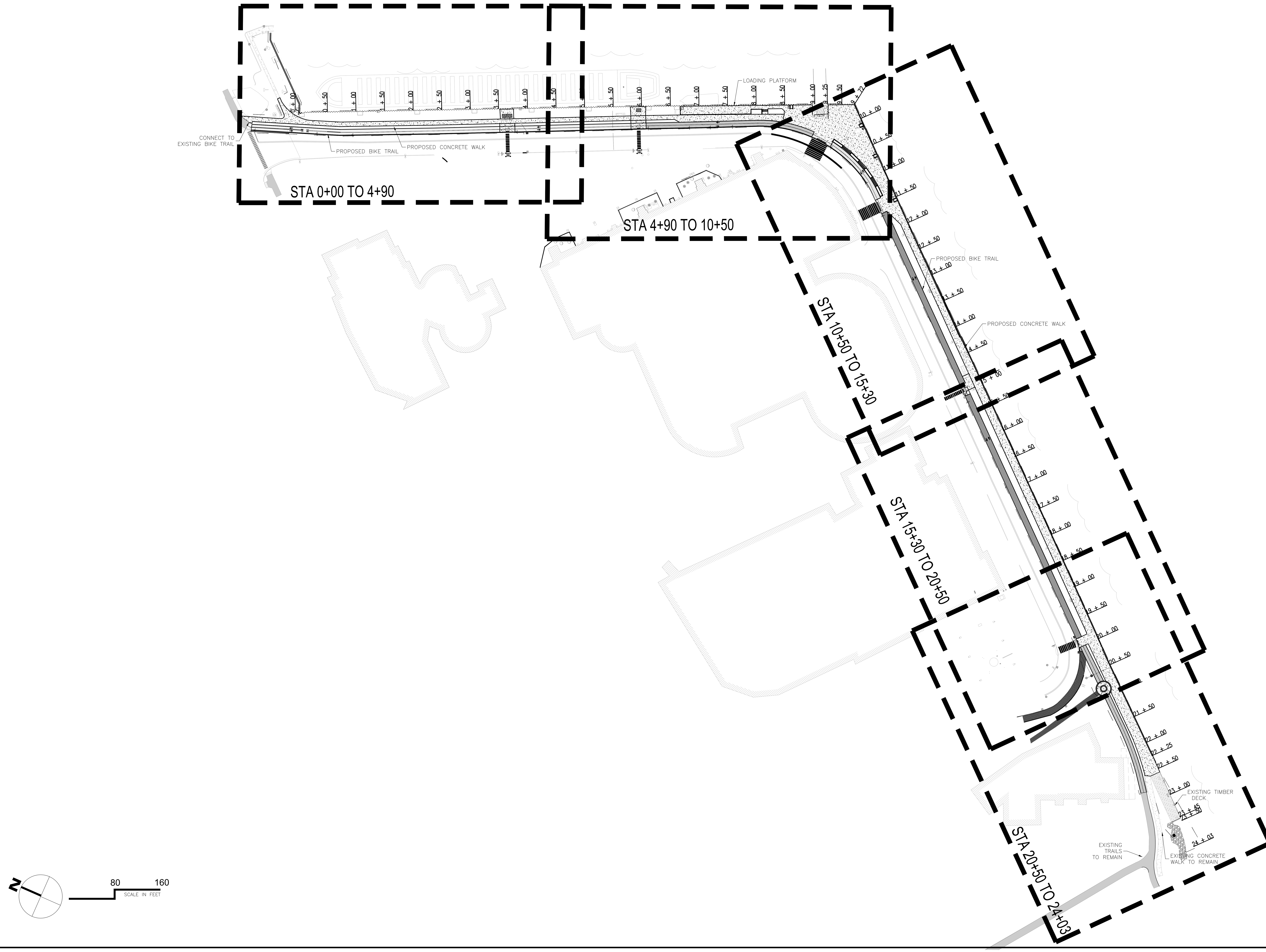
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

ESTIMATED QUANTITIES

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: G1.2



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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL SHEET OVERVIEW

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
G1.3

KEY NOTES

1. REMOVE BUILDING OR STRUCTURE
2. REMOVE OR RELOCATE LIGHT POLE AND APPURTENANCES. SEE ELECTRICAL PLANS FOR DETAILS.
3. REMOVE STRIPING
4. REMOVE PER ELECTRICAL
5. REMOVE BOLLARD
6. ADJUST FRAME & CASTING
7. REMOVE/MODIFY PER PLUMBING PLANS
8. SALVAGE & REINSTALL, SEE CIVIL PLAN SHEETS
9. REMOVE CATCH BASIN/MANHOLE
10. SALVAGE AND REINSTALL SIGN, SEE CIVIL PLAN SHEETS
11. SALVAGE TO STORAGE (LOCATION PER OWNER)

N

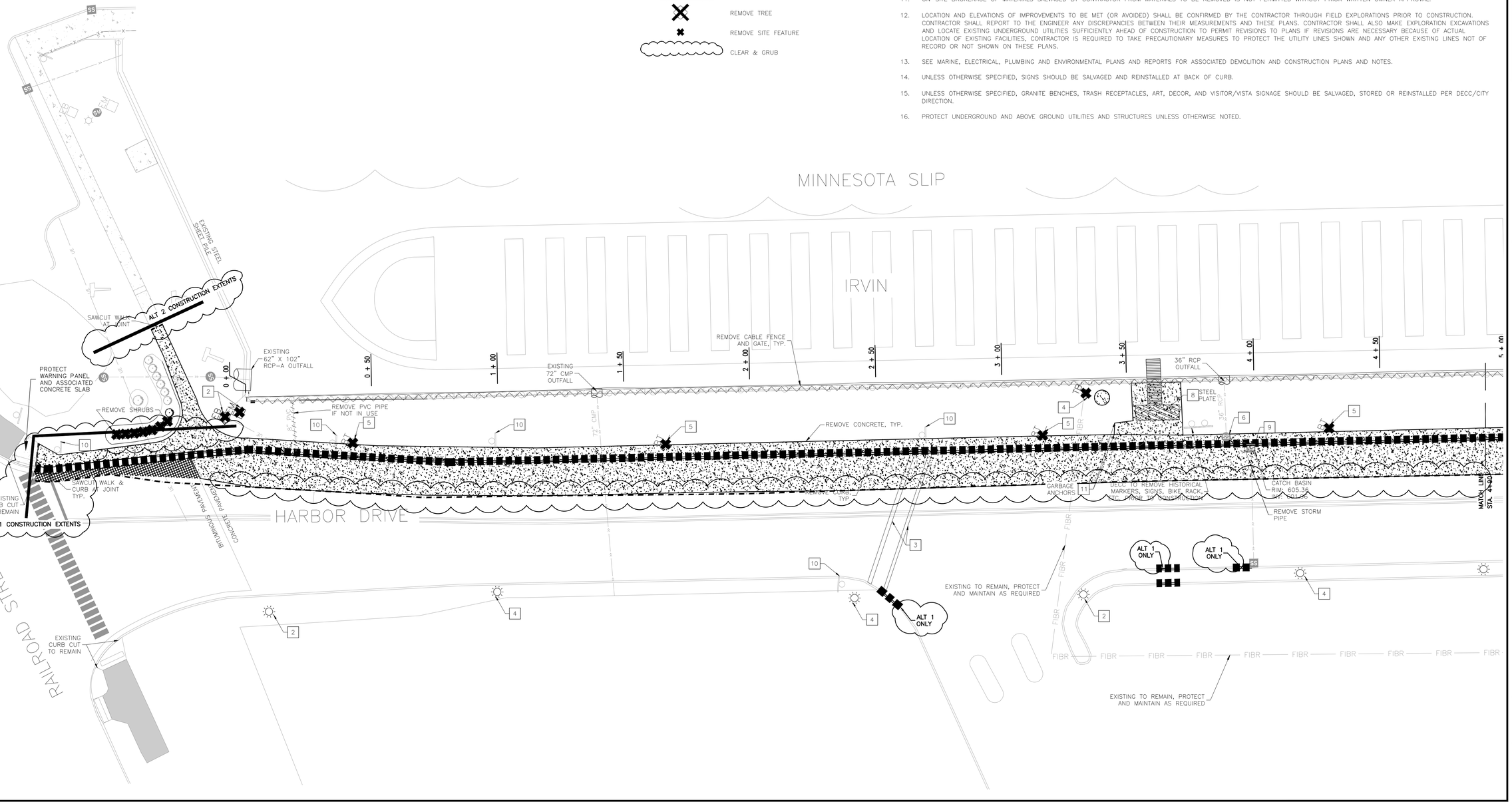
20 40
SCALE IN FEET

SITE DEMOLITION LEGEND

- SAWCUT PAVEMENT
- REMOVE UTILITY
- REMOVE CABLE FENCE AND GATE
- REMOVE PIPE (STEEL TUBE) FENCE AND GATE
- REMOVE CURB
- REMOVE CONCRETE (THICKNESS VARIES)
- REMOVE BITUMINOUS PAVEMENT
- REMOVE GRAVEL
- REMOVE WOOD PLATFORM/DECK
- REMOVE TREE
- REMOVE SITE FEATURE
- CLEAR & GRUB

GENERAL SITE DEMOLITION AND CLEARING NOTES

1. CONTRACTOR SHALL COORDINATE LIMITS OF REMOVALS WITH PROPOSED IMPROVEMENTS AND SHALL BE RESPONSIBLE FOR PROTECTING EXISTING SITE FEATURES (STRUCTURES, CURBS, WALKS, PAVEMENTS, UTILITIES, SIGNAGE, FENCES, ETC.) WHICH ARE TO REMAIN. REPAIR OR REPLACE, TO OWNER'S SATISFACTION, ANY DAMAGE TO EXISTING PROPERTY OR SITE FEATURES WHICH ARE TO REMAIN, AT NO ADDITIONAL COST.
2. COORDINATE DISRUPTION OF UTILITY SERVICES WITH THE OWNER'S PROJECT REPRESENTATIVE AND UTILITY OWNER, PUBLIC OR PRIVATE. CONTRACTOR TO PROVIDE TEMPORARY UTILITIES AS NECESSARY TO MAINTAIN SERVICES.
3. THE OWNER'S ACTIVITIES MAY CONTINUE ON THE SITE DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE SEQUENCE OF WORK WITH THE OWNER.
4. CONTRACTOR TO PROVIDE AND MAINTAIN TEMPORARY FENCING AND PROTECTION MEASURES TO PROTECT PEDESTRIANS, VEHICLES, AND COMPLETED WORK FROM HARM/DAMAGE.
5. PRIOR TO START OF ANY WORK, ALL EROSION AND SEDIMENT CONTROL PROTECTION MEASURES SHALL BE IN PLACE. SEE EROSION CONTROL PLAN OR SWPPP FOR DETAILS.
6. CONTRACTOR SHALL PRESERVE ALL VEGETATION NOT TO BE REMOVED BY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR SODDING AREAS DISTURBED BY CONSTRUCTION UNLESS OTHERWISE SPECIFIED IN PLANS.
7. CLEARLY IDENTIFY AND LABEL EACH TREE THAT IS TO REMAIN PRIOR TO STARTING SITE CLEARING. CONTACT OWNER'S PROJECT REPRESENTATIVE FOR SITE INSPECTION AFTER ALL "TO REMAIN" TREES HAVE BEEN IDENTIFIED. TREES THAT ARE TO BE PROTECTED SHALL HAVE TEMPORARY FENCING PLACED AT THE DRIP LINE AROUND EACH TREE.
8. STOCKPILE TOPSOIL FOR REUSE ON SITE. VERIFY THE STRIPPED TOPSOIL MEETS SPECIFICATIONS FOR THE PROPOSED USE. VERIFY THE AMOUNT OF TOPSOIL NEEDED AND REMOVE EXCESS FROM SITE.
9. ALL MATERIAL REMOVED SHALL BE DISPOSED OF OFF-SITE AND IN A LEGAL MANNER.
10. MATERIAL TO BE SALVAGED FOR REUSE BY OWNER SHALL BE REMOVED UNDAMAGED IN USABLE CONDITION. TEMPORARY PROTECTED STORAGE ON-SITE MAY BE REQUIRED. STORAGE LOCATION TO BE PROVIDED TO CONTRACTOR AT PRE-BID OR PRE-CON MEETING.
11. ON-SITE BROKERAGE OF MATERIALS SALVAGED BY CONTRACTOR FROM MATERIALS TO BE REMOVED IS NOT PERMITTED WITHOUT PRIOR WRITTEN OWNER APPROVAL.
12. LOCATION AND ELEVATIONS OF IMPROVEMENTS TO BE MET (OR AVOIDED) SHALL BE CONFIRMED BY THE CONTRACTOR THROUGH FIELD EXPLORATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT TO THE ENGINEER ANY DISCREPANCIES BETWEEN THEIR MEASUREMENTS AND THESE PLANS. CONTRACTOR SHALL ALSO MAKE EXPLORATION EXCAVATIONS AND LOCATE EXISTING UNDERGROUND UTILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS TO PLANS IF REVISIONS ARE NECESSARY BECAUSE OF ACTUAL LOCATION OF EXISTING FACILITIES. CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
13. SEE MARINE, ELECTRICAL, PLUMBING AND ENVIRONMENTAL PLANS AND REPORTS FOR ASSOCIATED DEMOLITION AND CONSTRUCTION PLANS AND NOTES.
14. UNLESS OTHERWISE SPECIFIED, SIGNS SHOULD BE SALVAGED AND REINSTALLED AT BACK OF CURB.
15. UNLESS OTHERWISE SPECIFIED, GRANITE BENCHES, TRASH RECEPTACLES, ART, DECOR, AND VISITOR/VISTA SIGNAGE SHOULD BE SALVAGED, STORED OR REINSTALLED PER DECC/CITY DIRECTION.
16. PROTECT UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES UNLESS OTHERWISE NOTED.



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DECC SEAWALL PROJECT
CITY OF DULUTH
330 HARBOR DRIVE
DULUTH, MN

DEMOLITION PLAN
STA 0+00 TO 4+90

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C1.1

N

20 40
SCALE IN FEET

KEY NOTES

1. REMOVE BUILDING OR STRUCTURE
2. REMOVE OR RELOCATE LIGHT POLE AND APPURTENANCES. SEE ELECTRICAL PLANS FOR DETAILS.
3. REMOVE STRIPING
4. REMOVE PER ELECTRICAL
5. REMOVE BOLLARD
6. ADJUST FRAME & CASTING
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8. SALVAGE & REINSTALL, SEE CIVIL PLAN SHEETS
9. REMOVE CATCH BASIN/MANHOLE
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11. SALVAGE TO STORAGE (LOCATION PER OWNER)

SITE DEMOLITION LEGEND

- SAWCUT PAVEMENT
- REMOVE UTILITY
- REMOVE CABLE FENCE AND GATE
- REMOVE PIPE (STEEL TUBE) FENCE AND GATE
- REMOVE CURB
- REMOVE CONCRETE (THICKNESS VARIES)
- REMOVE BITUMINOUS PAVEMENT
- REMOVE GRAVEL
- REMOVE WOOD PLATFORM/DECK
- REMOVE TREE
- REMOVE SITE FEATURE
- CLEAR & GRUB

MINNESOTA SLIP

VISTA

HARBOR DRIVE

DECC

EXISTING BUILDING

BRIDGE

BRIDGE HINGE

4 + 50 | 5 + 00 | 5 + 50 | 6 + 00 | 6 + 50 | 7 + 00 | 7 + 50 | 8 + 00 | 8 + 50 | 9 + 00 | 9 + 25 | 9 + 50 | 9 + 72 | 10 + 50 | 11 + 00

REMOVE CABLE FENCE AND GATE, TYP.

PROTECT WATER HOOKUP

PVC PIPE TEL JUNCTION

STEEL PLATE

REMOVE CONCRETE, TYP.

TEMPORARY RELIEVING PLATFORM

REMOVE PIPE (STEEL TUBE) FENCE AND GATE, TYP.

REMOVE ELECTRICAL JUNCTION BOXES AND CONDUIT FROM STA 8+64 TO 12+77 (SEE ELECTRICAL)

REMOVE SMALL CLEATS, TYP.

SALVAGE BRIDGE GATE AND POSTS

REMOVE PIPE (STEEL TUBE) FENCE AND GATE POSTS, TYP.

MATCH LINE STA. 4+90

CURB CUT

SAWCUT AT JOINT, TYP.

START

ALT 1 ONLY

MATCHLINE STA. 10+50

DECC OVERHANG

EXISTING CURB CUT TO REMAIN

REMOVE CURB, TYP.

CROSSWALK

END

OVERHEAD DOOR

FIBR

OH

ALT 1 ONLY

EXISTING CURB CUT TO REMAIN

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DATE: 10/25

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

DEMOLITION PLAN
STA 4+90 TO 10+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C1.2

KEY NOTES

1. REMOVE BUILDING OR STRUCTURE
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5. REMOVE BOLLARD
6. ADJUST FRAME & CASTING
7. REMOVE/MODIFY PER PLUMBING PLANS
8. SALVAGE & REINSTALL, SEE CIVIL PLAN SHEETS
9. REMOVE CATCH BASIN/MANHOLE
10. SALVAGE AND REINSTALL SIGN, SEE CIVIL PLAN SHEETS
11. SALVAGE TO STORAGE (LOCATION PER OWNER)

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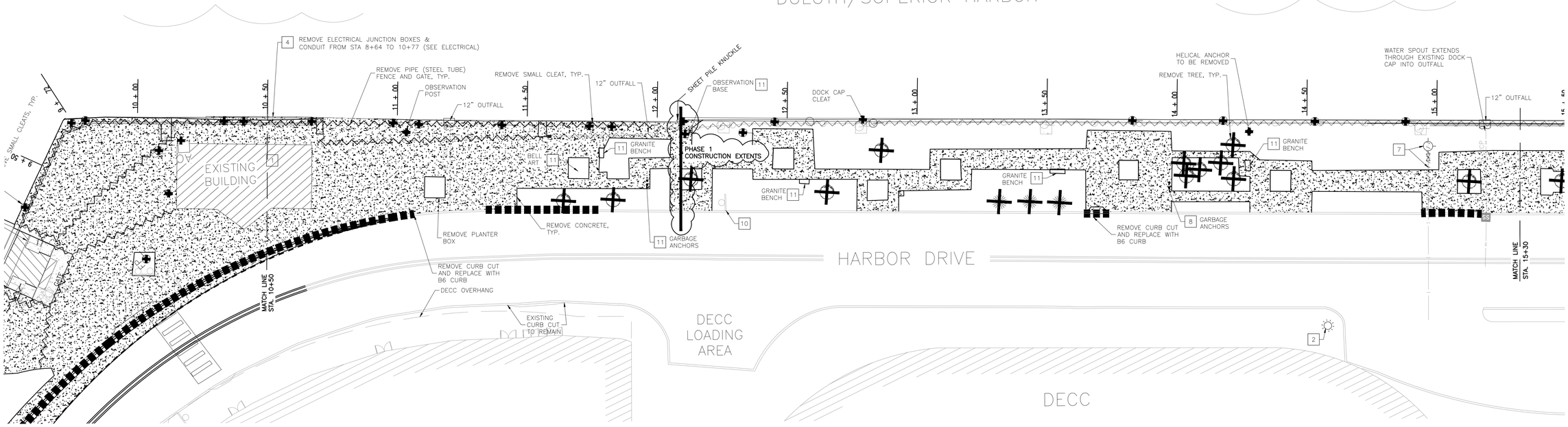
20 40
SCALE IN FEET

SITE DEMOLITION LEGEND

- SAWCUT PAVEMENT
- REMOVE UTILITY
- REMOVE CABLE FENCE AND GATE
- REMOVE PIPE (STEEL TUBE) FENCE AND GATE
- REMOVE CURB
- REMOVE CONCRETE (THICKNESS VARIES)
- REMOVE BITUMINOUS PAVEMENT
- REMOVE GRAVEL
- REMOVE WOOD PLATFORM/DECK
- REMOVE TREE
- REMOVE SITE FEATURE
- CLEAR & GRUB



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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

DEMOLITION PLAN
STA. 10+50 TO 15+30

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C1.3

KEY NOTES

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- REMOVE TREE
- REMOVE SITE FEATURE
- CLEAR & GRUB

N

20 40
SCALE IN FEET

DULUTH/SUPERIOR HARBOR

EXTENDS TING DOCK ALL
12" OUTFALL
REMOVE CABLE FENCE AND GATE, TYP.
HELICAL ANCHOR TO BE REMOVED
X" OUTFALL
REMOVE 2" CONDUIT
15 + 00
15 + 50
16 + 00
16 + 50
17 + 00
17 + 50
18 + 00
18 + 50
19 + 00
19 + 50
20 + 00
20 + 50
GARBAGE ANCHORS
GRANITE BENCH
REMOVE TIMBER PILE
REMOVE CABLE FENCE AND GATE
DOCK CAP CLEAT
DOCK CAP CLEAT
REMOVE STORM PIPE
DOCK CAP CLEAT
SHEET PILE KNUCKLE
LIGHT BASE
REMOVE STORM PIPE
REMOVE TREE, TYP.
REMOVE CONCRETE, TYP.
CURB CUT SAWCUT AND REMOVE CONCRETE PAVEMENT
REMOVE GRAVEL
REMOVE GRAVEL
CATCH BASIN RIM: 605.49 INV: 597.79
REMOVE CONCRETE FLUME
MATCH LINE STA. 15+30
MATCHLINE STA. 20+50
HARBOR DRIVE
EXISTING CURB CUT TO REMAIN
5TH AVE. W
GRAVEL PATH W/ STEEL
RETAINING WALL
DECC PARKING
DECC

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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

DEMOLITION PLAN
STA 15+30 TO 20+50

JOB No: 161080
DATE: 09/22/2017
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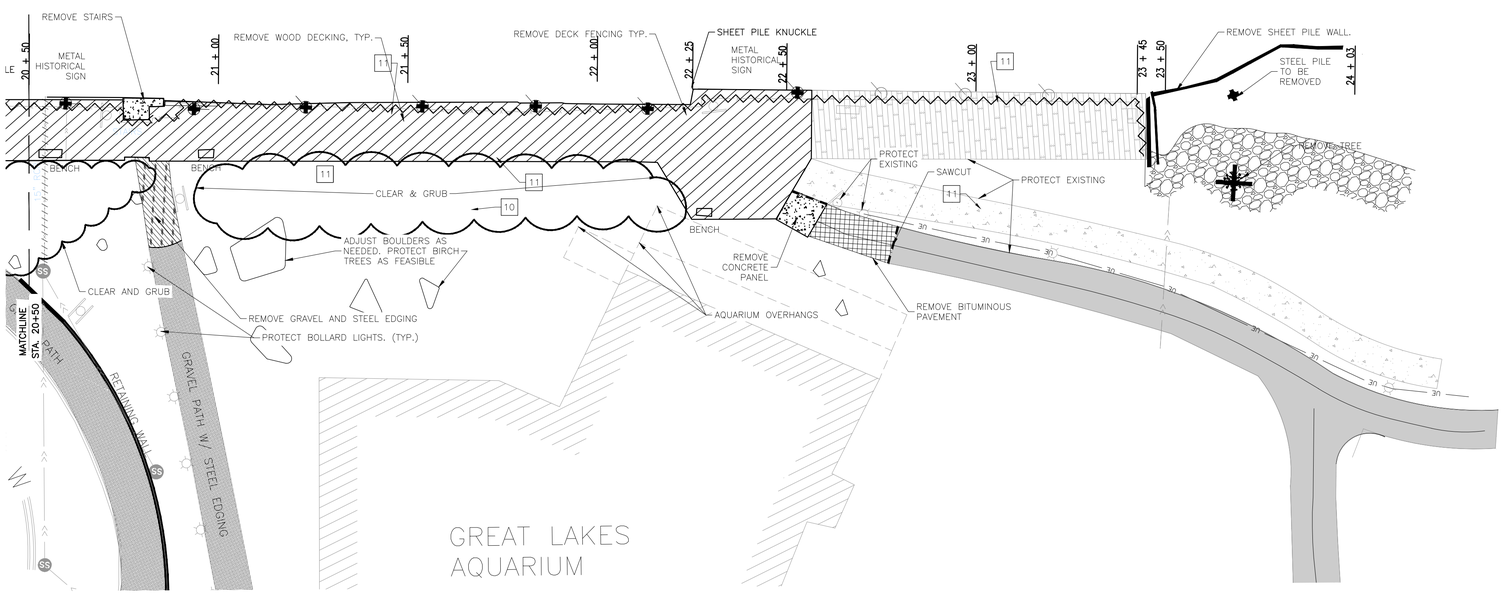
SHEET:
C1.4



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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

DEMOLITION PLAN
STA 20+50 TO 24+03

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C1.5

STORM NOTES

1. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY SIZE AND TYPE OF EXISTING STORM FEATURES.

SIGNAGE AND MARKING NOTES

1. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE MN MUTCD, CURRENT VERSION.
2. SEE REGULATORY SIGN DETAIL FOR SIGN AND POST DETAILS AND SIGN DESIGNATION AND SIZE INFORMATION.
3. ACCESSIBLE PARKING SIGNS SHALL BE PER MINNESOTA MUTCD SIGN R7–8M, VAN ACCESSIBLE PARKING SIGNS PER R7–8BP WHERE INDICATED AS "VAN". SEE ACCESSIBLE SIGN AND POST DETAIL.
4. PROVIDE 4" WIDE SOLID WHITE STRIPING IN PARKING AREAS, UNLESS NOTED OTHERWISE.
5. PROVIDE PAVEMENT MARKINGS AND PAINT SYMBOLS AT ACCESSIBLE PARKING SPACES PER MN MUTCD, ADA AND LOCAL CODE.

811 Know what's below. Call before you dig.

STATE LAW: 48 HOURS BEFORE EXCAVATING OR DEMOLISHING BUILDINGS, CALL 811 FOR FIELD LOCATION OF UNDERGROUND UTILITY LINES. THIS SERVICE LOCATES UTILITY OWNED LINES BUT NOT PRIVATE LINES.

THE LOCATIONS OF UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED. THE EXACT LOCATION OF ALL UTILITIES (PUBLIC AND PRIVATE) MUST BE DETERMINED BEFORE COMMENCING WORK.

GENERAL GEOMETRIC AND PAVING NOTES

1. SITE DIMENSIONS SHOWN ON THIS PLAN SHALL BE USED FOR ALL LAYOUT WORK. CHECK ALL PLAN AND DETAIL DIMENSIONS. BUILDING AND SITE IMPROVEMENTS SHALL BE LAID OUT ON SITE BY A REGISTERED LAND SURVEYOR, OR A LICENSED ENGINEER.
2. REFER TO SITE DEMOLITION PLAN FOR LIMITS OF PAVEMENT REMOVAL, IF APPLICABLE.
3. ALL PAVING DIMENSIONS ARE TO FLOW LINE OF CURB UNLESS NOTED OTHERWISE. THE FLOW LINE OF CURB IS ASSUMED TO BE 8 INCHES FROM THE BACK OF CURB.
4. MEET REQUIREMENTS OF LOCAL GOVERNING AUTHORITY FOR WORK WITHIN THE PUBLIC RIGHT OF WAY, INCLUDING TEMPORARY TRAFFIC CONTROL. A TRAFFIC CONTROL PLAN SHALL BE PROVIDED AND APPROVED BY THE CITY PRIOR TO BEGINNING WORK IN THE RIGHT OF WAY.
5. ALL SIDEWALKS SHALL HAVE POSITIVE SLOPE AWAY FROM THE BUILDING. THE MAXIMUM CROSS SLOPE SHALL BE 2.0% AND THE MAXIMUM LONGITUDINAL SLOPE SHALL BE 5.0% UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
6. NO SLOPE IN ANY DIRECTION SHALL EXCEED 2% IN ACCESSIBLE PARKING AND LOADING AREAS.
7. MATCH NEW AND EXISTING PAVEMENT SURFACES, SIDEWALKS AND CURBS AT SAWCUT LINES, ALLOWING NO PONDING OF WATER AT JOINTS. PROVIDE SMOOTH GRADE TRANSITION ACROSS NEW AND EXISTING JOINTS.
8. ALLOW MINIMUM OF SEVEN DAYS CURE FOR CURB AND GUTTER PRIOR TO PAVING.
9. ALLOW MINIMUM OF 24 HOUR COOLING PRIOR TO ALLOWING TRAFFIC ON BITUMINOUS PAVING.
10. PROVIDE 4' TRANSITION OF B618 CURB AND GUTTER EITHER SIDE OF RECTANGULAR CATCH BASINS TO MATCH WIDTH OF CASTING.
11. RAMP WIDTH DIMENSION INCLUDES CURB TAPERS AND OPENING

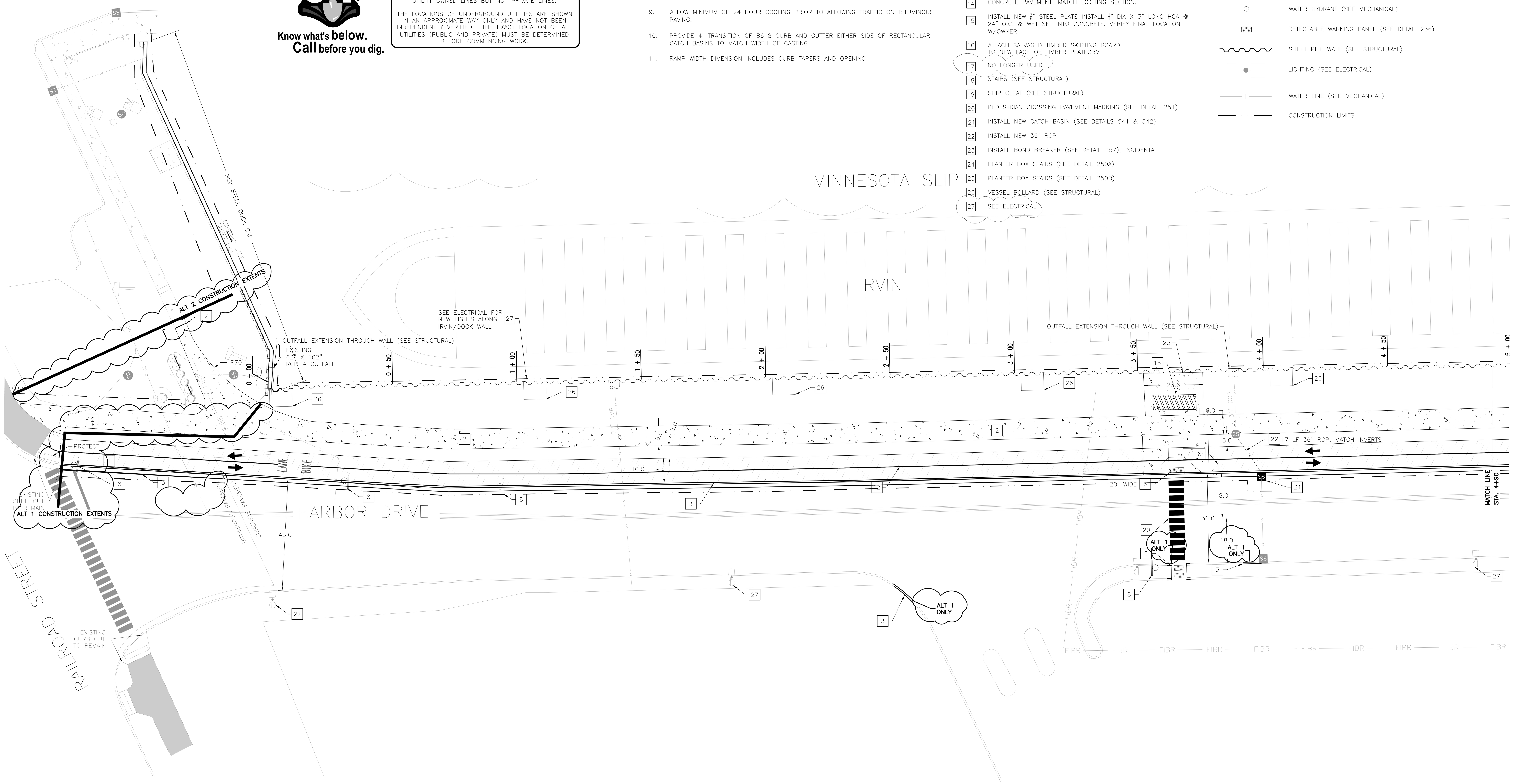
KEY NOTES

1	BITUMINOUS PAVEMENT (SEE DETAIL 200)
2	CONCRETE SIDEWALK (SEE DETAIL 204 & 256)
3	B618 CONCRETE CURB, OR CURB AND GUTTER (SEE DETAIL 210)
4	PLANTER BOX (SEE DETAIL 220)
5	CURB TAPER (SEE DETAIL 214)
6	PERPENDICULAR ACCESSIBLE CURB RAMP (SEE DETAIL 230)
7	PEDESTRIAN CROSSWALK SIGN (SEE DETAIL 243)
8	RELOCATE SIGN AS SHOWN OR LIGHT PER ELECTRICAL
9	RELOCATE HYDRANT AND VALVE. (SEE MECHANICAL)
10	PLACE SALVAGED BENCH
11	STORM EXCAVATION TO OCCUR PRIOR TO CONSTRUCTION TO CONFIRM EXISTING AND STRUCTURE SIZES. (SEE DETAILS 541 & 542)
12	4" WHITE STRIPE
13	PLUMBING CABINET SET TO FINISH GRADE (SEE MECHANICAL)
14	CONCRETE PAVEMENT. MATCH EXISTING SECTION.
15	INSTALL NEW $\frac{3}{8}$" STEEL PLATE INSTALL $\frac{1}{4}$" DIA X 3" LONG HCA @ 24" O.C. & WET SET INTO CONCRETE. VERIFY FINAL LOCATION W/OWNER
16	ATTACH SALVAGED TIMBER SKIRTING BOARD TO NEW FACE OF TIMBER PLATFORM
17	NO LONGER USED
18	STAIRS (SEE STRUCTURAL)
19	SHIP CLEAT (SEE STRUCTURAL)
20	PEDESTRIAN CROSSING PAVEMENT MARKING (SEE DETAIL 251)
21	INSTALL NEW CATCH BASIN (SEE DETAILS 541 & 542)
22	INSTALL NEW 36" RCP
23	INSTALL BOND BREAKER (SEE DETAIL 257), INCIDENTAL
24	PLANTER BOX STAIRS (SEE DETAIL 250A)
25	PLANTER BOX STAIRS (SEE DETAIL 250B)
26	VESSEL BOLLARD (SEE STRUCTURAL)
27	SEE ELECTRICAL

20 40
SCALE IN FEET
SEE SHEET C2.6 & C2.7 FOR DETAILS

CIVIL SITE LEGEND

- CONCRETE CURB AND GUTTER (SEE DETAIL 210)
- PEDESTRIAN CROSSING PAVEMENT MARKING (SEE DETAIL 251)
- TRAFFIC ARROW PAVEMENT MARKING (SEE DETAIL 252)
- BITUMINOUS PAVEMENT (SEE DETAIL 200)
- CONCRETE (SIDEWALK OR PAVEMENT) (SEE DETAIL 204 & 256)
- WATER HYDRANT (SEE MECHANICAL)
- DETECTABLE WARNING PANEL (SEE DETAIL 236)
- SHEET PILE WALL (SEE STRUCTURAL)
- LIGHTING (SEE ELECTRICAL)
- WATER LINE (SEE MECHANICAL)
- CONSTRUCTION LIMITS



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TWIN CITIES - IRON RANGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

NAME: ELI RUPNOW
SIGNATURE:
DATE: 9/27/2017 LIC. No: 46681

DATE:	REV:	DESCRIPTION	REV. BY:
10/25	1	BIDDING CLARIFICATION	ECR
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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL PLAN
STA 0+00 TO 4+90

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C2.1

KEY NOTES

1. BITUMINOUS PAVEMENT (SEE DETAIL 200)
2. CONCRETE SIDEWALK (SEE DETAIL 204 & 256)
3. B618 CONCRETE CURB, OR CURB AND GUTTER (SEE DETAIL 210)
4. PLANTER BOX (SEE DETAIL 220)
5. CURB TAPER (SEE DETAIL 214)
6. PERPENDICULAR ACCESSIBLE CURB RAMP (SEE DETAIL 230)
7. PEDESTRIAN CROSSWALK SIGN (SEE DETAIL 243)
8. RELOCATE SIGN AS SHOWN OR LIGHT PER ELECTRICAL
9. RELOCATE HYDRANT AND VALVE. (SEE MECHANICAL)
10. PLACE SALVAGED BENCH
11. STORM EXCAVATION TO OCCUR PRIOR TO CONSTRUCTION TO CONFIRM EXISTING AND STRUCTURE SIZES. (SEE DETAILS 541 & 542)
12. 4" WHITE STRIPE
13. PLUMBING CABINET SET TO FINISH GRADE (SEE MECHANICAL)
14. CONCRETE PAVEMENT. MATCH EXISTING SECTION.
15. INSTALL NEW ⅜" STEEL PLATE INSTALL ¾" DIA X 3" LONG HCA @ 24" O.C. & WET SET INTO CONCRETE. VERIFY FINAL LOCATION W/OWNER
16. ATTACH SALVAGED TIMBER SKIRTING BOARD TO NEW FACE OF TIMBER PLATFORM
17. NO LONGER USED.
18. STAIRS (SEE STRUCTURAL)
19. SHIP CLEAT (SEE STRUCTURAL)
20. PEDESTRIAN CROSSING PAVEMENT MARKING (SEE DETAIL 251)
21. INSTALL NEW CATCH BASIN (SEE DETAILS 541 & 542)
22. INSTALL NEW 36" RCP
23. INSTALL BOND BREAKER (SEE DETAIL 257), INCIDENTAL
24. PLANTER BOX STAIRS (SEE DETAIL 250A)
25. PLANTER BOX STAIRS (SEE DETAIL 250B)
26. VESSEL BOLLARD (SEE STRUCTURAL)
27. SEE ELECTRICAL

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SCALE IN FEET
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CIVIL SITE LEGEND

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- PEDESTRIAN CROSSING PAVEMENT MARKING (SEE DETAIL 251)
- TRAFFIC ARROW PAVEMENT MARKING (SEE DETAIL 252)
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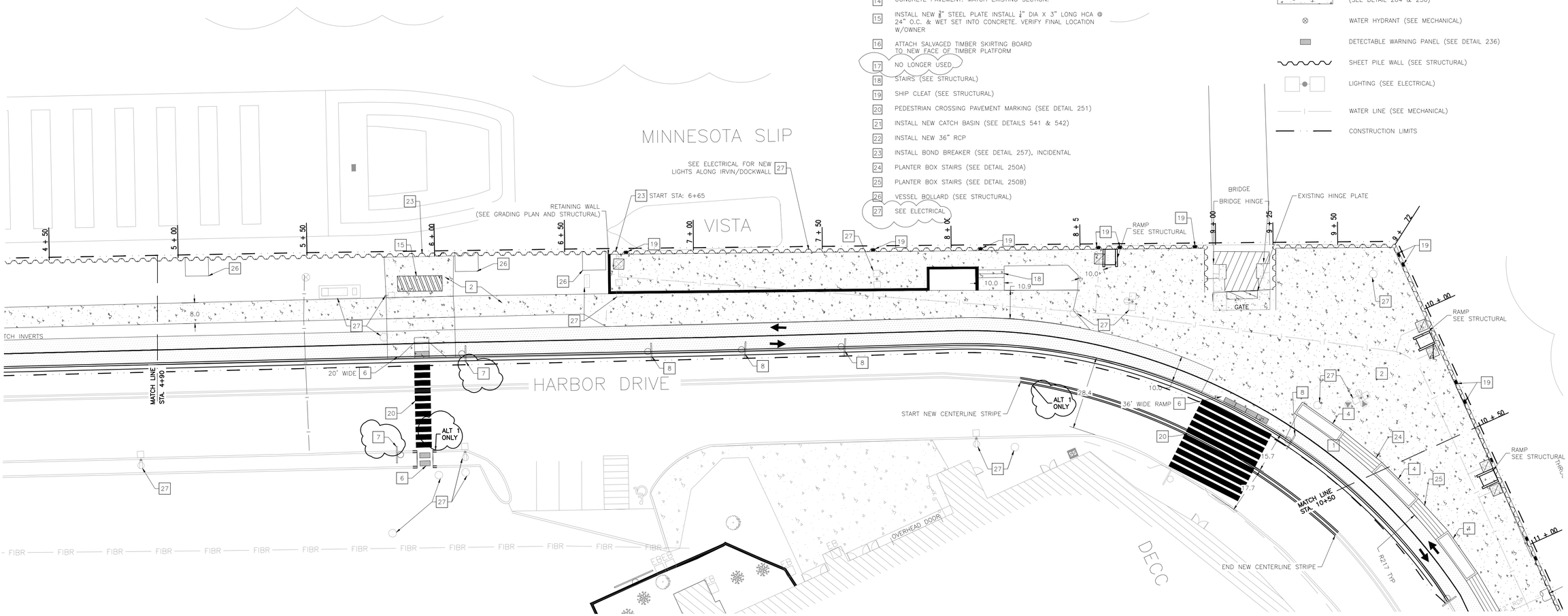
- LIGHTING (SEE ELECTRICAL)
- WATER LINE (SEE MECHANICAL)
- CONSTRUCTION LIMITS



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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL PLAN
STA 4+90 TO 10+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C2.2

KEY NOTES

1. BITUMINOUS PAVEMENT (SEE DETAIL 200)
2. CONCRETE SIDEWALK (SEE DETAIL 204 & 256)
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9. RELOCATE HYDRANT AND VALVE. (SEE MECHANICAL)
10. PLACE SALVAGED BENCH
11. STORM EXCAVATION TO OCCUR PRIOR TO CONSTRUCTION TO CONFIRM EXISTING AND STRUCTURE SIZES. (SEE DETAILS 541 & 542)
12. 4" WHITE STRIPE
13. PLUMBING CABINET SET TO FINISH GRADE (SEE MECHANICAL)
14. CONCRETE PAVEMENT. MATCH EXISTING SECTION.
15. INSTALL NEW ⅜" STEEL PLATE INSTALL ½" DIA X 3" LONG HCA @ 24" O.C. & WET SET INTO CONCRETE. VERIFY FINAL LOCATION W/OWNER
16. ATTACH SALVAGED TIMBER SKIRTING BOARD TO NEW FACE OF TIMBER PLATFORM
17. NO LONGER USED
18. STAIRS (SEE STRUCTURAL)
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20. PEDESTRIAN CROSSING PAVEMENT MARKING (SEE DETAIL 251)
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25. PLANTER BOX STAIRS (SEE DETAIL 250B)
26. VESSEL BOLLARD (SEE STRUCTURAL)
27. SEE ELECTRICAL

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- LIGHTING (SEE ELECTRICAL)
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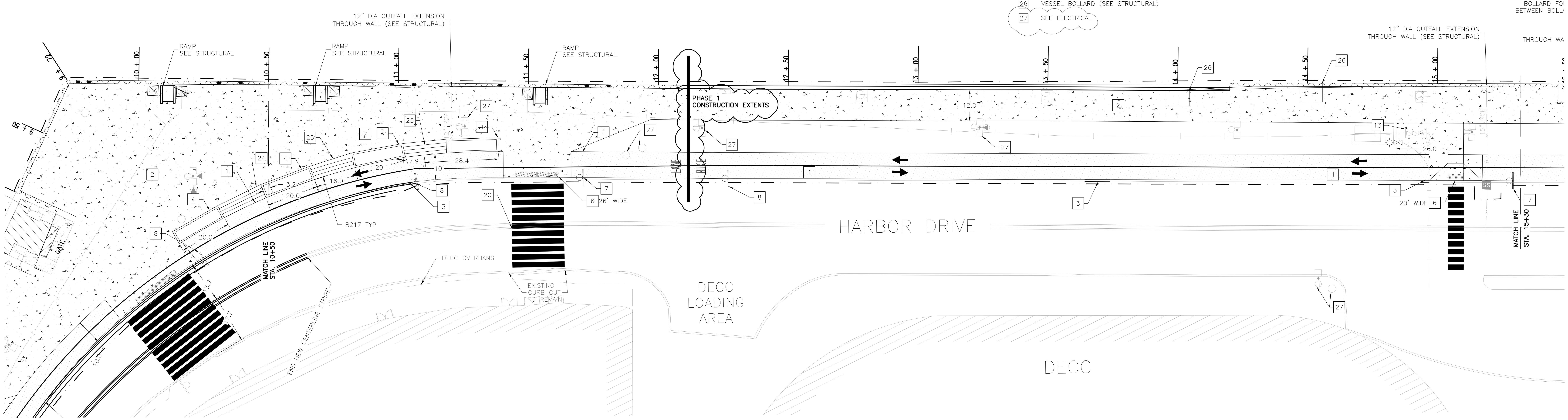

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ECR	BIDDING CLARIFICATION	1	10/25

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL PLAN
STA 10+50 TO 15+30

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C2.3

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STORM NOTES

1. CONTRACTOR IS RESPONSIBLE TO FIELD VERIFY SIZE AND TYPE OF EXISTING STORM FEATURES.

KEY NOTES

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11. STORM EXCAVATION TO OCCUR PRIOR TO CONSTRUCTION TO CONFIRM EXISTING AND STRUCTURE SIZES. (SEE DETAILS 541 & 542)
12. 4" WHITE STRIPE
13. PLUMBING CABINET SET TO FINISH GRADE (SEE MECHANICAL)
14. CONCRETE PAVEMENT. MATCH EXISTING SECTION.
15. INSTALL NEW ⅜" STEEL PLATE INSTALL ¾" DIA X 3" LONG HCA @ 24" O.C. & WET SET INTO CONCRETE. VERIFY FINAL LOCATION W/OWNER
16. ATTACH SALVAGED TIMBER SKIRTING BOARD TO NEW FACE OF TIMBER PLATFORM
17. INSTALL 8" WIDE CURB, HEIGHT PER GRADING PLAN
18. STAIRS (SEE STRUCTURAL)
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20 40

SCALE IN FEET

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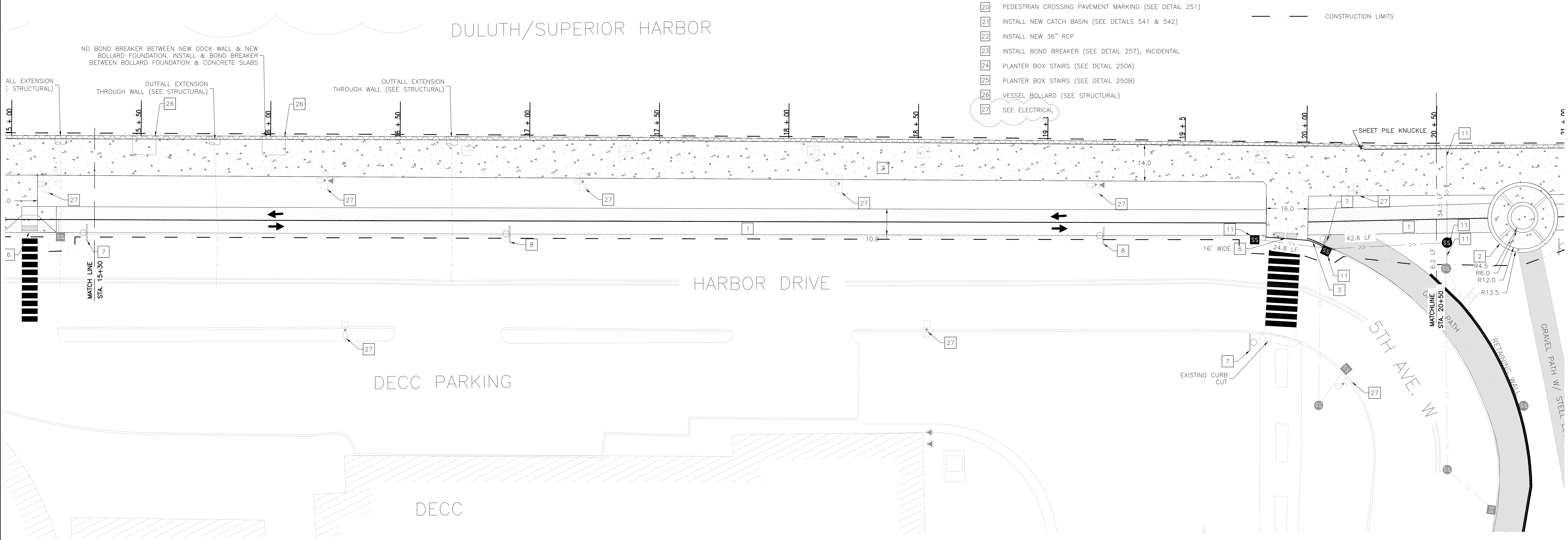

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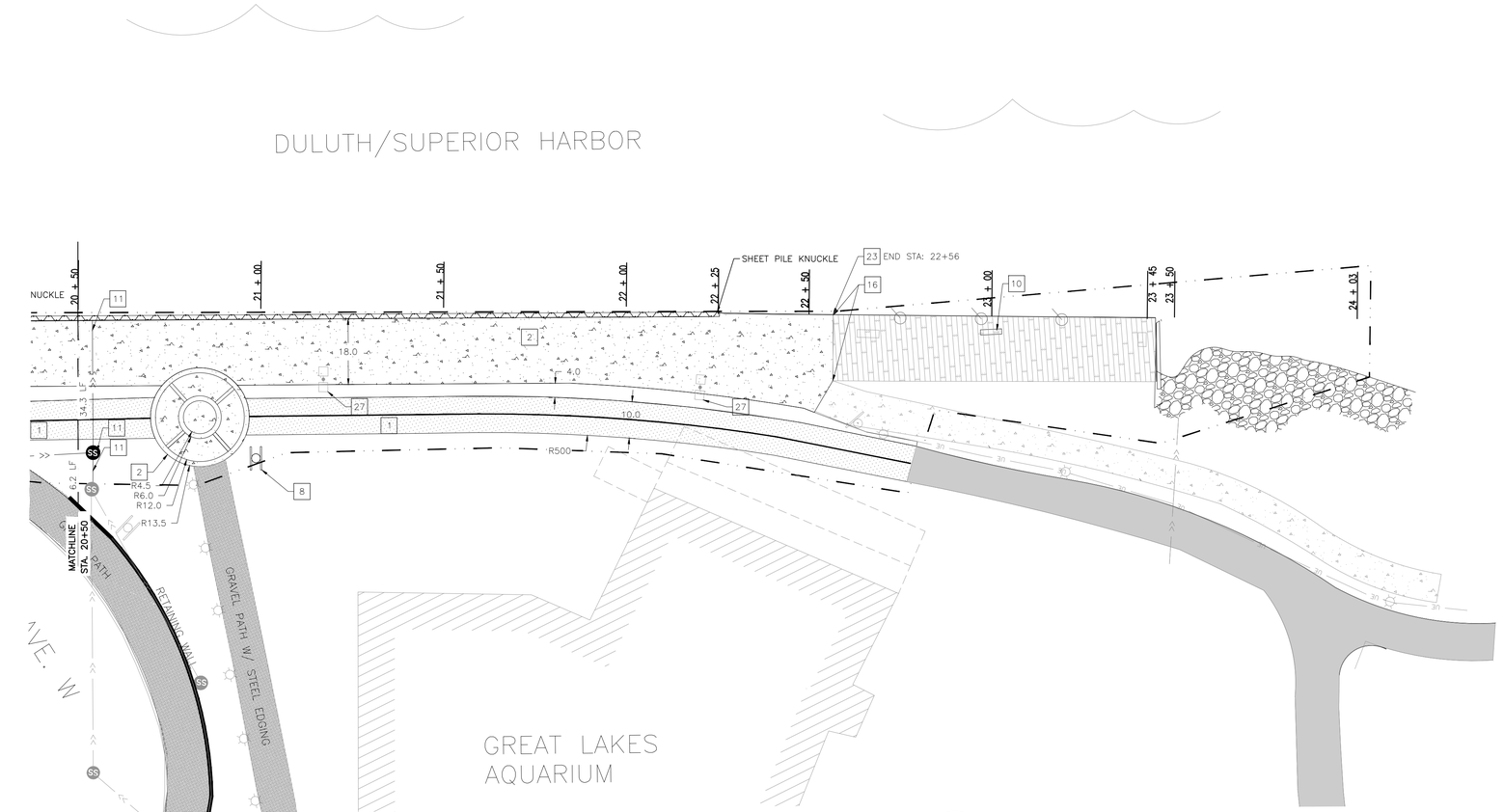
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL PLAN
STA 15+30 TO 20+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C2.4



KEY NOTES

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11. STORM EXCAVATION TO OCCUR PRIOR TO CONSTRUCTION TO CONFIRM EXISTING AND STRUCTURE SIZES. (SEE DETAILS 541 & 542)
12. 4" WHITE STRIPE
13. PLUMBING CABINET SET TO FINISH GRADE (SEE MECHANICAL)
14. CONCRETE PAVEMENT. MATCH EXISTING SECTION.
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16. ATTACH SALVAGED TIMBER SKIRTING BOARD TO NEW FACE OF TIMBER PLATFORM
17. INSTALL 8" WIDE CURB, HEIGHT PER GRADING PLAN
18. STAIRS (SEE STRUCTURAL)
19. SHIP CLEAT (SEE STRUCTURAL)
20. PEDESTRIAN CROSSING PAVEMENT MARKING (SEE DETAIL 251)
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26. VESSEL BOLLARD (SEE STRUCTURAL)
27. SEE ELECTRICAL

20 40
SCALE IN FEET
SEE SHEET C2.6 & C2.7 FOR DETAILS

CIVIL SITE LEGEND

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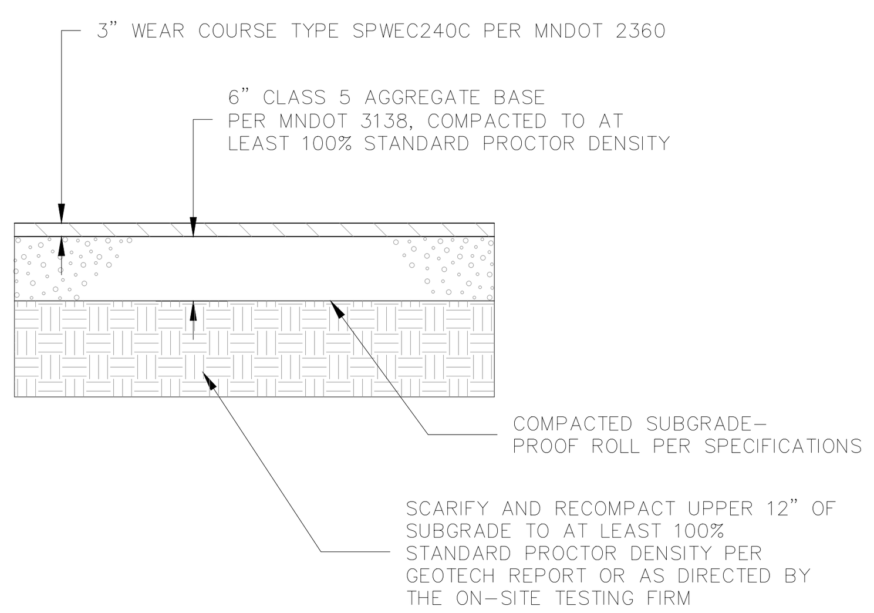
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL PLAN
STA 20+50 TO 24+03

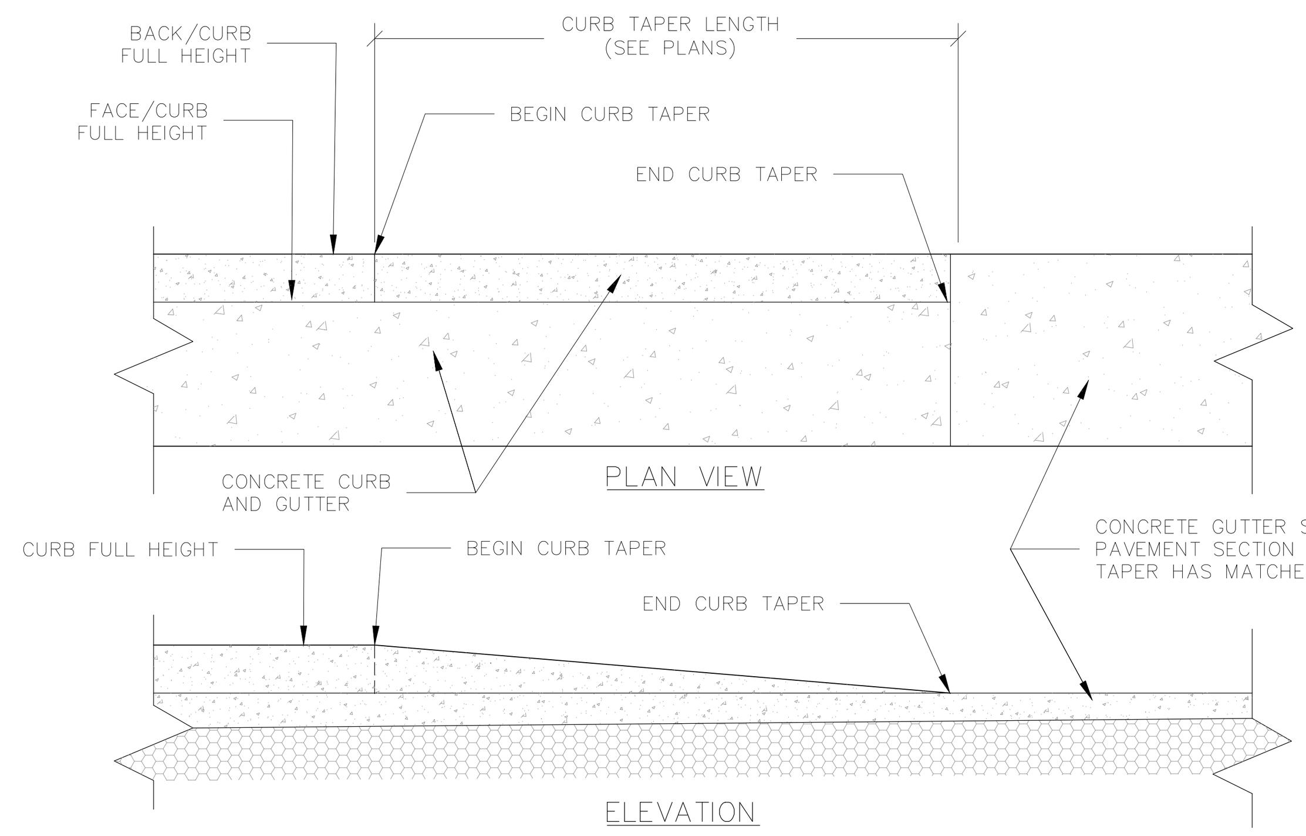
JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C2.5



200 | BITUMINOUS PAVEMENT

NOT TO SCALE

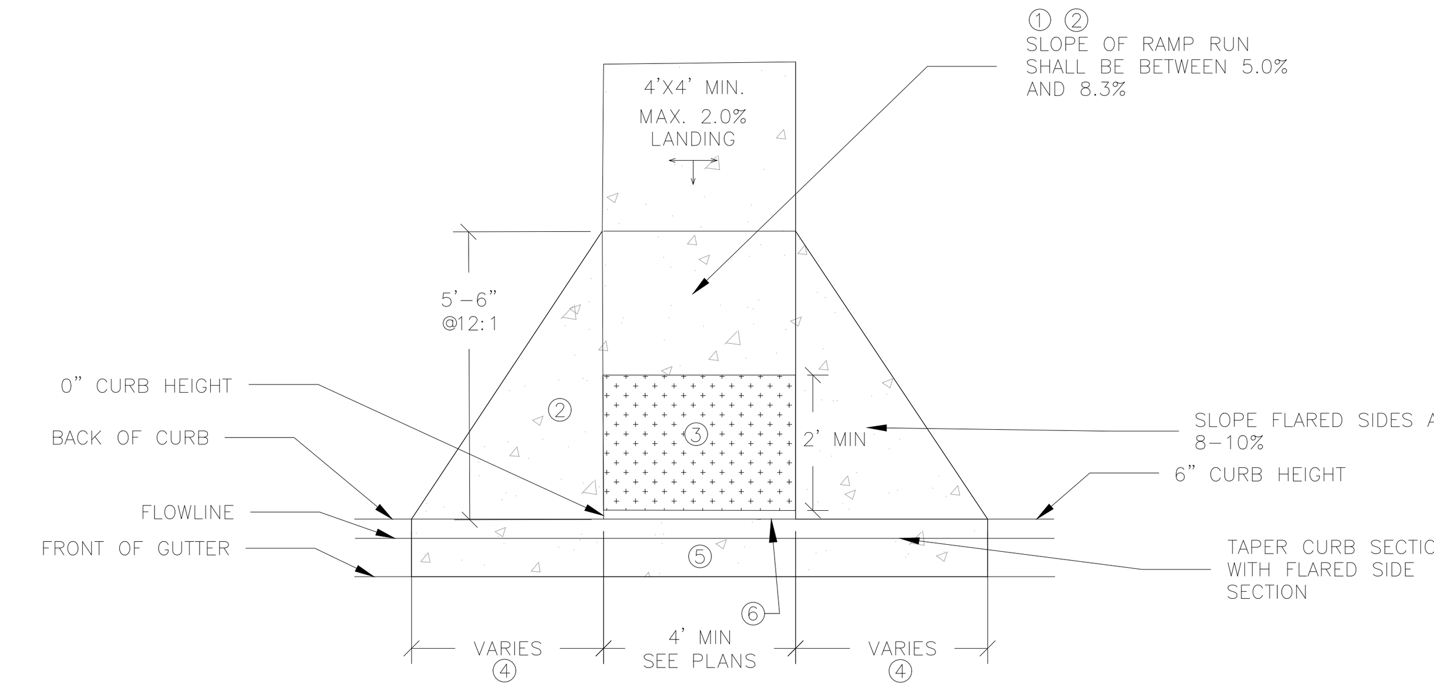


NOTES:

1. FULL VERTICAL HEIGHT OF CURB IS ASSUMED TO BE 4 INCHES AT BEGINNING OF CURB TAPER AND 0 INCHES AT END OF TAPER UNLESS NOTED OTHERWISE.
2. CURB TO TAPER AT 1:12 UNLESS OTHERWISE IDENTIFIED ON PLANS. (TYPICAL TAPER FOR 4 INCH CURB IS 4 FEET)

214 | CURB TAPER

NOT TO SCALE



① IF RAMP SCOPE IS LESS THAN 5.0%, THEN NO LANDING IS REQUIRED.

② THIS DETAIL ASSUMES THAT THE TOTAL VERTICAL RISE OF THE RAMP IS 6 INCHES. ADJUST RAMP LENGTH TO ACCOMMODATE CROSS SLOPE ON WALK.

SLOPED RAMP SURFACES SHALL BE STABLE, FIRM AND SLIP-RESISTANT. APPLY MEDIUM BROOM FINISH ON CONCRETE PERPENDICULAR TO SLOPE ON RAMP RUN AND FLARED SIDES.

③ DETECTABLE WARNING SURFACE IN APPROVED CONTRASTING COLOR WITH TRUNCATED DOMES PER MNDOT STANDARD PLATE 7038A AND MEETING ADA REQUIREMENTS. EXTEND FULL WIDTH (4' MINIMUM) OF RAMP, CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL. RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MIN. TO 6" MAX. FROM THE BACK OF CURB.

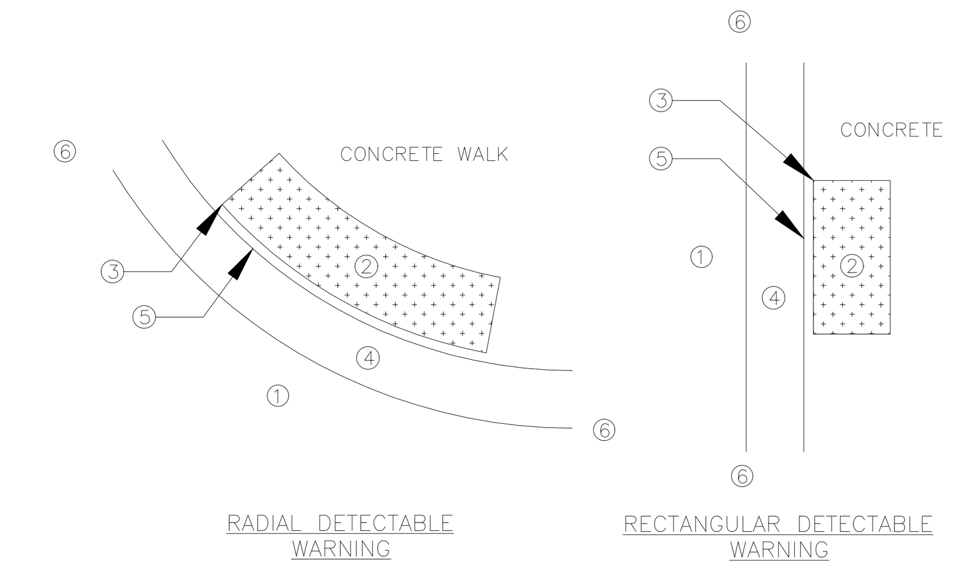
④ DISTANCE VARIES BASED ON FLARE SLOPE.

⑤ SEE PEDESTRIAN ACCESS ROUTE CURB & GUTTER DETAIL 234.

⑥ 1/2" PREFORMED JOINT FILLER MATERIAL (AASHTO M213). JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT SIDEWALK. JOINT SHALL BE FREE OF DEBRIS.

230 | PERPENDICULAR ACCESSIBLE CURB RAMP

NOT TO SCALE



① WHEN NO FLARES ARE PROPOSED, FORM AND CONSTRUCT CONCRETE WALK PERPENDICULAR TO THE EDGE OF PAVEMENT.

② DETECTABLE WARNING SURFACE IN APPROVED CONTRASTING COLOR WITH TRUNCATED DOMES PER MNDOT STANDARD PLATE 7038A AND MEETING PUBLIC-OF-WAY ACCESSIBILITY GUIDELINES REQUIREMENTS. EXTEND WIDTH AS SHOWN ON THE PLANS. CONTINUOUSLY EXTEND FOR A MINIMUM OF 24" IN THE PATH OF TRAVEL.

③ RECTANGULAR DETECTABLE WARNINGS SHALL BE SET BACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SET BACK 3" MIN. TO 6" MAX. FROM THE BACK OF CURB.

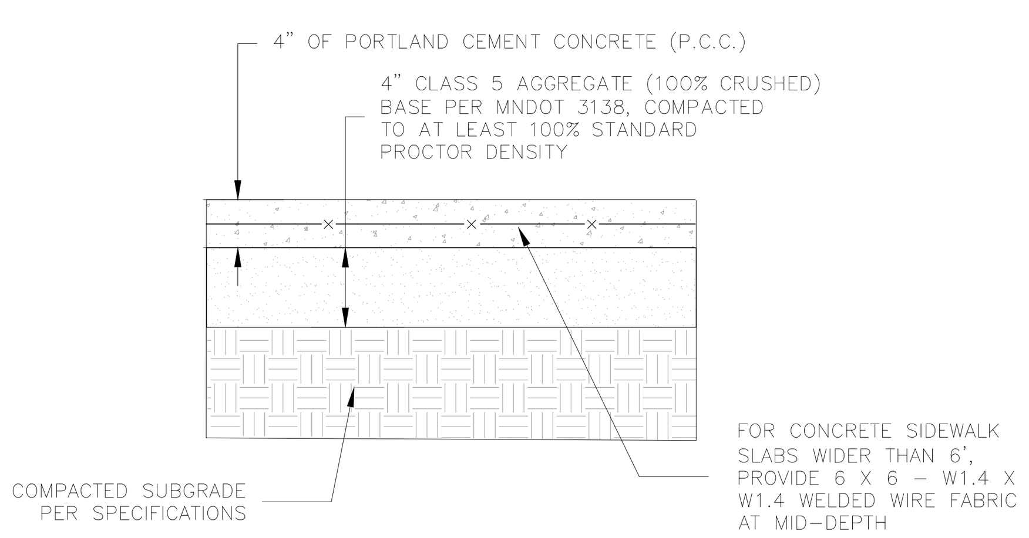
④ FLUSH (RIBBON) CURB. SEE DETAIL 234.

⑤ 1/2" PREFORMED JOINT FILLER MATERIAL (AASHTO M213). JOINT FILLER SHALL BE PLACED FLUSH WITH THE BACK OF CURB AND ADJACENT TO SIDEWALK. JOINT SHALL BE FREE OF DEBRIS.

⑥ SEE PLANS FOR CURB TAPERS.

236 | DETECTABLE WARNING SURFACE

NOT TO SCALE

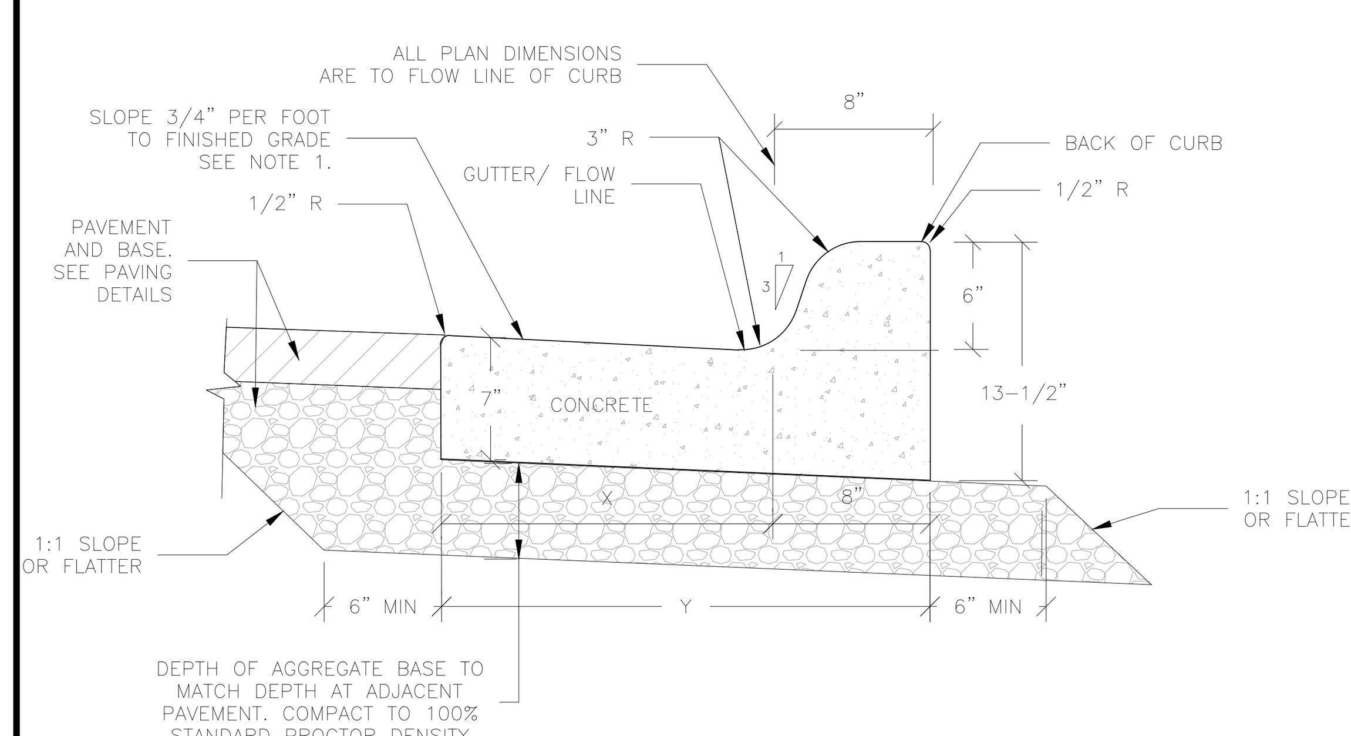


NOTES:

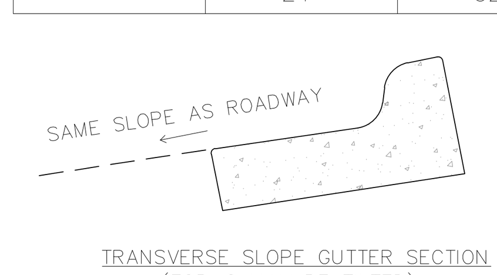
1. SIDEWALKS TO HAVE 2% MAXIMUM CROSS SLOPE, AND 5% MAXIMUM LONGITUDINAL SLOPE UNLESS INDICATED OTHERWISE

204 | CONCRETE SIDEWALK

NOT TO SCALE



CURB TYPE	X	Y
B612	12"	20"
B618	18"	26"
B624	24"	32"



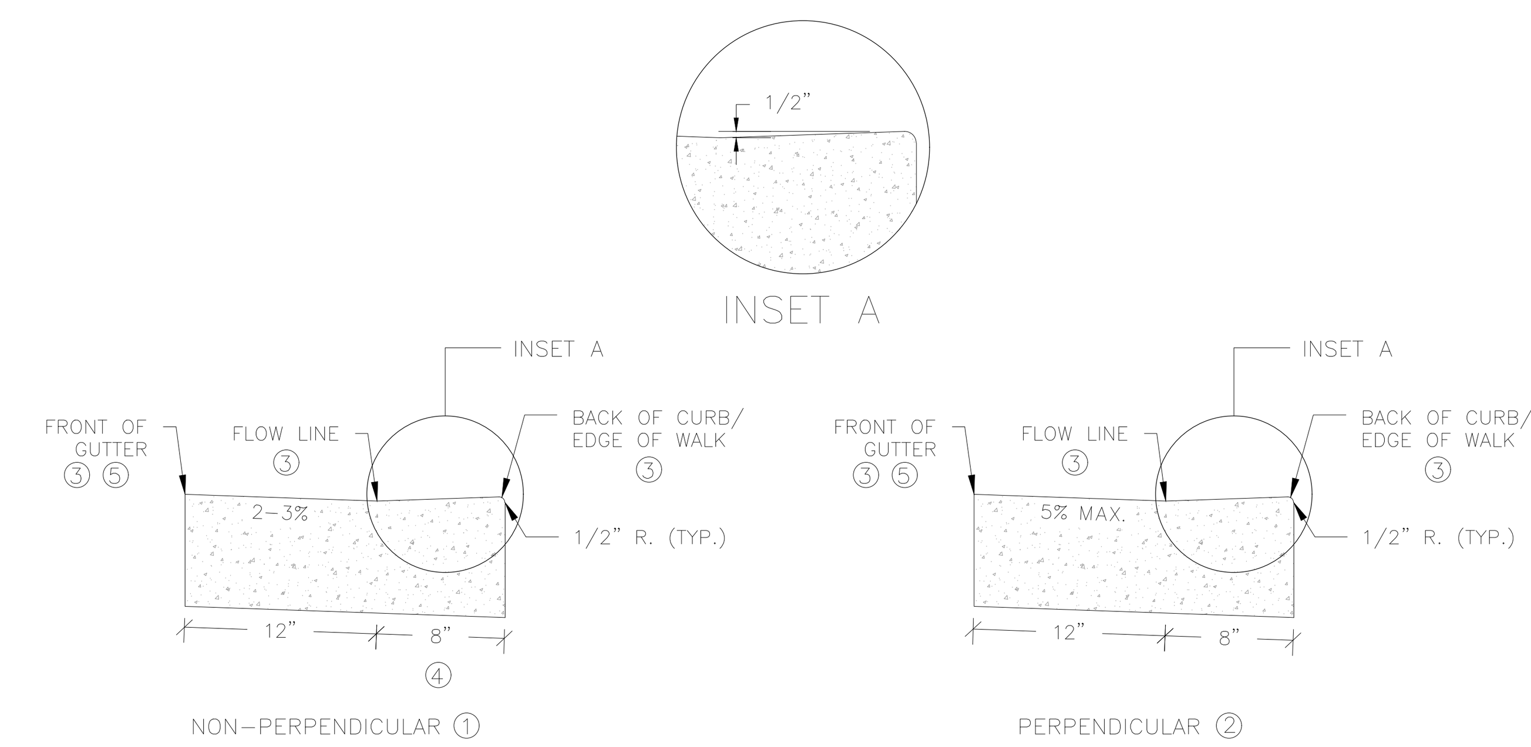
TRANSVERSE SLOPE GUTTER SECTION
(FORMS MAY BE TILTED)

NOTES:

1. DIRECTION OF TIP-OUT GUTTER SLOPE TO MATCH DIRECTION OF ADJACENT PAVEMENT SLOPE.
2. PROVIDE TOOLED OR SAWN CONTRACTION JOINTS AT 10' SPACING, EXPANSION JOINTS AT 60' MAXIMUM SPACING.
3. CONSTRUCT CURB AND GUTTER PER MNDOT 2531.
4. IF ADJACENT CURB IS NOT 6" IN HEIGHT, CONSTRUCT CURB TO TIE IN TO ADJACENT CURB ELEVATIONS. INCIDENTAL.

210| B6 STYLE CURB AND GUTTER

NOT TO SCALE



① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON-PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS, DEPRESSED CORNERS, AND ONE WAY AND COMBINED DIRECTIONALS.

② FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.

③ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4 INCH.

④ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS.

⑤ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. PEDESTRIAN ACCESS ROUTE (PAR) GUTTER SHALL NOT BE OVERLAID.

NOTES:

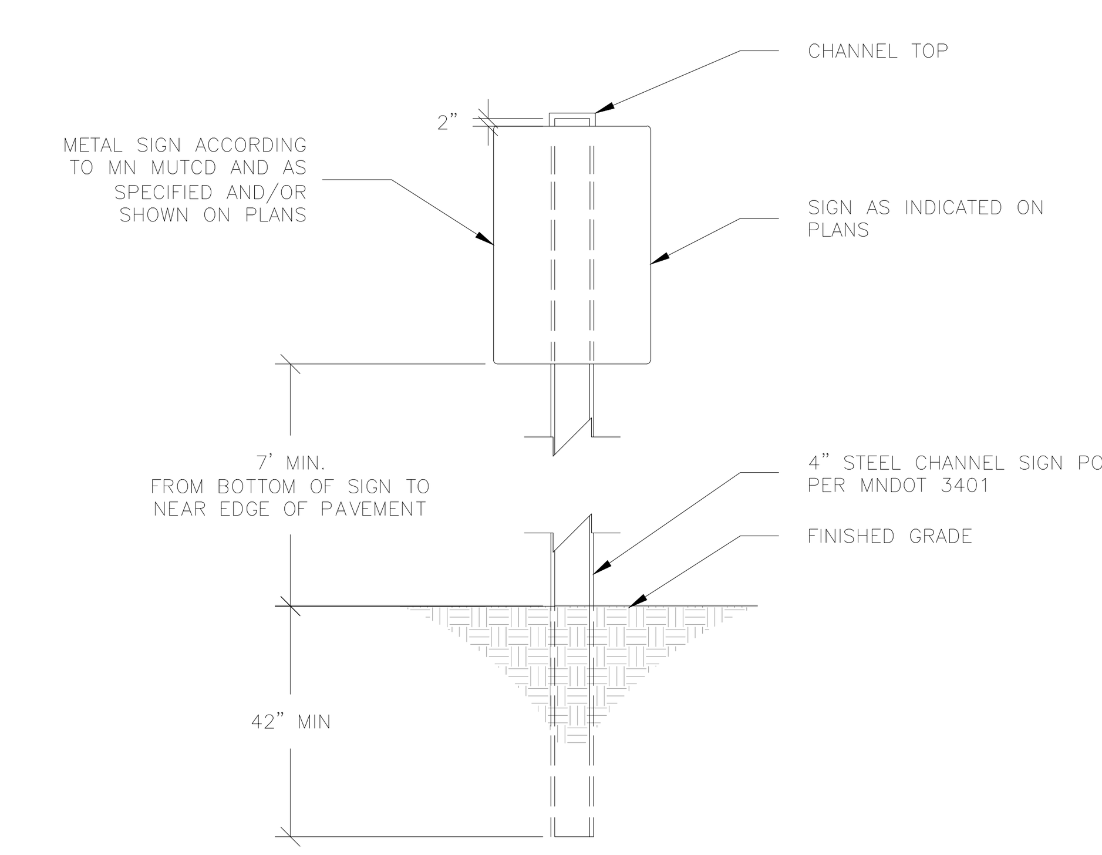
A. POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM GRADE.
B. NO PONDING SHALL BE PRESENT IN THE PAR.
C. ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

234 | PEDESTRIAN ACCESS ROUTE CURB AND GUTTER

NOT TO SCALE

SIGN NAME	DESIGNATION	SIZE
STOP	R1-1	30"X30" (SINGLE LANE) 36"X36" (MULTI-LANE)
YIELD	R1-2	36"X36"X36"
SPEED LIMIT	R2-1	24"X30"
NO PARKING ANYTIME	R7-1	12"X18"
DO NOT ENTER	R5-1	30"X30"
ONE WAY	R6-2 (R or L)	18"X24"
PEDESTRIAN CROSSING*	W11-2	30"X30"

*COLOR SHALL BE FLOURESCENT YELLOW-GREEN



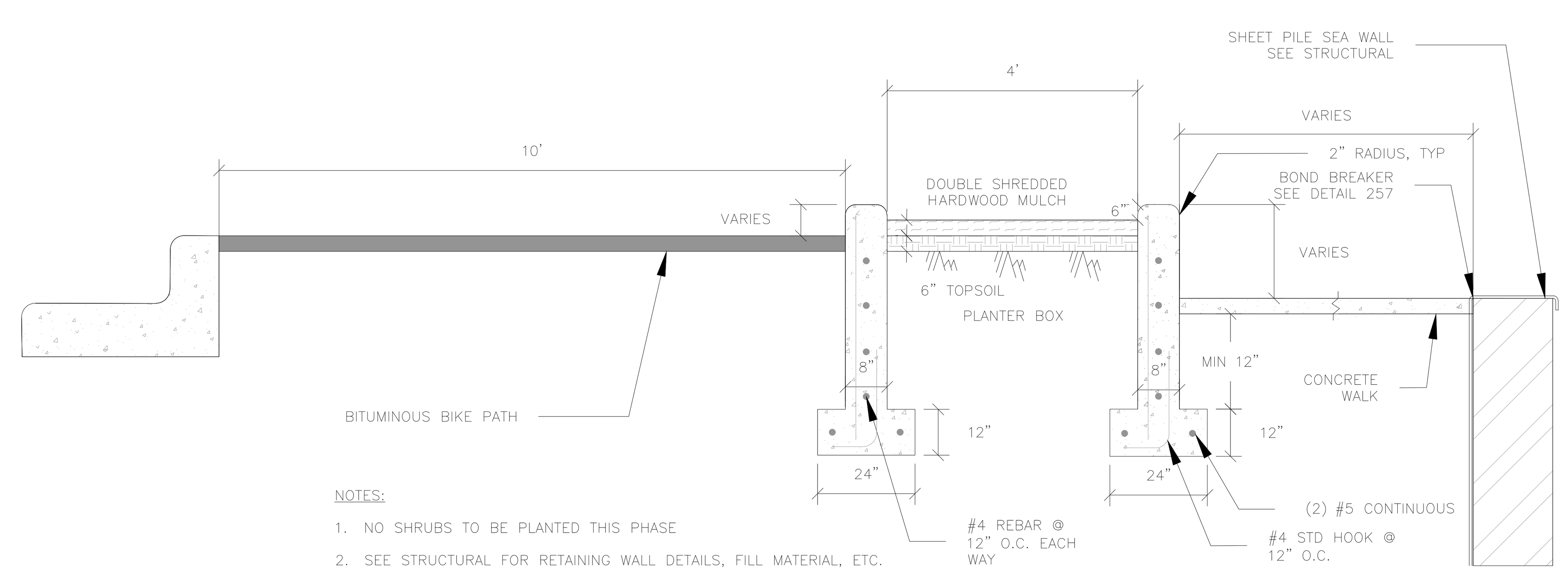
NOTES:

DESIGN SHALL CONFORM TO MN MUTCD CURRENT ADDITION AND THESE REQUIREMENTS EXCEPT AS OTHERWISE APPROVED IN WRITING BY THE OWNER AND CITY/COUNTY ENGINEER AS APPLICABLE

1. SIGN SHALL BE REFLECTORIZED PER MNDOT 3352.2A2B, STANDARD NO. 2
2. SIGN SHALL BE CONSTRUCTED OF ALUMINUM PER MNDOT 3352.2A1

243 | REGULATORY SIGN DETAIL

NOT TO SCALE

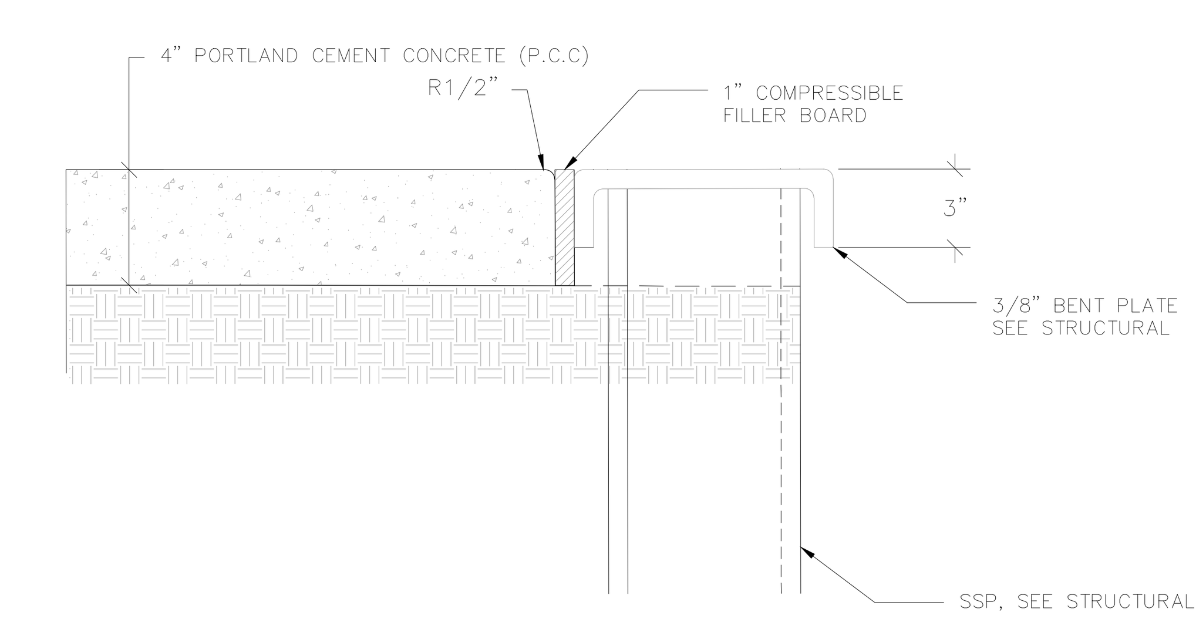


NOTES:

1. NO SHRUBS TO BE PLANTED THIS PHASE
2. SEE STRUCTURAL FOR RETAINING WALL DETAILS, FILL MATERIAL, ETC.
3. #4 BARS SHALL BE CONTINUOUS AROUND CORNERS.
4. CONCRETE SPREAD FOOTINGS SHALL BE AT THE SAME ELEVATIONS

220 | DECC PLANTER BOX

NOT TO SCALE



257 | BOND BREAKER

NOT TO SCALE

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NAME: ELI RUPNOW
SIGNATURE:
DATE: 9/27/2017 LIC. NO. 46681

DATE:	REV:	DESCRIPTION	REV. BY:
10/25	1	BIDDING CLARIFICATION	ECR

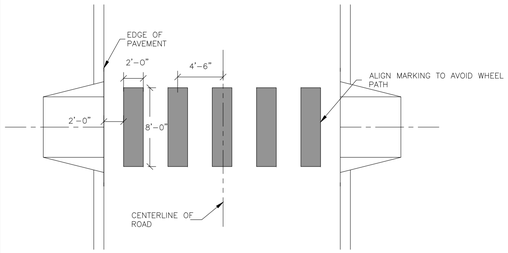
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL PLAN DETAILS

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C2.6

4/17/2017 1:28 PM c:\2016\161080 decc seawall project\1_CAD\Civil\161080-SITE.dwg

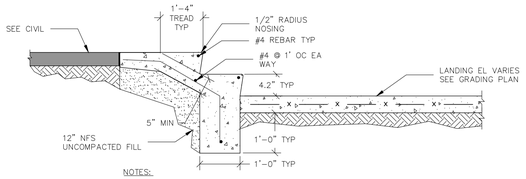


NOTES:

1. MARKINGS FOR PUBLIC STREETS SHALL BE ACCORDING TO LOCAL REQUIREMENTS AND AS OUTLINED IN SECTION 3B OF THE MUTCD, CURRENT ADDITION.
2. CENTERED MARKINGS WITH RAMPS IN WALKWAY

251 | CROSSWALK PAVEMENT MARKINGS

NOT TO SCALE

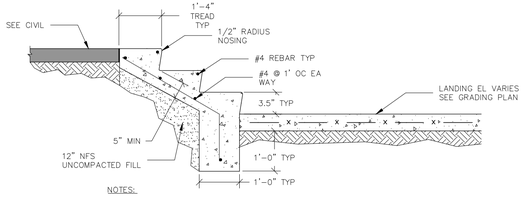


NOTES:

1. SEE DETAIL 220 FOR PLANTER BOX

250A | PLANTER BOX STAIRS

NOT TO SCALE

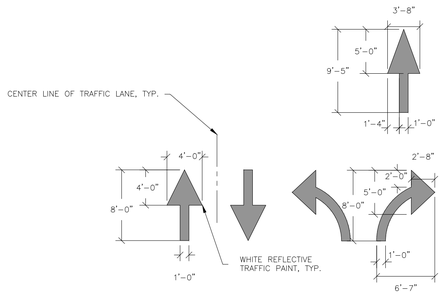


NOTES:

1. SEE DETAIL 220 FOR PLANTER BOX

250B | PLANTER BOX STAIRS

NOT TO SCALE

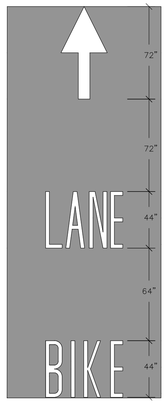


NOTES:

1. ARROW TO BE CENTERED IN BIKING LANE UNLESS OTHERWISE NOTED.

252 | TRAFFIC ARROW PAVEMENT MARKINGS

NOT TO SCALE

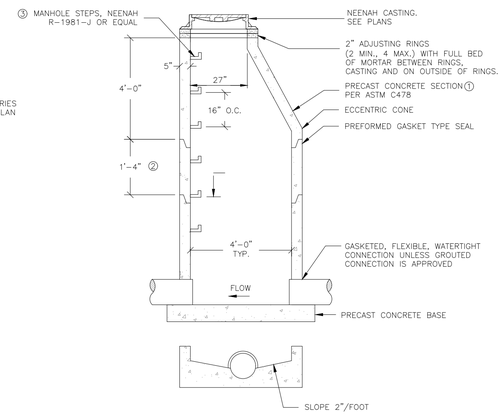


NOTES:

1. MARKINGS FOR PUBLIC STREETS SHALL BE ACCORDING TO LOCAL REQUIREMENTS AND AS OUTLINED IN SECTION 3B OF THE MUTCD, CURRENT ADDITION.
2. LETTERS ARE TO BE PAINTED TRAFFIC REFLECTIVE WHITE.

254| BIKE LANE PAVEMENT MARKINGS

NOT TO SCALE

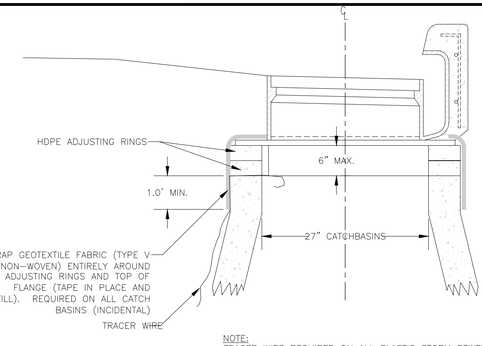


NOTES:

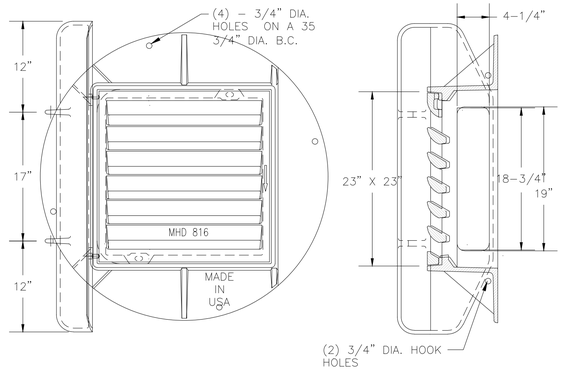
1. REINFORCING SHALL BE A MINIMUM OF A SINGLE LINE WIRE FABRIC HAVING AN AREA OF NOT LESS THAN 0.12 SQ. INCH PER FOOT OF HEIGHT.
2. FOR MANHOLES 8' DEEP OR GREATER, THE SECTION IMMEDIATELY BELOW THE CONE SHALL BE 1'-4" (16").
3. PROVIDE STEPS AS INDICATED FOR MANHOLES 4.5' DEEP AND GREATER.

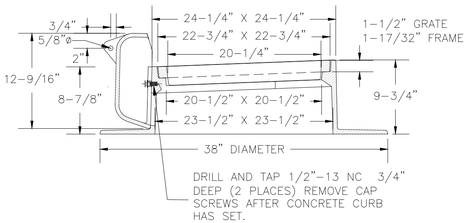
541 | STORM SEWER ECCENTRIC CONE

NOT TO SCALE



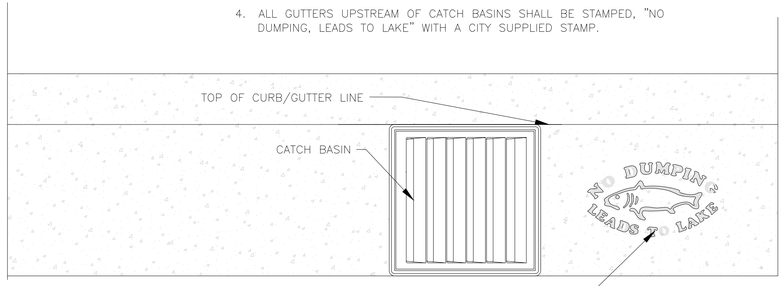
NOTE:
TRACER WIRE REQUIRED ON ALL PLASTIC STORM SEWER PIPES





NOTES:

1. COMPONENT NO'S: FRAME 5002, GRATE MHD 816 (STD PLATE 4154B), CURB BOX 823A (STD PLATE 4160D).
2. MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
3. WEIGHT: FRAME APPROX. 257#, GRATE 131#, CURB BOX 105#.
4. ALL GUTTERS UPSTREAM OF CATCH BASINS SHALL BE STAMPED, "NO DUMPING, LEADS TO LAKE" WITH A CITY SUPPLIED STAMP.

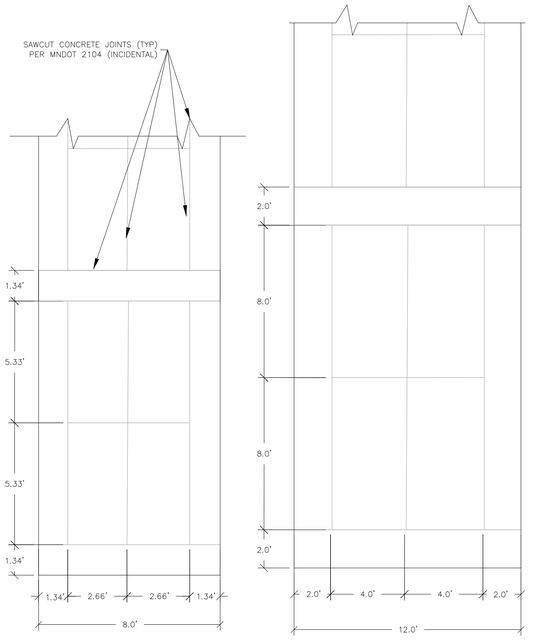


GUTTER STAMP TO BE PLACED A MAXIMUM OF 18" FROM CATCH BASIN GRATE ON UPHILL SIDE AND CENTERED IN GUTTER.

GUTTER STAMP TO BE OBTAINED FROM CITY OF DULUTH BY CONTRACTOR.

542| STORM SEWER GRATE

NOT TO SCALE



256| CONCRETE PATH SCORING

NOT TO SCALE

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NAME: ELI RUPNOW
SIGNATURE:
DATE: 9/27/2017
LIC. No: 46681

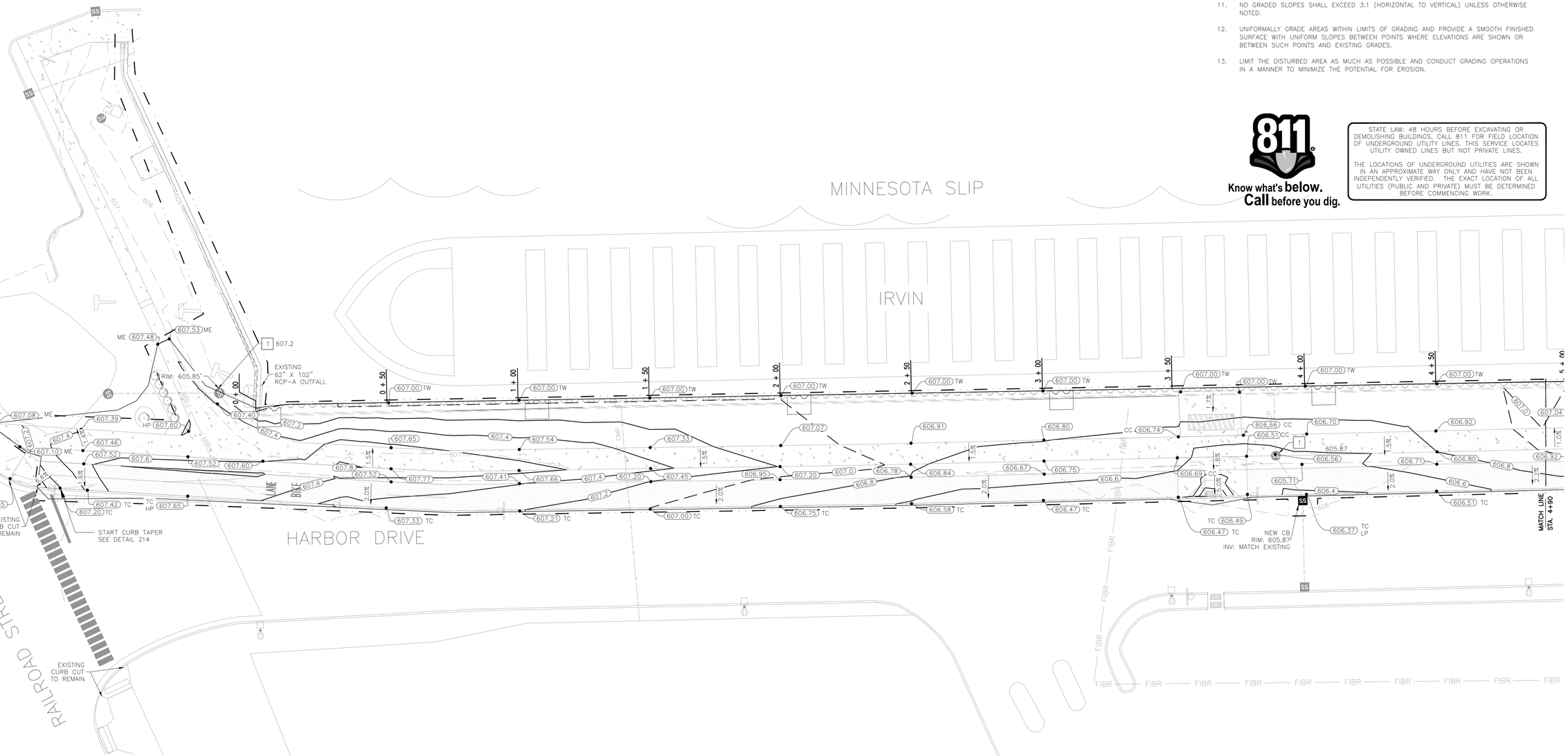
REV. BY:	DESCRIPTION	REV:	DATE:
ECR	BIDDING CLARIFICATION	1	10/25

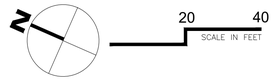
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CIVIL PLAN DETAILS

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C2.7





GRADING LEGEND:

- MANHOLE
- CATCH BASIN
- FLOW ARROW
- SPOT ELEVATION
- PROPOSED CONTOUR (0.2' INTERVAL)
- PROPOSED CONTOUR (1.0' INTERVAL)
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- ADA PATH
- CONSTRUCTION LIMITS

KEY NOTES

1 ADJUST FRAME AND CASTING

GENERAL GRADING AND DRAINAGE NOTES:

1. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE IN PLACE BEFORE BEGINNING SITE GRADING ACTIVITIES.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING QUANTITIES OF CUT, FILL AND WASTE MATERIAL TO BE HANDLED, AND FOR THE AMOUNT OF GRADING TO BE DONE. ALL COSTS ASSOCIATED WITH IMPORTING SUITABLE MATERIAL AND EXPORTING UNSUITABLE/EXCESS/WASTE MATERIAL SHALL BE INCLUDED IN THE BID PRICE.
3. CONTRACTOR SHALL STRIP, STOCKPILE AND RE-SPREAD EXISTING ONSITE TOPSOIL, IF MATERIAL IS APPROVED BY THE LANDSCAPE ARCHITECT AND/OR SPECIFICATIONS. PROVIDE A UNIFORM THICKNESS OF 6" MINIMUM IN ALL DISTURBED AREAS TO BE LANDSCAPED.
4. CONTRACTOR SHALL DISPOSE OF ANY EXCESS SOIL MATERIAL UNLESS OTHERWISE DIRECTED.
5. REFER TO EROSION CONTROL PLAN FOR PERMANENT TURF RESTORATION AND PLANTING INFORMATION.
6. MAINTAIN TEMPORARY PROTECTION MEASURES DURING CONSTRUCTION ACTIVITIES. SEE SITE REMOVALS PLAN FOR ADDITIONAL INFORMATION. PROVIDE ADDITIONAL PROTECTION AS NECESSARY AS WORK PROGRESSES.
7. SEE CIVIL SITE PLAN FOR SITE LAYOUT.
8. PROPOSED CONTOURS AND SPOT ELEVATIONS ARE TO FINISHED SURFACE GRADE.
9. SPOT ELEVATIONS SHOWN ADJACENT TO CURB REFER TO GUTTER/FLOW LINE GL. SPOT ELEVATION SHOWN FOR TOP OF CURB ARE LABELED WITH TC (TOP OF CURB). SPOT LABELED ME REFERS TO MATCH EXISTING GRADE, EOF REFERS TO EMERGENCY OVERFLOW ELEVATION, TW REFERS TO TOP OF WALL AND BW REFERS TO BOTTOM OF WALL. TS REFERS TO TOP OF STAIRS AND BS REFERS TO BOTTOM OF STAIRS. CC REFERS TO CONCRETE CORNER.
10. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT ALL TIMES.
11. NO GRADED SLOPES SHALL EXCEED 3:1 (HORIZONTAL TO VERTICAL) UNLESS OTHERWISE NOTED.
12. UNIFORMALLY GRADE AREAS WITHIN LIMITS OF GRADING AND PROVIDE A SMOOTH FINISHED SURFACE WITH UNIFORM SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE SHOWN OR BETWEEN SUCH POINTS AND EXISTING GRADES.
13. LIMIT THE DISTURBED AREA AS MUCH AS POSSIBLE AND CONDUCT GRADING OPERATIONS IN A MANNER TO MINIMIZE THE POTENTIAL FOR EROSION.

811 Know what's below. Call before you dig.

STATE LAW: 48 HOURS BEFORE EXCAVATING OR DEMOLISHING BUILDINGS, CALL 811 FOR FIELD LOCATION OF UNDERGROUND UTILITY LINES. THIS SERVICE LOCATES UTILITY OWNED LINES BUT NOT PRIVATE LINES.

THE LOCATIONS OF UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED. THE EXACT LOCATION OF ALL UTILITIES (PUBLIC AND PRIVATE) MUST BE DETERMINED BEFORE COMMENCING WORK.

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NAME: ELI RUPNOW
SIGNATURE:
LIC. No: 46681
DATE: 9/27/2017

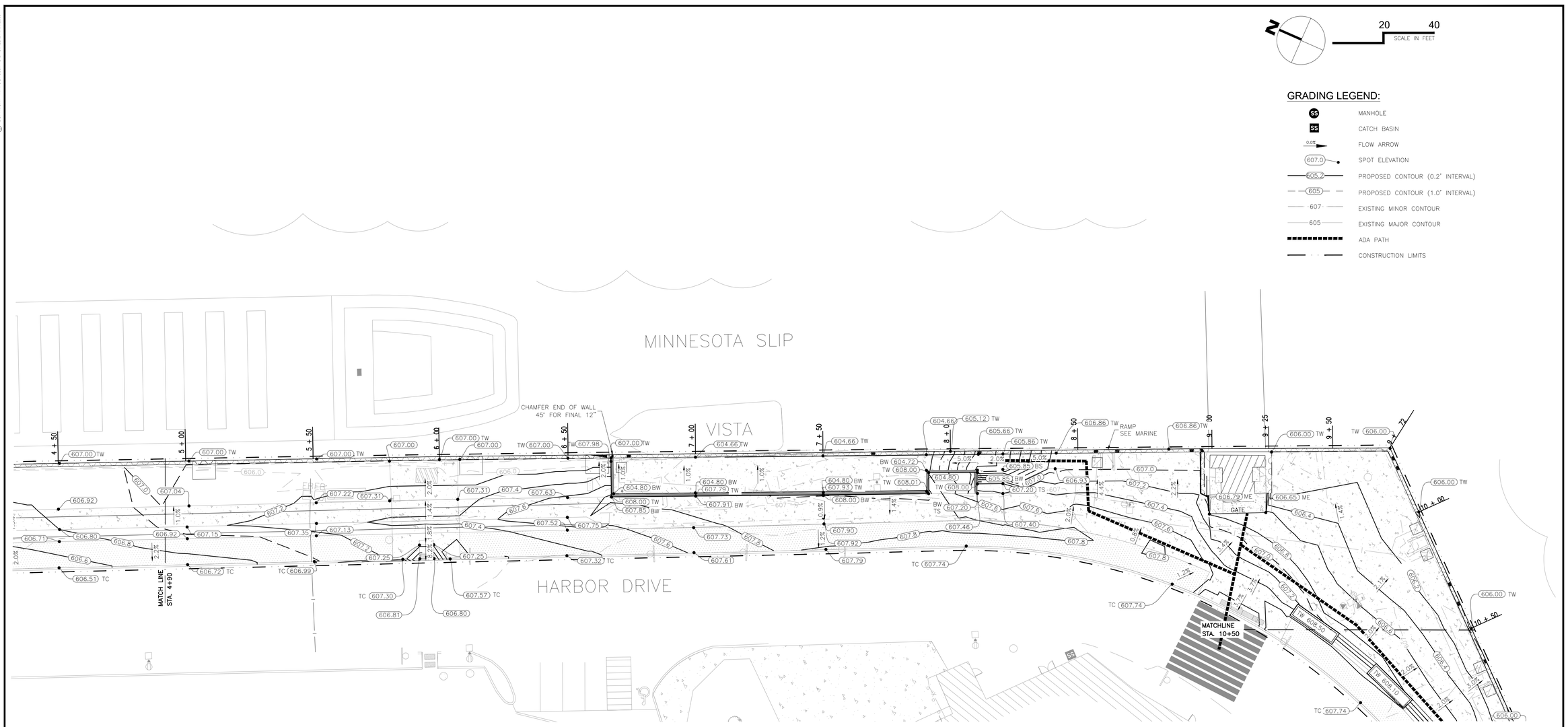
DATE:	REV:	DESCRIPTION	REV. BY:
10/25	1	BIDDING CLARIFICATION	ECR

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

GRADING PLAN
STA 0+00 TO 4+90

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C3.1



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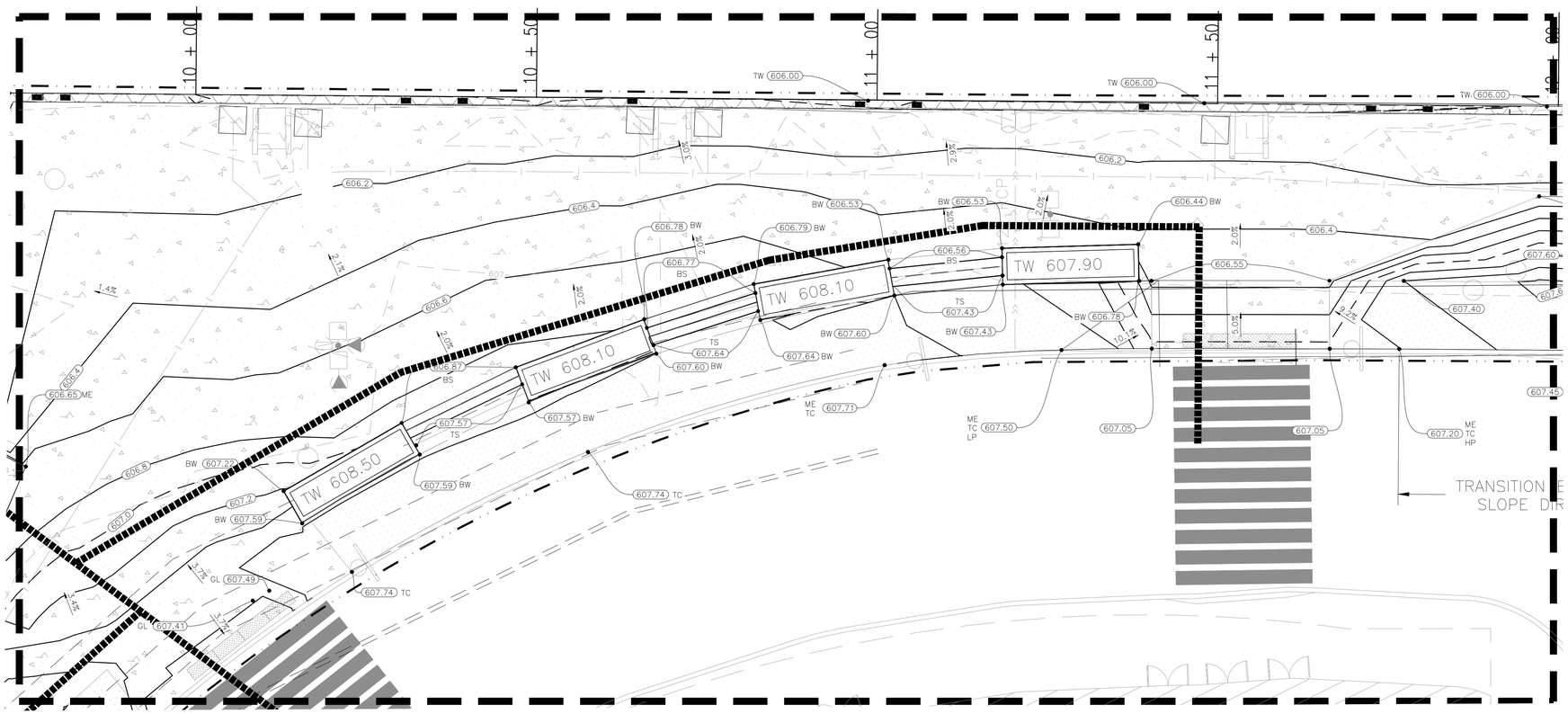
ECR	10/25	1	BIDDING CLARIFICATION
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

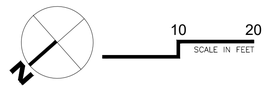
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

GRADING PLAN
STA 4+90 TO 10+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

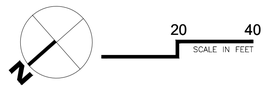
SHEET:
C3.2





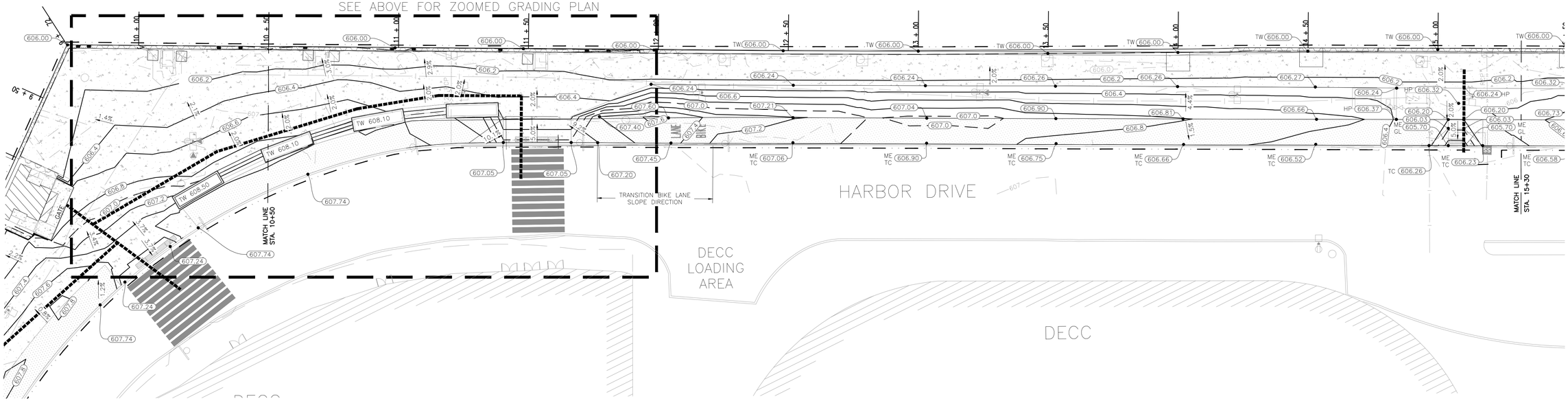
GRADING LEGEND:

- MANHOLE
- CATCH BASIN
- FLOW ARROW
- SPOT ELEVATION
- PROPOSED CONTOUR (0.2' INTERVAL)
- PROPOSED CONTOUR (1.0' INTERVAL)
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- ADA PATH
- CONSTRUCTION LIMITS



DULUTH/SUPERIOR HARBOR

SEE ABOVE FOR ZOOMED GRADING PLAN



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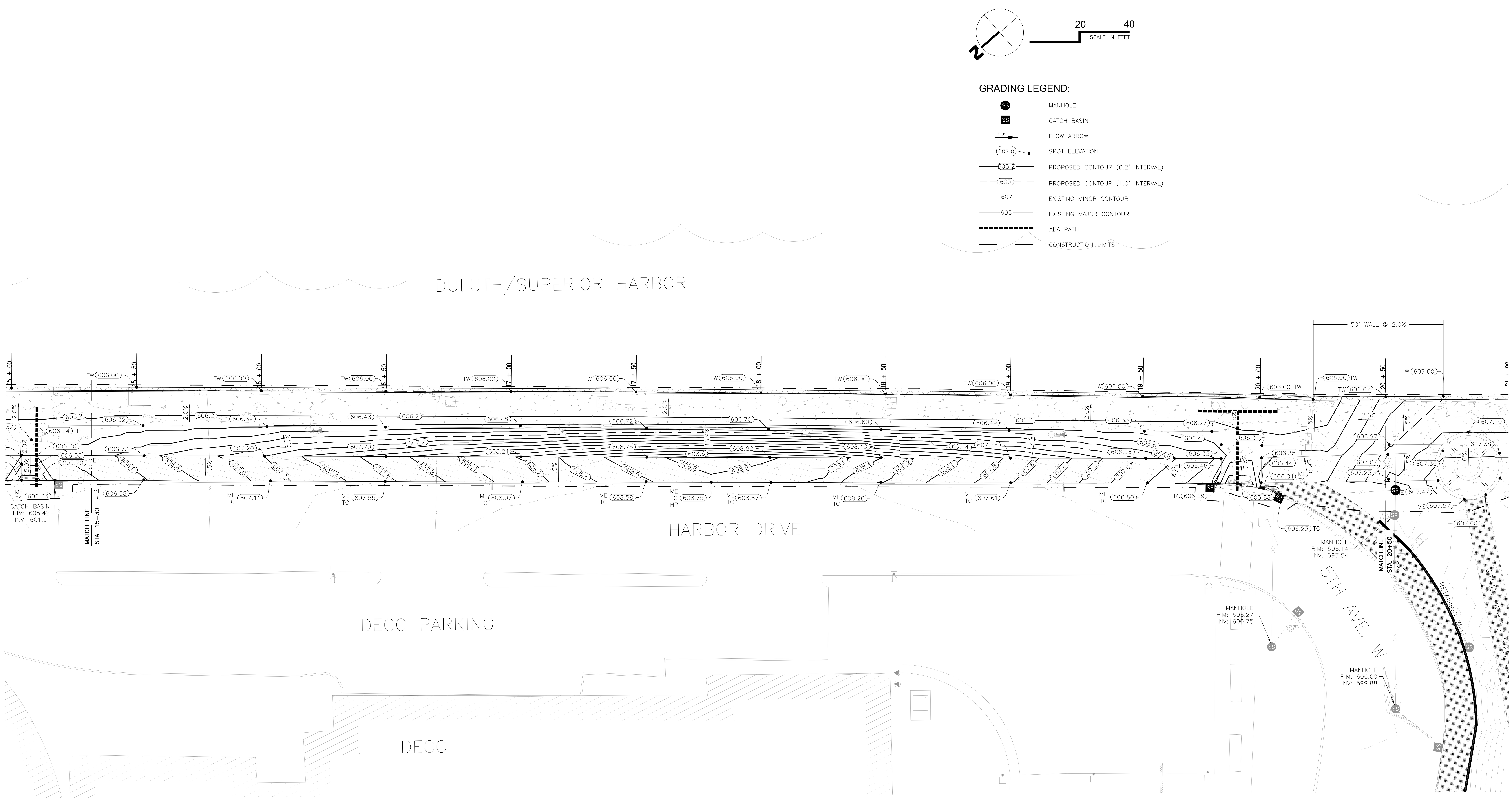
REV. BY:	DESCRIPTION	REV:	DATE:
ECR	BIDDING CLARIFICATION	1	10/25
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

GRADING PLAN
STA 10+50 TO 15+30

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C3.3



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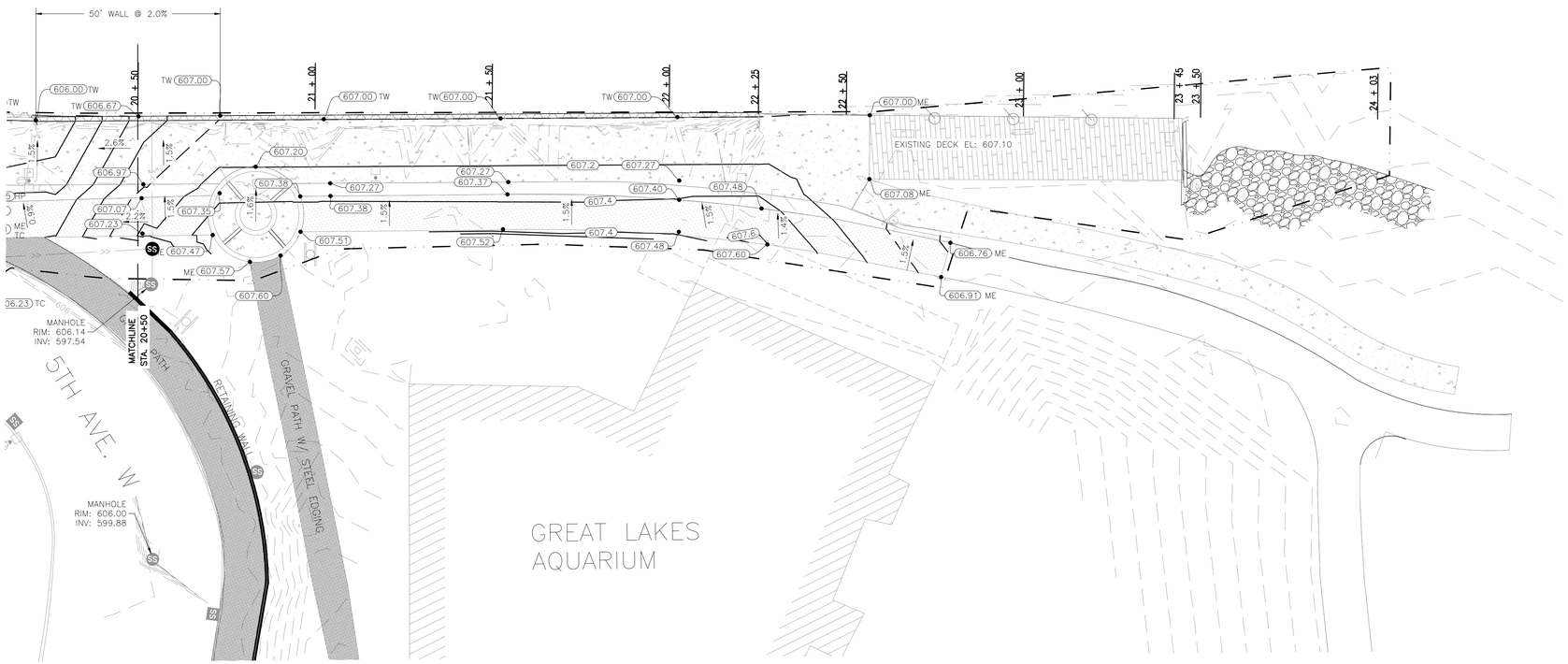
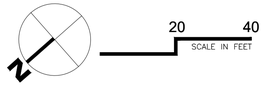
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

GRADING PLAN
STA 15+30 TO 20+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C3.4





GRADING LEGEND:

- MANHOLE
- CATCH BASIN
- 0.05 FLOW ARROW
- 607.0 SPOT ELEVATION
- 605.2 PROPOSED CONTOUR (0.2' INTERVAL)
- 605 PROPOSED CONTOUR (1.0' INTERVAL)
- 607 EXISTING MINOR CONTOUR
- 605 EXISTING MAJOR CONTOUR
- ADA PATH
- CONSTRUCTION LIMITS

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NAME: ELI RUPNOW
SIGNATURE:
LIC. No: 46681
DATE: 9/27/2017

REV:	DESCRIPTION	REV. BY:
1	BIDDING CLARIFICATION	ECR
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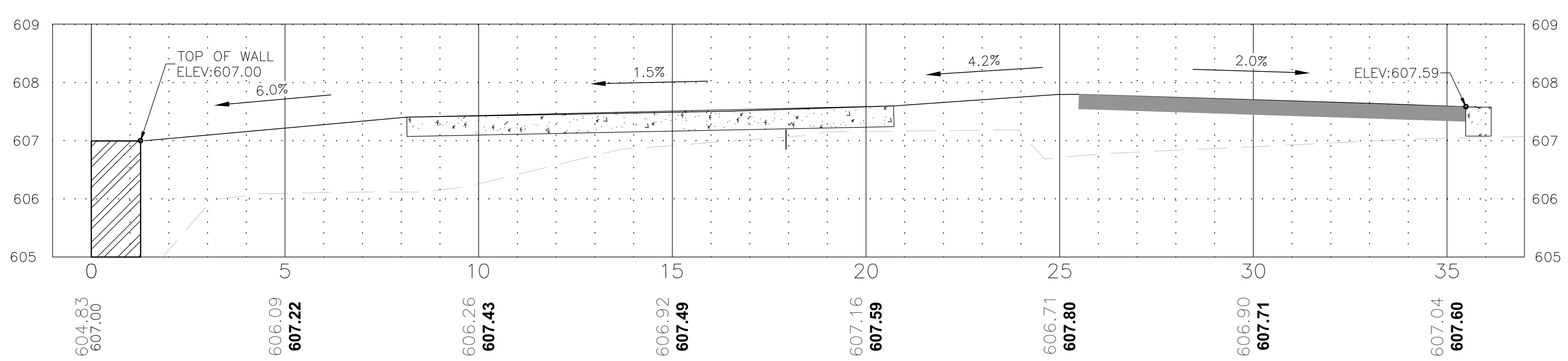
DATE:
10/25

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

GRADING PLAN
STA 20+50 TO 24+03

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C3.5



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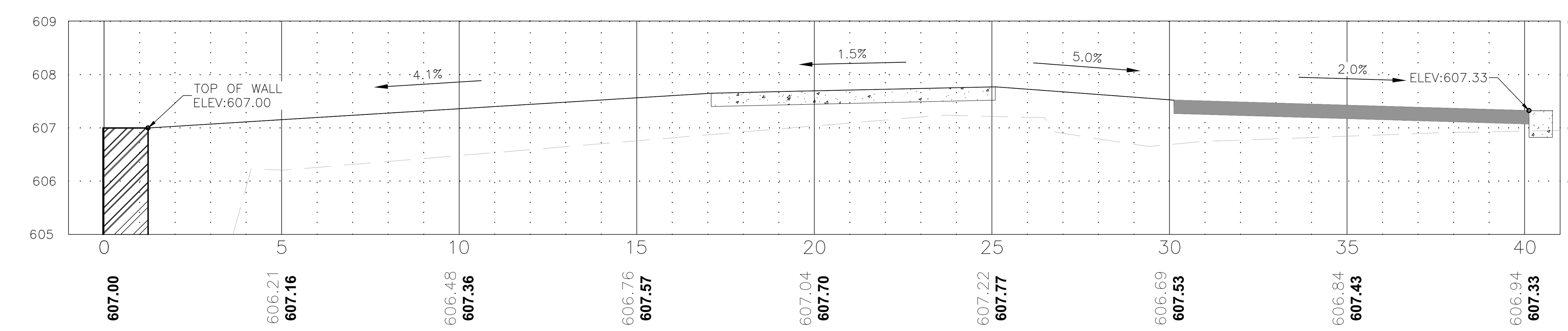

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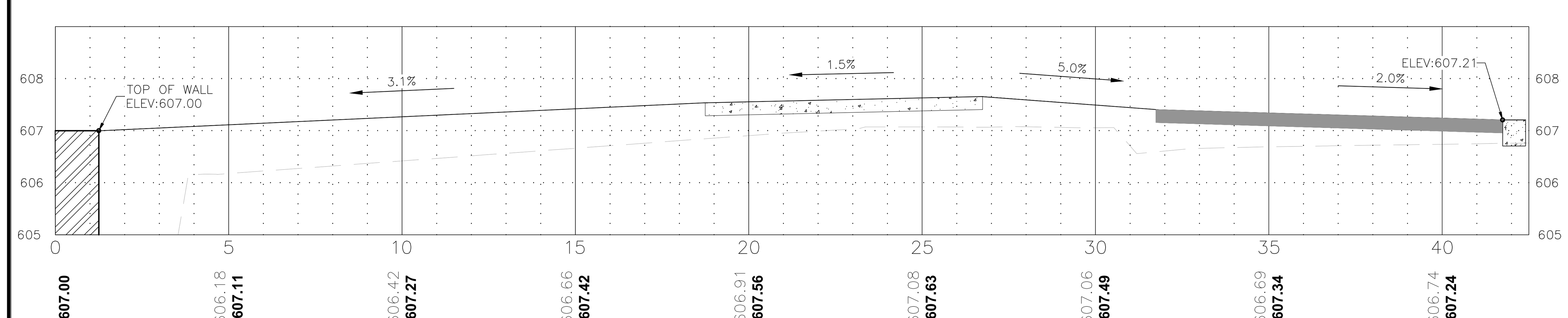

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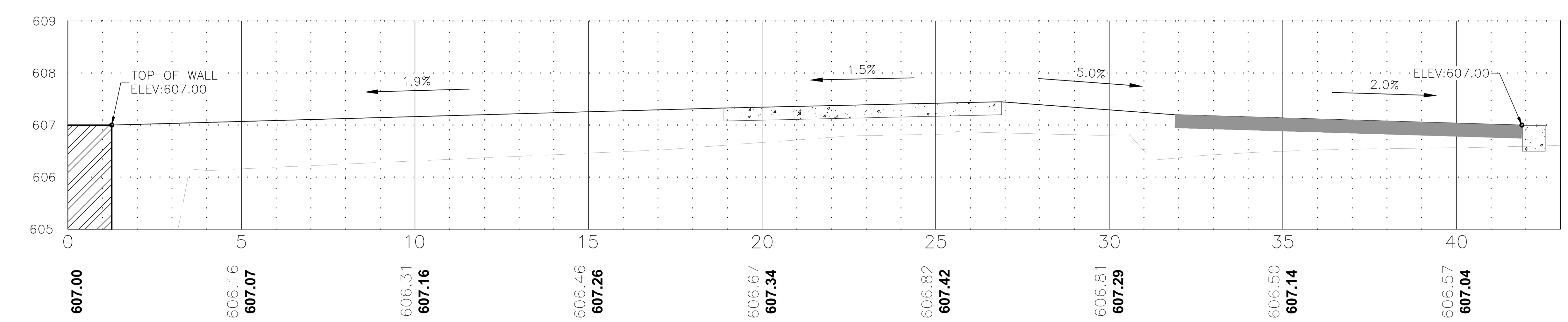

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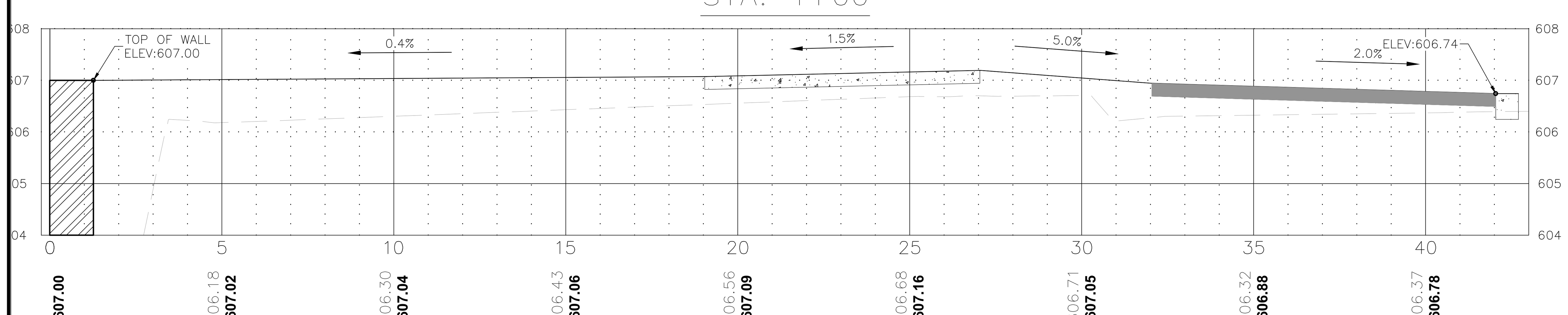

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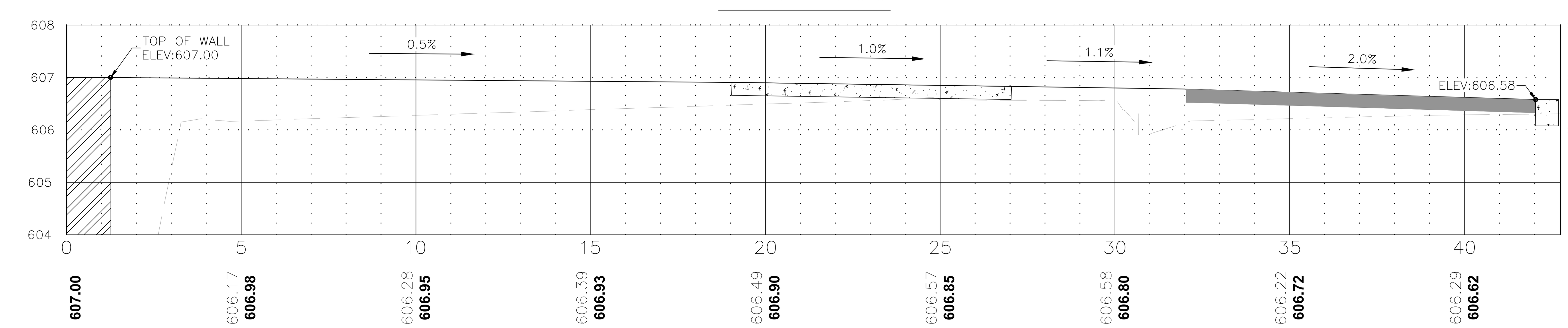

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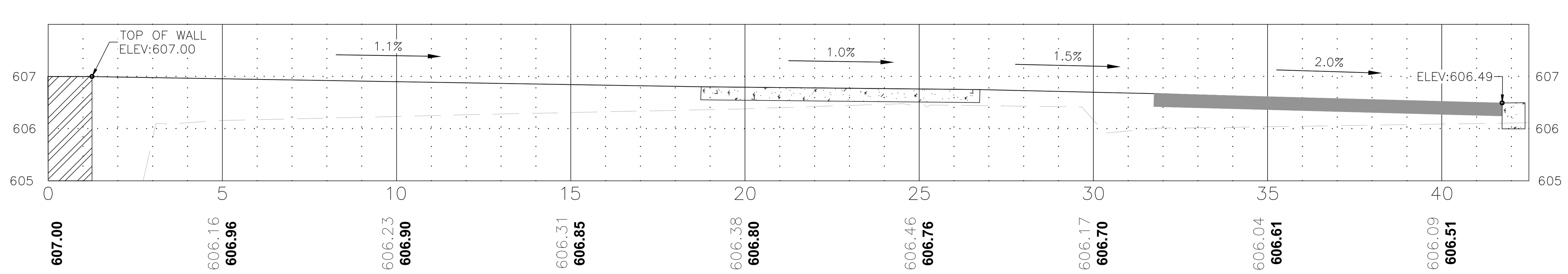

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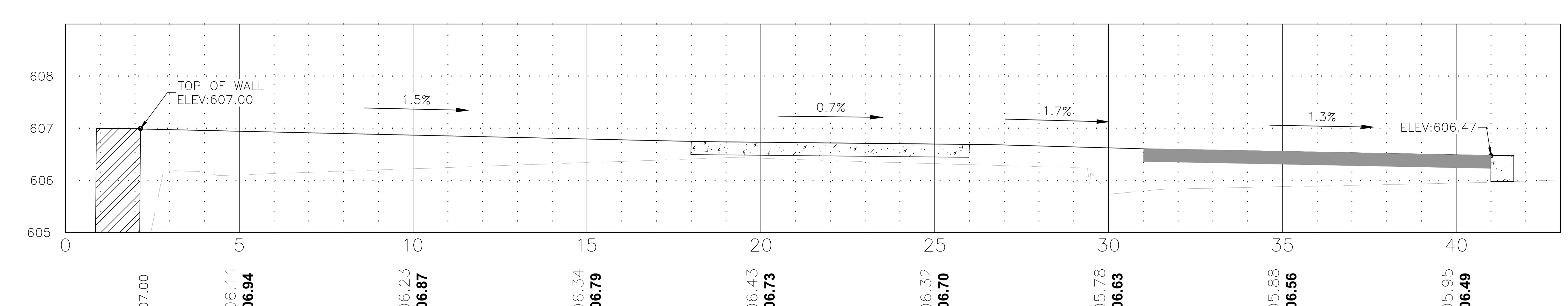

STA: 3+50

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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CROSS SECTIONS
0+00 TO 3+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C3.6

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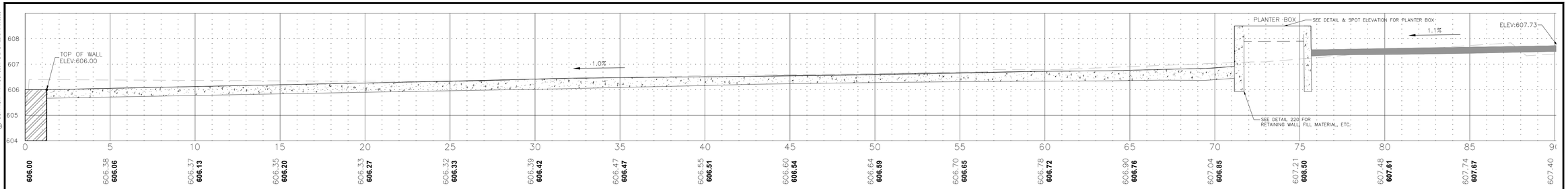
DECC SEAWALL PROJECT

CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CROSS SECTIONS
STA 4+00 TO 8+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C3.7



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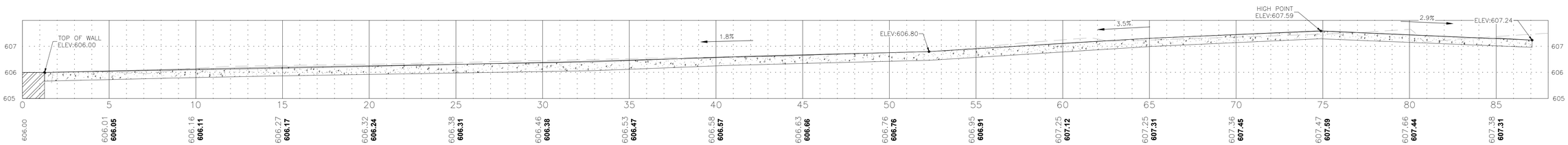

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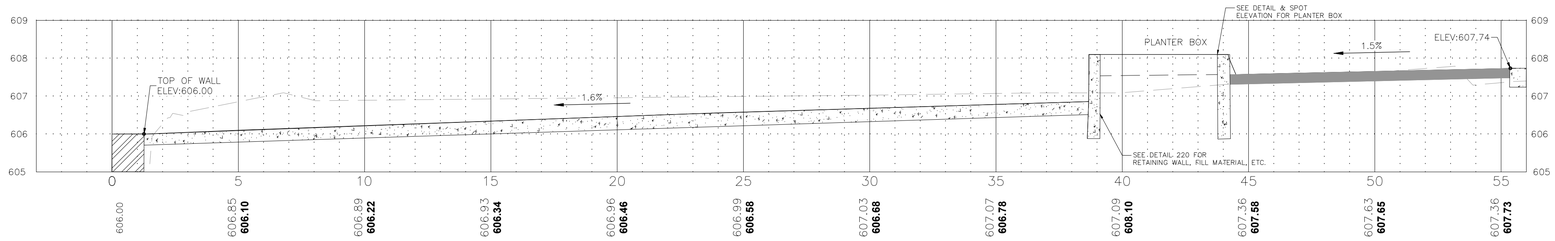

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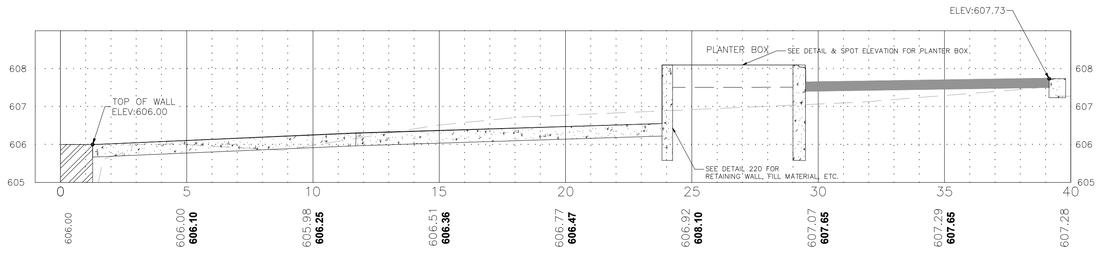

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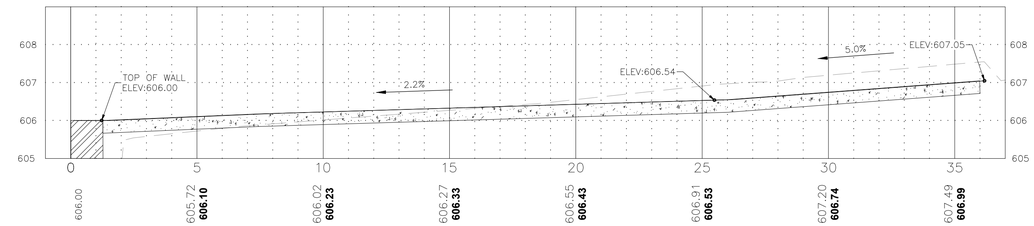

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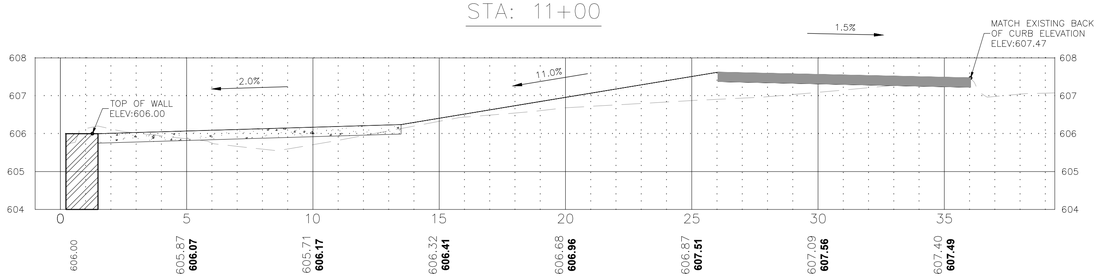

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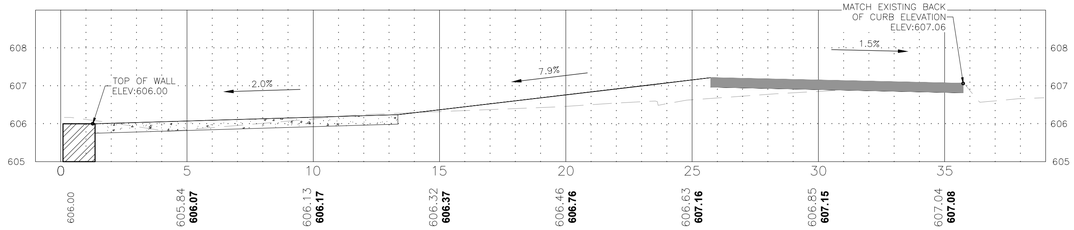

STA: 12+50

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ECR	10/25	1	BIDDING CLARIFICATION
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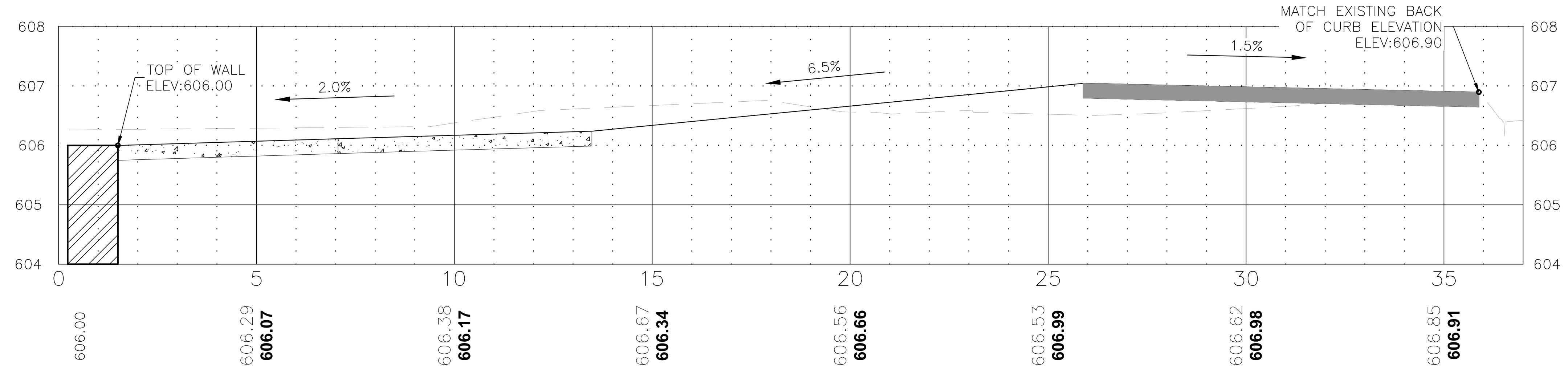
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CROSS SECTIONS
STA 9+50 TO 12+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C3.8



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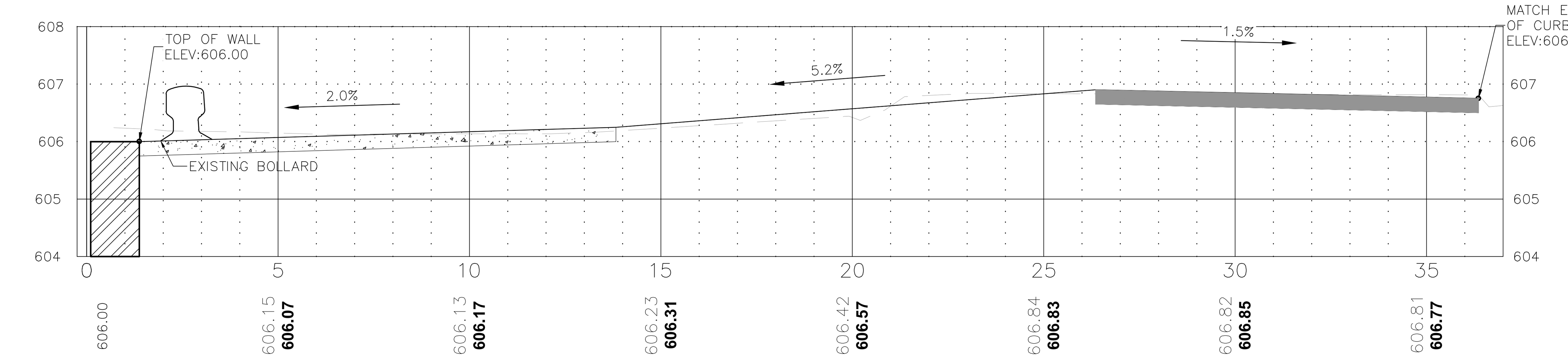

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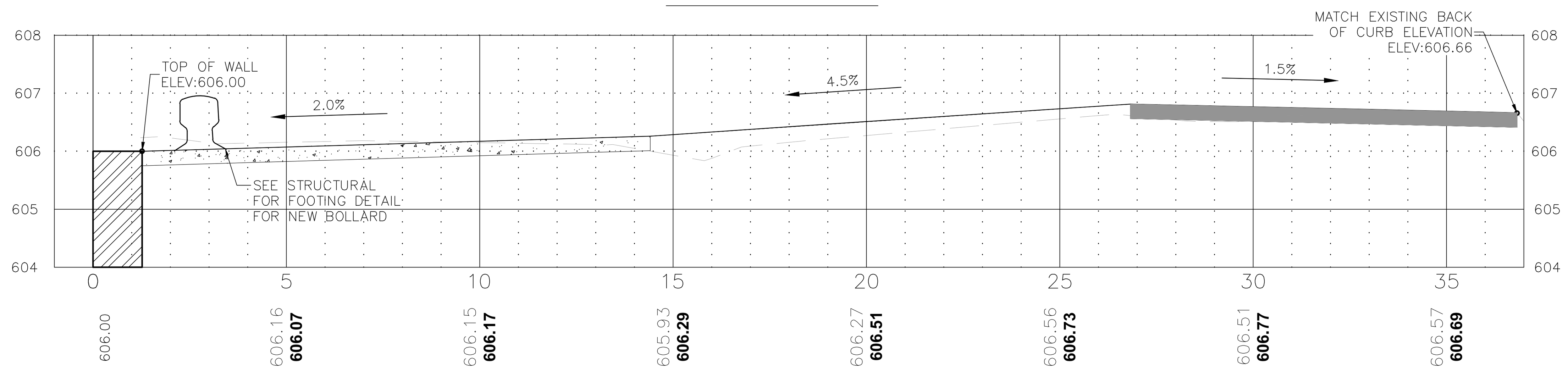

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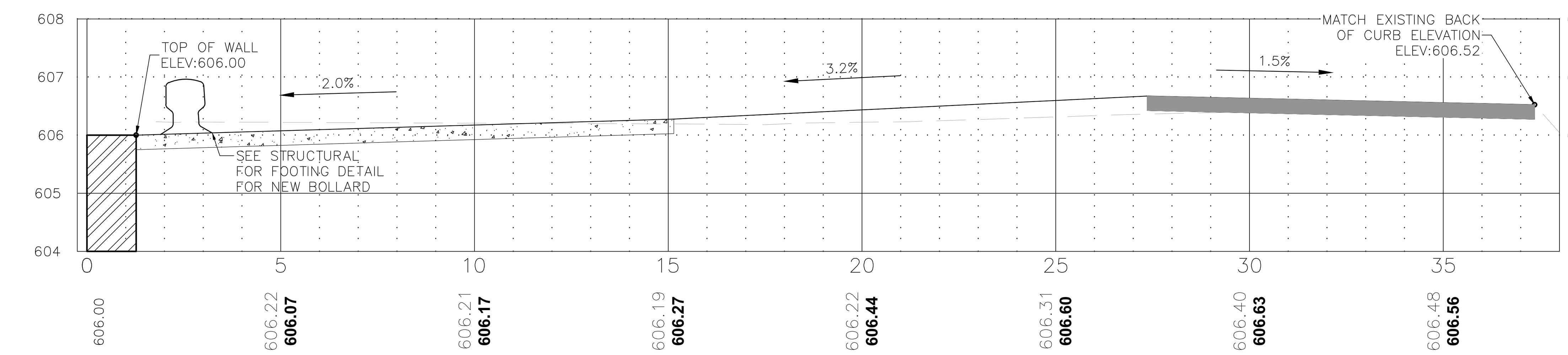

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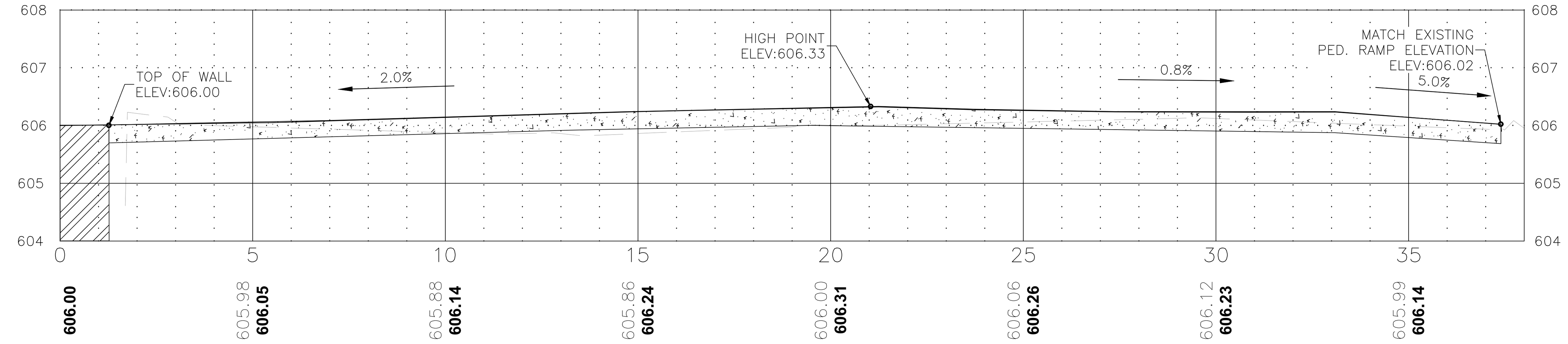

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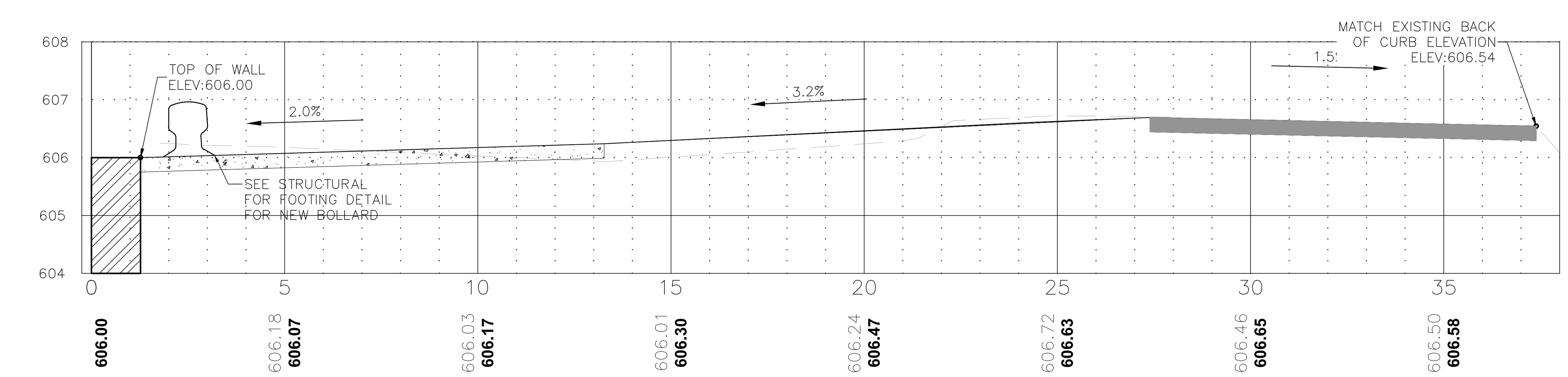

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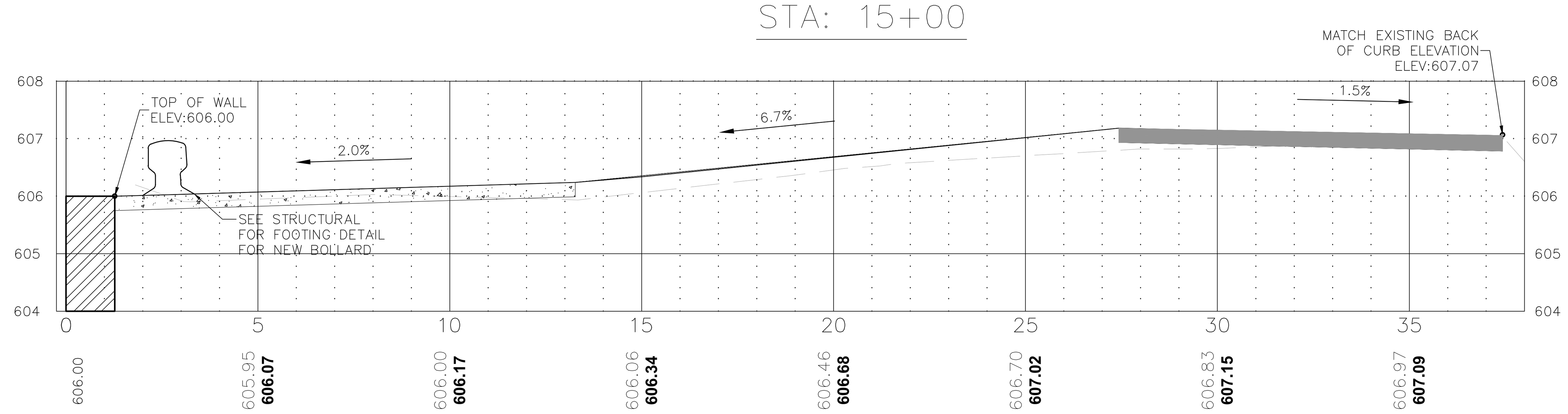

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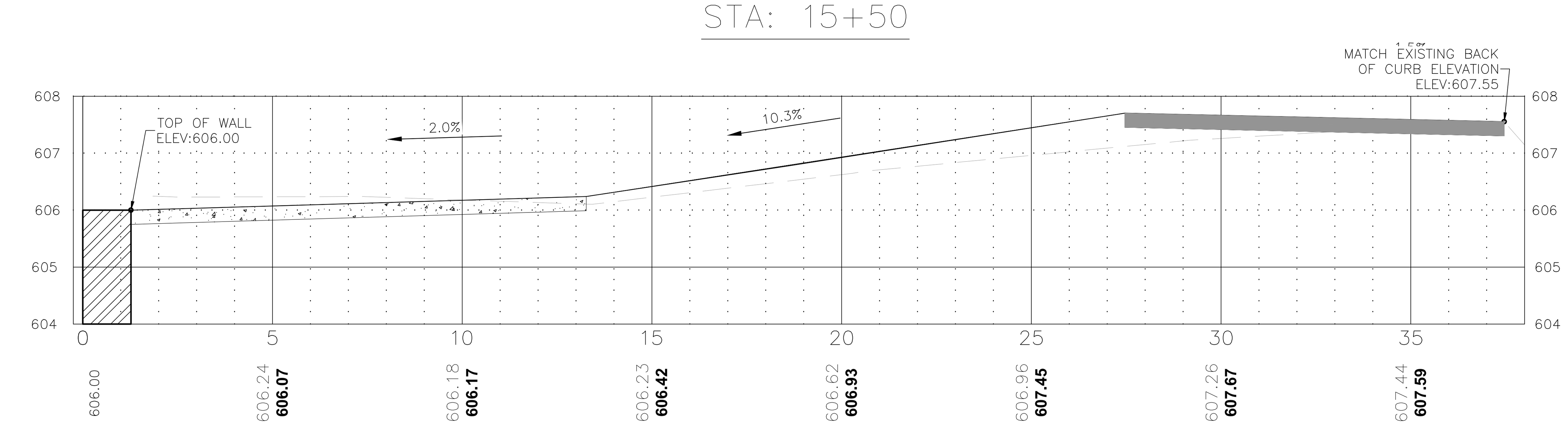

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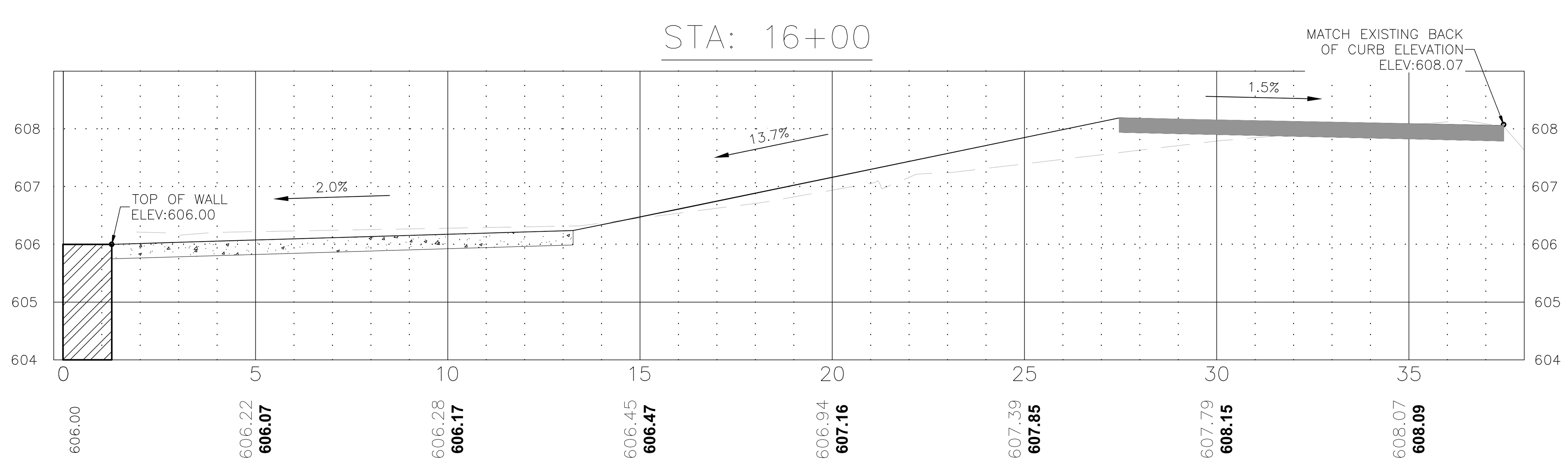

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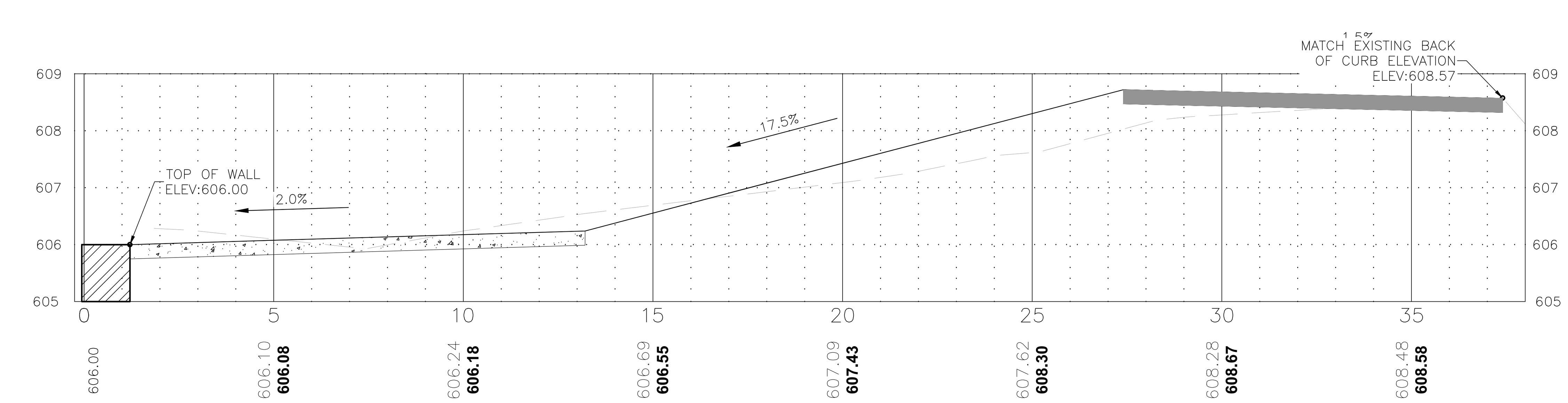

STA: 17+50

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NAME: ELI RUPNOW
SIGNATURE:
DATE: 9/27/2017 LIC. No. 46681

DATE:	REV:	DESCRIPTION	REV. BY:
10/25	1	BIDDING CLARIFICATION	ECR
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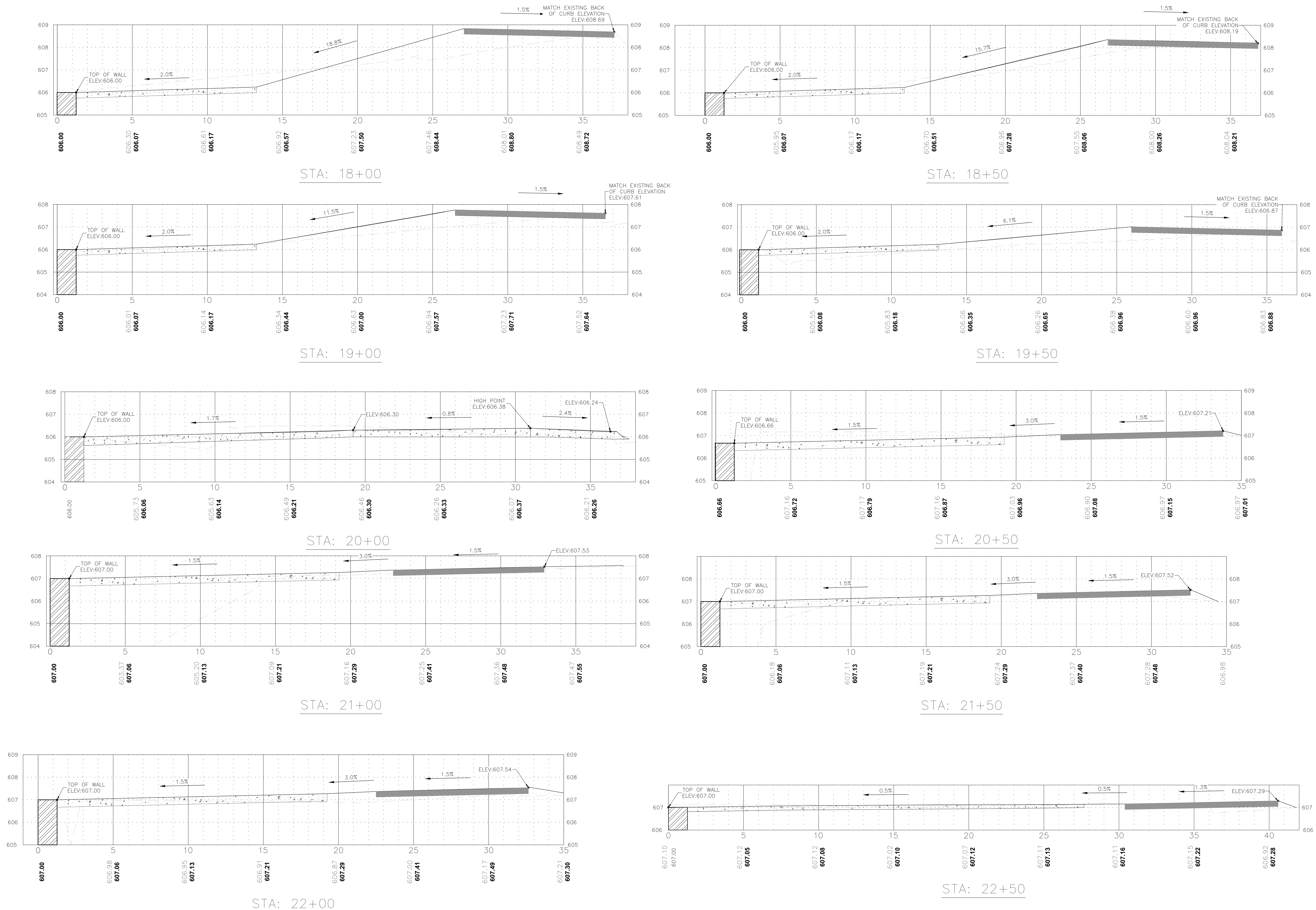
-	-	-	-

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CROSS SECTIONS
STA: 13+00 TO 17+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C3.9



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DATE: 9/27/2017
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DATE:	REV:	DESCRIPTION	REV. BY:
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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

CROSS SECTIONS
STA: 18+00 TO 22+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C3.10

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

1. INSTALL TEMPORARY EROSION CONTROL DEVICES AT THE LOCATIONS SHOWN ON THE PLANS PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES.
2. MAINTAIN ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES IN PLACE UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED. INSPECT ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES ON A WEEKLY BASIS AND DURING RAINFALL EVENTS. REMOVE ACCUMULATED SEDIMENT DEPOSITS FROM EROSION AND SEDIMENT CONTROL DEVICES AND DOWNSTREAM DRAINAGE SYSTEMS AS NEEDED. DO NOT ALLOW SEDIMENT TO ACCUMULATE TO A DEPTH OF MORE THAN ONE–THIRD OF THE CAPACITY OF THE DEVICE. REPLACE DETERIORATED OR DAMAGED EROSION CONTROL DEVICES WITHIN 24 HOURS.
3. PROVIDE ADDITIONAL EROSION CONTROL, WHICH MAY NOT BE SHOWN ON THE DRAWINGS, CONSISTENT WITH THE MEANS, METHODS AND SEQUENCE OF CONSTRUCTION IN ACCORDANCE WITH PERMIT REQUIREMENTS AND AUTHORITIES HAVING JURISDICTION.
4. REMOVE ALL SOILS AND SEDIMENTS TRACKED OR OTHERWISE DEPOSITED ONTO PAVEMENT AREAS. REMOVAL SHALL BE ON A DAILY BASIS THROUGHOUT THE DURATION OF THE CONSTRUCTION.
5. STABILIZE ALL AREAS WHICH HAVE BEEN FINISH–GRADED, AND ALL DISTURBED AREAS IN WHICH GRADING OR CONSTRUCTION OPERATIONS ARE NOT ACTIVELY UNDERWAY, AGAINST EROSION DUE TO RAIN, WIND AND RUNNING WATER WITHIN 14 DAYS. REPAIR ERODED AREAS IMMEDIATELY.
6. LOCATE SOIL OR DIRT STOCKPILES CONTAINING MORE THAN 10 CUBIC YARDS OF MATERIAL WITH A DOWNSLOPE DRAINAGE LENGTH OF NO LESS THAN 25 FEET FROM THE TOE OF THE PILE TO A ROADWAY OR DRAINAGE CHANNEL. IF REMAINING FOR MORE THAN SEVEN DAYS, STABILIZE THE STOCKPILES BY MULCHING, VEGETATIVE COVER, TARPS, OR OTHER MEANS. CONTROL EROSION FROM ALL STOCKPILES BY PLACING SILT FENCE BARRIERS AROUND THE PILES.
7. PERFORM ALL EROSION CONTROL PRACTICES AND SEQUENCE CONSTRUCTION IN ACCORDANCE WITH THE METHODS OUTLINED IN THE BEST MANAGEMENT PRACTICES HANDBOOK: "PROTECTING WATER QUALITY IN URBAN AREAS," PUBLISHED BY THE MINNESOTA POLLUTION CONTROL AGENCY.
8. REMOVE TEMPORARY EROSION CONTROL DEVICES AFTER THE ADJACENT FINAL SURFACES ARE PERMANENTLY ESTABLISHED. COORDINATE REMOVAL WITH PERMANENT RESTORATION OF ALL AREAS OCCUPIED BY TEMPORARY DEVICES.
9. PHASED CONSTRUCTION SHALL BE USED TO THE EXTENT PRACTICAL OR AS INDICATED ON THE PLANS TO MINIMIZE EXPOSED SOILS.
10. EROSION CONTROL PLAN, AS WELL AS THE WEEKLY AND POST RAINFALL EVENT INSPECTION REPORTS TO BE KEPT IN THE ON–SITE JOB TRAILER.
11. CONTRACTOR SHALL MAINTAIN ROCK ENTRANCE(S) DURING CONSTRUCTION
12. ALL STORM SEWER CATCH BASINS TO BE PROTECTED FROM SEDIMENT DEPOSITION WITH AN APPROVED INLET PROTECTION DEVICE. CONTRACTOR SHALL CLEAN STORM SEWER SYSTEM OF SEDIMENT AND DEBRIS PRIOR TO COMPLETION.

20 40
SCALE IN FEET
SEE SHEET C4.6 FOR DETAILS

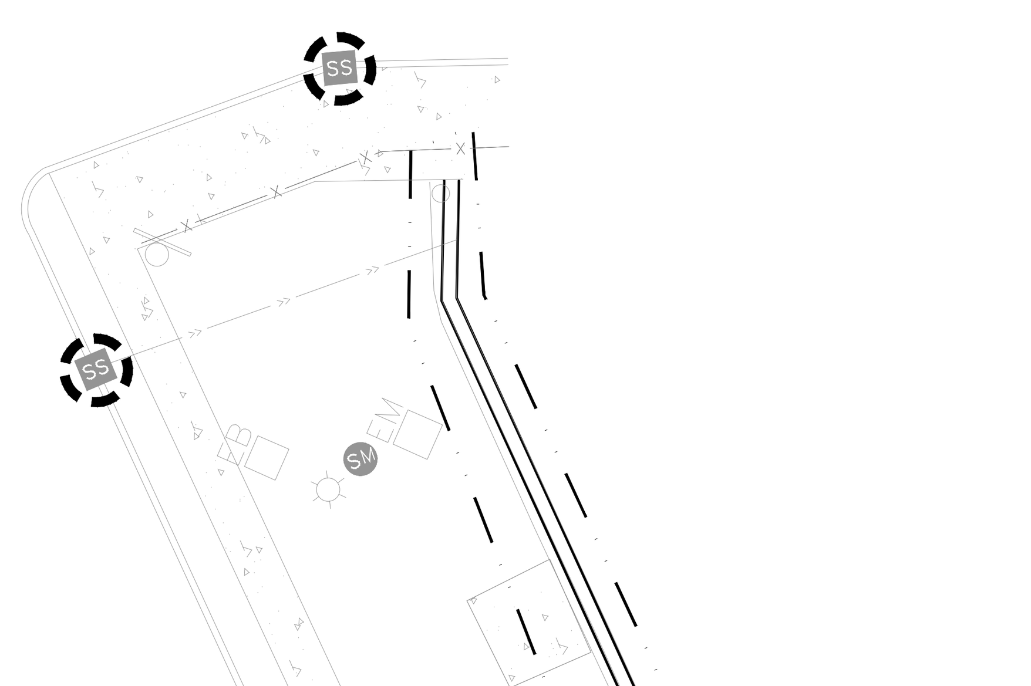
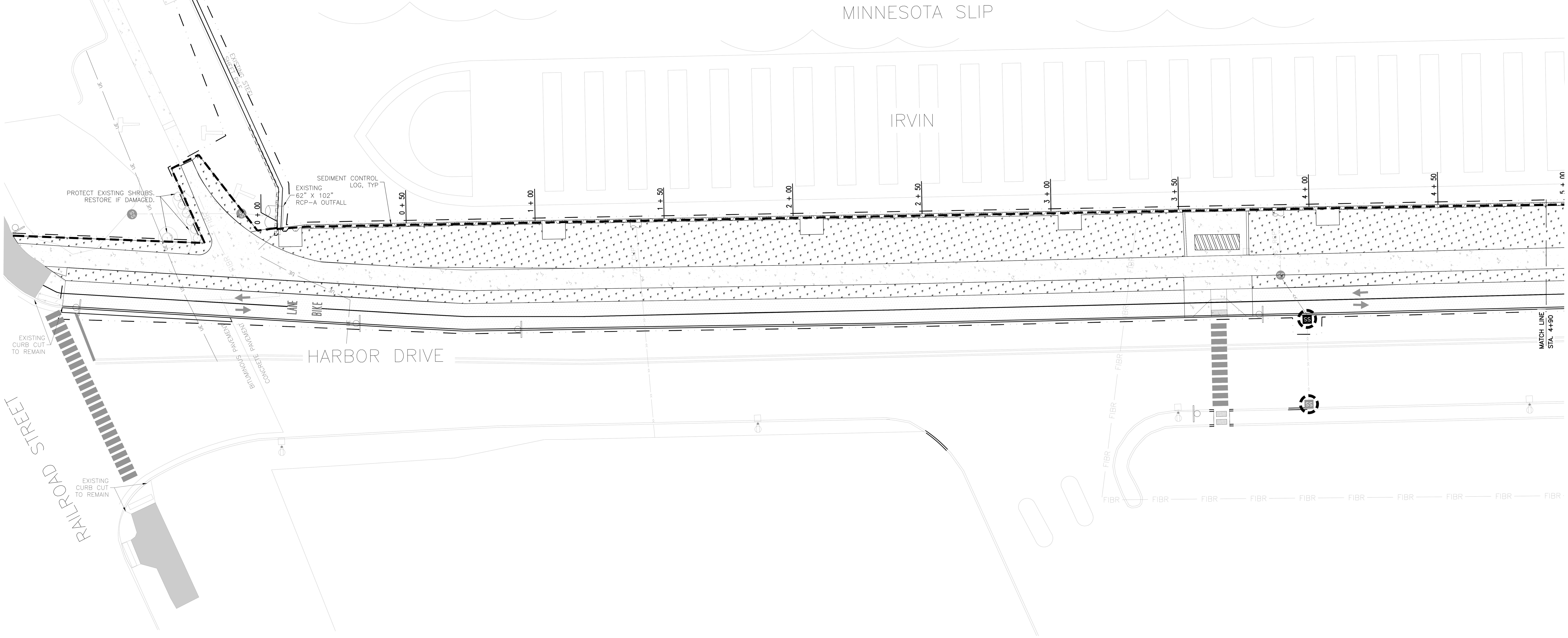
EROSION CONTROL LEGEND:

- ROCK CONSTRUCTION ENTRANCE (SEE DETAIL 600) CONTRACTOR TO DETERMINE LOCATION
- SILT FENCE (SEE DETAIL 601)
- SEDIMENT CONTROL LOG (SEE DETAIL 604)
- INLET PROTECTION (SEE DETAIL 605)
- EROSION CONTROL BLANKET
- SOD WITH 4" TOPSOIL
- CONSTRUCTION LIMITS

811 Know what's below. Call before you dig.

STATE LAW: 48 HOURS BEFORE EXCAVATING OR DEMOLISHING BUILDINGS, CALL 811 FOR FIELD LOCATION OF UNDERGROUND UTILITY LINES. THIS SERVICE LOCATES UTILITY OWNED LINES BUT NOT PRIVATE LINES.

THE LOCATIONS OF UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED. THE EXACT LOCATION OF ALL UTILITIES (PUBLIC AND PRIVATE) MUST BE DETERMINED BEFORE COMMENCING WORK.

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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

EROSION CONTROL PLAN
STA 0+00 TO 4+90

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

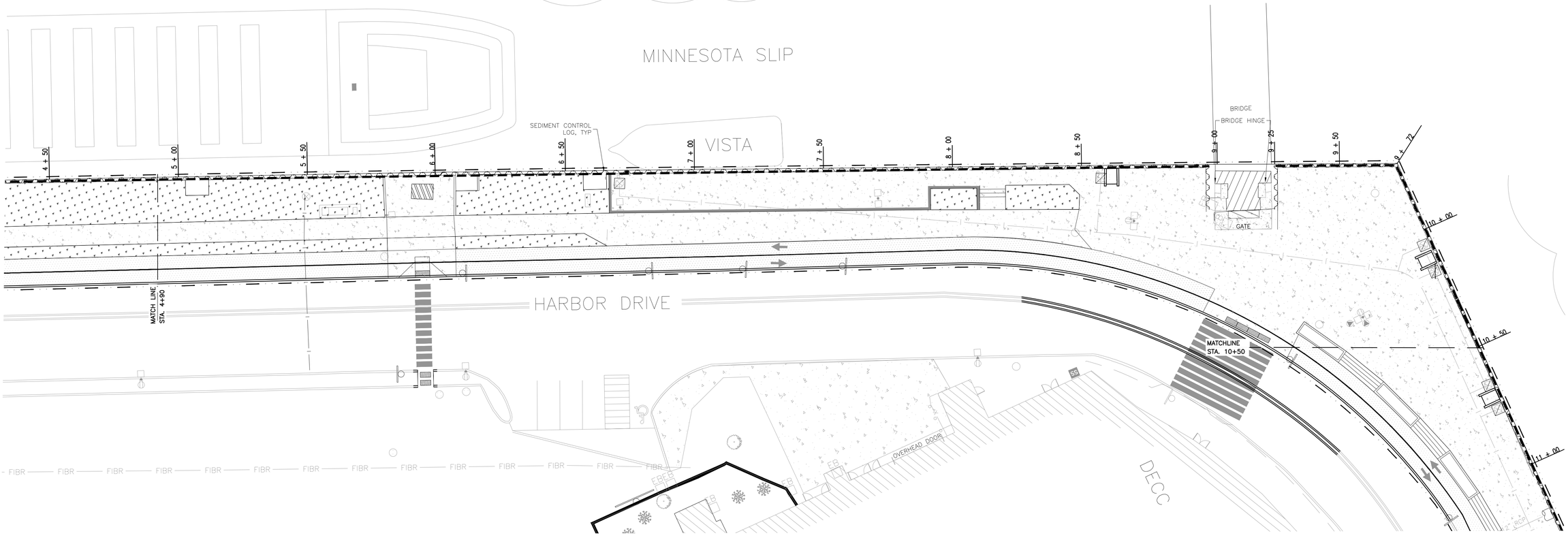
SHEET:
C4.1

N

20 40
SCALE IN FEET
SEE SHEET C4.6 FOR DETAILS

EROSION CONTROL LEGEND:

- ROCK CONSTRUCTION ENTRANCE (SEE DETAIL 600) CONTRACTOR TO DETERMINE LOCATION
- SILT FENCE (SEE DETAIL 601)
- SEDIMENT CONTROL LOG (SEE DETAIL 604)
- INLET PROTECTION (SEE DETAIL 605)
- EROSION CONTROL BLANKET
- SOD WITH 4" TOPSOIL
- CONSTRUCTION LIMITS



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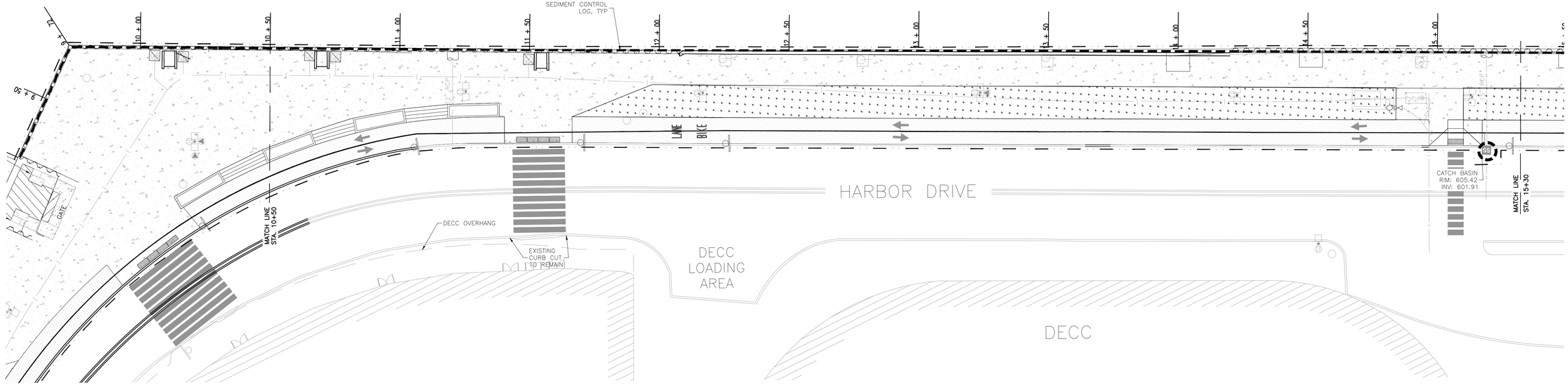
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

EROSION CONTROL PLAN
STA 4+90 TO 10+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C4.2



N

20 40
SCALE IN FEET
SEE SHEET C4.6 FOR DETAILS

EROSION CONTROL LEGEND:

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- EROSION CONTROL BLANKET
- SOD WITH 4" TOPSOIL
- CONSTRUCTION LIMITS

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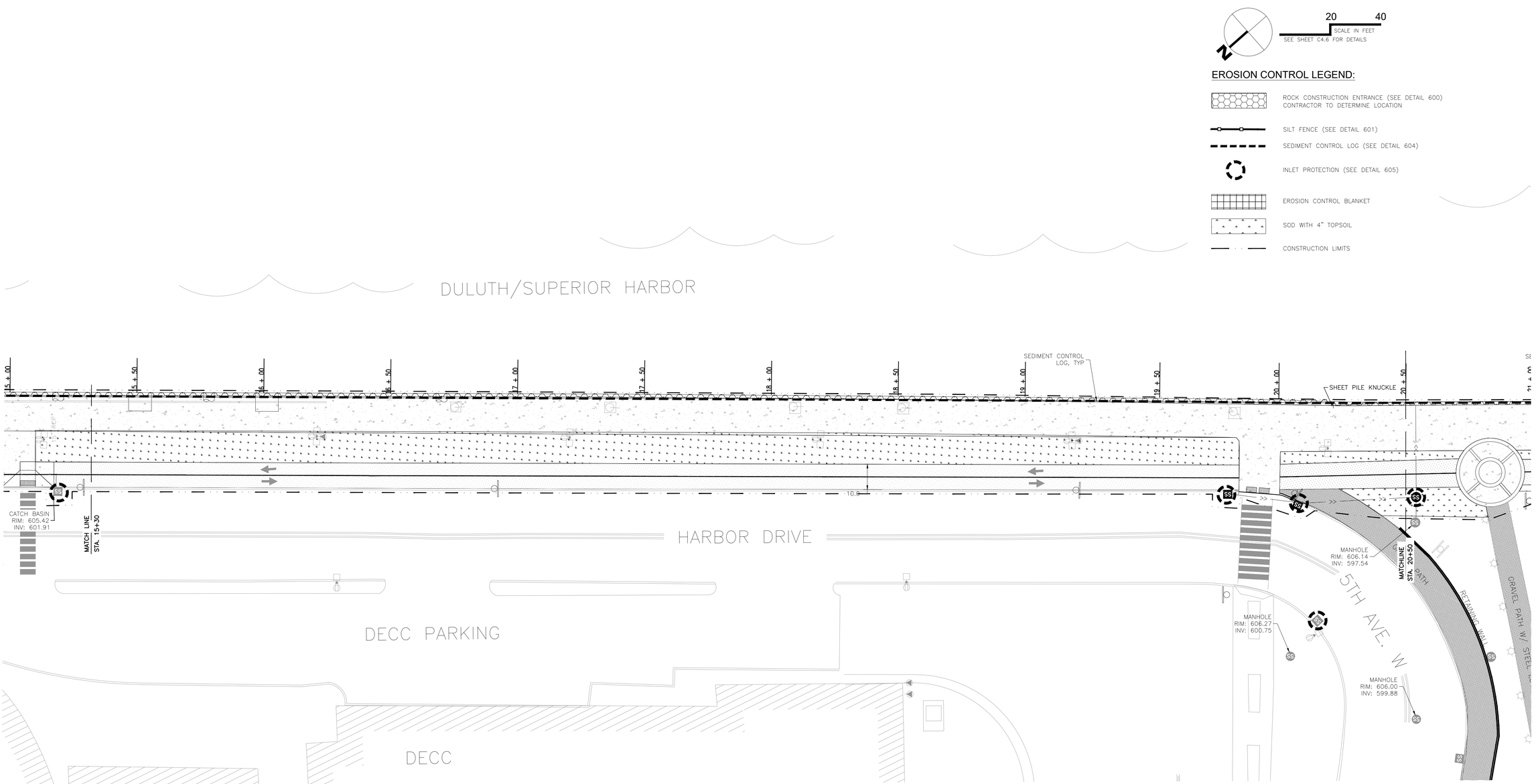
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

EROSION CONTROL PLAN
STA 10+50 TO 15+30

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C4.3



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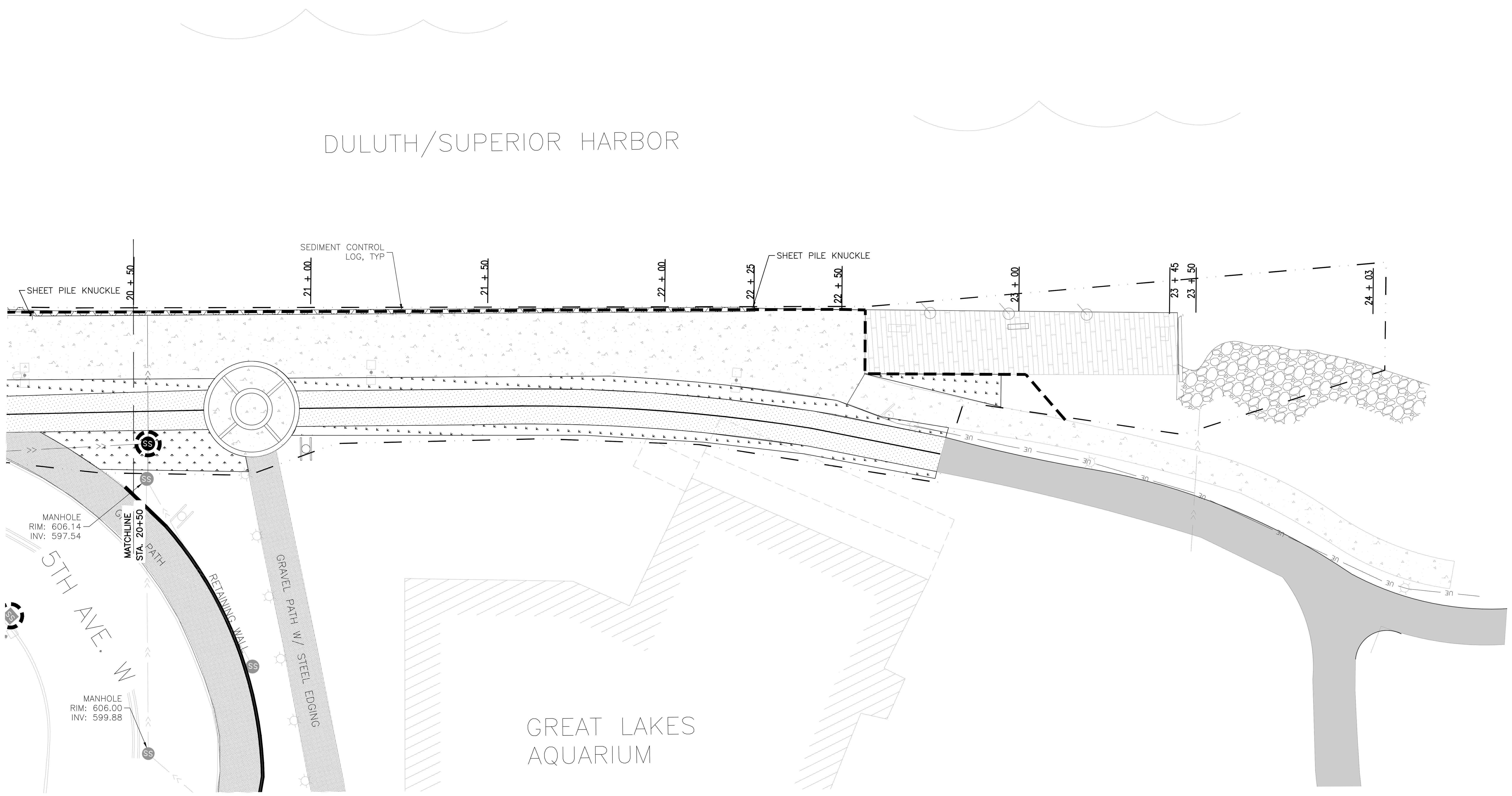
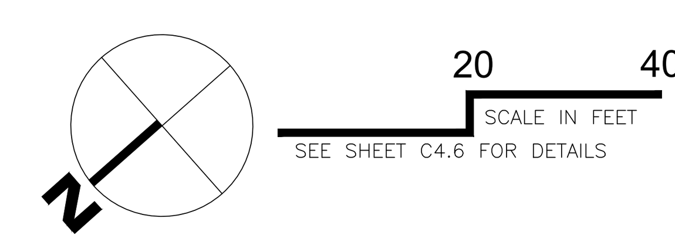
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

EROSION CONTROL PLAN
STA 15+30 TO 20+50

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C4.4





EROSION CONTROL LEGEND:

- ROCK CONSTRUCTION ENTRANCE (SEE DETAIL 600) CONTRACTOR TO DETERMINE LOCATION
- SILT FENCE (SEE DETAIL 601)
- SEDIMENT CONTROL LOG (SEE DETAIL 604)
- INLET PROTECTION (SEE DETAIL 605)
- EROSION CONTROL BLANKET
- SOD WITH 4" TOPSOIL
- CONSTRUCTION LIMITS

AMI Consulting Engineers P.A.
91 Main Street SUPERIOR, WI
715.718.2193 - amiengineers.com
TWIN CITIES - IRON RANGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

NAME: ELI RUPNOW
SIGNATURE:
DATE: 9/27/2017
LIC. No.: 46681

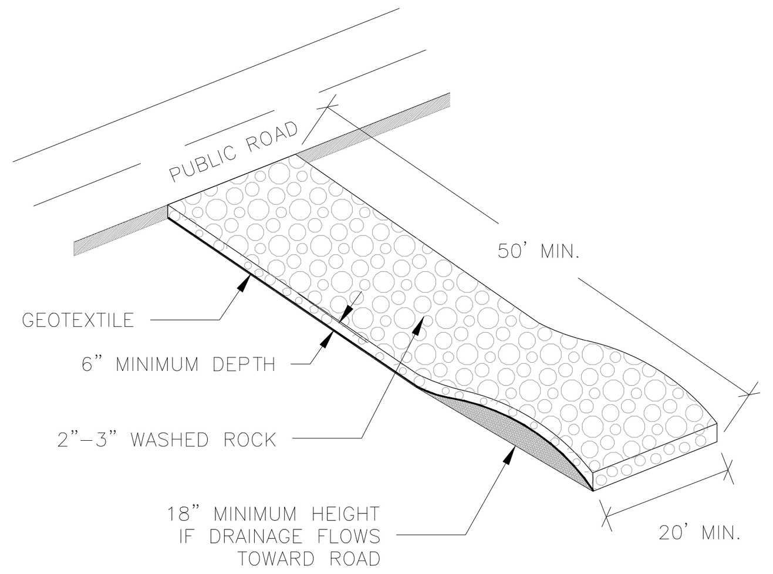
DATE:	REV:	DESCRIPTION	REV. BY:
10/25	1	BIDDING CLARIFICATION	ECR

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

EROSION CONTROL PLAN
STA 20+50 TO 24+03

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET: C4.5

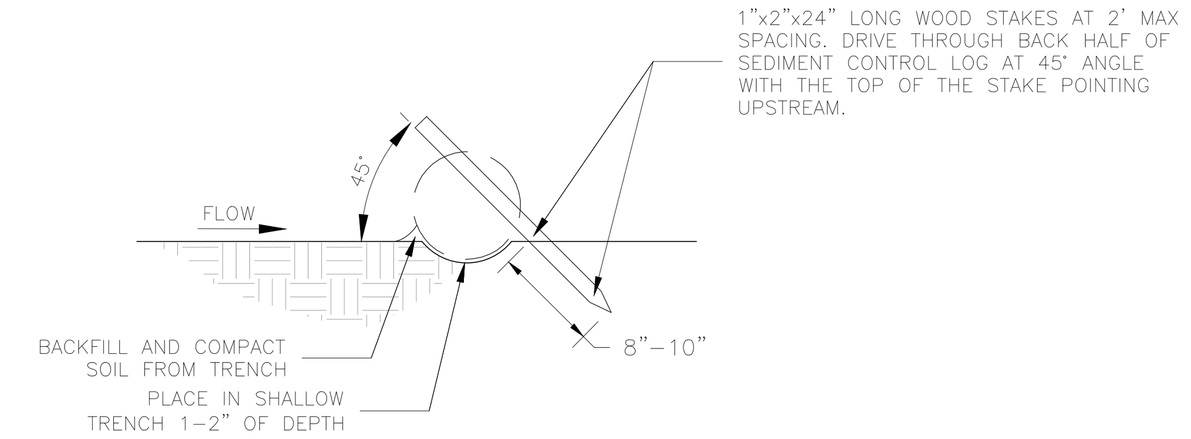


NOTES:

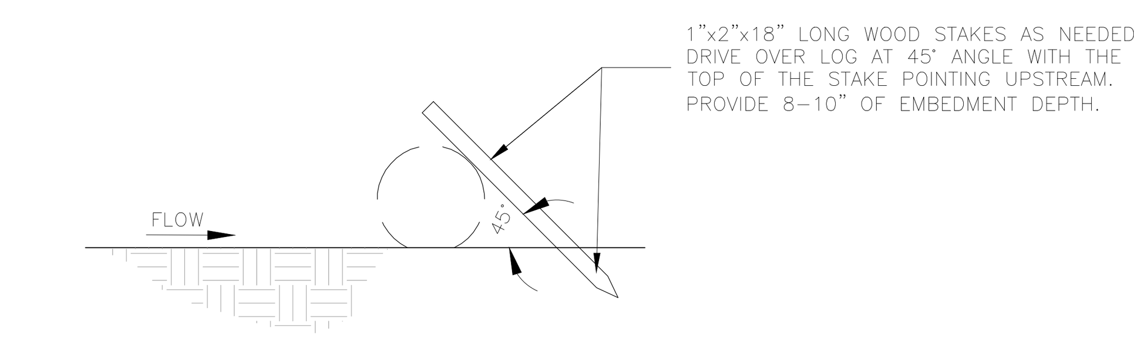
1. GEOTEXTILE SHALL BE PLACED UNDER ROCK TO STOP MUD MIGRATION THROUGH ROCK
2. OTHER METHODS BESIDES ROCK (SLASH MULCH, RUMBLE PAD, ETC.) MAY BE USED FOR EXIT STABILIZATION WITH ENGINEER APPROVAL
3. SEE EROSION CONTROL PLAN OR SWPPP FOR MAINTENANCE.
4. SEE MNDOT SPECS: 2573 & 3882

600| ROCK CONSTRUCTION ENTRANCE

NOT TO SCALE



DETAIL FOR TYPES: STRAW, WOOD FIBER OR COIR
NOT FOR USE ON HARD SURFACES



DETAIL FOR TYPES: WOOD CHIP, COMPOST OR ROCK
MAY BE USED ON HARD SURFACES. NO STAKES IF SHOWN ON HARD SURFACES

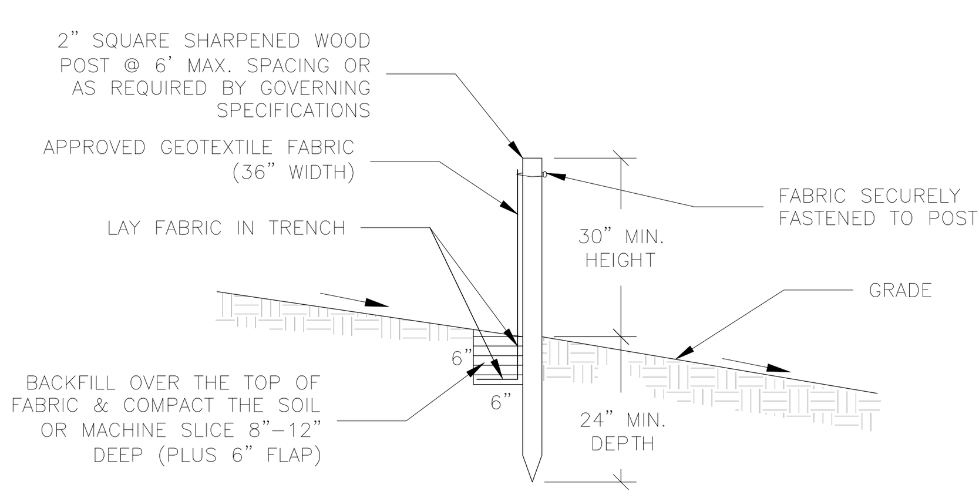
SEE MNDOT SPECS: 2573, 3601, 3885, 3886 AND 2573

NOTES:

1. SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1 FOOT FOR DITCH CHECKS OR 2 FEET FOR OTHER APPLICATIONS.
2. PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.
3. FOR PERMANENT DITCH CHECK REDUCE THE HEIGHT TO 16 IN. AND MODIFY THE 1:2 (V:h) SIDE SLOPE TO 1:6 (V:H).
4. TO BE USED FOR CRITICAL PERIMETER CONTROL AREAS WHERE STANDING WATER OCCURS (6 INCH MAX. DEPTH). BALES SHALL CONSIST OF TYPE 1 MULCH OF APPROXIMATELY 14 IN. X 18 IN. X 36 IN. LONG. BALES SHALL BE PLACED ON EDGE AND BUTTED TIGHT TO ADJACENT BALES.
5. INSTEAD OF TRENCHING, PLACE BALE ON THE BLANKET AND WRAP BLANKET AROUND THE BALE. PLACE STAKE THROUGH BALE AND BLANKET.

604 | SEDIMENT CONTROL LOG

NOT TO SCALE

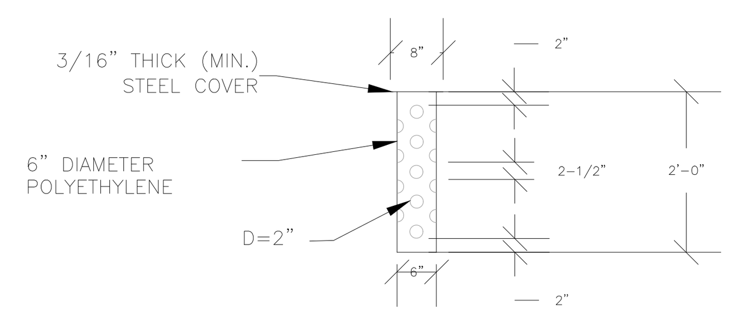


NOTES:

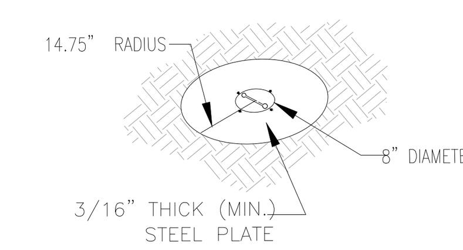
1. POST SPACING SHALL NOT EXCEED 6 FEET.
2. POST TO BE ON LOWER SIDE OF SLOPE (TOWARD PROPERTY BOUNDARY OR POND SIDE) AND FENCE UPSTREAM.
3. GEOTEXTILE FABRIC SHALL BE "MIRAFI" TYPE OR APPROVED EQUAL.
4. TRENCH SHALL BE A MIN. OF 6 INCHES DEEP BY 6 INCHES WIDE.
5. MACHINE SLICED METHOD IS ACCEPTABLE
6. SEE EROSION CONTROL PLAN OR SWPPP FOR REPAIR AND MAINTENANCE.
7. SEE MNDOT SPECS 3886.

601| SILT FENCE

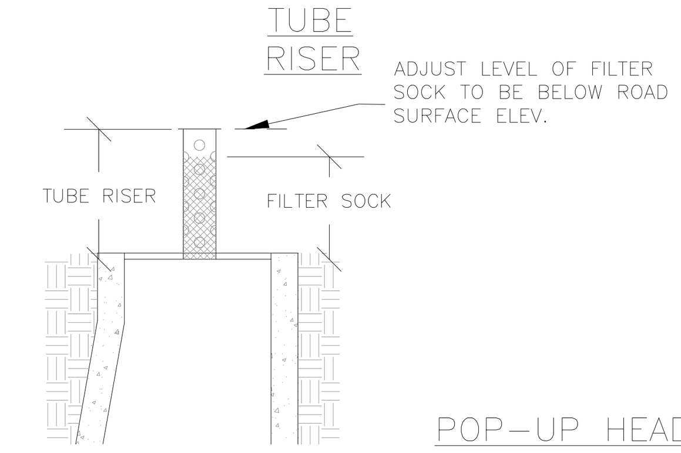
NOT TO SCALE



TUBE RISER

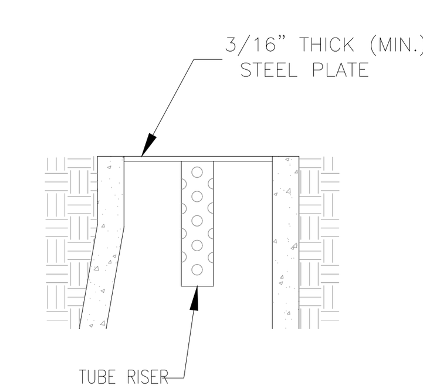


PERSPECTIVE VIEW

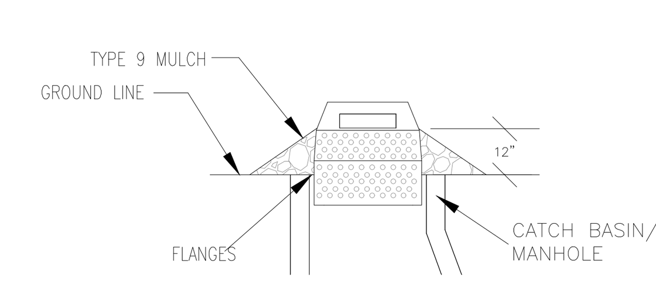


SECTION
(UP POSITION)

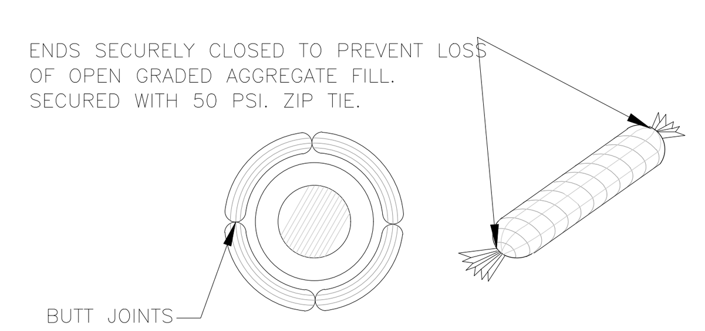
POP-UP HEAD



SECTION
(DOWN POSITION)



SEDIMENT CONTROL INLET HAT



ROCK LOG/COMPOST LOG

NOTES:

1. THE SEDIMENT CONTROL BARRIER SHALL BE A METAL OR PLASTIC/POLYETHYLENE RISER SIZED TO FIT INSIDE THE CATCH BASIN/MANHOLE: HAVE PERFORATIONS TO ALLOW FOR WATER INFILTRATION: HAVE AN OVERFLOW OPENING, FLANGES AND A LID/COVER.
2. MANUFACTURED ALTERNATIVES LISTED ON MNDOT'S APPROVED PRODUCTS LIST MAY BE SUBSTITUTED.
3. SOCK HEIGHT MUST NOT BE SO HIGH AS TO SLOW DOWN WATER FILTRATION TO CAUSE FLOODING OF THE ROADWAY.
4. GEOTEXTILE SOCK BETWEEN 4-10 FEET LONG AND 4-6 INCH DIAMETER. SEAM TO BE JOINED BY TWO ROWS OF STITCHING WITH A PLASTIC MESH BACKING OR PROVIDE A HEAT BONDED SEAM (OR APPROVED EQUIVALENT). FILL ROCK LOG WITH OPEN GRADED CONFORMING TO SPEC. 3137 TABLE 3137-1; CA-3 GRADATION.
5. SEE MNDOT SPECS: 2573, 3137, 3886, & 2573.

605 | INLET PROTECTION

NOT TO SCALE

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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

EROSION CONTROL DETAILS

JOB No: 161080
DATE: 09/22/2017
DRAWN BY: CJO
DESIGNED BY: ECR

SHEET:
C4.6

4/17/2017 1:28 PM z:\2016\161080 decc seawall project\7_CAD\Civil\161080-EROS.dwg

GENERAL

- ELEVATIONS SHOWN, EXCEPT AS NOTED, ARE BASED ON LAKE SUPERIOR IGLD 1985 LOW WATER DATUM OF 601.1. ON GENERAL ARRANGEMENT DRAWINGS, ELEVATIONS ARE ALSO SHOWN RELATIVE TO IGLD DATUM.
- ALL PLAN DIMENSIONS ON THE DRAWINGS ARE MEASURED IN A TRUE HORIZONTAL PLANE UNLESS NOTED OTHERWISE.
- EXISTING WATER ELEVATIONS MAY VARY ABOVE AND BELOW IGLD ELEVATION THROUGHOUT THE PROJECT DUE TO ENVIRONMENTAL CHANGES, I.E. RAINFALL, WIND, RUNOFF, AND CYCLICAL CHANGES IN WATER LEVELS.
- ALL MATERIALS AND INSTALLATION MUST MEET THE STANDARD SPECIFICATIONS LISTED IN THE DESIGN CRITERIA SECTION OF THE STRUCTURAL NOTES AND THE PROJECT SPECIFICATIONS.
- THE MARINE DRAWINGS ARE TO BE WORKED TOGETHER WITH MECHANICAL, ELECTRICAL, AND CIVIL DRAWINGS AND SPECIFICATIONS FOR ALL INTER-DISCIPLINE INTERFACE WORK WHICH MAY NOT BE INCLUSIVE ON THE MARINE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND SHALL REPORT ANY DISCREPANCY TO THE ENGINEER PRIOR TO COMMENCING THE WORK.
- OPENINGS AND PENETRATIONS NOT SHOWN IN THE CONTRACT DOCUMENTS THROUGH ANY STRUCTURAL ELEMENTS OR ITEMS EMBEDDED IN THE STRUCTURAL ELEMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO IMPLEMENTING THE WORK.
- PLANS, SECTIONS, AND DETAILS SHALL NOT BE SCALED FOR DETERMINATION OF SIZE, QUANTITIES, LENGTHS, ETC.
- ALL MEMBERS ARE DESIGNED TO RESIST THE DESIGN LOADS WITHIN THE COMPLETED MARINE SYSTEM. CONTRACTOR IS RESPONSIBLE FOR ADEQUATE SHORING, BRACING, ETC DURING CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ANY AND ALL STREETS, UTILITIES, EXISTING STRUCTURES, EQUIPMENT, ETC.
- CONTRACTOR IS RESPONSIBLE TO FOLLOW ALL LOCAL, STATE, & FEDERAL PERMIT REQUIREMENTS AT ALL TIMES.
- EXISTING CONDITIONS, RELATED DIMENSIONS, ELEVATIONS INDICATED IN THE CONTRACT DOCUMENTS SHALL BE FIELD VERIFIED AS SITE CONDITIONS MAY HAVE CHANGED SINCE LAST INSPECTION BY ENGINEER. ANY VERIFIED CONDITIONS THAT DIFFER FROM THAT INDICATED IN THE CONTRACT DOCUMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PRODUCTION OF SHOP DRAWINGS & FABRICATION.
- WHERE A SPECIFIC MODEL, MANUFACTURER, OR GEOMETRIC SIZE/SHAPE OF AN ITEM ARE IDENTIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE MODEL, MANUFACTURER, OR GEOMETRIC SIZE/SHAPE IDENTIFIED ARE THE BASIS OF THE DESIGN. ITEMS OF OTHER MODEL, MANUFACTURER, OR GEOMETRIC SIZE/SHAPE OF EQUAL DESIGN WHICH ARE ACCEPTED BY THE ENGINEER THAT REQUIRE ANY ADDITIONAL DRAWINGS, ENGINEERING DEVIATIONS, OR CONSTRUCTION/QUANTITY CHANGES ARE THE RESPONSIBILITY OF THE CONTRACTOR INCLUDING ALL ASSOCIATED COSTS.
- THE ACCURACY OF EXISTING UNDERGROUND UTILITIES AND STRUCTURES ARE NOT GUARANTEED AND NOT INCLUSIVE. FIELD CONDITIONS SHALL BE VERIFIED PRIOR TO ANY EXCAVATION.
- THE GENERAL STRUCTURAL AND MARINE NOTES GIVEN IN THE CONSTRUCTION DOCUMENTS MAY NOT BE INCLUSIVE TO THE ENTIRE PROJECT. SEE FULL PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A SITE SAFETY AND SITE CONTINGENCY PLAN, AND ADHERE TO THE RESPONSE ACTION PLAN (RAP) ADDRESSING THE REQUIREMENTS SET FORTH IN 29 CFR 1910.120.
- ALL CONSTRUCTION MATERIALS, STRUCTURAL STEEL, STEEL SHEET PILE, AND COATINGS SHALL BE AMERICAN MINED AND SOURCED.

DESIGN CRITERIA

- CODES AND SPECIFICATIONS
  ALL DESIGN, UNLESS OTHERWISE NOTED, ARE IN ACCORDANCE WITH THE FOLLOWING:
  - I. LOCAL & STATE CODES FOR WHICH THE PROJECT IS ERECTED
  - II. INTERNATIONAL BUILDING CODE (IBC)
  - III. ASCE STANDARD 7
  - IV. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (AASHTO)
- DESIGN LOADS
  - A. LIVE LOADS

WIND SPEED FOR DOCK STRUCTURE:	105 MPH 3 SEC GUST
PRIMARY DOCK SURCHARGE:	300 PSF

  - B. MOORING ARRANGEMENT BASED ON BOLLARD CAPACITY OF 65 TONS
  - C. FOR MOORING DESIGN, WIND PRESSURE ON VESSEL BASED ON WIND PRESSURES SHOWN ABOVE WHILE DOCKED.
  - D. A DESIGN VESSEL IMPACT VELOCITY OF 0.5 FEET PER SECOND AND A 10° APPROACH ANGLE WERE USED TO DETERMINE THE TOTAL BERTHING IMPACT ENERGY FOR EACH BARGE VESSEL.
  - E. THE STRUCTURES HAVE BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS COMPLETED STRUCTURES, UNLESS OTHERWISE NOTED ON THE DRAWINGS. ANY PROPOSED APPLICATION OF CONSTRUCTION LOADS WHICH EXCEED THE DESIGN LOADS MUST BE APPROVED BY THE ENGINEER.
- GENERAL VESSEL PARAMETERS
  - A. S.S. WILLIAM A. IRVIN VESSEL PROPERTIES:

LENGTH OVERALL:	610 FT
BREADTH MOLDED:	60 FT
DRAFT, WITHOUT BALLAST	15 FT
DRAFT, WITH BALLAST	33 FT

  - B. VISTA STAR VESSEL PROPERTIES:

LENGTH OVERALL:	92 FT
BREADTH MOLDED:	26 FT
DRAFT, DESIGN, MOLDED:	7.5 FT

TESTING NOTES

- CONTRACTOR SHALL PERFORM ALL QUALITY CONTROL TESTING PER THE SPECIFICATIONS AND SUBMIT REPORTS TO OWNER/ENGINEER WEEKLY.
- CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE ENGINEER AND OWNER'S TESTING AGENCY ENGINEER TO ALLOW FOR PERFORMANCE & QUALITY TESTING OF ALL MATERIALS.
- THE OWNER/ENGINEER WILL PERFORM OR ENGAGE A REPRESENTATIVE FIRM(S) FOR THE INDEPENDENT TESTING OF THE FOLLOWING ITEMS:
  - A. CONCRETE: ONE SET OF FIVE CONCRETE TEST CYLINDERS WILL BE TAKEN FOR EVERY 100 FEET OF DOCK WALL, EACH INDIVIDUAL CONCRETE STRUCTURE (I.E. DOLPHIN, PIER, BOLLARD PAD, ETC.) OR EVERY 50 CUBIC YARDS OR LESS OF CONCRETE PLACED DAILY. TEST TWO CYLINDER AT SEVEN DAYS AND THREE AT 28 DAYS. CONCRETE TEST REPORTS TO BE SUBMITTED TO THE ENGINEER. AIR CONTENT AND SLUMP TESTS SHALL BE TAKEN FOR EACH SET OF TEST CYLINDERS.
  - B. MARINE COATING: VERIFICATION THAT THE STEEL PILES HAVE BEEN PREPARED FOR COATING IN ACCORDANCE WITH THE SPECIFICATIONS AND COATING MANUFACTURER'S RECOMMENDATIONS AND ALL OTHER REQUIREMENTS. VERIFICATION OF THE DRY FILM THICKNESS OF THE EPOXY COATINGS, SURFACE PREPARATION, AND THAT THE APPLICATION PROCESS IS BEING PERFORMED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. DESTRUCTIVE COATING ADHESION TESTS WILL BE PERFORMED TO DETERMINE ADEQUATE PERFORMANCE FOR COATING. COATING SHALL BE REPAIRED IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS
  - C. PILE LOAD TESTS (HP PILES FOR HELICALS/TRANSFER BEAM): PERFORM A MINIMUM OF THREE DYNAMIC PILE TESTS. PDA TEST SHALL CONFORM TO ASTM 4945 AND THE CONTRACTOR MAY USE PRODUCTION PILES FOR THE LOAD TEST AT HIS OPTION. PILING MUST HAVE A MINIMUM 31 TON AXIAL CAPACITY PER PILE (SERVICE LOAD OF 62 TONS WITH FS = 2.0). PERFORM A DRIVE TEST ONCE FOR THE PURPOSE OF CONFIRMING PILE LENGTHS REQUIRED. DRIVE TEST PILES SHALL BE A MINIMUM 15' LONGER THAN AS SHOWN.
  - D. HELICAL ANCHORS: PERFORMANCE TESTS SHALL BE PERFORMED ON 5% OF THE ANCHOR INSTALLED. PROOF TESTS SHALL BE PERFORMED ON ALL OF THE REMAINING ANCHORS. ALL OF THE TESTS SHALL CONFORM TO MANUFACTURERS RECOMMENDATIONS AND ASTM A981 & D4435 WHERE APPLICABLE. HELICAL ANCHORS MUST BE DESIGNED FOR A SERVICE LOAD OF 60 OR 80 KIPS AT THE INSTALLATION ANGLE WITH AN APPROPRIATE FACTOR OF SAFETY. ANY ANCHORS THAT FAIL DURING THE TESTING SHALL BE REPORTED TO THE OWNER'S REPRESENTATIVE AND THE ANCHOR SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL AND MISCELLANEOUS METAL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF THE LATEST:
  - A. AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS
  - B. AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
  - C. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS (RCRBJ)
  - D. AISC QUALITY CERTIFICATION PROGRAM.
- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MATERIAL SPECIFICATIONS:

WIDE FLANGES AND SHAPES CUT FROM THEM	ASTM A992
S-BEAMS, CHANNELS, AND ANGLES	ASTM A36
STEEL PLATES	ASTM A36 OR A572 GR. 50 (SEE PLAN)
HOLLOW STRUCTURAL SECTIONS	ASTM A500 GRADE B
STEEL PIPE	ASTM A53 GRADE B
HIGH STRENGTH BOLTS	ASTM A325-X OR ASTM F1852-X
NUTS	ASTM A563
WASHERS	ASTM F436
WELDED STUDS	ASTM A108
WELD ELECTRODES	E70XX
GALVANIZED BOLTS	ASTM A307
STAINLESS STEEL BOLTS	TYPE 304 OR 316
GALVANIZED NUT	ASTM A563
GALVANIZED WASHER	ASTM F436
WALL ANCHORAGE	ASTM A193 GRADE B7

- WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1 BY QUALIFIED WELDERS AS DEFINED BY AWS D1.1 & ALL UNDERWATER WELDING SHALL BE IN ACCORDANCE WITH AWS D3.6. ELEMENTS INVOLVING CONNECTIONS OF SHEET STEEL OR STRIP STEEL SHALL ALSO BE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.3, SPECIFICATION FOR WELDING SHEET STEEL IN STRUCTURES.
- WELDING RODS UTILIZED IN UNDERWATER WELDING SHALL MEET THE STANDARDS OF AWS D3.6.
- BOLTED CONNECTIONS SHALL BE WITH ⅞"ø HIGH STRENGTH BOLTS CONFORMING TO ASTM A325 WITH THREADS EXCLUDED FROM THE SHEAR PLANE UNLESS INDICATED OTHERWISE ON THE DRAWINGS. THE USE OF HIGH STRENGTH STEEL BOLTS SHALL BE GOVERNED BY "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
- FAYING SURFACES OF PRE-TENSIONED BOLTS SHALL BE FREE OF ALL LOOSE RUST, LOOSE MILL SCALE, AND LOOSE PAINT TO A DEGREE SPECIFIED BY HAND CHIPPING, SCRAPING, SANDING AND WIRE BRUSHING TO OBTAIN A CLASS A FAYING SURFACE.
- BEVELED WASHERS SHALL BE UTILIZED WHEN THE OUTER FACE OF THE JOINT HAS A SLOPE THAT IS GREATER THAN 1:20 WITH RESPECT TO A PLANE THAT IS NORMAL TO THE BOLT AXIS.
- A TENSION CALIBRATOR SHALL BE USED WHERE BOLTS ARE TO BE PRE-TENSIONED TO CONFIRM THE SUITABILITY OF THE COMPLETED FASTENER ASSEMBLE, INCLUDING LUBRICATION, FOR PRE-TENSIONED INSTALLATION; AND, TO CONFIRM THE PROCEDURE AND PROPER USE BY THE BOLTING CREW OF THE PRE-TENSIONING METHOD TO BE USED.
- THE ACCURACY OF A HYDRAULIC TENSION CALIBRATOR SHALL BE CONFIRMED THROUGH CALIBRATION AT LEAST ANNUALLY.
- THE HARDWARE SHALL BE PRE-TENSIONED ONCE THE SURFACES OF THE JOINING MATERIAL ARE IN FIRM CONTACT.
- PROVIDE FIRE WATCH DURING ALL WELDING, FLAME CUTTING, AND BURNING.
- STEEL MEMBERS AND CONNECTIONS WERE DESIGNED ASSUMING A TYPE PR (PARTIALLY RESTRAINED) OR "SIMPLE FRAMING" CONSTRUCTION TYPE.
- ALL BOLTED CONNECTIONS SHALL BE SNUG TIGHTENED PER RCSC 2009.
- PRE-TENSIONED BOLTED CONNECTIONS SHALL BE PRE-TENSIONED PER THE PLANS.
- ALL HARDWARE AND STRUCTURAL STEEL SHAPES TO BE PAINTED SHALL BE DESIGNATED IN THE CONSTRUCTION DOCUMENTS OR PROJECT SPECIFICATIONS.
- ALL HARDWARE AND STRUCTURAL STEEL SHAPES TO BE PAINTED SHALL BE COMPLETED IN ACCORDANCE WITH THE GENERAL SPECIFICATIONS AND PLANS OR GALVANIZED BY THE HOT DIPPED PROCESS IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123 AND/OR A153, AS APPLICABLE, AFTER FABRICATION, UNLESS OTHERWISE NOTED.
- FIELD TREAT DAMAGED GALVANIZED FINISH WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT, COLD GALVANIZING COMPOUNDS OR APPROVED EQUAL CONFORMING TO THE REQUIREMENTS OF ASTM A780.
- FIELD TREAT ALL COATING DAMAGED WITH MANUFACTURERS RECOMMENDED REPAIR PROCESS. ALL PROCESSES FOR REPAIR MUST BE APPROVED BY THE ENGINEER PRIOR TO THE REPAIR.

CONCRETE

- ALL TOPSIDE CONCRETE AND CONCRETE MATERIALS TO BE DESIGNED, MIXED AND PLACED IN ACCORDANCE WITH THE STANDARDS AND RECOMMENDATIONS OF THE LATEST ACI-318 CODE FOR REINFORCED CONCRETE.
- ALL NEW CONCRETE PLACED UNDERWATER SHALL FOLLOW CHAPTER 8 OF ACI 304R "GUIDE FOR MEASURING, MIXING, TRANSPORTING, AND PLACING CONCRETE" AND ALL EXISTING CONCRETE BELOW THE WATER SHALL BE REPAIRED IN ACCORDANCE TO ACI 546.2R "GUIDE TO UNDERWATER REPAIR OF CONCRETE".
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI UNLESS NOTED OTHERWISE.
- CONCRETE FOR BOLLARD FOUNDATIONS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI.
- CONCRETE SLUMP SHALL BE 4" ± 1" WITH ALLOWANCE TO USE SUPERPLASTICIZING ADMIXTURE TO INCREASE UP TO 8" IF DESIRED.
- ENTRAINED AIR SHALL BE 6% ± 1.5% (MEASURED AT TRUCK DISCHARGE).
- MAXIMUM COARSE-AGGREGATE SIZE OF SHALL BE ¾".
- CONCRETE SHALL BE DESIGNED TO A MINIMUM WATER-CEMENTITIOUS MATERIAL RATIO TO LIMIT SHRINKAGE AND PRODUCE MAXIMUM DURABILITY. MAXIMUM WATER-CEMENTITIOUS RATIO SHALL BE 0.40.
- CEMENT USED SHALL BE PORTLAND CEMENT MEETING THE REQUIREMENTS OF ASTM C150, TYPE II.
- ALL AGGREGATES SHALL CONFORM TO ASTM C33.
- ALL FLY ASH INCLUDED IN THE CONCRETE SHALL BE TYPE F MEETING THE REQUIREMENTS OF ASTM C618.
- ALL SLAG CEMENT INCLUDED IN THE CONCRETE SHALL MEET THE REQUIREMENTS OF ASTM C989.
- ALL SILICA FUME INCLUDED IN THE CONCRETE SHALL MEET THE REQUIREMENTS OF ASTM C1240.
- ALL HORIZONTAL REINFORCING BARS SHALL BE CONTINUOUS AROUND CORNERS.
- WATER USED TO BE POTABLE AND FREE OF DEBRIS, OIL, AND OTHER DELETERIOUS SUBSTANCES AND MEET THE REQUIREMENTS OF ASTM C1602.
- CONCRETE PLACED SHALL BE THOROUGHLY COMPACTED DURING PLACEMENT BY VIBRATING.
- FOLLOW ACI 305 AND ACI 306 FOR HOT AND COLD WEATHER CONSTRUCTION WHEN APPLICABLE.
- ALL FORMING SHALL BE TRUE AND STRAIGHT IN ACCORDANCE WITH ACI STANDARDS.
- ALL HORIZONTAL CONCRETE SURFACES SHALL HAVE A BROOM FINISH. ALL OTHER SURFACES SHALL HAVE SMOOTH FORM FINISH.
- SUFFICIENT CURING SHALL BE PROVIDED FOR CONCRETE. WET CURE WITH BURLAP AND WATER IMMEDIATELY AFTER FINISHING AND FOR A MINIMUM OF 7 DAYS. ALTERNATELY USE CURING COMPOUND ON FORMED SIDES, ONLY AFTER REMOVAL OF FORMS. CURE AS PER ACI STANDARDS.
- ALL EMBEDDED ITEMS AND OPENINGS REQUIRED FOR MOORING, UTILITY, ELECTRICAL, AND MECHANICAL SERVICES SHALL BE INCORPORATED INTO THE STRUCTURES WHETHER OR NOT THEY ARE DETAILED OR INDICATED ON THE STRUCTURAL / MARINE DRAWINGS. ALL OPENING DIMENSIONS SHOWN ON THE DRAWINGS FOR MECHANICAL EQUIPMENT SHALL BE COORDINATED WITH THE ACTUAL EQUIPMENT TO BE USED, AND THE DIMENSIONS ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. REFER TO THE OTHER DISCIPLINE DRAWINGS FOR FLOOR FINISHES, SLOPES, DRAINS, DEPRESSIONS, CELLS, EQUIPMENT PADS, ETC.
- ALL ITEMS EMBEDDED INTO CONCRETE SHALL BE CLEANED TO REMOVE ALL LOOSE SCALE, RUST, AND MARINE GROWTH. REFER TO THE RESPECTIVE DRAWINGS FOR THE DETAILS OF EMBEDDED ITEMS AND OPENINGS.
- ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED ¾" BY ¾" UNLESS SHOWN OTHERWISE.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO OWNERS REPRESENTATIVE FOR REINFORCING STEEL BEFORE PROCEEDING WITH FABRICATION.
- ALL OPENING DIMENSIONS SHOWN ON THE DRAWINGS FOR MECHANICAL EQUIPMENT SHALL BE COORDINATED WITH THE ACTUAL EQUIPMENT TO BE USED, AND THE DIMENSIONS ADJUSTED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. REFER TO THE OTHER DISCIPLINE DRAWINGS FOR FLOOR FINISHES, SLOPES, DRAINS, DEPRESSIONS, CELLS, EQUIPMENT PADS, ETC.

VIBRO COMPACTION

- VIBRO COMPACTION WILL BE REQUIRED FOR ALL MATERIAL PLACED IN WATER DEPTHS GREATER THAN ONE FOOT.
- CONTRACTOR SHALL SUBMIT VIBRO COMPACTION EQUIPMENT AND PROCEDURE FOR APPROVAL PRIOR TO STARTING WORK.

CAMEL SYSTEM

- A CAMEL SYSTEM WILL BE REQUIRED TO SEPARATE THE S.S. WILLIAM A. IRVIN FROM THE EXISTING DOCKWALL.
- CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROPER DESIGN OF CAMEL SYSTEMS.
- CONTRACTOR SHALL SUBMIT CAMEL DESIGN INFORMATION TO ENGINEER FOR APPROVAL.
- DESIGN OF CAMEL SYSTEM SHALL BE PERFORMED BY AN ENTITY AS REQUIRED IN ACCORDANCE WITH EXISTING LOCAL CODE REQUIREMENTS OR ESTABLISHED LOCAL PRACTICES. THIS DESIGN WORK MAY BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER, A CERTIFIED CAMEL SYSTEM DEALER, OR DESIGNER DEPENDING ON LOCAL REQUIREMENTS OR PRACTICES.

REINFORCING STEEL

- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60, WITH A MINIMUM YIELD POINT OF 60,000 PSI.
- ALL REINFORCING BAR DIMENSIONS SHOWN ON THE DRAWINGS ARE TO CENTERLINE OF BARS UNLESS NOTED OTHERWISE.
- DETAIL REINFORCING STEEL IN ACCORDANCE WITH "ACI DETAILING MANUAL" ACI SP66 AND "CRSI: MANUAL OF STANDARD PRACTICE AND RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS", EXCEPT WHERE SHOWN OTHERWISE.
- DEVELOPMENT LENGTH AND LAP SPLICE LENGTH OF REINFORCING BARS SHALL BE AS SHOWN ON THE PLANS. ALL REINFORCING BAR SPLICES SHALL BE CLASS "B" TENSION LAP SPLICES, UNLESS NOTED OTHERWISE.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
- REINFORCING MEETING ASTM A615 SHALL NOT BE WELDED WITHOUT PRIOR APPROVAL FROM ENGINEER.
- WELDED WIRE FABRIC SHALL BE LAPPED TWO FULL MESH PANELS AND TIED SECURELY.
- REINFORCING TO BE WELDED SHALL BE WELDABLE REBAR MEETING ASTM A706 SPECIFICATION OR DEFORM BAR ANCHORS MEETING ASTM A496 STANDARD. ALL WELDING OF REBAR SHALL BE SUBMITTED FOR APPROVAL TO ENGINEER PRIOR TO WELDING.

CEMENTITIOUS GROUT

- CEMENTITIOUS GROUT PLACED:
  - A. UNDERWATER SHALL BE SEASHIELD 510 UNDERWATER GROUT PROVIDED BY DENSO NORTH AMERICA OR APPROVED EQUAL.
  - B. TOPSIDE SHALL BE MASTERFLOW 713 PROVIDED BY BASF OR APPROVED EQUAL.
- CONTRACTOR SHALL FOLLOW ALL OF MANUFACTURERS RECOMMENDATIONS OF POT LIFE AND TEMPERATURE REQUIREMENTS DURING MIXING AND PLACEMENT OF PRODUCT.
- WATER USED IN MIXTURE SHALL BE POTABLE AND FREE OF OIL, GREASE, & DEBRIS.
- FOLLOW THE MANUFACTURERS RECOMMENDATION FOR THE USED OF ADMIXTURES.
- FINE AGGREGATE SHALL MEET THE REQUIREMENTS OF ASTM C33.
- ITEMS EMBEDDED INTO THE GROUT SHALL BE FREE OF LOOSE SCALE, RUST, AND MARINE GROWTH.
- SURFACES MUST BE CLEANED OF ALL OILS, GREASES, DIRT, WAX SOLUTIONS, AND OLD COATINGS.
- SURFACE SHOULD BE CLEANED WITH A HIGH PRESSURE WATERBLAST, SANDBLAST, OR OTHER APPROVED METHODS TO REMOVE ALL CONTAMINANTS WHICH MIGHT INTERFERE WITH PROPER ADHESION.
- METAL SURFACES SHALL BE CLEANED TO A BARE METAL SURFACE AND CONCRETE SURFACES SHALL BE FREE OF WEAK & LOOSE CONCRETE BY CHIPPING DOWN TO SOUND CONCRETE.
- ALL GROUT SHALL BE PLACED BY MEANS OF TREMIE OR PUMP.

ENERGY CONTROLS

- CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE PROJECT OWNER TO INSURE A SAFE WORK AREA, INCLUDING THE LOCKOUT OF MACHINERY, VESSEL PROPS, AND SHIP EQUIPMENT WHEN REQUIRED.

PERMITS

- THE FOLLOWING PERMITS/APPROVALS HAVE BEEN OBTAINED FOR THIS PROJECT:
  - A. DNR PERMIT FOR DOCK REHABILITATION – PENDING
  - B. ARMY CORPS OF ENGINEERS PERMIT FOR DOCK REHABILITATION – PENDING
- CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL DISPOSAL, OR LOCAL PERMITTING NECESSARY BEFORE THE START OF THE PROJECT.

WORK SCHEDULE & DELAYS

- ALL DOCK CONSTRUCTION MUST BE COMPLETED DURING SCHEDULED DOWN TIME PERIODS TO PREVENT INTERFERENCE WITH PIER/DOCK OPERATIONS. THE CONTRACTOR SHALL COORDINATE WITH DOCK OWNER TO SCHEDULE WORK.
- THE FOLLOWING SCHEDULE MILESTONES MUST BE MET:
  - APRIL 27, 2018: COMPLETION AND ACCEPTANCE BY ENGINEER/OWNER OF DOCK WALL AND ANCHORAGE SYSTEM, BOLLARD FOUNDATION AND ANCHORAGE SYSTEM, AND FENDERING SYSTEM.
  - JUNE 1, 2018: COMPLETION AND ACCEPTANCE BY ENGINEER/OWNER OF PROJECT.
- ALL WORK THAT MAY BE CONSIDERED A PUBLIC NOISE NUISANCE AS DETERMINED BY ENGINEER/OWNER (E.G. PILE DRIVING) SHALL BE PERFORMED BETWEEN 7:00 AM AND 7:00 PM. NO PUBLIC NOISE NUISANCE WORK MAY BE PERFORMED OUTSIDE OF THESE HOURS UNLESS APPROVED BY ENGINEER/OWNER.
- LIQUIDATED DAMAGES WILL BE $1,000 PER CALENDAR DAY FOR EVERY CALENDAR DAY THAT SCHEDULE MILESTONES ARE NOT MET. CONSEQUENTIAL DAMAGES WILL BE CHARGE TO CONTRACTOR IF WORK IS NOT COMPLETED AND ACCEPTED BY JUNE 15, 2018.

SHEET PILE SEAWALL

- HOT ROLLED STEEL SHEET PILING SHALL CONFORM TO ASTM A6 "STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR ROLLED STRUCTURAL STEEL BARS, PLATES, SHAPES, AND SHEET PILING" WHILE COLD ROLLED STEEL SHEET PILING SHALL CONFORM TO ASTM A857 "STANDARD SPECIFICATION FOR STEEL SHEET PILING, COLD FORMED, LIGHT GAGE."
- ALL STEEL SHEET PILE SHALL BE ASTM A572 GR 50. SHEET PILE SHALL HAVE A MINIMUM SECTION MODULUS OF S_x=33.5 IN^3/FT OF WALL AND A MINIMUM THICKNESS OF 0.375" ON FLANGES AND WEB.
- IF THE STEEL SHEET PILE SIZE DESIGNATED ON THE PLANS ARE NOT UTILIZED, <u>THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL DRAWINGS, ENGINEERING DEVIATIONS, OR CONSTRUCTION/QUANTITY CHANGES INCLUDING ALL ASSOCIATED COSTS</u>.
- ALL STEEL SHEET PILE SIZES TO BE UTILIZED DURING CONSTRUCTION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PURCHASE.
- FOR PILE TIP ELEVATIONS, SEE RELEVANT DRAWINGS.
- PILES SHALL BE DRIVEN WITHIN 2 INCHES FROM BASELINE INDICATED ON PLANS AFTER DRIVING IS COMPLETED.
- PILES SHALL MAINTAIN ⅛ INCH PER FOOT OUT OF PLUMB TOLERANCE IN THE PARALLEL AND PERPENDICULAR PLANE OF THE WALL.
- TEMPORARY WALES, TEMPLATES, OR GUIDE STRUCTURES SHALL BE USED TO INSURE THAT THE PILING IS PLACED AND DRIVEN WITHIN THE ALIGNMENT TOLERANCES IN ALL PLANES.
- PILING DAMAGED OR DRIVEN OUTSIDE THE ABOVE TOLERANCES SHALL BE REMOVED & REPLACED WITH NO ADDITIONAL EXPENSE TO THE OWNER.
- THE CONTRACTOR SHALL PREPARE DRIVING RECORDS FOR ALL PILES INCLUDING PROJECT NAME AND NUMBER, NAME OF CONTRACTOR, PILE LOCATION AND IDENTIFICATION MARK, SEQUENCE OF DRIVING, PILE DIMENSIONS, GROUND ELEVATION, SPLICE LOCATIONS AND TYPE, TIP AND CUTOFF ELEVATIONS AFTER DRIVING PILE GROUP, PLUMBNESS CHECKS BEFORE AND AFTER DRIVING, VERTICAL AND HORIZONTAL ALIGNMENT VERIFICATIONS, DATE, START & FINISH TIMES OF DRIVING, TOTAL DRIVING TIME, AND ANY UNUSUAL OCCURRENCES. DAILY RECORDS SHALL BE TURNED OVER TO THE ENGINEER FOR REVIEW THE SAME DAY THE WORK IS PERFORMED.
- THE CONTRACTOR IS RESPONSIBLE FOR CLEARING THE DRIVING LINE OF ANY DEBRIS UP TO 5 FT BELOW THE EXISTING MUD LINE WHICH MAY DAMAGE OR PREVENT THE INSTALLATION OF THE SHEET PILE.
- DESIGN OF THE SHEET PILE WALL WAS BASED OFF OF SOILS INFORMATION PROVIDED BY LAKEHEAD TESTING REPORT #910-87-271 DATED MAY 28, 1987.

STEEL PILE FOUNDATIONS

- ALL STEEL PILES SHALL BE HP10x42 OR HP14x73 PILES (SEE PLAN FOR LOCATIONS) CONFORMING TO ASTM A572 GRADE 50 UNLESS NOTED OTHERWISE.
- NO SECONDS, REJECT, OR USED PILING WILL BE CONSIDERED UNLESS APPROVED BY ENGINEER.
- SEE PLAN FOR ESTIMATED PILE LENGTHS AND PILE TIP ELEVATIONS.
- ALL PILES SHALL BE DRIVEN OPEN ENDED.
- SEE PLANS FOR PILE ALLOWABLE COMPRESSION DESIGN CAPACITIES AND ADDITIONAL TESTING NOTES.
- PILES SHALL BE DRIVEN HORIZONTALLY WITHIN 3 INCHES OF THE PLAN LOCATION AND PILES SHALL NOT BE OUT OF PLUMB VERTICALLY BY MORE THAN 2% FOR PROPER ALIGNMENTS.
- PILES MAY BE INSTALLED WITH VIBRATORY HAMMERS FOR THE FIRST 20 FT. THE FINAL 10 FT MUST BE DRIVEN WITH AN IMPACT HAMMER.
- THE CONTRACTOR SHALL PREPARE DRIVING RECORDS FOR ALL PILES INCLUDING PILE IDENTIFICATION MARK, TYPE, SIZE AND LENGTH OF PILE, PILE HAMMER USED, HAMMER SPEED AND PRESSURE, SPLICE LOCATIONS AND TYPE, TIP AND CUTOFF ELEVATIONS, PLUMBNESS CHECKS BEFORE AND AFTER DRIVING, DRIVING RESISTANCE PER FOOT, DATE AND TIME OF DRIVING, AND ANY UNUSUAL OCCURRENCES. DAILY RECORDS SHALL BE TURNED OVER TO THE ENGINEER FOR REVIEW.
- PILING DAMAGED OR DRIVEN OUTSIDE THE ABOVE TOLERANCES SHALL BE REMOVED AND REPLACED WITH NO ADDITIONAL EXPENSE TO THE OWNER.
- TEST PILES SHALL BE DRIVEN TO DETERMINE FINAL CAPACITIES AND LENGTHS ACCORDING TO TESTING NOTES, CONSTRUCTION DOCUMENTS, AND PROJECT SPECIFICATIONS.
- SOILS INFORMATION FOR THE DESIGN OF THE STEEL PILING WERE BASED OFF OF SOILS INFORMATION PROVIDED BY LAKEHEAD TESTING REPORT #910-87-271 DATED MAY 28, 1987.
- UPON COMPLETION OF PILE DRIVING, AN OWNER REPRESENTATIVE SHALL FURNISH A SURVEY OF AS-DRIVEN PILE LOCATIONS. THE SURVEY SHALL INDICATE THE MISALIGNMENT OF EACH PILE IN TOW PERPENDICULAR DIRECTIONS, GIVEN IN INCHES, AND ACTUAL CUTOFF ELEVATIONS OF EACH PILE.

HELICAL SCREW & ANCHOR PILES

- HELICAL PIERS SHALL BE MANUFACTURED BY CHANCE™ OR APPROVED EQUAL.
- PILES SHALL BE INSTALLED BY AN AUTHORIZED HELICAL SCREW PILE INSTALLING CONTRACTOR WHO HAS SATISFIED THE CERTIFICATION REQUIREMENTS RELATING TO THE TECHNICAL ASPECTS OF THE PRODUCT AND THE ASCRIBED INSTALLATION TECHNIQUES. PROOF OF CURRENT CERTIFICATION MUST BE PROVIDED.
- ALL PILES SHALL BE CORROSION PROTECTED BY HOT DIP GALVANIZATION.
- INSTALLATION UNITS SHALL BE CAPABLE OF DEVELOPING THE MAXIMUM TORQUE AS REQ'D.
- INSTALLATION UNIT SHALL BE CAPABLE OF POSITIONING THE HELICAL PIER AT THE PROPER INSTALLATION ANGLE. THIS ANGLE MAY VARY BETWEEN VERTICAL AND 5 DEGREES DEPENDING UPON APPLICATION AND TYPE OF LOAD TRANSFER DEVICE SPECIFIED OR REQUIRED.
- PILES SHALL BE DRIVEN WITHIN 3 INCHES OF PILE LOCATIONS.
- CONTRACTOR SHALL PROTECT AND SHORE ROADWAY AS REQUIRED DURING INSTALLATION OF HELICAL ANCHORS.
- HELICAL PIERS SHALL BE INSTALLED TO THE MAXIMUM TORQUE VALUE REQUIRED TO PROVIDE THE LOAD CAPACITIES SHOWN ON THE PLANS.
- PIERS SHALL BE INSTALLED WITH A ROTARY TYPE MOTOR WITH EQUAL FORWARD AND REVERSE TORQUE CAPABILITIES. THIS EQUIPMENT SHALL BE CAPABLE OF CONTINUAL ADJUSTMENT OF THE TORQUE DRIVE UNIT'S REVOLUTIONS PER MINUTE (RPM'S) DURING INSTALLATION. PERCUSSION DRILLING EQUIPMENT SHALL NOT BE ALLOWED.
- INSTALLATION EQUIPMENT SHALL BE CAPABLE OF APPLYING AXIAL COMPRESSION (CROWD) PRESSURE AND TORQUE SIMULTANEOUSLY.
- THE TORQUE BEING APPLIED BY THE INSTALLING UNITS SHALL BE MONITORED THROUGHOUT THE INSTALLATION BY THE INSTALLER. THE TORQUE MONITORING DEVICE SHALL EITHER BE A PART OF THE INSTALLING UNIT OR AN INDEPENDENT DEVICE IN-LINE WITH THE INSTALLING UNIT. CALIBRATION FOR EITHER UNIT SHALL BE AVAILABLE FOR REVIEW BY THE OWNER.
- THE APPROPRIATE STEEL NEW CONSTRUCTION LOAD TRANSFER DEVICE SHALL BE USED.
- APPROPRIATE HELICAL PIER SELECTION WILL CONSIDER DESIGN LOAD PLUS SAFETY FACTOR, SOIL PARAMETERS, AND THE INSTALLATION TORQUE VS. CAPACITY EQUATION AS PER THE MANUFACTURERS RECOMMENDATIONS.
- DESIGN OF HELICAL SCREW PILES AND ANCHORS SHALL BE PERFORMED BY AN ENTITY AS REQUIRED IN ACCORDANCE WITH EXISTING LOCAL CODE REQUIREMENTS OR ESTABLISHED LOCAL PRACTICES. THIS DESIGN WORK MAY BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER, A CERTIFIED HELICAL PIER DEALER, OR DESIGNER DEPENDING ON LOCAL REQUIREMENTS OR PRACTICES.
- SOILS INFORMATION FOR THE PROJECT PROVIDED BY LAKEHEAD TESTING REPORT #910-87-271 DATED MAY 28, 1987.
- UPON COMPLETION OF PILE DRIVING, AN OWNER REPRESENTATIVE SHALL FURNISH A SURVEY OF AS-DRIVEN PILE LOCATIONS. THE SURVEY SHALL INDICATE THE MISALIGNMENT OF EACH PILE IN TOW PERPENDICULAR DIRECTIONS, GIVEN IN INCHES, AND ACTUAL CUTOFF ELEVATIONS OF EACH PILE.

BOLLARDS

- UNLESS OTHERWISE NOTED, NEW CAST STEEL BOLLARDS SHALL BE T-HEAD TYPE, MODEL #1352 PROVIDED BY SCHOELLHORN-ALBRECHT OR APPROVED EQUAL AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- NEW CAST STEEL BOLLARDS BETWEEN STATION 0+00 TO 6+70 SHALL BE STAGHORN TYPE, MODEL #S1547 PROVIDED BY SCHOELLHORN-ALBRECHT OR APPROVED EQUAL AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- EQUIVALENT BOLLARDS PROVIDED BY OTHER MANUFACTURERS MUST BE APPROVED BY ENGINEER PRIOR TO PURCHASE.
- IF AN EQUIVALENT BOLLARD IS APPROVED BY THE ENGINEER, <u>THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL DRAWINGS, ENGINEERING DEVIATIONS, OR CONSTRUCTION/QUANTITY CHANGES INCLUDING ALL ASSOCIATED COSTS.</u>
- ANCHOR BOLTS FOR BOLLARDS SHALL HAVE A MINIMUM EMBEDMENT OF 3'-0", AND SHALL CONFORM TO DIAMETERS AND GRADES RECOMMENDED BY MANUFACTURER.
- NUTS AND WASHERS FOR BOLLARDS SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS.
- ALL ANCHORAGE HARDWARE SHALL BE HOT DIPPED GALVANIZED TO ASTM A123 OR A153.
- NON-SHRINK GROUT SHALL BE USED TO FILL THE INTERNAL CAVITY AND AROUND THE BASE OF THE BOLLARD WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI WITH A MAXIMUM AGGREGATE SIZE OF ⅜".
- BOLLARD SHALL BE FINISHED WITH (2) – 2 MIL DFT COATS OF DURA-PLATE 235 PW EPOXY PRIMER AND (1) – 2 MIL DFT COAT OF ACROLON 218 HS ACRYLIC POLYURETHANE BY THE SHERWIN WILLIAMS CORP OR EQUAL.
- BOLLARD SHALL BE CLEANED WITH A POWER TOOL TO A MINIMUM SURFACE PREPARATION AS DEFINED BY SSPC-SP10 PRIOR TO TO THE APPLICATION OF ANY COATING.
- BOLLARD FINISH SHALL BE OSHA COLOR YELLOW (SHERWIN WILLIAMS SAFETY YELLOW SW 4084 OR EQUAL).
- EXISTING BOLLARDS, CLEATS, AND MOORING HARDWARE SHALL BE REMOVED AND NOT REUSED.
- ANCHOR BOLT HEADS AND CAVITIES FOR THE ANCHOR BOLTS SHALL BE FILLED WITH AN APPROVED EPOXY TO PREVENT STANDING WATER.
- 5000 PSI CONCRETE SHALL BE USED FOR ALL BOLLARD FOUNDATIONS.
- BOLLARD CAPACITY SHALL BE STAMPED INTO WET CONCRETE BOLLARD FOUNDATION IMMEDIATELY IN FRONT OF BOLLARD LOCATION.

CLEATS

- UNLESS OTHERWISE NOTED, NEW CAST STEEL CLEATS SHALL BE MODEL #1460-24 PROVIDED BY SCHOELLHORN-ALBRECHT OR APPROVED EQUAL AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- CLEAT SHALL BE MADE OF CAST STEEL MEETING ASTM A27 GRADE 70-36.

STRUCTURAL AND MISC STEEL PAINT

- PAINT SHALL BE HI-SOLIDS POLYURETHANE BY THE SHERWIN WILLIAMS CORP OR EQUAL AND APPLIED PER MANUFACTURERS RECOMMENDATIONS.
- PAINT SHALL BE APPLIED WITH ZINC RICH PRIMER AND IN TWO TOP COATS EACH 4 MIL DFT. COLOR SHALL BE VERIFIED WITH OWNER PRIOR TO APPLICATION.
- ALL SURFACES TO BE COATED SHALL BE SAND-BLASTED IN PREPARATION FOR APPLICATION OF THE COATING. SAND-BLASTING SHALL BE TO NEAR WHITE METAL, AT LEAST EQUIVALENT TO A COMMERCIAL BLAST AS DEFINED BY SSPC-SP10. ALL SURFACES TO BE COATED MUST BE COMPLETELY DRY, FREE OF MOISTURE, SOIL, DUST, AND GRIT AT THE TIME THE COATING IS APPLIED.
- COATING SHALL BE APPLIED PER MANUFACTURERS SPECIFICATIONS.
- ANY COATINGS DAMAGED FROM FASTENERS, WELDING, OR DURING INSTALLATION SHALL BE FIELD REPAIRED WITH THE APPROPRIATE COATING PER THE MANUFACTURERS RECOMMENDATIONS.
- ALL COATINGS PAINT SHALL BE A HIGH SOLIDS TWO COMPONENT POLYURETHANE RESIN COATING.

AMI
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TWIN CITIES - IRON RANGE

DATE:	REV:	DESCRIPTION	REV. BY:
10-31-17	0	Issued for Bid	

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

General Notes

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S0.0

TIMBER RUB RAIL

- ALL TIMBER ELEMENTS SHALL BE MANUFACTURED AND DESIGNED IN ACCORDANCE WITH ANSI/AWC NATIONAL DESIGN SPECIFICATIONS (NDS).
- SINGLE ROUGH SAWN TIMBER FENDER RUB RAIL SHALL BE INSTALLED ALONG THE LENGTH OF THE DOCK. SEE DRAWINGS FOR MORE DETAILS AND CHAMFER REQUIREMENTS.
- WOOD SPECIES SHALL BE OAK MATERIAL (WHITE OR RED) GRADED #1 OR BETTER, AS DETERMINED BY NELMA, NLGA, SPIB, WCLIB OR WWPA.
- TIMBERS SHALL BE GRADE STAMPED OR VISUALLY CERTIFIED BY AN INDEPENDENT TESTING AGENCY. LETTER OF CERTIFICATION MUST BE SUBMITTED TO ENGINEERS PRIOR TO INSTALLATION.
- GENERAL: COMPLY WITH DOC PS 20 AND GRADING RULES OF LUMBER GRADING AGENCIES CERTIFIED BY AMERICAN LUMBER STANDARDS COMMITTEE BOARD OF REVIEW, AS APPLICABLE.
  - A. FACTORY MARK EACH ITEM OF TIMBER WITH GRADE STAMP OF GRADING AGENCY.
  - B. FOR EXPOSED TIMBER INDICATED TO RECEIVE A STAINED OR NATURAL FINISH, APPLY GRADE STAMPS TO SURFACES THAT WILL NOT BE EXPOSED TO VIEW OR OMIT GRADE STAMPS AND PROVIDE CERTIFICATES OF GRADE COMPLIANCE ISSUED BY GRADING AGENCY.
- MOISTURE CONTENT: NO WARRANTY REQUIRED IF TIMBER IS PROVIDED WITH 22 PERCENT MAXIMUM MOISTURE CONTENT AT TIME OF DRESSING. ONE YEAR WARRANTY OF TIMBER RUB RAIL MAINTAINING A GRADE #1 AS DETERMINED BY NELMA, NLGA, SPIB, WCLIB, OR WWPA WILL BE REQUIRED IF TIMBER IS PROVIDED WITH MOISTURE CONTENT AT TIME OF DRESSING BETWEEN 22 PERCENT AND 30 PERCENT. MOISTURE CONTENTS GREATER THAN 30 PERCENT AT TIME OF DRESSING WILL NOT BE ACCEPTED.
- DRESSING: PROVIDE TIMBER THAT IS ROUGH SAWN (RGH).
- END SEALER: MANUFACTURER'S STANDARD, TRANSPARENT, COLORLESS WOOD SEALER THAT IS EFFECTIVE IN RETARDING THE TRANSMISSION OF MOISTURE AT CROSS CUTS.

EARTH WORK

- ALL GEOTEXTILE FABRIC SHALL BE PROPEX GEOTEX 315ST OR APPROVED EQUIVALENT.
- CONTRACTOR TO PROVIDE ALL NECESSARY MEANS AND EQUIPMENT TO CONTAIN EXISTING. DEBRIS DURING DEMO INCLUDING; ABSORBENT BOOM, SCREEN FENCE, H.D. SILT FENCE, ETC.
- NON–FROST SUSCEPTIBLE (NFS) SOIL IS DEFINED AS NO MORE THAN 6% OF THE MASS OF UNDISTURBED SOILS OR FILL MATERIAL MUST PASS THROUGH A #200 MESH SIEVE IN ACCORDANCE WITH ASTM D422.
- ALL FILL SHALL BE COMPACTED TO 95% MODIFIED PROCTOR.
- THE AREA OF FILL ON THE BACKSIDE OF THE DOCK WALL WILL BE COVERED UNDER THE ACOE PERMIT FOR THE DOCK WALL.
- UNCLASSIFIED EXCAVATION MATERIAL IS EXPECTED TO CONTAIN WOOD, CONCRETE, AND METAL DEBRIS.
- CONTAMINATED SOILS ARE EXPECTED TO BE ENCOUNTERED DURING EXCAVATION.

MARINE PILE COATINGS

- COAT (PAINT) STEEL SHEET PILES AND MISCELLANEOUS STRUCTURAL STEEL IN CORROSIVE ZONE AS NOTED ON DRAWINGS PER SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS. SEE DRAWING AND SPECIFICATIONS FOR SPECIFIC PAINTING DETAILS AND COVERAGE LIMITS.
- THE PROCEDURE FOR DETERMINING DRY FILM THICKNESS OF THE COATING SHALL MEET OR EXCEED THE STANDARDS IN SSPC–PA 2: PROCEDURE FOR DETERMINING CONFORMANCE TO DRY COATING THICKNESS REQUIREMENTS.
- ALL SURFACES TO BE COATED SHALL BE SAND–BLASTED IN PREPARATION FOR APPLICATION OF THE COATING. SAND–BLASTING SHALL BE TO NEAR WHITE METAL, AT LEAST EQUIVALENT TO A NEAR WHITE BLAST AS DEFINED BY SSPC–SP10. ALL SURFACES TO BE COATED MUST BE COMPLETELY DRY, FREE OF MOISTURE, SOIL, DUST, AND GRIT AT THE TIME THE COATING IS APPLIED.
- SURFACE PROFILE SHALL BE MEET OR EXCEED THE SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS.
- WHERE WELDING OR FASTENINGS ARE TO BE ACCOMPLISHED AFTER INSTALLATION OF PILES, EQUIVALENT REPAIR COATING SHALL BE FIELD APPLIED. ALL DAMAGED AREAS MUST BE CLEANED AND PREPARED TO SAME STANDARDS PRIOR TO APPLICATION OF REPAIR COATING.
- THE COATING SHALL BE ALLOWED TO CURE A MINIMUM OF EIGHT DAYS PRIOR TO THE INSTALLATION OF THE PILING.
- EPOXY COATING PRODUCTS SHALL CONFORM TO THE SPECIFICATIONS AND RECOMMENDED MANUFACTURER SPECIFICATIONS. COATINGS SHALL BE MARINE GRADE FOR USE IN ENVIRONMENTS WITH HEAVY ICE AND SUBJECTED TO MICROBIOLOGICALLY INFLUENCED CORROSION. APPROVED PRODUCTS INCLUDE THE FOLLOWING:
  - A. HUMIDUR ME EPOXY COATING, ACOTEC UK, 12 FOREST DRIVE, BELLSHILL, ML4 2PT, NORTH LANARKSHIRE, SCOTLAND. CONTACT: PHILIP STARR, TEL. +44 (0) 7432–3204–87, EMAIL PHILIP.STARR@ACOTEC.BE.
  - B. FAST CLAD ER EPOXY COATING, SHERWIN–WILLIAMS COMPANY, 4767 MILLER TRUNK HWY, HERMANTOWN, MN 55811. CONTACT: SCOTT SINNER, TEL. 218–722–7413, EMAIL SCOTT.A.SINNER@SHERWIN.COM.
  - C. INTERZONE 954 EPOXY COATING, 803 CORPORATE CT., WAUKESHA, WI 53189. CONTACT: LARRY KELLY, TEL. 262–436–0595, EMAIL LARRY.KELLY@KELLYCOATINGS.COM.
  - D. AQUAPURE SP EPOXY COATING, MARINE COATINGS LLC, 716 GARFIELD AVE., DULUTH, MN 55802, TEL. 218–349–6502.
- A DIFFERENT PRODUCT OF EQUAL OR BETTER QUALITY MAY BE SUBSTITUTED BY THE CONTRACTOR WITH THE APPROVAL OF THE ENGINEER. POSITIVE PROOF OF COATING ADEQUACY TO WITHSTAND HEAVY ICE IMPACT AND ABRASION MUST BE PROVIDED FOR EVALUATION.
- ALL SHEET PILING MUST BE PREPARED AND COATED IN INDIVIDUAL PIECES AS SHOWN ON DRAWINGS. NO PAIRING OF SHEET PILE WILL BE ALLOWED PRIOR TO COATING, EXCEPT FOR EXISTING IN–PLACE APPLICATIONS ON EXISTING SHEETING OR BY SPECIFIC PERMISSION OF ENGINEER.
- VERIFY COATING COLOR PRIOR TO PURCHASE.
- SURFACE TO BE COATED AND COATING ADHESION SHALL BE TESTED ACCORDING TO THE TESTING NOTES, CONSTRUCTION DOCUMENTS, AND PROJECT SPECIFICATIONS.

SUBMITTALS

THE FOLLOWING ITEMS SHALL BE SUBMITTED AND APPROVED BY THE ENGINEER OR OWNERS REPRESENTATIVE PRIOR TO THE PURCHASE AND INSTALLATION OF THE ITEM

- BASELINE PROJECT SCHEDULE AND FOREMAN CONTACT INFORMATION
- BI–WEEKLY PROJECT SCHEDULE
- PRE–CONSTRUCTION PHOTOGRAPHS, VIDEOS, AND RELEVANT DOCUMENTATION
- QUALITY CONTROL TEST RESULTS SHALL BE SUBMITTED WEEKLY FOR ALL QUALITY CONTROL TESTS PERFORMED BY CONTRACTOR
- CONCRETE
  - A. MIX DESIGNS AND MATERIAL SPECIFICATIONS INCLUDING NON–SHRINK GROUT
  - B. STEEL REINFORCING MATERIAL SPECIFICATIONS AND PLACEMENT DRAWINGS THAT DETAIL FABRICATION, BENDING, PLACEMENT, BAR SIZES, LENGTHS, AND SPLICE LENGTHS
  - C. HOT/COLD WEATHER CONSTRUCTION PROCEDURES
  - D. CONCRETE CURING PROCEDURE AND MATERIALS
  - E. FORM–RELEASE AGENT
  - F. PATCHING MATERIALS INCLUDING BONDING AGENT
  - G. JOINT LAYOUT
  - H. COMPRESSIBLE FILLER BOARD
  - I. SILICONE JOINT SEALER
  - J. CONCRETE FINISH
- STRUCTURAL STEEL & SHEET PILING
  - A. SHOP DRAWINGS INCLUDING MEMBER SIZES, LENGTHS, CUT & CONNECTIONS DETAILS, LENGTHS, SIZE, & NUMBER OF BOLTS, AND WELD SIZE, TYPE, LENGTH, & LOCATION.
  - B. AWS D1.1 WELDING CERTIFICATES FOR PERSONNEL PERFORMING WELDING
  - C. MATERIAL SPECIFICATIONS FOR STRUCTURAL SHAPES AND STEEL PLATES
  - D. DAILY FIELD QUALITY CONTROL REPORTS INCLUDING PILE DRIVING LOGS, PILE DRIVING EQUIPMENT, VERTICAL AND HORIZONTAL ALIGNMENT VERIFICATIONS, FINAL TIP AND CUTOFF ELEVATIONS, OBSTRUCTIONS ENCOUNTERED WHILE DRIVING, HOURS WORKED, ETC. THE DAILY FIELD QUALITY CONTROL REPORT SHALL BE SUBMITTED THE SAME DAY THE WORK WAS PERFORMED.
  - E. INSTALLER QUALIFICATIONS
  - F. CERTIFIED COPIES OF MILL TEST REPORTS
  - G. BASELINE DRIVING LANE
  - H. PAINT AND PRIMER MATERIAL SPECIFICATIONS
  - I. PILE TESTING PROCEDURE
  - J. STEEL SHEET PILE CLOSURE PLATE DESIGN AND DRAWINGS
  - K. TESTING AND INSTALLATION PROCEDURE FOR PRE–TENSIONED BOLTS
  - L. PILE LOCATION PLAN VERIFYING ACTUAL LOCATIONS OF PILES AND DETAIL RECORDS FOR INDIVIDUAL PILES SHALL BEAR IDENTIFICATION
- HELICAL SCREW AND ANCHOR PILES
  - A. DESIGN DATA, DRAWINGS, TORQUE VS. CAPACITY EQUATION, AND PRODUCT INFORMATION INCLUDING CONNECTIONS.
  - B. PERFORMANCE TESTING PROCEDURE
  - C. INSTALLER CERTIFICATION
  - D. INSTALLATION EQUIPMENT
  - E. DAILY FIELD QUALITY CONTROL REPORTS INCLUDING DRIVING LOGS, EQUIPMENT, VERTICAL AND HORIZONTAL ALIGNMENT VERIFICATIONS, FINAL LENGTHS, OBSTRUCTIONS ENCOUNTERED WHILE INSTALLING, HOURS WORKED, ETC. THE DAILY FIELD QUALITY CONTROL REPORT SHALL BE SUBMITTED WITHIN 48 HOURS OF WHEN THE WORK WAS PERFORMED.
- BOLLARDS
  - A. MATERIAL SPECIFICATION FOR STEEL BOLLARD, NON–SHRINK GROUT, ANCHOR BOLTS, AND ANCHOR BOLT FINISH
  - B. BOLLARD LOAD RATING, DESIGN CRITERIA, AND CERTIFICATES OF CONFORMANCE
  - C. PAINT AND PRIMER SPECIFICATIONS FOR BOLLARD
  - D. CAPACITY STAMPING PROCEDURE AND MATERIALS
  - E. SHOP DRAWINGS
- TIMBER FENDERS
  - A. LETTER OF CERTIFICATION FROM THE SUPPLIER STATING THE SPECIES, GRADE, AND MOISTURE CONTENT OF THE MEMBER.
  - B. MATERIAL SPECIFICATIONS FOR BOLTS, NUTS, WASHERS, ANGLES AND OTHER CONNECTION HARDWARE
  - C. END SEALER PRODUCT AND AND SPECIFICATIONS
  - D. SEAL COAT PRODUCT AND SPECIFICATIONS
  - E. WARRANTY LETTER DUE TO MOISTURE CONTENT OF FENDERS (IF REQUIRED)
- MARINE PILE COATINGS
  - A. COATING REPAIR PROCESS
  - B. COATING PRODUCT AND MATERIAL SPECIFICATIONS
- VIBRO COMPACTION
  - A. VIBRO COMPACTION EQUIPMENT AND PROCEDURE
- CAMEL SYSTEMS
  - A. GENERAL ARRANGEMENTS OF CAMELS
  - B. DESIGN DATA, CALCULATIONS, AND DRAWINGS FOR CAMEL SYSTEMS
  - C. MATERIAL SPECIFICATIONS FOR CAMEL SYSTEMS INCLUDING HARDWARE
  - D. INSTALLATION AND REMOVAL PROCEDURES OF CAMEL SYSTEMS
- CLEATS
  - A. PRODUCT DATA AND TECHNICAL SPECIFICATION
  - B. CLEAT LOAD RATING AND CERTIFICATE OF CONFORMANCE
  - C. PAINT AND PRIMER SPECIFICATIONS FOR CLEAT
- SITE SAFETY AND SITE CONTINGENCY PLAN
  - A. CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A SITE SAFETY AND SITE CONTINGENCY PLAN, AND ADHEREING TO THE RESPONSE ACTION PLAN (RAP) ADDRESSING THE REQUIREMENTS SET FORTH IN 29 CFR 1910.120
- TESTING AGENCY
  - A. QUALIFICATIONS
- SELECTIVE SITE DEMOLITION
  - A. WORK SEQUENCE
- SURVEY
  - A. EXPERIENCED LAND SURVEYOR QUALIFICATIONS AND SUPERVISION

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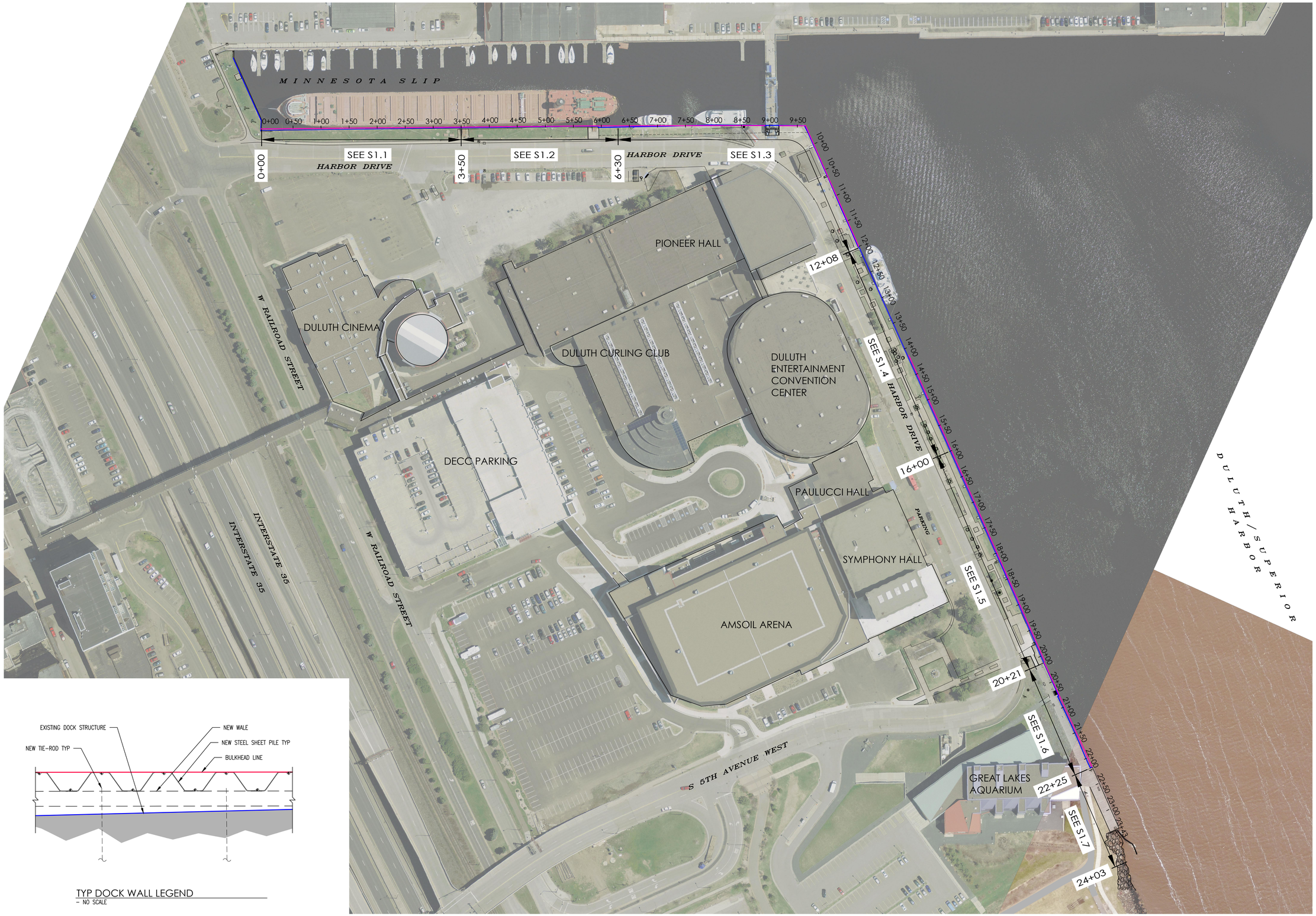
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

General Notes

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S0.1



TYP DOCK WALL LEGEND
– NO SCALE

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DECC Seawall Project
City of Duluth
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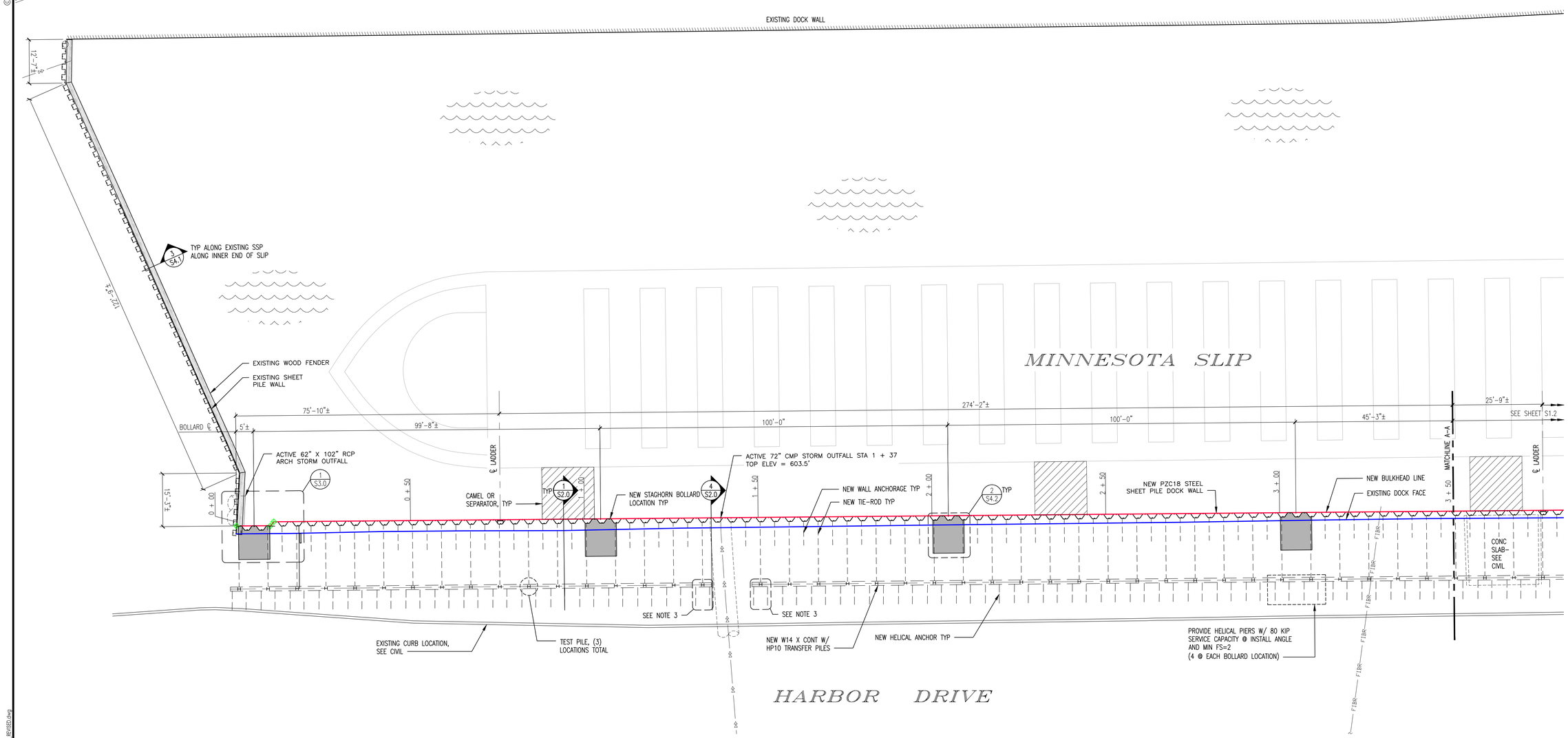
Duluth, Minnesota

Project Overview Plan

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S1.0



N

1 S1.1 **DOCK WALL STATION 0 + 00 TO 3 + 50**

SCALE: 1" = 15'-0"

1. FLOATING DOCKS ALONG EAST SIDE OF MN SLIP NOT SHOWN FOR CLARITY.
2. SEE S0.0 FOR H-PILE AND HELICAL TESTING REQUIREMENTS.
3. CONTRACTOR SHALL PROVIDE HELICAL PIERS W/ INCREASED AXIAL SERVICE CAPACITY IF TIE-ROD SPACING EXCEEDS TYPICAL SPACING DUE TO STORM OUTFALL (CONTRACTOR SHALL ACCOUNT FOR A MAX AXIAL SERVICE CAPACITY OF 80 KIPS)

CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF TEMPORARY CAMEL OR SEPARATOR SYSTEM. CAMEL/SEPARATOR SHALL BE DESIGNED TO PROVIDE ADEQUATE SEPARATION FOR INSTALLATION ON NEW SSP DOCK WALL. ANY DAMAGE TO COATING DUE TO CAMEL/SEPARATOR SYSTEM IS THE RESPONSIBILITY OF THE CONTRACTOR.

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DECC Seawall Project
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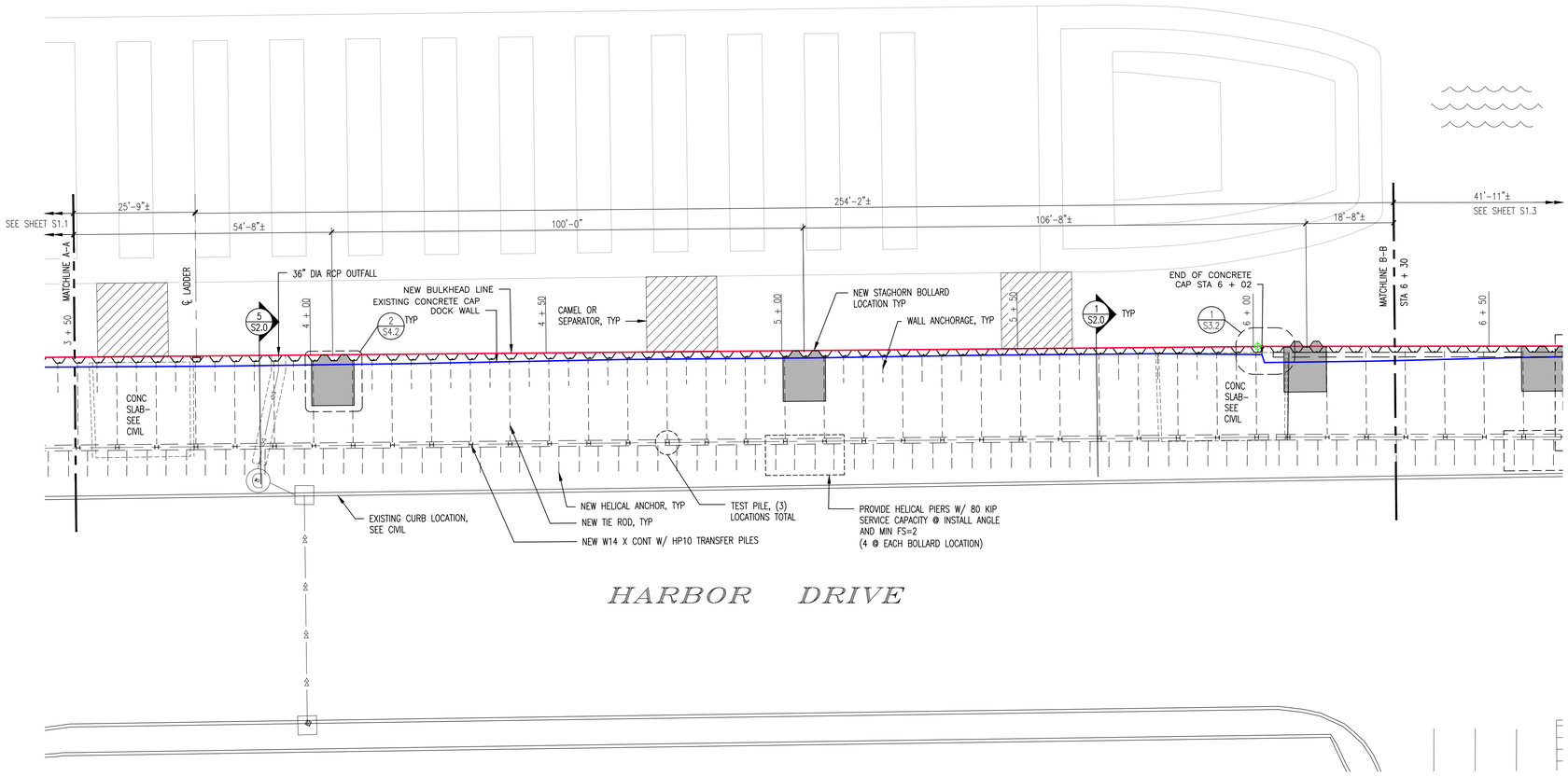
Dock Site Plan
Station 0+00 to 3+50 &
Inner End of MN Slip

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET: S1.1



1 / S1.2 DOCK WALL STATION 3 + 50 TO 6 + 30

SCALE: 1" = 15'-0"

1. SEE S0.0 FOR H-PILE AND HELICAL TESTING REQUIREMENTS.

CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF TEMPORARY CAMEL OR SEPARATOR SYSTEM. CAMEL/SEPARATOR SHALL BE DESIGNED TO PROVIDE ADEQUATE SEPARATION FOR INSTALLATION ON NEW SSP DOCK WALL. ANY DAMAGE TO COATING DUE TO CAMEL/SEPARATOR SYSTEM IS THE RESPONSIBILITY OF THE CONTRACTOR.

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Dock Site Plan
Station 3+50 to 6+30

JOB No: 161080
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DESIGNED BY: CWS

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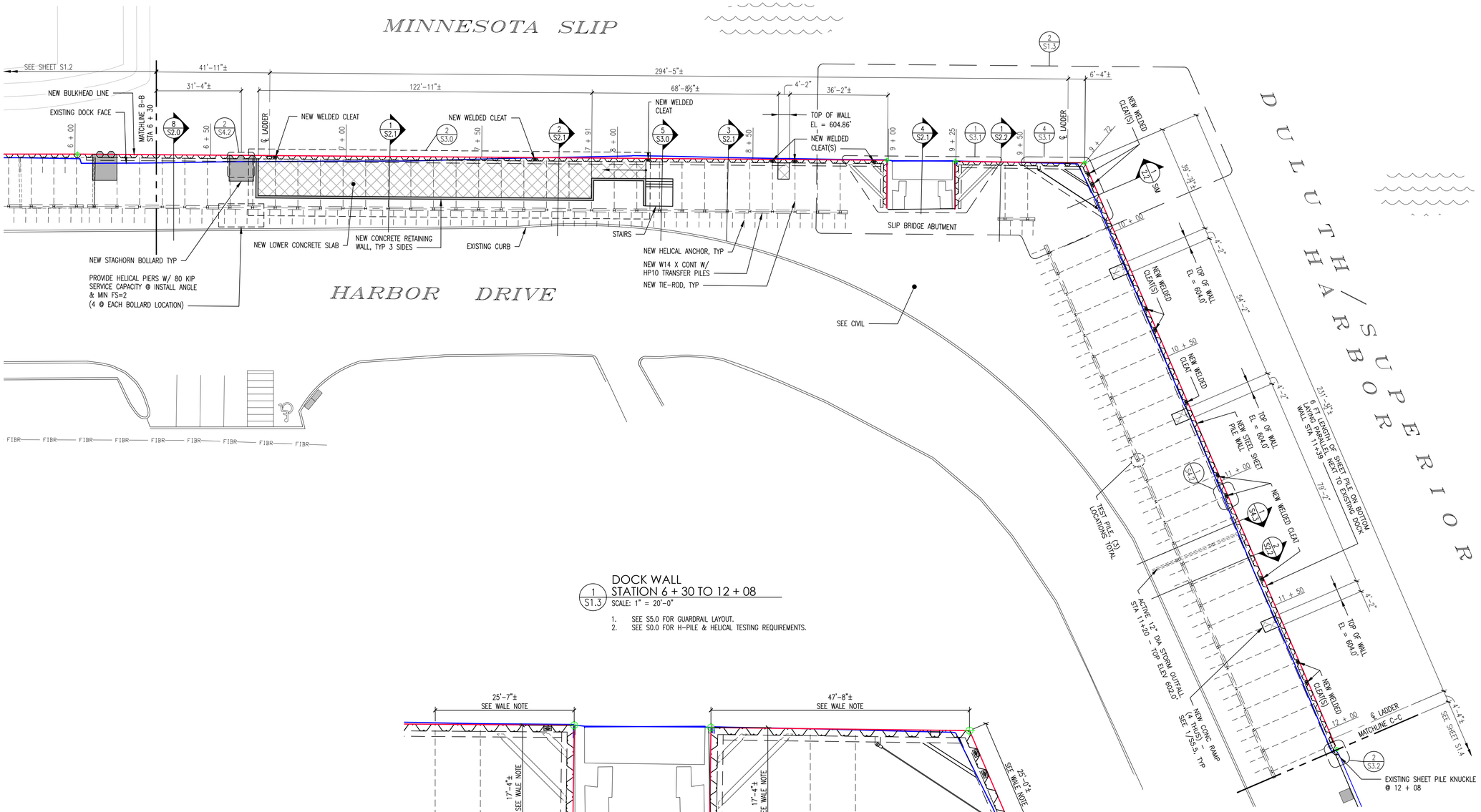
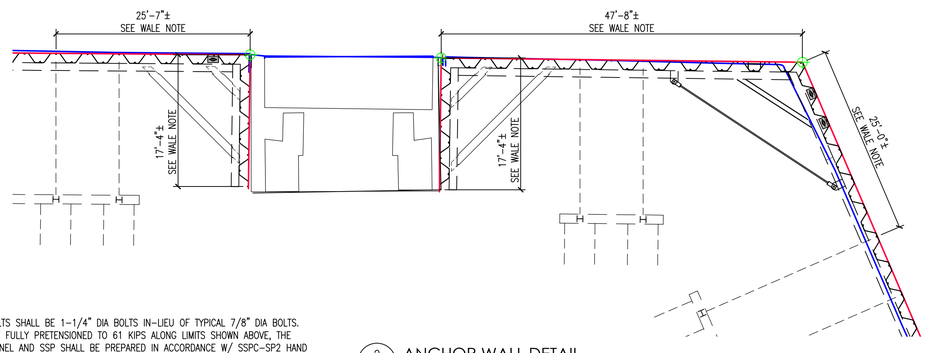


1 S1.3 DOCK WALL STATION 6 + 30 TO 12 + 08

SCALE: 1" = 20'-0"

1. SEE S5.0 FOR GUARDRAIL LAYOUT.
2. SEE S0.0 FOR H-PILE & HELICAL TESTING REQUIREMENTS.



WALE NOTES:

1. SSP TO WALE CONNECTION BOLTS SHALL BE 1-1/4" DIA BOLTS IN-LIEU OF TYPICAL 7/8" DIA BOLTS.
2. SSP TO WALE BOLTS SHALL BE FULLY PRETENSIONED TO 61 KIPS ALONG LIMITS SHOWN ABOVE, THE FAYING SURFACE OF THE CHANNEL AND SSP SHALL BE PREPARED IN ACCORDANCE W/ SSPC-SP2 HAND TOOL CLEANING SPECIFICATION.
3. WALE SHALL BE CONTINUOUS (NO SPLICES) ALONG THIS SECTION.
4. BEVEL WASHERS SHALL BE UTILIZED WHEN SURFACES OR PARTS IN CONTACT W/ BOLT HEAD AND NUT EXCEEDS A SLOPE OF 1:20.

2 S1.3 ANCHOR WALL DETAIL

SCALE: 1" = 10'-0"

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Dock Site Plan
Station 6+30 to 12+08

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SHEET: S1.3

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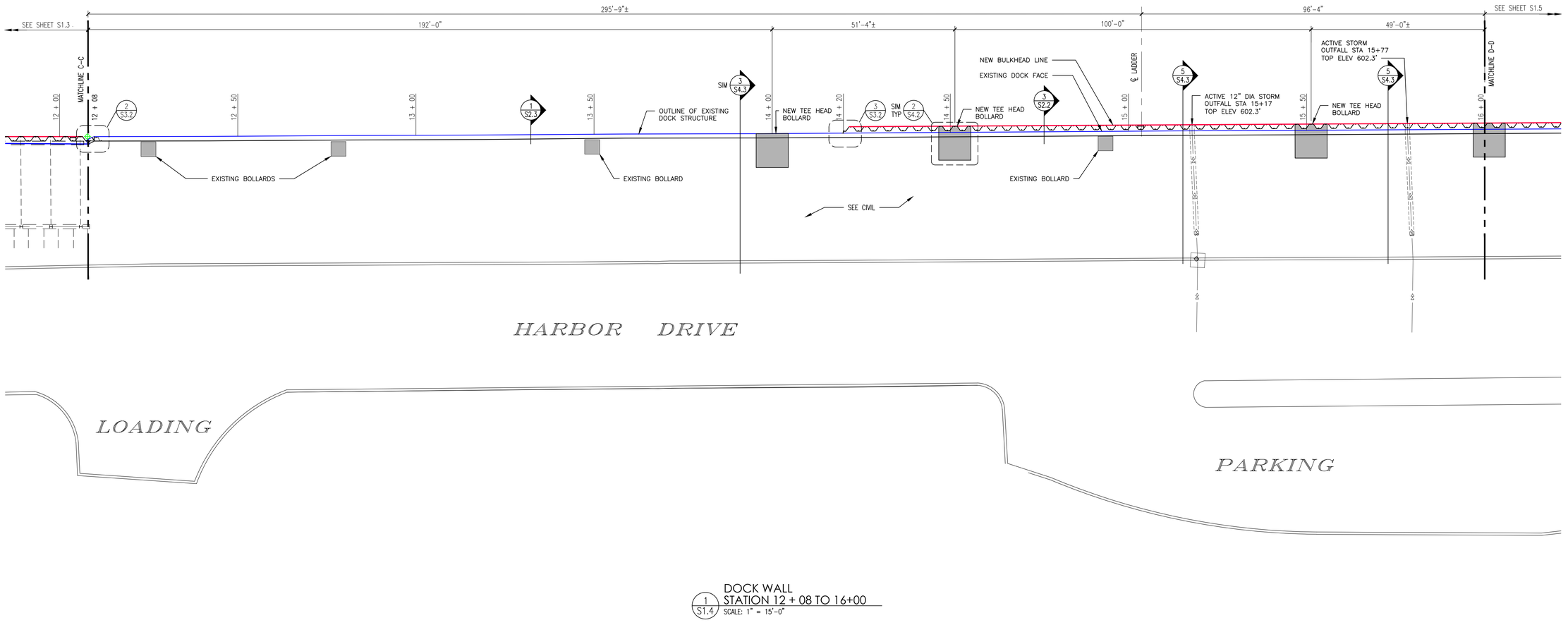

1 / S1.4 DOCK WALL
STATION 12 + 08 TO 16+00
SCALE: 1" = 15'-0"

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Dock Site Plan
Station 12+08 to 16+00

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DESIGNED BY: CWS

SHEET: S1.4

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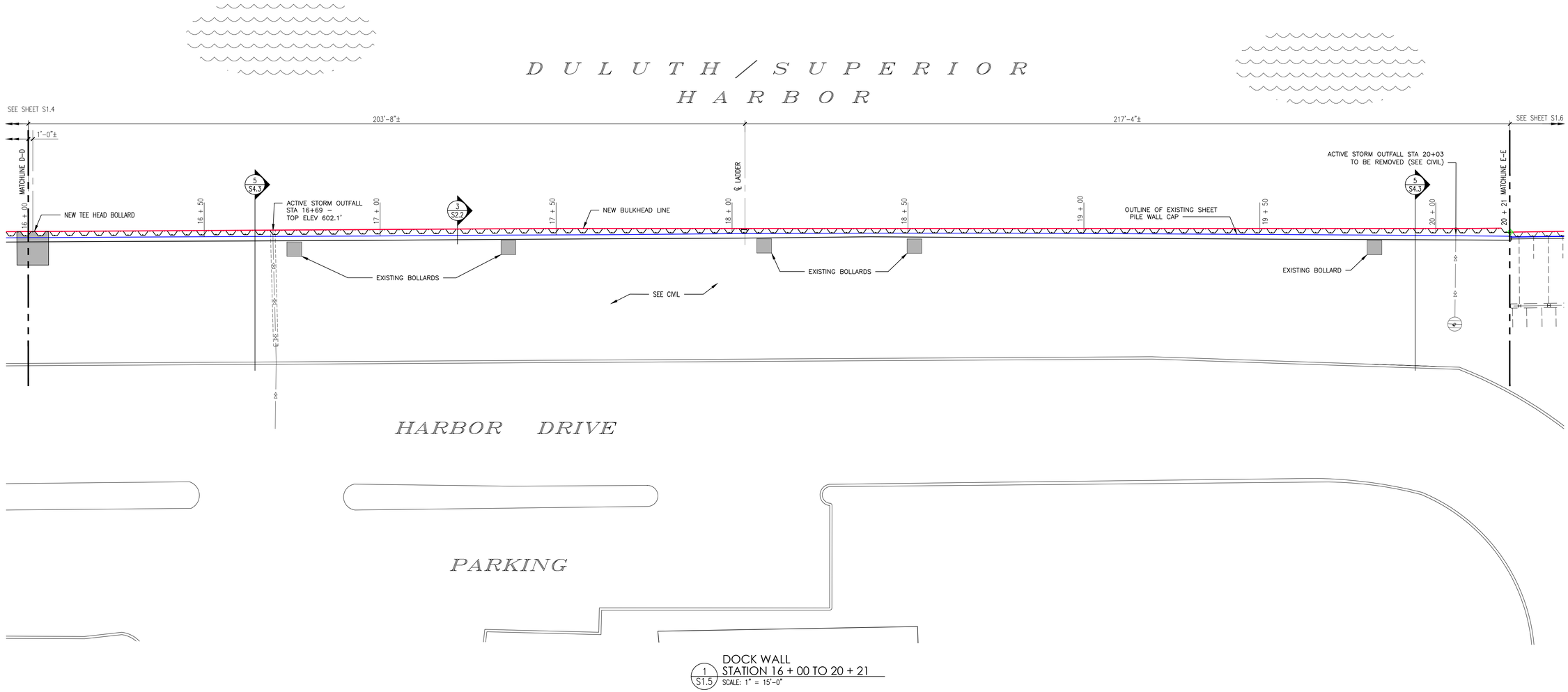

1 S1.5 DOCK WALL
STATION 16 + 00 TO 20 + 21
SCALE: 1" = 15'-0"

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Dock Site Plan
Station 16+00 to 20+21

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DATE: 10-31-17
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DESIGNED BY: CWS

SHEET: S1.5

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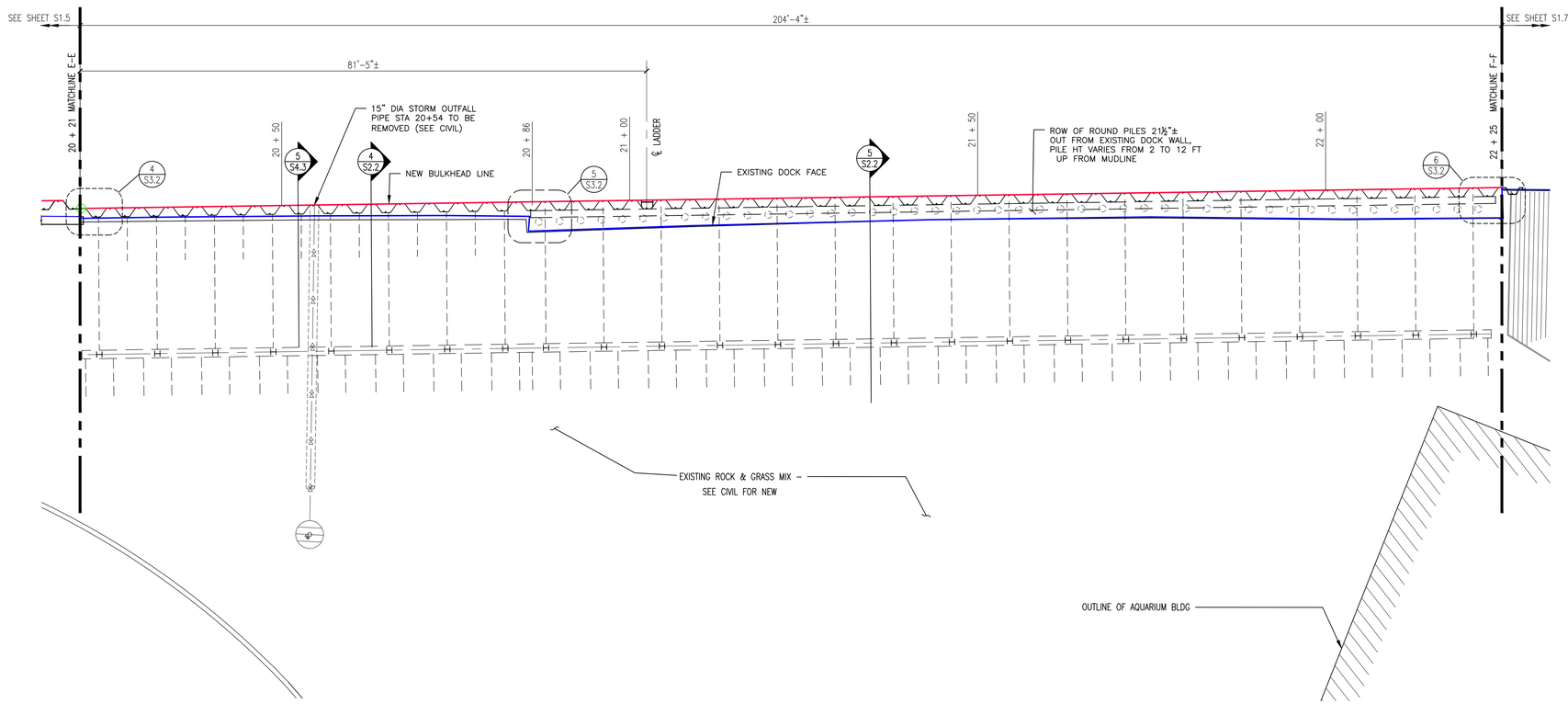

1 S1.6 DOCK WALL
STATION 20 + 21 TO 22 + 25
SCALE: 1" = 10'-0"

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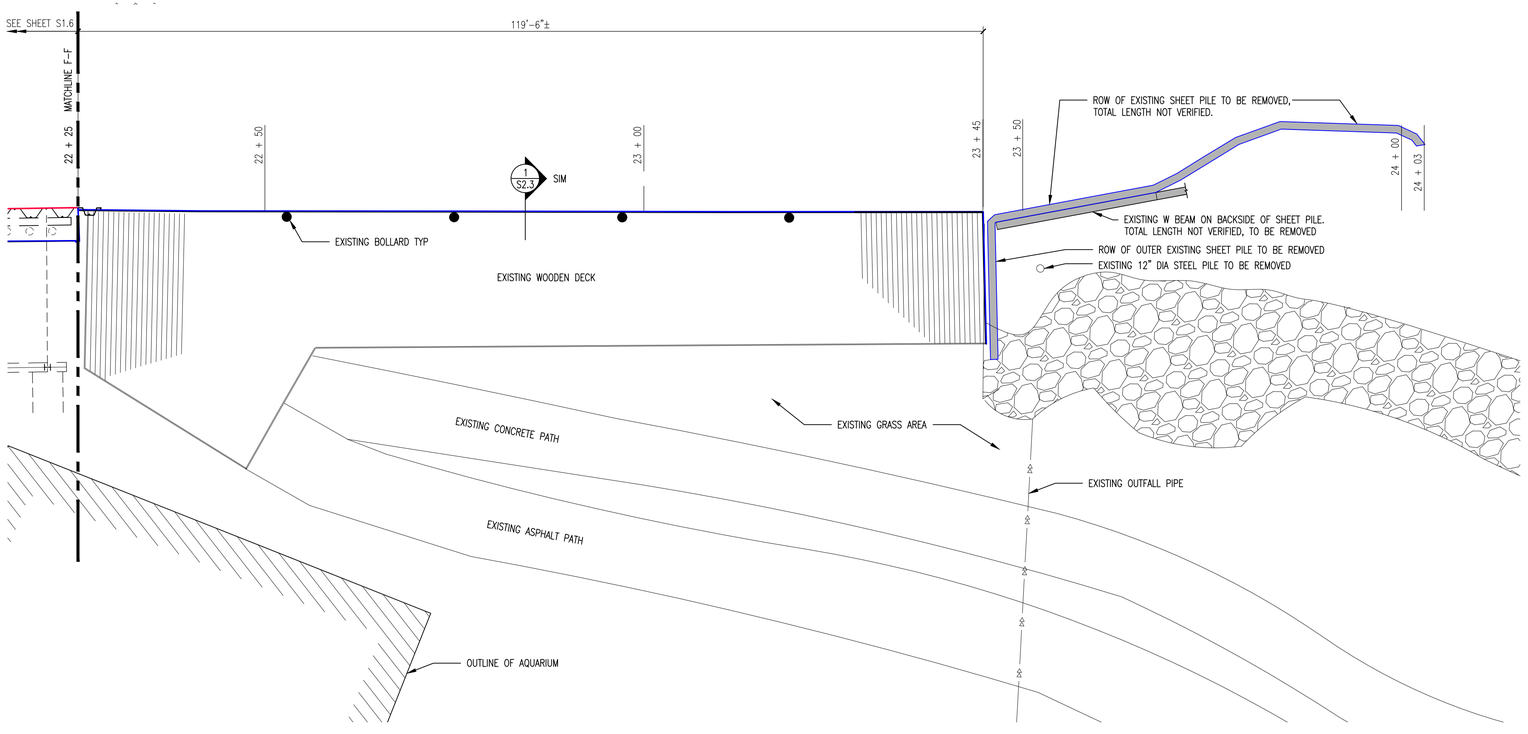
Dock Site Plan
Station 20+21 to 22+25

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET: S1.6

DULUTH / SUPERIOR HARBOR



1
S1.7
DOCK WALL PLAN
STATION 22 + 25 TO 24 + 03
SCALE: 1" = 10'-0"

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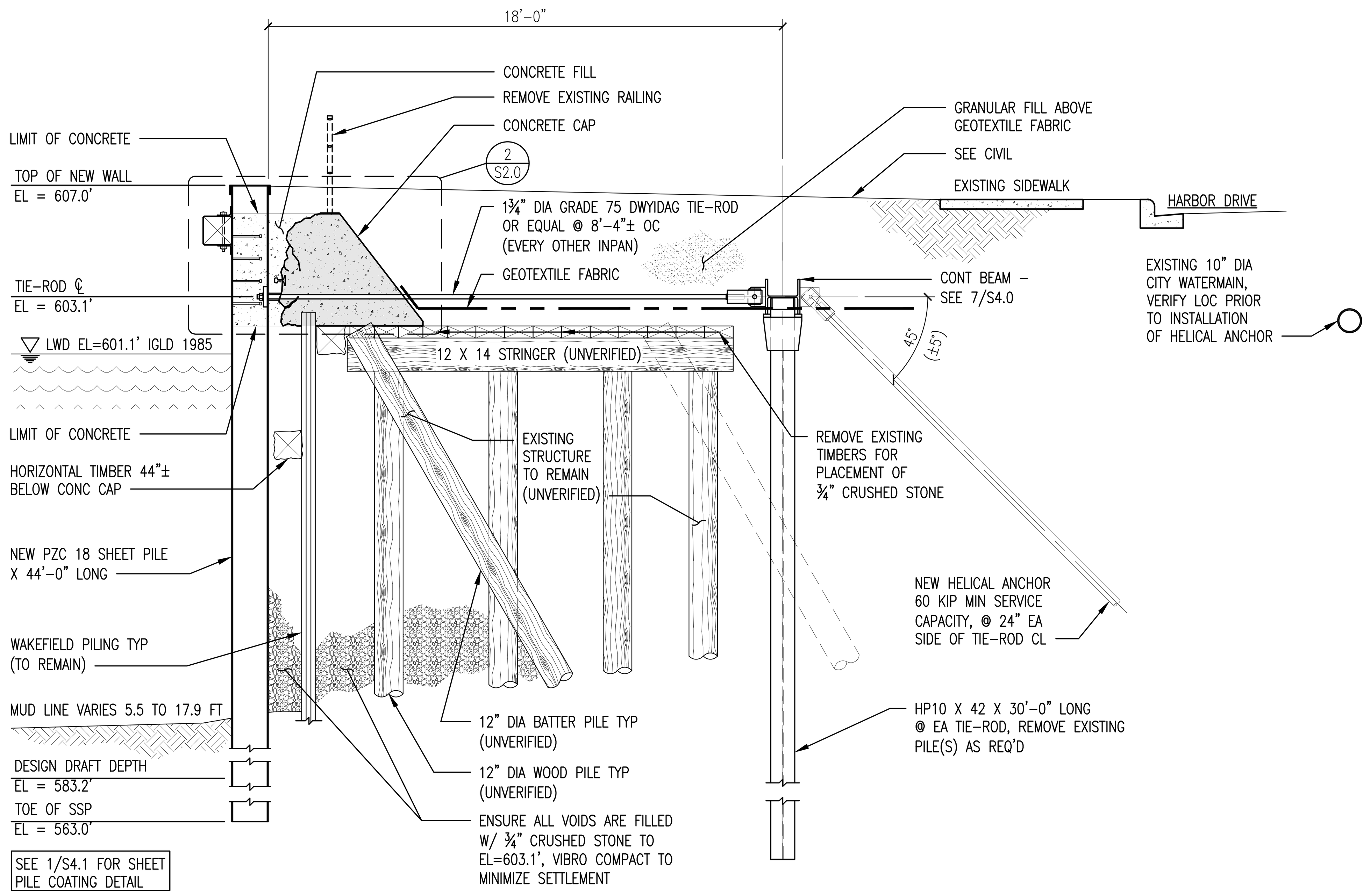
Dock Site Plan
Station 22+25 to 24+03

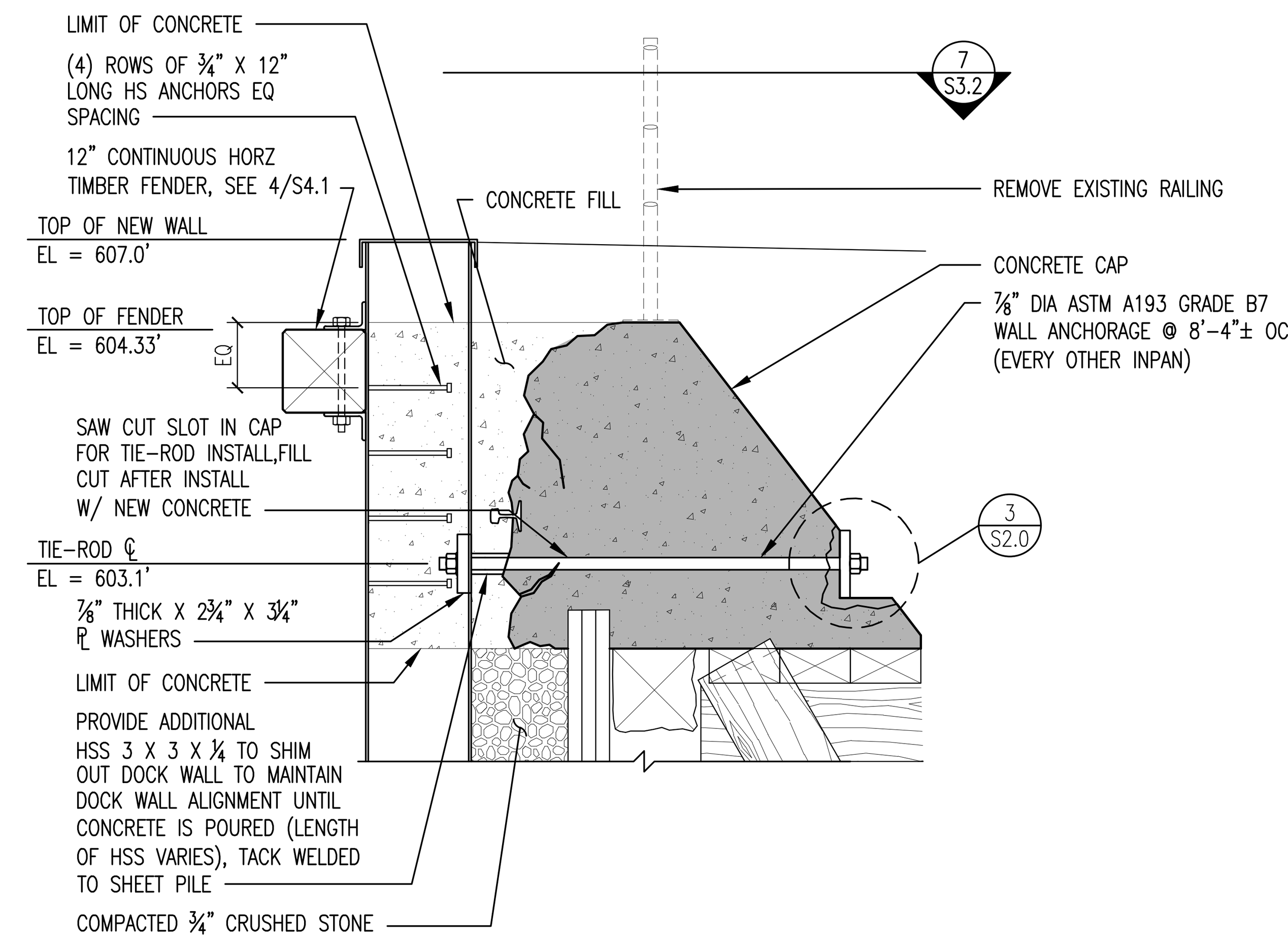
JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S1.7

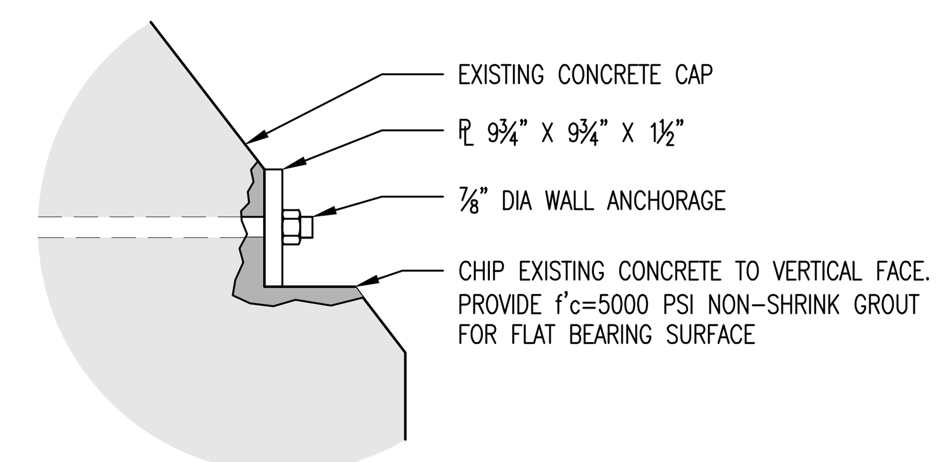


1 / S2.0 TYPICAL DOCK SECTION @ CONCRETE CAP
STA 0 + 00 TO 6 + 02
SCALE: 1/4" = 1'-0"

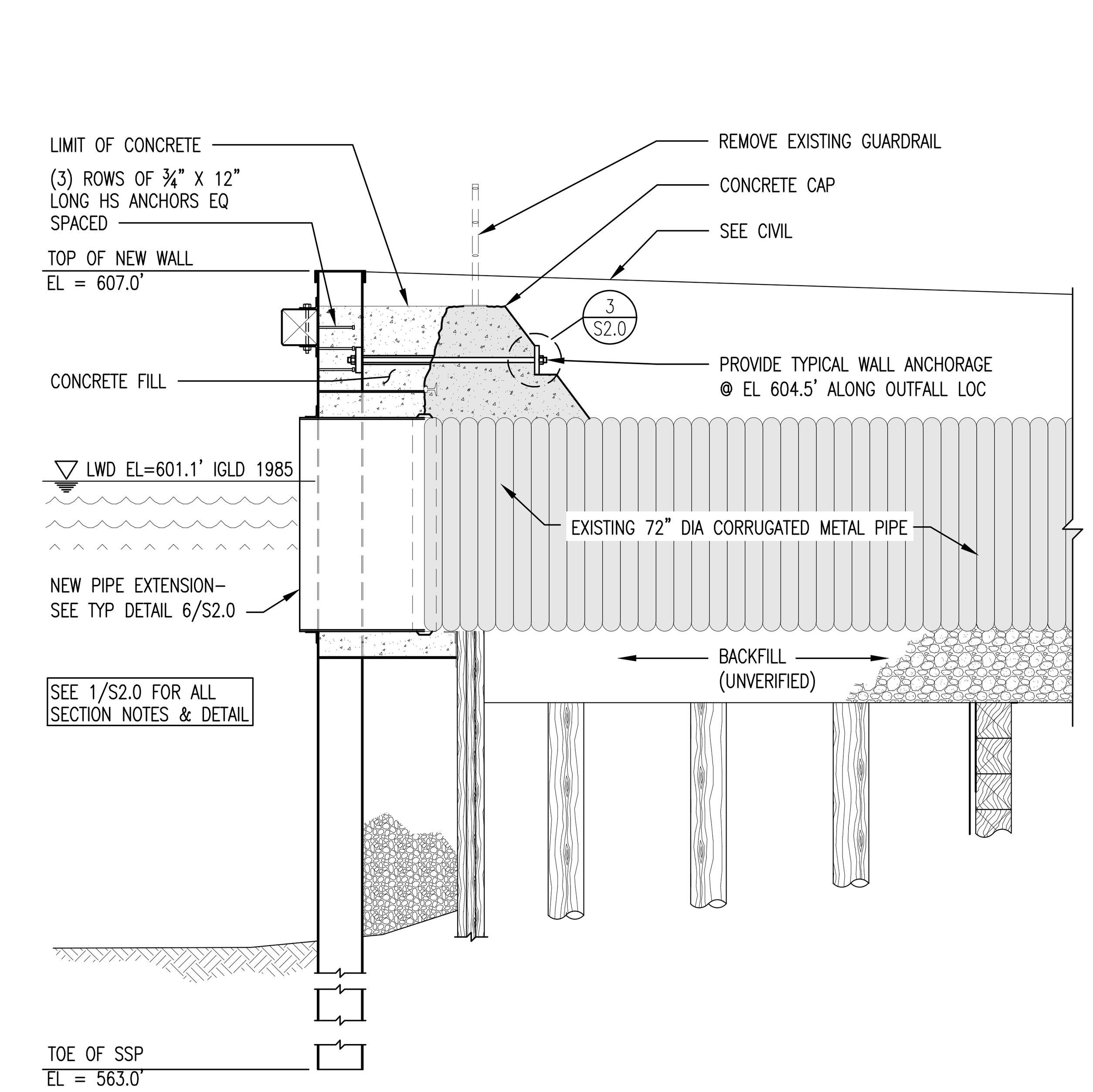
1. GEOTEXTILE FABRIC SHALL EXTEND THE LIMITS OF EXCAVATION & EXTEND A MINIMUM OF 1'-0" UP BACKSIDE OF CONCRETE CAP.



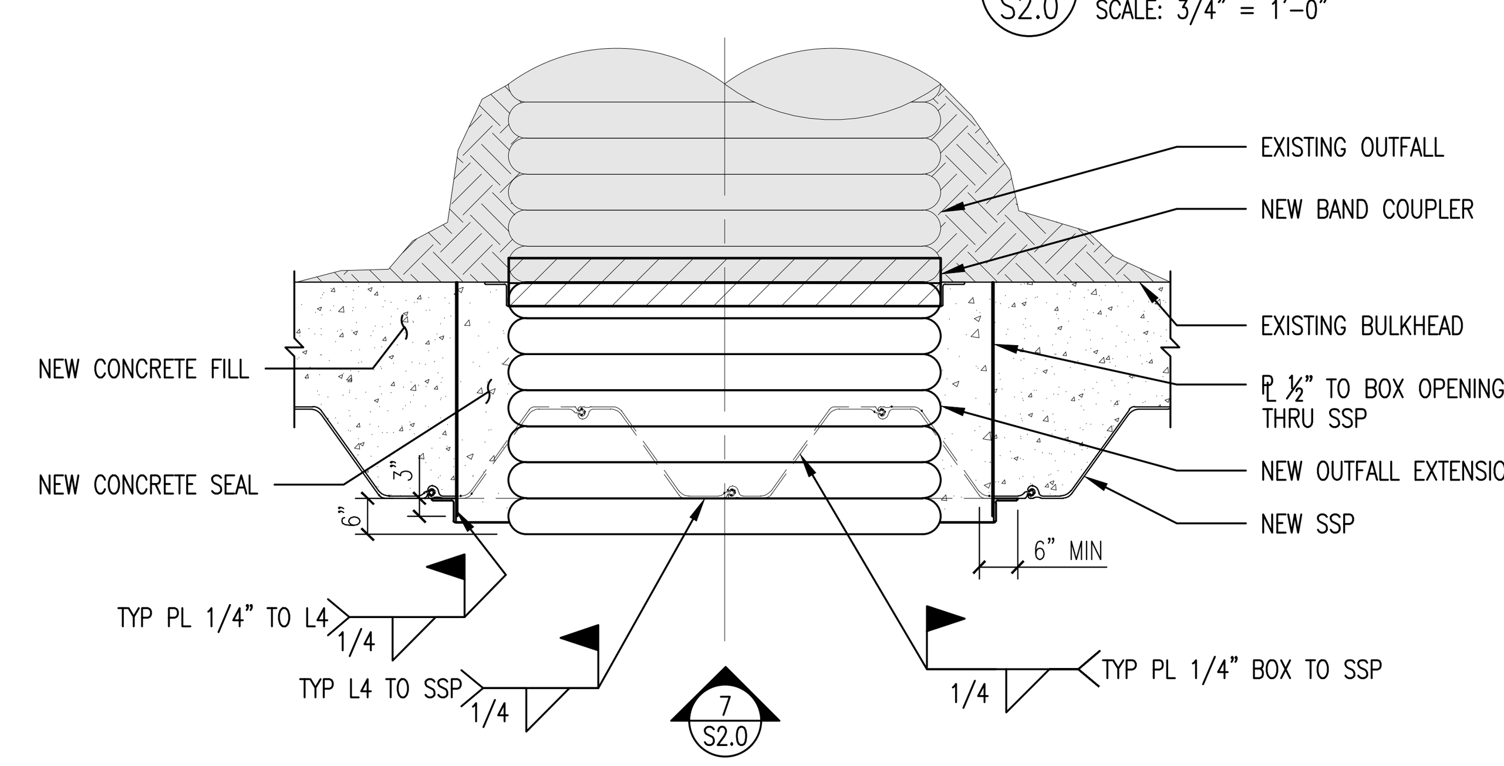
2 / S2.0 TYPICAL DOCK SECTION @ TIE-ROD
STA 0 + 00 TO 6 + 02
SCALE: 1/2" = 1'-0"



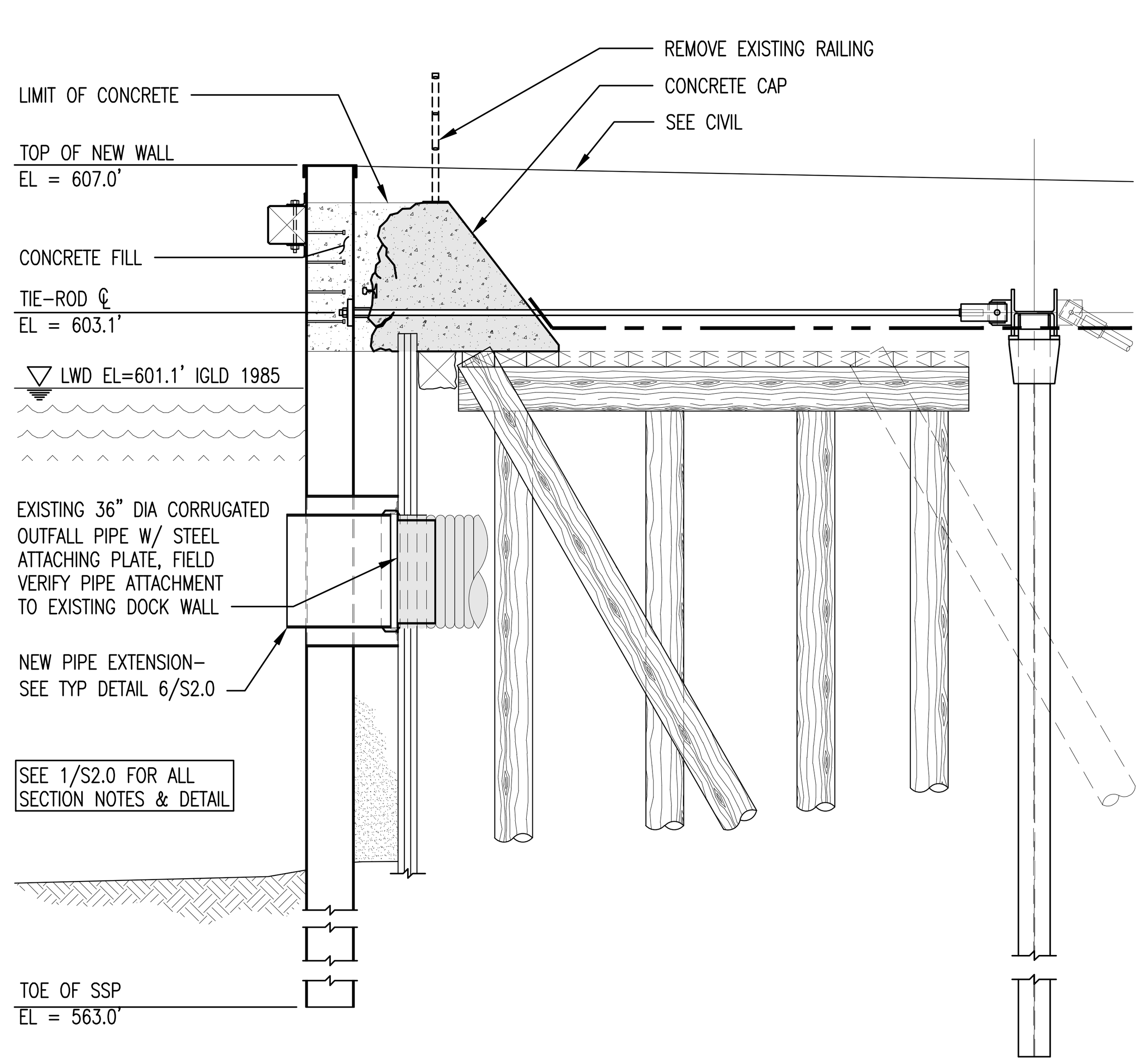
3 / S2.0 ANCHOR ROD BOLTING DETAIL
SCALE: 3/4" = 1'-0"



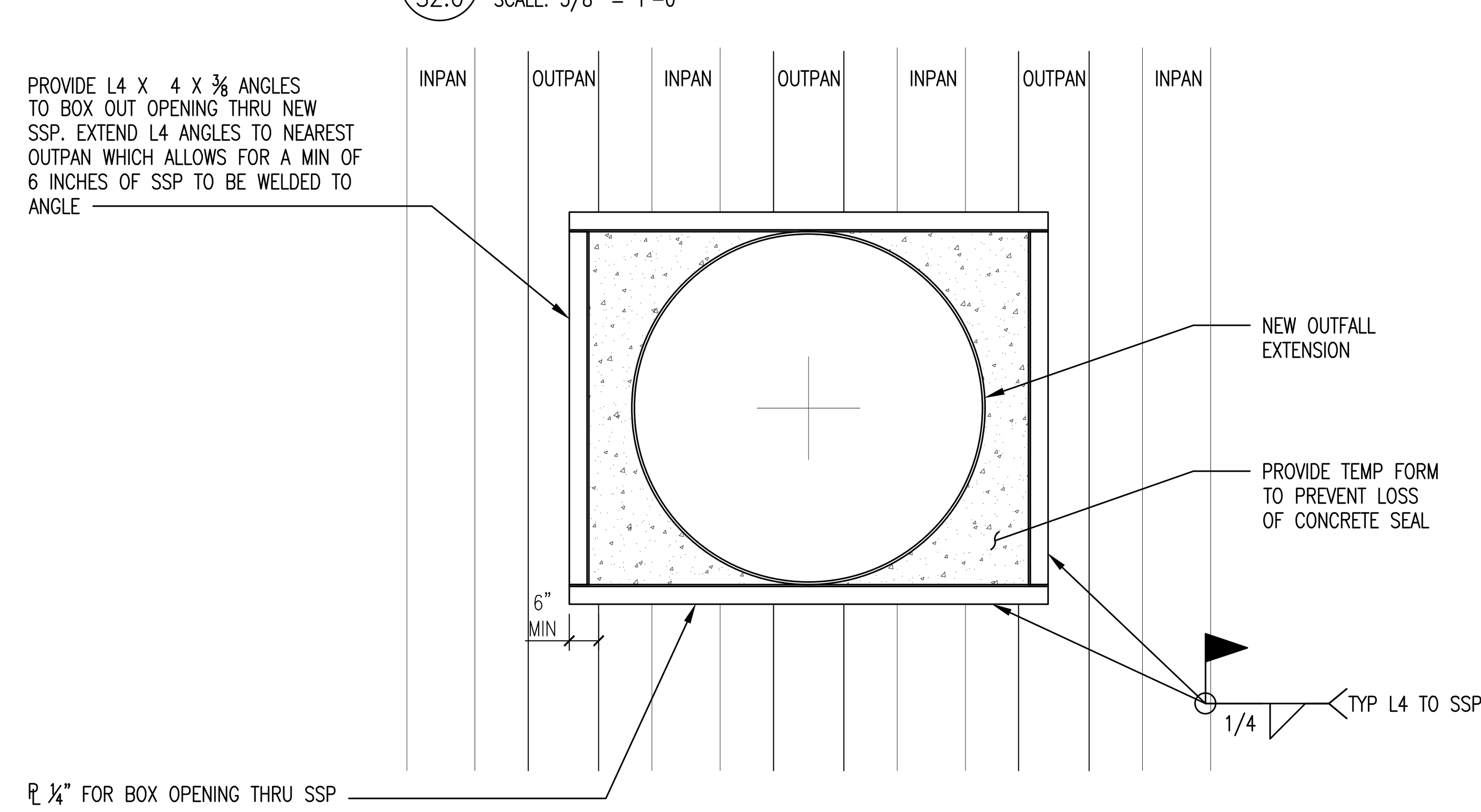
4 / S2.0 TYPICAL DOCK SECTION @ 72" DIA OUTFALL
STA 1 + 37
SCALE: 1/4" = 1'-0"



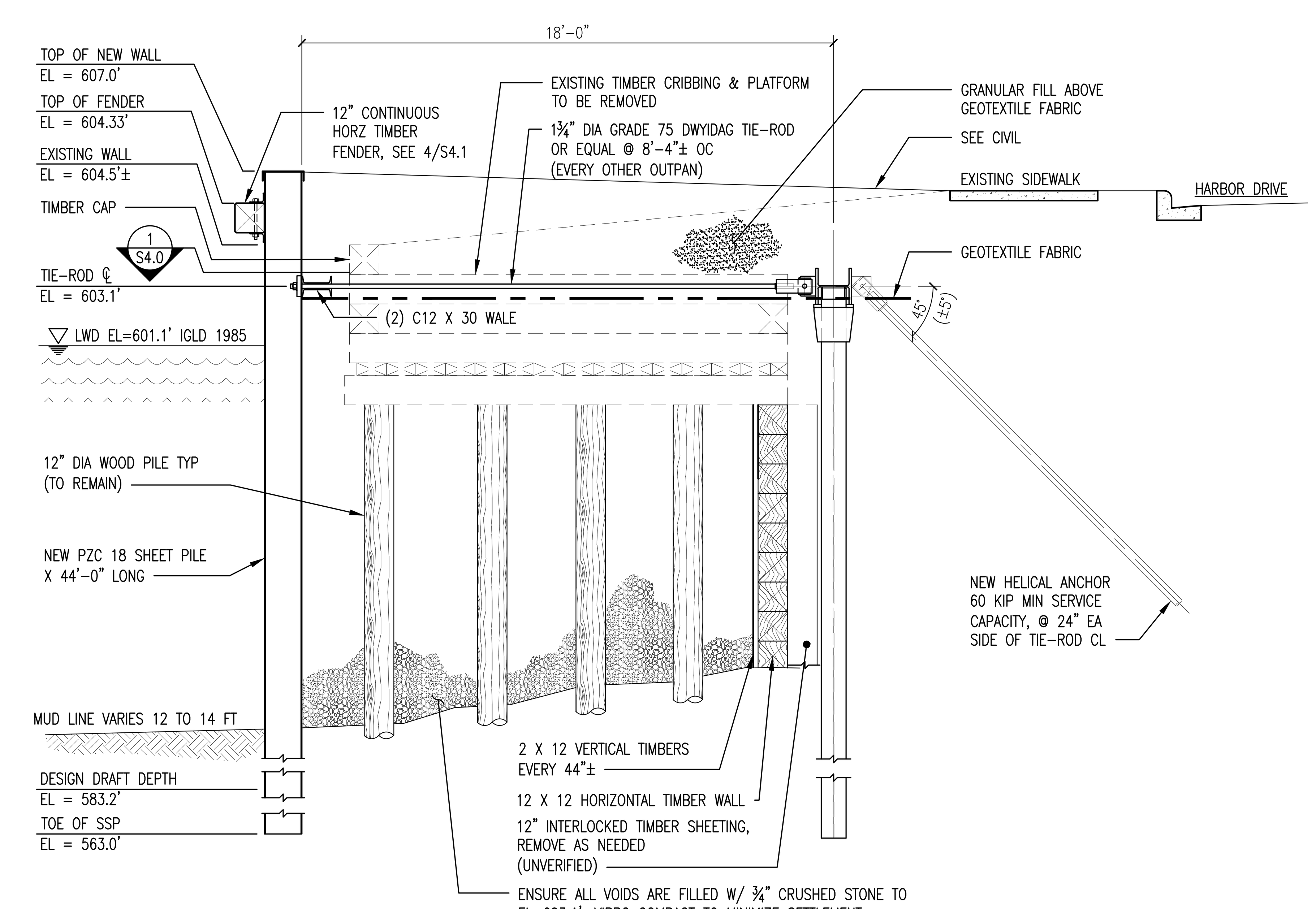
6 / S2.0 TYP OUTFALL EXTENSION SECTION
SCALE: 3/8" = 1'-0"



5 / S2.0 TYPICAL DOCK SECTION @ 36" DIA OUTFALL
STA 3 + 92
SCALE: 1/4" = 1'-0"



7 / S2.0 TYP OUTFALL EXTENSION ELEVATION
SCALE: 3/8" = 1'-0"



8 / S2.0 TYPICAL DOCK SECTION @ TIMBER CAP
STA 6 + 02 TO 6 + 65
SCALE: 1/4" = 1'-0"

1. THE GEOTEXTILE FABRIC SHALL EXTEND THE LIMITS OF EXCAVATION.

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City of Duluth
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Duluth, Minnesota

Dock Wall Sections

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S2.0

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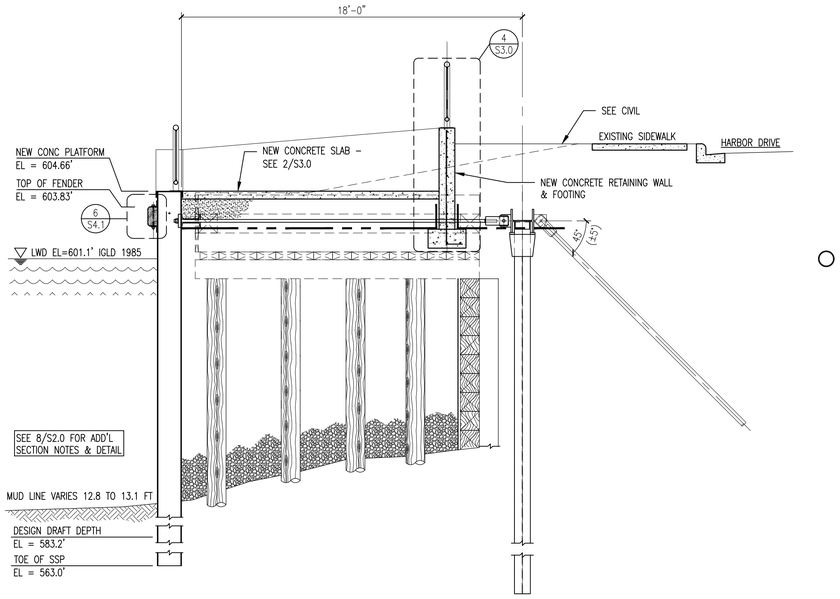
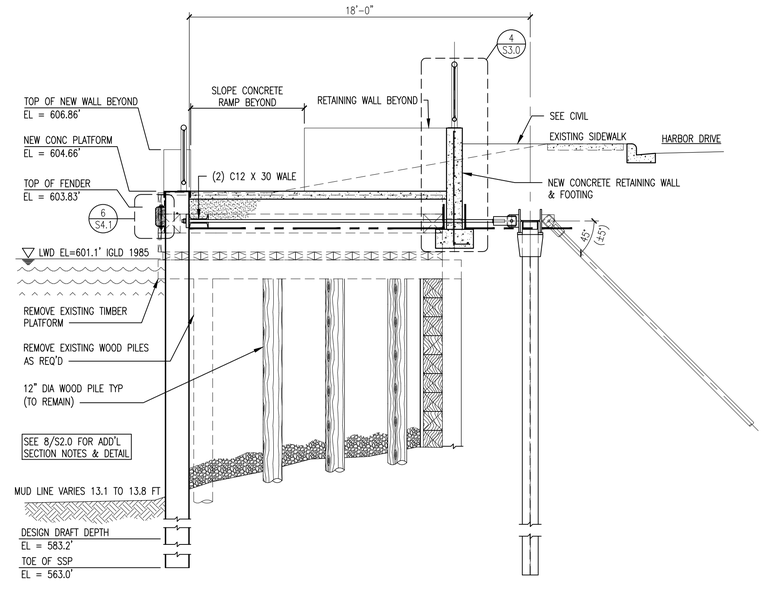


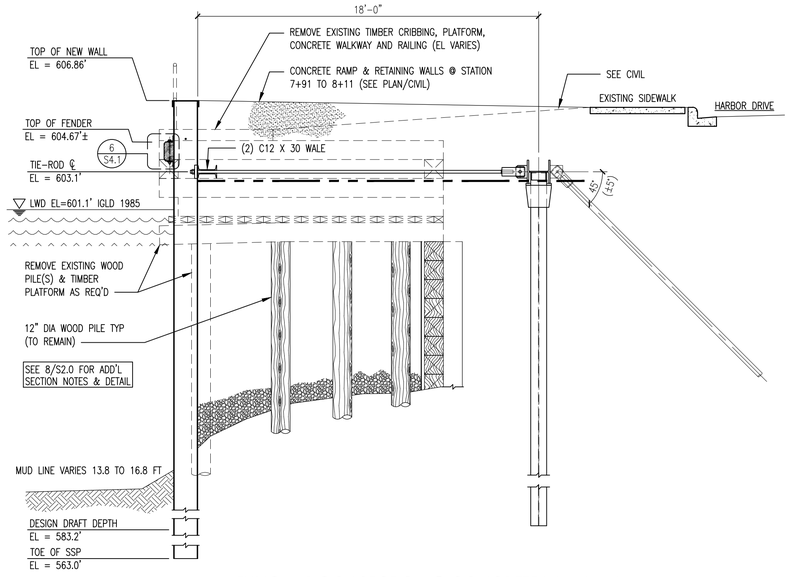
1 S2.1 TYPICAL DOCK SECTION @ LOWER PLATFORM
STA 6 + 65 TO 7 + 30±
SCALE: 1/4" = 1'-0"

1. EXTEND GEOTEXTILE FABRIC MINIMUM 1'-0" UP EACH SIDE OF NEW CONCRETE RETAINING WALL.
2. GEOTEXTILE FABRIC SHALL EXTEND LIMITS OF EXCAVATION.

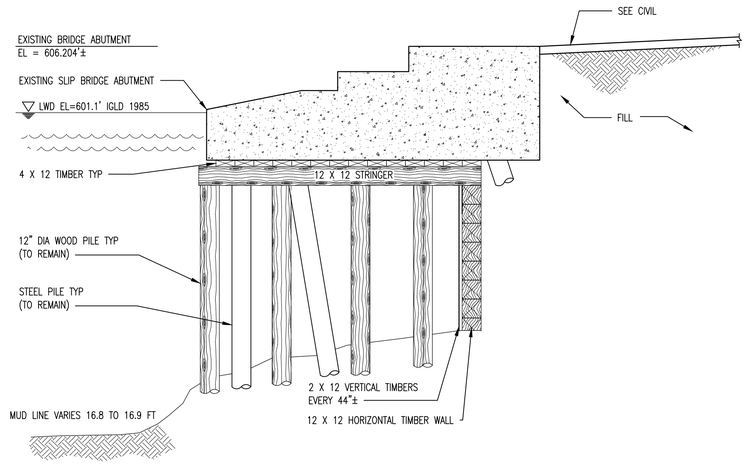


2 S2.1 TYPICAL DOCK SECTION @ LOWER PLATFORM
STA 7 + 30± TO 7 + 91
SCALE: 1/4" = 1'-0"

1. EXTEND GEOTEXTILE FABRIC MINIMUM 1'-0" UP EACH SIDE OF NEW CONCRETE RETAINING WALL.
2. GEOTEXTILE FABRIC SHALL EXTEND LIMITS OF EXCAVATION.



3 S2.1 TYPICAL DOCK SECTION @ CONCRETE WALKWAY
@ STA 7 + 91 TO 9 + 00
SCALE: 1/4" = 1'-0"



4 S2.1 SECTION @ SLIP BRIDGE ABUTMENT
@ STA 9 + 00 TO 9 + 25
SCALE: 1/4" = 1'-0"

SEE EXISTING REFERENCE DRAWINGS –
CITY OF DULUTH / MINNESOTA SLIP PEDESTRIAN BRIDGE

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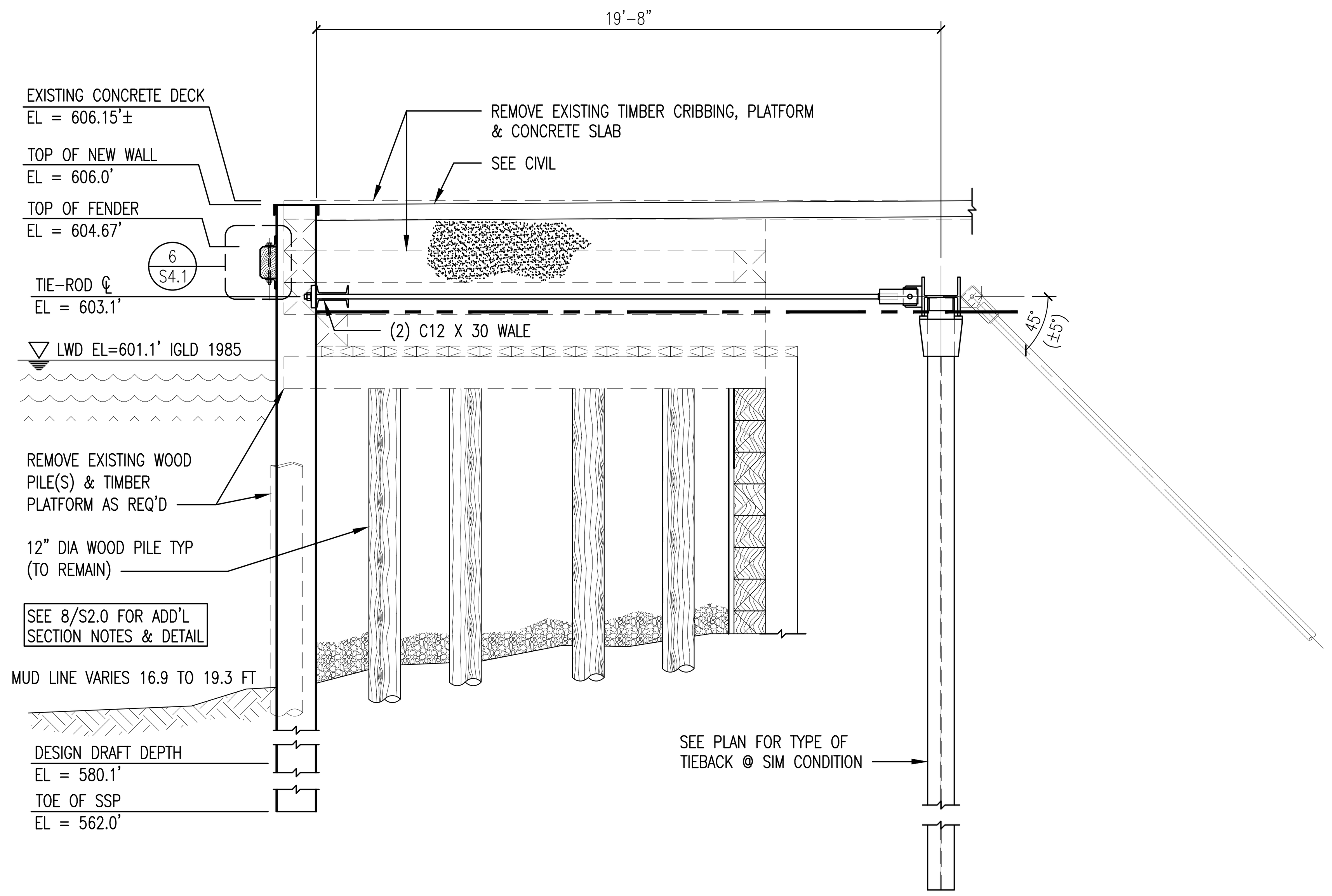
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

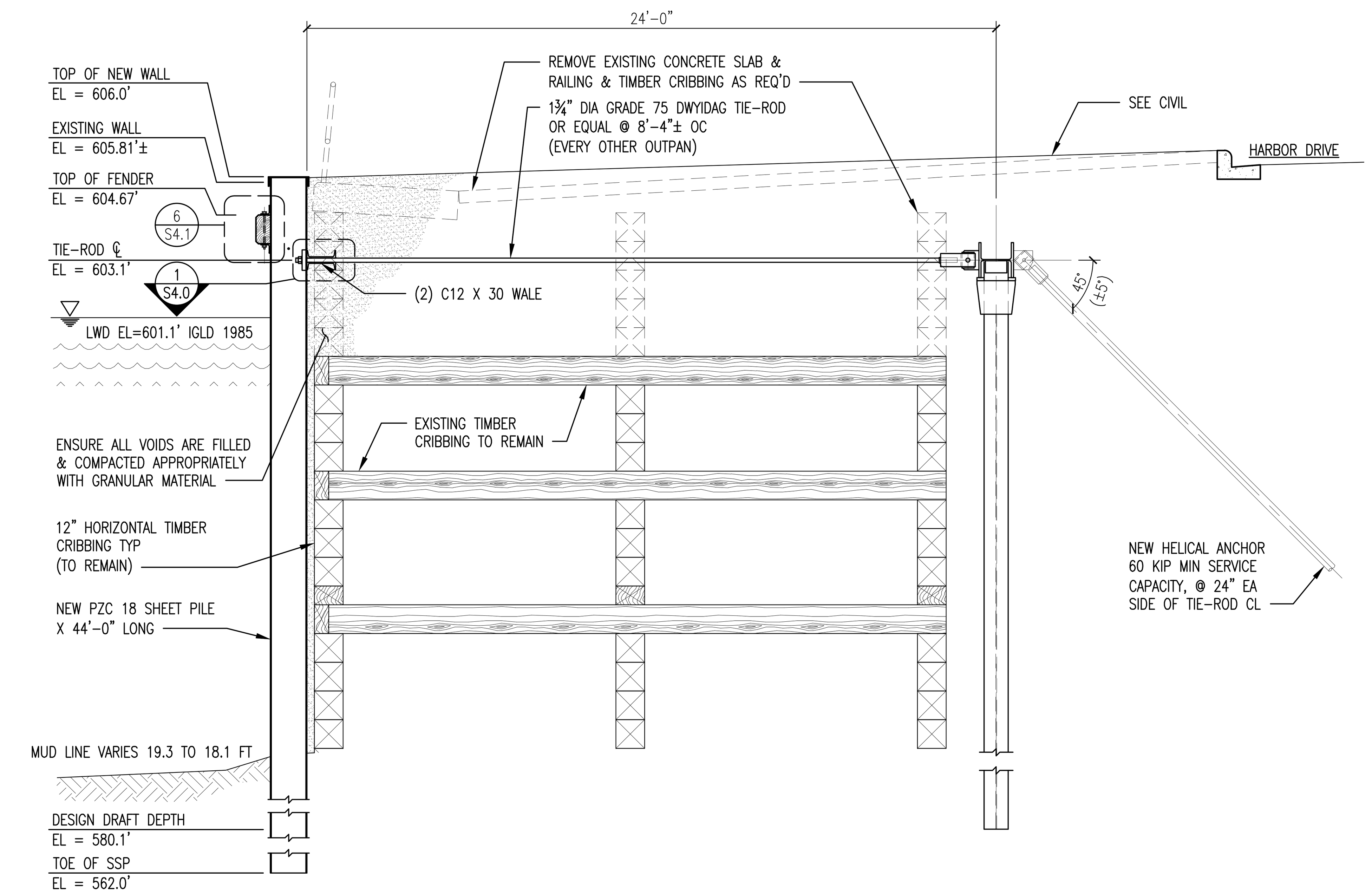
Dock Wall Sections

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

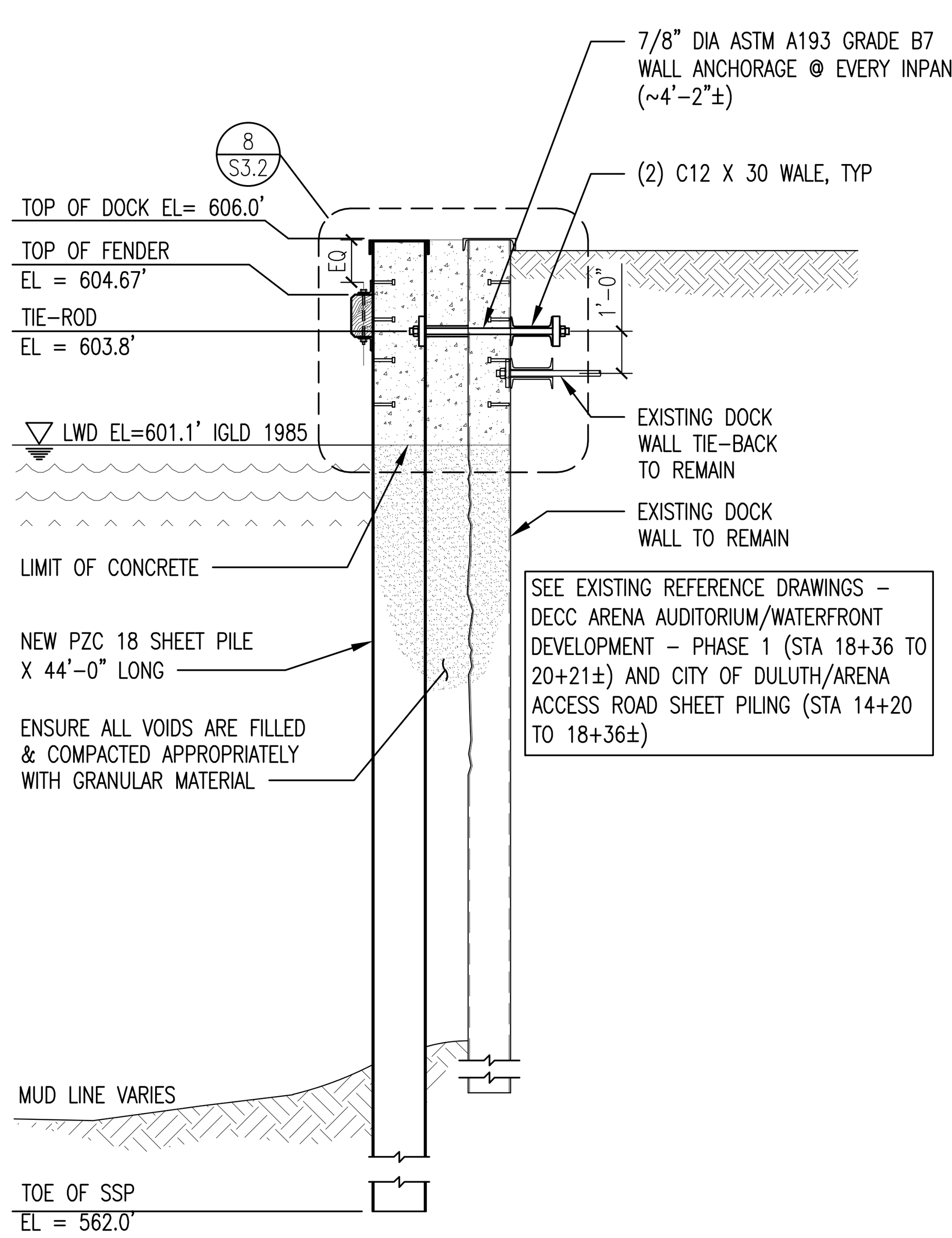
SHEET:
S2.1



1
S2.2
TYPICAL DOCK SECTION @ CONCRETE SLAB
STA 9 + 25 TO 9 + 85
SCALE: 1/4" = 1'-0"

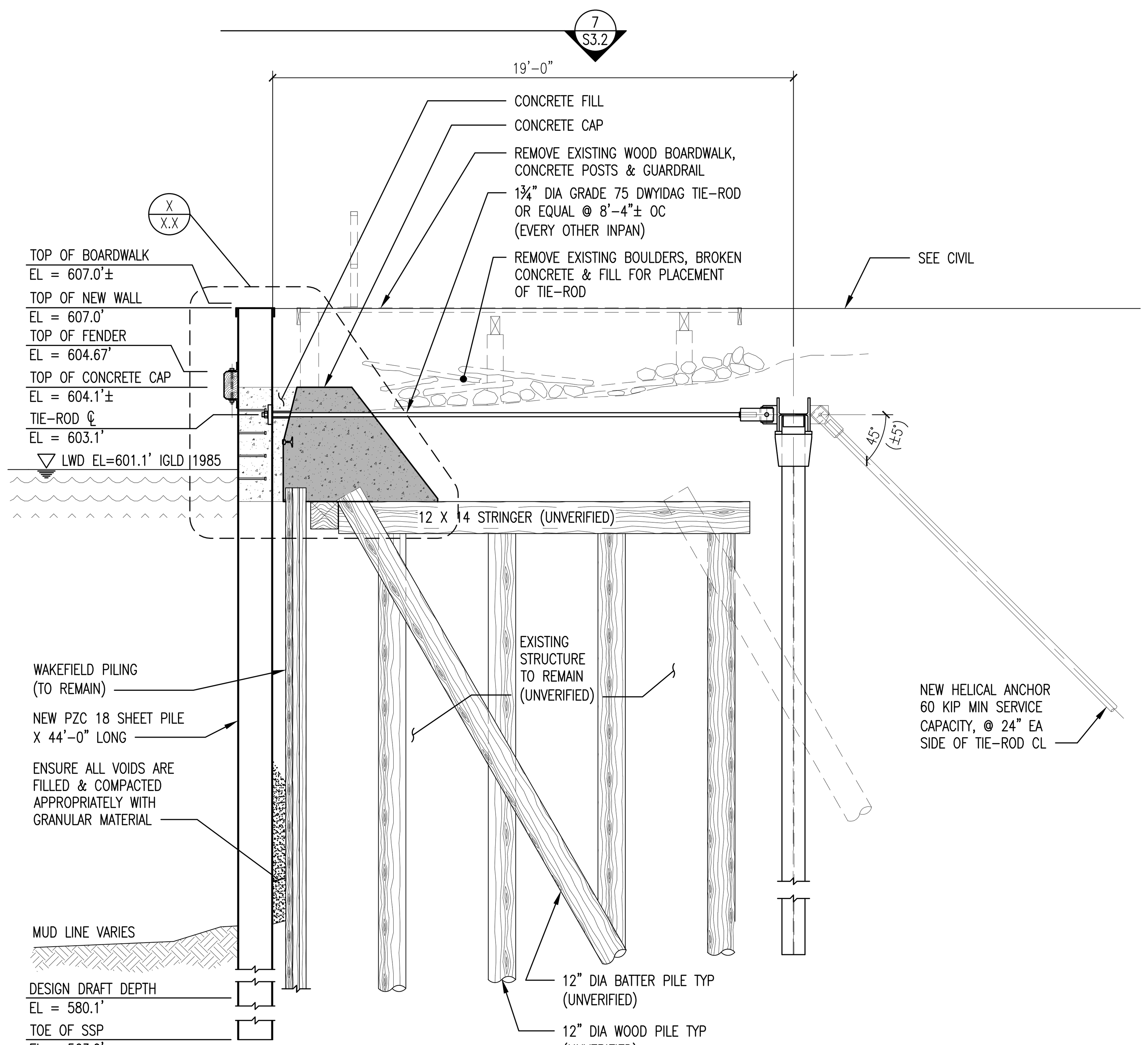


2
S2.2
TYPICAL DOCK SECTION @ CRIB WALL
STA 9 + 85 TO 12 +08
SCALE: 1/4" = 1'-0"

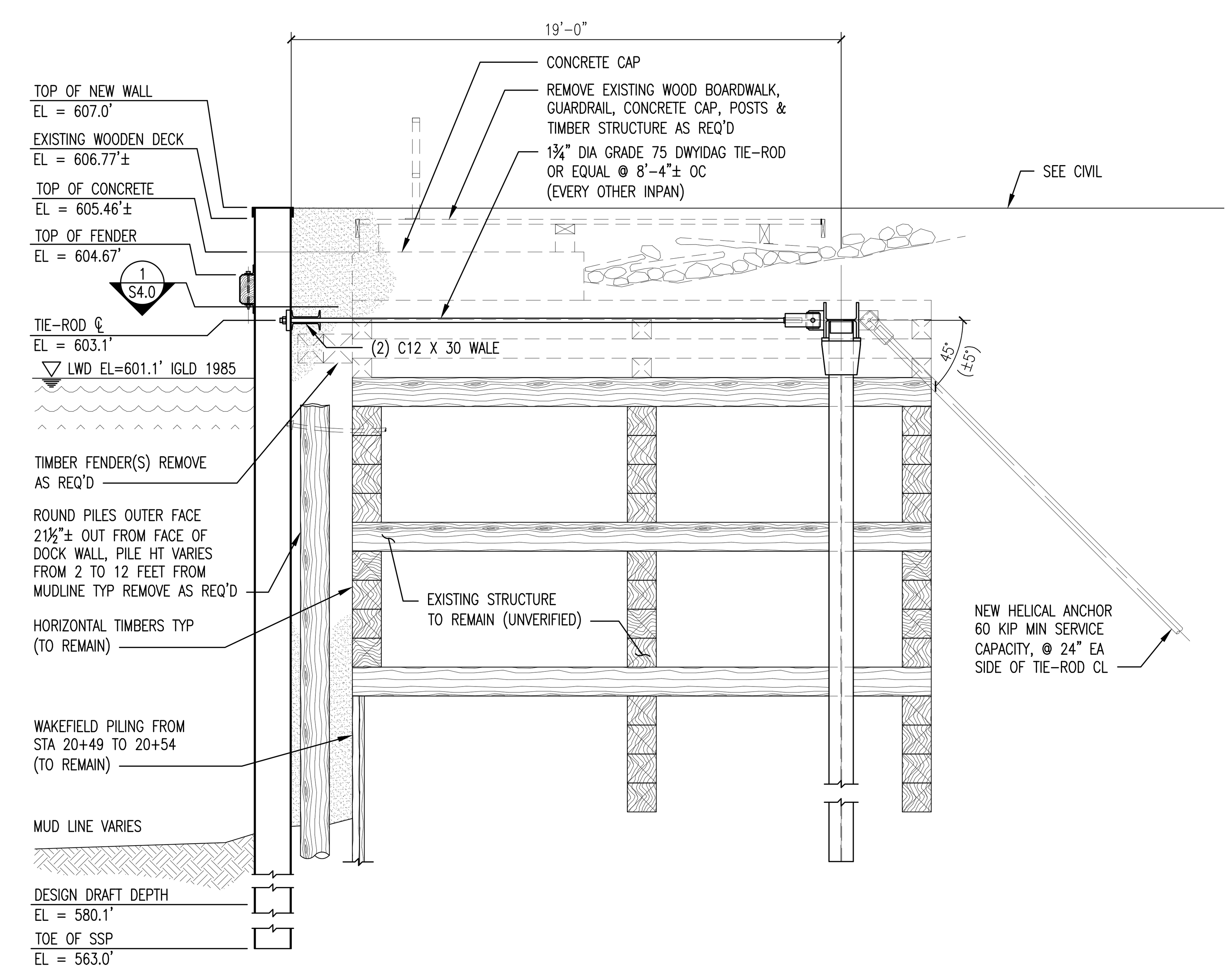


3
S2.2
TYPICAL DOCK SECTION
@ STA 14 + 20 TO 20 + 21
SCALE: 1/4" = 1'-0"

1. REMOVE & PROPERLY DISPOSE EXISTING VERTICAL FENDERS.



4
S2.2
TYPICAL DOCK SECTION @ WAKEFIELD WALL
@ STA 20 + 21 TO 20 + 86
SCALE: 1/4" = 1'-0"



5
S2.2
TYPICAL DOCK SECTION @ CRIB WALL
@ STA 20 + 86 TO 22 + 25
SCALE: 1/4" = 1'-0"

1. SEE 6/S4.1 FOR TIMBER FENDER DETAILS.

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TWIN CITIES - IRON RANGE

REV:	DATE:	DESCRIPTION	REV. BY:
0	10-31-17	Issued for Bid	

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

Dock Wall Sections

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S2.2

10/19/2017 8:00 PM
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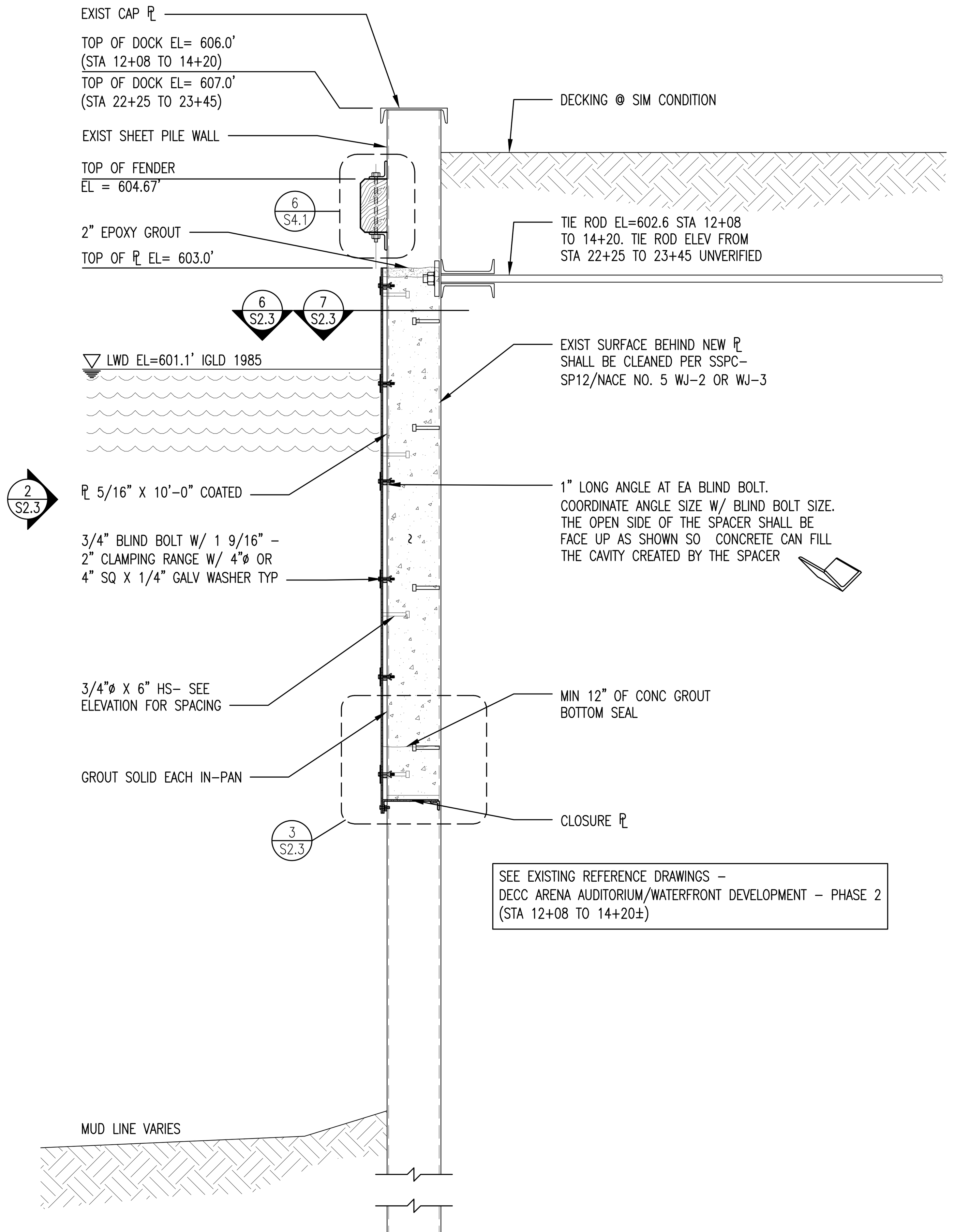
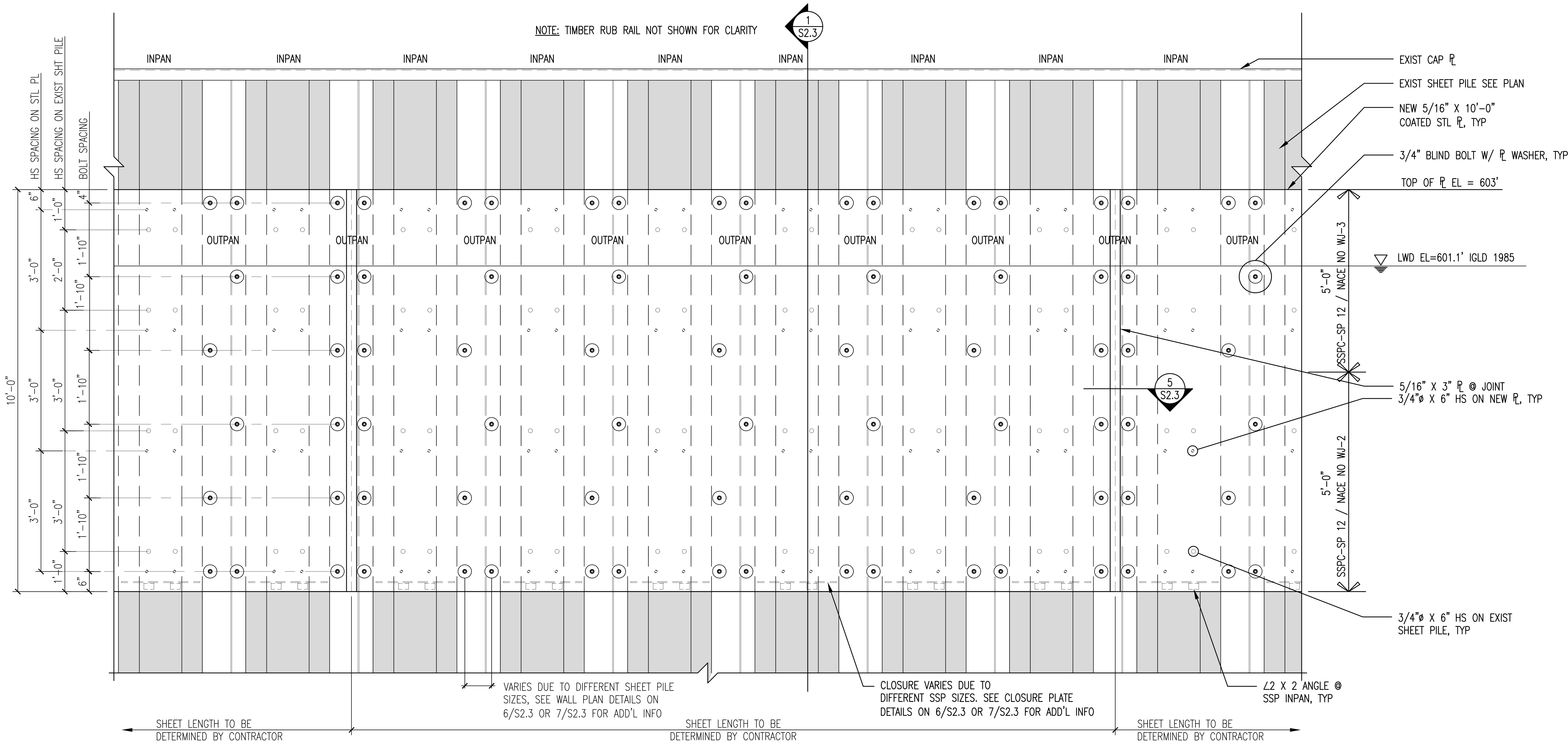
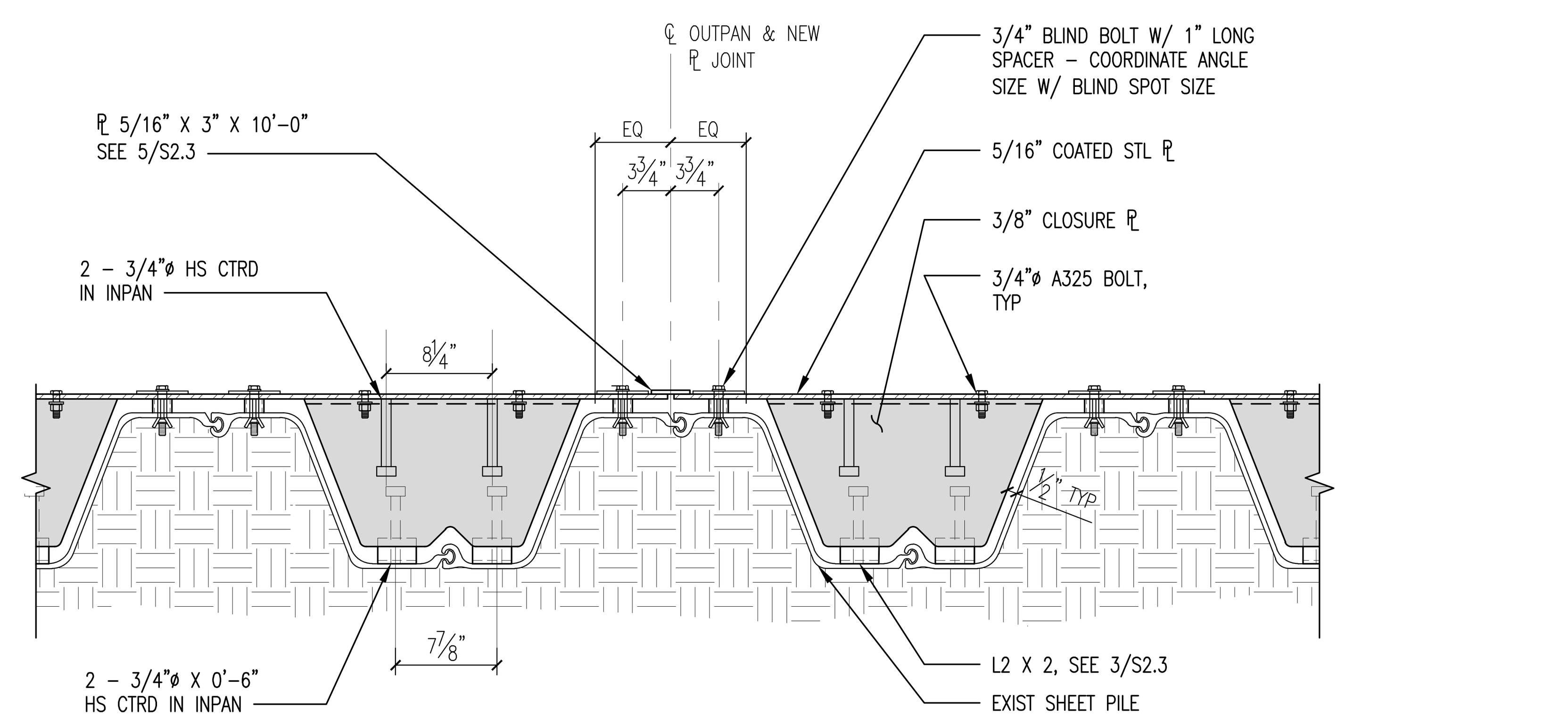


1 / S2.3 TYPICAL DOCK WALL REHABILITATION SECTION STA 12+08 TO 14+20 & STA 22+25 TO 23+45
SCALE: 1/2" = 1'-0"

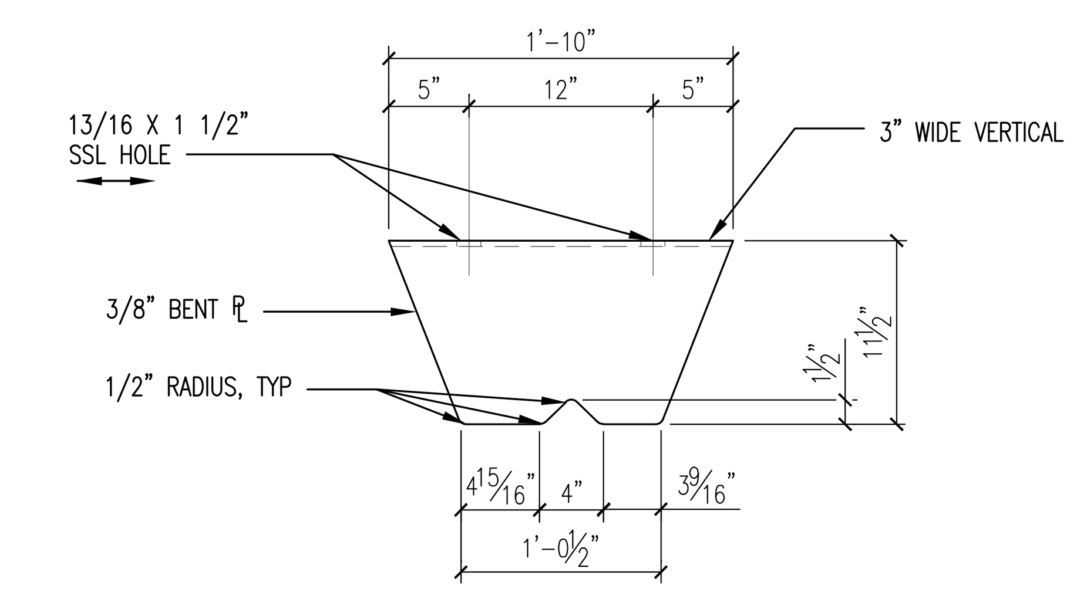
1. REMOVE & PROPERLY DISPOSE EXISTING VERTICAL TIMBER FENDERS & BRACKETS.



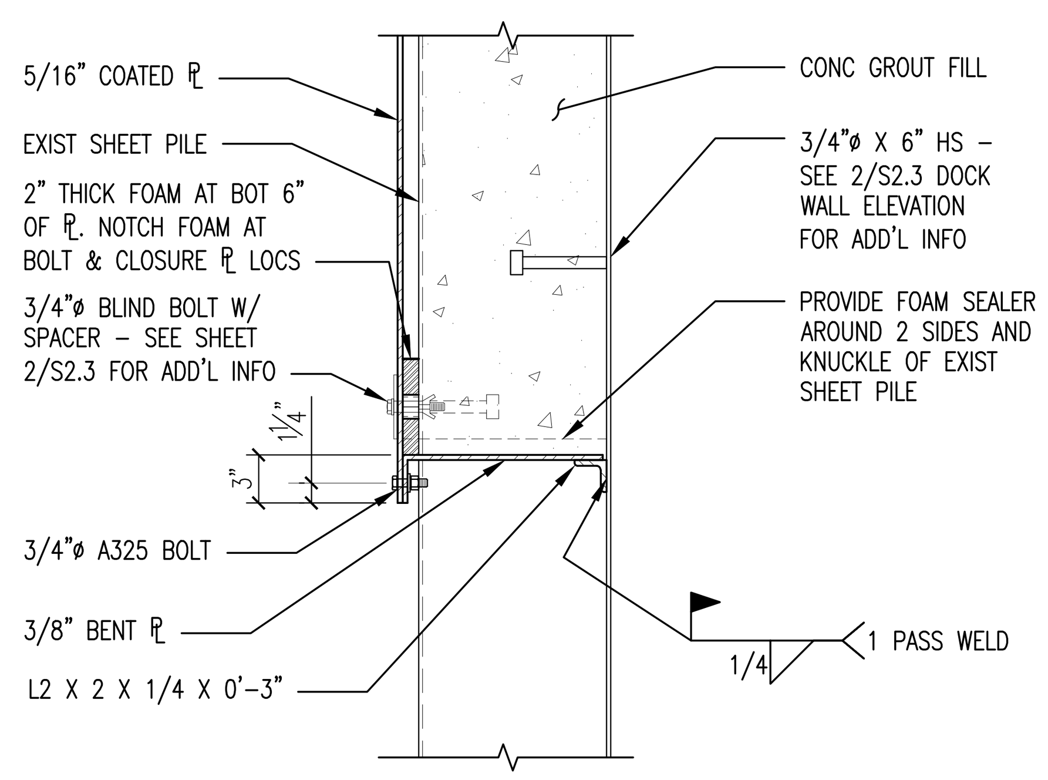
2 / S2.3 TYPICAL DOCK WALL REHABILITATION ELEVATION
SCALE: 1/2" = 1'-0"



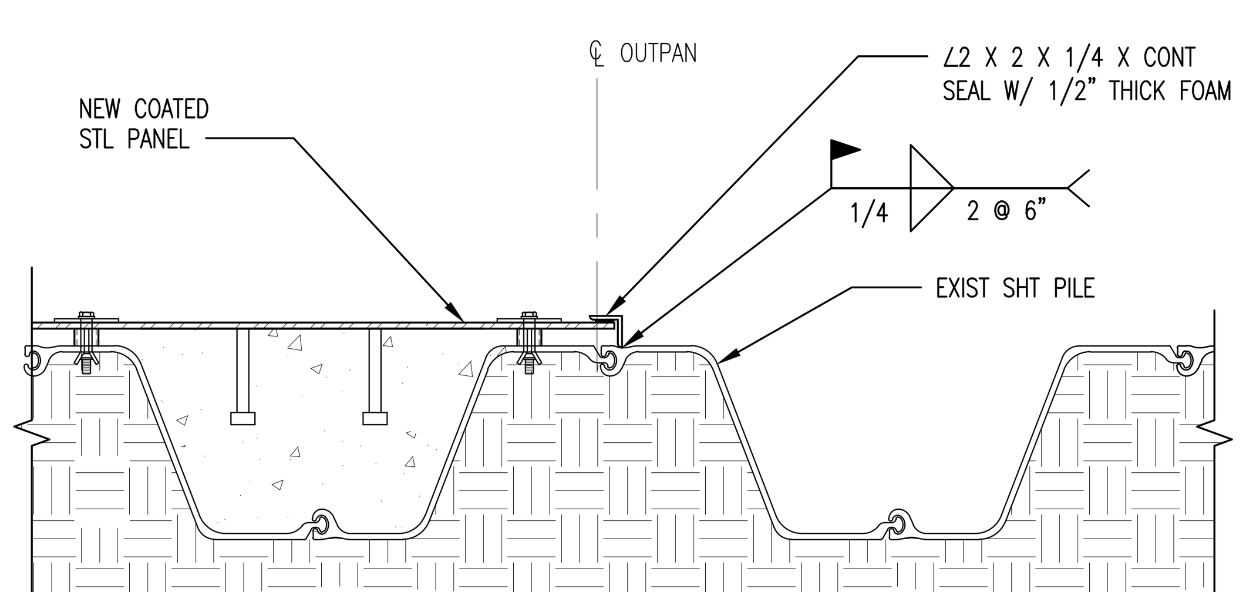
6 / S2.3 TYPICAL REHABILITATION DOCK WALL SECTION @ STA 12 + 8 TO 20 + 21
SCALE: 1" = 1'-0"



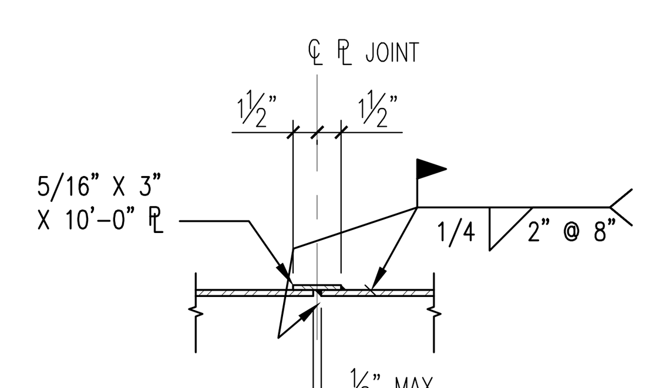
NOTE: CLOSURE PL DIMENSIONS SHOWN ARE APPROXIMATE AND INDIVIDUAL PL DIMENSIONS MAY VARY DUE TO DRIVEN PLACEMENT TOLERANCES AND SHIFTING OF EXIST SHEET PILE.



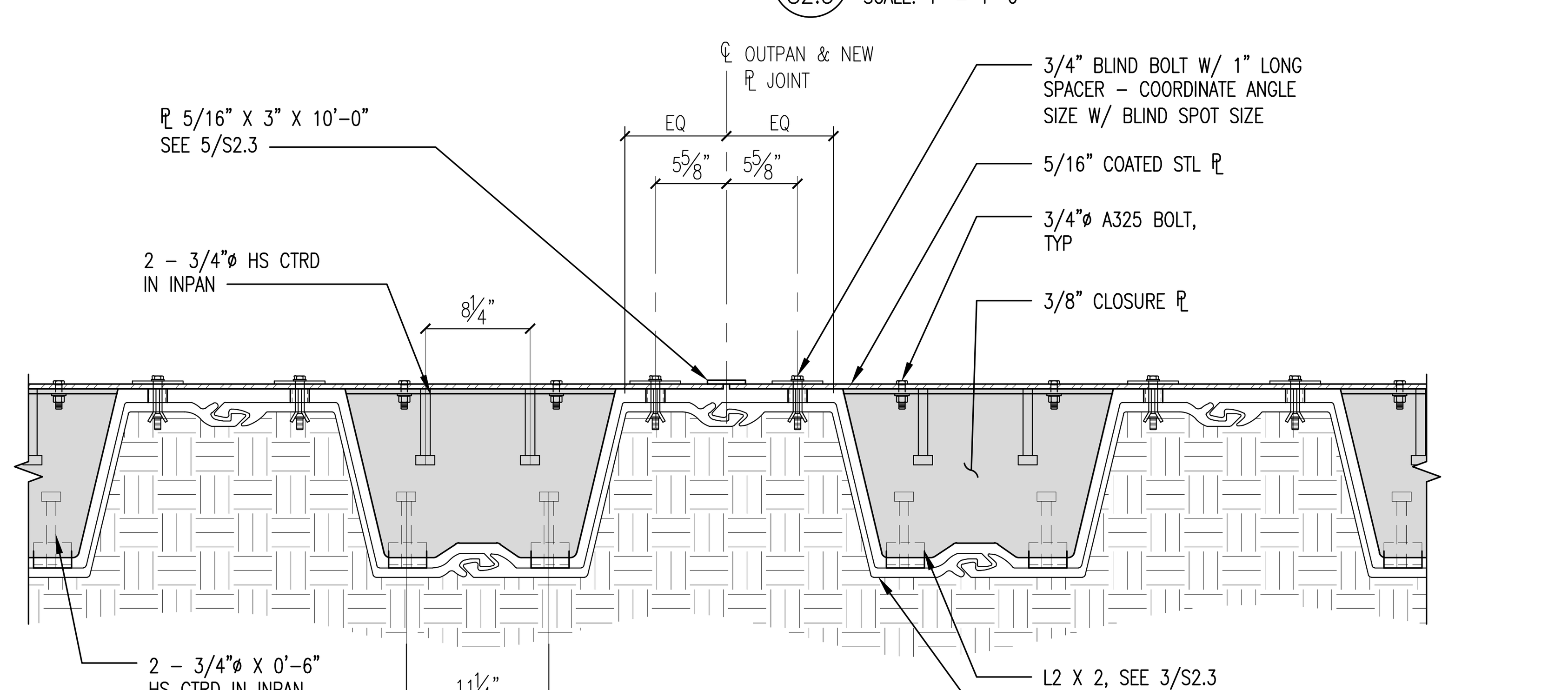
3 / S2.3 TYPICAL BOTTOM CONNECTION DETAIL
SCALE: 1" = 1'-0"



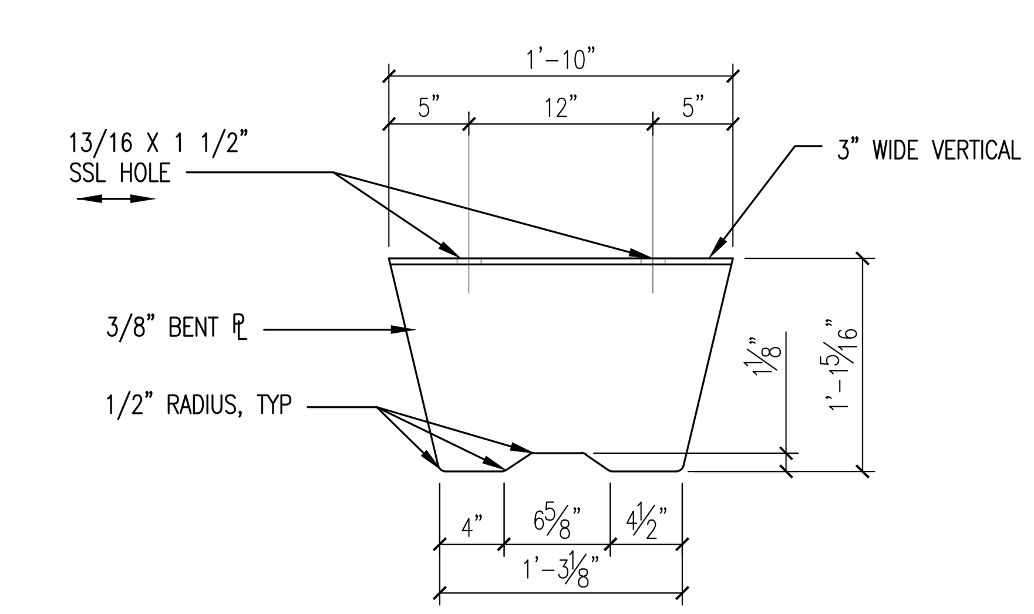
4 / S2.3 TYPICAL END CONNECTION DETAIL
SCALE: 1" = 1'-0"



5 / S2.3 TYPICAL JOINT PLATE DETAIL
SCALE: 1" = 1'-0"



7 / S2.3 TYPICAL REHABILITATION DOCK WALL SECTION @ STA 22 + 25 TO 23 + 45
SCALE: 1" = 1'-0"



NOTE: CLOSURE PL DIMENSIONS SHOWN ARE APPROXIMATE AND INDIVIDUAL PL DIMENSIONS MAY VARY DUE TO DRIVEN PLACEMENT TOLERANCES AND SHIFTING OF EXIST SHEET PILE.

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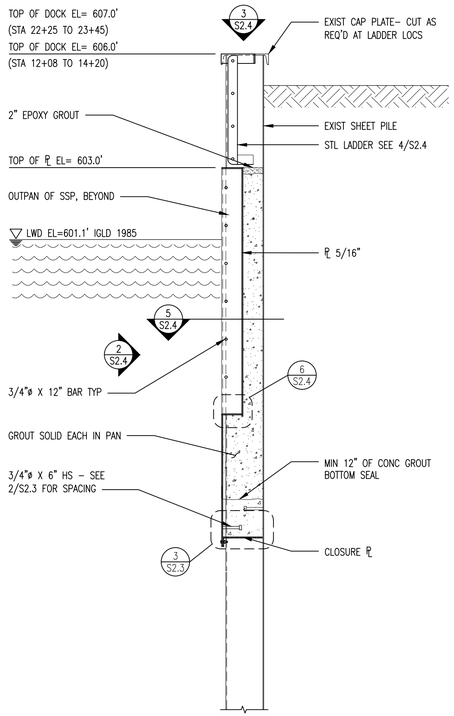
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

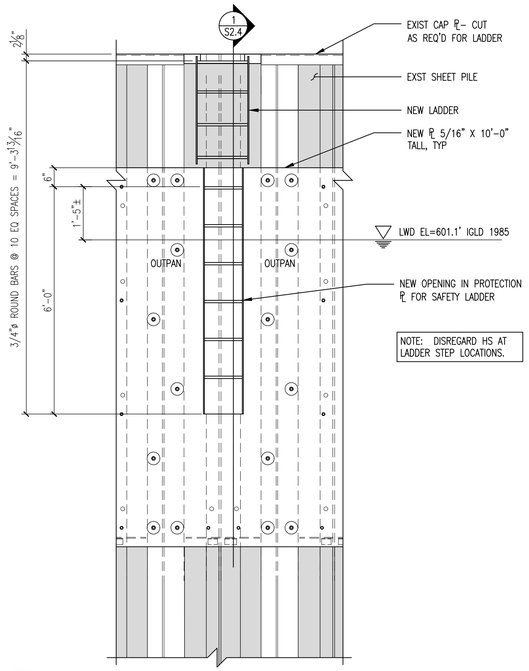
Dock Wall Rehabilitation Section & Details

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

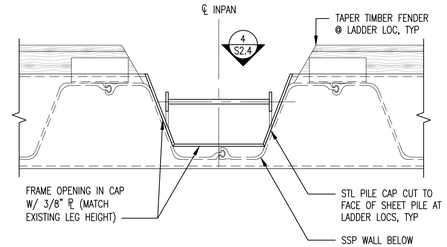
SHEET: S2.3



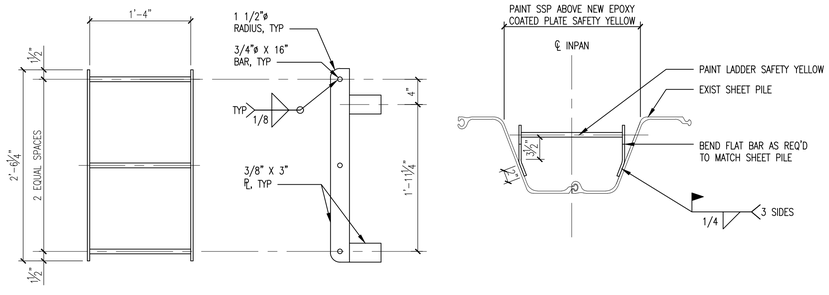
1 S2.4 TYPICAL DOCK WALL REHABILITATION LADDER SECTION
SCALE: 1/2" = 1'-0"



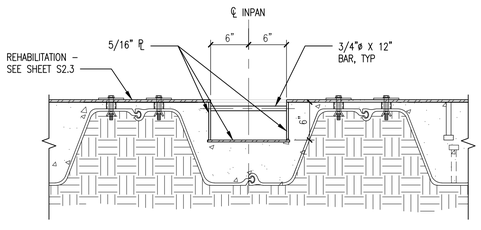
2 S2.4 TYPICAL DOCK WALL REHABILITATION LADDER ELEVATION
SCALE: 1/2" = 1'-0"



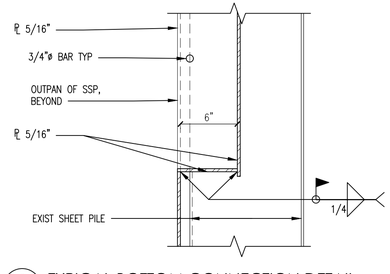
3 S2.4 TYPICAL EXISTING DOCK WALL LADDER DETAIL
SCALE: 1" = 1'-0"



4 S2.4 TYPICAL EXISTING DOCK WALL LADDER DETAIL
SCALE: 1" = 1'-0"



5 S2.4 TYPICAL REHABILITATION DOCK WALL LADDER DETAIL
SCALE: 1" = 1'-0"



6 S2.4 TYPICAL BOTTOM CONNECTION DETAIL
SCALE: 1-1/2" = 1'-0"

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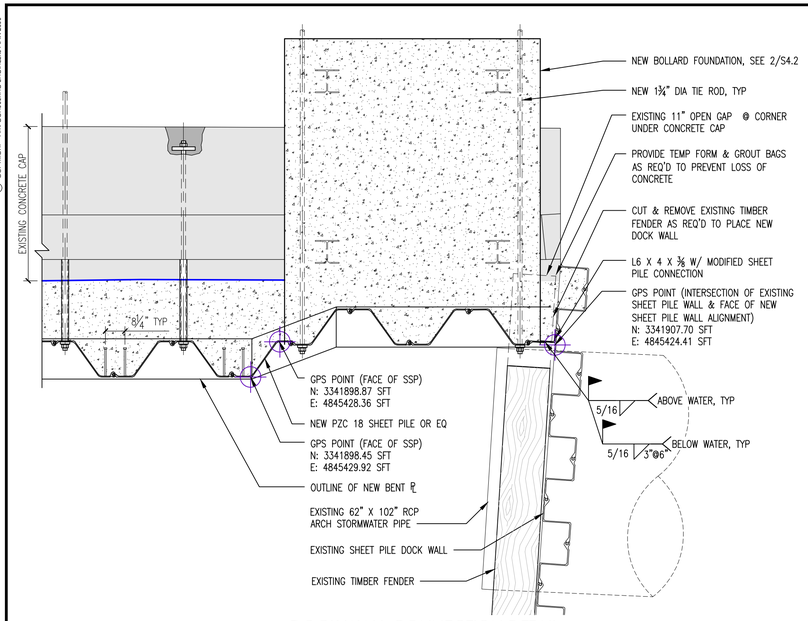
REV. BY:

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

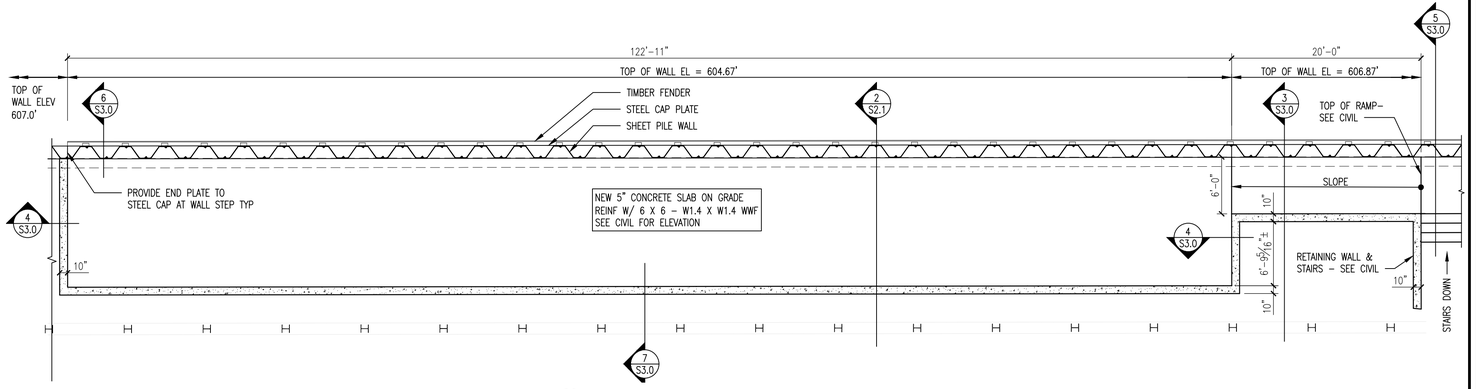
Dock Wall Rehabilitation
Ladder Section & Details

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

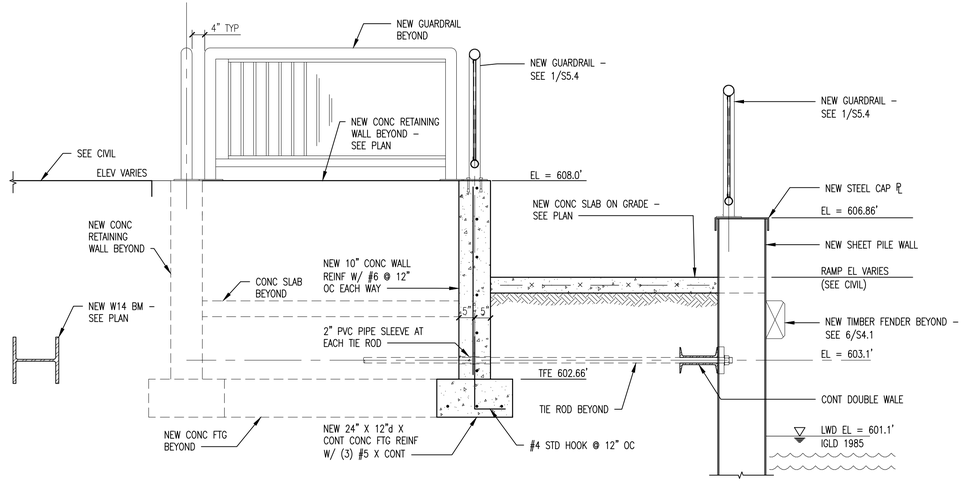
SHEET:
S2.4



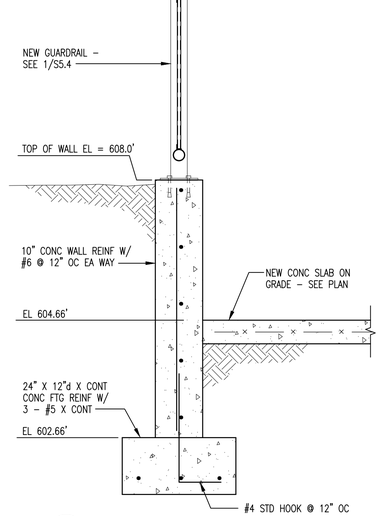
1 S3.0 DOCK WALL CONNECTION DETAIL STA 0 + 00
SCALE: 3/8" = 1'-0"



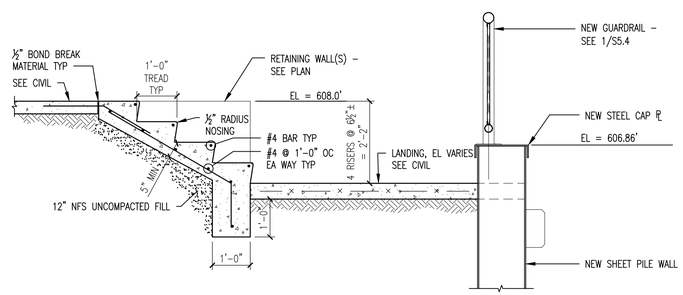
2 S3.0 LOWER CONCRETE PLATFORM PLAN
SCALE: 1/8" = 1'-0"



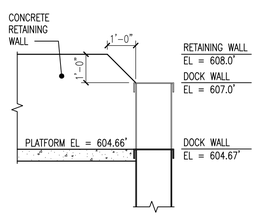
3 S3.0 RAMP SECTION AT LOWER PLATFORM
SCALE: 1/2" = 1'-0"



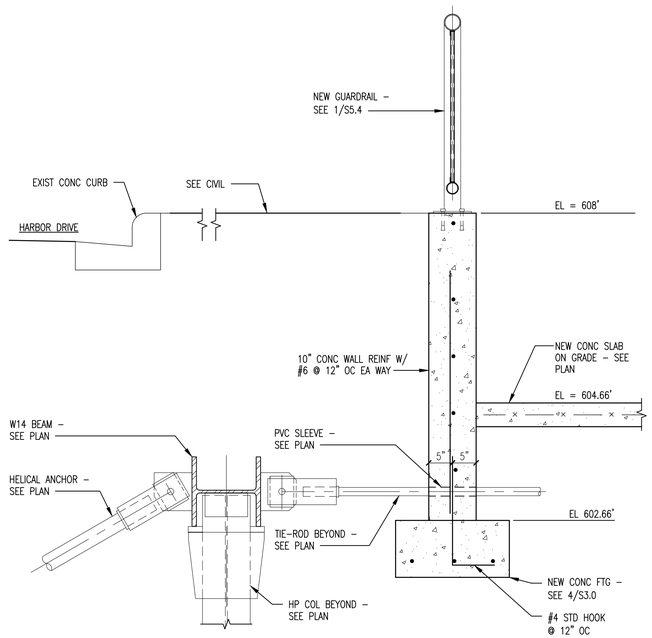
4 S3.0 RETAINING WALL SECTION
SCALE: 3/4" = 1'-0"



5 S3.0 CONCRETE STAIRS AT LOWER PLATFORM
SCALE: 1/2" = 1'-0"



6 S3.0 RETAINING WALL DETAIL
SCALE: 3/8" = 1'-0"



7 S3.0 RETAINING WALL SECTION
SCALE: 3/4" = 1'-0"

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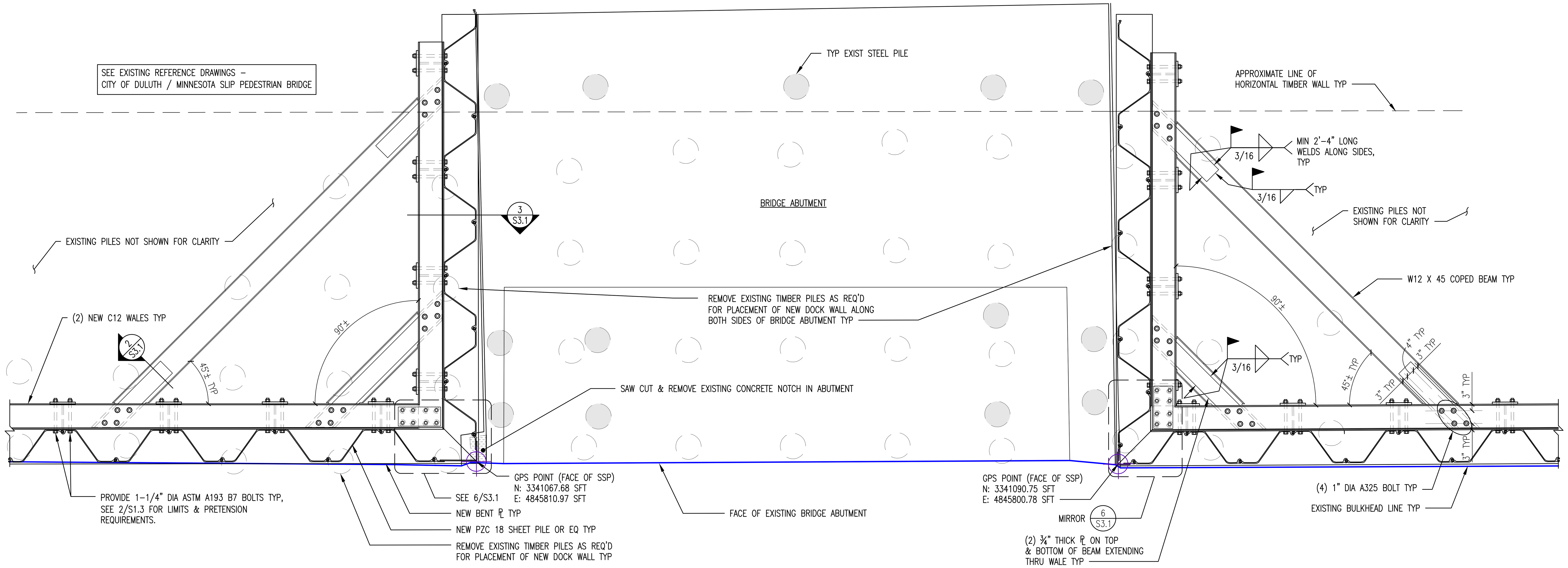
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

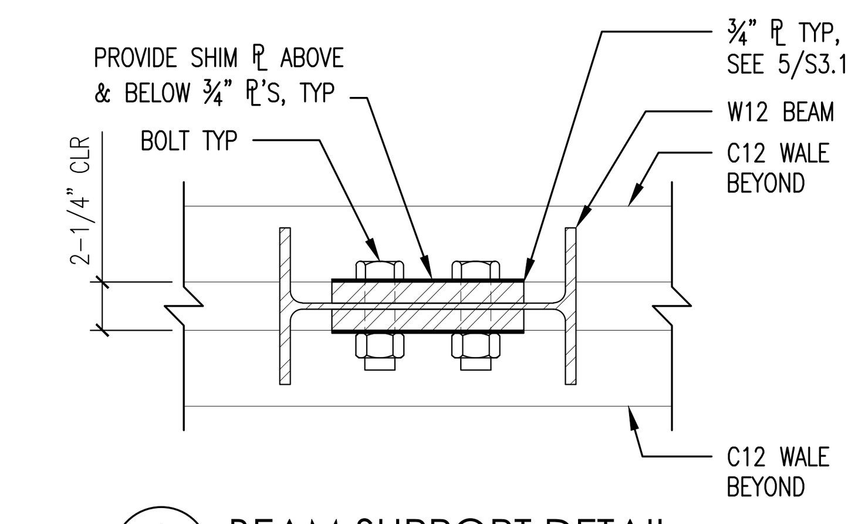
Dock Wall Detail & Lower Concrete Platform Plan & Sections

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

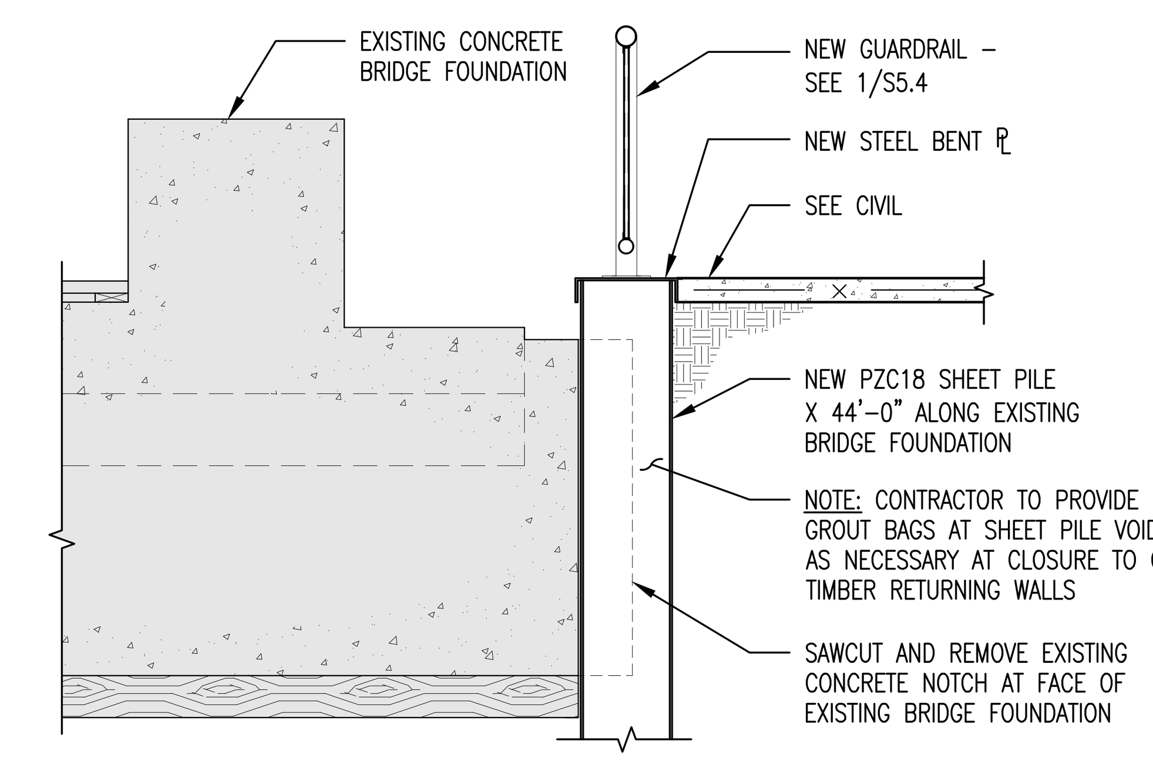
SHEET: S3.0



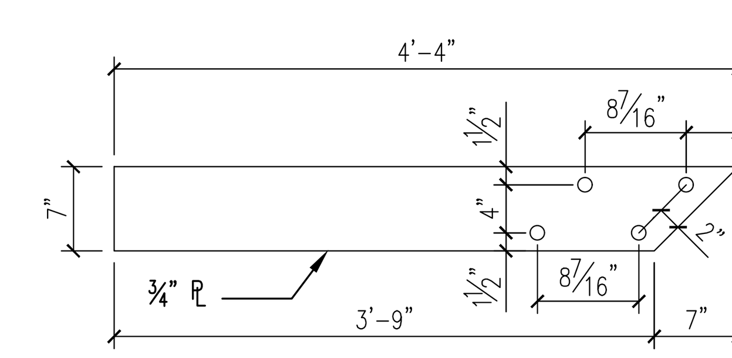
1 S3.1 SLIP BRIDGE ABUTMENT DETAIL STA 9 + 00 TO 9 + 25
SCALE: 3/8" = 1'-0"



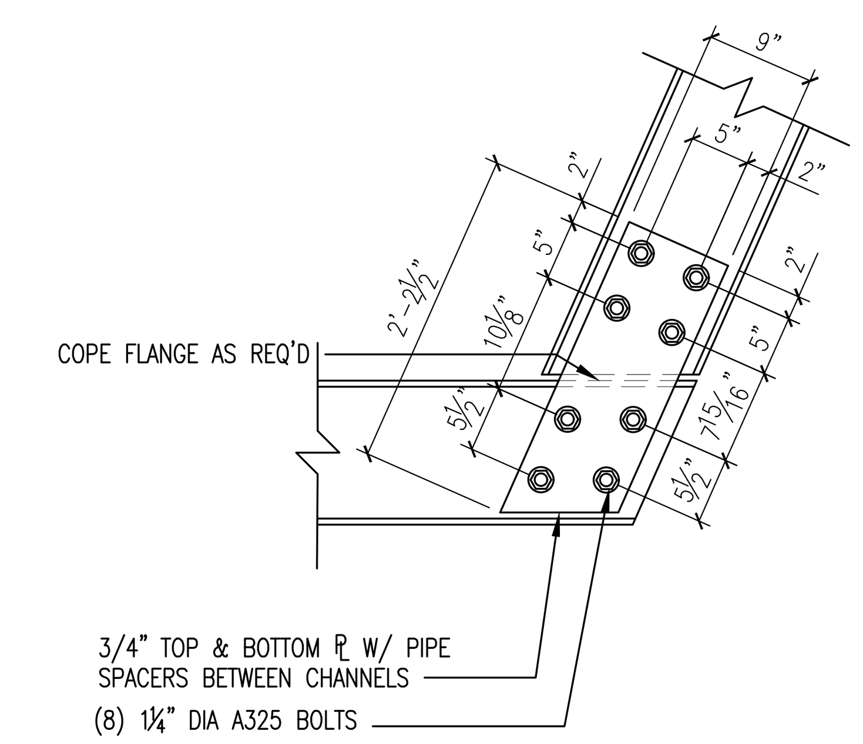
2 S3.1 BEAM SUPPORT DETAIL
SCALE: 1-1/2" = 1'-0"



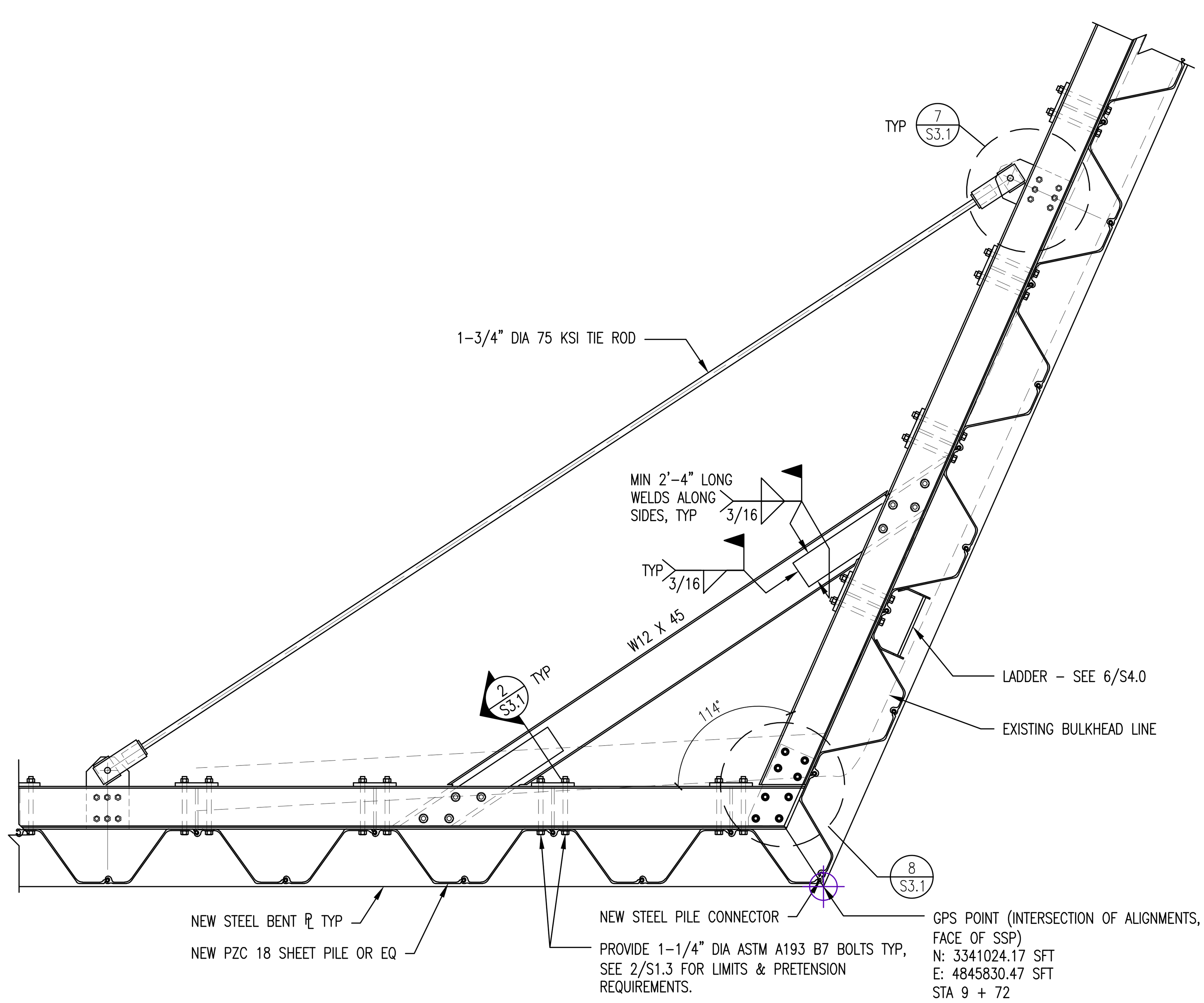
3 S3.1 TYPICAL DOCK SECTION @ EXISTING BRIDGE
SCALE: 3/8" = 1'-0"



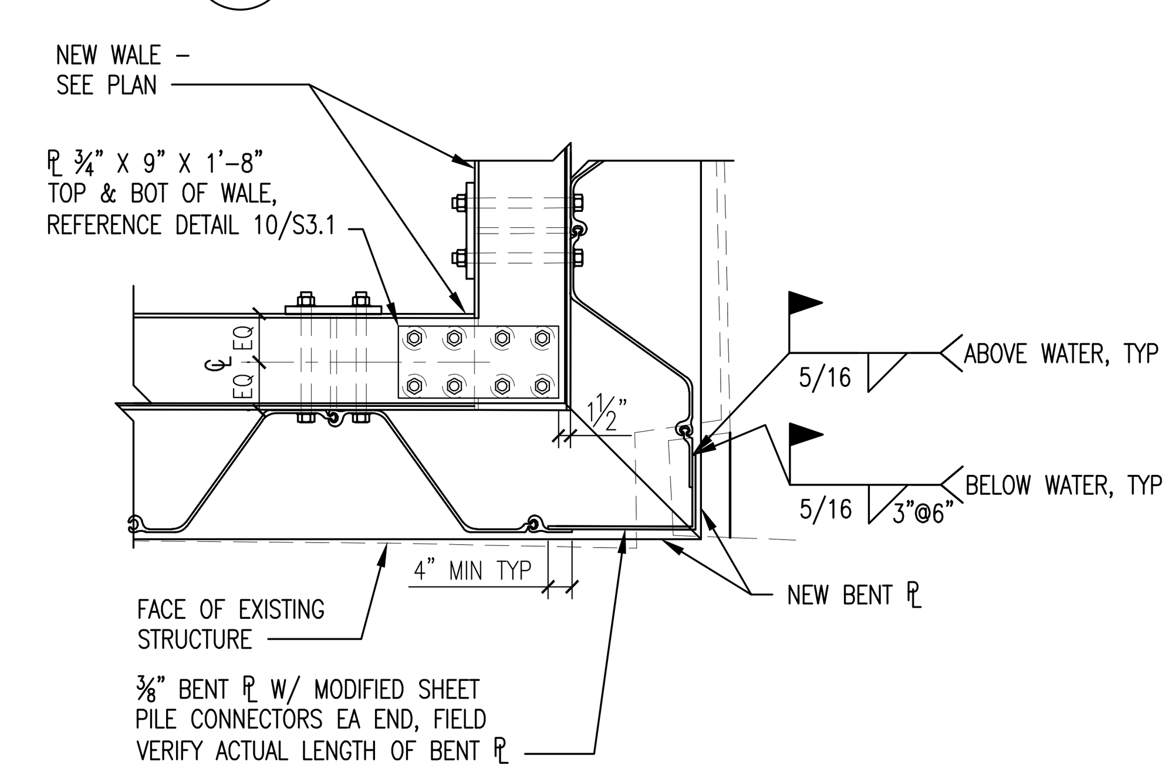
5 S3.1 DOCK WALL DETAIL
SCALE: 3/4" = 1'-0"



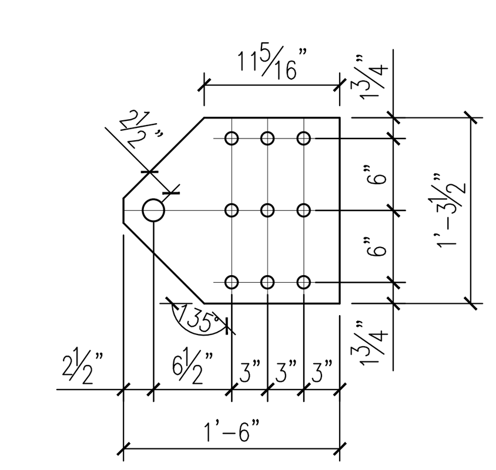
8 S3.1 DOCK WALL DETAIL
SCALE: 3/4" = 1'-0"



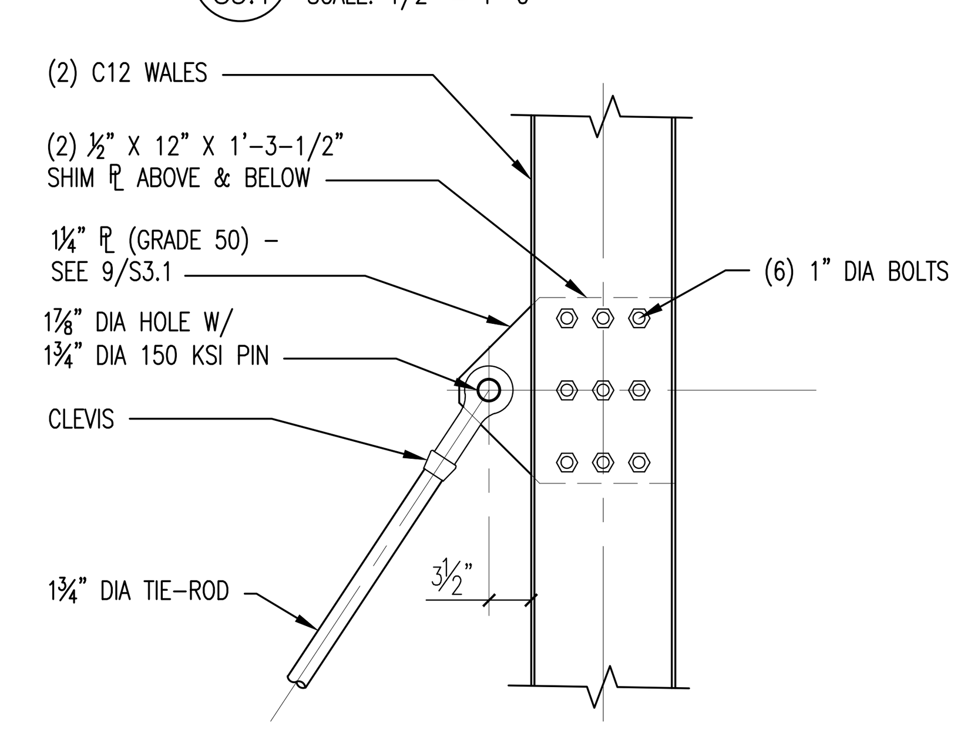
4 S3.1 CORNER DETAIL
SCALE: 3/8" = 1'-0"



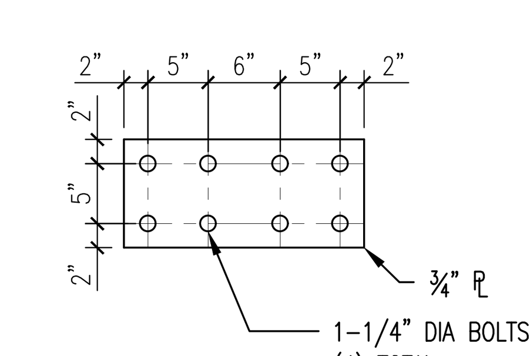
6 S3.1 DOCK WALL DETAIL
SCALE: 1/2" = 1'-0"



9 S3.1 DOCK WALL DETAIL
SCALE: 3/4" = 1'-0"



7 S3.1 DOCK WALL DETAIL
SCALE: 3/4" = 1'-0"



10 S3.1 DOCK WALL DETAIL
SCALE: 3/4" = 1'-0"

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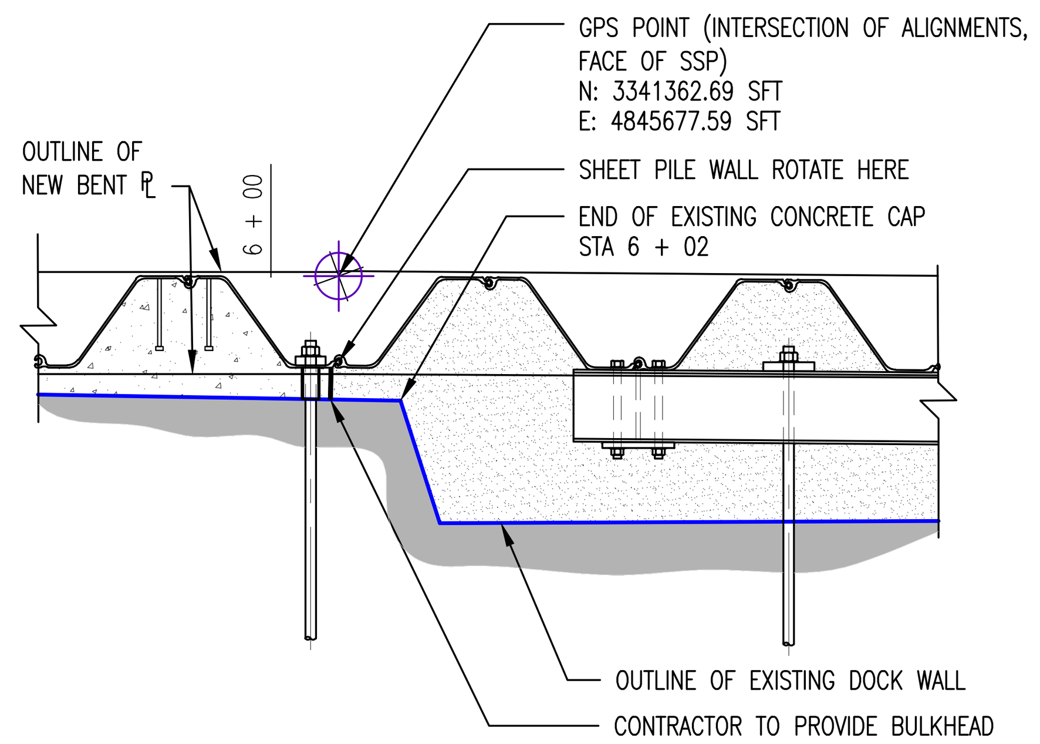
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

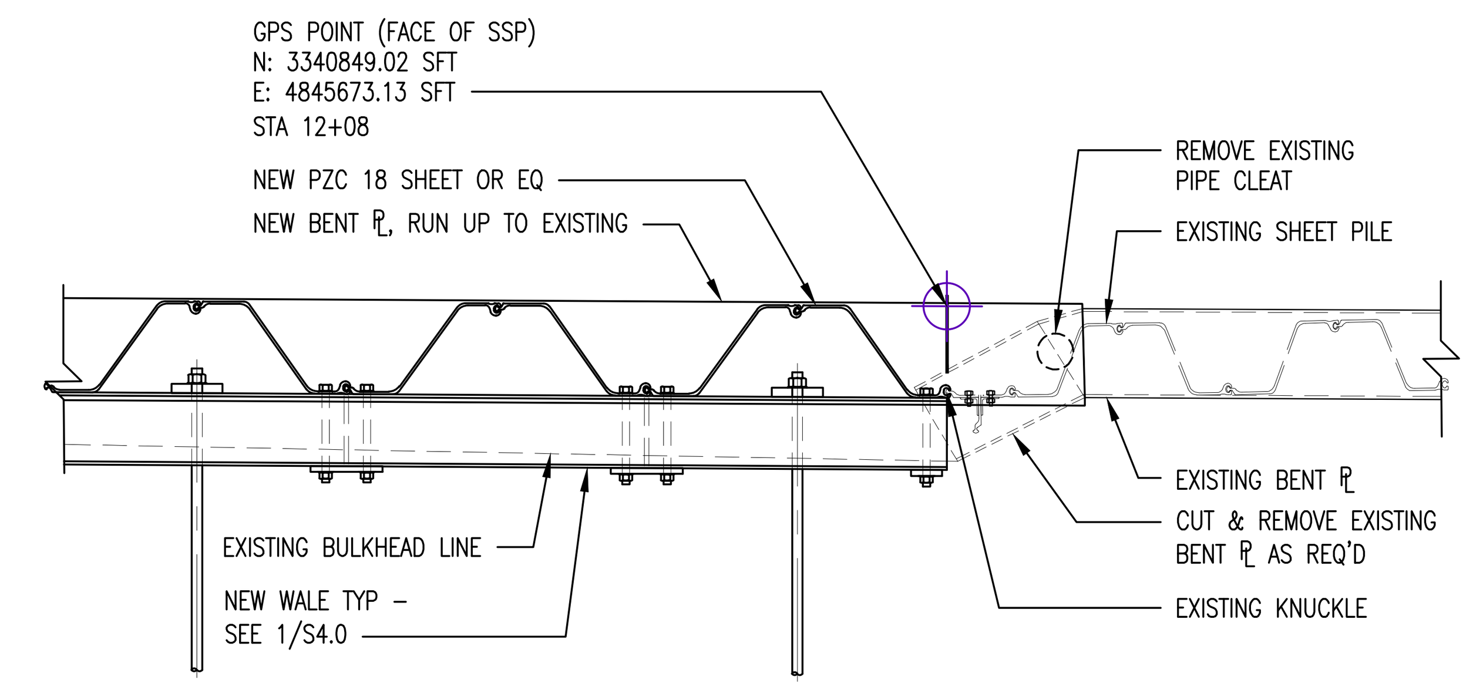
Dock Wall Sections & Details

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

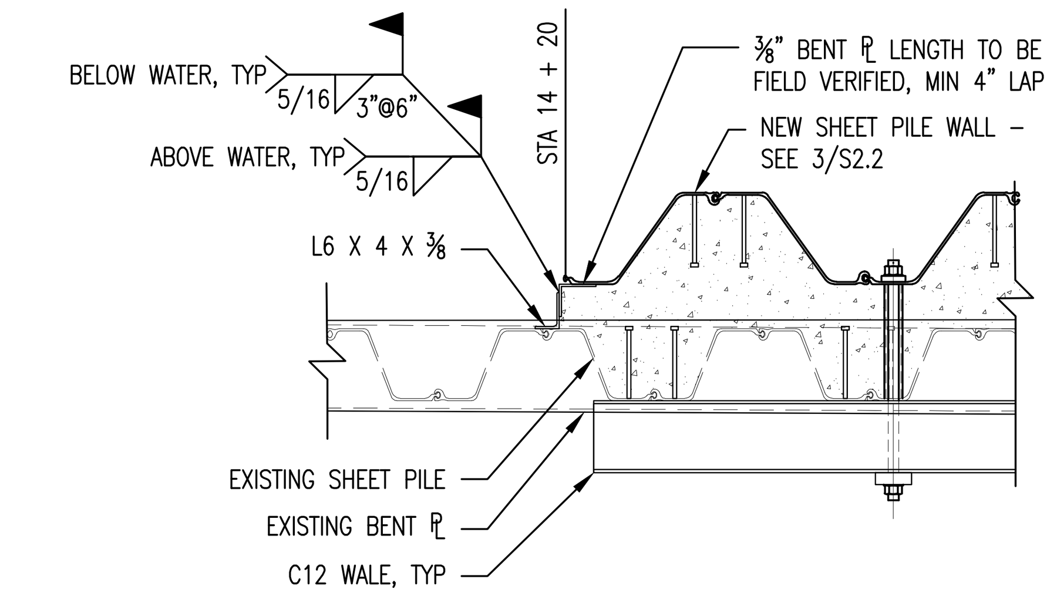
SHEET: S3.1



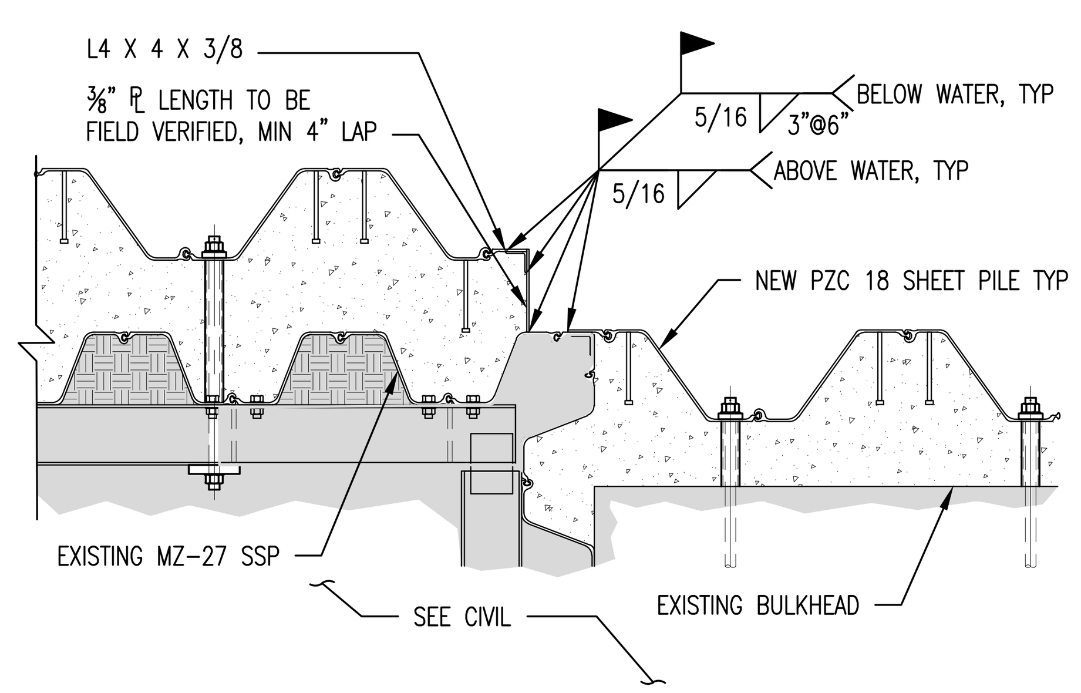
DOCK WALL DETAIL @ STA 6 + 02
1 / S3.2
SCALE: 3/8" = 1'-0"
1. CONNECT GPS POINT SHOWN ABOVE TO GPS POINT ON 1/S3.1



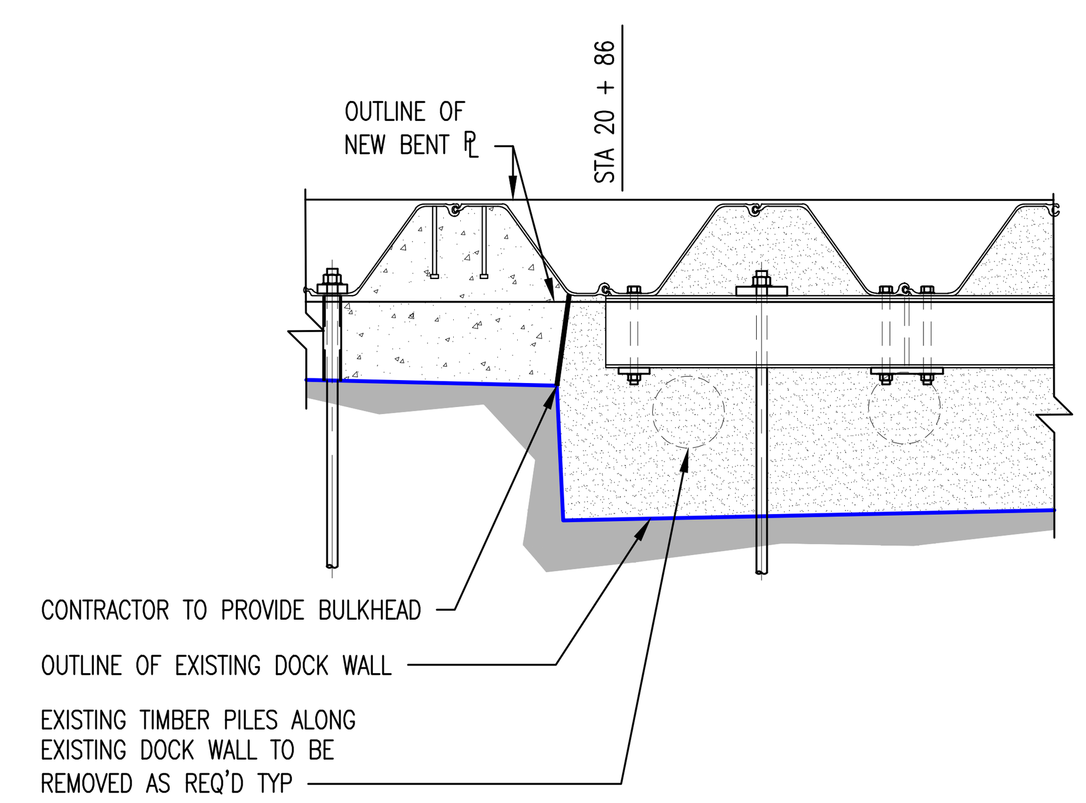
DOCK WALL CONNECTION @ STA 12 + 08
2 / S3.2
SCALE: 3/8" = 1'-0"



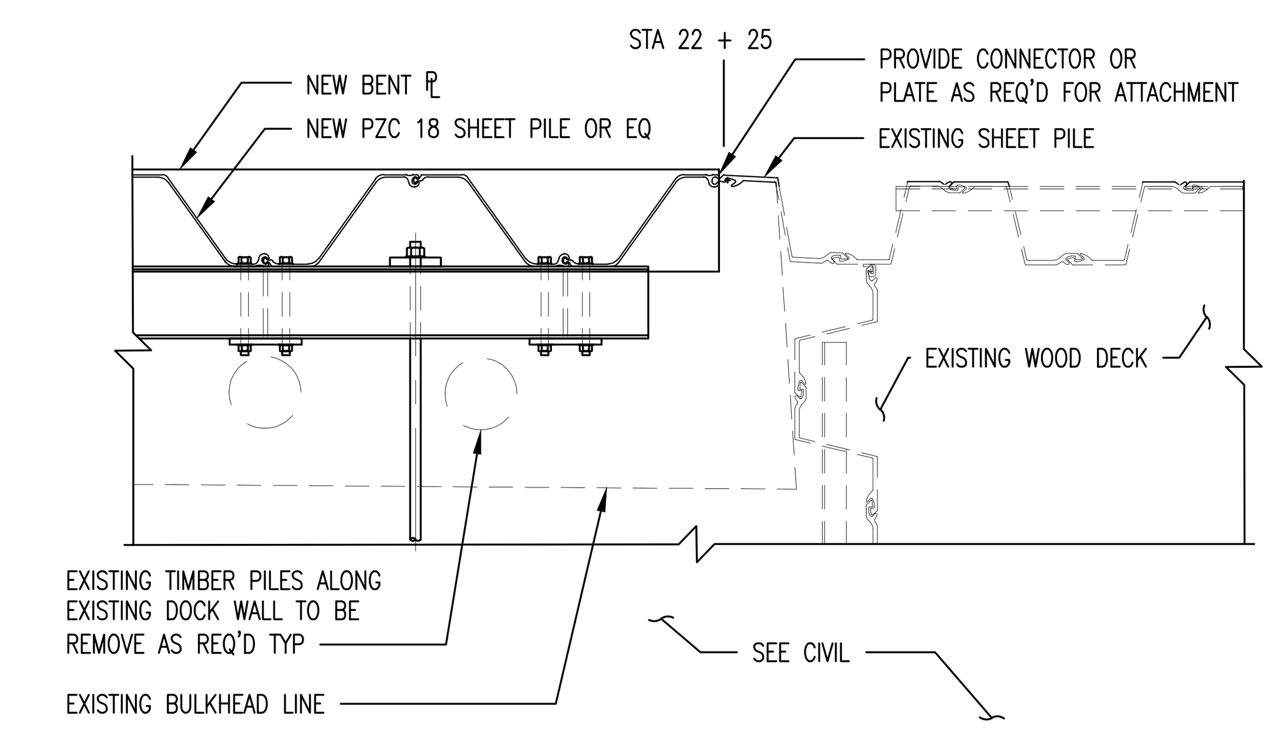
DOCK WALL CONNECTION @ STA 14 + 20
3 / S3.2
SCALE: 3/8" = 1'-0"



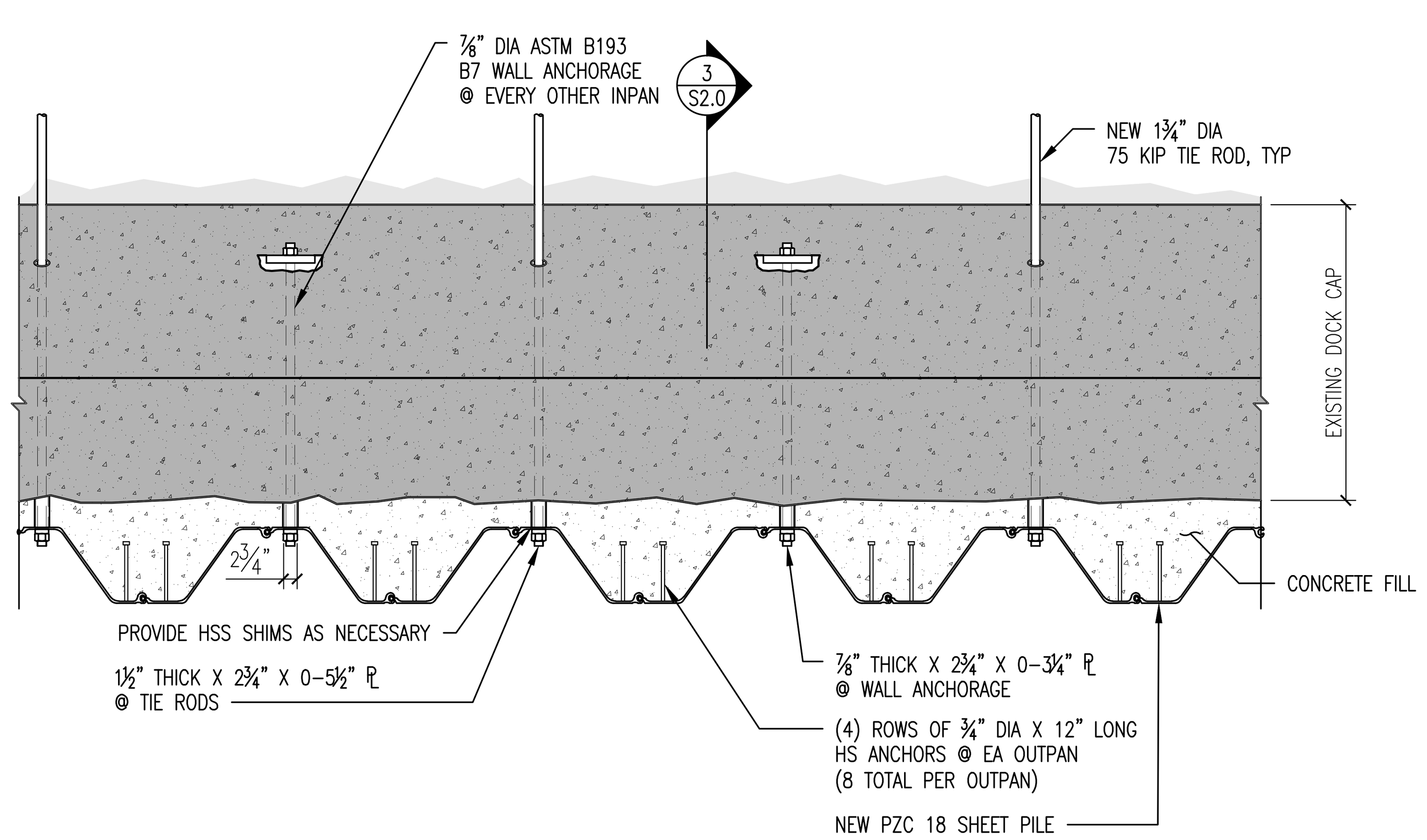
DOCK WALL CONNECTION @ STA 20 + 21
4 / S3.2
SCALE: 3/8" = 1'-0"



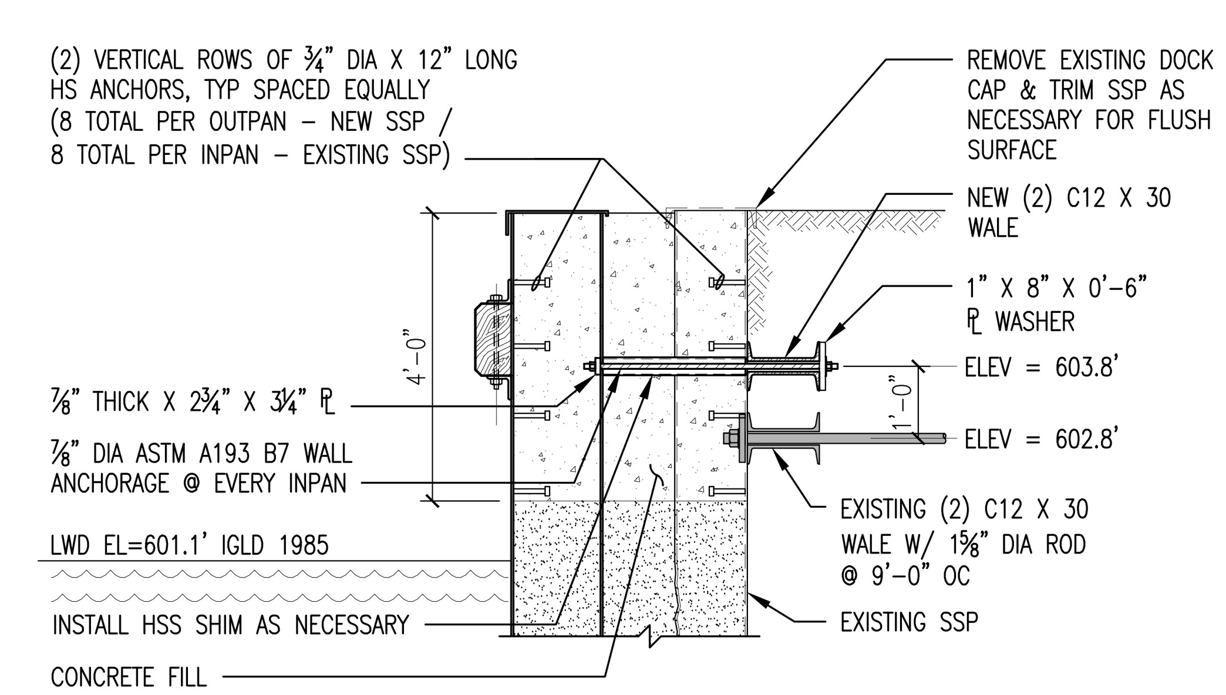
DOCK WALL CONNECTION @ STA 20 + 86
5 / S3.2
SCALE: 3/8" = 1'-0"



DOCK WALL CONNECTION @ STA 22 + 25
6 / S3.2
SCALE: 3/8" = 1'-0"



TYPICAL DOCK WALL PLAN @ STA 0 + 00 TO 6 + 02 & STA 10 + 21 TO 20 + 86
7 / S3.2
SCALE: 3/8" = 1'-0"



DOCK WALL DETAIL @ STA 14 + 20 TO 20 + 21
8 / S3.2
SCALE: 3/8" = 1'-0"

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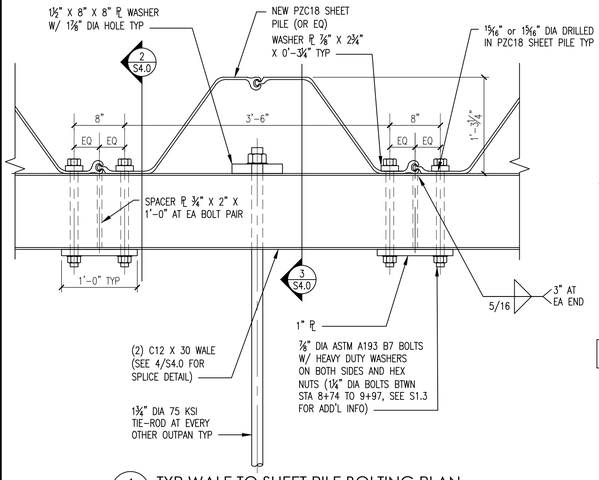
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

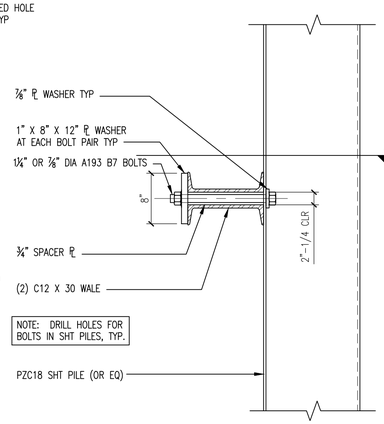
Dock Wall
Sections & Details

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

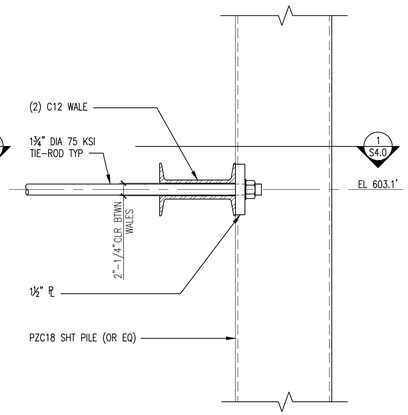
SHEET:
S3.2



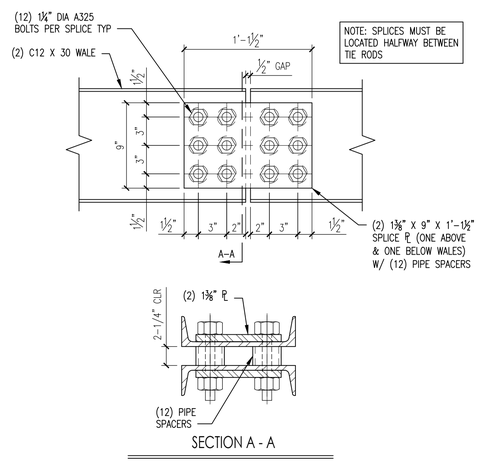
1 S4.0 TYP WALE TO SHEET PILE BOLTING PLAN
SCALE: 1" = 1'-0"



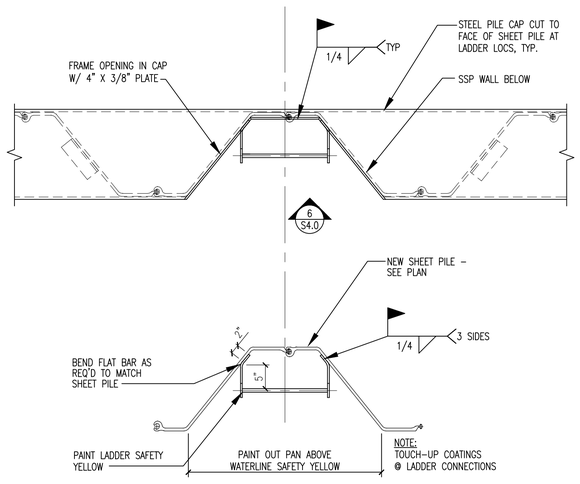
2 S4.0 TYP WALE / BOLT DETAIL
SCALE: 1" = 1'-0"



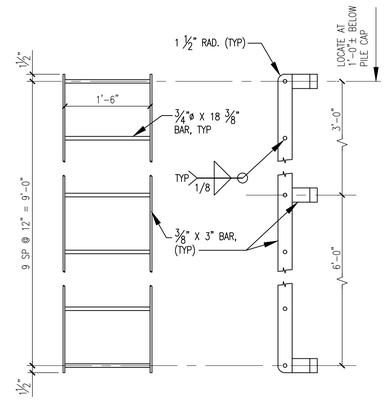
3 S4.0 TYP TIE-ROD DETAIL
SCALE: 1" = 1'-0"



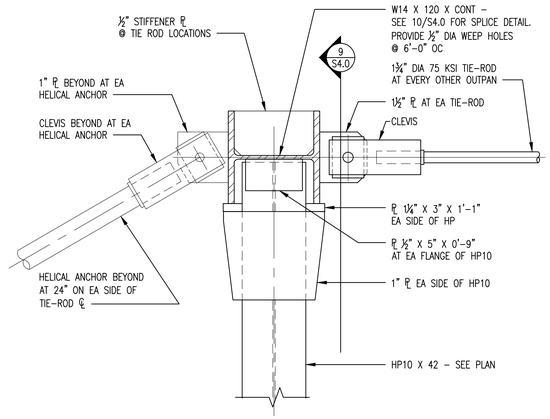
4 S4.0 TYP WALE SPLICE DETAIL
SCALE: 1-1/2" = 1'-0"



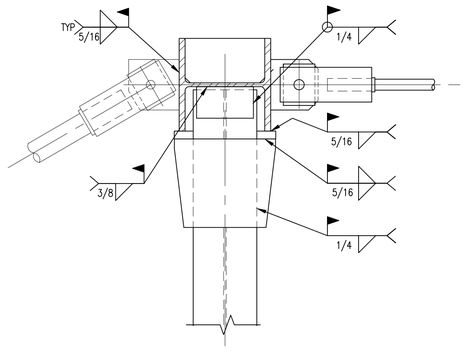
5 S4.0 TYP LADDER DETAIL
SCALE: 3/4" = 1'-0"

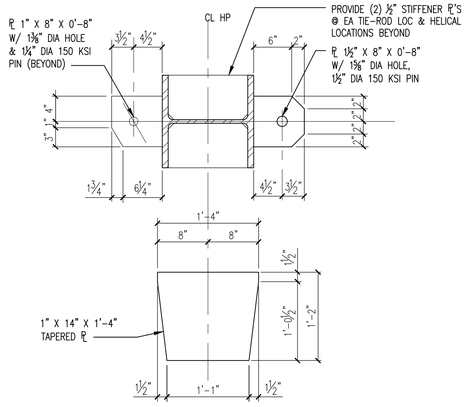


6 S4.0 TYP LADDER ELEVATION
SCALE: 3/4" = 1'-0"

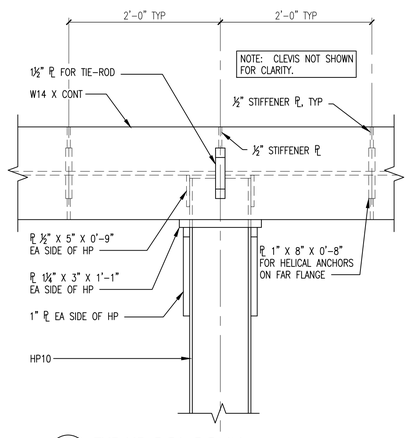


7 S4.0 TYP HP COLUMN CONNECTION
SCALE: 1" = 1'-0"

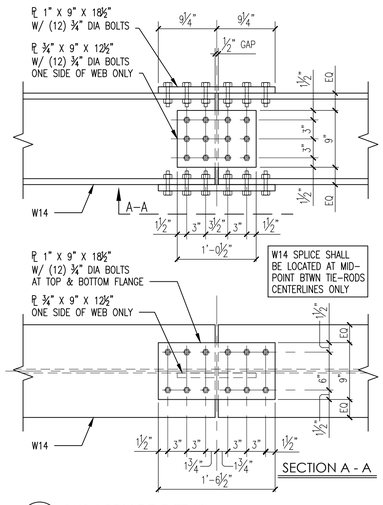




8 S4.0 TYP PLATE DETAILS
SCALE: 1" = 1'-0"



9 S4.0 TYP HP COL CONN
SCALE: 1" = 1'-0"



10 S4.0 W14 SPLICE DETAIL
SCALE: 1" = 1'-0"

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	Issued for Bid	10-31-17	0

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

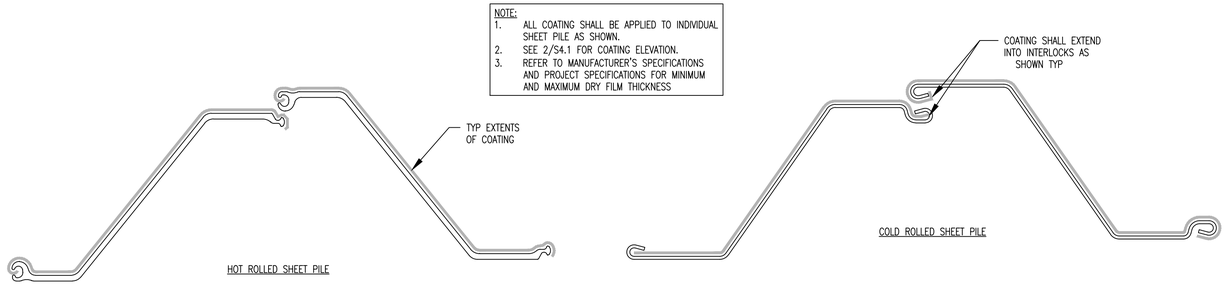
General Dock Wall
Sections & Details

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

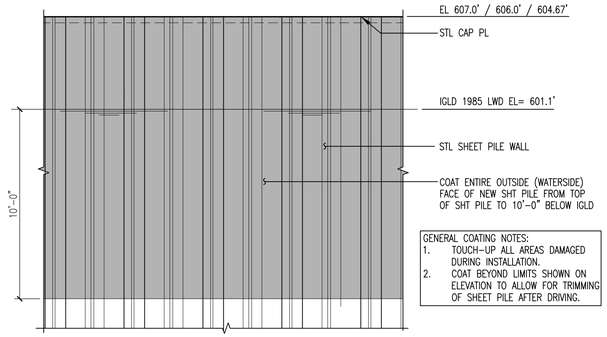
SHEET:
S4.0

10/19/2017 8:00 PM
Z:\2016\14\7080 DECC Seawall Project\7 CAD\Marine\Group Plan Split\14708_GroupPlan_DockWalls_S2-S4.3.dwg

NOTE:
1. ALL COATING SHALL BE APPLIED TO INDIVIDUAL SHEET PILE AS SHOWN.
2. SEE 2/S4.1 FOR COATING ELEVATION.
3. REFER TO MANUFACTURER'S SPECIFICATIONS AND PROJECT SPECIFICATIONS FOR MINIMUM AND MAXIMUM DRY FILM THICKNESS

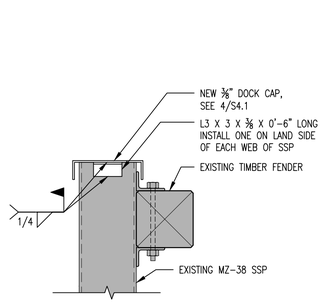


1 S4.1 TYP COATING DETAIL
SCALE: 1-1/2" = 1'-0"



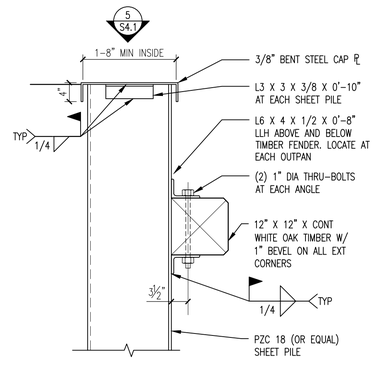
GENERAL COATING NOTES:
1. TOUCH-UP ALL AREAS DAMAGED DURING INSTALLATION.
2. COAT BEYOND LIMITS SHOWN ON ELEVATION TO ALLOW FOR TRIMMING OF SHEET PILE AFTER DRIVING.

2 S4.1 TYP COATING ELEVATION
SCALE: 1/4" = 1'-0"

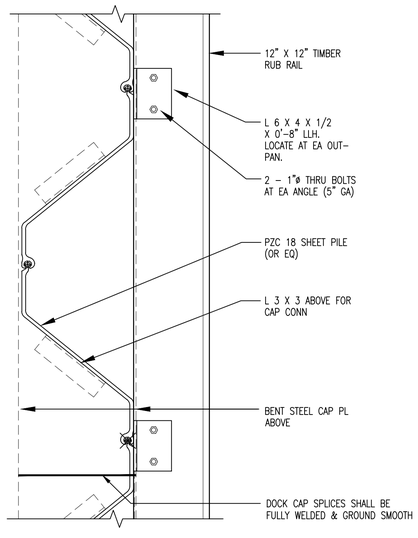


3 S4.1 INNER END DOCK WALL CAP
SCALE: 3/4" = 1'-0"

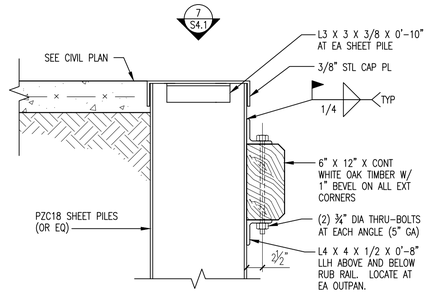
1. JOINTS IN DOCK CAP SHALL BE FULLY WELDED AND GROUND SMOOTH



4 S4.1 TYP DOCK FENDER DETAIL
SCALE: 3/4" = 1'-0"

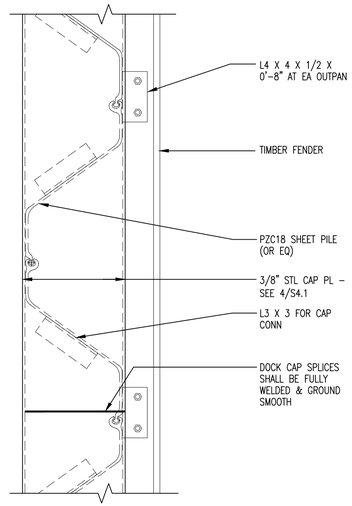


5 S4.1 TYP DOCK FENDER CONN DETAIL
SCALE: 1" = 1'-0"

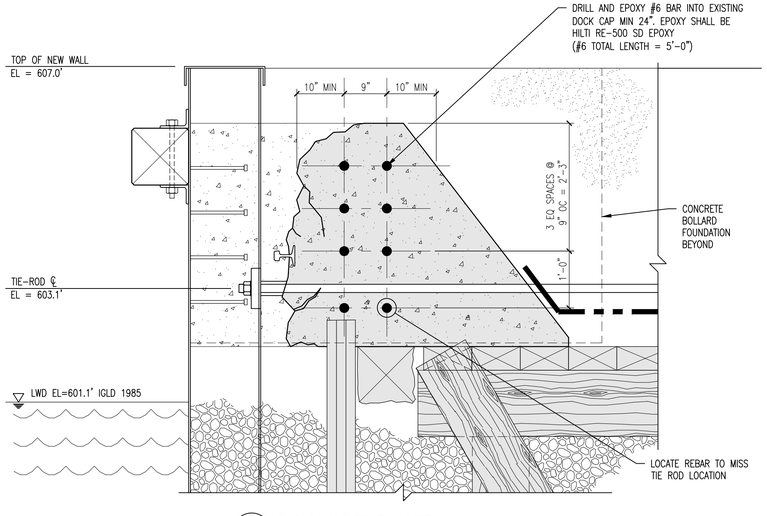


6 S4.1 TYP DOCK FENDER CONNECTION DETAIL
SCALE: 1" = 1'-0"

1. SEE WALL SECTION DETAILS FOR ELEVATIONS.



7 S4.1 TYP BENT PLATE CONN DETAIL
SCALE: 1" = 1'-0"



8 S4.1 DOCK SECTION DETAIL
SCALE: 3/4" = 1'-0"

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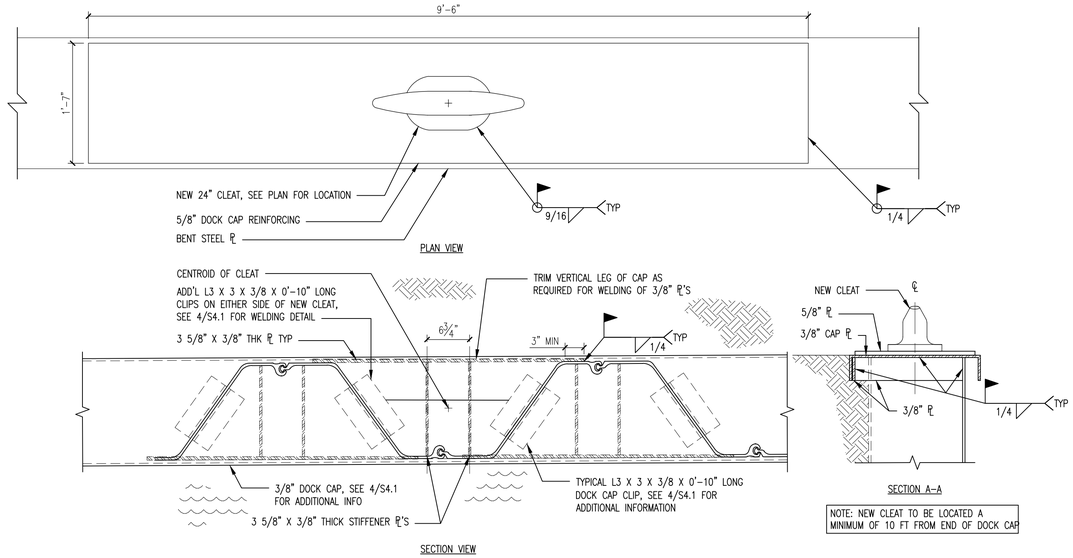
10-31-17	0	Issued for Bid	

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

General Dock Wall Sections & Details

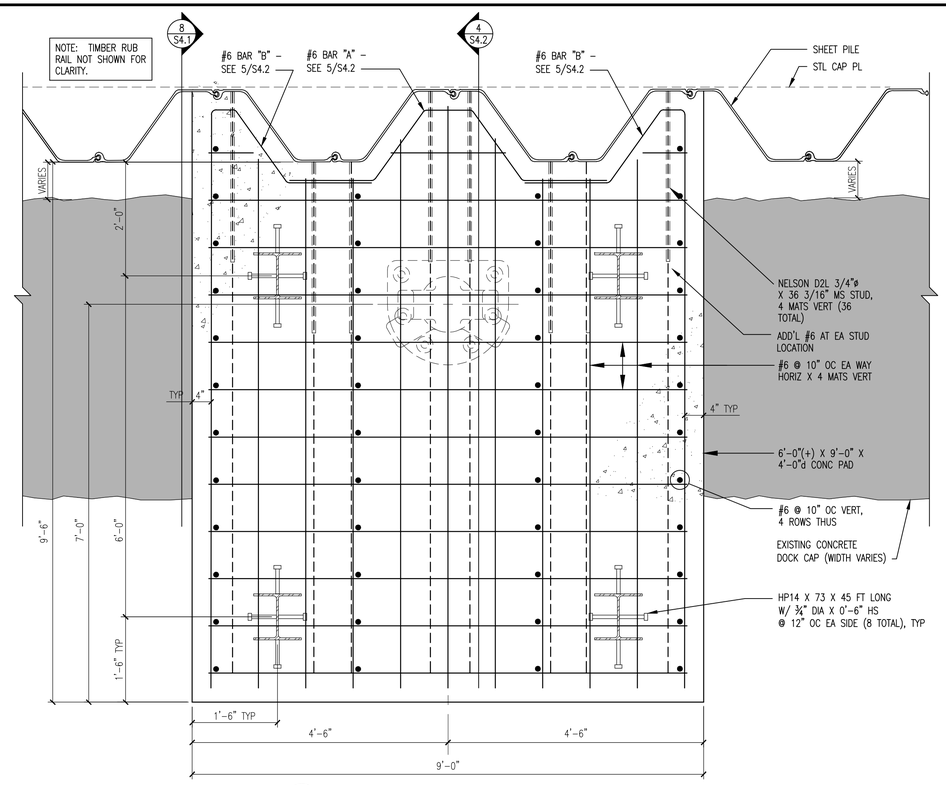
JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET: S4.1



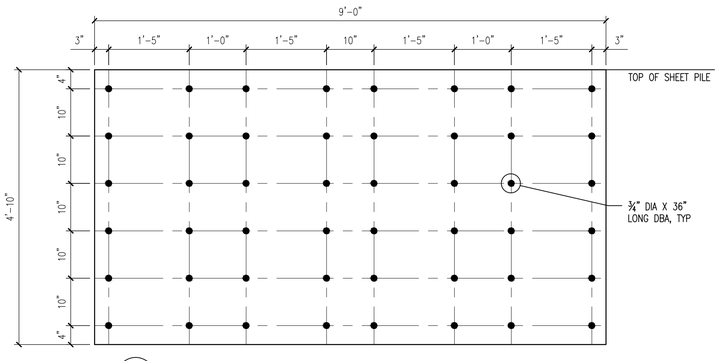
1/S4.2 TYPICAL WELDED CLEAT DETAIL
SCALE: 1" = 1'-0"

1. DOCK CLEAT AND STEEL CAP REINFORCING PLATE NOT SHOWN FOR CLARITY

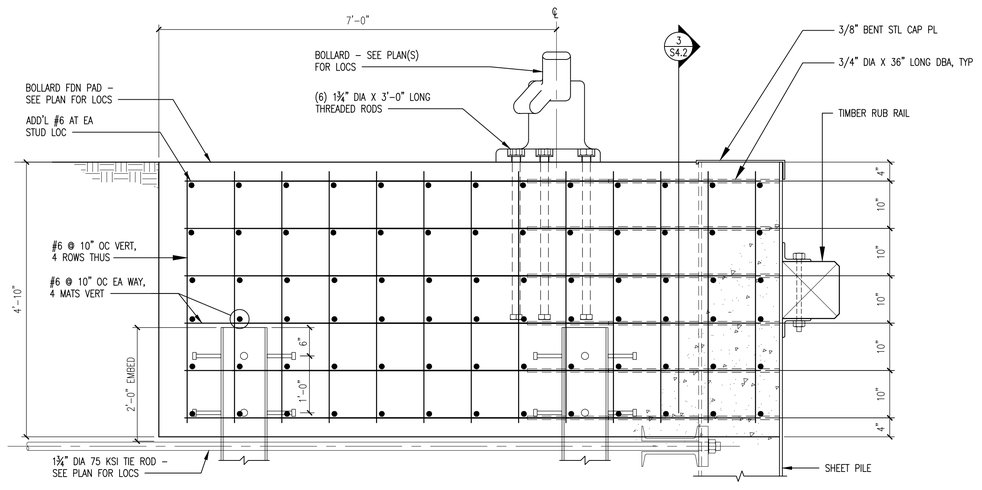


2/S4.2 TYP 65 TON BOLLARD FOUNDATION PAD PLAN
SCALE: 3/4" = 1'-0"

1. FOUNDATION TO BE INSTALLED WITH EITHER TEE AND STAGHORN BOLLARD.

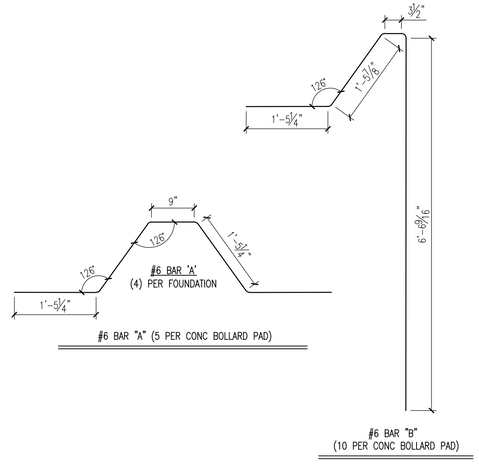


3/S4.2 TYP BOLLARD DEFORMED BAR ANCHOR STUD ELEVATION
SCALE: 3/4" = 1'-0"



4/S4.2 TYP BOLLARD FOUNDATION PAD SECTION
SCALE: 3/4" = 1'-0"

1. TRIM DOCK CAP LEG @ BOLLARD FOUNDATIONS



5/S4.2 BOLLARD PAD REBAR BENDING DIAGRAMS
SCALE: 3/4" = 1'-0"

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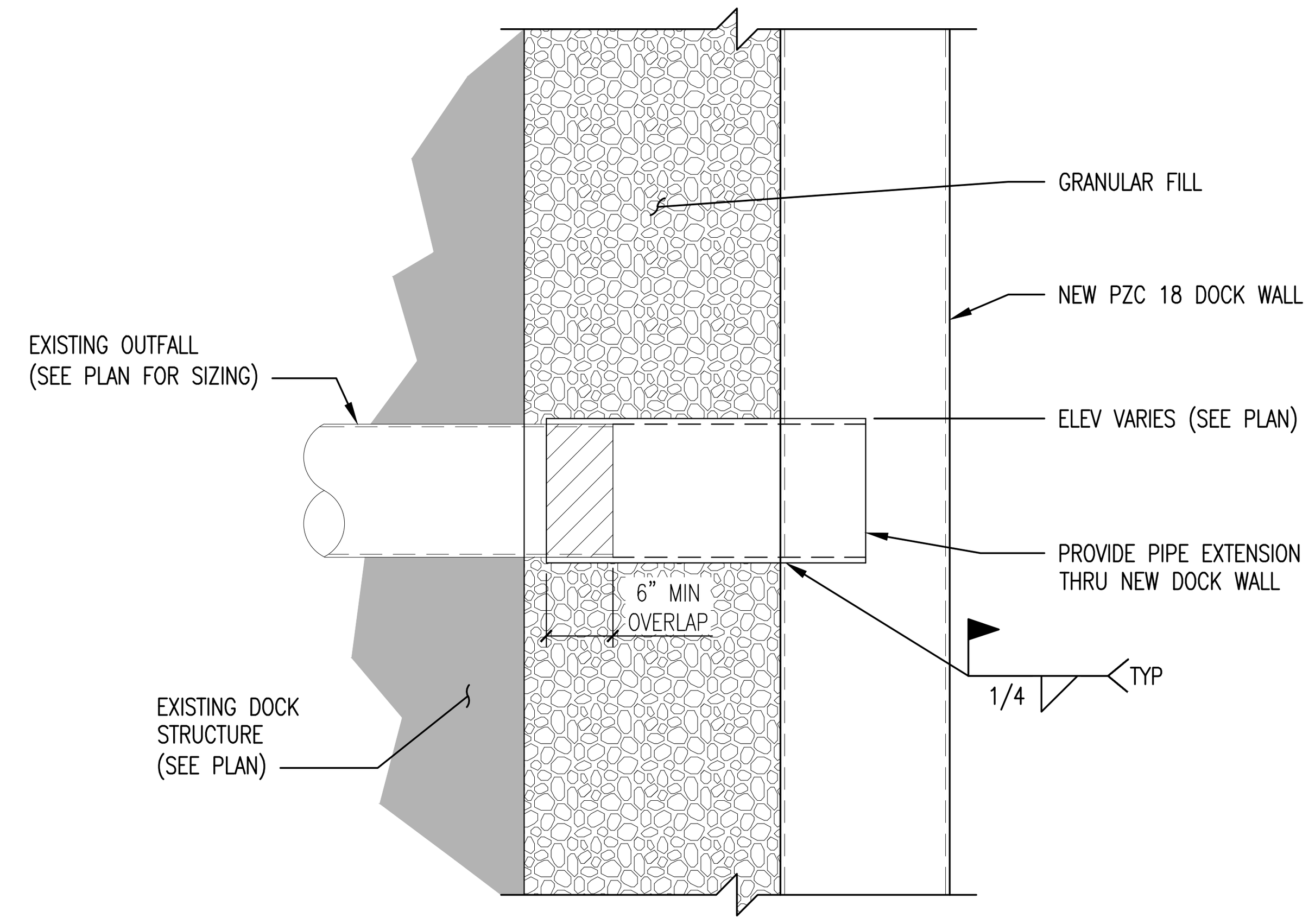
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

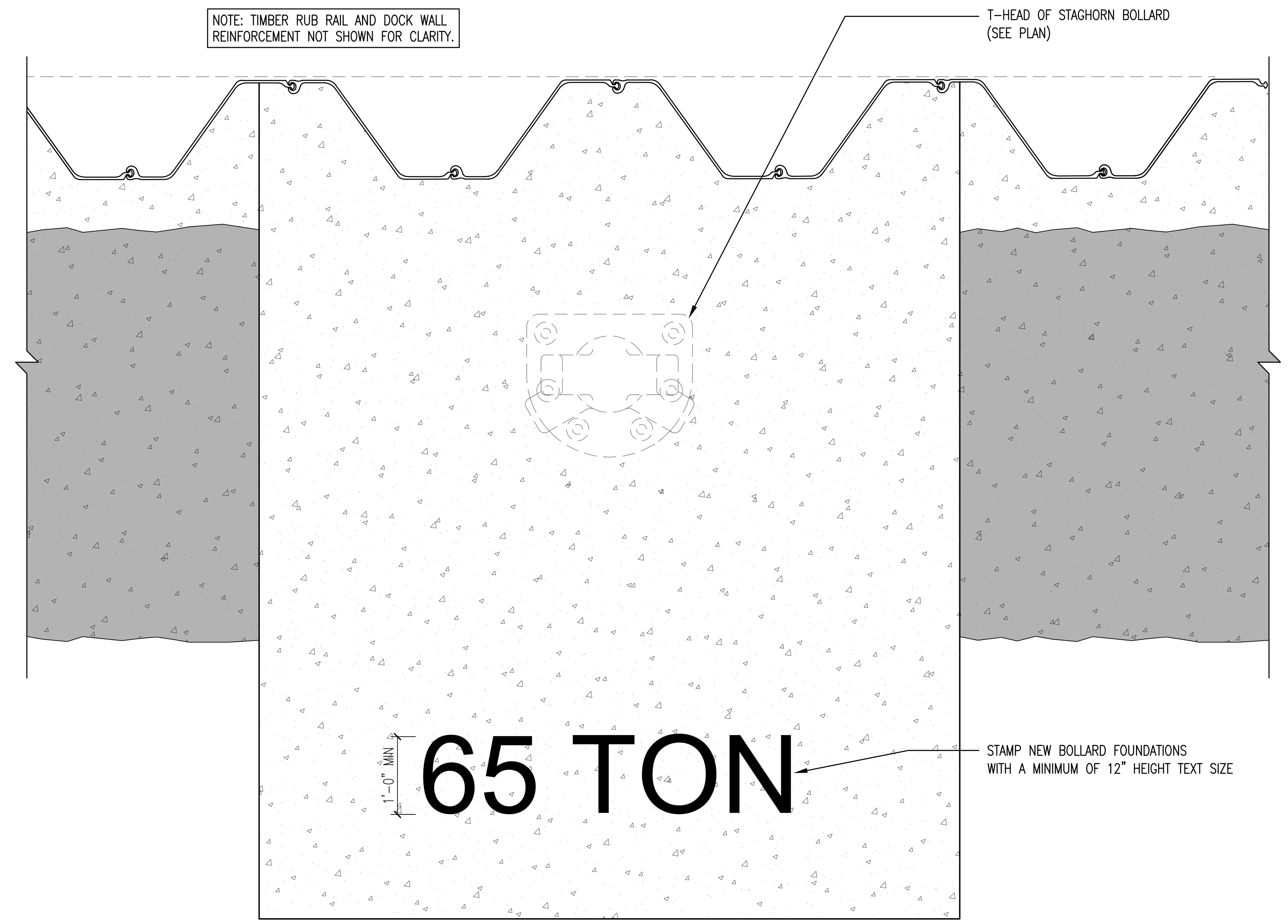
General Sections and Details

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET: S4.2



2 / S4.3 TYPICAL BOLLARD FOUNDATION STAMP
SCALE: 3/4" = 1'-0"



2 / S4.3 TYPICAL BOLLARD FOUNDATION STAMP
SCALE: 3/4" = 1'-0"

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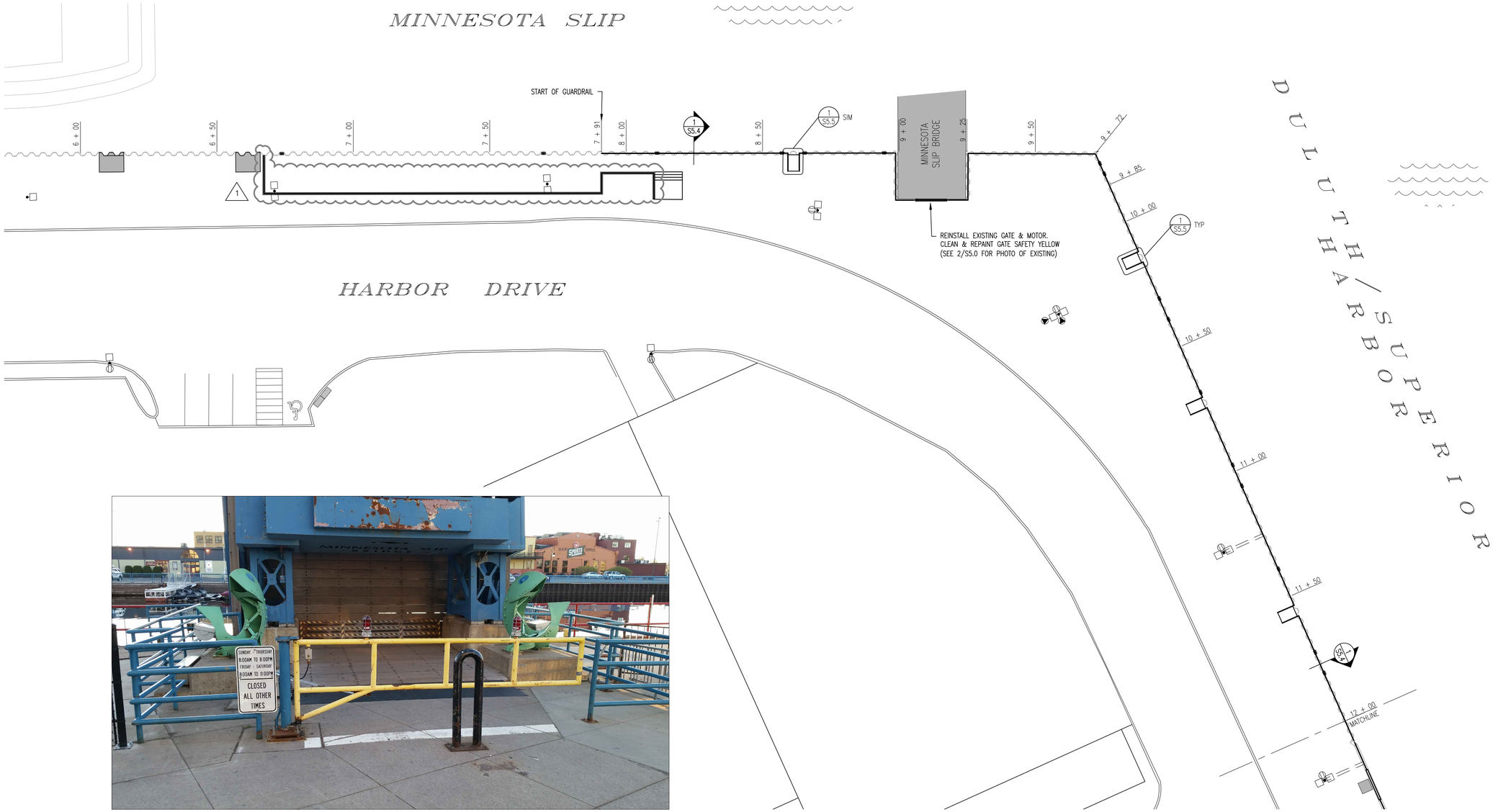
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

General Sections and Details

JOB No: 161080
DATE: 10-31-17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S4.3



2 / S5.0 EXISTING MN SLIP BRIDGE GATE

1 / S5.0 GUARDRAIL PLAN- STA 6+00 TO 12+00

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CAD	ISSUED FOR BID	1	10/19/17
CAD	General Revisions	1	10-31-17

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

Guardrail Plan
Station 6+00 to 12+00

JOB No: 161080
DATE: 10/19/17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S5.0

10/19/2017 3:40 PM
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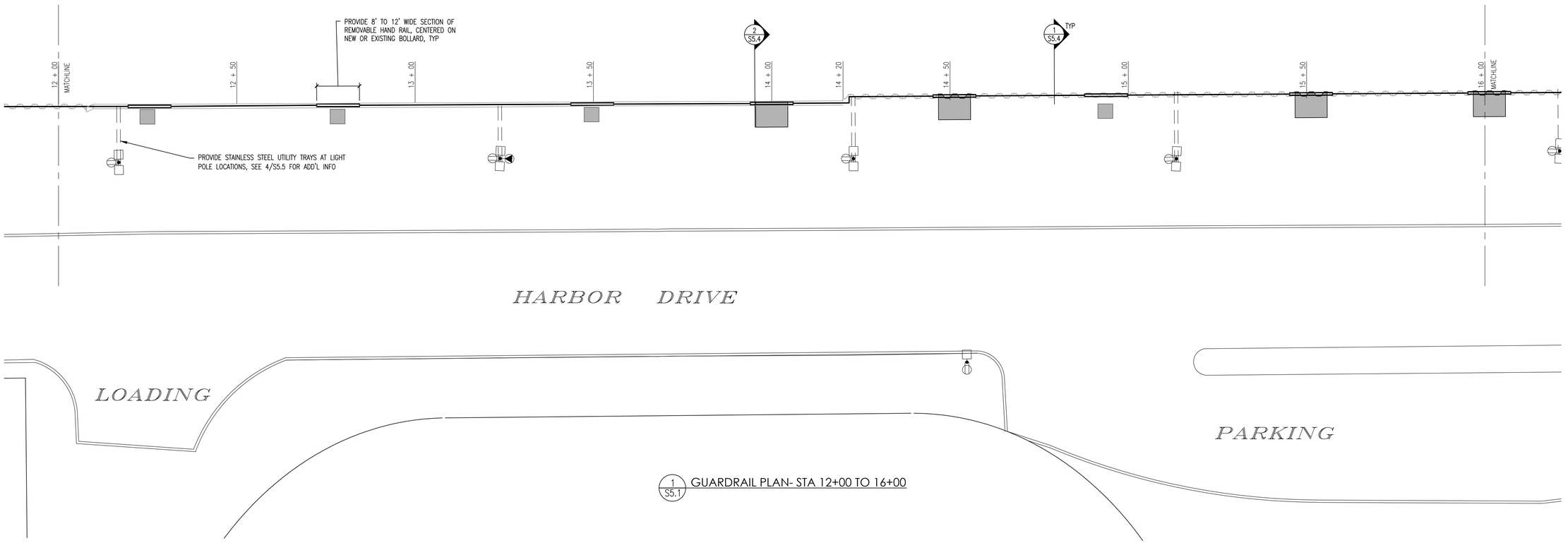

1 S5.1 GUARDRAIL PLAN- STA 12+00 TO 16+00

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TWIN CITIES - IRON RANGE

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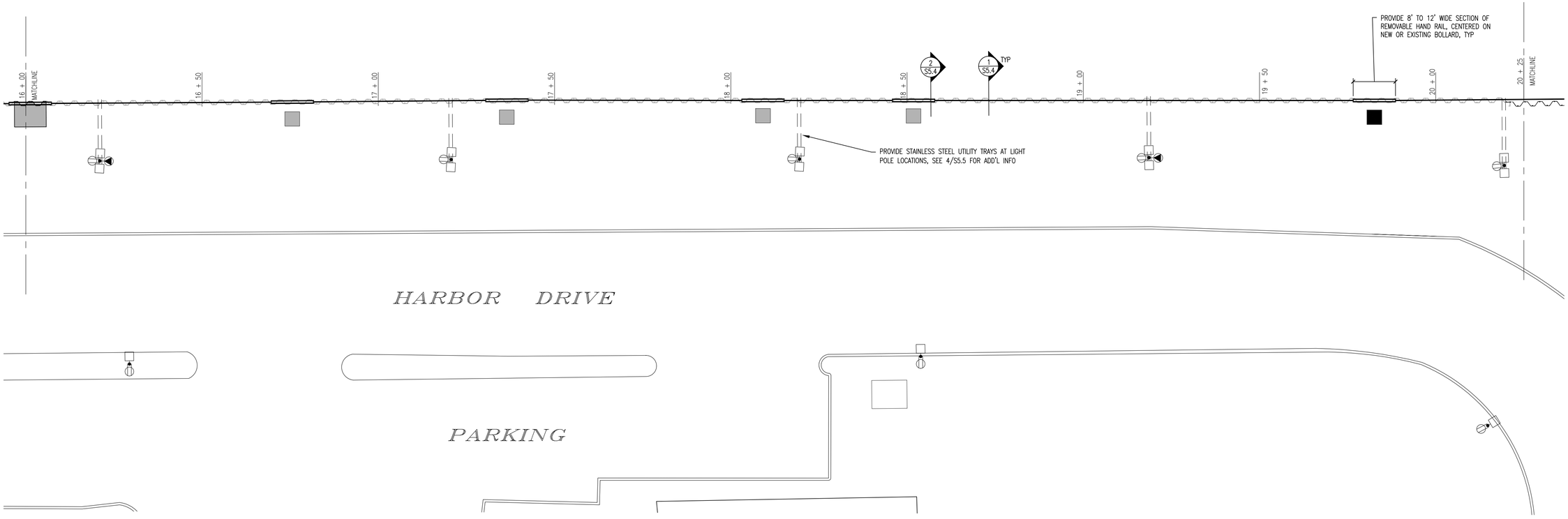
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

Guardrail Plan
Station 12+00 to 16+00

JOB No: 161080
DATE: 10/19/17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S5.1

DULUTH / SUPERIOR HARBOR



1 S5.2 GUARDRAIL PLAN- STA 16+00 TO 20+25

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TWIN CITIES - IRON RANGE

DATE:	REV:	DESCRIPTION	REV. BY:
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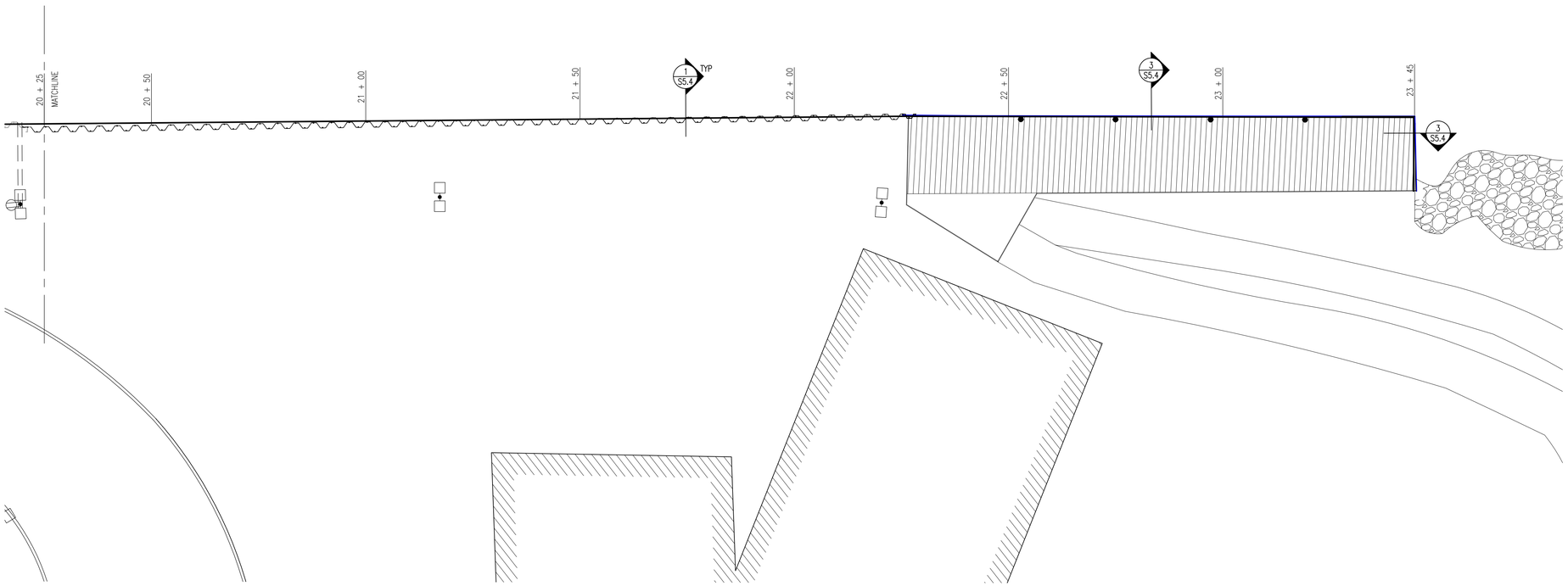
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

Guardrail Plan
Station 16+00 to 20+25

JOB No: 161080
DATE: 10/19/17
DRAWN BY: PJB
DESIGNED BY: CWS

SHEET:
S5.2

D U L U T H / S U P E R I O R
H A R B O R



1 / S5.3 GUARDRAIL PLAN- STA 20+25 TO 23+45

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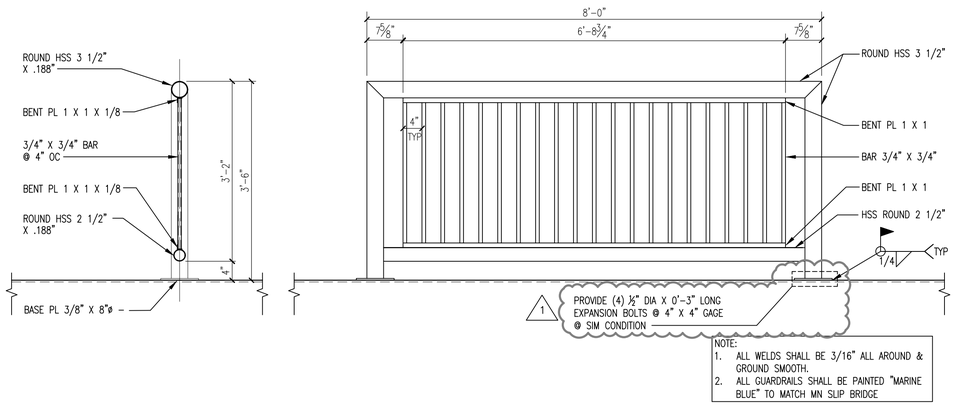
DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

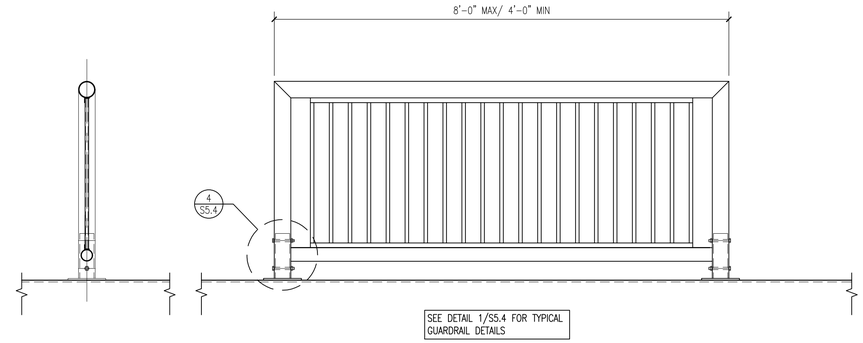
Guardrail Plan
Station 20+25 to 23+45

JOB No: 161080
DATE: 10/19/17
DRAWN BY: PJB
DESIGNED BY: CWS

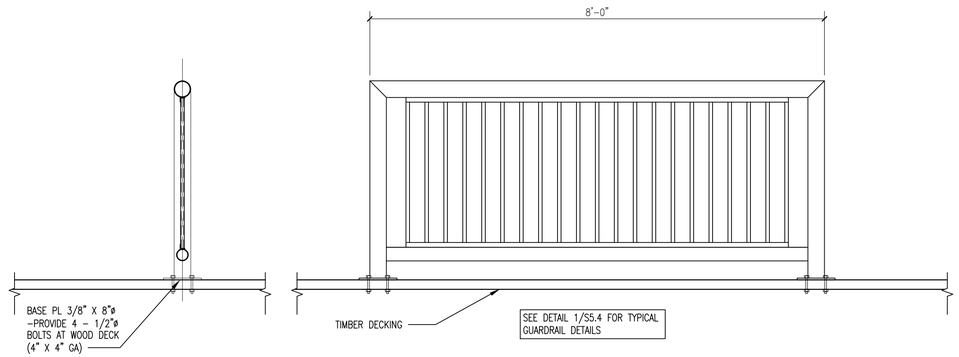
SHEET:
S5.3



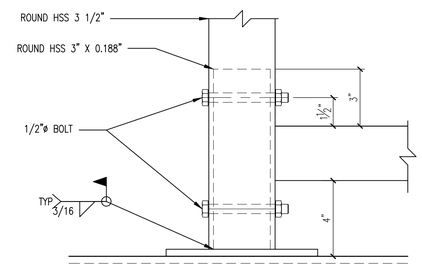
1 / S5.4 TYP GUARDRAIL DETAILS
SCALE: 3/4" = 1'-0"



2 / S5.4 REMOVABLE GUARDRAIL DETAILS
SCALE: 3/4" = 1'-0"



3 / S5.4 TIMBER DECK GUARDRAIL DETAILS
SCALE: 3/4" = 1'-0"



4 / S5.4 REMOVABLE GUARDRAIL DETAIL
SCALE: 3" = 1'-0"

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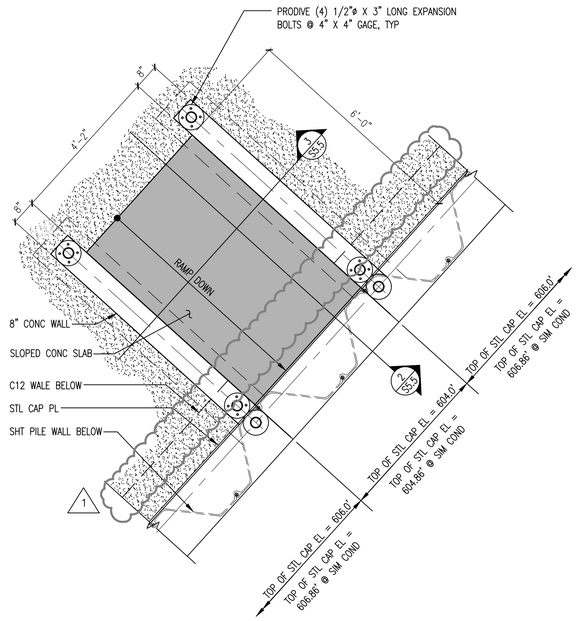
10-31-17	1	General Revisions	CAD

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

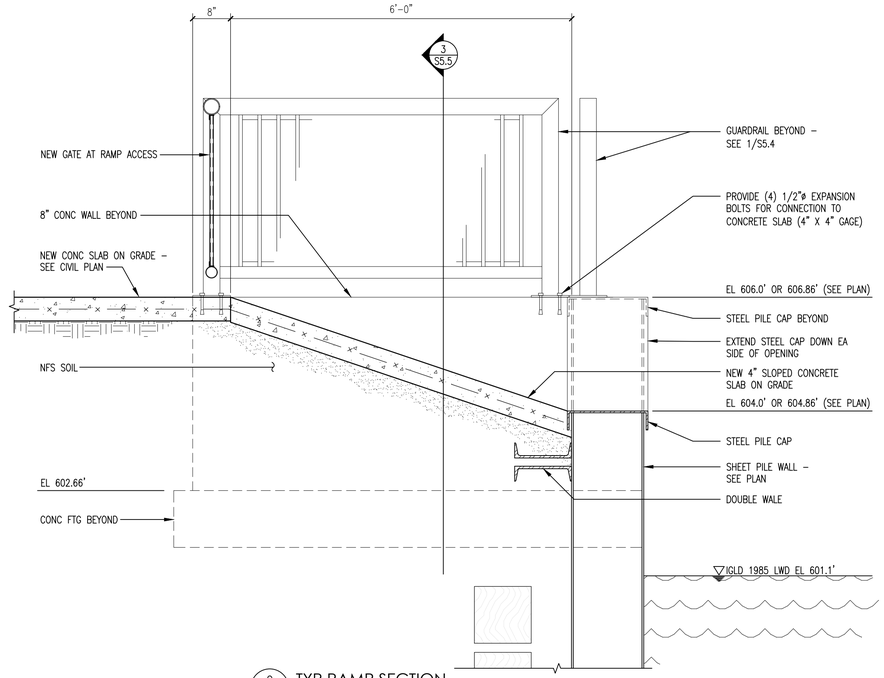
General Details

JOB No: 161080
DATE: 10/19/17
DRAWN BY: SAJ
DESIGNED BY: CAD

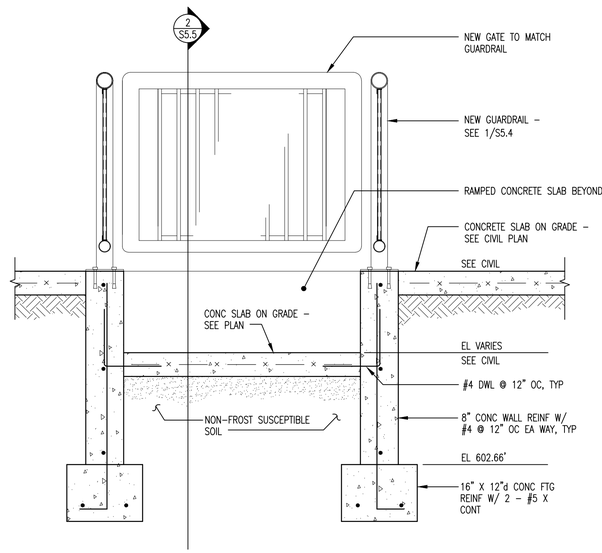
SHEET:
S5.4



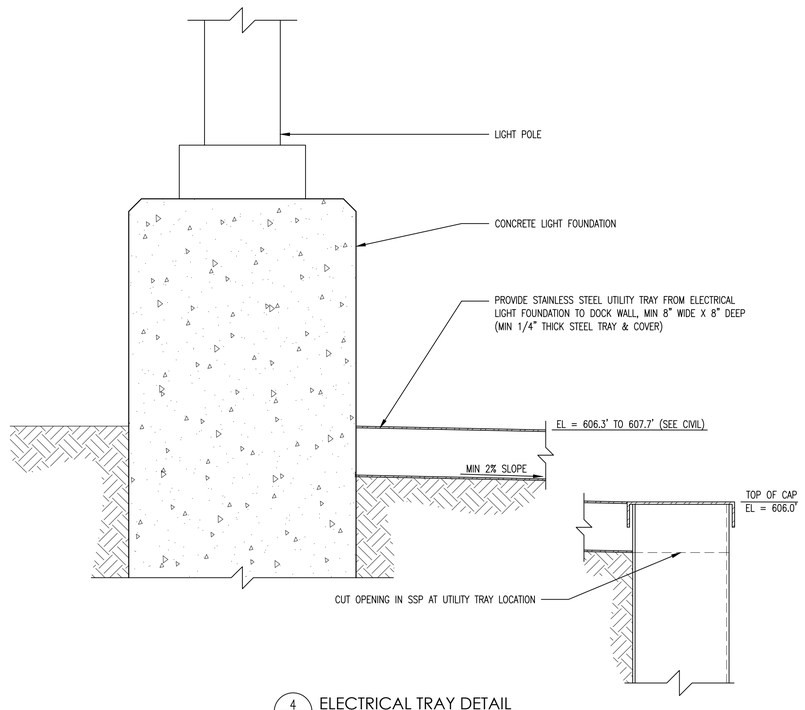
1 S5.5 TYP RAMP PLAN
SCALE: 1/2" = 1'-0"



2 S5.5 TYP RAMP SECTION
SCALE: 3/4" = 1'-0"



3 S5.5 TYP RAMP SECTION
SCALE: 3/4" = 1'-0"



4 S5.5 ELECTRICAL TRAY DETAIL
SCALE: 1" = 1'-0"

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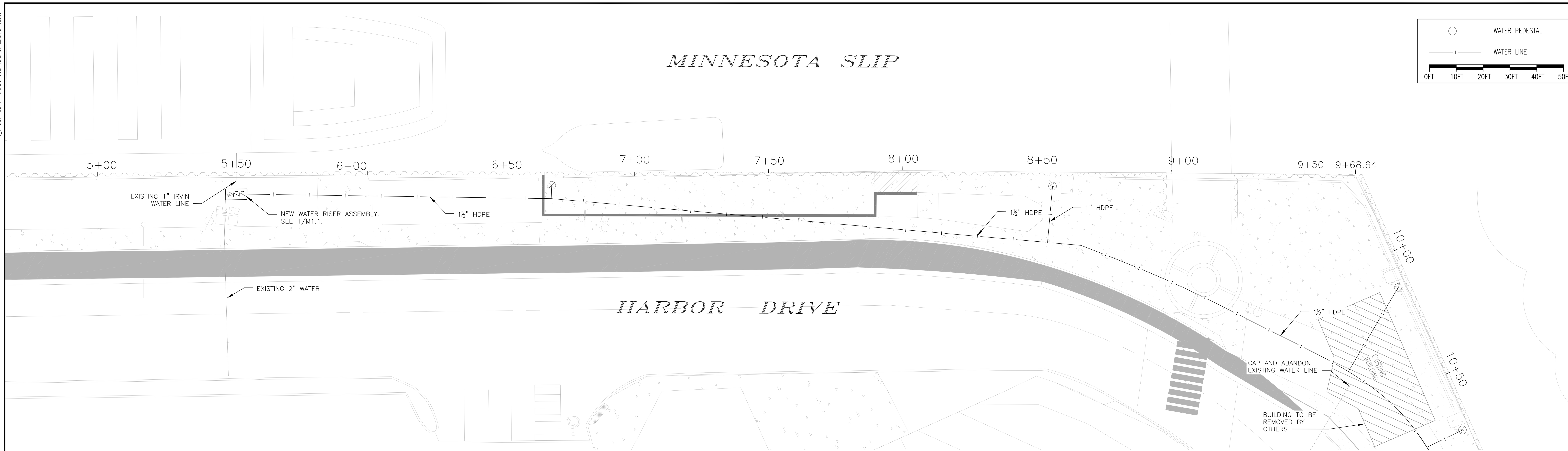
CAD	ISSUED FOR BID	1	10/19/17
CAD	General Revision	1	10-31-17

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

General Details

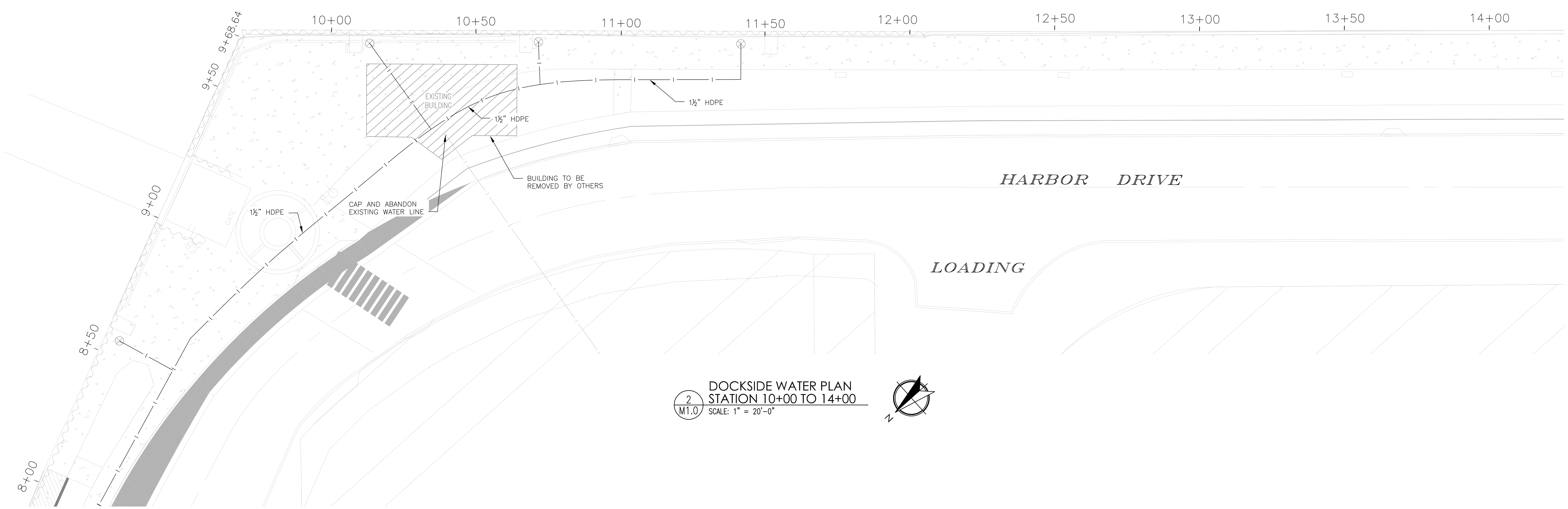
JOB No: 161080
DATE: 10/19/17
DRAWN BY: SAJ
DESIGNED BY: CAD

SHEET:
S5.5



1 M1.0 DOCKSIDE WATER PLAN STATION 5+00 TO 10+00
SCALE: 1" = 20'-0"

LAKE SUPERIOR



2 M1.0 DOCKSIDE WATER PLAN STATION 10+00 TO 14+00
SCALE: 1" = 20'-0"

AMI Consulting Engineers P.A.
91 Main Street Superior, WI
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TWIN CITIES - IRON RANGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED MECHANICAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

NAME: Adam D. Marksteiner
SIGNATURE:
DATE: 10/31/2017 LIC. No.: 51812

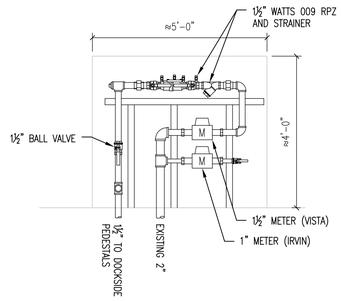
DATE:	REV:	DESCRIPTION	REV. BY:
10/31/17	0	Issued For Construction	ADM

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

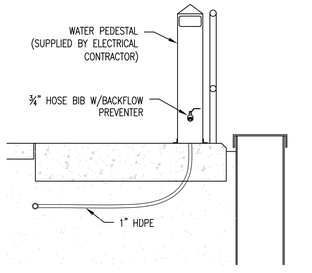
Dockside Water Plan
Station 5+00 to 14+00

JOB No: 161080
DATE: 10/31/17
DRAWN BY: ADM
DESIGNED BY: ADM

SHEET:
M1.0



1 M1.1 WATER RISER DETAIL
SCALE: 1/2" = 1'-0"



2 M1.1 TYPICAL PEDESTAL INSTALLATION DETAIL
SCALE: 1/2" = 1'-0"

GENERAL NOTES

1. CODES, RULES, AND REGULATIONS
   1.1. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH MN STATE BUILDING CODE, MN STATE PLUMBING CODE, AND APPLICABLE RULES, REGULATIONS OF LOCAL AND STATE GOVERNMENTS, AND UTILITY REQUIREMENTS.
   1.2. DRAWINGS AND SPECIFICATIONS INDICATE MINIMUM STANDARDS OF CONSTRUCTION.
   1.3. CONTRACTOR SHALL COOPERATE WITH ALL LOCAL BUILDING OFFICIALS, AND UTILITIES

2. GENERAL REQUIREMENTS
   2.1. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES IN ORDER TO AVOID ALL INTERFERENCE.
   2.2. CONTRACTOR SHALL MAKE ALL CONNECTIONS OF HIS TRADE AND SHALL CONFORM WITH, COOPERATE WITH, AND ASSIST OTHER CONTRACTORS
   2.3. CONTRACTOR SHALL VERIFY ALL EXISTING SIZES, FUNCTIONS, LOCATIONS, AND CONDITIONS PRIOR TO BEGINNING WORK
   2.4. CONTRACTOR SHALL NOT MODIFY STRUCTURAL COMPONENTS WITHOUT PERMISSION FROM THE ENGINEER
   2.1. RUN AND ARRANGEMENT OF PIPING SHALL BE APPROXIMATELY AS INDICATED ON DRAWINGS, SUBJECT TO MODIFICATIONS AS REQUIRED. CONTRACTOR SHALL REFER TO AND CAREFULLY CHECK DRAWINGS AND DETAILS, AND SHALL ARRANGE ITS WORK ACCORDINGLY.
   2.2. MATERIALS SHALL BE NEW AND OF BEST QUALITY.
   2.3. MATERIALS, EQUIPMENT, FIXTURES, AND FITTINGS SHALL BE PROPERLY AND ADEQUATELY PROTECTED BY THE CONTRACTOR.

3. INSTALLATION
   3.1. MATERIALS AND INSTALLATION TO CONFORM TO APPLICABLE STATE AND LOCAL CODES.
   3.2. PIPING SHALL BE PROTECTED FROM DAMAGE DUE TO ABRASION, CONTACT WITH SHARP SURFACES, OR KINKING/PINCHING.

4. PLUMBING MATERIALS
   4.1. ALL HDPE PIPE TO BE PE4710 IPS AND MIN. DR11
   4.2. SHALL BE IN ACCORDANCE WITH STATE PLUMBING CODE
   4.3. SLEEVES – PROVIDE SLEEVES FOR ALL PIPES PASSING THROUGH MASONRY, CONCRETE, FLOORS OR WALLS OF SUFFICIENT SIZE FOR PIPE AND INSULATION.
   4.4. EXPANSION AND CONTRACTION – PROVIDE FOR EXPANSION AND CONTRACTION.

5. MISCELLANEOUS

   5.1. CONTRACTOR SHALL TEST ENTIRE WATER SUPPLY SYSTEM PER MN PLUMBING CODE SECTION 609.4. PROVIDE RECORD OF TEST RESULTS TO OWNER AND ENGINEER.
   5.2. ALL PIPING TO BE FLUSHED AND SANITIZED PER MN PLUMBING CODE SECTION 609.9. PROVIDE RECORD OF TESTING RESULTS TO OWNER AND ENGINEER.
   5.3. THE CONTRACTOR SHALL GUARANTEE THAT DURING THE ONE YEAR PERIOD FOLLOWING THE COMPLETION OF THE INSTALLATION IT SHALL REPAIR ALL DEFECTIVE WORK AND REPLACE ALL DEFECTIVE MATERIALS FURNISHED OR INSTALLED UNDER THIS CONTRACT FREE OF COST TO OWNER

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TWIN CITIES - IRON RANGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

NAME: Adam D. Marksteiner
SIGNATURE:
DATE: 10/31/2017
LIC. No: 51812

DATE:	REV:	DESCRIPTION	REV. BY:
10/31/17	0	Issued For Construction	ADM

DECC Seawall Project
City of Duluth
350 Harbor Drive
Duluth, Minnesota

Dockside Water Plan
Installation Details

JOB No: 161080
DATE: 10/31/17
DRAWN BY: ADM
DESIGNED BY: ADM

SHEET: M1.1

LIGHTING

	MOUNTING HEIGHT
A / 21 — FIXTURE TYPE, CEILING OUTLET, SWITCH, CIRCUIT NO.	
RECESSED OUTLET	
BRACKET FIXTURE	AS NOTED
LED RECESSED FIXTURE	
BRACKET LED FIXTURE	AS NOTED
EXIT LIGHT FIXTURE, DENOTES WALL MOUNTED, DENOTES ARROW DIRECTION	
DENOTES NUMBER OF HEADS	
EBU — TWIN HEAD EMERGENCY BATTERY UNIT WITH LIGHTS, CHARGER AND BATTERY	
EBU-RC — EMERGENCY BATTERY UNIT WITH REMOTE CAPABILITY	
ELB — EMERGENCY LIGHT BATTERY WITH CHARGER	
ELRHC — EMERGENCY LIGHT WITH SINGLE REMOTE HEAD	
ELRH — EMERGENCY LIGHT WITH DOUBLE REMOTE HEADS	

SWITCHES

	MOUNTING HEIGHT
WS $ — WALL BOX OCCUPANCY SENSOR SWITCH	48"
$ — SWITCH 1-POLE	48"
3 or 4 $ — 3 OR 4 WAY SWITCH.	48"
2 $ — 2 - POLE SWITCH	48"
$ P — SWITCH & PILOT	48"
PC — PHOTO CELL	48"
$D — DIMMER SWITCH (LED FIXTURE COMPATIBLE AS REQUIRED)	48"
$K — KEY SWITCH	48"

RECEPTACLES

	MOUNTING HEIGHT
DUPLEX RECEPTACLE	18" OR AS NOTED
DOUBLE DUPLEX RECEPTACLE	"
DUPLEX REC. TOP HALF SWITCHED	"
120/208/240 VOLT RECEPTACLE	"
GFI — GROUND FAULT INTERRUPTER DUPLEX RECEPTACLE (FEED THROUGH TYPE)	"
WP — WEATHERPROOF RECEPTACLE	"
EM — RECEPTACLE ON EMERGENCY	"
SS — SURGE SUPPRESSION ISOLATED GROUND RECEPTACLE	"
ISOLATED GROUND RECEPTACLE	"
FLOOR OUTLET	
PLUG-IN-STRIP	AS NOTED

MOTORS

	MOUNTING HEIGHT
MOTOR OUTLET - SEE SCHEDULE (REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATIONS)	
MOTOR STARTER	48"
LOCKABLE DISCONNECT SWITCH	48"
PUSH BUTTON	48"
INTERVAL TIMER	54"
R — RELAY	54"
STARTER AND PILOT	54"
PUSH BUTTON AND PILOT	48"
T — THERMOSTAT	54"

OTHERS

	MOUNTING HEIGHT
SPECIAL PURPOSE OUTLET	AS NOTED
JUNCTION BOX	18" OR AS NOTED
JUNCTION BOX CEILING	
JUNCTION BOX FLOOR	
T — TRANSFORMER (GROUND PER NEC)	AS NOTED
CABLE TRAY	AS NOTED

CONDUIT

- CONDUIT IN CEILING, FLOOR OR WALL AS REQUIRED BY FIELD CONDITIONS
- CONDUIT IN FLOOR/BELOW GRADE
- TELEPHONE CONDUIT
- SR — SURFACE RACEWAY
- SC — SURFACE CONDUIT
- FLEXIBLE CONDUIT OR ROMEX RUN IN PRECUTS
- SEE NOTES OR SPEC. FOR PARTICULAR SYSTEM

FIRE ALARM

	MOUNTING HEIGHT
F — FIRE ALARM PULL STATION	48"
F — FIRE ALARM HORN W/ STROBE LIGHT	MOUNT 80" A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.
F — FIRE ALARM STROBE	MOUNT 80" A.F.F. OR 6" BELOW CEILING, WHICHEVER IS LOWER.
FSD — FIRE ALARM FAN SHUT DOWN	
THERMAL DETECTOR	
SMOKE DETECTOR - ROOM OR DUCT TYPE AS REQUIRED BY APPLICATION	
DUCT SMOKE DETECTOR	
F — FIRE ALARM DOOR RELEASE	AT TOP OF DOOR - REFER TO ARCHITECTURAL DOOR SCHEDULE OR AS NOTED OTHERWISE
FS — FLOW SWITCH	
TS — TAMPER SWITCH	

REFERENCE INDICATION

- 1 — SEE NOTE INDICATED BY NUMBER
- (E)MPP-1 — SEE EQUIPMENT SCHEDULE FOR MORE INFORMATION

SIGNALS

	MOUNTING HEIGHT
BELL	7'-6"
BUZZER	7'-6"
C — CLOCK	7'-6"
CLOCK & BELL SEPARATE OUTLETS	7'-6"
TELEPHONE	18" OR AS NOTED
TELEPHONE FLOOR OUTLET	
DATA DEVICE	18" OR AS NOTED
WAP — WIRELESS ACCES POINT	CEILING
DATA FLOOR OUTLET	
VOICE/DATA OUTLET	18" OR AS NOTED
VOICE/DATA FLOOR OUTLET	
NURSE CALL DUTY STATION	7'-6"
NURSE CALL LT (1 WHITE LAMP)	7'-6"
NURSE CALL LT (1 RED LAMP)	7'-6"
NURSE CALL LT-1 WHITE & 1 RED LP.	7'-6"
NURSES CALL PATIENT STATION	AS NOTED
TV — TV OUTLET	7'-0"

SECURITY

	MOUNTING HEIGHT
D — DOOR POSITION SWITCH	48"
WS — WINDOW SENSORS	
C TV — TV CAMERA OUTLET	AS NOTED
M TV — TV MONITOR OUTLET	AS NOTED
M — MOTION DETECTOR	AS NOTED
CR — CARD READER	48"
KP — KEY PADS	48"
L — ELECTRIC LOCK	
SKP — SECURITY KEY PAD	
SCP — SECURITY CONTROL PANEL	

HOMERUN

- LP3N-101 3,5,7 — 3 - SINGLE POLE CIRCUIT CIRCUIT NO.'S
- LP3N-101 27/2 — 1 - TWO POLE CIRCUIT CIRCUIT NO./BREAKER
- LP3N-101 38/3 — 1 - THREE POLE CIRCUIT CIRCUIT NO./BREAKER

SOUND SYSTEM

	MOUNTING HEIGHT
S — WALL MOUNTED SPEAKER	7'-0"
S — SOUND MASKING SPEAKERS ABOVE CEILING	
J S — WALL MOUNTED SPEAKER JACK	18"
S — HORN TYPE SPEAKER	7'-6"
M — MICROPHONE OUTLET	18"
VC — VOLUME CONTROL	54"
AUX — AUXILIARY JACK	18"

NOTE:

ALL OF THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

ELECTRICAL GENERAL NOTES

A. PROVIDE CONDUIT AND WIRE AS REQUIRED TO ACHIEVE CIRCUITING SHOWN. SIZE CONDUCTORS PER NEC AMPACITY AND WIRE FILL CRITERIA. PROVIDE DEDICATED NEUTRAL AND GROUND CONDUCTORS FOR ALL CIRCUITING CU (UNO). INCREASE BRANCH CIRCUIT CONDUCTORS INCLUDING EQUIPMENT GROUNDING CONDUCTORS PROPORTIONALLY FOR NO MORE THAN 3□ VOLTAGE DROP PER NEC 210.

B. SECURITY SYSTEM WORK TO BE PROVIDED UNDER SEPARATE CONTRACT. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE CONDUIT PROVISIONS, BACK BOXES, ROUGH-INS, SLEEVES AND POWER TO EQUIPMENT FOR EXACT REQUIREMENTS PRIOR TO START OF WORK.

C. COOPERATE WITH OTHER TRADES FOR PROPER INSTALLATION OF EQUIPMENT. CONSULT THE DRAWINGS OF OTHER TRADES OR CRAFTS TO AVOID CONFLICTS WITH EQUIPMENT, ETC. CONFLICTS SHALL BE RESOLVED PRIOR TO ROUGH-IN AND AT NO ADDITIONAL COST TO THE OWNER.

D. PROVIDE POWER WIRING AND CONNECT TO EACH ITEM OF EQUIPMENT FURNISHED BY OWNER AND OTHER TRADES AS SHOWN ON THE DRAWINGS. VERIFY ROUGH-IN REQUIREMENTS FOR EACH ITEM. FURNISH AND INSTALL MINOR ITEMS WHICH ARE OBVIOUSLY AND REASONABLY NECESSARY FOR COMPLETION.

E. LEAVE THE SITE CLEAN AND READY FOR OCCUPANCY. REMOVE DIRT, DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT AND WIRE SCRAPS AND MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THIS DIVISION OF THE WORK DURING CONSTRUCTION. COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS AND LEFT AS NEW BEFORE FINAL ACCEPTANCE OF WORK.

F. PERFORM WORK TO COMPLY WITH THE STANDARD PRACTICES FOR GOOD WORKMANSHIP PUBLISHED BY NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA). COMPLY WITH THE LATEST ENFORCED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), LOCAL CODES, AMENDMENTS, AND ORDINANCES.

G. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO FIELD COORDINATE ALL FINAL CIVIL WORK AND EQUIPMENT LOCATIONS ALONG WITH CONNECTION REQUIREMENTS AND CONTROL WIRING PRIOR TO ROUGH-IN. .

H. PROVIDE COMPLETE O&M MANUAL INCLUDING APPROVED SUBMITTAL DRAWINGS, WARRANTY INFORMATION FOR ALL PRODUCT SUPPLIED, AND MANUFACTURES OPERATION AND MAINTENANCE INSTRUCTIONS AND AS-CONSTRUCTED DRAWINGS.

J. PROVIDE ELECTRONIC MANUFACTURES SUBMITTAL DRAWINGS FOR APPROVAL PRIOR TO RELEASE, ASSOCIATED WITH THE FOLLOWING: POWER DISTRIBUTION EQUIPMENT□ LIGHTING FIXTURES.

K. ELECTRICAL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF A LICENSED MASTER ELECTRICIAN. PROCURE PERMITS AND LICENSES AND PAY FEES ASSOCIATED WITH THIS WORK.

L. MATERIALS FURNISHED FOR THIS PROJECT SHALL BE NEW, COMMERCIAL GRADE, FREE OF DEFECTS, AND LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY UNO.

M. PROVIDE OWNER COORDINATION FOR COPPER AND FIBER OPTIC SERVICES TO SITE.

PROJECT SUMMARY

A. REFER TO BID FORM FOR SPECIFIC WORK DESCRIPTION INCLUDING REQUIRED WORK BETWEEN STATION 00+00 TO STATION 12+08.

B. REFER TO BID FORM FOR SPECIFIC ELECTRICAL WORK UNDER ALTERNATE BETWEEN STATION 00+00 TO STATION 12+08.

C. ELECTRICAL WORK INIDCATED ON PLAN BEYOND STATION 12+08 IS SHOWN FOR REFERENCE, PLANNING, AND FUTURE PHASE COMPLETION.

LIGHT FIXTURE IDENTIFICATION ID SYSTEM

TV-S1A1
① ②③④⑤

① SITE LOCATION:
BW = BAYWALK
BF = BAYFRONT PARK
LW = LAKEWALK
LP = LAKE PLACE PARK
CL = CORNER OF THE LAKE PARK
VM = VETERANS MEMORIAL PARK
LE = LEIF ERIKSON PARK
RG = ROSE GARDEN
DH = DECC HARBOR WALK

② MOUNTING:
P = POLE MOUNTED
S = SURFACE MOUNTED

③ POLE/LOCATION NUMBER:
1 = POLE/LOCATION #1
2 = POLE/LOCATION #2
3 = POLE/LOCATION #3
ETC.

④ LIGHT FIXTURE:
A = LIGHT FIXTURE A
B = LIGHT FIXTURE B
C = LIGHT FIXTURE C
ETC.

⑤ PARKING RAMP LEVEL
G = GROUND LEVEL
1 = LEVEL 1
2 = LEVEL 2
3 = LEVEL 3
4 = LEVEL 4
ETC.

PANEL DESIGNATION SYSTEM

L3N-101
①②③ ④⑤

① L = LIGHTING
P = POWER
D = DISTRIBUTION
S = SWITCHBOARD
M = MOTOR CONTROL CENTER
R = RELAY PANEL

② 1 = 120/240V-1Ø
2 = 120/240-3Ø,4W HL
3 = 120/208V-3Ø
4 = 277/480V-3Ø
5 = -SPECIAL-

③ N = NORMAL POWER SOURCE
E = EMERGENCY POWER SOURCE
U = UNINTERUPTIBLE POWER SOURCE

④ I = IRVIN SHIP
B = BASEMENT LEVEL,/FLOOR
G = GROUND FLOOR
1 = FIRST FLOOR
2 = SECOND FLOOR
ETC.

⑤ 01 = PANELBOARD #1
02 = PANELBOARD #2
03 = PANELBOARD #3
ETC.

INDEX OF ELECTRICAL DRAWINGS

E0.1	TITLE SHEET
E1.1	OVERALL ELECTRICAL DEMOLITION PLAN
E1.2	OVERALL SITE LIGHTING & POWER PLAN
E1.3	ENLARGED PLAN STA 0+00 TO 5+00
E1.4	ENLARGED PLAN STA 5+00 TO 12+50
E1.5	ENLARGED PLAN STA 12+50 TO 18+00
E1.6	ENLARGED PLAN STA 18+00 TO 22+50
E2.1	DETAILS
E3.1	SCHEDULES

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PRINT NAME: DAVE T. BLUME
SIGNATURE:
DATE: 10/20/2017 LIC. NO. 24671

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501 e South Lake Avenue Suite 110
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(218)722-2255 FAX (218)722-4306
Project No. 84877

DATE:	REV:	DESCRIPTION	REV. BY:
10/20/2017	—	ISSUED FOR BIDDING	—
11/01/2017	—	ADDENDUM #1	—
—	—	—	—
—	—	—	—
—	—	—	—

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

TITLE SHEET

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

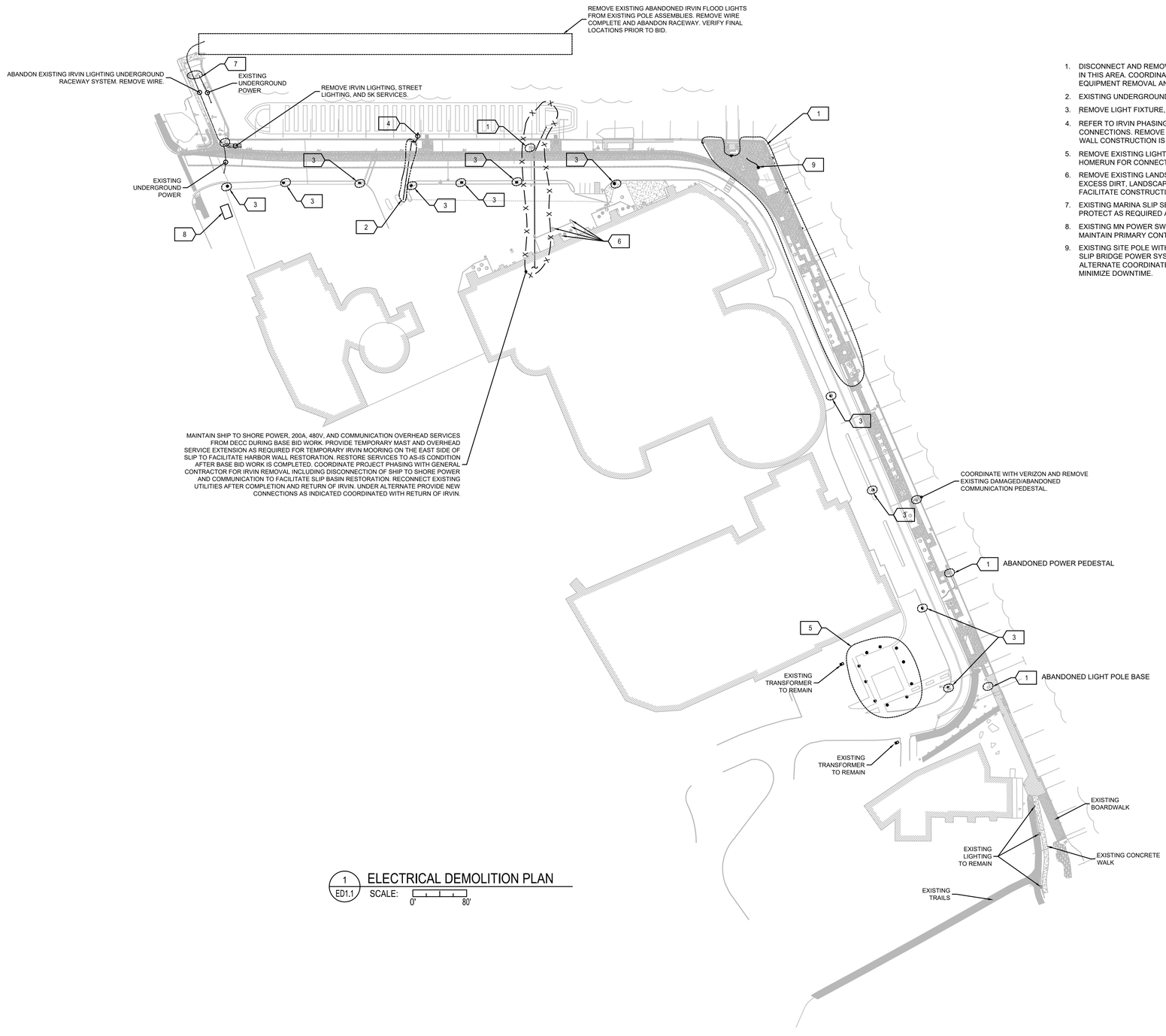
SHEET: E0.1

GENERAL NOTE

A. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE COMPLETE DEMOLITION TO FACILITATE NEW CONSTRUCTION IN PHASES REQUIRED.FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID. NO EXTRAS WILL BE ALLOWED DUE TO CONTRACTORS LACK OF KNOWLEDGE OF EXISTING CONDITIONS, SCOPE, AND/OR SCHEDULE.

KEYNOTE:

1. DISCONNECT AND REMOVE LIGHT FIXTURES, POWER, SECURITY,AND DATA DEVICES IN THIS AREA. COORDINATE WITH CITY OF DULUTH POLICE DEPARTMENT FOR CCTV EQUIPMENT REMOVAL AND REINSTALLATION.
2. EXISTING UNDERGROUND FIBER OPTIC CABLE TO REMAIN. PROTECT AS REQUIRED.
3. REMOVE LIGHT FIXTURE, POLE, BASE, AND BRANCH CIRCUITING COMPLETE.
4. REFER TO IRVIN PHASING PLAN NOTE FOR SHIP TO SHORE TEMPORARY CONNECTIONS. REMOVE EXISTING COMM. PEDESTAL AND REINSTALL AFTER SLIP WALL CONSTRUCTION IS COMPLETE.
5. REMOVE EXISTING LIGHTING SYSTEMS IN THIS AREA COMPLETE. SALVAGE EXISTING HOMERUN FOR CONNECTION TO NEW AS INDICATED ON SHEET E1.2.
6. REMOVE EXISTING LANDSCAPE, INCLUDING BUT NOT LIMITED TO TREES, SHRUBS, EXCESS DIRT, LANDSCAPE WALLS AND ELECTRICAL CONNECTIONS IN AREA TO FACILITATE CONSTRUCTION OF NEW MN. POWER SERVICE AREA.
7. EXISTING MARINA SLIP SERVICE TRANSFORMER AND EQUIPMENT TO REMAIN. PROTECT AS REQUIRED AND MAINTAIN SERVICE CONTINUITY.
8. EXISTING MN POWER SWITCHGEAR TO REMAIN. COORDINATE WITH MN POWER AND MAINTAIN PRIMARY CONTINUITY FOR SERVICES NOT AFFECTED BY DEMOLITION.
9. EXISTING SITE POLE WITH CITY OF DULUTH SECURITY CAMERAS ARE SERVED FROM SLIP BRIDGE POWER SYSTEM. MAINTAIN AND PROTECT UNDER BASE BID. UNDER ALTERNATE COORDINATE REMOVAL WITH INSTALLATOIN OF NEW AS INDICATED TO MINIMIZE DOWNTIME.



1 / ED1.1 ELECTRICAL DEMOLITION PLAN

SCALE: 0' 80'

N

2/14/2017 12:54 PM P:\84877.01_DECC\00_ACTIVE\CAD\84877-E1.dwg

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SIGNATURE:

DATE: 11/01/2017 LIC. NO. 24671

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DATE:	REV:	DESCRIPTION
10/20/2017		ISSUED FOR BIDDING
11/01/2017	--	ADDENDUM #1
--	--	--
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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

ELECTRICAL OVERALL DEMOLITION PLAN

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E1.1

LIGHTING CONTROL MATRIX

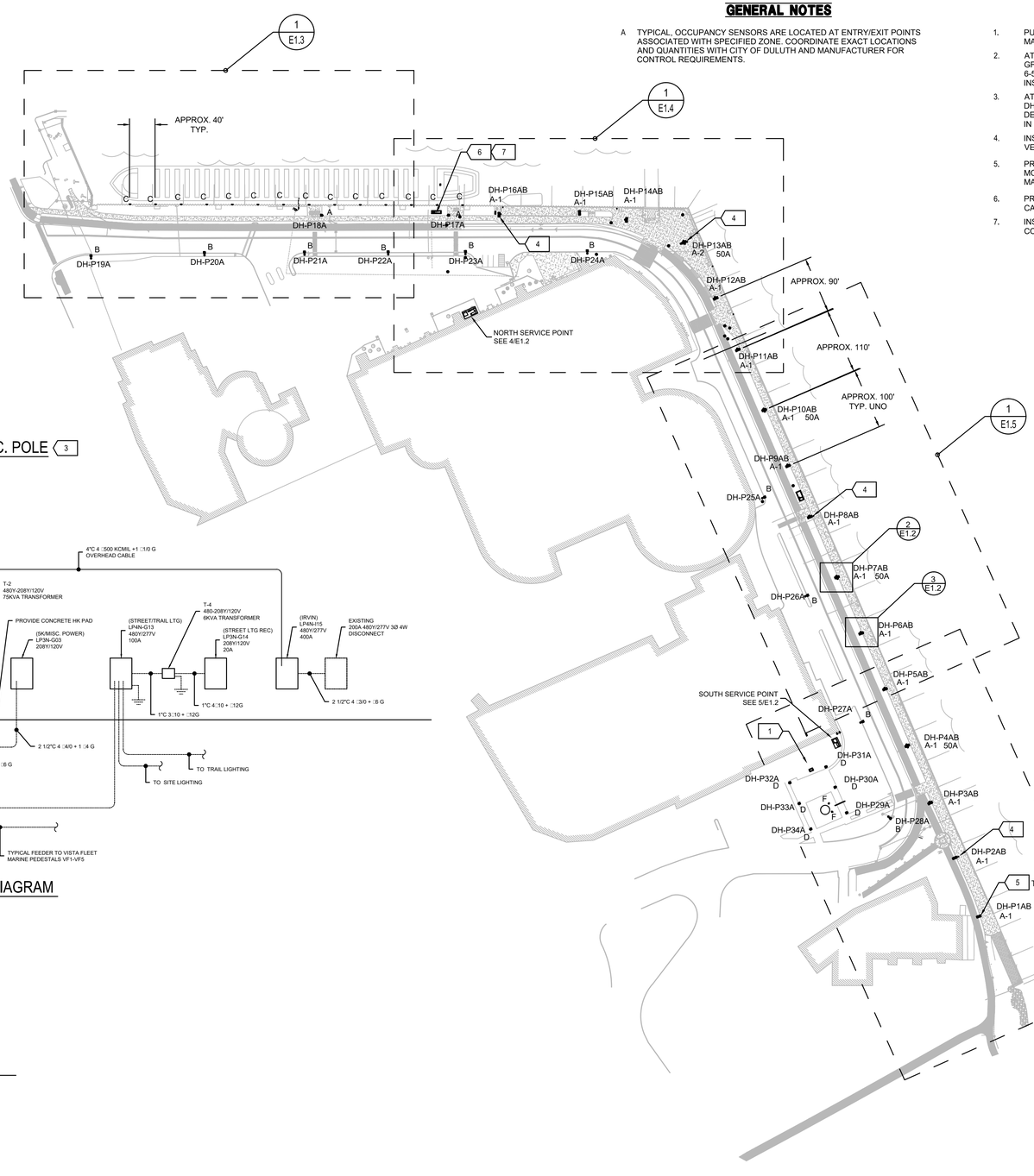
SYSTEM INPUTS	CONTROLLED BY WIRELESS OCCUPANCY SENSOR	CONTROLLED BY LOCAL PHOTOCELL (SPACE	CONTROLLED BY A SET TIME ON/OFF	CONTROLLED BY WIRELESS INTEGRAL EXTERNAL CONTROL MODULE	CONTROLLED BY A SET TIME OFF
TYPE 'A' LIGHT FIXTURES	•				
TYPE 'A-1' & 'A-2' LIGHT FIXTURES	•	•	•	•	
TYPE 'B' LIGHT FIXTURES		•			
TYPE 'C' LIGHT FIXTURES		•			•

GENERAL NOTES

A TYPICAL, OCCUPANCY SENSORS ARE LOCATED AT ENTRY/EXIT POINTS ASSOCIATED WITH SPECIFIED ZONE. COORDINATE EXACT LOCATIONS AND QUANTITIES WITH CITY OF DULUTH AND MANUFACTURER FOR CONTROL REQUIREMENTS.

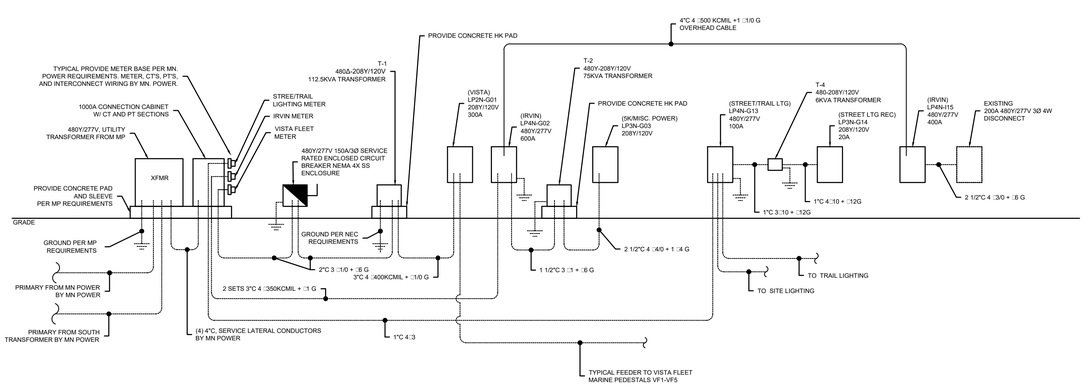
KEYNOTE:

1. PULLBOX 12" □12" HANDHOLE FOR CONNECTION TO EXISTING CIRCUITRY MADE AVAILABLE FOR STATUE AND SURROUNDING LIGHTING.
2. AT POLE LOCATIONS DH-P4, DH-P7, DH-P10 AND DH-P13. INSTALL 20A/120V GFI RECEPTACLE WITH DEDICATED CIRCUIT AND 50A/240V/1Ø, NEMA 6-50R IN FACTORY FURNISHED BACK BOXES INTEGRATED IN POLE. INSTALL WP IN-USE COVERPLATES.
3. AT POLE LOCATIONS DH-P3, DH-P5, DH-P6, DH-P8, DH-P9, DH-P11, DH-P12, AND DH-P14. INSTALL 20A/120V GFI RECEPTACLE WITH DEDICATED CIRCUIT IN FACTORY FURNISHED BACK BOXES INTEGRATED IN POLE. INSTALL WP IN-USE COVERPLATES.
4. INSTALL ECHELON SYSTEM OCCUPANCY SENSOR ON LIGHT FIXTURE. VERIFY EXACT MOUNTING REQUIREMENTS PRIOR TO INSTALLATION.
5. PROVIDE WIRELESS OUTDOOR LIGHTING CONTROLLER INTEGRAL OR MOUNTED TO EACH TYPE 'A', 'A-1', 'A-2', 'B' LIGHT FIXTURE AS MANUFACTURED BY ECHELON CONTROLS LUMEWAVE SERIES.
6. PROVIDE ECHELON LUMEWAVE SYSTEM GATEWAY MOUNTED WITHIN CABINET.
7. INSTALL ECHELON SYSTEM PHOTOCELL ON EXTERIOR OF CABINET FOR CONTROL OF LIGHT FIXTURES.

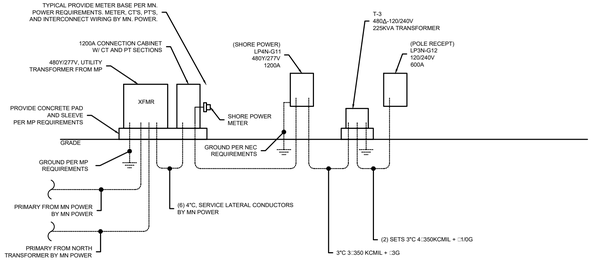


2 E1.2 TYP SPECIALTY REC. POLE 2
NTS

3 E1.2 TYP STANDARD REC. POLE 3
NTS



4 E1.2 NORTH SERVICE POINT POWER RISER DIAGRAM
NTS



5 E1.2 SOUTH SERVICE POINT POWER RISER DIAGRAM
NTS

1 E1.2 OVERALL ELECTRICAL SITE PLAN
NTS

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Project No. 84877

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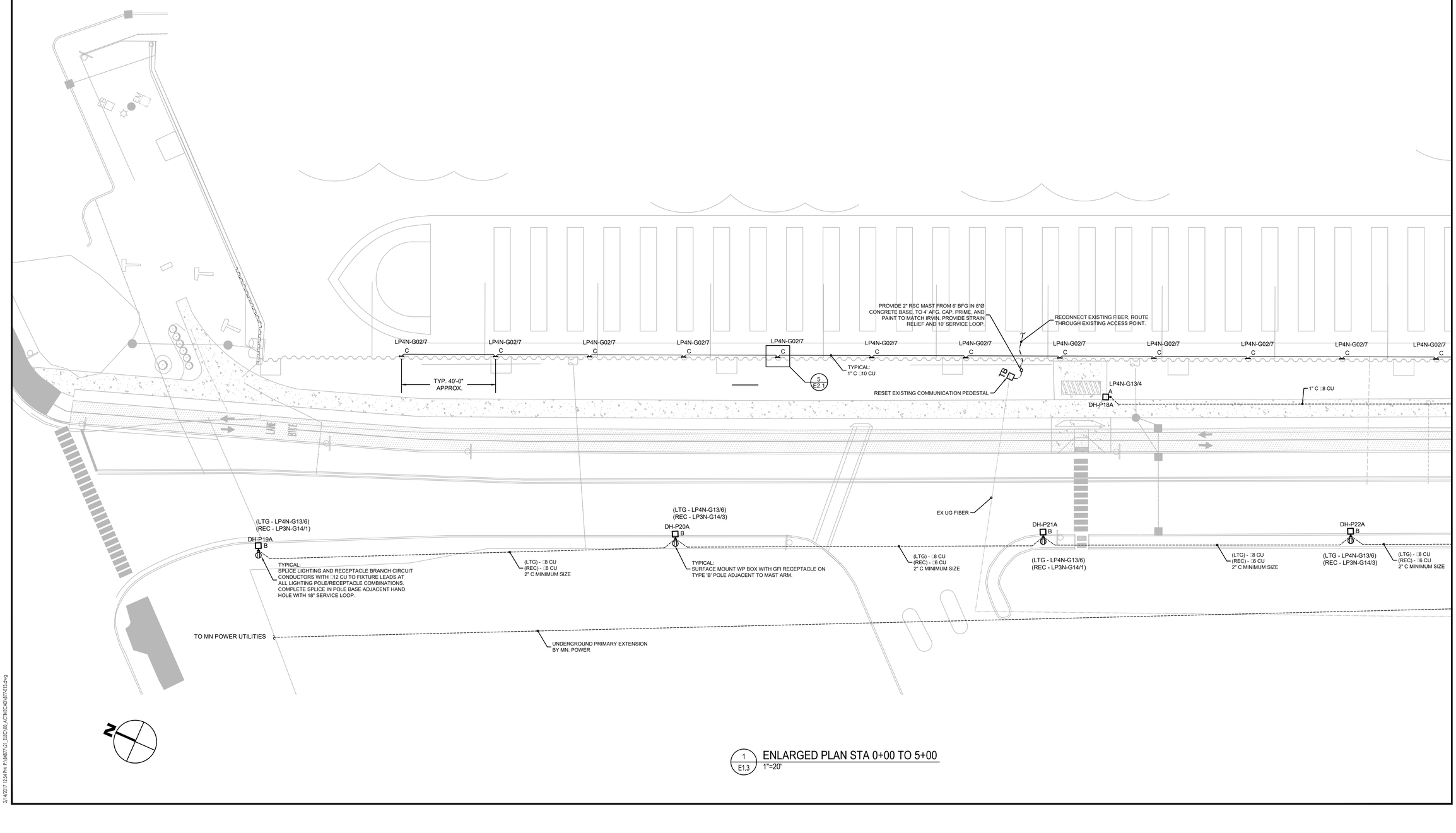
DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

OVERALL ELECTRICAL SITE PLAN

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E1.2



1 E1.3 ENLARGED PLAN STA 0+00 TO 5+00
1"=20'

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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

ENLARGED PLAN
STA 0+00 TO 5+00

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E1.3

NEW PANEL LP4N-I15

COORDINATE ROUTING OF NEW FEEDER AND PANEL INSTALLATION WITH OWNER PRIOR TO ROUGH-IN.

MODIFY EXISTING OPENING MADE AVAILABLE BY DEMOLITION OF 480V, 3Ø, 4W, 200A EXISTING OVERHEAD SERVICE DROP FOR NEW 480V, 3Ø, 4W, 400A OVERHEAD SERVICE DROP

LP4N-G02/7 C

LP4N-G02/7 C

LP4N-G02/7 C

LP4N-G02 1" C □10 CU (ENTIRE CIRCUIT)

LP4N-G13/4 DH-P17A

1"C □8 CU (LTG - LP4N-G13/4)

6 E2.1

T1□LP4N-G02□LP3N-G03

MN POWER MAN HOLE

UGP

UGP

UGP FROM MN POWER UTILITIES

MN POWER MAN HOLE

UGS

VISTA FEEDER

UGP

VISTA FLEET MAIN SERVICE DISCONNECT

T2

MN POWER UTILITY TRANSFORMER

CONNECTION CABINET WITH CT AND PT SECTIONS

2 E2.1 T2□LP4N-G13□LP3N-G14

4 □4 + □8G 1 1/4" C

VF1

7 E2.1

LP2N-G01

A-1 DH-P16AB

LP4N-G13/4

1"C □6 CU

TO LIGHTING
(LTG - LP4N-G13/1□□4CU)
(LTG - LP4N-G13/2□□4CU)
(LTG - LP4N-G13/3□□4CU)
(LTG - LP4N-G13/4□□6CU)
4"C

DH-P23A

B

(LTG - LP4N-G13/6)
(REC - LP3N-G14/1)

2"C □10 CU

TYPICAL STREET LIGHTING HANDHOLE

TO STREET & TRAIL LIGHTING ELECTRICAL CABINET
(LTG - □4CU)
(REC - □4CU)
2" MINIMUM SIZE

TYPICAL OF FIVE (5) LOCATIONS (VF1, VF2, VF3, VF4, VF5):
PROVIDE MARINE PEDESTAL AS MANUFACTURED BY INTERNATIONAL DOCK PRODUCTS MODEL□SP841-4A INCLUDING CONE TOP□LED LIGHT WITH PHOTOCELL□100A, 208Y/120V MLO PANELBOARD WITH ONE (1) 70A/3P CB, FOUR (4) 20A/1P CB, ALL GFI TYPE□DUAL HOST CABLE HOLDERS□DUAL WATER FAUCETS (WATER CONNECTED BY CIVIL)□TWO (2) DUPLEX RECEPTACLES WITH WP IN-USE CASE COVER PLATES□ONE (1) 70A/3P TWIST LOCK RECEPTACLE WITH WP IN-USE CAST COVER PLATE.

4 □4 + □8G 1 1/2" C

VF2

A-1 DH-P15AB

LP4N-G13/4

1"C □6 CU

CKT □4

(LTG - LP4N-G13/6)
(REC - LP3N-G14/3)

DH-P24A

B

2"C □10 CU

4" C ROAD CROSSING FOR STREET LIGHTING
(LTG - □4 CU)
(REC - □4 CU)

(LTG - □4 CU)
(REC - □4 CU)
2" C MINIMUM SIZE

(LTG - LP4N-G13/4)
(REC - LP2N-G12/20)

A-1 DH-P14AB

1"C □6 CU

REINSTALL EXISTING CITY OF DULUTH POLICE DEPARTMENT WIRELESS CCTV ASSEMBLY AT 20' AFF

TYPICAL DECC HAND HOLE

FUTURE POWER

LP2N-G12 2" C EMPTY

REC - 1"C □6 CU

4 □3 + □6G 1 1/2" C

VF3

DH-P13AB

A-2

(LTG - LP4N-G13/4)
(REC - LP2N-G12/19)
(SPECIAL REC - LP2N-G12/29,31)
(CCTV - RECONNECT TO EXISTING SERVICE AT SLIP BRIDGE)

CCTV

VF4

4 □2 + □6G 1 1/2" C

(LTG - LP4N-G13/3)
(REC - LP2N-G12/18)

A-1 DH-P12AB

(LTG - □4 CU)
(REC - □4 CU)
2" C MINIMUM

REC - 1" C □6 CU

1"C □8CU

EXTEND 3" AND ASSOCIATED BRANCH CIRCUITING TO HAND HOLE TYPE "Y" AT STATION 6+00

LTG - 3" C
CKT □1□□4 CU
CKT □2□□4 CU
CKT □3□□4 CU

VF5

4 □1 + □6G 2" C

FUTURE LP2N-G12/19,20,29,31 3" MINIMUM SIZE

MN POWER MAN HOLE

1"C

2"C

(LTG - LP4N-G13/3)
(REC - LP2N-G12/17)

A-1 DH-P11AB

LP2N-G12/17,18

BASE BID ALTERNATE

STUB CAP AND RACEWAYS AT CONSTRUCTION LIMITS

FUTURE

STREET LIGHTING

UGP

(LTG - □6 CU)
(REC - □4 CU)
2" C MINIMUM

N

1 E1.4 ENLARGED PLAN STA 5+00 TO 12+50
1"=20'

2/14/2017 12:54 PM P:\84877\01 EEC\00 ACTIVE CAD\84877-E1.4.dwg

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TWIN CITIES - IRON RANGE

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PRINT NAME: DAVE T. BLUME

SIGNATURE:

DATE: 11/01/2017 LIC. NO. 24671

Gausman & Moore
Mechanical and Electrical Engineers
501 South Lake Avenue
Suite 310
Duluth, Minnesota 55802
(218)722-2555 FAX (218)722-3306
Project No. 84877

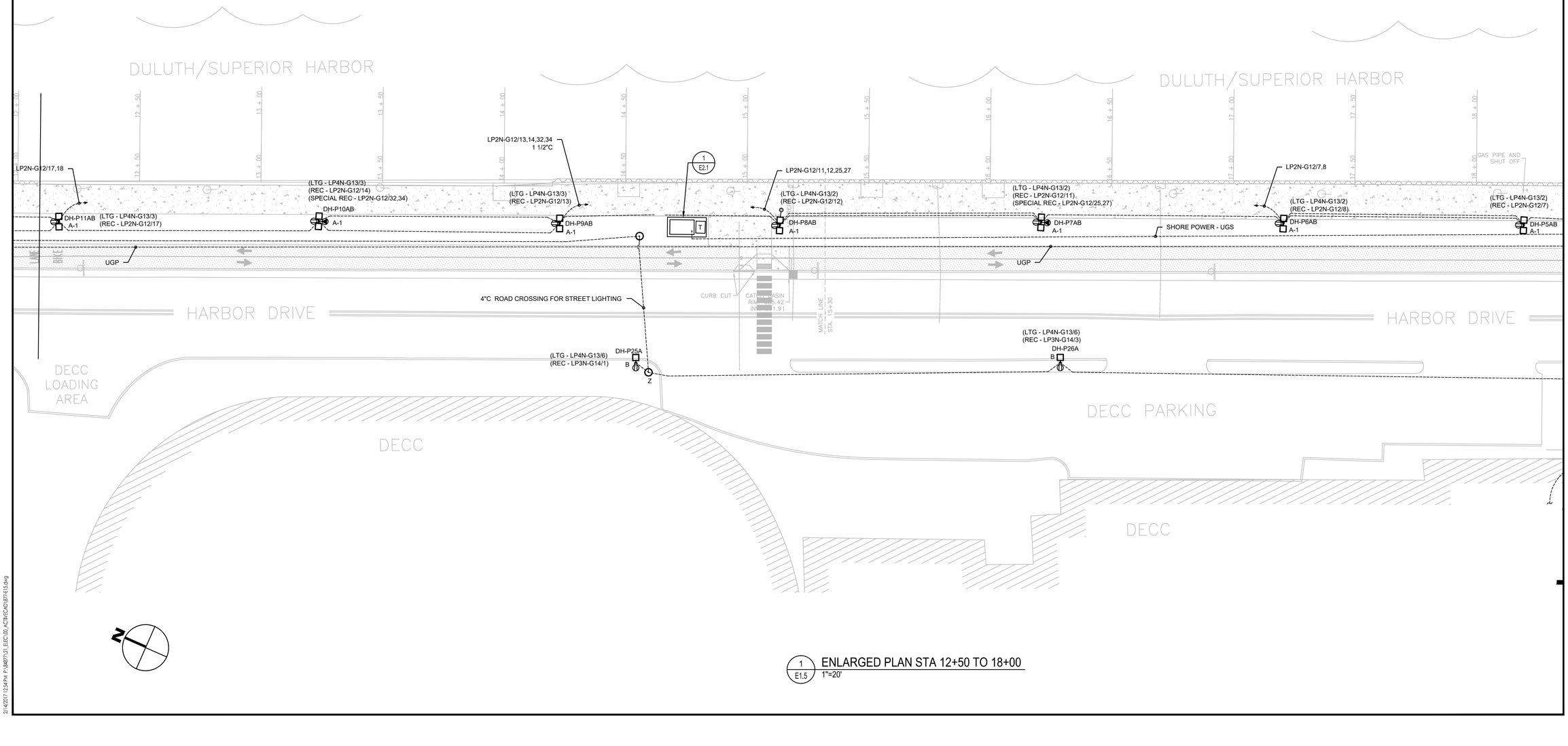
REV. BY:	DATE:	REV:	DESCRIPTION
---	10/20/2017	---	ISSUED FOR BIDDING
---	11/01/2017	---	ADDENDUM #1
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

ENLARGED PLAN
STA 5+00 TO 12+50

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E1.4



1 E1.5 ENLARGED PLAN STA 12+50 TO 18+00
1"=20'

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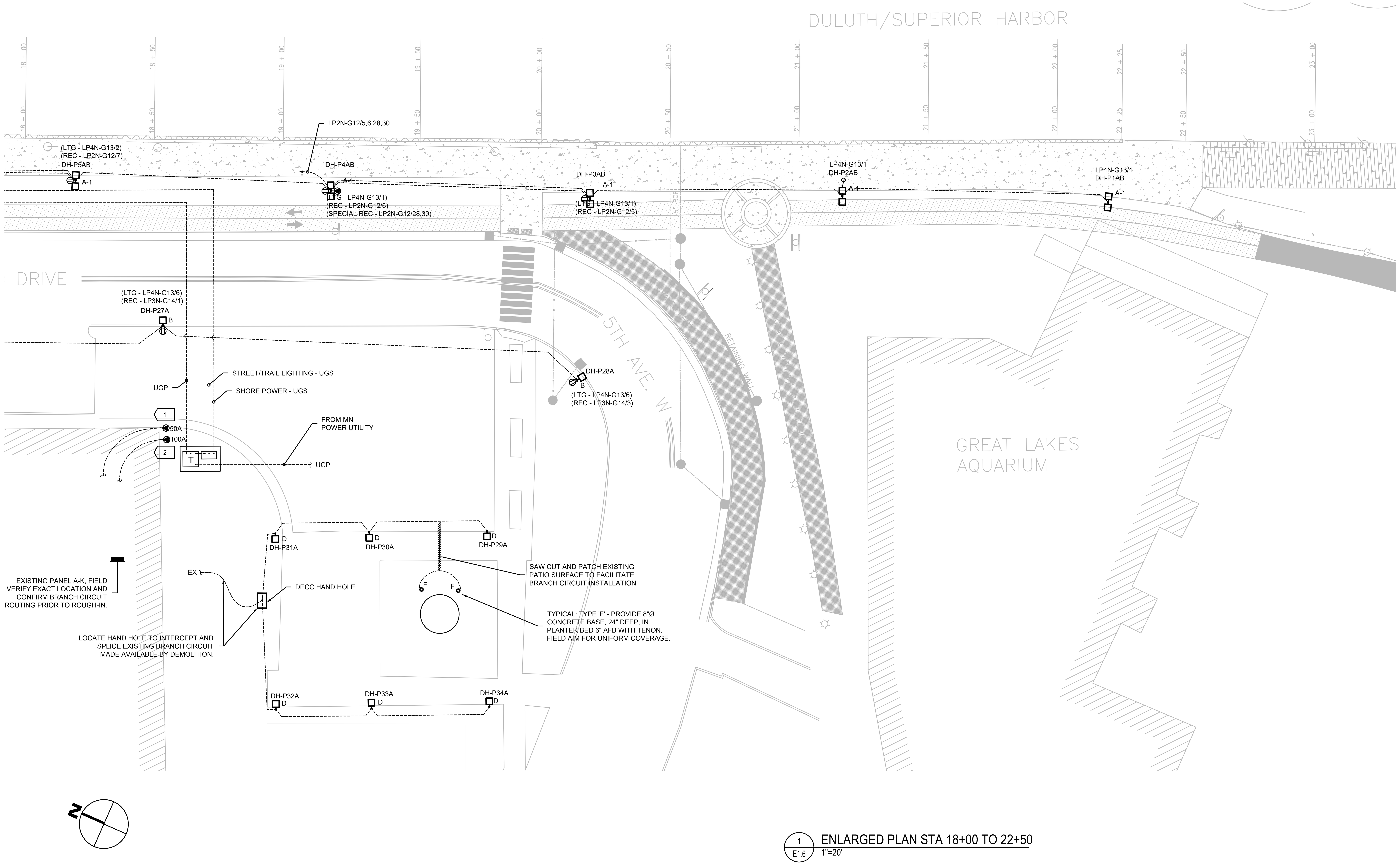
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

ENLARGED PLAN
STA 12+50 TO 18+00

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E1.5



KEYNOTE:

1. PROVIDE 50A, 208Y/120V, 3Ø, 4W RECEPTACLE MATCHING DECC PLUG CONFIGURATION. EXTEND 1" C WITH 4 □6 +□10G TO NEW 50A/3P CB TYPE AND RATING TO MATCH EXISTING.
2. PROVIDE 100A, 208Y/120V, 3Ø, 4W RECEPTACLE MATCHING DECC PLUG CONFIGURATION. EXTEND 1 1/4" C WITH 4 □3 +□8G TO NEW 100A/3P CB TYPE AND RATING TO MATCH EXISTING.

1 / E1.6 ENLARGED PLAN STA 18+00 TO 22+50
1"=20'

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Project No. 84877

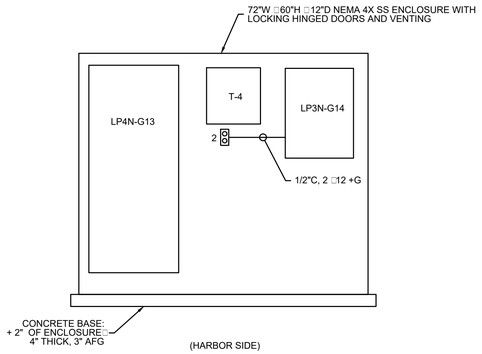
DATE:	REV:	DESCRIPTION	REV. BY:
10/20/2017		ISSUED FOR BIDDING	
11/01/2017		ADDENDUM E1	

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

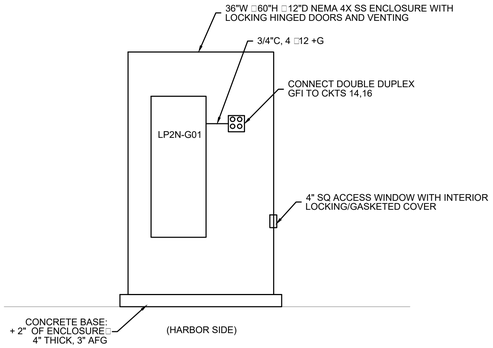
ENLARGED PLAN
STA 18+00 TO 22+50

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E1.6



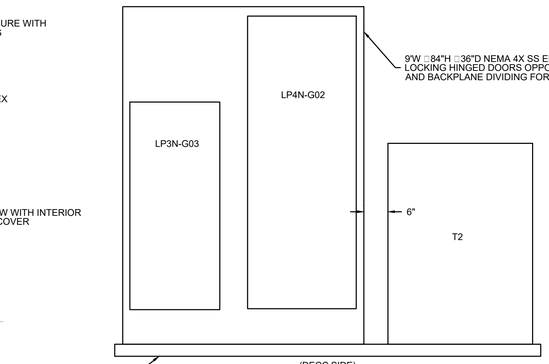
2 E1.2 STREET & TRAIL LTG ELECTRICAL CABINET DETAIL
NTS

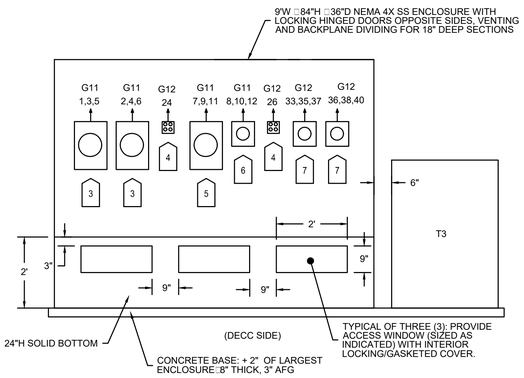


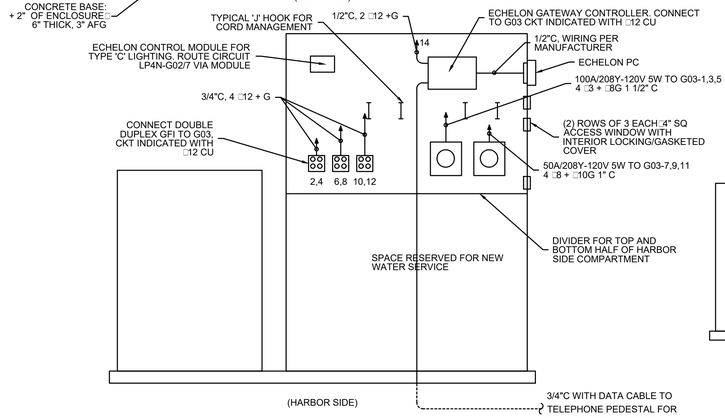
7 E1.2 VISTA ELECTRICAL CABINET DETAIL
NTS

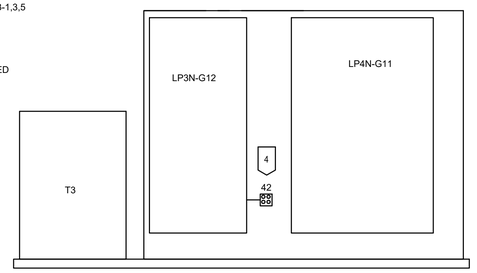
KEYNOTE:

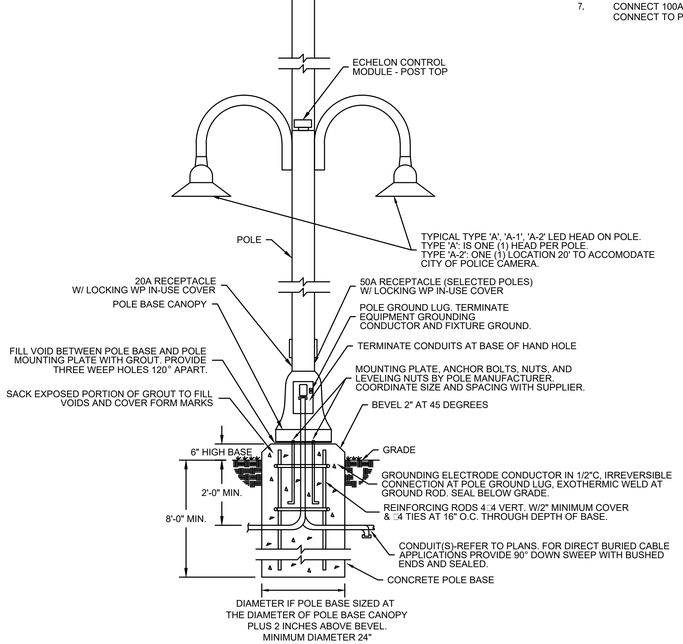
1. ENCLOSURE SIZES AND EQUIPMENT LAYOUT ARE SHOWN FOR DESIGN INTENT. FINAL SIZES AND LAYOUT BY CONTRACTOR. ADJUST SIZES BASED ON ACTUAL EQUIPMENT AND SUBMIT ENCLOSURE COORDINATION DRAWINGS INCLUDING BUT NOT LIMITED TO, MATERIAL SPECIFICATIONS, ELEVATIONS, SECTIONS, FLOOR OPENINGS WITH INCOMING RACEWAY LAYOUT, LABELING, AND DIMENSIONAL DATA.
2. PROVIDE EXTERIOR ENCLOSURE LABEL.
3. CONNECT 400A, 480V, 3W NON GROUND PIN AND SLEEVE RECEPTACLE MATCHING EXISTING COAST GUARD PLUG. CONNECT TO PANEL/CKT INDICATED WITH 3 □500 KCMIL IN 3"C.
4. CONNECT DOUBLE DUPLEX RECEPTACLE TO PANEL/CKT INDICATED WITH 2 □12 + G 1/2"C.
5. CONNECT 200A, 480V, 4W RECEPTACLE AS MANUFACTURED BY APPLETON □304428 TO PANEL/CKT INDICATED WITH 4 □3/0 +□6G.
6. CONNECT 100A, 480V, 4W STY 1 RECEPTACLE AS MANUFACTURED BY APPLETON □ADR1044 TO PANEL/CKT INDICATED WITH 4 □3 +□8G IN 1 1/4"C.
7. CONNECT 100A, 208V, 4W RECEPTACLE MATCHING DECC CONFIGURATION. CONNECT TO PANEL/CKT INDICATED WITH 4 □3 +□8G IN 1 1/4"C.



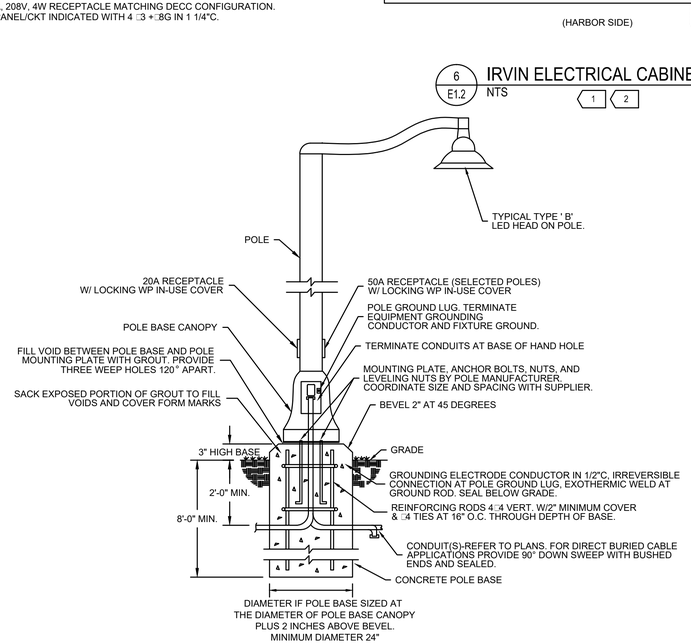








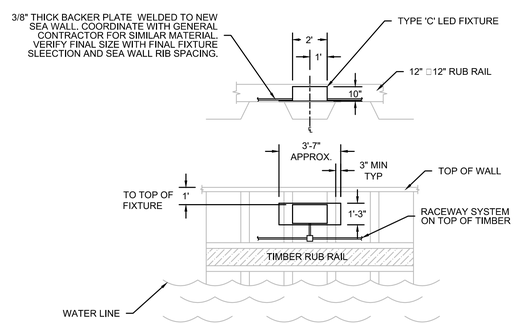
3 E2.1 POLE BASE DETAIL - 6" AFF
NTS



4 E2.1 POLE BASE DETAIL - 3" AFF
NTS

6 E1.2 IRVIN ELECTRICAL CABINET DETAIL
NTS

1 E1.2 SHORE POWER ELECTRICAL CABINET DETAIL
NTS



5 E2.1 IRVIN ACCENT LIGHTING DETAIL
NTS

NOTE:
1. BACK PLATE SIZE (APPROXIMATE): 3/8" □3'-7" □1'-3"
2. LIGHT FIXTURE 'C' TO BE INSTALLED INVERTED TO LIGHT THE SIDE OF SHIP TOWARDS THE DECK

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Project No. 84877

REV:	DESCRIPTION	DATE:
—	ISSUED FOR BIDDING	10/20/2017
1	ADDENDUM #1	11/01/2017
1	—	—
1	—	—
1	—	—
1	—	—

DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

DETAILS SHEET

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E2.1

LP2N-G01

PANEL NAME:	LP2N-G01		VOLT:	208Y/120							BUS SIZE:	400 AMPS	REMARKS:			
LOCATION:	EXTERIOR		PH:	3							MAIN BRKR:	300 AMPS				
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	NO		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
VF1	VESSEL PEDESTAL			1	7766			7766			2			VESSEL PEDESTAL		VF2
			70/3	3		7766			7766		4	70/3				
				5			7766			7766	6					
VF3	VESSEL PEDESTAL			7	7766			7766			8			VESSEL PEDESTAL		VF4
			70/3	9		7766			7766		10	70/3				
				11			7766			7766	12					
VF5	FUTURE			13				1920			14	20/1	R	RECEPTACLE		CAB
			70/3	15					1920		16	20/1	R	RECEPTACLE		CAB
				17							18			SPACE		
	SPACE			19							20			SPACE		
	SPACE			21							22			SPACE		
	SPACE			23							24			SPACE		

PER PHASE TOTAL VA	32984	32984	31064
TOTAL CONNECTED VA		97032	V.A
TOTAL CONNECTED AMPS		269	AMPS
3 x HIGHEST PHASE		98952	V.A
HIGHEST AMPS		275	AMPS

11/1/2017

LP4N-G11

PANEL NAME:	LP4N-G11		VOLT:	480Y/277							BUS SIZE:	1200 AMPS	REMARKS:			
LOCATION:	EXTERIOR		PH:	3							MAIN BRKR:	1200 AMPS		SERVICE RATED		
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	YES		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
	ALDER/MACKINAW			1	88640			88640			2			MACKINAW/ALDER		
	-		*400/3	3		88640			88640		4	*400/3		-		
	-			5			88640			88640	6			-		
	LAKE GUARDIAN			7	44320			22160			8			R/V/KIYI		
	-		*200/3	9		44320			22160		10	*100/3		-		
	-			11			44320			22160	12			-		
	XFMR T-3	C		13	88640						14			SPARE		
	(LP3N-G12)		400/3	15		88640					16	100/3		-		
	-			17			88640				18			-		
	SPACE			19							20			SPACE		
	SPACE			21							22			SPACE		
	SPACE			23							24			SPACE		
	SPACE			25							26			SPACE		
	SPACE			27							28			SPACE		

PER PHASE TOTAL VA	332400	332400	332400
TOTAL CONNECTED VA		997200	V.A
TOTAL CONNECTED AMPS		1199	AMPS
3 x HIGHEST PHASE		997200	V.A
HIGHEST AMPS		1199	AMPS

11/1/2017

LP3N-G14

PANEL NAME:	LP3N-G14		VOLT:	208Y/120							BUS SIZE:	60 AMPS	REMARKS:			
LOCATION:	EXTERIOR		PH:	3							MAIN BRKR:	20 AMPS				
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	NO		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
ODD	STREET REC ODD POLES	R	20/1	1	1500			180			2	20/1	R	CAB REC		
EVEN	STREET REC EVEN POLES	R	20/1	3		1500			180		4	20/1	C	ECHELON CONTROLS		
	SPACE			5							6			SPACE		
	SPACE			7							8			SPACE		
	SPACE			9							10			SPACE		
	SPACE			11							12			SPACE		

PER PHASE TOTAL VA	1680	1680	0
TOTAL CONNECTED VA		3360	V.A
TOTAL CONNECTED AMPS		9	AMPS
3 x HIGHEST PHASE		5040	V.A
HIGHEST AMPS		14	AMPS

11/1/2017

LP4N-I15

PANEL NAME:	LP4N-I15		VOLT:	480Y/277							BUS SIZE:	400 AMPS	REMARKS:			
LOCATION:	IRVIN		PH:	3							MAIN BRKR:	400 AMPS		SERVICE RATED		
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	NO		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
	BACKFEED TO EXISTING			1	55460						2	20/3		SPARE		
	-		200/3	3		55460					4			-		
	-			5			55460				6			-		
	SPACE			7							8	50/3		SPARE		
	SPACE			9							10			-		
	SPACE			11							12			-		
	SPACE			13							14	20/1		SPARE		
	SPACE			15							16	20/1		SPARE		
	SPACE			17							18	20/1		SPARE		
	SPACE			19							20	20/1		SPARE		
	SPACE			21							22	20/1		SPARE		
	SPACE			23							24	20/1		SPARE		
	SPACE			25							26			SPACE		
	SPACE			27							28			SPACE		
	SPACE			29							30			SPACE		
	SPACE			31							32			SPACE		
	SPACE			33							34			SPACE		
	SPACE			35							36			SPACE		
	SPACE			37							38			SPACE		
	SPACE			39							40			SPACE		
	SPACE			41							42			SPACE		

PER PHASE TOTAL VA	55460	55460	55460
TOTAL CONNECTED VA		166380	V.A
TOTAL CONNECTED AMPS		200	AMPS
3 x HIGHEST PHASE		166380	V.A
HIGHEST AMPS		200	AMPS

11/1/2017

LP4N-G02

PANEL NAME:	LP4N-G02		VOLT:	480Y/277							BUS SIZE:	600 AMPS	REMARKS:			
LOCATION:	EXTERIOR		PH:	3							MAIN BRKR:	600 AMPS		SERVICE RATED		
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	NO		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
	XFMR T-2	C		1	27700			88640			2		NC	IRVIN		
	(LP3N-G03)		125/3	3		27700			88640		4	*400/3				
				5			27700			88640	6					
	IRVIN HULL LIGHTING	L	*20/1	7	756						8			SPARE		
	SPARE		20/1	9							10	100/3				
	SPARE		20/1	11							12					
	SPACE			13							14			SPACE		
	SPACE			15							16			SPACE		
	SPACE			17							18			SPACE		
	SPACE			19							20			SPACE		
	SPACE			21							22			SPACE		
	SPACE			23							24			SPACE		
	SPACE			25							26			SPACE		
	SPACE			27							28			SPACE		

* GFCI TYPE CB

PER PHASE TOTAL VA	117096	116340	116340
TOTAL CONNECTED VA		349776	V.A
TOTAL CONNECTED AMPS		421	AMPS
3 x HIGHEST PHASE		351288	V.A
HIGHEST AMPS		423	AMPS

11/1/2017

LP2N-G12

PANEL NAME:	LP2N-G12		VOLT:	120/240							BUS SIZE:	600 AMPS	REMARKS:			
LOCATION:	EXTERIOR		PH:	3							MAIN BRKR:	MLO		HIGH LEG SYSTEM		
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	NO		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
P1	RECEPTACLE	R	20/1	1	1920			1920			2	20/1	R	RECEPTACLE		P2
	HIGH LEG DO NOT USE			3							4			HIGH LEG DO NOT USE		
P3	RECEPTACLE	R	20/1	5		1920			1920		6	20/1	R	RECEPTACLE		P4
P5	RECEPTACLE	R	20/1	7	1920			1920			8	20/1	R	RECEPTACLE		P6
	HIGH LEG DO NOT USE			9							10	-		HIGH LEG DO NOT USE		
P7	RECEPTACLE	R	20/1	11		1920			1920		12	20/1	R	RECEPTACLE		P8
P9	RECEPTACLE	R	20/1	13	1920			1920			14	20/1	R	RECEPTACLE		P10
	HIGH LEG DO NOT USE			15							16	-		HIGH LEG DO NOT USE		
P11	RECEPTACLE	R	20/1	17		1920			1920		18	20/1	R	RECEPTACLE		P12
P13	RECEPTACLE	R	20/1	19	1920			1920			20	20/1	R	RECEPTACLE		P14
	HIGH LEG DO NOT USE			21							22			HIGH LEG DO NOT USE		
P13	OPD CCTV	R	20/1	23		800			180		24	20/1	R	HARBOR S. CABINET		REC
P7	RECEPTACLE	R	*50/2	25	6000			180			26	20/1	R	HARBOR S. CABINET		REC
	-			27		6000			6000		28	*50/2	R	RECEPTACLE		P4
P13	RECEPTACLE	R	*50/2	29			6000			6000	30			-		
				31	6000			6000			32	*50/2	R	RECEPTACLE		P10
	RECEPTACLE	R		33		11085			6000		34			-		
	-		100/3	35			11085			11085	36	100/3	R	RECEPTACLE		
				37	11085			11085			38			-		
	SPARE		20/1	39					11085		40					
	SPARE		20/1	41						180	42	20/1	R	DECC S. CAB		REC

*GFCI TYPE CB

PER PHASE TOTAL VA	55710	40170	46850
TOTAL CONNECTED VA		142730	V.A
TOTAL CONNECTED AMPS		343	AMPS
3 x HIGHEST PHASE		167130	V.A
HIGHEST AMPS		402	AMPS

11/1/2017

LP3N-G03

PANEL NAME:	LP3N-G03		VOLT:	208Y/120							BUS SIZE:	200 AMPS	REMARKS:			
LOCATION:	EXTERIOR		PH:	3							MAIN BRKR:	200 AMPS				
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	NO		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
	PEDESTAL RECEPTACLE	R		1	9627			1920			2	20/1	R	PEDESTAL RECEPTACLE		
	-		*100/3	3		9627			1920		4	20/1	R	PEDESTAL RECEPTACLE		
				5			9627			1920	6	20/1	R	PEDESTAL RECEPTACLE		
	PEDESTAL RECEPTACLE			7	4814			1920			8	20/1	R	PEDESTAL RECEPTACLE		
	-		*50/3	9		4814			1920		10	20/1	R	PEDESTAL RECEPTACLE		
	-			11	4814					1920	12	20/1	R	PEDESTAL RECEPTACLE		
	SPARE			13				200			14	20/1		ECHELON CONTROLS		
	-		*50/3	15							16	20/1		SPARE		
	-			17							18	20/1		SPARE		
	SPACE			19							20	20/1		SPARE		
	SPACE			21							22	20/1		SPARE		
	SPACE			23							24	20/1		SPARE		
	SPACE			25							26			SPACE		
	SPACE			27							28			SPACE		
	SPACE			29							30			SPACE		
	SPACE			31							32			SPACE		
	SPACE			33							34			SPACE		
	SPACE			35							36			SPACE		
	SPACE			37							38			SPACE		
	SPACE			39							40			SPACE		
	SPACE			41							42			SPACE		

*GFCI TYPE CB

PER PHASE TOTAL VA	18481	18281	18281
TOTAL CONNECTED VA		55043	V.A
TOTAL CONNECTED AMPS		153	AMPS
3 x HIGHEST PHASE		55443	V.A
HIGHEST AMPS		154	AMPS

11/1/2017

LP4N-G13

PANEL NAME:	LP4N-G13		VOLT:	480Y/277							BUS SIZE:	100 AMPS	REMARKS:			
LOCATION:	EXTERIOR		PH:	3							MAIN BRKR:	100 AMPS		SERVICE RATED		
MOUNTING:	SURFACE		WIRE:	4	V.A.	V.A.	V.A.	V.A.	V.A.	V.A.	GND BUS:	YES	GFI:	NO		
RM. NO.	LOAD DESCRIPTION	TYPE	BRKR	CCT							CCT	BRKR	TYPE	LOAD DESCRIPTION		RM. NO.
	LIGHTING, P1-P4	L		1	784			784			2	20/1	L	LIGHTING, P5-P8		
	LIGHTING, P9-P12	L	20/1	3		784			980		4	20/1	L	LIGHTING, P13-P18		
	XFRMR T-4	C		5			3324			196	6	20/1	L	STREET LIGHTING, P19-P28		
	(LP1N-G14)		15/3	7	3324			580			8	20/1		SPARE		
				9		3324					10	20/1		SPARE		
	SPARE		20/1	11							12	20/1		SPARE		
	SPARE		20/1	13							14	20/1		SPARE		
	SPARE		20/1	15							16	20/1		SPARE		
	SPARE		20/1	17							18	20/1		SPARE		
	SPACE			19							20			SPACE		
	SPACE			21							22			SPACE		
	SPACE			23							24			SPACE		

PER PHASE TOTAL VA	5472	5088	3520
TOTAL CONNECTED VA		14080	V.A
TOTAL CONNECTED AMPS		17	AMPS
3 x HIGHEST PHASE		16416	V.A
HIGHEST AMPS		20	AMPS

11/1/2017

HAND HOLE SCHEDULE			
TYPE	SIZE		
	W	L	D
Z	12"	24"	24"
X	PER CITY OF DULUTH/MNDOT STANDARDS		
Y	24"	36"	36"
W	12"	12"	12"
NOTE: REFER TO SPECIFICATIONS			

LUMINAIRE SCHEDULE

TYPE	MANUFACTURER	MODEL	VOLT	LAMP NO. / TYPE / WATTAGE	BALLAST	LUMINAIRE DESCRIPTION
A	GLASWERKS (NOTE 3,4)	GPLF2P2030KAS4RAL5015L2 PDA16S5J18P09RAL5015(2)RXXXY (2)SXXXY 1BC90R15FRAL5015-QSM (2)BA24BOH4RAL5015 FGIUS FG-50A FD-BLNKPLT AB RFD246835	277	1 LED 98	DRIVER	GLASWERKS PRAGUE LED - FLAT GLASS, 3K, TYPE 2 DIST INTEGRAL PHOTOCELL SINGLE LAMP, DUAL BANNER, POWER SHEPHARD HOOK
		CEMENT POLE BASE: REFER TO DETAIL 3/E2.1				
A-1	GLASWERKS (NOTE 3,4)	GPLF2P2040KAS4RAL5015L2 PDA16S5J18P09RAL5015(2)RXXXY (2)SXXXY 2BC180R15CRAL5015-QSM (2)BA24BOH4RAL5015 FGIUS FG-50A FD-BLNKPLT AB RFD239973	277	1 LED 98	DRIVER	GLASWERKS PRAGUE LED - FLAT GLASS, 3K, TYPE 2 DIST DUAL LAMP, DUAL BANNER, POWER SHEPHARD HOOK
		CEMENT POLE BASE: REFER TO DETAIL 3/E2.1				
A-2	GLASWERKS (NOTE 3,4)	GPLF2P2030KAS4RAL5015L2 PDA16S5J18P09RAL5015(2)RXXXY (2)SXXXY 1BC90R15FRAL5015-QSM (2)BA24BOH4RAL5015 FGIUS FG-50A FD-BLNKPLT AB SXXXY	277	1 LED 98	DRIVER	GLASWERKS PRAGUE LED - FLAT GLASS, 3K, TYPE 2 DIST WITH CCTV MOUNTED AT TOP OF POLE DUAL LAMP, DUAL BANNER, POWER SHEPHARD HOOK
		CEMENT POLE BASE: REFER TO DETAIL 3/E2.1				
B	GLASWERKS (NOTE 3,4)	GBLF2 P20 40K AS 4 B L2 BHDF13 200 BK	277	1 LED 58	DRIVER	GLASWERKS LED BERN - FLAT GLASS, 3K, TYPE 2 DIST INTEGRAL PHOTOCELL SINGLE LAMP, DUAL BANNER, NO POWER, BOSTON HARBOR
		KWA22L5J20P08ABGXX AB-31-4 FGIUS FG-20A RXXXY RFD225830				
		BHC48/1MODU8698 RFD246830				
		CEMENT POLE BASE: REFER TO DETAIL 3/E2.1				
C	HALOPHANE	SVLED2 PNL PK1 MVOLT 40K AMT BKSDP AO	277	1 LED 54	DRIVER	SIGN VUE LED II, PNL OPTIC, PK1 4K PANEL MOUNT
D	HALOPHANE (NOTE 2)	PUCL2035HO4KASXXL2S PDA08S4C18P07XX AB-31-4 RFD239974	277	1 LED 45	DRIVER	POST TOP AREA LIGHTING LED FULL CUT OFF SINGLE LAMP, DUAL BANNER, NO POWER
		CEMENT POLE BASE: REFER TO DETAIL 4/E2.1				
F	HALOPHANE (NOTE 1)	PSLED PK1 MVOLT NSP 40K 1 XXSDP 10KWP NR	MVOLT	1 LED	DRIVER	UP LIGHTING FOR STATUE

NOTE:

1. FIELD VERIFY EXISTING CIRCUIT VOLTAGE AND ADJUST DRIVER TAP SETTING RESPECTIVELY.
2. TYPE D FIXTURES TO USE POLE BASE 14"Ø, 8' DEEP AND 3" ABOVE FINISHED GRADE.
3. FIXTURE TYPES 'A','A-1','A-2' AND 'B' FURNISH WITH WIRELESS LIGHTING CONTROLS MATCHING CITY OF DULUTH REQUREMENTS AS MANUFACTURE BY ECHELON.
4. REFER TO SPECIFICATION SECTION 260943 NETWORK LIGHTING CONTROLS. PROVIDE 7-PIN RECEPTACLE TO FACILITATE INSTALLATION OF WIRELESS CONTROL MODULE AS MANUFACTURED BY ECHELON. AT CONTRACTOR AND MANUFACTURES OPTION THE 7-PIN RECEPTACLE MAY BE REPLACED WITH BASE MOUNTED CONTROL MODULE CPD3000 AS MANUFACTURED BY ECHELON.

AMI
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715.718.2193 - amiengineers.com
TWIN CITIES - IRON RANGE

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

PRINT NAME: DAVE T. BLUME
SIGNATURE:
DATE: 10/20/2017 LIC. NO. 24671

Gausman & Moore
Mechanical and Electrical Engineers
501 South Lake Avenue
Duluth, Minnesota 55802
(218)722-2555 FAX (218)722-4306
Project No. 84877

REV:	DESCRIPTION	DATE:
---	BID/ISSUED FOR BIDDING	10/20/2017
---	ADDENDUM #1	11/01/2017
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DECC SEAWALL PROJECT
CITY OF DULUTH
350 HARBOR DRIVE
DULUTH, MN

SCHEDULES

JOB No: 84877
DATE: 10/20/2017
DRAWN BY: B.ANDERSON
DESIGNED BY: S.HAEDTKE

SHEET: E3.1