sappi | warren release papers

Saccarappa Falls Fish Passage Project
Preliminary Design
October 2015

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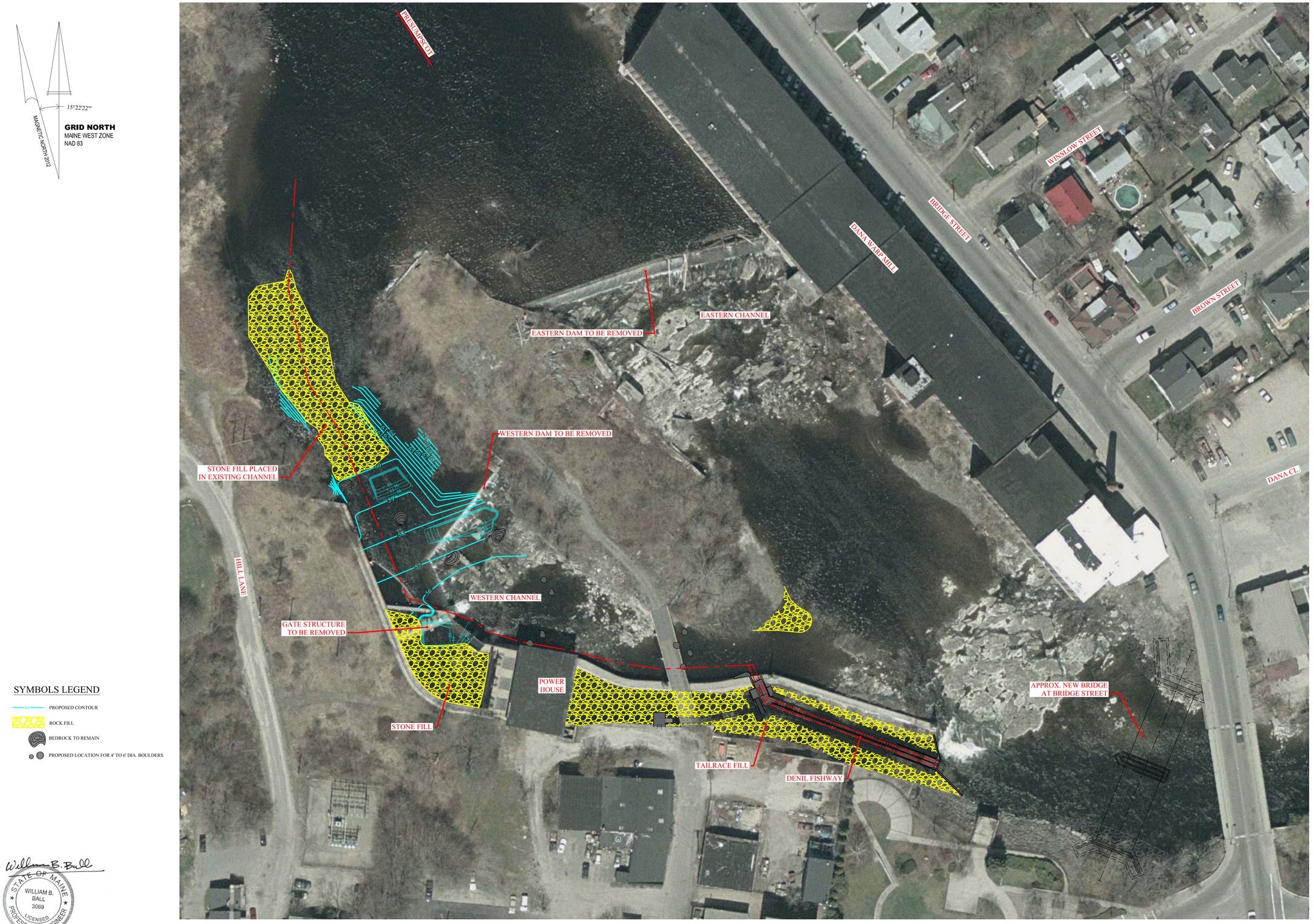

SYMBOLS LEGEND

- 61 — PROPOSED CONTOUR
- ROCK FILL
- BEDROCK TO REMAIN
- PROPOSED LOCATION FOR 4' TO 6' DIA. BOULDERS

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED PROFESSIONAL ENGINEER
October 20, 2015

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SCALE: 1"= 40'

40 0 40 80 120 160

No.	Revision Description	Drwn	Ck'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Ckd By: KJB
Aprvd By: WBB
Date: 10-19-15

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Saccarappa Falls Fish Passage Project
Western Channel Design
Aerial

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2249

Sheet 1 of 13

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

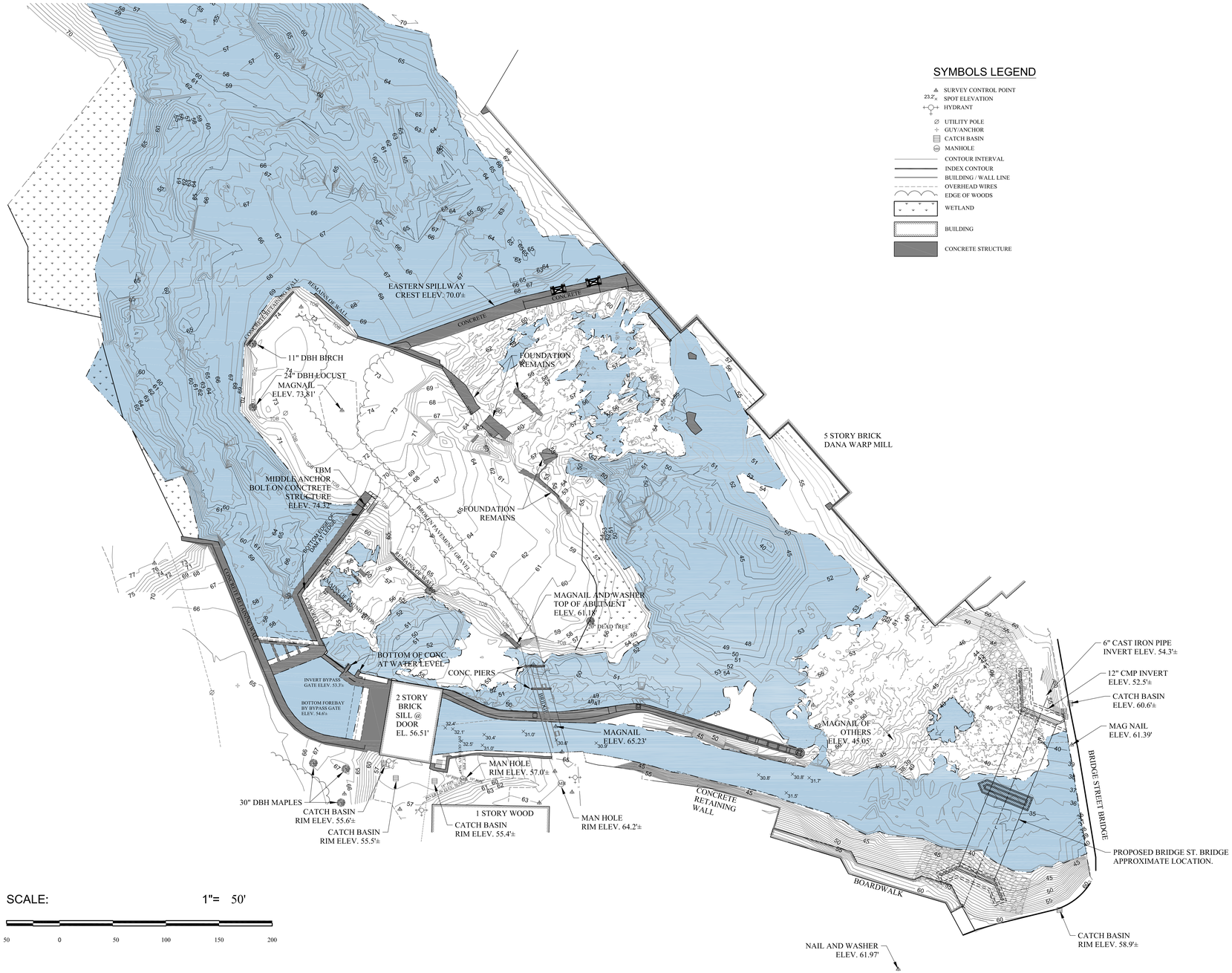
(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

15°22'22"
MAGNETIC NORTH 2012

GRID NORTH
MAINE WEST ZONE
NAD 83



SYMBOLS LEGEND

- SURVEY CONTROL POINT
- 23.2 SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- WETLAND
- BUILDING
- CONCRETE STRUCTURE

SCALE: 1"= 50'

50 0 50 100 150 200

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October 20, 2015

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No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

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Saccarappa Falls Fish Passage Project
Western Channel Design
Pre-Development Project Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2250

Sheet 2 of 13

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- INDEX CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- ESTIMATED FROM SURVEYED DATA
- ESTIMATED EXISTING BEDROCK BATHYMETRY
- PROPOSED BEDROCK BATHYMETRY IN WESTERN CHANNEL AND TAILRACE FILL
- WETLAND
- BUILDING
- CONCRETE STRUCTURE
- x 23.2' PROPOSED SPOT ELEVATIONS
- PROPOSED LOCATION FOR 4' TO 6' DIA. BOULDERS
- PROPOSED ROCK FILL
- BEDROCK TO REMAIN

WESTERN CHANNEL NATURAL FISH PASSAGE
CONCRETE RETAINING WALL
CONCRETE RETAINING WALL
REMAINS OF WALL
REMAINS OF WALL
11" DBH BIRCH
24" DBH LOCUST
MAGNAIL ELEV. 73.81'
FOUNDATION REMAINS
FOUNDATION REMAINS
5 STORY BRICK DANA WARP MILL
BROKEN PAVEMENT / GRAVEL
REMAINS OF FOUNDATION
MAGNAIL AND WASHER TOP OF ABUTMENT ELEV. 61.18'
20" DEAD TREE
CONC. PIERS TO BE REMOVED
INVERT BYPASS GATE ELEV. 53.3'±
BOTTOM FOREBAY BY BYPASS GATE ELEV. 54.6'±
2 STORY BRICK SILL @ DOOR EL. 56.51'
MAGNAIL ELEV. 65.23'
DOUBLE DENIL FISH LADDER SEE SHEET #7
ALL ELECTRICAL POLES TO BE REMOVED FROM TAILRACE WALL
MAGNAIL OF OTHERS ELEV. 45.05'
PROPOSED CB-2
PROPOSED CB-1
PROPOSED CB-3
MH
MH
CONCRETE RETAINING WALL
PROPOSED BRIDGE ST. BRIDGE APPROXIMATE LOCATION.
30" DBH MAPLES
1 STORY WOOD
BOARDWALK
TOB

15°22'22"
MAGNETIC NORTH 2012

GRID NORTH
MAINE WEST ZONE
NAD 83

SCALE: 1"= 30'

30 0 30 60 90 120

STATE OF MAINE
WILLIAM B. BALL
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LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

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No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

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Saccarappa Falls Fish Passage Project
Western Channel Design
Post-Development Project Site Plan

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2251

Sheet 3 of 13

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- INDEX CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- ESTIMATED FROM SURVEYED DATA
- ESTIMATED EXISTING BEDROCK BATHYMETRY
- PROPOSED BEDROCK BATHYMETRY IN WESTERN CHANNEL AND TAILRACE FILL
- WETLAND
- BUILDING
- CONCRETE STRUCTURE
- x 23.2' PROPOSED SPOT ELEVATIONS
- PROPOSED LOCATION FOR 4' TO 6' DIA. BOULDERS
- PROPOSED ROCK FILL
- BEDROCK TO REMAIN

GRID NORTH
MAINE WEST ZONE
NAD 83'

15°22'22"
MAGNETIC NORTH 2012

788'
700'
686.81'
600'
596.81'
546.81'
500'
400'
376.51'
312.2'
300'
294.5'
264.5'
214.5'
200'
174.5'
130'
100'
30'
0'

CONCRETE RETAINING WALL
REMAINS OF WALL
FOUNDATION REMAINS
MAGNAIL ELEV. 73.81'
STONE FILL
NATURAL FISH PASSAGE PROFILE CENTER LINE
3'Ø BOULDERS
CONCRETE TO BE REMOVED
5'Ø BOULDERS
MAGNAIL AND WASHER TOP OF ABUTMENT ELEV. 61.18'
REMOVE HUMP
2 STORY BRICK SILL @ DOOR EL. 56.51'
FOUNDATION REMAINS
PROVIDE RIP-RAP D_{50} = 24"±
DOUBLE DENIL FISH LADDER SEE SHEET #7
5 STORY BRICK DANA WARP MILL
MAGNAIL ELEV. 65.23'
1 STORY WOOD
MH
TOB

SCALE: 1"= 30'
30 0 30 60 90 120

William B. Ball
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WILLIAM B. BALL
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October 20, 2015

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No.	Revision Description	Drwn	Chk'd	Date

Drwn By: BPG / PHD
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Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

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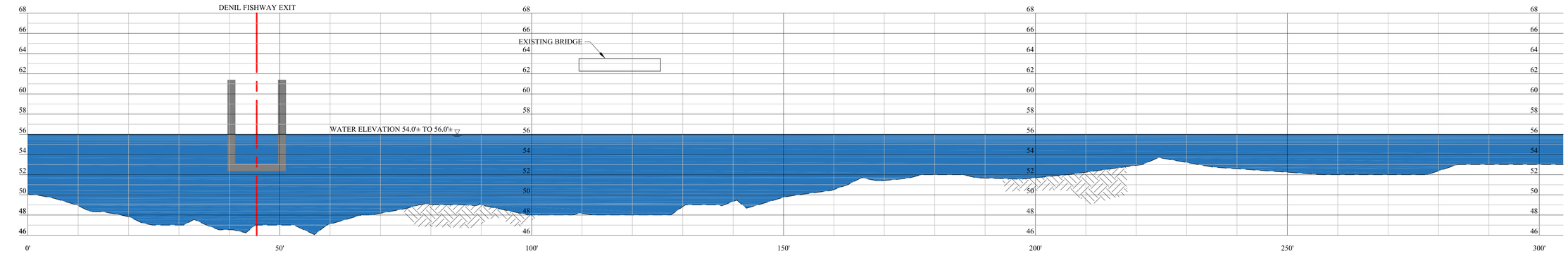
Saccarappa Falls Fish Passage Project
Western Channel Design
Overall Western Channel Site Plan
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

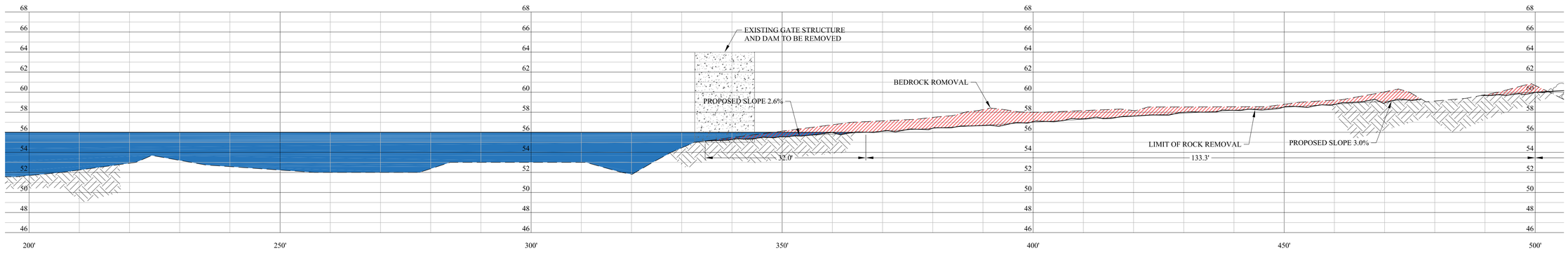
Drawing No: C-2252

Sheet 4 of 13



WESTERN CHANNEL PROFILE

Scale: Horz: 1" = 10'
Vert: 1" = 5'

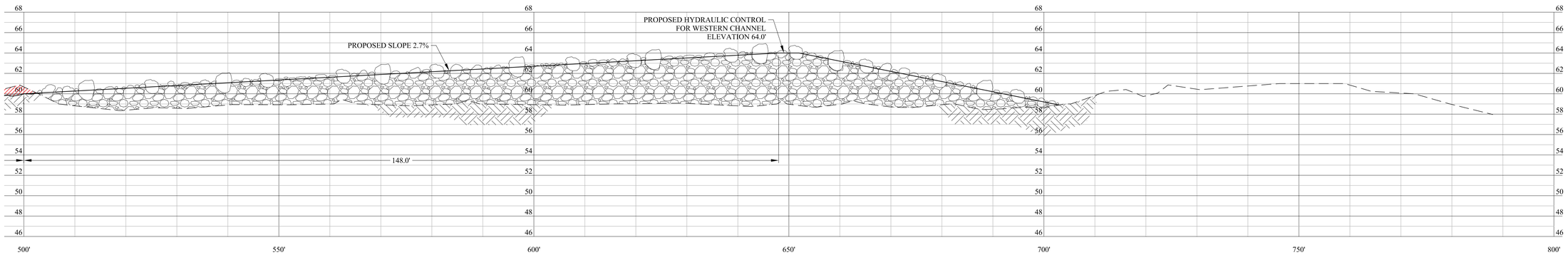


WESTERN CHANNEL PROFILE

Scale: Horz: 1" = 10'
Vert: 1" = 5'

LOWER SECTION

STA. 3+44 TO 3+66 = 32'
ELEV. 56'-55.15'=0.85' SLOPE: 0.85'/32'=2.6%
STA. 3+66 TO 5+00 = 133.3'
ELEV. 60.0'-56.0'=4.0' SLOPE: 4.0'/133.3'=3.0%



WESTERN CHANNEL PROFILE

Scale: Horz: 1" = 10'
Vert: 1" = 5'

UPPER SECTION

SILL AT ELEV. 64.0'
STA. 5+00 TO 6+50 = 150'
ELEV. 64.0'-60.0'=4.0' SLOPE: 4.0'/150'=2.7%

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
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PROFESSIONAL ENGINEER
October 20, 2015

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No.	Revision Description	Drwn	Chk'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

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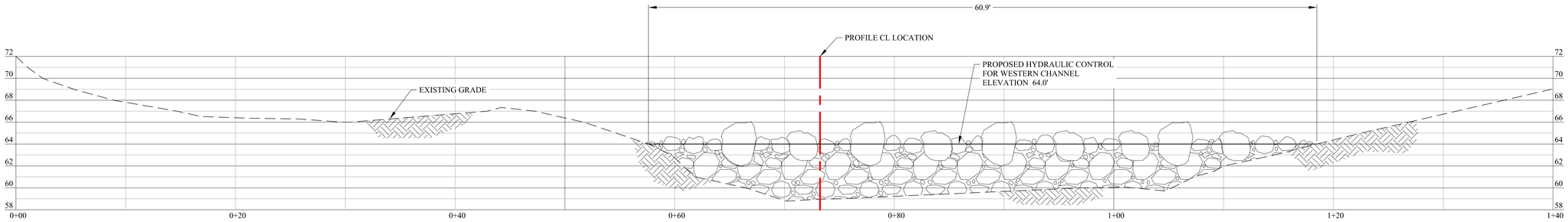
Saccarappa Falls Fish Passage Project
Western Channel Design
Western Channel River Profile

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

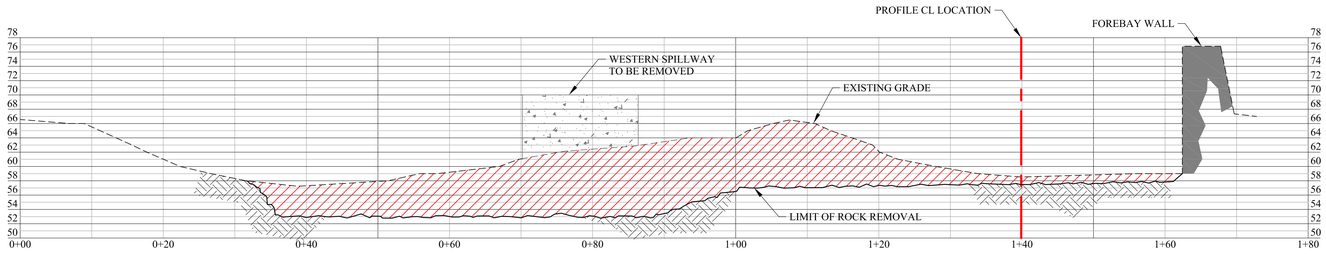
Drawing No: C-2253

Sheet 5 *of* 13



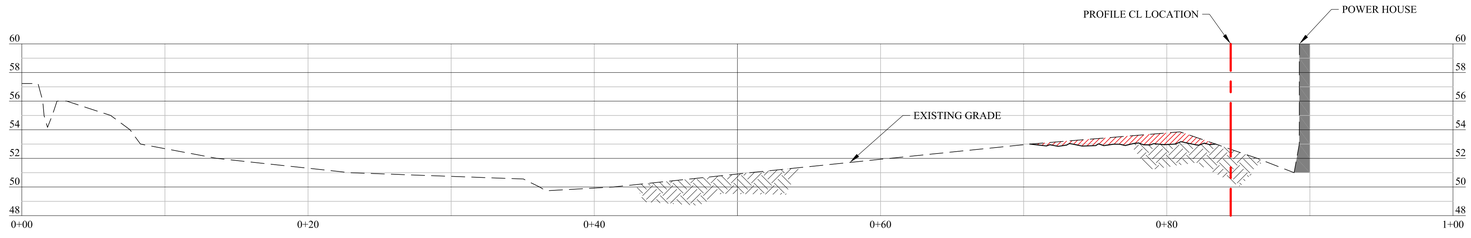
SECTION A-A

Scale: 1" = 5'



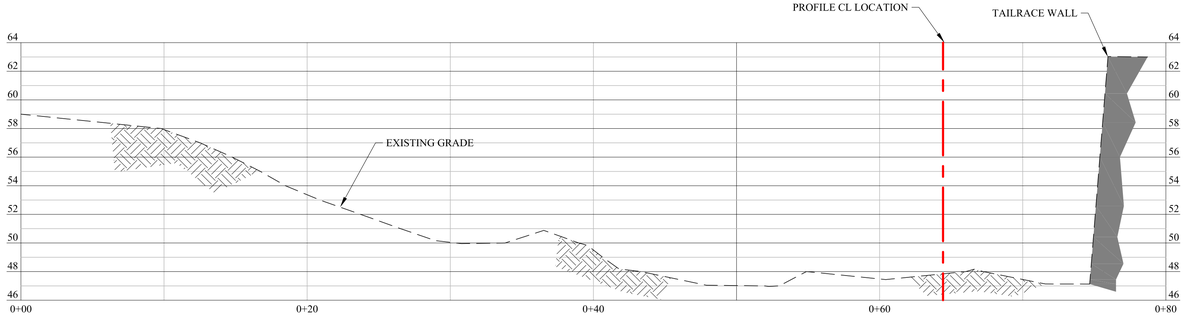
SECTION B-B

Scale: 1" = 10'



SECTION C-C

Scale: 1" = 5'



SECTION D-D

Scale: 1" = 5'

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PROFESSIONAL ENGINEER
October 20, 2015

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No.	Revision Description	Drwn	Chkd	Date
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Drwn By: BPG
Desgn By: BPG / KJB / WBB
Chkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

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Saccarappa Falls Fish Passage Project

Western Channel Design
Western Channel Section A, B, C and D

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2254

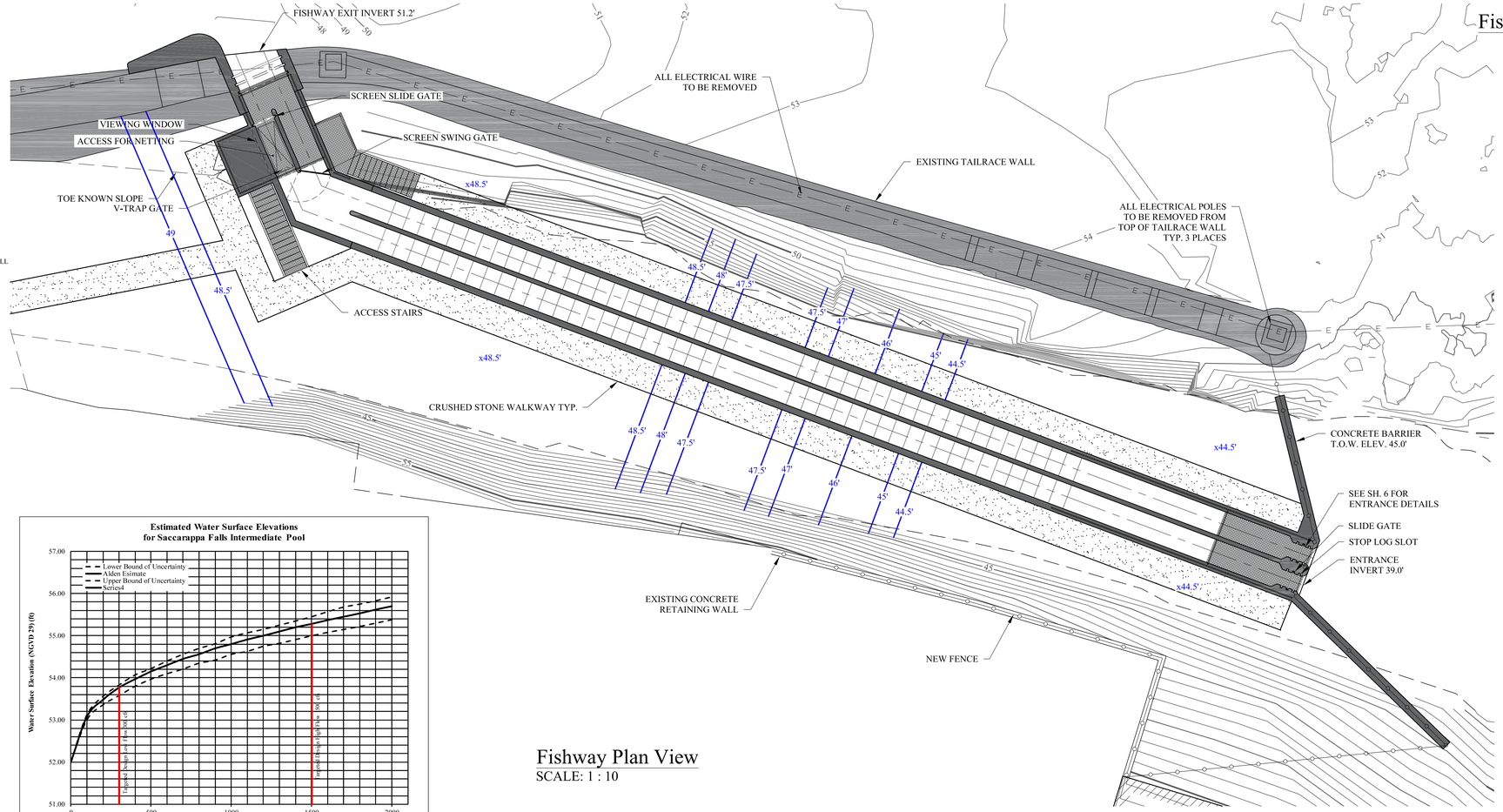
15°22'22"

MAGNETIC NORTH 2012

GRID NORTH
MAINE WEST ZONE
NAD 83

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- x 23.2' SPOT ELEVATION
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- INTERPOLATED LINE TOE OF TAILRACE WALL
- ACHERON INTERPOLATED LINE
- PROPOSED CONTOURS

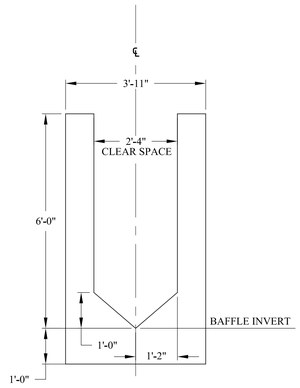


Fishway Plan View
SCALE: 1 : 10

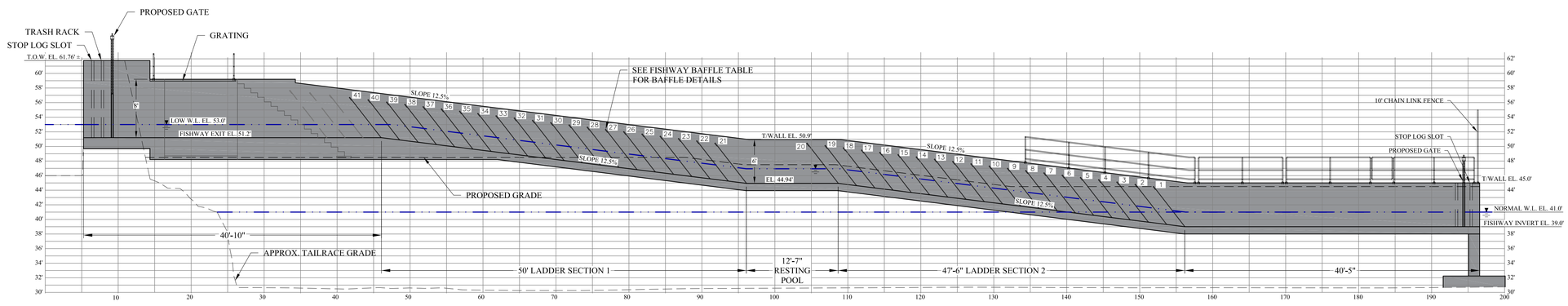
Fishway Baffle Table

BAFFLE NO.	BAFFLE INV.	FLOOR INV.
1	39.79	39.00
2	40.10	39.31
3	40.41	39.63
4	40.73	39.94
5	41.04	40.25
6	41.35	40.56
7	41.66	40.88
8	41.98	41.19
9	42.29	41.50
10	42.60	41.81
11	42.91	42.13
12	43.23	42.44
13	43.54	42.75
14	43.85	43.06
15	44.16	43.38
16	44.48	43.69
17	44.79	44.00
18	45.10	44.31
19	45.41	44.63
20	45.73	44.94

BAFFLE NO.	BAFFLE INV.	FLOOR INV.
21	45.73	44.94
22	46.04	45.25
23	46.35	45.56
24	46.66	45.88
25	46.98	46.19
26	47.29	46.50
27	47.60	46.81
28	47.91	47.13
29	48.23	47.44
30	48.54	47.75
31	48.85	48.06
32	49.16	48.38
33	49.48	48.69
34	49.79	49.00
35	50.10	49.31
36	50.41	49.63
37	50.73	49.94
38	51.04	50.25
39	51.35	50.56
40	51.66	50.88
41	51.98	51.19
42	52.29	51.50



Typical Baffle
SCALE: NTS



Fishway Profile
SCALE: Horz = 1 : 8
Vert = 1 : 8

William B. Ball
STATE OF MAINE
WILLIAM B. BALL
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LICENSED PROFESSIONAL ENGINEER
October 20, 2015

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NOTE:
CONTRACTOR TO MAKE REPAIRS TO THE UPSTREAM SIDE OF THE BARRIER WALL TO ELIMINATE OR SUBSTANTIALLY REDUCE THE FLOW OF WATER THROUGH AND UNDER THE BARRIER WALL. REPAIRS TO BE MADE PRIOR TO PLACING ANY FILL IN THE TAILRACE CHANNEL. REPAIRS ARE TO BE TESTED UNDER LOW WATER CONDITIONS INSIDE THE TAILRACE CHANNEL.

Data based on field surveys by Plisga & Day Land Surveyors 26 September, 2011, 14 November, 2011, and 13 December, 2011 using a Trimble S6 robotic total station and a TDS Ranger data collector; and by Harry R. Feldman, Inc 13 December, 2012 using a digital scanner.
Water surface as surveyed on December 13, 2012 under low flow conditions.
Elevations shown are based on NGVD 29 Datum.

No.	Revision Description	Drwn	Ck'd	Date
-	-	-	-	-

Drwn By: BPG
Desg By: BPG / KJB / WBB
Ck'd By: KJB
Aprv'd By: WBB
Date: 10-19-15

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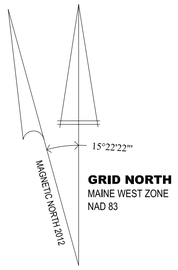
Saccarappa Falls Fish Passage Project
Western Channel Design
Double Denil Plan and Profile

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

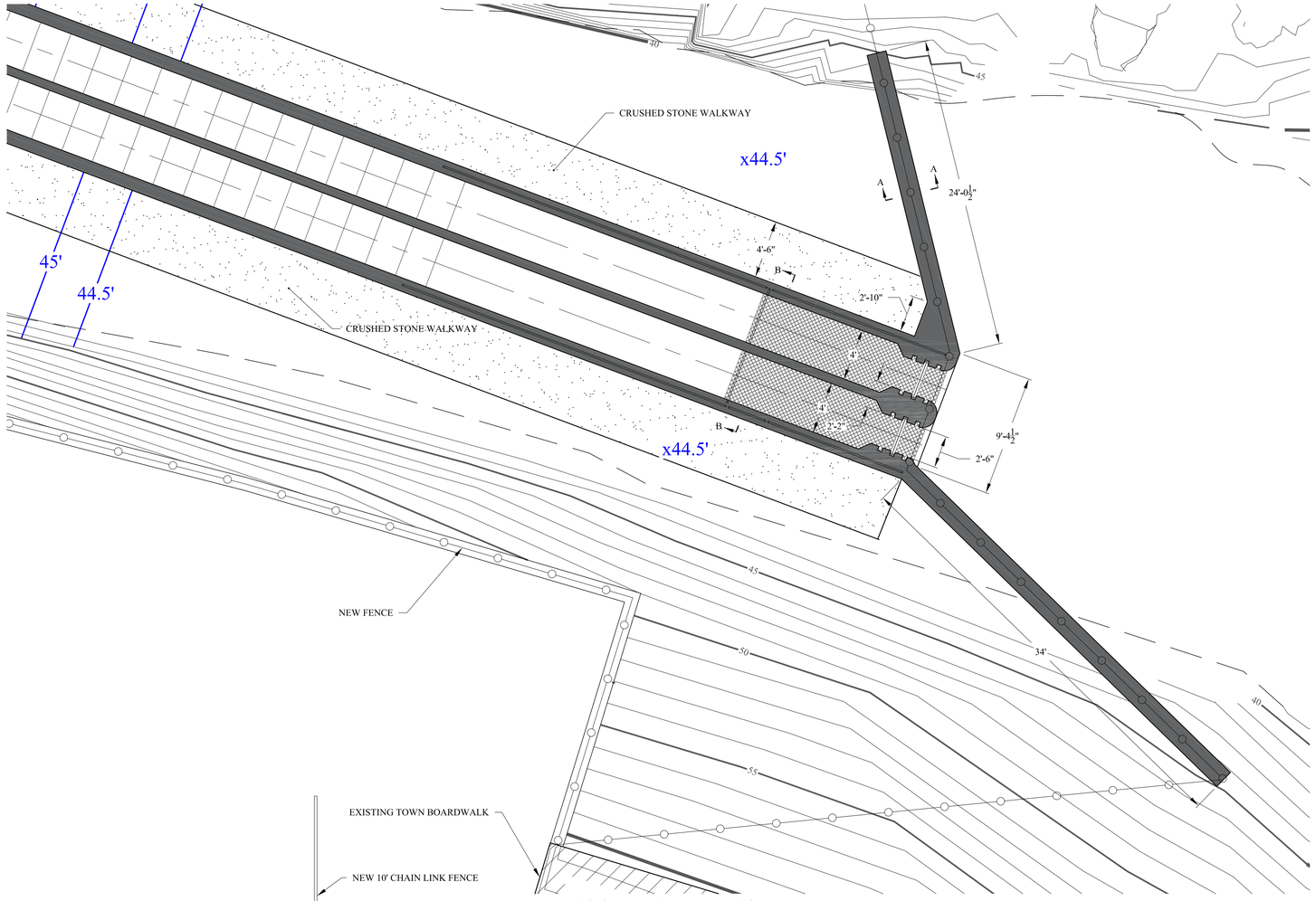
Drawing No: C-2255

Sheet 7 of 13

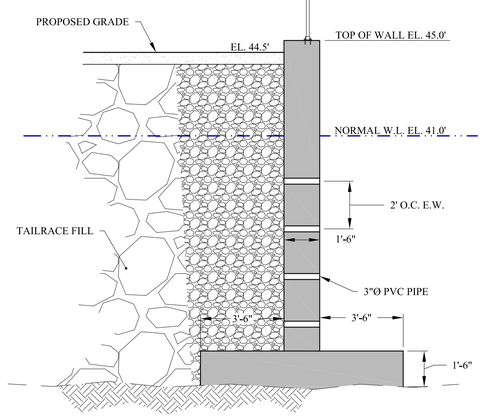


SYMBOLS LEGEND

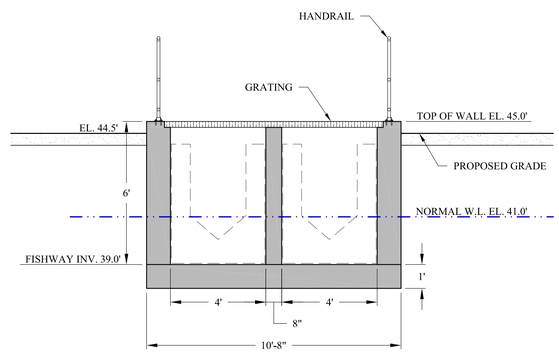
- SURVEY CONTROL POINT
- x 23.2' SPOT ELEVATION
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- E — OVERHEAD WIRES
- EDGE OF WOODS
- INTERPOLATED LINE TOE OF TAILRACE WALL
- ACHERON INTERPOLATED LINE
- PROPOSED CONTOURS



Fishway Entrance Plan
SCALE: 1 : 5



Section A-A
SCALE: 1 : 3



Section B-B
SCALE: 1 : 3

NOTE:
CONTRACTOR TO MAKE REPAIRS TO THE UPSTREAM SIDE OF THE BARRIER WALL TO ELIMINATE OR SUBSTANTIALLY REDUCE THE FLOW OF WATER THROUGH AND UNDER THE BARRIER WALL. REPAIRS TO BE MADE PRIOR TO PLACING ANY FILL IN THE TAILRACE CHANNEL. REPAIRS ARE TO BE TESTED UNDER LOW WATER CONDITIONS INSIDE THE TAILRACE CHANNEL.

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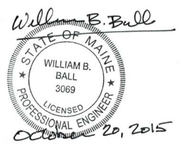

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-	-	-	-	-
-	-	-	-	-
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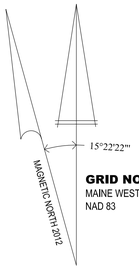
Saccarappa Falls Fish Passage Project
Western Channel Design
Fishway Entrance Plan and Details

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2256

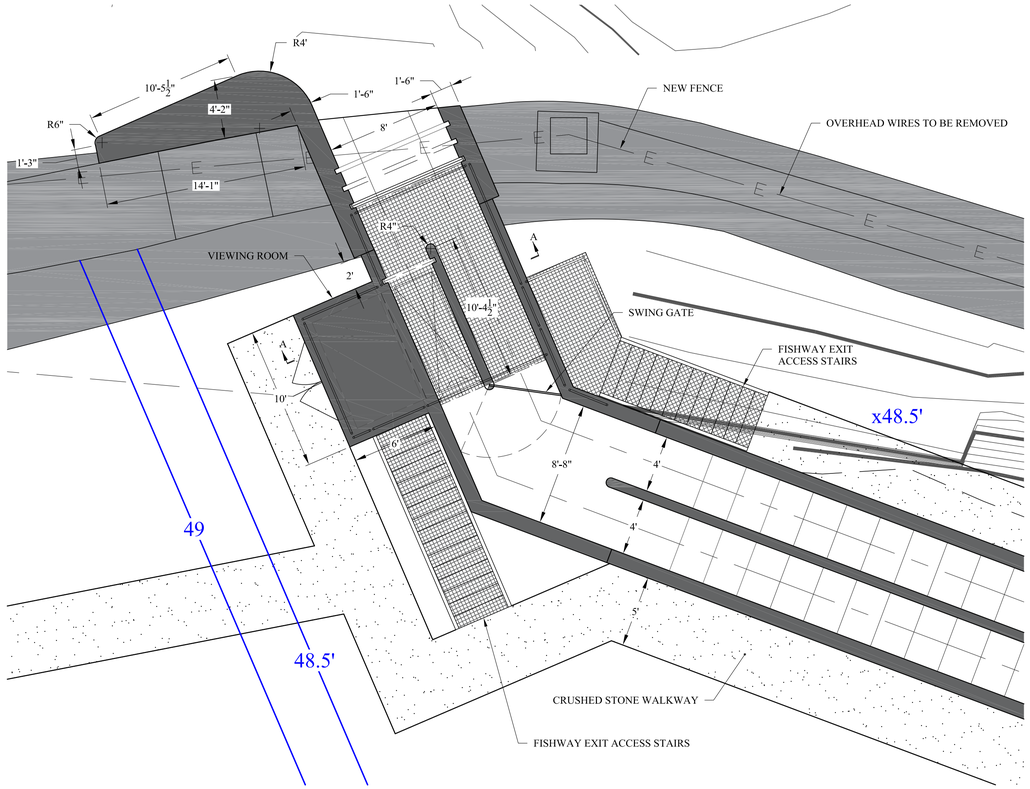
Sheet 8 of 13



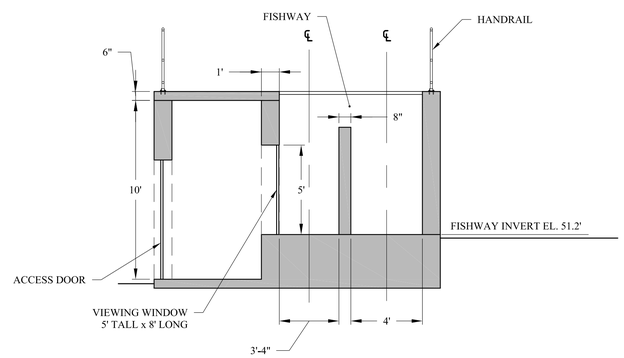
GRID NORTH
MAINE WEST ZONE
NAD 83

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- x 23.2' SPOT ELEVATION
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- E — OVERHEAD WIRES
- EDGE OF WOODS
- INTERPOLATED LINE TOE OF TAILRACE WALL
- ACHERON INTERPOLATED LINE
- PROPOSED CONTOURS



Fishway Exit Plan View
SCALE: 1 : 5



Fishway Exit Section A-A
SCALE: 1 : 4

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WILLIAM B. BALL
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LICENSED
PROFESSIONAL ENGINEER
October 20, 2015

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Saccarappa Falls Fish Passage Project
Western Channel Design
Fishway Exit Plan and Sections
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

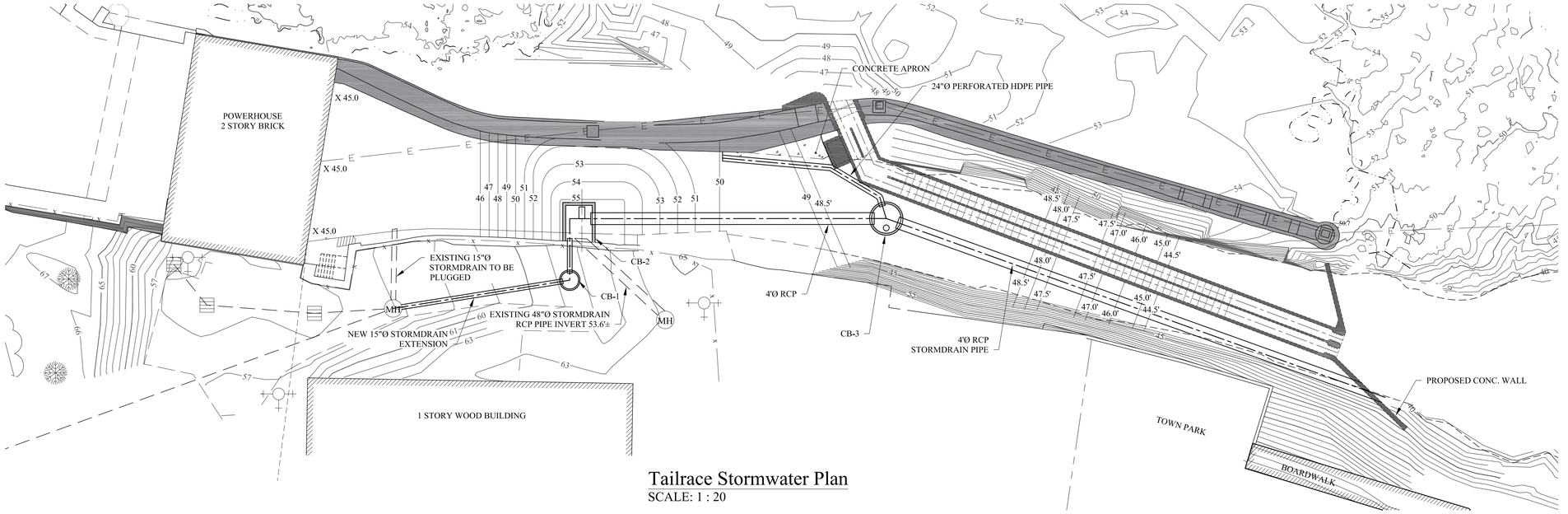
Job Number: 49293

Drawing No: C-2257

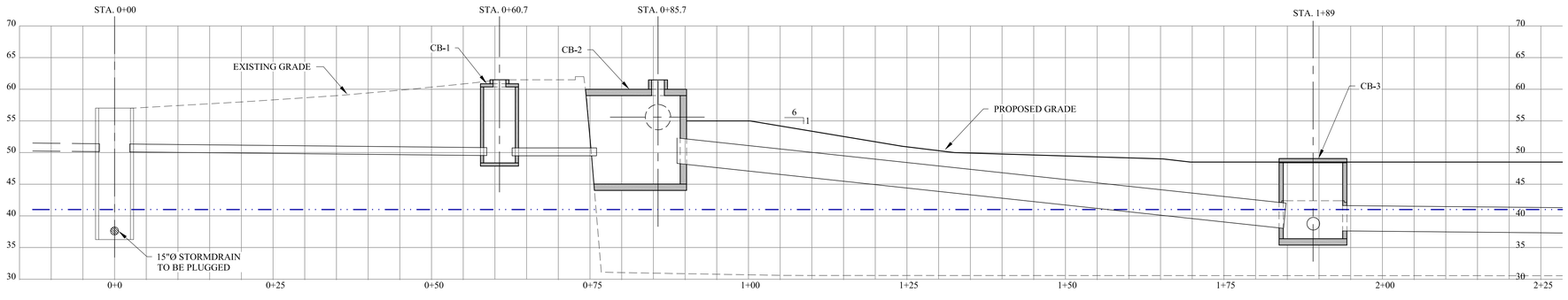
Sheet 9 of 13

NOTE:
1. LOCATION OF EXISTING 4'Ø AND 15"Ø STORM DRAINS, BASED ON INFORMATION PROVIDED BY CITY OF WESTBROOK AND SAPPI. COMFIRMATION OF LOCATION REQUIRED.

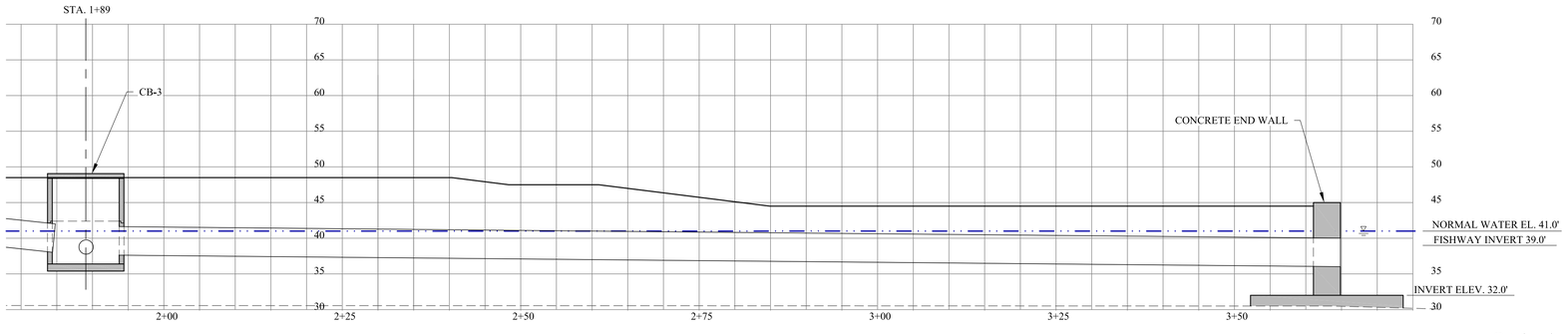
2. CONTRACTOR TO MAKE REPAIRS TO THE UPSTREAM SIDE OF THE BARRIER WALL TO ELIMINATE OR SUBSTANTIALLY REDUCE THE FLOW OF WATER THROUGH AND UNDER THE BARRIER WALL. REPAIRS TO BE MADE PRIOR TO PLACING ANY FILL IN THE TAILRACE CHANNEL. REPAIRS ARE TO BE TESTED UNDER LOW WATER CONDITIONS INSIDE THE TAILRACE CHANNEL.



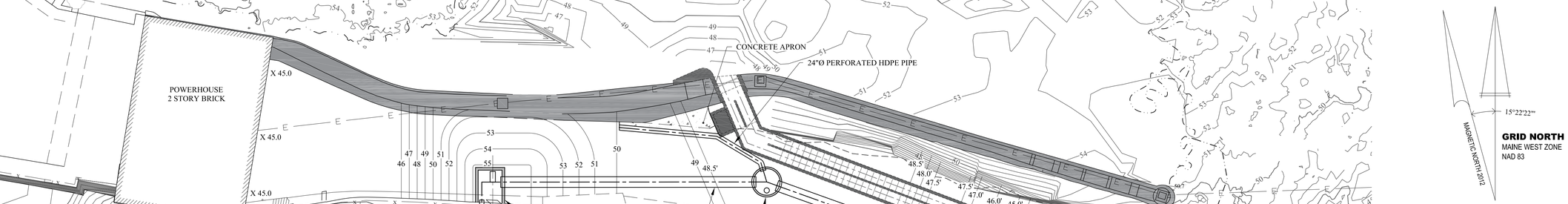
Tailrace Stormwater Plan
SCALE: 1 : 20



Stormdrain Profile
SCALE: Horz = 1 : 10
Vert = 1: 10



Stormdrain Profile
SCALE: Horz = 1 : 10
Vert = 1: 10



SYMBOLS LEGEND
- SURVEY CONTROL POINT
- SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- PROPOSED CONTOURS
- PROPOSED CONCRETE
- INTERPOLATED LINE
- PROPOSED STORMWATER

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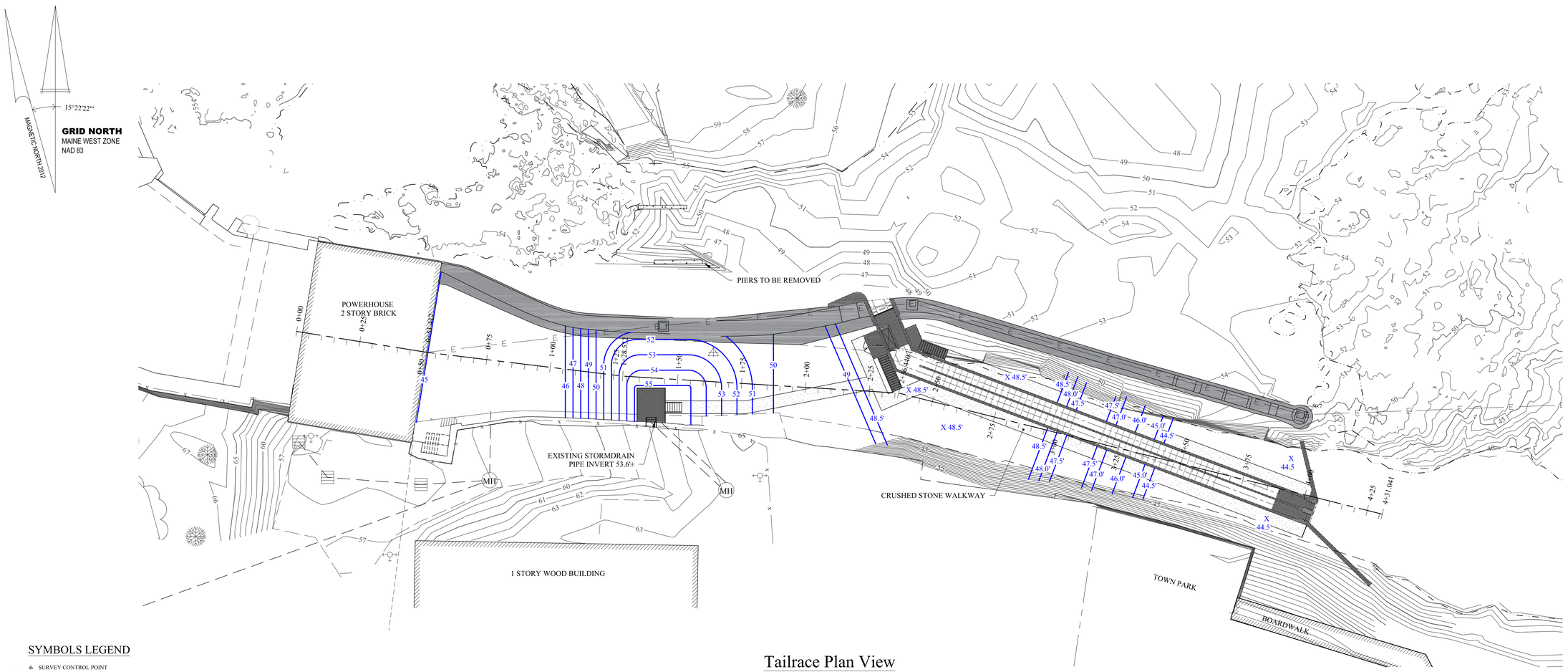
Saccarappa Falls Fish Passage Project
Western Channel Design
Proposed Tailrace Stormdrain Plan and Profile
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
49293

Drawing No:
C-2258

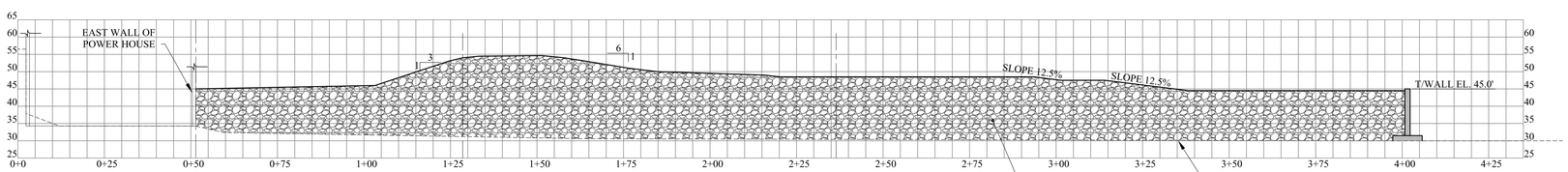
Sheet 10 of 13



Tailrace Plan View
SCALE: 1 : 20

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- X 23.2' SPOT ELEVATION
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR INTERVAL
- INDEX CONTOUR
- BUILDING / WALL LINE
- E — OVERHEAD WIRES
- EDGE OF WOODS
- x — FENCE
- CONTOURS INFERRED FROM OTHER SOURCES
- 65 PROPOSED CONTOURS
- MAN MADE STRUCTURE REMAINS
- INTERPOLATED LINE



Tailrace Profile
SCALE: Horz = 1 : 20
Vert = 1:20

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Saccarappa Falls Fish Passage Project
Fishway Preliminary Design
Proposed Tailrace Grading Plan and Profile
Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2259

Sheet 11 of 13

LOCATION	PURPOSE	CUT VOLUME	IMPACT AREA BELOW O.H.W.	TEMPORARY FILL BELOW O.H.W.	TEMPORARY FILL TOTAL	PERMANENT FILL BELOW O.H.W.	PERMANENT FILL TOTAL	MATERIAL SPECIFICATION AND DESCRIPTION
1	FILL FOR TAILRACE CHANNEL & FISH LADDER	60 C.Y.	14,000 S.F.			4,300 C.Y.	7,620 C.Y.	CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS AND REINFORCED CONCRETE
2	FILL FOR FLOW CONTROL AT SOUTH END ISLAND		900 S.F.			34 C.Y.	68 C.Y.	CLEAN STONE FILL FROM GRAVEL PIT
3	EASTERN CONCRETE SPILLWAY TO BE REMOVED	410 C.Y.	-2,900 S.F.					DEMO CONCRETE
4	WESTERN CONCRETE SPILLWAY TO BE REMOVED	1,080 C.Y.	-2,800 S.F.					DEMO CONCRETE
5	ACCESS ROAD FOR EASTERN DAM REMOVAL		4,400 S.F.	470 C.Y.	1080 C.Y.			EXISTING GRAVEL WET ROAD. CLEAN WASHED STONE FILL FROM GRAVEL PIT SCREENINGS
6	ACCESS ROAD FOR WESTERN DAM REMOVAL		2,600 S.F.	160 C.Y.	230 C.Y.			EXISTING GRAVEL WET ROAD. CLEAN WASHED STONE FILL FROM GRAVEL PIT SCREENINGS
7	WESTERN CHANNEL EXCAVATION	1,770 C.Y.	-17,000 S.F.					BEDROCK EXCAVATION WITH BLASTING
8	WESTERN CHANNEL AND FOREBAY FILL		13,400 S.F.			1,370 C.Y.	1,940 C.Y.	CLEAN WASHED STONE FILL. EXCAVATED BEDROCK FILL.
9	WET ROAD FOR TAILRACE ACCESS		5,600 S.F.	400 C.Y.	640 C.Y.			CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS
10	TRANSITION FROM BRIDGE TO ISLAND	30 C.Y.	400 S.F.			2 C.Y.	140 C.Y.	CLEAN WASHED STONE FILL FROM GRAVEL PIT SCREENINGS OR SUITABLE DEMO DEBRIS W/ GRAVEL TOP
11	TAILRACE COFFER DAM		1,500 S.F.	500 C.Y.	550 C.Y.			CELLULAR STYLE COFFER DAM
12	WEST FALLS COFFER DAM		1,100 S.F.	80 C.Y.	160 C.Y.			SANDBAGS
13	EASTERN DAM REMOVAL COFFER DAM		600 S.F.	70 C.Y.	90 C.Y.			SANDBAGS
14	FISHWAY EXIT COFFER DAM		400 S.F.	50 C.Y.	60 C.Y.			SANDBAGS
15	WESTERN CHANNEL COFFER DAM		1,000 S.F.	110 C.Y.	150 C.Y.			SANDBAGS
16	HAND CARRY BOAT LAUNCH EXTENSION		150 S.F.				6 C.Y.	CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS
17	ISLAND ACCESS ROAD		1,800 S.F.	120 C.Y.	350 C.Y.			CLEAN STONE FILL FROM GRAVEL PIT SCREENINGS

SYMBOLS LEGEND

- SURVEY CONTROL POINT
- HYDRANT
- UTILITY POLE
- GUY/ANCHOR
- CATCH BASIN
- MANHOLE
- CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- INDEX CONTOUR OF LAND & BOTTOM OF RIVER BATHYMETRY
- BUILDING / WALL LINE
- OVERHEAD WIRES
- EDGE OF WOODS
- ESTIMATED FROM SURVEYED DATA
- ESTIMATED EXISTING BEDROCK BATHYMETRY
- PROPOSED BEDROCK BATHYMETRY IN WESTERN CHANNEL AND TAILRACE FILL
- WETLAND
- BUILDING
- CONCRETE STRUCTURE
- x 23.2' PROPOSED SPOT ELEVATIONS
- PROPOSED LOCATION FOR 4" TO 6' DIA. BOULDERS
- PROPOSED ROCK FILL
- SILT FENCE
- TURBIDITY CURTIAN
- BEDROCK TO REMAIN

NOTE:
This sheet depicts the Topography of the ground surface and the Bathymetry of the surface of the sediment, soil and/or bedrock below the water at the time and date of the survey.

15°22'22"
MAGNETIC NORTH 2012

GRID NORTH
MAINE WEST ZONE
NAD 83

NOTES:

(1) ELEVATIONS SHOWN ARE NGVD 29 BASED UPON NGS DISK R121 WITH PUBLISHED ELEVATION OF 54.14'.

(2) CONTOURS SHOWN ARE 1 FOOT INTERVALS.

(3) DATA BASED ON FIELD SURVEYS BY PLISGA & DAY LAND SURVEYORS 26 SEPTEMBER, 2011, 14 NOVEMBER, 2011,13 DECEMBER, 2011, 19 MAY, 2013, 20 JUNE, 2013, AND 4 DECEMBER, 2013 USING A TRIMBLE S6 ROBOTIC TOTAL STATION AND A TDS RANGER DATA COLLECTOR; AND BY HARRY R. FELDMAN, INC 13 DECEMBER, 2011 USING A DIGITAL SCANNER.

(4) COORDINATES ARE ORIENTED TO STATE PLANE, MAINE WEST, ZONE 1802, WITH GROUND DISTANCES.

SCALE: 1"= 30'

30 0 30 60 90 120

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William B. Ball
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Saccarappa Falls Fish Passage Project
Western Channel Design
Coffer Dam / Dewatering Construction Plan
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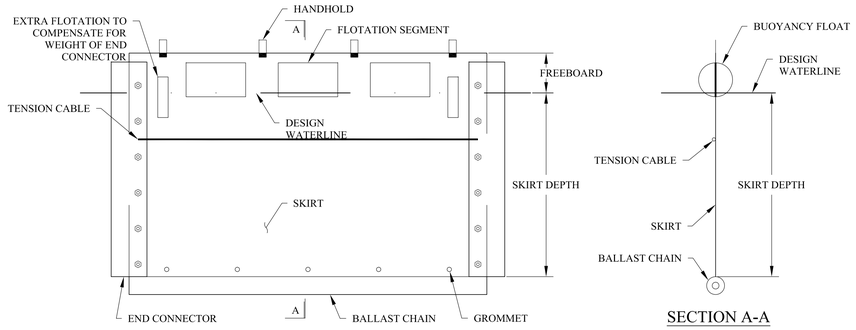
Saccarappa Falls
Westbrook, Maine

Job Number: 49293

Drawing No: C-2260

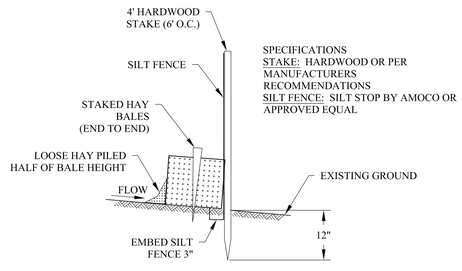
Sheet 12 of 13



SECTION A-A

TYPE II SILT CURTAIN DETAIL

NOT TO SCALE



STANDARD SILT FENCE DETAIL

NOT TO SCALE

DO NOT USE FOR CONSTRUCTION
FOR REGULATORY REVIEW

GENERAL NOTES:

1. *LOCATE AND MARK ALL PROJECT BOUNDARIES PRIOR TO CONSTRUCTION.*
2. *LIMIT THE AMOUNT OF SOIL DISTURBANCE AT ANY ONE TIME.*
3. *INSTALL SEDIMENT BARRIERS PRIOR TO DISTURBING SOILS.*
4. *MARK SOIL DISTURBANCE LIMITS.*
5. *MULCH EXPOSED SOIL AS SOON AS POSSIBLE, AND REVEGETATE AS SOON AS FINAL GRADE IS ATTAINED.*
6. *INSPECT AND REPAIR EROSION CONTROL AND SEDIMENT TRAPPING MEASURES WEEKLY AND BEFORE AND AFTER EVERY STORM EVENT.*
7. *REMOVE TEMPORARY EROSION CONTROLS WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.*
8. *STABILIZE DITCHES WITHIN 24 HOURS OF FINAL GRADE.*
9. *INSTALL SEDIMENT BARRIER DOWN SLOPE OF SOIL STOCK PILES.*
10. *DO NOT SITE SOIL STOCK PILES IN AREA OF CONCENTRATED FLOW OR POTENTIAL FLOODING.*
11. *MULCHING:*

    A: APPLY TEMPORARY MULCH ON DISTURBED AREAS WITHIN 14 DAYS OF INITIAL DISTURBANCE OR PRIOR TO ANY STORM.
    B: DO NOT APPLY EROSION CONTROL MIX, OR HAY MULCH, IN AREAS OF CONCENTRATED WATER FLOWS.
    C: DO NOT USE EROSION CONTROL MIX, OR HAY MULCH FOR SLOPES STEEPER THAN 2:1.
    D: APPLY EROSION CONTROL MIX IN A LAYER AT LEAST 3" THICK.
    E: USE HAY MULCH AS A TEMPORARY MEASURE TO PROTECT BARE SOILS OR TO COVER NEWLY SEEDED AREAS.
    F: APPLY AT A RATE OF TWO SQUARE BALES (70-90 POUNDS) PER 1,000 SQ. FT.
    G: ANCHOR HAY MULCH USING ONE OF THE FOLLOWING METHODS:
    - *STAPLE JUTE OR PLASTIC NETTING OVER MULCH IN ACCORDANCE WITH MFG. INSTRUCTIONS.*
    - *STRETCH TWINE BETWEEN PEGS IN A CRISS-CROSS PATTERN OVER MULCH (4-6 PEGS PER SQ. YD.).*
    - *TRACK EQUIPMENT OVER MULCH, SUCH THAT TRACKS ARE PARALLEL TO CONTOURS. TRACKING IS SUITABLE FOR SLOPES LESS THAN 3:1.*

12. *SEEDING:*

    A: COMPLETE SEEDING WITHIN 7 DAYS OF FINAL GRADING.
    B: BROADCAST SEED OVER ENTIRE DITCH AND SURFACE AND RAKE INTO SOIL.
    C: APPLY HAY MULCH TO ALL SEEDED AREAS.
    D: SUMMER SEEDED DATES ARE FROM APRIL 1 TO SEPTEMBER 15
    E: PERMANENT SEEDING SHOULD BE DONE 45 DAYS BEFORE FIRST KILLING FROST.

13. *STABILIZATION BEFORE WINTER:*
    SEPTEMBER 15:
    ALL DISTURBED AREA MUST BE SEEDED AND MULCHED.
    ALL SLOPES MUST BE SEEDED AND MULCHED.
    ALL GRASS LINED DITCHES AND CHANNELS MUST BE STABILIZED WITH MULCH OR AN EROSION CONTROL BLANKET.
    OCTOBER 1:
    SLOPE STABILIZED WITH EROSION CONTROL BLANKET AND SEEDED.
    NOVEMBER 15:
    ALL STONE-LINED DITCHES AND CHANNELS MUST BE CONSTRUCTED AND STABILIZED.
    ALL RIP-RAP SLOPES MUST BE CONSTRUCTED AND STABILIZED.
14. *PRIOR TO COMMENCEMENT OF CONSTRUCTION OPERATIONS, SILT CURTAIN SHALL BE INSTALLED IN AREAS INDICATED ON DRAWINGS.*
15. *SILT CURTAIN, TYPE II MEDIUM DUTY WITH FILTER FABRIC SKIRT.*
16. *FOLLOW GUIDELINES SET FORTH IN ERDC TN-DOER-21 PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS FOR SELECTION OF SILT CURTAIN.*
17. *MODIFY DEWATERING OPERATIONS AND EROSION CONTROL MEASURE AS NECESSARY SO THAT THE DISCHARGE TO THE RIVER DOES NOT EXCEED THE FOLLOWING LIMITS:*

    1. TOTAL SUSPENDED SOLIDS - 30 MG/L.
    2. TOTAL SETTLEABLE SOLIDS - 5 MG/L.
    3. TURBIDITY - 50 NTU ABOVE RECEIVING WATER.

18. *ACHERON HAS USED A REASONABLE STANDARD OF CARE TO TRY TO LOCATE UNDERGROUND FACILITIES IN THE VICINITY OF THIS PROJECT. THE LOCATIONS OF UNDERGROUND FACILITIES DEPICTED ON THIS DRAWING ARE APPROXIMATE. EXCAVATORS MUST COMPLY WITH ALL REQUIREMENTS OF TITLE 23 SECTION 3360, PROTECTION OF UNDERGROUND FACILITIES BEFORE COMMENCING OPERATIONS.*
19. *DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE U.S., INCLUDING WETLANDS, SHALL BE AVOIDED AND MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE THROUGH CONSIDERATION OF ALTERNATIVES.*
20. *TEMPORARY FILL. FILL PLACED INTO WATERS OF THE U.S. (INCLUDING WETLANDS) TOTALING GREATER THAN OR EQUAL TO 4,300 SF (15,000 SF IF A DEP TIER ONE PERMIT IS ISSUED) IN TOTAL AREA (I.E., THE SUM OF PERMANENT AND TEMPORARY FILL AREAS) EXCEEDS THE CATEGORY 1 THRESHOLD AND MAY NOT BE DISCHARGED WITHOUT WRITTEN AUTHORIZATION FROM THE U.S. ARMY CORPS. WHEN TEMPORARY FILL IS USED (E.G., ACCESS ROADS, SWAMP MATS, COFFERDAMS), IT SHALL BE STABILIZED AND MAINTAINED DURING CONSTRUCTION IN SUCH A WAY AS TO PREVENT SOIL ERODING INTO PORTIONS OF WATERS OF THE U.S. WHERE IT IS NOT AUTHORIZED. SWAMP OR TIMBER MATS ARE CONSIDERED TEMPORARY FILL WHEN THEY ARE REMOVED IMMEDIATELY UPON WORK COMPLETION. THE AREA MUST BE RESTORED.*

    - *UNCONFINED TEMPORARY FILL AUTHORIZED FOR DISCHARGE INTO FLOWING WATER (RIVERS AND STREAMS) SHALL CONSIST ONLY OF CLEAN WASHED STONE.*
    - *TEMPORARY FILL AUTHORIZED FOR DISCHARGE INTO WETLANDS SHALL BE PLACED ON GEOTEXTILE FABRIC LAID ON THE PRE-CONSTRUCTION WETLAND GRADE. (SWAMP AND TIMBER MATS ARE EXCLUDED FROM THIS REQUIREMENT.)*
    - *TEMPORARY FILL SHALL BE REMOVED AS SOON AS IT IS NO LONGER NEEDED, AND IT SHALL BE DISPOSED OF AT AN UPLAND SITE AND SUITABLY CONTAINED TO PREVENT SUBSEQUENT EROSION INTO WATERS OF THE U.S.*
    - *WATERS OF THE U.S. WHERE TEMPORARY FILL WAS DISCHARGED SHALL BE RESTORED.*
    - *NO TEMPORARY WORK SHALL DRAIN A WATER OF THE U.S. BY PROVIDING A CONDUIT FOR WATER ON OR BELOW THE SURFACE.*

21. *RESTORATION.*

    - *UPON COMPLETION OF CONSTRUCTION, ALL DISTURBED WETLAND AREAS (THE DISTURBANCE OF THESE AREAS MUST BE AUTHORIZED) SHALL BE STABILIZED WITH A WETLAND SEED MIX CONTAINING ONLY PLANT SPECIES NATIVE TO NEW ENGLAND.*
    - *THE INTRODUCTION OR SPREAD OF INVASIVE PLANT SPECIES IN DISTURBED AREAS SHALL BE CONTROLLED.*
    - *IN AREAS OF AUTHORIZED TEMPORARY DISTURBANCE, IF TREES ARE CUT THEY SHALL BE CUT AT GROUND LEVEL AND NOT UPROOTED IN ORDER TO PREVENT DISRUPTION TO THE WETLAND SOIL STRUCTURE AND TO ALLOW STUMP SPROUTS TO REVEGETATE THE WORK AREA, UNLESS OTHERWISE AUTHORIZED.*
    - *WETLAND AREAS WHERE PERMANENT DISTURBANCE IS NOT AUTHORIZED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND ELEVATION, WHICH UNDER NO CIRCUMSTANCES SHALL BE HIGHER THAN THE PRE-CONSTRUCTION ELEVATION. ORIGINAL CONDITION MEANS CAREFUL PROTECTION AND/OR REMOVAL OF EXISTING SOIL AND VEGETATION, AND REPLACEMENT BACK TO THE ORIGINAL LOCATION SUCH THAT THE ORIGINAL SOIL LAYERING AND VEGETATION SCHEMES ARE APPROXIMATELY THE SAME, UNLESS OTHERWISE AUTHORIZED.*

22. *SEE SPECIFICATIONS FOR RIVER FLOW AND WATER LEVEL MANAGEMENT PLAN.*

23. *COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, RULES AND REGULATIONS. ALL WORK DONE SHALL COMPLY WITH THE REQUIREMENTS SET FORTH BY BEST MANAGEMENT PRACTICES OF MAINE AS PREPARED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE U.S. ARMY CORPS OF ENGINEERS.*

William B. Ball

STATE OF MAINE
WILLIAM B. BALL
3069
LICENSED
PROFESSIONAL ENGINEER

October 20, 2015

No.	Revision Description	Drwn	Ck'd	Date

Drwn By: BPG
Desg By: BPG / KJB / WBB
Ckkd By: KJB / WBB
Aprvd By: WBB
Date: 10-19-15

ACHERON ENGINEERING SERVICES
Engineering, Environmental & Geologic Consultants
www.AcheronEngineering.com
24466 Powell Rd.
Brooksville, Fl. 34602
(352)-796-6236
Acheron International Inc.
147 Main St.
Newport, ME. 04953
(207)-368-5700

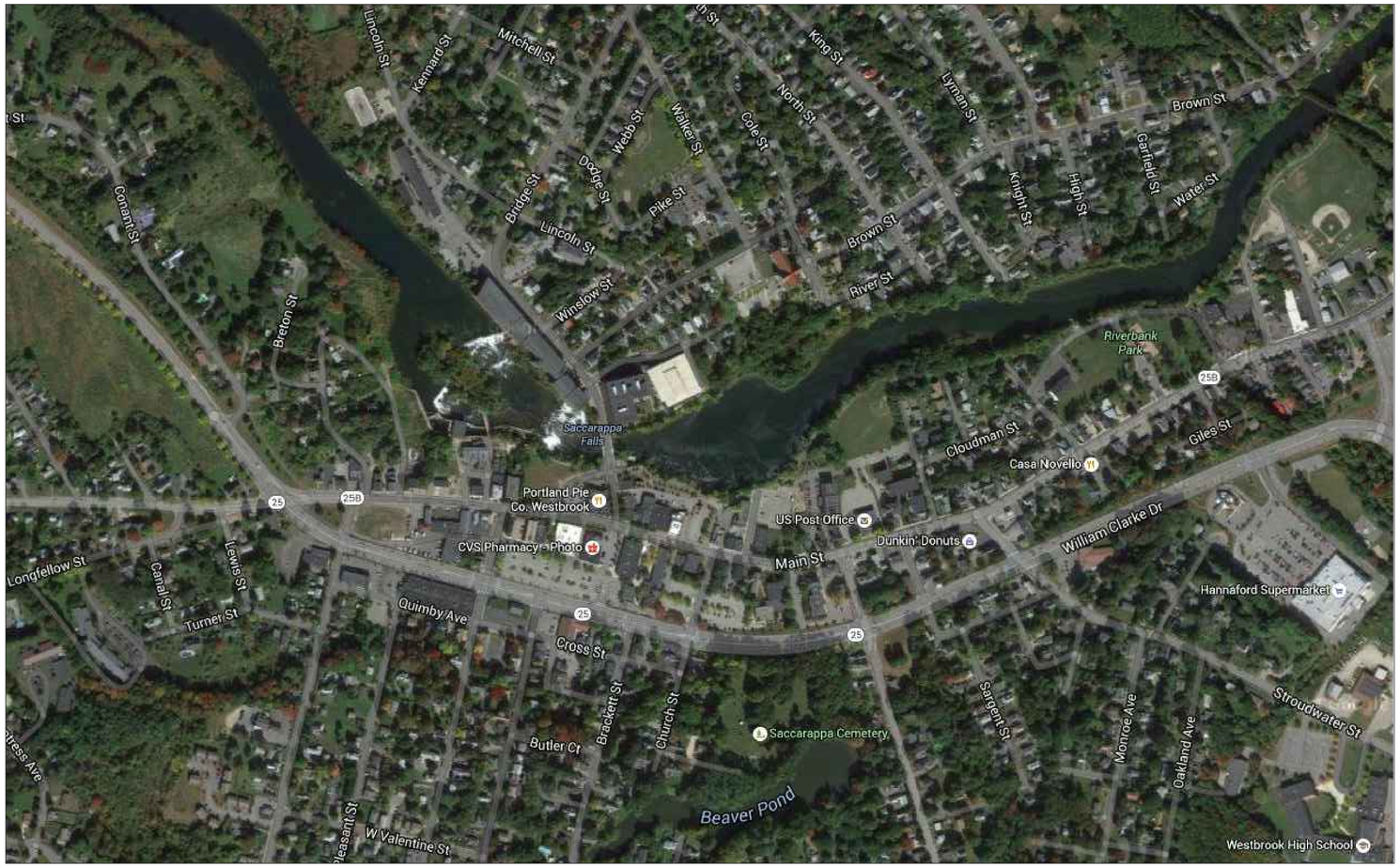
Saccarappa Falls Fish Passage Project
Western Channel Design
Erosion Control General Notes

Sappi / Warren Release Papers
Saccarappa Falls
Westbrook, Maine

Job Number:
49293

Drawing No:
C-2261

Sheet 13 of 13



PROJECT LOCATION MAP

PROJECT OWNER: CITY OF WESTBROOK
2 YORK STREET,
WESTBROOK, MAINE
04092

ENGINEER: GARY M. LACY, P.E.
RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER, CO 80302
303-545-5883
INFO@BOATERPARKS.COM

TABLE OF CONTENTS

1. PROJECT LOCATION MAP AND TABLE OF CONTENTS
2. PROJECT OVERVIEW PLAN
3. STRUCTURE PLAN SHEET
4. STRUCTURE PLAN AND PROFILE SHEET

PROJECT LOCATION
LATITUDE 43° 40' 43" N LONGITUDE 70° 22' 07" W

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Saccarappa Falls Recreational Enhancements

WESTBROOK, MAINE PRESUMPSCOT RIVER

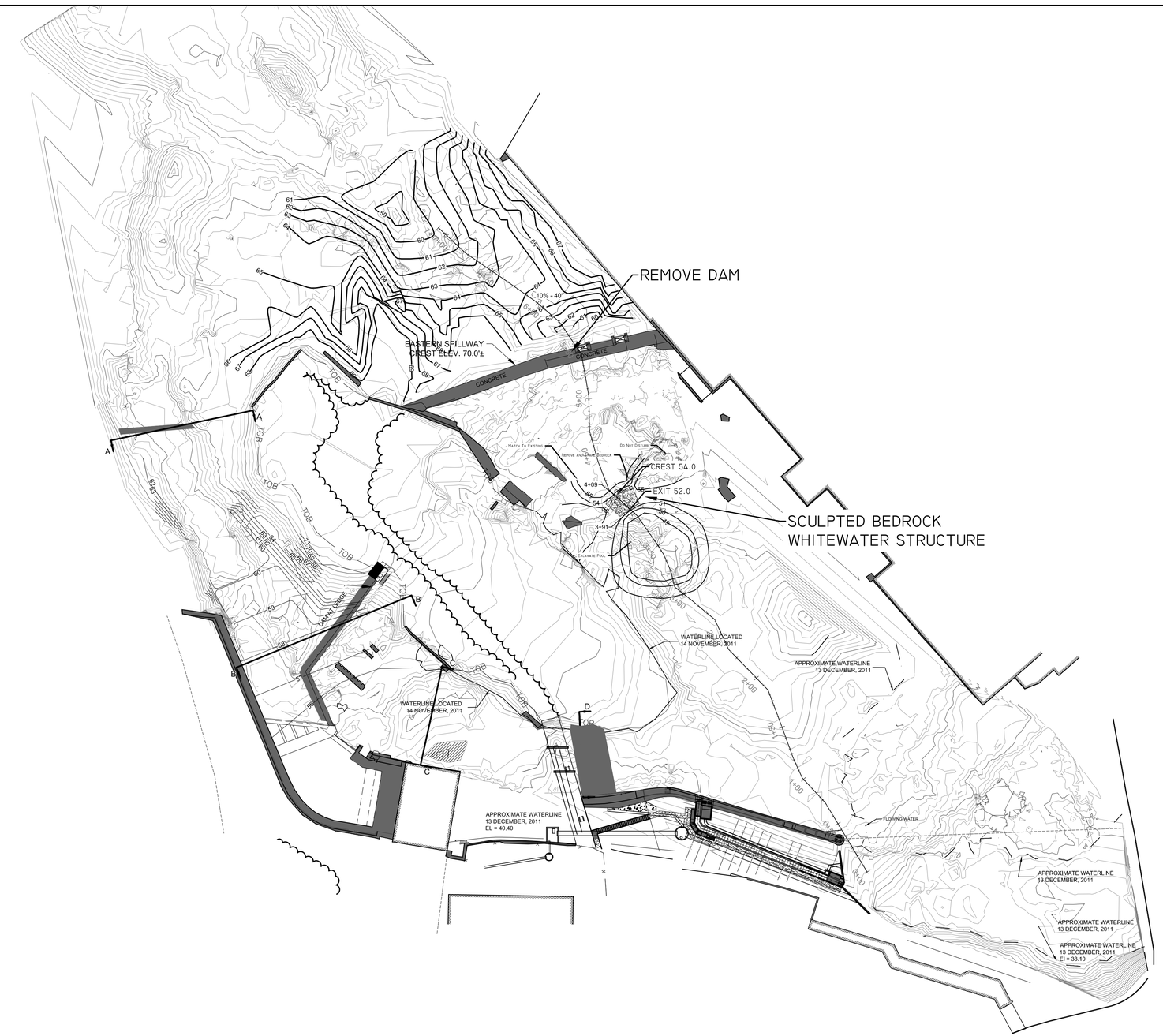
PROJECT LOCATION MAP AND TABLE OF CONTENTS

PRELIMINARY

DRAFT

CLIENT INFORMATION:
CITY OF WESTBROOK
2 YORK STREET,
WESTBROOK, MAINE
04092

DESIGNED: GL
DRAFTED:
CHECKED:
PLOT DATE: OCT 28, 2015
REVISIONS:



N

SCALE: 1" = 100'

0 50 100 Feet

CONTOUR INTERVAL TWO FEET

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Saccarappa Falls Recreational Enhancements

Westbrook, Maine Presumpscot River

PROJECT OVERVIEW PLAN

Preliminary

DRAFT

PROJECT OWNER:
City of Westbrook
2 York Street,
Westbrook, Maine
04092

Designed: GL
Drafted: RG
Checked:
Plot Date: Oct 28, 2015
Revisions:

Page Number:

2

SHEET 2 OF 4

N

SCALE: 1" = 40'

0 20 40 Feet

CONTOUR INTERVAL TWO FEET

EASTERN SPILLWAY
CREST ELEV. 70.0'±

CONCRETE

CONCRETE

10% - 40'

MATCH TO EXISTING

REMOVE AND SHAPE BEDROCK

DO NOT DISTURB

CREST 54.0

EXIT 52.0

EXCAVATE POOL

SCULPTED BEDROCK
WHITEWATER STRUCTURE

WATERLINE LOCATED
14 NOVEMBER, 2011

APPROXIMATE WATERLINE
13 DECEMBER, 2011

DAM AT LEDGE

TOB

B

C

5+00

4+09

3+91

3+50

3+00

2+00

Saccarappa Falls Recreational Enhancements

WESTBROOK, MAINE PRESUMPSCOT RIVER

EAST CHANNEL PLAN

PRELIMINARY

DRAFT

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CHECKED:
PLOT DATE: Oct 28, 2015
REVISIONS:

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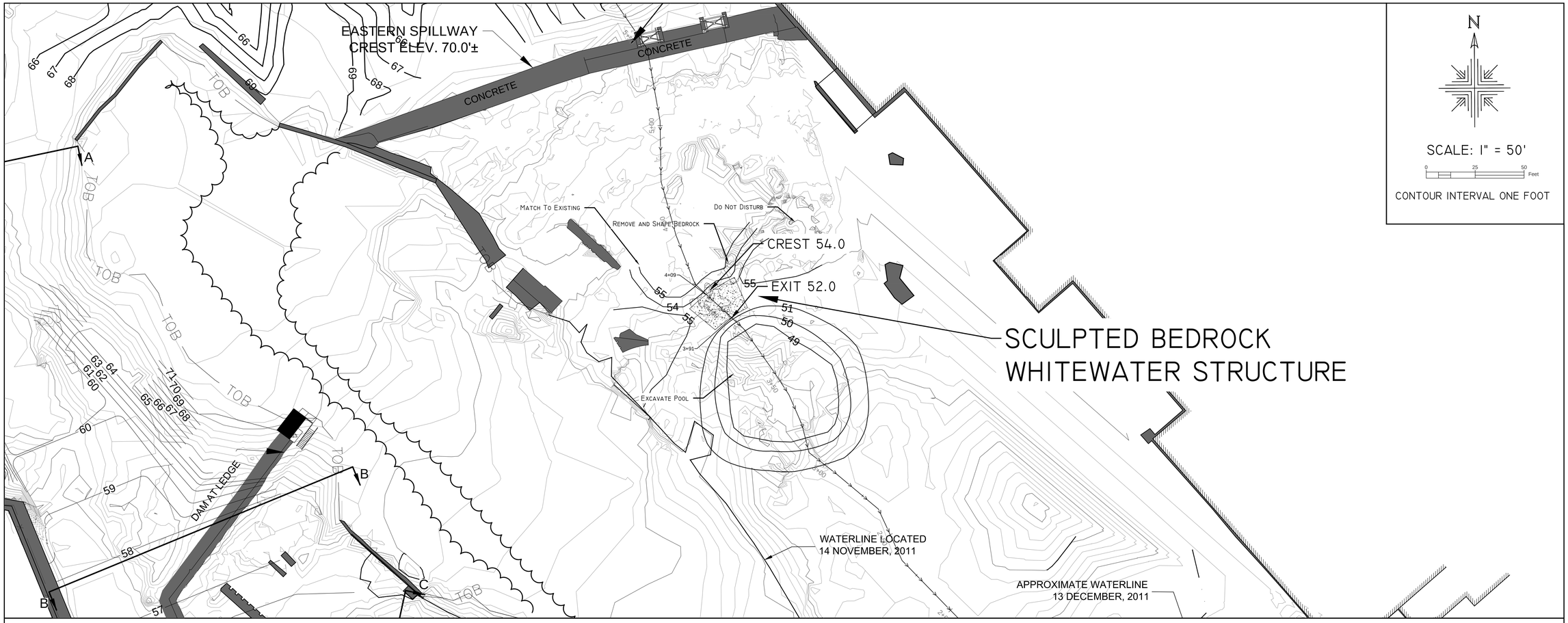
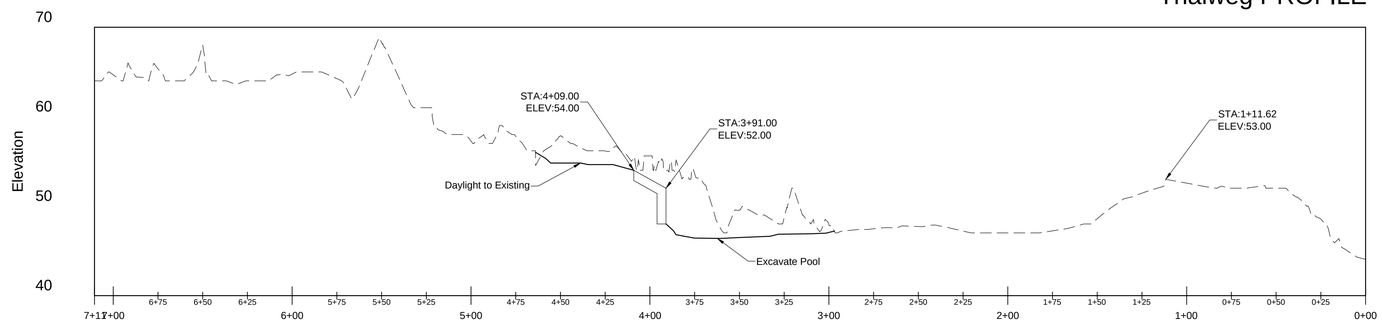


Thalweg PROFILE



VERTICAL EXAGGERATION = 5X

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WESTBROOK, MAINE PRESUMPSCOT RIVER

Structure Plan and Profile

Preliminary

DRAFT

PROJECT OWNER:
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2 YORK STREET,
WESTBROOK, MAINE
04092

DESIGNED: GL
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CHECKED:
PLOT DATE: OCT 28, 2015
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PROJECT LOCATION MAP

PROJECT OWNER: CITY OF WESTBROOK
2 YORK ST.
WESTBROOK, ME 04092

ENGINEER: GARY M. LACY, P.E.
RECREATION ENGINEERING AND PLANNING
485 ARAPAHOE AVE.
BOULDER, CO 80302
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3. STRUCTURE SECTIONS
4. STRUCTURE LONGITUDINAL PROFILES

PROJECT LOCATION
LATITUDE 43°40'41.16"N LONGITUDE 70°22'11.57"W

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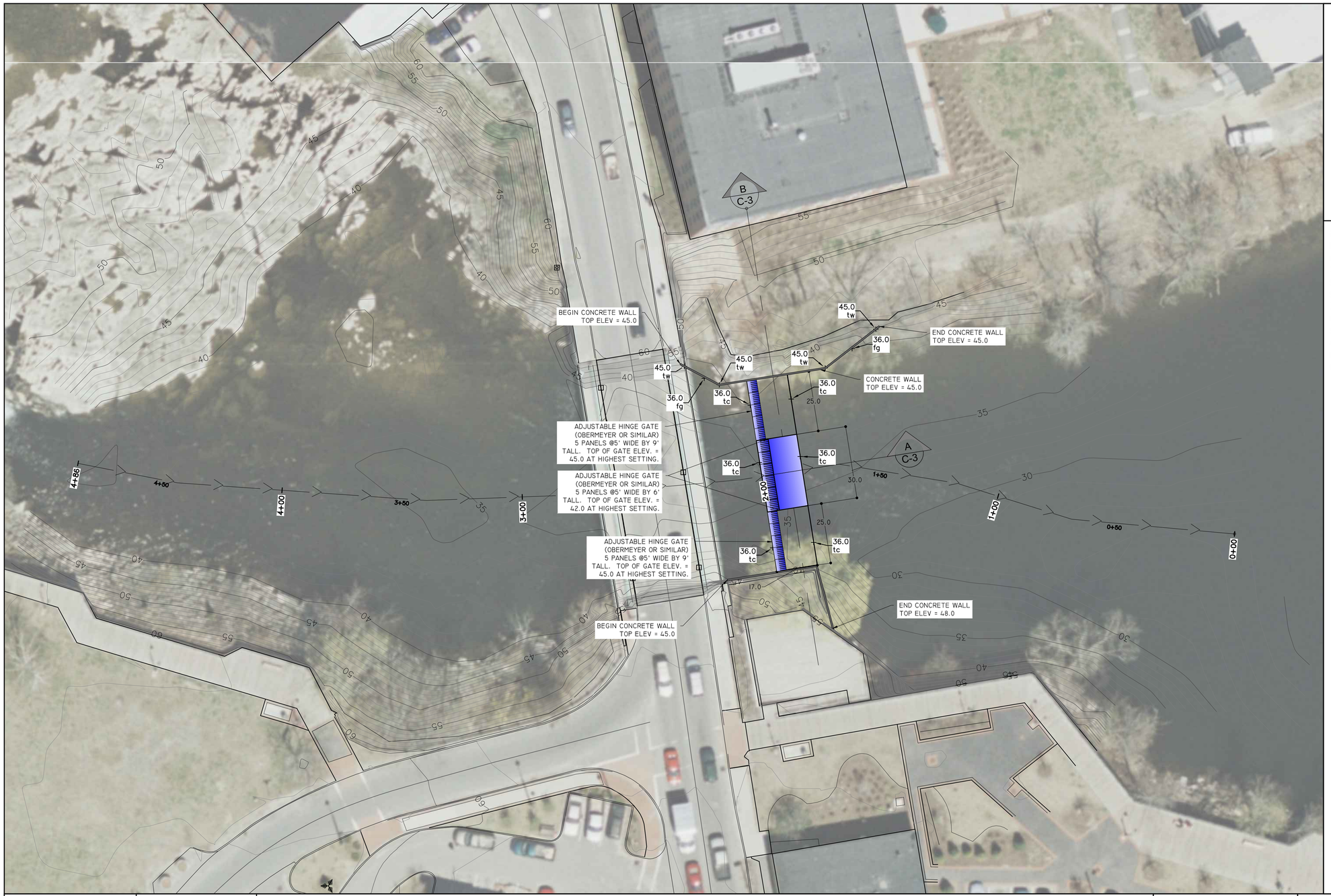
WHITEWATER AND HABITAT IMPROVEMENTS

PRESUMPSCOT RIVER, WESTBROOK, MAINE

PROJECT LOCATION MAP AND TABLE OF CONTENTS
PRELIMINARY - NOT FOR CONSTRUCTION

CLIENT INFORMATION:
CITY OF WESTBROOK
2 YORK ST.
WESTBROOK, ME 04092

DESIGNED: GL
DRAFTED: AR
CHECKED: GL
PLOT DATE: AUG 5, 2015
REVISIONS:



N

SCALE: 1" = 20'

20 0 20

GENERAL NOTES:

1. ALL ELEVATIONS GIVEN IN FEET ABOVE SEA LEVEL.
2. ROCK FILL/HATCH AND VEGETATIVE IMAGES SHOWN FOR ILLUSTRATIVE PURPOSES. NOT TO SCALE.
3. AN REP REPRESENTATIVE SHALL BE PRESENT DURING CONSTRUCTION OF ALL STRUCTURES AND TERRACING.
4. ALL STRUCTURE CREST AND EXIT ELEVATIONS ARE APPROXIMATE AND WILL BE CONFIRMED BY AN REP REPRESENTATIVE PRIOR TO CONSTRUCTION.

LEGEND

- INSTREAM STRUCTURE
- ADJUSTABLE HINGE GATES/PLATES
- THALWEG AND DIRECTION OF FLOW
- WATER SURFACE DAY OF SURVEY
- EXISTING CONTOUR LINES
- BANK STABILIZATION/ RETAINING WALL

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WHITEWATER AND HABITAT IMPROVEMENTS

PRESUMPSCOT RIVER, WESTBROOK, MAINE

PROJECT OVERVIEW PLAN

PRELIMINARY - NOT FOR CONSTRUCTION

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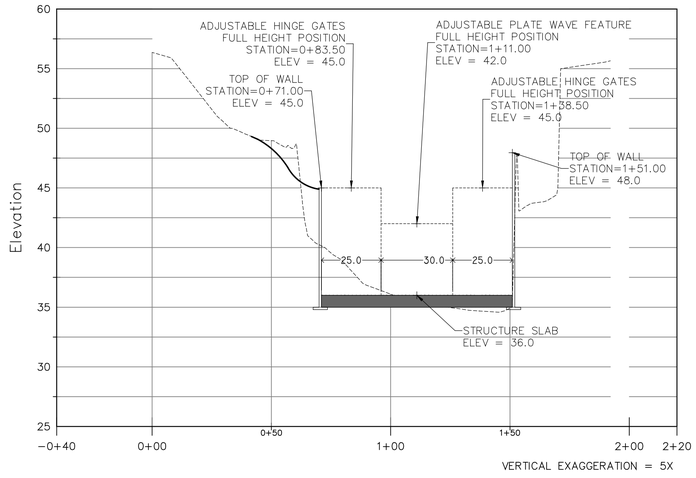
CROSS SECTION B



VERTICAL EXAGGERATION = 5X

SCALE: 1" = 30'

30 0 30

GENERAL NOTES:

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WHITEWATER AND HABITAT IMPROVEMENTS

PRESUMPSCOT RIVER, WESTBROOK, MAINE

STRUCTURE SECTIONS

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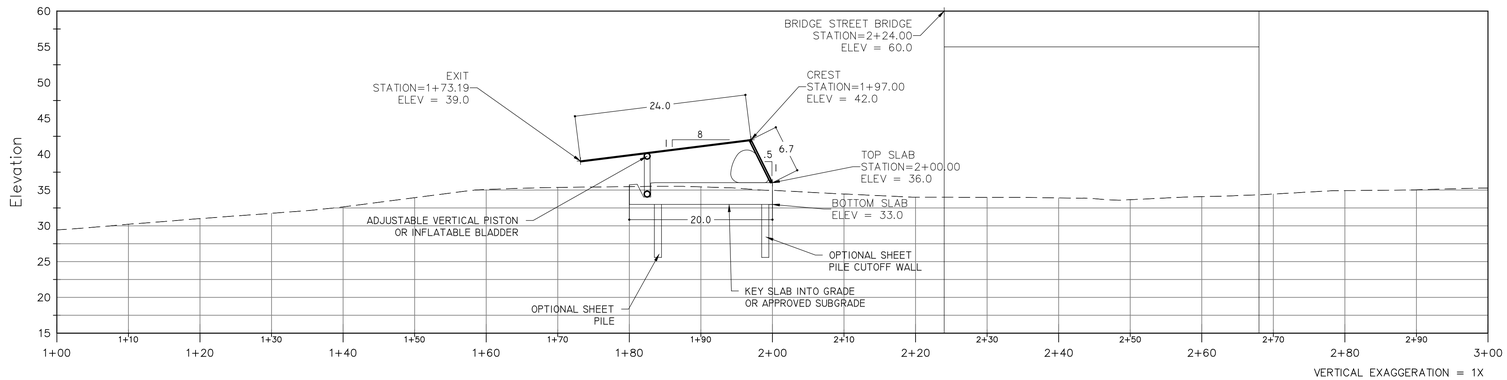
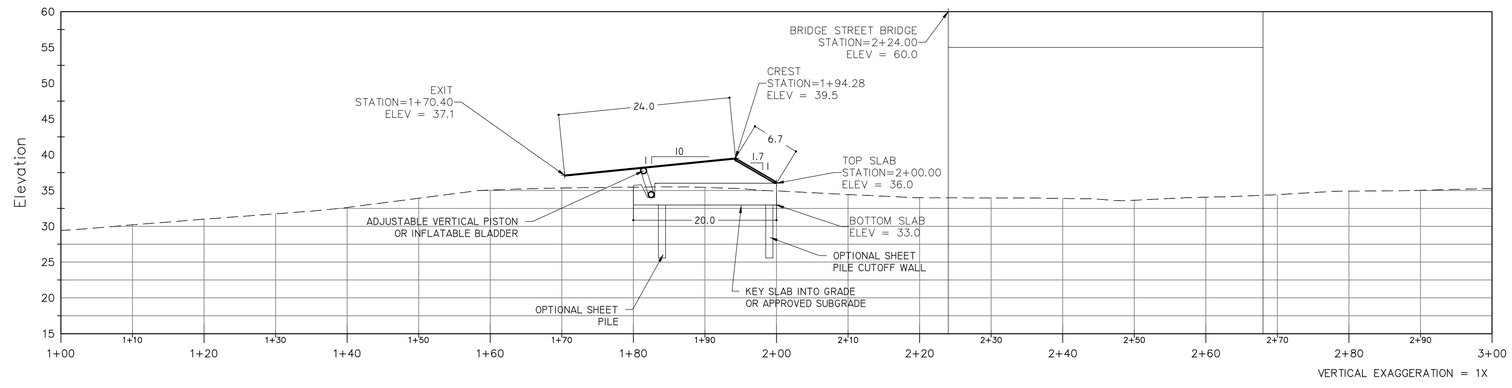
PROFILE A



PROFILE A



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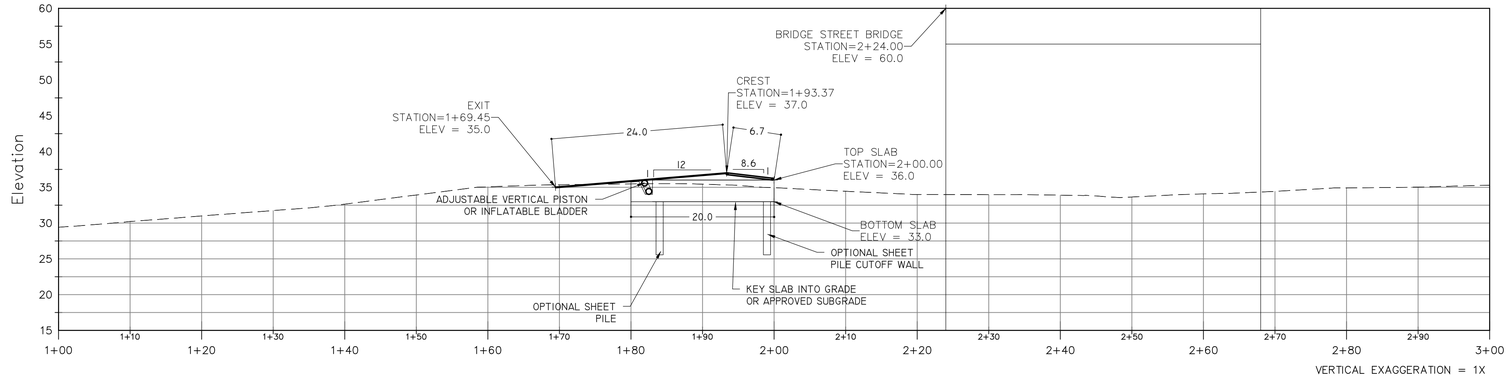

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SCALE: 1" = 10'

10 0 10

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STRUCTURE LONGITUDINAL PROFILES
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