Appendix J

Final Plan Sheets
FINAL DESIGN DRAWINGS FOR
MILWAUKEE ESTUARY DREDGED MATERIAL MANAGEMENT FACILITY
WEC ENERGY GROUP - BUSINESS SERVICES
MILWAUKEE, WISCONSIN
NOVEMBER 2020

SITE LOCATION
CITY OF MILWAUKEE
MILWAUKEE COUNTY

VICTIM MAP

LOCATION MAP

COVER SHEET
AND DRAWING LIST

G01
GENERAL NOTES:

1. Soil properties are based on the site-specific geotechnical investigation performed by Foth in June 2020.
3. Vertical datum: NAVD 88 at the beginning of the platform.
4. Flood levels are based on the expected water level of the lake at the beginning of the platform.
5. Elevations and distances are shown on the drawings for reference.

DESIGNED BY:

DATE:

SURVEYED BY:

DRAWN BY:

CHECKED BY:

PROJECT DATES:

CONVERSION:

CUT-OFF FOR SHEET FILES IS 0 below finished grade except:

1. Pour those that fall below the concrete platform, which have to be CUTOFF flush with the lower elevation of the platform.
2. Pour those that fall below the concrete platform, which have to be CUTOFF flush with the lower elevation of the platform.
3. Pour those that fall below the concrete platform, which have to be CUTOFF flush with the lower elevation of the platform.

DATE OF PREPARATION:

NO.:

DESCRIPTION:

REVISIONS:

FOTH INFRASTRUCTURE & ENVIRONMENT, LLC
2514 S 102ND ST
WEST ALLIS, WI 53227
MILWAUKEE ESTUARY DREDGED MATERIAL MANAGEMENT FACILITY
MILWAUKEE, WISCONSIN
WEC ENERGY GROUP - BUSINESS SERVICES

NOTE:

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SHEET NUMBER:

G02 W012
PROJECT NO:

PROJECT NOTES - SHEET 1 OF 3

Tuesday, May 07, 2019 7:51:01 AM

FOTH INFRASTRUCTURE & ENVIRONMENT, LLC

WE ENERGY GROUP - BUSINESS SERVICES

MATERIAL MANAGEMENT FACILITY

NOT FOR CONSTRUCTION
GENERAL MATERIAL SPECIFICATIONS

STEEL
1. STRUCTURAL STEEL SHALL COMPLY WITH THE STEEL CONSTRUCTION MANUAL FIFTEENTH EDITION PUBLISHED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
2. MISCELLANEOUS STEEL OR STEEL NOT SPECIFIED OTHERWISE IS TO BE GRADE 50.
3. WELDING SHALL CONFORM TO THE STRUCTURAL WELDING CODE – STEEL, PUBLISHED BY THE AMERICAN WELDING SOCIETY (AWS D1.1), A WELDER CERTIFIED IN ACCORDANCE WITH AWS STANDARDS SHALL PERFORM WELDING.
4. WELDING ELECTRODES SHALL BE E70XX AND COMPLY WITH AWS A5.1 AND AWS A5.5 UNLESS NOTED OTHERWISE.
5. STRUCTURAL STEEL SHAPES, PIPE, Fittings, AND PLATES SHALL CONFORM TO ASTM A325, GRADE 50.
7. STEEL HARDWARE ABOVE GRADE SHALL BE NOT GALVANIZED IN ACCORDANCE WITH ASTM A153.
8. CONNECTIONS SHALL BE DESIGNED AND DETAI LLED BY THE STEEL FABRICATOR EXCEPT FOR THOSE SPECIFICALLY DETAI LLED IN THE CONTRACT DOCUMENTS.
9. STEEL STRUCTURAL DETAILS SHALL BE DESIGNATED TO THE REQUIREMENTS OF ASTM A397 AND SHALL BE AIDED POSITIVE OR EQUAL MINIMUM 1.20 GRADES AS NOTED, AND ARE TO BE FURNISHED UNCOATED AND COATED AS PER COATING SECTION. MINIMUM INTERLOCK STRENGTH OF 24 KPSI IS REQUIRED.
10. PILES CAPACITY & THE ELEVATION TO BE CONFIRMED AT THE SITE USING PDCA TEST, TYPING AND PROCEDURE TO BE CONFERRED BY ENGINEER.
11. LADDERS OF ONE INCH DIAMETER STEEL RINGS, OR LARGER, SHALL BE GALVANIZED AND SHALL BE PLACED AT INTERVALS NOT MORE THAN 100 FEET.

CONCRETE
1. CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI-318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AS ADOPTED BY THE AMERICAN CONCRETE INSTITUTE.
2. PLATFORM CONCRETE SHALL BE MORTAR WITH A MAXIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 28 DAYS: PORTLAND CEMENT SHALL BE TYPE II CONCRETE SHALL CONTAIN 65 (4-1 1/2) ENTRAINED AIR AND HAVE A MAXIMUM WATER TO CEMENT RATIO OF 0.40.
3. CONCRETE MIX SHOULD BE DESIGNED AND TESTED BY CONTRACTOR AS TO DEVELOP THE REQUIRED COMPRESSIVE STRENGTH AND BE APPROVED BY ENGINEER BEFORE STARTING THE OPERATIONS.
4. OTHER CONCRETE SHALL BE MORTAR WITH A MAXIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS: PORTLAND CEMENT SHALL BE TYPE II CONCRETE SHALL CONTAIN 65 (4-1 1/2) ENTRAINED AIR AND HAVE A MAXIMUM WATER TO CEMENT RATIO OF 0.40.
5. USE ACCELERATORS ADDITIVES AS NECESSARY TO IMPROVE WORKABILITY AND REDUCE WATER/CEMENT RATIO TO CONTROL SHRINKAGE: SUBMIT PROPOSED MIX DESIGN TO THE ENGINEER FOR REVIEW. NO WATER SHALL BE ADDED TO THE MIX AT THE JOB SITE.
6. CONCRETE SHALL BE MIXED AND PLACED IN THE PRESENCE OF THE APPROVED TESTING AGENCY.
7. CONSTRUCTION JOINTS AND EXPANSION JOINTS SHOWN ON THE DRAWINGS ARE MANDATORY. ADDITIONAL CONSTRUCTION JOINTS AND NOTIFICATIONS AS REQUIRED TO EXECUTE THE CONSTRUCTION SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. CONSTRUCTION JOINTS AS SHOWN ON THE DRAWINGS.
8. DO NOT PLACE CONCRETE UNTIL REINFORCEMENT AND ENDED ITEMS HAVE BEEN APPROVED BY THE ENGINEER AND/OR THE APPROVED TESTING AGENCY (IF APPLICABLE). PROVIDE A MINIMUM OF 24 HOURS NOTIFICATION TO THE ENGINEER.
9. A MINIMUM OF 72 HOURS SHALL ELAPSE BETWEEN ADJACENT CONCRETE PLACEMENTS.

CATHODE PROTECTION
1. ALUMINUM ANODES FOR PASSIVE CATHODE PROTECTION OF STEEL STRUCTURES IN MARINE ENVIRONMENTS SHALL PROVIDE AN INITIAL MEAN, AND END OF LIFE CURRENT DENSITY OF 200 mA/m², 60 mA/m², AND 120 mA/m², RESPECTIVELY.
2. ANODES SHALL BE INSTALLED BY AN EXPERIENCED CONTRACTOR, MINIMUM 5 YEARS OF EXPERIENCE, UNDER THE SUPERVISION OF A CORROSION SPECIALIST (PREFERRED) BY TRADE.
3. CATHODE PROTECTION SYSTEM SHALL BE TESTED AFTER INSTALLATION. SUBMIT TEST RESULTS IN A REPORT TO THE ENGINEER FOR REVIEW AND ACCEPTANCE.
4. CONTRACTOR SHALL SUBMIT THE REVIEW OF THE ENGINEER, INSTALLER QUALIFICATIONS, WRITE INTERNATIONAL CORROSION CERTIFICATION, CERTIFICATIONS, AND PROCEDURES FOR TESTING CORROSION CONTROL SYSTEM, INCLUDING DESCRIPTION OF INSTRUMENTS AND EQUIPMENT TO BE USED.
5. ANODES SHALL BE REMOVED ALUMINUM WIRE (2" X 4" X 2") OR EQUIVALENT ACCEPTED BY THE ENGINEER.
6. ANODES SHALL BE INSTALLED ON ALL FRONT PILES (2 PER PILE) OUTSIDE OF CELL AND ONE ON EVERY FOUR SHEET VAGES FOR CELLS.

REINFORCEMENT
1. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 615 GRADE 60 OR 75 AS CALLED FOR.
2. DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A 375 AND CONFORM TO THE REQUIREMENTS OF ACI 318 AND ACI 316 DETAILS AND DETAILS OF CONCRETE REINFORCEMENT.
3. REINFORCEMENT SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318), ACI DETAILING MANUAL (ACI 318), ACI MANUAL OF STANDARD PRACTICE (MSP), AND THE STRUCTURAL WELDING CODE-REINFORCING STEEL (AWS D1.5). ELECTRODES TO BE E6010.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 616.
5. PROVIDE EPOXY COATED SUPPLEMENTAL BARS AND ACCESSORIES AS REQUIRED TO HOLD REINFORCEMENT SECURELY IN POSITION.
6. MINIMUM CONCRETE PROTECTIVE COVER, UNLESS NOTED OTHERWISE, SHALL BE AS FOLLOWS:
   6.1 CONCRETE EXPOSED TO WEATHER 3 INCHES
   6.2 CONCRETE EXPOSED TO WEATHER 5 INCHES
   6.3 CONCRETE PLACED AGAINST GROUND 3 INCHES
7. ALL CONTINUOUS REINFORCEMENT SHALL BE EXTENDED AROUND CORNERS AND LAPPED AT NEEDED SPACES OR HOLED AT DISCONTINUOUS BARS USE STANDARD HOLES UNLESS OTHERWISE SPECIFIED.
8. LAPS SHALL BE CLASS B TENSION LAP SPECIES, UNLESS NOTED OTHERWISE.
9. REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS: PROVIDE MECHANICAL COUPLERS WHERE REQUIRED CONTINUOUS REINFORCEMENT EXCEEDS AVAILABLE LENGTH.
1. **SURFACE**:  
1.1. 500 PSF on the yard immediately behind cells. Up to 20 ft.

2. **ICE LOAD**:  
2.1. Horizontal: 10 KIPS/FT at EL 0.0' or 2.0', except piles, which is 35 KIPS/FT at EL -2.0' or 0.0'.  
2.2. Vertical: 150 KIPS (upwards) and 150 KIPS (downwards) on piles.  

3. **WAVE LOAD**: 6.2 KIPS/FT applied horizontally at EL 2.0' or 4.0'.  

4. **BEARING LOAD**:  
4.1. One carrier: 16 KIPS/FT uniform over 40 feet impact length.  
4.2. Alternate carrier: 22 KIPS/FT uniform over 50 feet impact length.  

5. **WATER LEVEL**:  
5.1. High water level: +5.0 ft MWD (528.5 ft ELWD).  
5.2. Low water level: 0.0 ft MWD (527.5 ft ELWD).  

6. **EXCESS HYDROSTATIC PRESSURE**:  
6.1. An excess hydrostatic pressure of 3 ft is considered in design between two sides of the cells.  
6.2. A permanent grout line at 3 ft below the grout line shall be constructed (not part of this contract) for removing excess water from the back of the cells.  

7. **BOOM**:  
7.1. Boom is designed for a 23° swing. Boom is configured for material transfer, not construction.  
7.2. Boom dimensions are shown below.  

8. **DRAIN-OF-SIZE CONNECTOR**:  
8.1. The drain-off connector can be used for up to 360 tons of material.  
8.2. Material is to be distributed as follows:  
8.3. Material distribution is shown below.  

9. **DRAIN-OF-SIZE CONNECTOR AND OFFLOADING PLATFORMS**:  
9.1. The design allowable capacity for offloading platform files are as follows:  
9.2. The design allowable capacity for offloading platform files are as follows:  
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9.99. The design allowable capacity for offloading platform files are as follows:  
10. **SCHEDULE**:  
10.1. Design & C:  
10.1.1. COMPRESSION = 200 TONS  
10.1.2. UPLIFT = 100 TONS  
10.1.3. LATERAL = 10 TONS @ DECK CONNECTION  
10.1.4. TORSION = 10 KIP-FT @ DECK CONNECTION  
10.2. Design & B:  
10.2.1. COMPRESSION = 300 TONS  
10.2.2. UPLIFT = 100 TONS  
10.2.3. LATERAL = 60 TONS @ DECK CONNECTION  
10.2.4. TORSION = 20 KIP-FT @ DECK CONNECTION  

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GENERAL NOTES
1. THIS PLAN IS CONCEPTUAL AND DOES NOT INCLUDE ANY SPECIFIC GEOTECHNICAL OR STRUCTURAL DESIGN. THE CONCEPTUAL SITE PLAN IS FOR PLANNING PURPOSES AND IS NOT INTENDED FOR CONSTRUCTION.
2. BASE PLAN IS COMPILED BY FOTH USING AVAILABLE GIS DATA AND INFORMATION PROVIDED BY PORT MILWAUKEE.
3. HYDROGRAPHIC SURVEY PERFORMED BY FRESHWATER ENGINEERING SEPTEMBER 18-19, 2019.
4. TOPOGRAPHIC SURVEY AND UFC LEVEL 1 VISUAL INSPECTION OF EXISTING SHEET PILE BULKHEAD PERFORMED BY FOTH SEPTEMBER 4, 2019
SECTION S7-1
TYPICAL STEEL CELL & RELIEVING PLATFORM SECTION

NOTES:
1. USE SHEET FOR WRITTEN COMMENTS
2. USE SHEET BACK SIDE FOR EXCITATION
3. CHECK THE CATCHMENTS AND CEILING LEVEL VALUES
4. CONSTRUCTION TO FIELD WITH CROSSHATCHED DIMENSIONS AND DESIGN LEVELS

NOTE: THIS SHEET IS PRINTED FOR INFORMATION ONLY.

FOTH INFRASTRUCTURE & ENVIRONMENT, LLC
2514 S 102ND ST
WEST ALLIS, WI 53227

NOT FOR CONSTRUCTION
SECTION S9-1
TYP SHIP BERTH FENDER
SCALE 1" = 1'-0"

SECTION S9-2
TYP SHIP BERTH FENDER
SCALE 1" = 1'-0"
SECTION S10-1
60 TON BOLLARD

DETAIL S10-2
60 TON BOLLARD & PAD

DETAIL S10-3
60 TON BOLLARD & PAD

ELEVATION S10-4
FRONT FACE OF PLATFORM

NOT FOR CONSTRUCTION
DETAIL S12-1

Concrete beam 6" x 3 7/8"

DETAIL S12-3

Scale: 1/8" = 1'-0"

DETAIL S12-4

Scale: 1/8" = 1'-0"

DETAIL S12-5

Utility Trench & Emerg Ladder @ Relieving Platform

Scale: 1" = 1'-0"

NOT FOR CONSTRUCTION
DETAIL S13-1
UTILITY TRENCH COVER PLATE
SCALE 1" = 1'-0"

DETAIL S13-2
UTILITY TRENCH COVER PLATE
SCALE 2" = 1'-0"

DETAIL S13-3
EMERG LADDER
FRONT ELEVATION
SCALE 1" = 1'-0"

DETAIL S13-4

DETAIL S13-5
SECTION S14-1
ELEVATION OF GUARD RAILING
S14-2
PIPE RAILING CONNECTIONS
SCALE 1" = 1'-0"

SECTION S14-2
PIPE RAILING CONNECTIONS
SCALE 1" = 1'-0"

MISC. DETAILS
NOT FOR CONSTRUCTION
DETAIL S17-1
PLATFORM BOTTOM REINFORCEMENT PLAN
SCALE: 1" = 5'-0"

DETAIL S17-2
PLATFORM TOP REINFORCEMENT PLAN
SCALE: 1" = 5'-0"

DETAIL S17-3
TYPICAL DOLPHIN BOTTOM REINFORCEMENT
SCALE: 1" = 5'-0"

DETAIL S17-4
TYPICAL DOLPHIN TOP REINFORCEMENT
SCALE: 1" = 5'-0"

BAR SHAPE SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS.
SHEET 1 OF 5

NOT FOR CONSTRUCTION
LOW WATER DATUM
EL. 0.0
EX. LAKE BOTTOM
EL. -12.0
T/SHTG. EL. +12.5
T/BACKFILL EL. +10
B/SHTG. EL. -37.5
CUT OFF EL. +12.0
C/L WALE EL. +7.0
T/SHTG. EL. +12.5
C/L WALE EL. +7.0
T/FENDER EL. +10.25±
LOW WATER DATUM
EL. 0.0
B/FENDER EL. +1.25±
B/SHTG. EL. -37.5

SECTION S20-1
SCALE 1" = 10' - 0"

SECTION 20-2
SCALE 1" = 10' - 0"

S20-3
SCALE 1" = 10' - 0"

DETAIL S20-4
WALE/STRUT CONNECTION DETAIL
SCALE 1" = 10' - 0"

DETAIL S20-6
WALE CORNER DETAIL
SCALE 1" = 10' - 0"

PLAN VIEW S20-7
SCALE 1" = 10' - 0"

NOT FOR CONSTRUCTION
**PLAN VIEW P24-1**

Sheet Pile DMMF-DMDP Connector Platform Layout

Scale 1" = 4'-0"

**NOTES:**
1. Sheet pile connection platform is designed for dredged depth of -15 ft LWD.
2. All sheet piles shall be coated both sides, top to 5 feet below design dredged module.
3. Not all PS sheets are shown.

**PLAN VIEW P24-2**

Sheet Pile DMMF-DMDP Connector Platform Layout

Scale 1" = 4'-0"
Grout mattresses to be installed along slope of new armor stone and existing DMDF dike.

Elevation LWD IGLD85 (FT)

Distance along profile (FT)

-30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220

EXISTING DMDF
DMMF-DMDF CONNECTOR
SEE SHEET S24

CELL 51

EXISTING GROUND

1.5:1 SLOPE

20'

TOP ELEV. +12 LWD

WISDOT EXTRA HEAVY RIPRAP

CORE STONE

TOE STONE (10-12 TON)

DREDGED MATERIAL

+12' ELEV

EXISTING MUDLINE

ROAD BASE CONNECTING DMMF-DMDF CONNECTOR TO ROAD ON DMDF DIKE

4.5% SLOPE

ROAD BASE

CONCRETE GROUT FILLED BAG MATTRESSES

NOT TO SCALE

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