SILVER LAKE DAM REPAIRS

CONTRACT NUMBER: T201807401
FEDERAL AID PROJECT NUMBER: N/A

COUNTY: NEW CASTLE M.R. #: N442

LOCATION MAP
SCALE: N.T.S.
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GENERAL NOTES

1. CONTRACTOR TO DESIGN AND CONSTRUCT TO MEET SPECIFICATIONS AS STATED IN THE DETAIL SHEETS WITHIN THE DETLA ADEPARTMENT OF TRANSPORTATION STANDARDS.

2. ALL DOCUMENTS AND SPECIFICATIONS PROVIDED TO THE CONTRACTOR MUST BE IN ACCORDANCE WITH THE DELAWARE DEPARTMENT OF TRANSPORTATION STANDARDS.

3. NO CHANGES TO ORIGINAL DESIGN ARE PERMITTED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.

4. PLOT AND PROPOSED CONSTRUCTION AREAS SHALL BE DESIGNED TO PROVIDE BOTH OF THE FOLLOWING CHARACTERISTICS:

- HAVING THE FOLLOWING CHARACTERISTICS:
- SEPARATE PRODUCTS EACH ADDED AT THE DOSAGE RECOMMENDED BY THE MANUFACTURER'S TECHNICAL DATA SHEETS AND

- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS, GEOMETRY, AND ELEVATIONS AS NECESSARY PRIOR TO COMMENCEMENT OF WORK.

- PAYMENT SHALL BE INCIDENTAL TO ITEM 763501 - CONSTRUCTION ENGINEERING.

- ALL EXISTING DIMENSIONS AND ELEVATIONS SHOWN ARE BASED ON THE BEST AVAILABLE INFORMATION AND ARE APPROXIMATE.

- ITEMS NOTED TO BE RELOCATED OR RESET BY THE CONTRACTOR, AT THE DISCRETION OF THE ENGINEER, SHALL BE DESIGNED TO PROVIDE BOTH OF THE FOLLOWING CHARACTERISTICS:

- ANY DAMAGE TO ITEMS NOTED TO BE RELOCATED OR RESET BY THE CONTRACTOR, AT THE DISCRETION OF THE ENGINEER, SHALL BE DESIGNED TO PROVIDE BOTH OF THE FOLLOWING CHARACTERISTICS:

- CONTRACTOR SHALL PROVIDE A COPY OF THE GENERAL PERMIT OR THE NOI CAN BE SECURED TO THE NEXT CONSTRUCTION PROJECT. A COPY OF THE NPDES GENERAL PERMIT AND NOI IS KEPT ON FILE IN THE DETLA ADEPARTMENT OF TRANSPORTATION STANDARDS.

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NOTES:

1. Contours shown are from survey completed by DelDOT in August/September 2014 using NAVD88.

2. Location of existing Chesapeake Utilities gas line shown is approximate.
NOTES:
1. CONTOURS SHOWN ARE FROM SURVEY COMPLETED BY DELDOT IN AUGUST/SEPTEMBER 2014 USING NAVD88.
2. LOCATION OF EXISTING CHESAPEAKE UTILITIES GAS LINE SHOWN IS APPROXIMATE.
3. REMOVE AND RE-SET EXISTING SIGN (1 POST, 3 SIGNS) ADJACENT TO NORTHWEST CORNER OF BRIDGE 1-504.
4. RIPRAP.
5. R6 4.
6. RECONSTRUCTION AS SHOWN IN THE PAVEMENT SECTIONS ON SHEET 16.
8. CONTOURS SHOWN ARE FROM SURVEY COMPLETED BY DELDOT IN AUGUST/SEPTEMBER 2014 USING NAVD88.
9. LOCATIONS OF EXISTING CHESAPEAKE UTILITIES GAS LINE SHOWN IS APPROXIMATE.
10. RIPRAP.
JOINT OF WINGWALL, MAX. CHIP DEPTH 3" (TYP.)
CHIP LOOSE CONCRETE/SPALLED AREAS TO DAMAGED. (SEE NOTE 5) (TYP. BOTH SIDES)
EXISTING REINFORCEMENT MAY REMAIN IF NOT CHIP AND REMOVE TOP 6" OF EXISTING REINFORCED CONCRETE WINGWALL TO CORNER.

REMOVE CONCRETE (MAX. CUT 1") TO FOR GATE MOUNTING PRODUCE LEVEL SILL IN PREPARATION SAWCUT AND REMOVE TOP ~2 FEET OF EXISTING CONCRETE WALL FROM UPSTREAM WINGWALLS AS SHOWN (TYP. BOTH SIDES)

ESTIMATED LIMIT OF EXISTING CONCRETE FOOTING (TYP.) COAT WITH COAL TAR EPOXY (TYP.) PAYMENT WHERE FRAME IS EMBEDDED IN CONCRETE, CUT DEMOLISH ALL STEEL GATE FRAME MEMBERS. STEEL FLUSH WITH SURROUNDING CONCRETE AND INCIDENTAL TO ITEM 211000.

DEMOLISH CONCRETE AROUND FISH LADDER SUPPORT. PROTECT FISH LADDER BARRIERS WITH STEEL ANGLE (LEFT CULVERT OPENING ONLY) NOTED APPROXIMATE LOCATION ACCORDING TO CONTRACT 672 HIGHWAY DEPARTMENT DELAWARE CONCRETE BRIDGE SILVER LAKE DRAWINGS DATED JANUARY 1939, SHEET 3 OF 4, THE EXISTING REINFORCEMENT IN THE WALL TO BE DEMOLISHED THROUGH THE FULL THICKNESS OF THE WALL CONSISTS OF #6 VERTICAL BARS SPACED AT 12" AND #4 HORIZONTAL BARS SPACED AT 12" ON THE EXPOSED FACE PORTION OF THE WALL TO BE DEMOLISHED THROUGH THE FULL THICKNESS OF THE WALL CONSISTS OF #7 VERTICAL BARS SPACED AT 12" AND #4 HORIZONTAL BARS SPACED AT 12" ON THE SOIL FACE OF THE WALL ONLY. A 12" WIDE ZINC PLATE SPANS THE VERTICAL WALL JOINT. REINFORCEMENT FOR THE WINGWALL UPSTREAM OF THE JOINT CONSISTS OF #7 VERTICAL BARS SPACED AT 12" AND #4 HORIZONTAL BARS SPACED AT 12" ON THE SOIL FACE OF THE WALL ONLY.

DEMOLISH TIMBER AND STEEL GATES, STEMS, MOUNTING HARDWARE, AND GUIDES.

FRESH CONCRETE. PAYMENT FOR CLEANING WILL BE CONSIDERED INCIDENTAL WITH ITEM 211000.

IF EXISTING REINFORCEMENT REMAINS, IT NEEDS TO BE CLEANED WITH WIREBRUSH PRIOR TO EMBEDMENT IN UNDER LUMP SUM ITEM 211000 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS.

ALL DEMOLITION AND REMOVAL SHOWN ON THIS SHEET INCLUDING TEMPORARY SUPPORT SHALL BE PAID INCIDENTAL TO ITEM 615521.

COAL TAR EPOXY. NO ADDITIONAL PAYMENT WILL BE MADE FOR BAFFLE DOWEL REMOVAL AND COAL TAR EPOXY. ITEMS 611001 AND 628070. BAFFLE DOWELS SHALL BE CUT FLUSH WITH CONCRETE SLAB AND PAINTED WITH #5 REBAR DRILLED INTO LOCATIONS AS DIRECTED BY THE ENGINEER; WORK SHALL BE PAID UNDER INCENTIVE ITEM 211000.

EXISTING UPSTREAM FISH LADDER SUPPORT DOWELS TO BE EVALUATED BY THE ENGINEER AFTER DEMOLITION OF DAMMNING CONCRETE. IF REMOVAL OR REPLACEMENT OF DOWELS IS RECOMMENDED THEN A PAINTED EPOXY DOWEL IS TO BEUSED IN THE FULL DEPTH OF THE CONCRETE. REINFORCEMENT IS TO BE INSERTED IN PLACE WITH THE SAME OR SIMILAR DOWEL. DOWEL LENGTH IS TO BE 3" LONGER THAN THE CURRENT LENGTH AND DRILLED INTO LOCATIONS AS DIRECTED BY THE ENGINEER. WORK SHALL BE PAID UNDER INCENTIVE ITEM 211000.

NOTE 2 THIS SHEET
NOTE 3 THIS SHEET
NOTE 4 THIS SHEET
NOTE 5 THIS SHEET

REFERENCES TO RIGHT AND LEFT ASSUME ONE IS LOOKING DOWNSTREAM.

ENGINEER TO EVALUATE EXISTING TOP OF CONCRETE SUPPORT AND PROVIDE TEMPORARY SUPPORT FOR EXISTING METAL FISH LADDER SUPPORT DOWEL REMOVAL AND INSTALLATION OF NEW FISH LADDER SUPPORT. PROTECT 8" DIA. SEWER PIPE.

NOTE 1 THIS SHEET
NOTE 2 THIS SHEET
NOTE 3 THIS SHEET
NOTE 4 THIS SHEET
NOTE 5 THIS SHEET

NEW CASTLE COUNTY

SCALE: 1" = 5'-0"
DEEP SPALL REPAIR NOTES:

1. DEEP SPALL REPAIRS ARE DEFINED AS AREAS THAT EXTEND BELOW THE TOP MAT OF REINFORCEMENT. DELAMINATED CONCRETE AREAS IDENTIFIED ON PLANS HAVE BEEN ASSIGNED AS DEEP SPALL REPAIRS.

2. ALL WORK INVOLVING METHODS OF CONCRETE REMOVAL, CLEANING OF CONCRETE SURFACE AND EXISTING REINFORCEMENT, PAYMENT FOR THIS WORK WILL BE INCIDENTAL TO ITEM 628041 - DEEP SPALL REPAIR.

3. IF DEPTH OF REPAIR EXTENDS MORE THAN 6" BEYOND SURFACE OF CONCRETE, CONTRACTOR SHALL STOP WORK AND NOTIFY THE ENGINEER IMMEDIATELY.

4. IF DEPTH OF REPAIR EXTENDS MORE THAN 6" BEYOND SURFACE OF CONCRETE, PAYMENT INCIDENTAL TO ITEM 628041 - DEEP SPALL REPAIR.

CONCRETE REPAIR QUANTITIES

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<tr>
<td>628011</td>
<td>CRACK SEALING</td>
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<tr>
<td>613001</td>
<td>Silicone-based Acrylic Concrete Sealer</td>
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<td>628041</td>
<td>DEEP SPALL REPAIR</td>
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* QUANTITY INCLUDES A 20% CONTINGENCY FACTOR

CRACK REPAIR DETAILS

- Beam No. 1
- Beam No. 2
- Beam No. 3

LIMITS OF CONCRETE REMOVAL AND ACCORDANCE WITH SUBSECTION 628.03:

- REMOVE TO SOUND CONCRETE, SEE NOTE 3
- SAW CUT 1" DEEP (TYP.)
- LIMITS OF CONCRETE REMOVAL AND ACCORDANCE WITH SUBSECTION 628.03
- REMOVE TO A MINIMUM 1" BEHIND EXISTING REINFORCEMENT

AREA TO RECEIVE DEEP SPALL REPAIR, SEE DETAIL AND NOTES THIS SHEET

SCALE: 1" = 5'-0"
NOTES:

1. SILICONE BASED ACRYLIC CONCRETE SEALER SHALL BE APPLIED TO ALL PROPOSED AND EXISTING EXPOSED CONCRETE SURFACES SUBSEQUENT TO THE CRACK REPAIRS AND DEEP SPALL REPAIRS. AREAS CONSIDERED WITH WEARING SURFACE AND BOTTOM SLAB IN CULVERTS AND AREAS PRIOR TO Application of the SEALANT. PREPARE THE CONCRETE SURFACES ACCORDING TO THE MANUFACTURER’S RECOMMENDATIONS PRIOR TO PAYMENT FOR THIS WORK WILL BE INCIDENTAL TO ITEM 613001 - SILICONE-BASED ACRYLIC CONCRETE SEALER. QUANTITIES SEE SHEET 9.

FOR SILICONE-BASED ACRYLIC CONCRETE SEALER, QUANTITIES SEE SHEET 9.

2. SCALE: 1/8” = 1’-0”

CONCRETE SEALING DETAIL - PLAN

SCALE AS NOTED

SILVER LAKE DAM REPAIRS

CONCRETE REPAIR DETAILS - 2

M.WEBER

H.BROWN

COUNTY DESIGNED BY:

CHECKED BY:

BRIDGE NO.

NEW CASTLE

UNOFFICIAL WEBSITE COPY
NOTES:

1. ALL THREE GATES, WEIRS, OPERATORS, SUPPORT EXTENSION MOUNTING HARDWARE, GATE MANUFACTURER REQUIRES BRACING AND REQUIRED GATE TESTING SHALL BE IN ACCORDANCE WITH LOCAL JURISDICTIONAL STANDARDS - STAINLESS STEEL SLIDE GATES.

2. CONTROL OF WAVE HEIGHT AND INCREASES NOT SHOWN FOR CLARITY. SEE SHEETS 21-28.

3. THE GATES AS SHOWN ON THIS SHEET ARE CONCEPTUAL REPRESENTATIONS. GATE STYLES ARE THE MANUFACTURER'S PREFERRED MANUFACTURING. THE GATES MUST MEET THE CRITERIA DEFINED ON THESE DRAWINGS AS WELL AS SPECIFICATION BOTTOM SUPPORT - STAINLESS STEEL SLIDE GATES.
NOTES:
1. DECKS AND EPOXY GLUING OF ALL DOWELS SHALL BE PAID UNDER ITEM 610000. DOWELS BE VALUED ON CONTRACTED BASIS.
2. PREPARE EXISTING CONCRETE TO BE IN CONTACT WITH NEW CONCRETE.
ROUGH SURFACE TO 1/4" AMPLITUDE. SURFACE PREPARATION SHALL BE NEEDED TO ITEM 610000. NO ADDITIONAL PAYMENT WILL BE MADE.

1. DECKS AND EPOXY GLUING OF ALL DOWELS SHALL BE PAID UNDER ITEM 610000. DOWELS BE VALUED ON CONTRACTED BASIS.
2. PREPARE EXISTING CONCRETE TO BE IN CONTACT WITH NEW CONCRETE.
ROUGH SURFACE TO 1/4" AMPLITUDE. SURFACE PREPARATION SHALL BE NEEDED TO ITEM 610000. NO ADDITIONAL PAYMENT WILL BE MADE.
NOTES:

1. Tab water, hydraulic interactions. Square dowel and stud clips used for top support detail shall be incidental to Item 610000. No separate payment will be made.
2. Prepare existing concrete to 1/4" with compressible material. Concrete must be placed with 1/4" of fresh concrete. New concrete must be placed with 1/4" of fresh concrete. No additional payment will be made.
3. Gate frame members and brackets shall be stainless steel AISI type 316L.
4. All threaded rod anchors shall be stainless steel AISI type 316L.
5. All welds for threaded rod anchors shall be stainless steel AISI type 316L.
6. Anchors (length shall be determined by contractor) to be provided with 1/4" of fresh concrete. Existing concrete must be placed with 1/4" of fresh concrete. No additional payment will be made.
7. Gates must not be used for clarity. Contractor must verify that gate mounting does not interfere with frame plates, anchors, and hardware.

STAINLESS STEEL PLATE

GATE MOUNT BOTTOM SUPPORT DETAIL

SCALE: 1/2" = 1'-0"

PLAN

6"

ELEVATION

SCALE: 1/2" = 1'-0"

GATE MOUNT BOTTOM SUPPORT

SECTION - LEFT BAYS

SCALE: 1/2" = 1'-0"

SILVER LAKE DAM REPAIRS

SILVER LAKE DAM REPAIRS
NOTES:

1. PLACE TAR PAPER BETWEEN EXISTING BRIDGE AND NEW CONCRETE.

2. SQUARE DOWEL CLIP. ORIENT COMPRESSION MATERIAL TOP AND BOTTOM.

3. PLACE SQUARE DOWELS INTEGRALLY WITH BRIDGE DECK, 6" DEPTH.

4. CAST 3/4" SQUARE DOWELS INTO EXISTING CONCRETE WALL.

RIGHT CULVERT - FISH LADDER

SUPPORT - PLAN EL 1.3 TO EL 7.6

SCALE: 1" = 1'-0"

RIGHT CULVERT - FISH LADDER

SUPPORT - PLAN EL 7.6 TO EL 9.9

SCALE: 1" = 1'-0"

RIGHT CULVERT - FISH LADDER

SUPPORT - PLAN EL 9.9 TO EL 14.8

SCALE: 1" = 1'-0"
NOTES:

1. ALIGN VERTICAL BAR WITH UPSTREAM FACE OF TRASH RACK.
2. STOP LOGS AND U-BOLT HANDLES TO BE PAID UNDER LUMP SUM ITEM 615521 - METAL FABRICATIONS.

Detail - Isometric

- Fish Ladder Stop Log

Details - Miscellaneous

- Bridge No.

Silver Lake Dam Repairs

Scale: 1 1/2" = 1'-0"
LIMITS OF DEMOLITION

TYPICAL BRIDGE SECTION

LEGEND

1. Points to be surveyed by contractor prior to construction.
   Points are to be used as reference points for structural
   surveying and after construction is completed. Payment for the
   work is included in item 801001 - Construction Engineering.

2. The maximum lifts for individual pavement materials are as
   follows:

   MATERIAL                       LIFT THICKNESS
   -------------------------------------------
   Item 601006 - Superpave Type B, PG 64-22   3.0
   Item 602006 - Superpave Type BCBC, PG 64-22  3.0
   Item 701006 - Bituminous Concrete Base Course, Type A  4.0
   Item 702006 - Bituminous Concrete Base Course, Type B  4.0

3. Existing pavement section (over bridge and approaches):

   MATERIAL                       LIFT THICKNESS
   -------------------------------------------
   Item 601006 - Superpave Type B, PG 64-22   3.0
   Item 610006 - Superpave Type BCBC, PG 64-22  3.0
   Item 701006 - Bituminous Concrete Base Course, Type A  4.0
   Item 702006 - Bituminous Concrete Base Course, Type B  4.0

4. For guardrail attachment detail, see sheet 17.

5. For section A-A, see sheet 16.

6. Typical approach pavement section shall be installed in any area
   where there are any existing construction (in 12") at each lift
   unless otherwise specified.

7. For additional notes, see sheet 5.

8. Contractor shall install item 817013 - Permanent pavement
   striping, epoxy resin paint, yellow, 5" across structure and
   reconstructed approach, item 817013 - Permanent pavement
   striping, epoxy resin paint, white, 5" across structure to match
   existing striping to the extent such striping is present and
   intact.

9. For additional notes, see sheet 5.

10. Contractor shall install item 817013 - Permanent pavement
    striping, epoxy resin paint, yellow, 5" across structure and
    reconstructed approach, item 817013 - Permanent pavement
    striping, epoxy resin paint, white, 5" across structure to match
    existing striping to approaches.

SILVER LAKE DAM REPAIRS

PLAN
SHEET NO. 16
SCALE AS NOTED
1/2" = 1'-0"

UNOFFICIAL WEBSITE COPY

EPOXY RESIN PAINT, BLACK, 5" ACROSS STRUCTURE AND RECONSTRUCTED APPROACHES TO MATCH EXISTING EPOXY RESIN PAINT TO THE EXTENT SUCH PAINT IS PRESENT AND INTACT.

1. Points to be surveyed by contractor prior to construction.
   Points are to be used as reference points for structural
   surveying and after construction is completed. Payment for the
   work is included in item 801001 - Construction Engineering.

2. The maximum lifts for individual pavement materials are as
   follows:

   MATERIAL                       LIFT THICKNESS
   -------------------------------------------
   Item 601006 - Superpave Type B, PG 64-22   3.0
   Item 602006 - Superpave Type BCBC, PG 64-22  3.0
   Item 701006 - Bituminous Concrete Base Course, Type A  4.0
   Item 702006 - Bituminous Concrete Base Course, Type B  4.0

3. Existing pavement section (over bridge and approaches):

   MATERIAL                       LIFT THICKNESS
   -------------------------------------------
   Item 601006 - Superpave Type B, PG 64-22   3.0
   Item 610006 - Superpave Type BCBC, PG 64-22  3.0
   Item 701006 - Bituminous Concrete Base Course, Type A  4.0
   Item 702006 - Bituminous Concrete Base Course, Type B  4.0

4. For guardrail attachment detail, see sheet 17.

5. For section A-A, see sheet 16.

6. Typical approach pavement section shall be installed in any area
   where there are any existing construction (in 12") at each lift
   unless otherwise specified.

7. For additional notes, see sheet 5.

8. Contractor shall install item 817013 - Permanent pavement
   striping, epoxy resin paint, yellow, 5" across structure and
   reconstructed approach, item 817013 - Permanent pavement
   striping, epoxy resin paint, white, 5" across structure to match
   existing striping to the extent such striping is present and
   intact.

9. For additional notes, see sheet 5.

10. Contractor shall install item 817013 - Permanent pavement
    striping, epoxy resin paint, yellow, 5" across structure and
    reconstructed approach, item 817013 - Permanent pavement
    striping, epoxy resin paint, white, 5" across structure to match
    existing striping to approaches.

SILVER LAKE DAM REPAIRS

PLAN
SHEET NO. 16
SCALE AS NOTED
1/2" = 1'-0"

UNOFFICIAL WEBSITE COPY
NOTES:

1. FOR SLAB DETAILS, SEE SHEET 16.
2. FOR ADDITIONAL NOTES, SEE SHEET 5.
4. CONTRACTOR IS RESPONSIBLE FOR SUPPORTING EXISTING 8" DIAMETER SEWER PIPE DURING CONSTRUCTION, SEE TEMPORARY SUPPORT DETAILS ON SHEET 17A.

UTILITY SUPPORT DETAIL

SCALE: 1" = 1'-0"

Existing B.Dia. Stair

 existing 8" Dia. Sewer Pipe

SECTION A-A

SCALE: 1" = 1'-0"

Full with Non-Divide Grout

EXISTING B.DIA. STEEL

Pivoting threaded rod mount loop hanger (see note 3)

NOTES:

1. FOR SLAB DETAILS, SEE SHEET 16.
2. FOR ADDITIONAL NOTES, SEE SHEET 5.
4. CONTRACTOR IS RESPONSIBLE FOR SUPPORTING EXISTING 8" DIAMETER SEWER PIPE DURING CONSTRUCTION, SEE TEMPORARY SUPPORT DETAILS ON SHEET 17A.
5. CONTRACTOR IS RESPONSIBLE FOR SUPPORTING EXISTING 8" DIAMETER SEWER PIPE DURING CONSTRUCTION, SEE TEMPORARY SUPPORT DETAILS ON SHEET 17A.
NOTES:

1. Operator shall be tamper-resistant.
2. Right side shown, left side mirrored.
3. Portable forms actuated/used to be provided in accordance with Section 615520 - Stainless Steel Slide Gates.

2. Gates as shown on this sheet are conceptual representations. gates styles vary by manufacturer. Regardless of manufacturer the gate must meet the criteria set forth in these drawings as well as specification section 615520 - Stainless Steel Slide Gates. Existing concrete surface preparation shall be considered incidental to TW 0325. Metal fabrication as separate payment will be made.
3. Gates, seals, and operators, operator extensions and the planters, mounting hardware, gate manufacturer required bracing, and required testing shall be performed under lump sum item 615520 - Stainless Steel Slide Gates.
4. Gates, seals, and operators. Operator extensions over the planters, mounting hardware, gate manufacturer required bracing, and required testing shall be paid under lump sum item 615520 - Stainless Steel Slide Gates.
5. Cleaning and filling existing blockouts shall be considered incidental to TW 0325. No separate payment will be made.
NOTES:
1. TAR PAPER, HYDROPHILIC WATERSTOP, SQUARE DOWELS AND DOWEL CLIPS USED FOR TOP SUPPORT DETAIL SHALL BE INCIDENTAL TO ITEM 610000. NO SEPARATE PAYMENT WILL BE MADE.
2. EXCAVATION FOR CONCRETE OPERATOR PLATFORM SHALL BE PAID UNDER ITEM 207000 - STRUCTURAL EXCAVATION.
3. ASABE NO. 57 STONE USED TO LEVEL PRIOR TO CONSTRUCTION OF OPERATOR PLATFORM IS CONSIDERED INCIDENTAL TO ITEM 610000. NO SEPARATE PAYMENT WILL BE MADE.
NOTES:

1. All gate frame members and brackets shall be stainless steel AISI Type 316.
2. All threaded rod anchors shall be Hilti type HAS-R 316 SS with hit-re500 v3 epoxy or equal.
3. All holes for threaded rod anchors shall have diameter 1/8" greater than anchor diameter.
4. Anchor length shall be determined by contractor. Total length to include embedded length, varying grout pad thickness, washer, hex nut, jam nut (as required), and at least one additional thread below anchor.
5. Gates not shown for clarity. Contractor to verify that gate mounting does not interfere with frame gussets, anchors, and hardware.
NOTES:
1. TRASH RACK MEMBERS SHALL BE DUPLEX TYPE 2205 STAINLESS STEEL WITH (Fy=65ksi).

STAINLESS STEEL TRASH RACKS

STRUCTURAL DETAILS -

A.VASKO
W.BROWN

SCALE AS NOTED

COUNTY

DESIGNED BY:
CHECKED BY:

BRIDGE NO.

NEW CASTLE

ADDENDA / REVISIONS

SILVER LAKE DAM REPAIRS

2" x 1/4" STAINLESS STEEL PLATE (TYP. HORIZ. MEMBERS AND OUTER FRAME)

4" x 3/4" STAINLESS STEEL PLATE (TYP. INTERIOR VERTICAL MEMBERS)

1/4 TYP

9'-2" (TYP)

1'-6"

FABRICATE W/ VERTICAL MEMBERS
FLUSH WITH U/S FACE OF RACK

1'-6" (TYP)

FABRICATE W/ VERTICAL MEMBERS
FLUSH WITH U/S FACE OF RACK

1'-6" (TYP)

FABRICATE W/ VERTICAL MEMBERS
FLUSH WITH U/S FACE OF RACK

SCALE: 3/4" = 1'-0"

(2 REQUIRED)

(1 REQUIRED)

(2 REQUIRED)

1-407 TRASH RACK - ELEVATION

1-504 LEFT BAY TRASH RACK - ELEVATION

1-504 RIGHT BAY TRASH RACK - ELEVATION

1-407 TRASH RACK - TYPICAL SECTION

1-504 LEFT BAY TRASH RACK - TYPICAL SECTION

1-504 RIGHT BAY TRASH RACK - TYPICAL SECTION

SCALE AS NOTED
### Specifications

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### Bending Dimensions

- **Feet-Inches / Quarters Inch**

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### Detailing

- **Area**
- **Dimensions**
- **Tolerances**

### Standard Bar Bends

- **1-6'**
- **2-10'**
- **3-20'**
- **4-30'**
- **5-30'**
- **6-70'**
- **7-30'**
- **8-90'**
- **9-90'**
- **10-40'**
- **11-50'**
- **12-30'**
- **13-30'**
- **14-50'**
- **15-40'**
- **16-70'**
- **17-20'**
- **18-10'**
- **19-10'**
- **20-70'**

### Special Bar Bends

- **10-30'**
- **11-50'**
- **12-30'**
- **13-30'**
- **14-50'**
- **15-40'**
- **16-70'**
- **17-20'**
- **18-10'**
- **19-10'**
- **20-70'**

### Notes

1. **Embedded**
2. **Recommended Embedment**
3. **Stirrup and Tie Hooks**
4. **180° and 90° Bends**

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### Silver Lake Dam Repairs

- **Contract No.**
- **Scope of Work**
- **Preparation**
- **Revision**

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**UNOFFICIAL WEBSITE**
ENVIRONMENTAL COMPLIANCE NOTES

1. GENERAL NOTES:
   A. THE PURPOSE OF THIS SHEET IS TO IDENTIFY THOSE ITEMS ASSOCIATED WITH ENVIRONMENTAL COMPLIANCE. IMPACT CALCULATIONS AND FOR THE AGENCY PERMIT REPORTING PURPOSES ONLY AND ARE NOT TO BE USED FOR BIDDING PURPOSES.
   B. IF A DEPARTURE FROM THE APPROVED PLANS WOULD AFFECT ANY NATURAL AND/OR CULTURAL RESOURCES, IT IS NECESSARY TO CONTACT THE ENVIRONMENTAL STUDIES SECTION PRIOR TO ANY MODIFICATION TO BLEND ENVIRONMENTAL STUDIES (ES/MS) TO ALLOW FOR COORDINATION WITH THE APPLICABLE RELEVANT AGENCIES AND APPROVAL.
   C. USE OF THIS SHEET DOES NOT ALLOWS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.

2. NATURAL RESOURCE ISSUES:
   A. PERMIT REQUIREMENTS/APPROVALS:* 
      1. DISTRICT COMMISSION ENGINEERS LISTED MUST BE CONSIDERED FOR CONSTRUCTION IN THE PERMITTED AREAS AND ENSURE THEY ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
      2. CONSTRUCTION RESTRICTIONS: 
         a. WETLANDS: NO WETLAND WORK MARCH 1 - JUNE 30, UNLESS NATURAL DRAINAGE CHANNELS ARE INSTALLED/REEMBANKED BEFORE CAPITAL RESTORATION WORK. NO IN-WATER WORK BEYOND LIMITS OF COFFERDAM MARCH 1 - JUNE 30, IF IN-WATER WORK BEYOND LIMITS OF COFFERDAM IS ESSENTIAL, IT SHOULD BE CONSIDERED IN THE ENVIRONMENTAL STUDIES STAFF WILL NEED TO REVISE THESE CHANGES FOR POTENTIAL CULTURAL RESOURCES CONCERNS.
         b. CONSTRUCTION MUST OCCUR WITHIN THE BOUNDARY OF THE WILLOW GROVE MILL HISTORIC DISTRICT. ANY PLAN MODIFICATION OR CHANGE IN THE PROJECT'S LOCATION MUST BE COORDINATED WITH THE DELDOT ENVIRONMENTAL STUDIES STAFF IF IT IS NECESSARY TO CHANGE THE PROJECT'S SIGHT AND LOCATION, ACCESS LOCATIONS OR OTHER SITE-RELATED ISSUES SHOULD BE DISCUSSED WITH THE ENVIRONMENTAL STUDIES STAFF PRIOR TO PROCEEDING WITH CONSTRUCTION ACTIVITIES.
   B. IF A DEPARTURE FROM THE APPROVED PLANS (WHICH WOULD AFFECT ANY NATURAL AND/OR CULTURAL RESOURCES) IS CONSIDERED, THE CONTRACTOR SHOULD BE CONTACTED PRIOR TO PROCEEDING WITH CONSTRUCTION ACTIVITIES.
   C. USE OF THIS SHEET DOES NOT ALLOWS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.

3. CULTURAL RESOURCE ISSUES:
   A. THE CONTRACTOR SHOULD BE AWARE THAT THE BRIDGES 1-504 AND 1-407 ARE ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER OF HISTORIC PLACES. THE PROJECT AS CURRENTLY DESIGNED, CONSTITUTES AN ADVERSE EFFECT. COORDINATION WITH THE DELAWARE STATE HISTORIC PRESERVATION OFFICE (DE SHPO) IS ONGOING.
   B. THIS WORK WILL OCCUR WITHIN THE BOUNDARY OF THE WILLOW GROVE MILL HISTORIC DISTRICT. ANY PLAN MODIFICATION OR CHANGE IN THE PROJECT'S LOCATION MUST BE COORDINATED WITH THE DELDOT ENVIRONMENTAL STUDIES STAFF IF IT IS NECESSARY TO CHANGE THE PROJECT'S SIGHT AND LOCATION, ACCESS LOCATIONS OR OTHER SITE-RELATED ISSUES SHOULD BE DISCUSSED WITH THE ENVIRONMENTAL STUDIES STAFF PRIOR TO PROCEEDING WITH CONSTRUCTION ACTIVITIES.
   C. USE OF THIS SHEET DOES NOT ALLOWS THE CONTRACTORS RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.

4. FLOOD RECORD RESTORATION:
   A. * THE CONTRACTOR MUST REMAIN IN OPERATIONAL EFFECT. COORDINATION WITH THE DELAWARE STATE HISTORIC PRESERVATION OFFICE (DE SHPO) IS ONGOING.

ENVIRONMENTAL COMPLIANCE NOTES

ORIGINAL SHEET PREPARED BY GLEN LOVELACE III ON 7/15/2019. SHEET LAST UPDATED ON 2/10/2020.

PERMIT REQUIREMENTS/APPROVALS:
1. DISTRICT COMMISSION ENGINEERS LISTED MUST BE CONSIDERED FOR CONSTRUCTION IN THE PERMITTED AREAS AND ENSURE THEY ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION PERIOD.
2. CONSTRUCTION RESTRICTIONS: 
   a. WETLANDS: NO WETLAND WORK MARCH 1 - JUNE 30, UNLESS NATURAL DRAINAGE CHANNELS ARE INSTALLED/REEMBANKED BEFORE CAPITAL RESTORATION WORK. NO IN-WATER WORK BEYOND LIMITS OF COFFERDAM MARCH 1 - JUNE 30, IF IN-WATER WORK BEYOND LIMITS OF COFFERDAM IS ESSENTIAL, IT SHOULD BE CONSIDERED IN THE ENVIRONMENTAL STUDIES STAFF WILL NEED TO REVISE THESE CHANGES FOR POTENTIAL CULTURAL RESOURCES CONCERNS.
   b. CONSTRUCTION MUST OCCUR WITHIN THE BOUNDARY OF THE WILLOW GROVE MILL HISTORIC DISTRICT. ANY PLAN MODIFICATION OR CHANGE IN THE PROJECT'S LOCATION MUST BE COORDINATED WITH THE DELDOT ENVIRONMENTAL STUDIES STAFF IF IT IS NECESSARY TO CHANGE THE PROJECT'S SIGHT AND LOCATION, ACCESS LOCATIONS OR OTHER SITE-RELATED ISSUES SHOULD BE DISCUSSED WITH THE ENVIRONMENTAL STUDIES STAFF PRIOR TO PROCEEDING WITH CONSTRUCTION ACTIVITIES.

PERMIT REQUIREMENTS/APPROVALS:*

* THE CONTRACTOR MUST ENSURE THAT THESE PERMITS/APPROVALS ARE IN THEIR POSSESSION PRIOR TO BEGINNING CONSTRUCTION IN THE PERMITTED AREAS AND ENSURE THEY ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION PERIOD.

THE PERMITS/APPROVALS LISTED ARE THOSE REQUIRED FOR THIS PROJECT. THE ENVIRONMENTAL STUDIES SECTION IS RESPONSIBLE FOR COORDINATING AND OBTAINING THESE PERMITS.

THE CONTRACTOR MUST ENSURE THAT THESE PERMITS/APPROVALS ARE IN THEIR POSSESSION PRIOR TO BEGINNING CONSTRUCTION IN THE PERMITTED AREAS AND ENSURE THEY ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION PERIOD.

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THE PURPOSE OF THIS SHEET IS TO IDENTIFY THOSE ITEMS ASSOCIATED WITH ENVIRONMENTAL COMPLIANCE. IMPACT CALCULATIONS AND FOR THE AGENCY PERMIT REPORTING PURPOSES ONLY AND ARE NOT TO BE USED FOR BIDDING PURPOSES.

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SEQUENCE OF CONSTRUCTION:

1. Coordinate with utility companies in accordance with the utility statement.
2. Install water devices in accordance with the detour plan or as directed by the engineer.
3. Maintain pool level at EL 9.3 using existing gates at Bridge 1-407.
4. Install erosion and sediment control measures.
5. Clear and/or designated trees.
6. Install control of water devices and modifications to existing cofferdam at Bridge 1-407.
8. Erosion and remove gate structure and other components in accordance with drawings at Bridge 1-407.
9. Maintain pool level at EL 9.3 using new gates at Bridge 1-504.
10. Upon acceptable gate test results, remove control of water devices at Bridge 1-504 including sheet pile in designation. Remove sheet pile to remove a water.
11. Maintain pool level at EL 9.3 using new gates at Bridge 1-504.
12. Construct cofferdam and control of water devices at Bridge 1-407.
13. Remove existing gates and associated mounting hardware at Bridge 1-407.
15. Remove control of water devices and cofferdam from Bridge 1-407.
16. Stake out all disturbed areas with ARKMAP.
17. Remove sediment control after final stabilization of all disturbed areas and as approved by engineer.
18. Remove all water devices and restore the roadway. Removal of water devices may occur prior to the removal of temporary erosion and sediment control devices.
19. Remove sediment control after final stabilization of all disturbed areas and as approved by engineer.
20. Install new concrete, gate systems, and pavement at Bridge 1-404.

GENERAL EROSION AND SEDIMENT CONTROL NOTES:

5. CLEARLY MARK ALL TOOLS TO BE REMOVED WITH PAINT PASS TO THE EROSION AND SEDIMENT CONTROL MEETING.
6. EROSION AND SEDIMENT CONTROL DEVICES WILL BE MAINTAINED IN PLACE AND WILL ONLY BE REMOVED WHEN IT IS NO LONGER NECESSARY TO PRINT THE DESIGNATED FUNCTIONS AS APPROVED BY THE ENGINEER.
7. EXISTING SHEETPILE (OWNED BY OTHERS)
8. THE CONTRACTOR SHALL HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT. THE CONTRACTOR SHALL NOT BE REQUIRED TO HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT.
9. THE CONTRACTOR SHALL HAVE AN ATSSA SUPERVISOR ASSIGNED TO THIS PROJECT. THE CONTRACTOR'S GENERAL SUPERINTENDENT FOR THIS PROJECT OR ANOTHER ATSSA CERTIFIED MEMBER OF THE CONTRACTOR'S PROJECT STAFF MAY BE THE ATSSA SUPERVISOR. PAYMENT FOR ATSSA SUPERVISOR IS INCIDENTAL TO ITEM 801000.
10. AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATSSA) CERTIFIED TRAFFIC CONTROL SUPERVISOR REQUIREMENT FOR THIS PROJECT.
11. AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION (ATSSA) CERTIFIED TRAFFIC CONTROL SUPERVISOR REQUIREMENT FOR THIS PROJECT.
12. GENERAL MOT NOTES:
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SCALE: 1" = 200'
NOTE:

1. Contractor should be prepared for notable differences in geometry. Contractor’s control of water system shall consider these differences in geometry at no additional cost to the Department.

2. Conceptual Cofferdam design shown shall be reviewed in the Contractor’s control of water system to suit their needs, existing conditions, or protection levels desired. Design Cofferdam for minimum mean elevation of 12.8 or critical load lower than this level. Conceptual Cofferdam to be installed in the wet.

3. All control of water work, including furnishing and placing all materials, engineering, labor, equipment, and coordination necessary for Cofferdam installation, preparation of forms, andsealed drawings and shop drawings (if requested) are necessary. Tailing slopes area, braiding of existing sheeting, sandbag Cofferdam, fencing, crickets, preparation of all areas used for Cofferdam work, dredging, plating, beams, delta, welding, removal of Cofferdam work, and removal of temporary works shall be paid by the Unit Cost of Cofferdam.
NOTES:

1. CONTRACTOR SHOULD BE PREPARED FOR NOTABLE DIFFERENCES IN GEOMETRY. CONTRACTOR'S CONTROL OF WATER SYSTEM SHALL CONSIDER THESE DIFFERENCES IN GEOMETRY AT NO ADDITIONAL COST TO THE DEPARTMENT.

2. NORTH AND SOUTH SHEET PILES DO NOT HAVE NOTABLE EMBEDMENT AND MAY NOT BE STABLE IN AREA. RIGID WALL ARE REMOVED. ADDITIONALLY, HEAVY WATER FLOW (LEAKAGE) IS OBSERVED IN THIS AREA. CONTRACTOR SHALL USE POLY DRAPES, GROUTING TECHNIQUES, CONCRETE GATES, TRASH RACKS, AND OTHER APPROVED METHODS TO LIMIT WATER INFILTRATION AND PIPELINE POTENTIAL, AND SHALL CAUSE NO DAMAGE TO THE EXISTING GAS LINE.

3. ALL CONTROL OF WATER WORK INCLUDING FURNISHING AND PLACING ALL MATERIALS, ENGINEERING, LABOR, EQUIPMENT, AND COORDINATION NECESSARY FOR COFFERDAM INSTALLATION, PREPARATION OF DRAFTS, AND ALL DRAWINGS, INCLUIDE PREPARATION OF DRAWINGS ARE NECESSARY. TO COMPLETE SHEET PILES, SHOULDER, AND GROINS OF SHEET PILES AND BLANKET SHOULDER WORK. REMOVE OF EXISTING SHEETING AND REMOVAL OF TEMPORARY WORKS SHALL BE PAID UNDER LUMP SUM ITEM 604500 - COFFERDAMS.

4. CONTRACTOR MAY LOWER THE LAKE IN ADVANCE OF STORM EVENTS WITH PERMISSION FROM DELEDOT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DESIGN THE CONTROL OF WATER SYSTEM AND INSTALLATION. CONTRACTOR MAY CHARGE FOR THE COST OF WATER CONCEPTS INDICATED ON THESE PLANS WITH PERMISSION FROM DELEDOT. THE WORK WILL BE PERFORMED AT NO ADDITIONAL COST TO THE DEPARTMENT.

SCALE: 1" = 5'-0"
NOTES:
1. Contractor should be prepared for notable differences in geometry. Contractor's control of water system shall consider these differences in geometry at no additional cost to the Department.

2. Elevation view: Looking downstream view taken along alignment of sheeting.

3. All controls of water work including furnishings and placing all materials, engineering, labor, equipment, and coordination necessary for Cofferdam installation, preparation of borrow and sealed drawings, multiple submissions if resubmissions are necessary. Filling scour area, backing of existing sheeting, sandbags, Cofferdams, pumping, coring, patching of all holes used for Cofferdam work, drilling, plates, beams, rivets, welding. Removal of existing sheeting and removal of temporary works shall be paid under lump sum item No.604500 - Cofferdams.
1-504 CONTROL OF WATER NOTES:

1. This design is contingent on proper construction techniques and pump operations. The intent of the presented design is to bolster the existing sheet pile wall to allow for limited additional movement and maintain existing pressures on the sheet piles during unwatering operations.

2. Proposed structural utilities, and drawings are shown on these drawings for reference only. Refer to other drawings for details of the proposed structural.

3. Contractor shall locate existing utilities prior to any work. The contractor shall take care to avoid damage to existing utilities.

4. Elevations of existing ground surface were extrapolated based on contours. Contractor shall verify and coordinate all dimensions and elevations prior to the start of work. Contractor shall notify engineer of any site conditions not reflected on these drawings.

5. The existing sheet piles shall be removed at the time of work on Bridge 1-504 and returned.

MUMPRO & MILLER
division of JPratt
201807401

CONTRACT COUNTY
MIDDLETOWN, DE 19709
PHONE: (302)378-7736

6. Contractor shall submit methods and materials for controlling water at the north and south ends of the existing sheet pile Cofferdam. Shall allow for the removal of the existing sheet piles when the spillway is returned to service.

7. Materials:
   - Waler shall consist of W12x72 (Sx=97.4 in3, I=597 in4, Fy=50 ksi) or approved equal.
   - Waler connection shall consist of W8x48 (Sx=43.2 in3, I=184 in4, Fy=50 ksi) or approved equal.
   - Walers shall be connected to act as 200 (fy=30.0 ksi) and shall permit full bearing pressure to be developed.
   - Welding electrode shall be E70XX.
   - Membrane shall be 30 mil high density polyethylene (HDPE).

8. All control of water work including furnishing and placing all materials, engineering, labor, equipment, and coordination necessary for Cofferdam placement, Cofferdam installation, preparation of ground and gravel surfaces multiple submissions if requested are necessary. Filling action area, placing of existing materials, and placing and positioning of Cofferdam necessary at this time.

9. It is the Contractor's responsibility to protect Cofferdam and instrumental as part of this work from erosion as additional payment will be made for this work.

CONSTRUCTION SEQUENCE:
1. Full sheet only with adjacent any necessary Cofferdam in full view
2. Install walers
3. Place Bulk Sandbags and Sandbags
4. Cofferdam area as required to perform the work. Additional phased Cofferdam operations may be necessary to complete the work in dry conditions.
5. Perform Cofferdam work as specified.

PLACEMENT OF SANDBAGS:
1. Place an equal number of horizontal rows on either side of shoreline
2. Butt ends of bags together maintaining staggered joint placement.
3. Compact each bag in place by walking on it.

INSTALL WALERS.

PERFORM SEEPAGE REMEDIATION AS REQUIRED.