David Arpin

From: David Arpin <darpin@rtg-eng.com>
Sent: Friday, April 14, 2017 9:08 PM
To: Mike Piscitelli (mpiscite@newhavenct.gov)
Cc: Dawn Henning (DHenning@newhavenct.gov); gzinn@newhavenct.gov; 'Jim Russell (jrussell@rtg-eng.com)'; 'talpaio@rtg-eng.com'; 'Greg Coren'
Subject: 50% Plans
Attachments: 50% DRAFT - Outfall Tide Gate Plan Set.pdf

Mike,

Please find the attached 50% Plans for the installation of the new duck-bill check valves on the existing Clay Street Stormsewer Outfall. Included in the plan set is an alternate in-line check valve option for your consideration.

In addition to the plans, we completed several internal analyses on the headwall including checking the headwall for overturning, designing the required concrete anchors, and estimating flow reduction from the check valve.

The flow reduction analyses completed indicate significant loss in the flow capacity of the culvert due to the decrease in area from the thimble plate and the head loss through the duck bills. This is of significant concern as it will likely exacerbate the flooding that is currently occurring.

Based on the above, we do not recommend the installation of the duck bill check valves as a standalone alternative to mitigate the flooding issue. To be effective, the system would need to be supplemented with a pumping station similar to that discussed previously.

The proposed duck bill check valve manufacturer (Red Valve) confirmed the above concerns and also does not recommend their installation without a pumping system.

We can discuss the above more during our conference call on Monday.

Best,
Dave

DAVID J. ARPIN, P. E.
Project Manager

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70 Romano Vineyard Way, Suite 134
North Kingstown, RI 02852
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F. 401-294-9806
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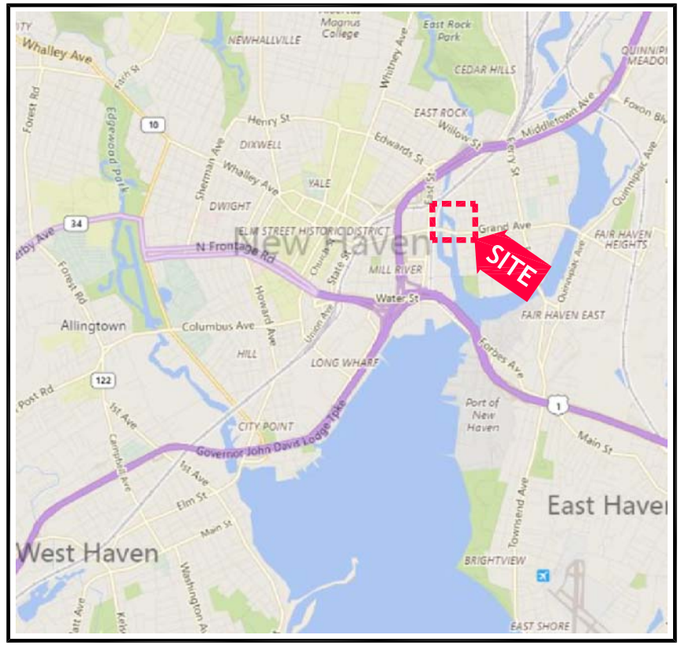
www.rtg-eng.com

OUTFALL TIDE GATE

MILL RIVER DISTRICT SHORELINE ANALYSIS

New Haven,Connecticut

Map 180, Block 749, Lot 21.01



SITE VICINITY MAP

INDEX OF DRAWINGS			
CATEGORY	SHEET	DRAWING	TITLE
GENERAL	1	G-01	TITLE, INDEX, LOCATION AND VICINITY MAPS
	2	G-02	LEGEND, ABBREVIATIONS, AND NOTES
CIVIL	3	C-01	SITE PLAN
	4	C-02	EXISTING HEADWALL PLAN
SECTIONS	5	S-01	EXISTING HEADWALL ELEVATION AND SECTION
DETAILS	6	D-01	PROPOSED HEADWALL DETAILS - 1
	7	D-02	PROPOSED HEADWALL DETAILS - 2
	7a	D-02a	ALTERNATIVE PROPOSED HEADWALL DETAILS - 2a (IN-LINE CHECK VALVE)

SITE LOCATION MAP

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File Location: R:\Projects\15103.01 - Outfall Tide Gate\DWG\Cover and Notes.dwg

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DR	TTA
CHK	GJC
APVD	JBR

No.	DATE	REVISIONS	BY	APVD

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City of New Haven

OUTFALL TIDE GATE
MILL RIVER DISTRICT SHORELINE ANALYSIS
Map 180, Block 749, Lot 21.01
City of New Haven
New Haven,Connecticut

TITLE, INDEX, LOCATION AND VICINITY MAPS

SHEET	1 OF 7
DWG No.	G-01
DATE	Apr 2017
PROJ No.	15103.01

GENERAL NOTES:

1. THE SITE IS LOCATED IN NEW HAVEN, CONNECTICUT.
2. STANDARD SPECIFICATIONS, WHEN REFERENCED IN THESE DRAWINGS, SHALL MEAN THE CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, AND INCIDENTAL CONSTRUCTION (MOST CURRENT EDITION). PARTS OF THE STANDARD SPECIFICATIONS THAT ARE SPECIFICALLY REFERENCED SHALL BECOME PART OF THESE DRAWINGS AS THOUGH STATED HEREIN IN FULL. IN CASE OF A DISCREPANCY BETWEEN THE STANDARD SPECIFICATIONS AND THE REQUIREMENTS STATED WITHIN THE DRAWINGS, THE REQUIREMENTS STATED WITHIN THE DRAWINGS SHALL PREVAIL.
3. THIS PROJECT IS MUNICIPALLY OWNED AND FUNDED. THEREFORE, SOME OF THE REFERENCES AND TERMINOLOGY OF THE STANDARD SPECIFICATIONS MAY SEEM OUT OF PLACE. THE OWNER IS THE CITY OF NEW HAVEN (THE CITY). THE ENGINEER FOR THIS PROJECT IS RT GROUP, INC. (RTG). THE CONNECTICUT DEPARTMENT OF TRANSPORTATION IS NOT A PARTY TO THIS PROJECT.
4. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY DURING THE PERFORMANCE OF THE WORK. SAFETY PROVISIONS SHALL COMPLY WITH OSHA AND OTHER APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. THESE REQUIREMENTS SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.
5. THE UTILITY LOCATIONS SHOWN ON THESE DRAWINGS ARE CONSIDERED APPROXIMATE AND WERE OBTAINED FROM THE BEST AVAILABLE INFORMATION. THE ACTUAL LOCATION OF UTILITIES MAY VARY FROM THAT SHOWN AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATIONS OF ALL UTILITIES, GRADES, AND DIMENSIONS PRIOR TO STARTING WORK.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT CALL BEFORE YOU DIG (1-800-922-4455) AND THE CITY 3 BUSINESS DAYS BEFORE COMMENCING WITH ANY EXCAVATION/GRADING, IN ORDER THAT ALL AFFECTED UTILITY COMPANIES ARE NOTIFIED PRIOR TO STARTING WORK.
7. THE PROPERTY AND EASEMENT LINES SHOWN ON THESE DRAWINGS ARE CONSIDERED APPROXIMATE.
8. CONSTRUCTION LIMITS COINCIDE WITH PROPERTY LINE AND/OR EASEMENT LIMITS AS SHOWN ON THESE DRAWINGS.
9. WATER ELEVATIONS AT THE SITE ARE TIDAL AND ARE EXPECTED TO VARY.
10. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS IN THE FIELD BEFORE ORDERING ANY MATERIAL, COMMENCING ANY FABRICATION, OR PERFORMING ANY WORK. THE CONTRACTOR SHALL NOTIFY THE ENGINEER, IN WRITING, OF ANY CONDITIONS OR DIMENSIONS WHICH VARY FROM THOSE SHOWN IN THE DRAWINGS AND INCORPORATE SUCH VARIATIONS IN THE CONSTRUCTION AS APPROVED BY THE ENGINEER.
11. THE PROPOSED WORK IS LOCATED WITHIN A FEMA ZONE VE FLOOD ZONE AND WILL BE INUNDATED DURING THE 100 YEAR FLOOD. THE 100 YEAR FLOOD ELEVATION IS ESTIMATED AT ABOUT 12 FEET NAVD 88 AS SHOWN ON THE NEW HAVEN COUNTY, CONNECTICUT FLOOD INSURANCE RATE MAP NUMBER 09009C0441J, PANEL 441 OF 635, DATED JULY 8, 2013 AND MAP NUMBER 09009C0442J, PANEL 442 OF 635, DATED JULY 8, 2013.

ENVIRONMENTAL PROTECTION:

THE CONTRACTOR SHALL BE RESPONSIBLE TO TAKE PREVENTATIVE MEASURES TO HELP MINIMIZE ANY ENVIRONMENTAL IMPACT. THESE MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:

1. NO FUEL WILL BE STORED ON SITE. ALL FUEL WILL BE BROUGHT TO THE SITE AS REQUIRED.
2. ALL FUEL TRANSFER OPERATIONS ARE TO BE CONDUCTED IN AN EFFICIENT AND SAFE MANNER IN ACCORDANCE WITH THE CONTRACTOR'S OPERATIONS MANUAL.
3. ABSORBENT DIAPERS DESIGNED FOR USE WITH PETROLEUM PRODUCTS SHALL BE PLACED UNDER ALL MACHINERY DURING FUELING OPERATIONS.
4. ALL HYDRAULIC EQUIPMENT SHALL UTILIZE VEGETABLE BASED, NON-TOXIC, AND NON-POLLUTING HYDRAULIC FLUID.
5. EQUIPMENT SHALL BE PROPERLY MAINTAINED AND RECORDED IN WEEKLY LOGS INCLUDING THE REQUIREMENTS FOR AND ACTUAL MAINTENANCE COMPLETED.
6. A SPILL KIT AND/OR ABSORBENT MATERIALS AND 300 LINEAR (MIN) FEET OF USCG APPROVED OIL CONTAINMENT BOOM SHALL BE ON-SITE AT ALL TIMES DURING CONSTRUCTION OPERATIONS.

LAYOUT:

1. THE HORIZONTAL CONTROL DATUM FOR THIS PROJECT IS CONSIDERED SITE SPECIFIC BUT IS APPROXIMATELY ALIGNED WITH NAD 83 (I.E., STATE PLANE COORDINATE SYSTEM) .
2. THE VERTICAL CONTROL DATUM FOR THIS PROJECT IS NAVD 88.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING ALL LAYOUT WORK FROM THE CONTROL MONUMENTATION PROVIDED AND IN ACCORDANCE WITH SECTION 01040, SITE CONDITIONS.

QUALITY CONTROL:

1. COORDINATE WITH THESE DRAWINGS AND SECTION 01400, QUALITY CONTROL.

MOBILIZATION/DEMOBILIZATION:

1. COORDINATE WITH THESE DRAWINGS AND SECTION 02005, MOBILIZATION/DEMOBILIZATION.

EROSION AND SEDIMENT CONTROL:

1. COORDINATE WITH THESE DRAWINGS AND SECTION 02270, EROSION AND SEDIMENT CONTROL.

DEWATERING, CONTROL, AND DIVERSION OF WATER:

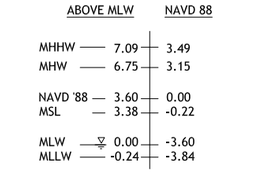
1. COORDINATE WITH THESE DRAWINGS AND SECTION 02400, DEWATERING, CONTROL, AND DIVERSION OF WATER.
2. THE CONTRACTOR SHALL ROUTE ALL PUMPED WATER TO DEWATERING BASINS OR OTHER SUITABLE DEVICES (E.G., DEWATERING BAGS) PRIOR TO ALLOWING THE PUMPED WATER TO FLOW OVER LAND.

CONCRETE:

1. COORDINATE WITH THESE DRAWINGS AND SECTION 03310, CONCRETE.

LEGEND:

- 10 — EXISTING CONTOUR
- EXISTING WATERFRONT STRUCTURE
- EXISTING PROPERTY LINE
- EXISTING EDGE OF PAVEMENT
- X — EXISTING FENCE
- EXISTING EDGE OF VEGETATION
- PROPOSED SILT FENCE
- RIVER EXTENTS AT EL. 0 (NAVD 88)
- EXISTING STRUCTURE
- EXISTING STORM SEWER LINE AND CATCH BASIN

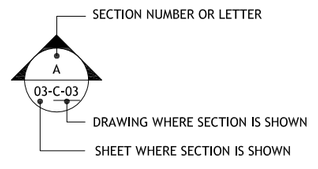


VERTICAL DATUM CONVERSION DIAGRAM

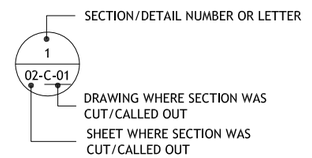
THE ABOVE TIDAL AND DATUM ELEVATION DATA WAS TAKEN FROM THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) DATABASE FOR THE FOLLOWING STATION:
STATION ID: *8467150*
LOCATION: BRIDGEPORT, CONNECTICUT
LATITUDE: *41° 10.4' N*
LONGITUDE: *073° 10.9' W*

ABBREVIATIONS

AC	ACRES
APPROX.	APPROXIMATE
BLDG.	BUILDING
BOT	BOTTOM
CIP	CAST-IN-PLACE
CONS. JT.	CONSTRUCTION JOINT
CONT. JT.	CONTRACTION JOINT
CONC.	CONCRETE
DFE	DESIGN FLOOD ELEVATION
DIA.	DIAMETER
EA	EACH
EPC	EPOXY COATED
EXP. JT.	EXPANSION JOINT
EL.	ELEVATION
E.O.P.	EDGE OF PAVEMENT
EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
FT	FEET
F&I	FURNISH AND INSTALL
GALV.	GALVANIZED
HORIZ	HORIZONTAL
HYD	HYDRANT
ID	INSIDE DIAMETER
LF	LINEAR FEET
LOC	LIMITS OF CLEARING, GRUBBING & STRIPPING
LOD	LIMITS OF DISTURBANCE
MAX.	MAXIMUM
MIN.	MINIMUM
NAD 83	NORTH AMERICAN DATUM OF 1983
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
NGVD 29	NATIONAL GEODETIC VERTICAL DATUM OF 1929
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
O.C.	ON CENTER
O.C.E.W.	ON CENTER EACH WAY
O.D.	OUTER DIAMETER
P	PROPERTY LINE
PI	POINT OF INTERSECTION
REQ'D	REQUIRED
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND REINSTALL
R&S	REMOVE AND STOCKPILE
TBD	TO BE DETERMINED
TEMP.	TEMPORARY
TYP.	TYPICAL
VERT	VERTICAL



SECTION / DETAIL



DETAIL AND SECTION DESIGNATION

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APVD	JBR

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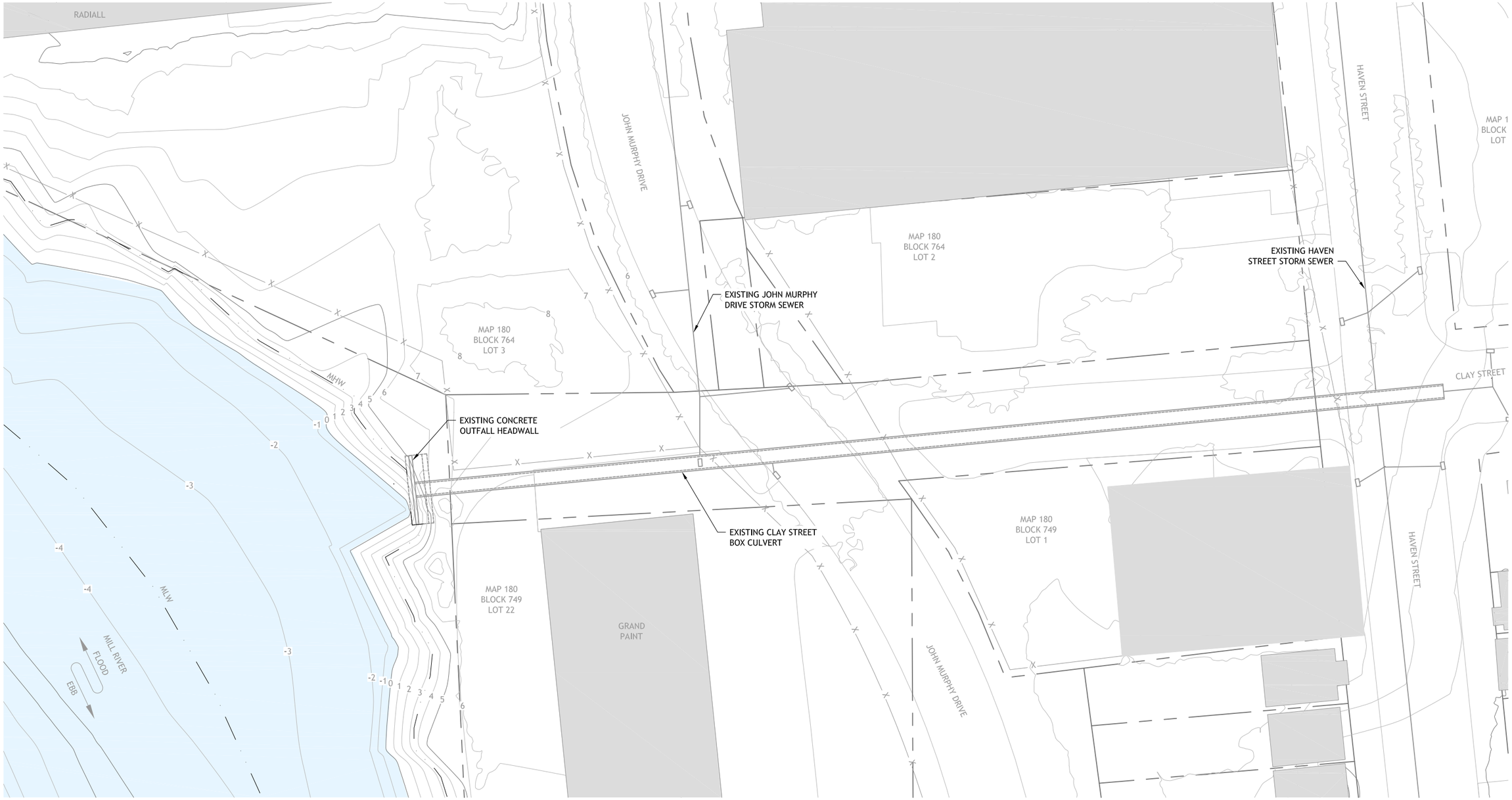
OUTFALL TIDE GATE
MILL RIVER DISTRICT SHORELINE ANALYSIS
Map 180, Block 749, Lot 21.01
City of New Haven
New Haven,Connecticut

LEGEND, ABBREVIATIONS, AND NOTES

SHEET	2 OF 7
DWG No.	G-02
DATE	Apr 2017
PROJ No.	15103.01



OVERALL SITE PLAN

SCALE: 1"=20'

Graphic Scale 1"=20'

20' 10' 0 20' 40' 60'

N

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OUTFALL TIDE GATE
MILL RIVER DISTRICT SHORELINE ANALYSIS
Map 180, Block 749, Lot 21.01
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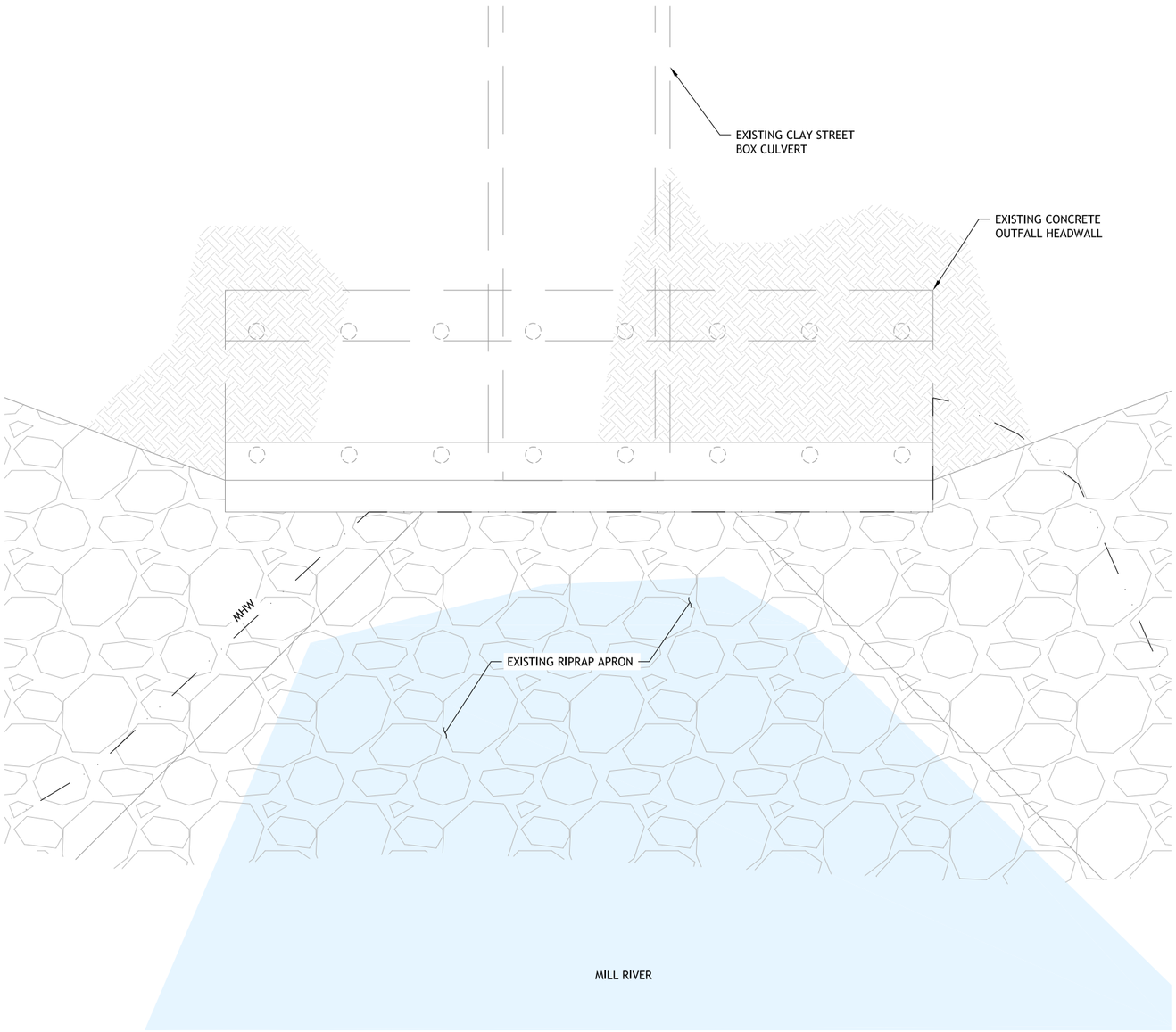
SITE PLAN

SHEET	3 OF 7
DWG No.	C-01
DATE	Apr 2017
PROJ No.	15103.01



EXISTING SITE PLAN

SCALE: ⅜"=1'-0"

N

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OUTFALL TIDE GATE
MILL RIVER DISTRICT SHORELINE ANALYSIS
Map 180, Block 749, Lot 21.01
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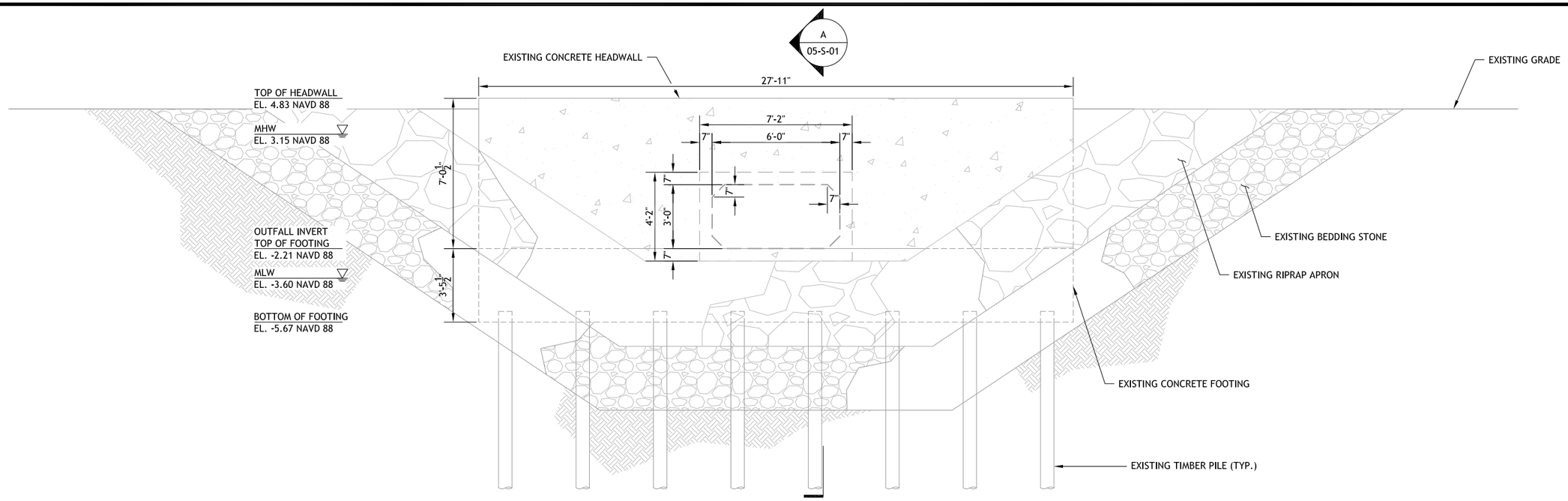
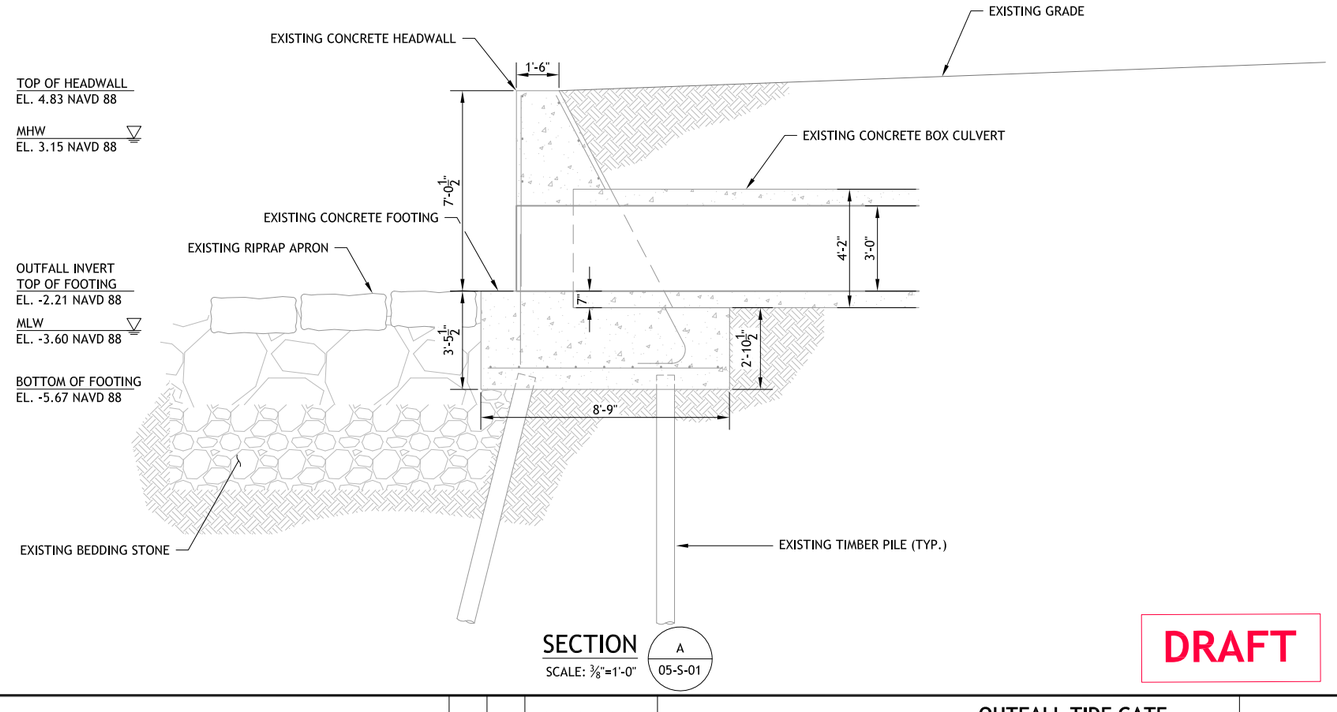
EXISTING HEADWALL PLAN

SHEET	4 OF 7
DWG No.	C-02
DATE	Apr 2017
PROJ No.	15103.01



ELEVATION

SCALE: ⅜"=1'-0"



SECTION

SCALE: ⅜"=1'-0"

A
05-S-01

NOTE:

1. THE EXISTING HEADWALL GEOMETRY SHOWN WAS TAKEN FROM A PLAN SET TITLED "HAVEN STREET SEWERS" PREPARED BY CARDINAL ENGINEERING ASSOCIATES, INC. FOR THE CITY OF NEW HAVEN AND DATED FEBRUARY 10, 1976.

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MILL RIVER DISTRICT SHORELINE ANALYSIS
Map 180, Block 749, Lot 21.01
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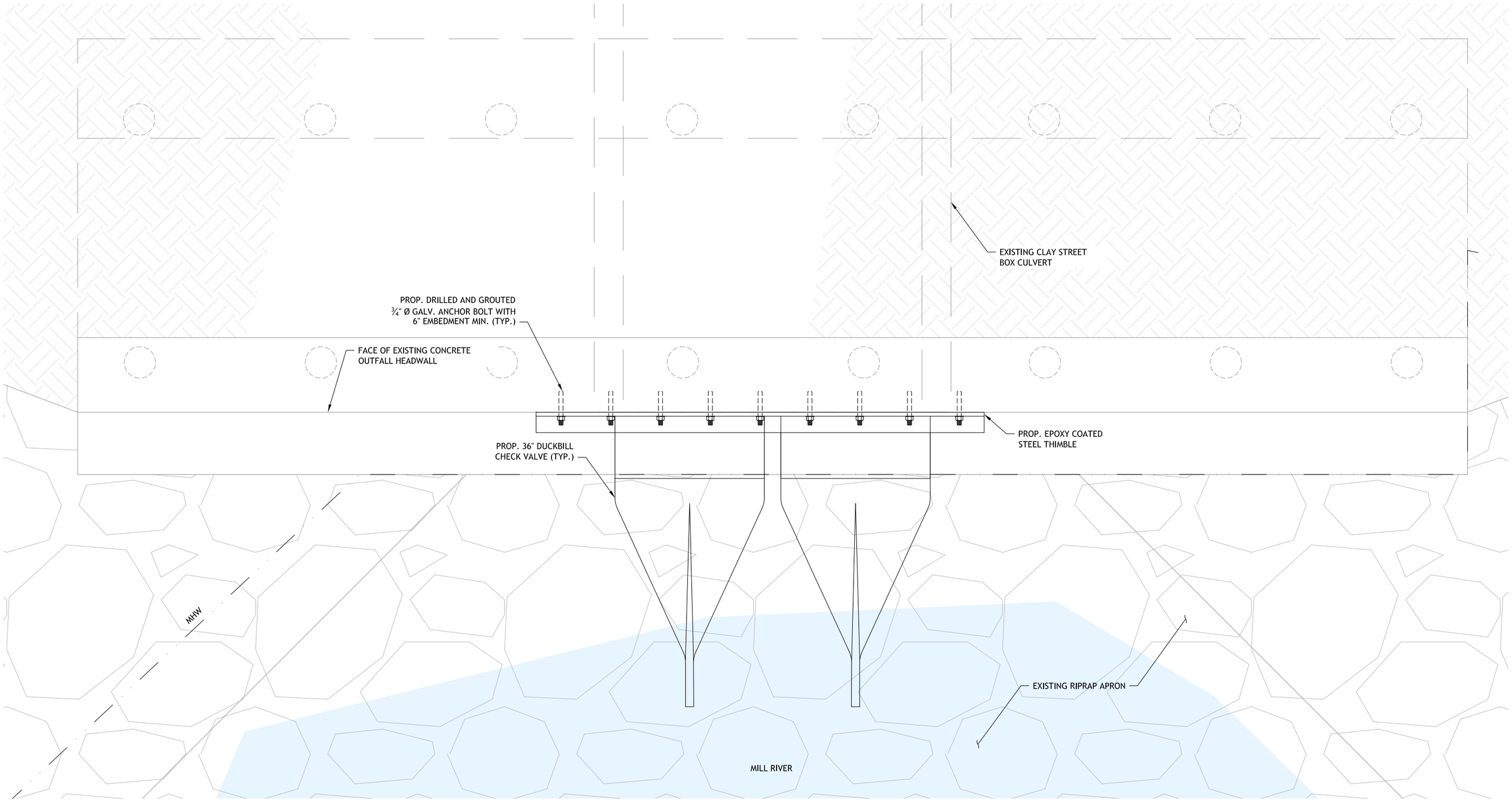
EXISTING HEADWALL ELEVATION AND SECTION

SHEET	5 OF 7
DWG No.	S-01
DATE	Apr 2017
PROJ No.	15103.01



EXISTING SITE PLAN

SCALE: 1"=1'-0"

N

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OUTFALL TIDE GATE
MILL RIVER DISTRICT SHORELINE ANALYSIS
Map 180, Block 749, Lot 21.01
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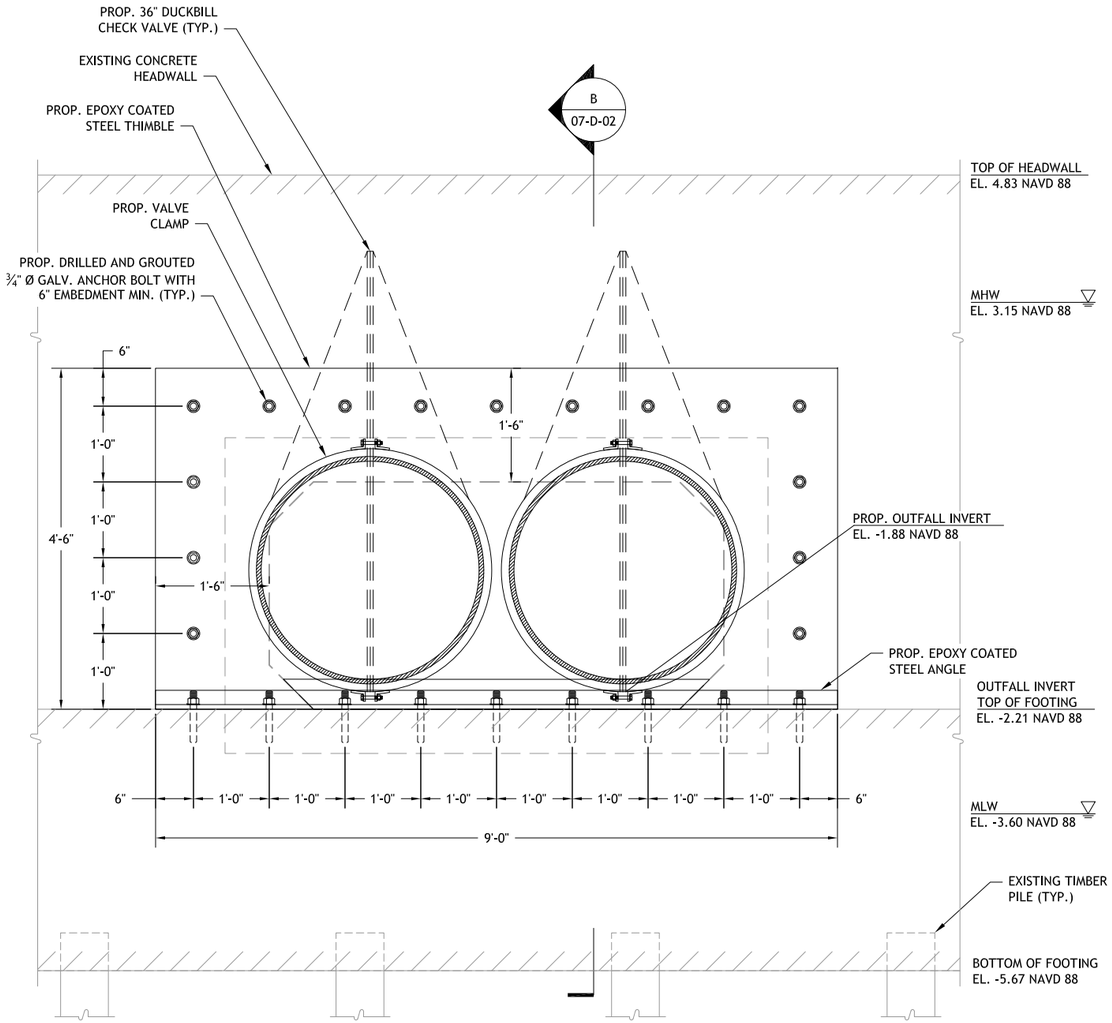
New Haven,Connecticut

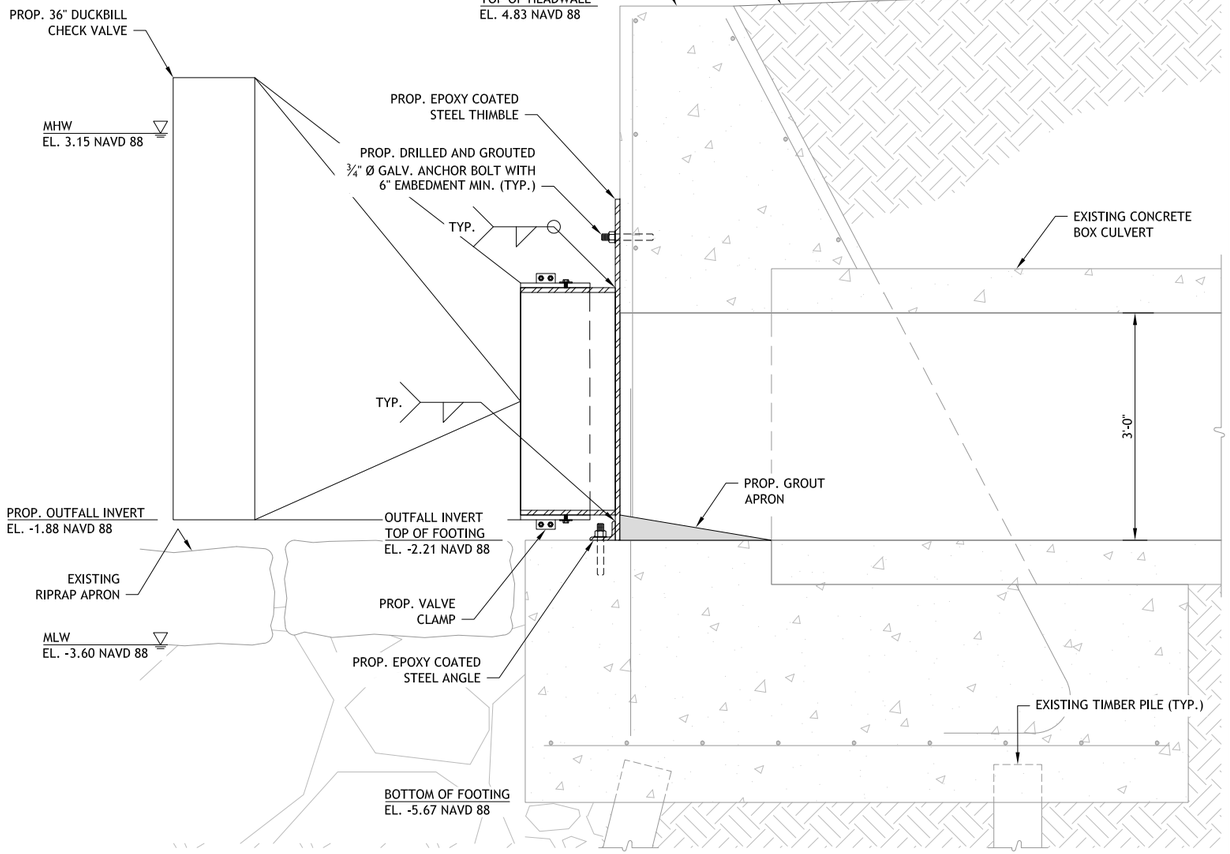
PROPOSED HEADWALL DETAILS - 1

SHEET	6 OF 7
DWG No.	D-01
DATE	Apr 2017
PROJ No.	15103.01



ELEVATION

SCALE: 1"=1'-0"



SECTION

SCALE: 1"=1'-0"

B
07-D-02

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OUTFALL TIDE GATE
MILL RIVER DISTRICT SHORELINE ANALYSIS
Map 180, Block 749, Lot 21.01
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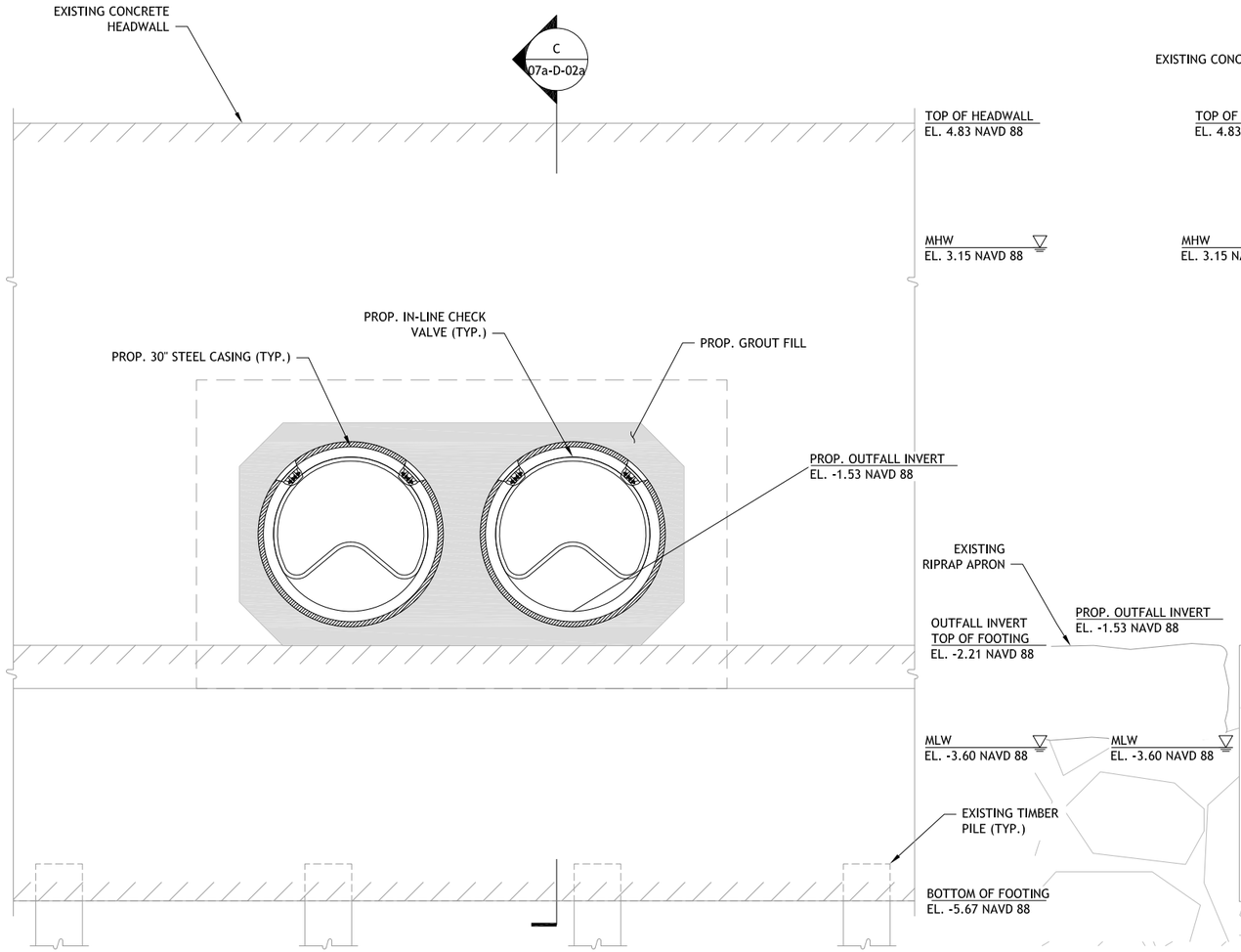
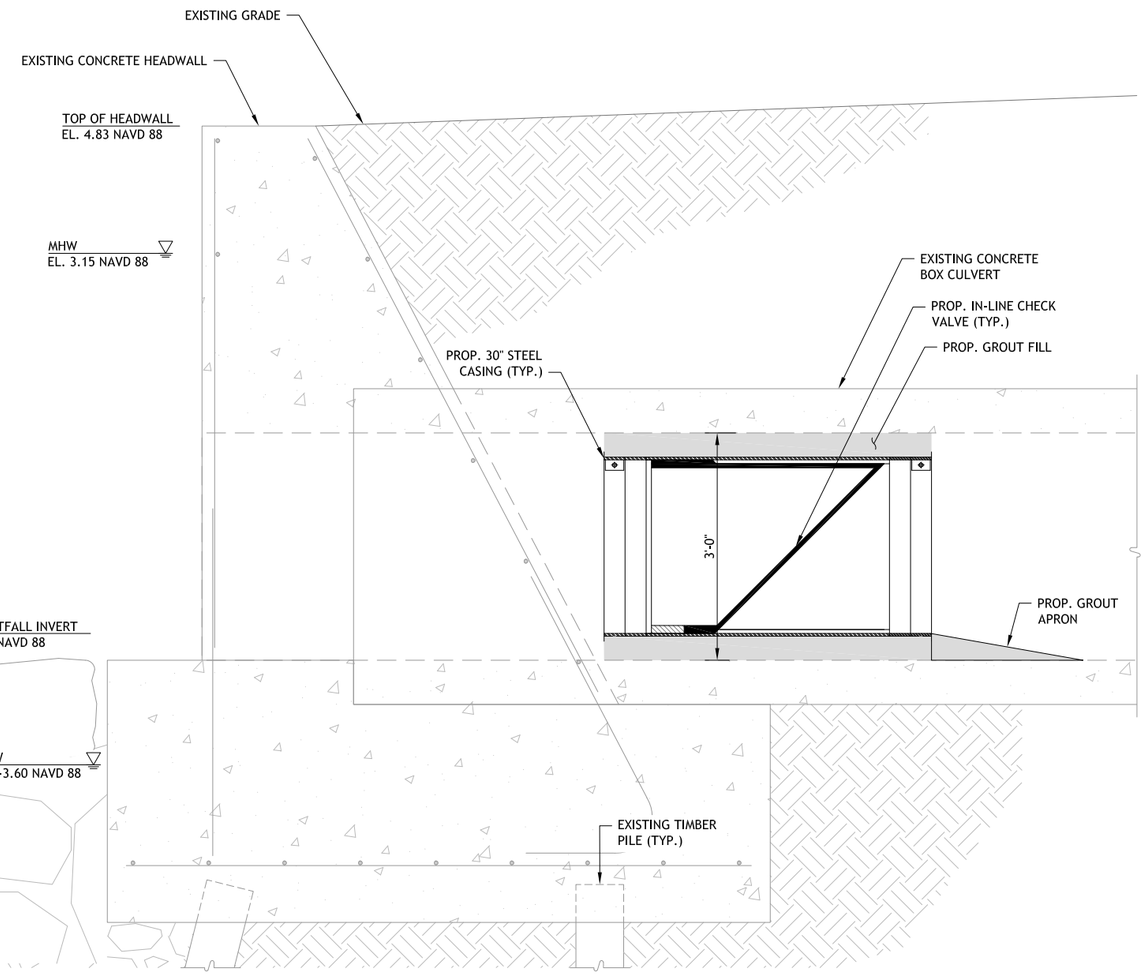
New Haven,Connecticut

PROPOSED HEADWALL DETAILS - 2

SHEET	7 OF 7
DWG No.	D-02
DATE	Apr 2017
PROJ No.	15103.01



ELEVATION
SCALE: 1"=1'-0"



SECTION C
SCALE: 1"=1'-0"
07a-D-02a

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ALTERNATE PROPOSED HEADWALL DETAILS - 2a (IN-LINE CHECK VALVE)

SHEET	7a OF 7
DWG No.	D-02a
DATE	Apr 2017
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