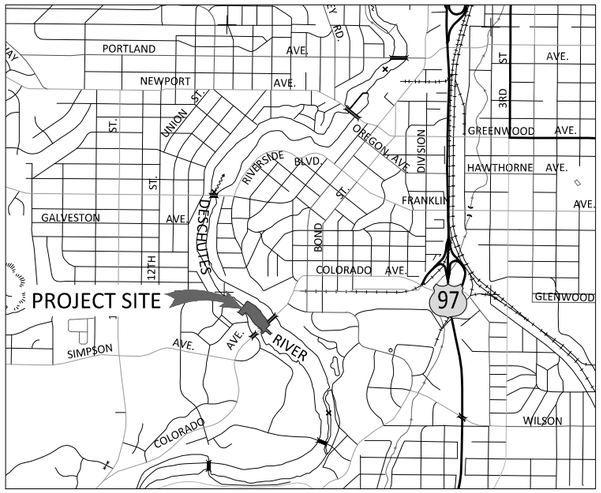
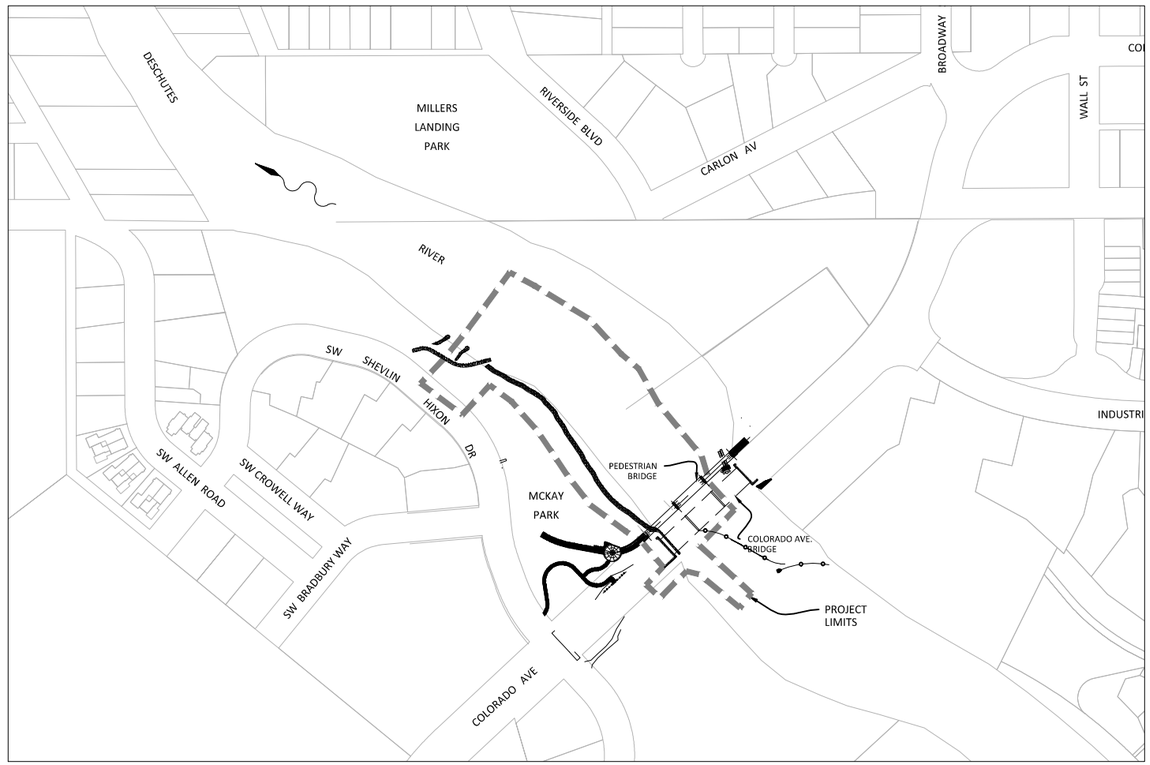
XREF LIST
Ltscale: 10
Resolved
C960X001
DESC3
DESCOGIS_012907
O960X190
C960X600

BEND WHITEWATER PARK
WINTER 2017 MODIFICATIONS

PROJECT #2016-XX, NOVEMBER 2016
BEND, DESCHUTES COUNTY, OREGON



VICINITY MAP
SCALE: 1"=1500'



SITE MAP
SCALE: 1"=150'

SHEET INDEX

1	COVER SHEET
2	EROSION AND SEDIMENT CONTROL
3	TEMPORARY WATER MANAGEMENT – STAGE 1
4	TEMPORARY WATER MANAGEMENT – STAGE 1
5	TEMPORARY WATER MANAGEMENT – DETAILS
6	OVERALL SITE IMPROVEMENT PLAN
7	WHITEWATER DROP 1 DETAILS
8	WHITEWATER DROP 2 DETAILS
9	WHITEWATER DROP 3 DETAILS
10	WHITEWATER DROP 4 DETAILS
11	PASSAGEWAY PLAN AND DETAILS
12	LSA MARSH BOOM PLAN AND DETAILS

OWNER:
BEND PARK & RECREATION DISTRICT
BRIAN HUDSPETH – CONSTRUCTION MANAGER
CHELSEA SCHNEIDER, PLA – PROJECT MANAGER
799 SW COLUMBIA STREET
BEND, OR 97702
(541) 389-7275

CIVIL ENGINEER
OTAK, INC
KEVIN TIMMINS, P.E.
808 SW THIRD AVENUE, SUITE 300
PORTLAND, OR 97204
(503) 287-6825

RIVER ENGINEER
RIVER RESTORATION.ORG
JASON CAREY, P.E.
PO BOX 248
CARBONDALE, CO 81623
(970) 947-9568

ENVIRONMENTAL CONSULTANT
CAMPBELL ENVIRONMENTAL, LLC.
ERIC CAMPBELL
4251 NE HAZELFERN PL
PORTLAND, OR 97213
(503) 680-8390

REVISIONS			
No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE
OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED:
DESIGNED: JMO
DRAWN: SLR
CHECKED: KJT
CRP No.
SCALE: AS SHOWN

otak
Hamm&Global Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: SEPT 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

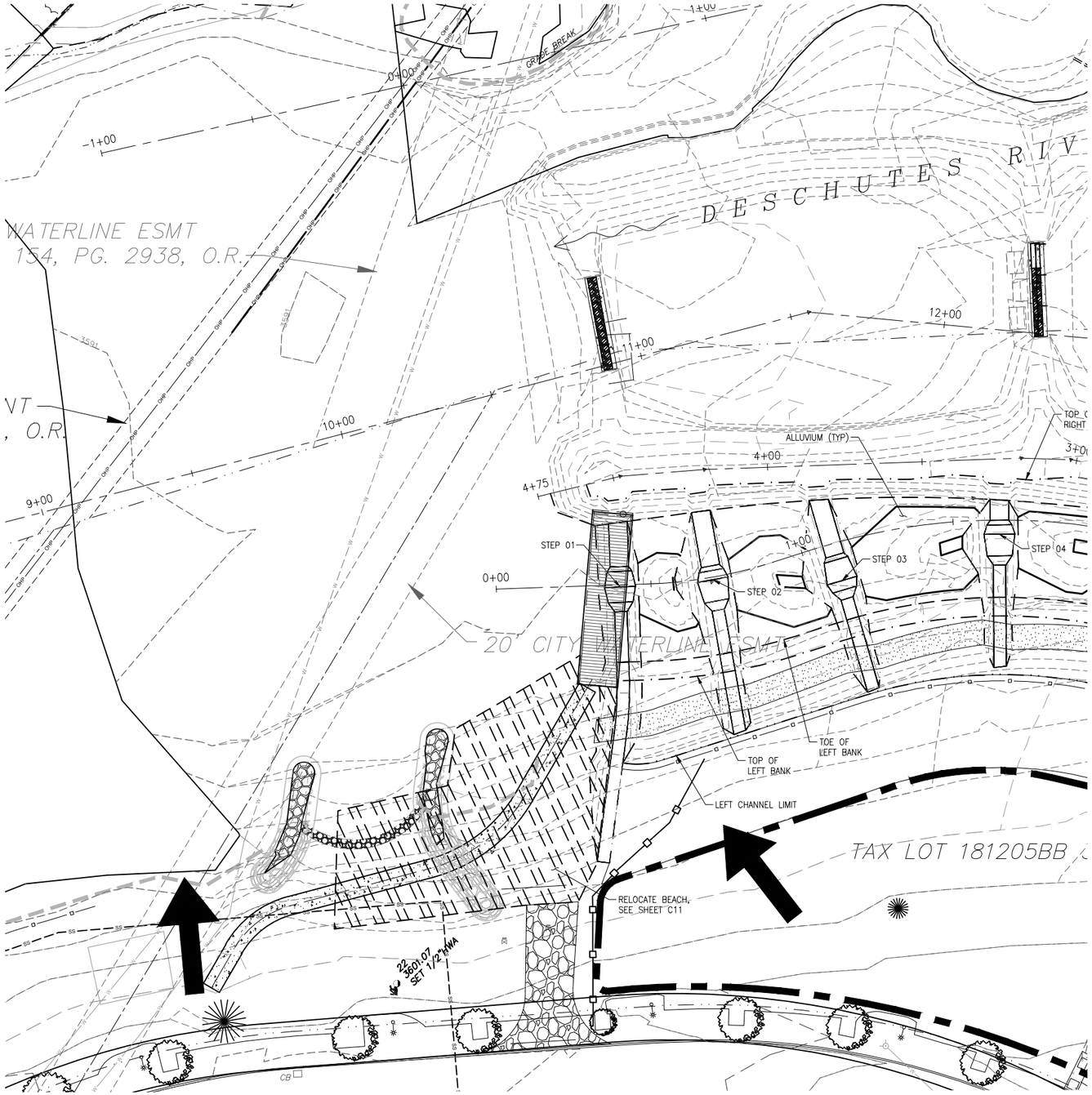
COLORADO DAM SAFE PASSAGE PROJECT
COVER SHEET
Enclosure

SHEET 1
FILE: C15960-W17-010

Plotted: Sep 22, 2016 – 2:10pm joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-010.dwg Layout Name: 010

XREF LIST
Ltscale: 1

Resolved
O960X191
O960X193_MCKAY
C960X001
C960X365
C960X465
C960X290
T960X800
C960X600
O960X192_MILLER
O960X190
C960X360
C960X900



PLAN
SCALE: 1"=30'

CONSTRUCTION NOTES

CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.

INSTALL ORANGE CONSTRUCTION FENCE

CONSTRUCT BEACH PROTECTION TO LIMITS SHOWN. SEE DETAIL THIS SHEET.

DRAINAGE FLOW DIRECTION

ORANGE CONSTRUCTION FENCE

CONSTRUCTION ENTRANCE

BEACH PROTECTION AREA

30' 0' 30' 60'
SCALE IN FEET

REVISIONS			
No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE
OREGON MAY 11, 2004
KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011/12/13
DESIGNED: JMO
DRAWN: SLR
CHECKED: QLD
CRP No.
SCALE: 1"=40'

otak
Harmon/Global Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE:
September 15, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT

EROSION AND SEDIMENT CONTROL PLAN

Enclosure

SHEET
2

FILE:
C15960-W17-020

Plotted: Sep 22, 2016 – 2:13pm joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-020.dwg Layout Name: 020

XREF LIST
Ltscale: 40
Resolved
C960X001
O960X190
O960X130
C960X465
T960X800
C960X290
C960X360
Unresolved
O960X192_MILLER
O960X193_MCKAY

CONSTRUCTION/SEQUENCING NOTES

1. COMPLETE ISOLATION IN WHITEWATER CHANNEL FIRST.
2. COORDINATE WITH DISTRICT ON TIMING FOR LOWERING OF MIRROR POND PACIFIC POWER DAM TO BACKWATER TO ELEVATION 3592.00'.
3. INSTALL TEMPORARY WORK BRIDGE 50' MAX ACROSS SAFE PASSAGE CHANNEL. PLACE TEMPORARY FILL AT WEST END TO PROVIDE SUPPORT FOR BRIDGE AND PROTECT EXISTING PATH.
4. RAISE GATES AT DROP 5. SUPPLEMENT GATE TO REDUCE LEAKAGE. (SEE SHEET TW03 FOR DETAILS.)
4A. LOWER GATES AT SP-11 AND SP-12 TO BYPASS RIVER FLOWS.
4B. OPTION TO OPEN HABITAT CHANNEL GATE TO BYPASS MORE FLOW.
5. INSTALL OIL BOOM FROM RIGHT ISLAND TO MCKAY BEACH. (SEE SHEET TW03 FOR DETAILS)
6. INSTALL TURBIDITY CURTAIN FROM RIGHT ISLAND TO MCKAY BEACH. (SEE SHEET TW03 FOR DETAILS)
7. USE NATIVE ALLUVIUM TO RAISE EXISTING ALLUVIUM BERM TO ELEVATION 3593.00' AS NEEDED. RESTORE TO ORIGINAL CONDITION FOLLOWING CONSTRUCTION, PRIOR TO DECOMMISSIONING OIL BOOM AND TURBIDITY CURTAIN.
8. MOVE OIL BOOM FROM MCKAY BEACH TO LEFT ISLAND TO ISOLATE WHITEWATER CHANNEL ONLY
9. MOVE TURBIDITY CURTAIN FROM MCKAY BEACH TO LEFT ISLAND TO ISOLATE WHITEWATER CHANNEL ONLY
10. AFTER FISH SALVAGE DEWATER TO HABITAT CHANNEL AS NEEDED.
11. CONSTRUCT WHITEWATER CHANNEL FEATURES. (SEE SHEETS 7 THROUGH 10)

GENERAL NOTES

A. ALL IN-WATER WORK REQUIRES USE OF APPROVED BMP's TO PREVENT IMPACTS TO WATER QUALITY.

B. NOV.-FEB. UPSTREAM MILL POND WATER SURFACE ELEVATION SHALL BE KEPT ABOVE 3602.2'. WATER LEVELS MAY BE DRAWN BELOW THIS ELEVATION FOR SHORT DURATIONS (24-48 HRS MAX) WITH APPROVAL BY ENGINEER OR AS DIRECTED IN THE PLANS.

C. MAR.-APR. MAINTAIN UPSTREAM MILL POND WATER SURFACE ELEVATIONS BETWEEN 3602.5' AND 3603.0'

DEWATERING NOTES

1. PERFORM FISH REMOVAL AFTER WORK AREA ISOLATION, PRIOR TO DEWATERING
2. PUMPING MAY BE REQUIRED FOR SEEPAGE REMOVAL INSIDE ISOLATION AREA.
3. WATER FROM THE DEWATERING PROCESS SHALL BE DISCHARGED INTO NON-ISOLATED AREA AS APPROVED BY THE OWNER.

REVISIONS			
No.	BY	DATE	DESCRIPTION
NWP-2013-83/1			

REGISTERED PROFESSIONAL ENGINEER 74834PE OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011-13
DESIGNED: QLD
DRAWN: SLR
CHECKED: KJT
CRP No.
SCALE: 1"=30'

otak
HerrmannGlobal Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: SEPT 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT

TEMPORARY WATER MANAGEMENT PLAN - STAGE 1

SHEET 3

FILE: C15960-W17-030-040

Plotted: Sep 22, 2016 - 2:14pm jashuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-030-040.dwg Layout Name: 030

XREF LIST
Ltscale: 40
Resolved
C960X001
O960X190
O960X130
C960X465
T960X800
C960X290
C960X360
Unresolved
O960X192_MILLER
O960X193_MCKAY

CONSTRUCTION/SEQUENCING NOTES

1. COMPLETE WORK IN WHITEWATER CHANNEL BEFORE WORK IN PASSAGEWAY.
2. COORDINATE WITH DISTRICT ON TIMING FOR LOWERING OF MIRROR POND PACIFIC POWER DAM TO BACKWATER TO ELEVATION 3592.00'.
3. RAISE GATES AT DROP SP-12. SUPPLEMENT GATE TO REDUCE LEAKAGE. (SEE SHEET TW03 FOR DETAILS.)
3A. LOWER GATES AT DROP 5 AND DROP 4 TO BYPASS RIVER FLOWS.
3B. GATE ON HABITAT CHANNEL MAY BE PULLED TO BYPASS MORE FLOW INTO HABITAT CHANNEL
4. INSTALL TURBIDITY CURTAIN ACROSS PASSAGEWAY CHANNEL. (SEE SHEET TW03 FOR DETAILS)
5. INSTALL OIL BOOM ACROSS PASSAGEWAY CHANNEL. (SEE SHEET TW03 FOR DETAILS)
6. KEEP TEMPORARY FILL AT END OF TEMPORARY WORK BRIDGE IN PLACE. USE NATIVE ALLUVIUM TO RAISE EXISTING ALLUVIUM BERM TO ELEVATION 3593.00' AS NEEDED. RESTORE TO ORIGINAL CONDITION FOLLOWING CONSTRUCTION, PRIOR TO DECOMMISSIONING OIL BOOM AND TURBIDITY CURTAIN.
7. AFTER FISH SALVAGE DEWATER TO WHITEWATER CHANNEL AS NEEDED.
8. CONSTRUCT PASSAGEWAY FEATURES. (SEE SHEET 11)

GENERAL NOTES

A. ALL IN-WATER WORK REQUIRES USE OF APPROVED BMP's TO PREVENT IMPACTS TO WATER QUALITY.

B. NOV.-FEB. UPSTREAM MILL POND WATER SURFACE ELEVATION SHALL BE KEPT ABOVE 3602.2'. WATER LEVELS MAY BE DRAWN BELOW THIS ELEVATION FOR SHORT DURATIONS (24-48 HRS MAX) WITH APPROVAL BY ENGINEER OR AS DIRECTED IN THE PLANS.

C. MAR.-APR. MAINTAIN UPSTREAM MILL POND WATER SURFACE ELEVATIONS BETWEEN 3602.5' AND 3603.0'

DEWATERING NOTES

1. PERFORM FISH REMOVAL AFTER WORK AREA ISOLATION, PRIOR TO DEWATERING
2. PUMPING MAY BE REQUIRED FOR SEEPAGE REMOVAL INSIDE ISOLATION AREA.
3. WATER FROM THE DEWATERING PROCESS SHALL BE DISCHARGED INTO NON-ISOLATED AREA AS APPROVED BY THE OWNER.

REVISIONS			
No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011-13
DESIGNED: QLD
DRAWN: SLR
CHECKED: KJT
CRP No.
SCALE: 1"=30'

otak
HaworthGlobal Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE: SEPT 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT

TEMPORARY WATER MANAGEMENT PLAN - STAGE 2

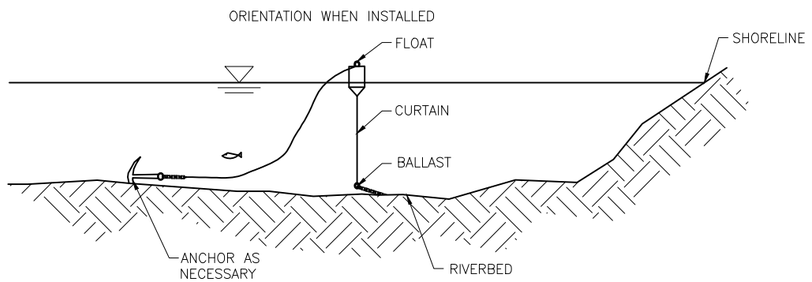
SHEET 4

FILE: C15960-W17-030-040

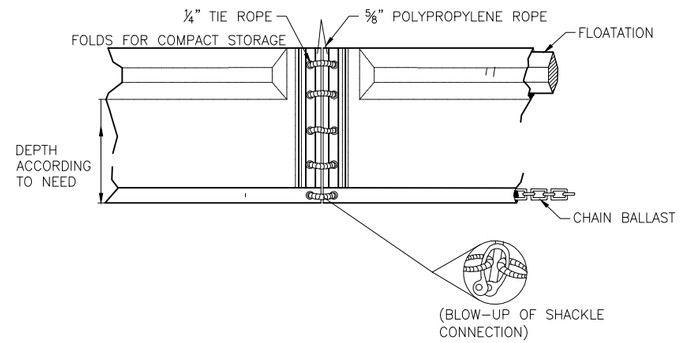
Plotted: Sep 22, 2016 - 2:14pm joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-030-040.dwg Layout Name: 040

XREF LIST
Ltscale: 1
Resolved
C960X001
C960X465

TYPICAL LAYOUTS

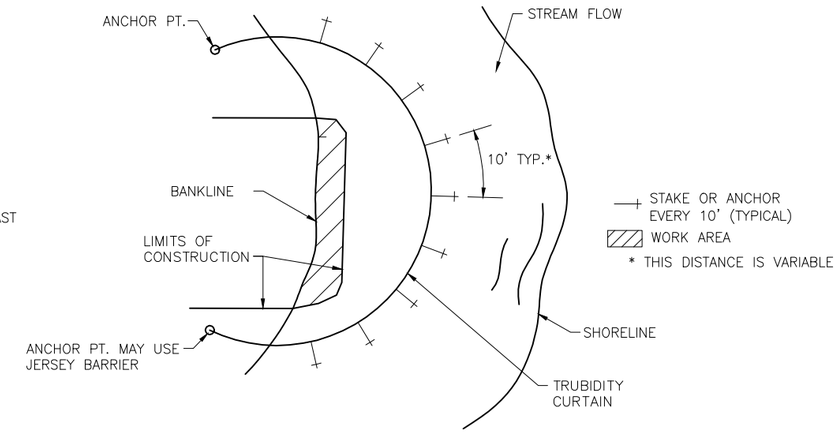


1 TW05 TURBIDITY CURTAIN (TYP.)
SECTION–NTS



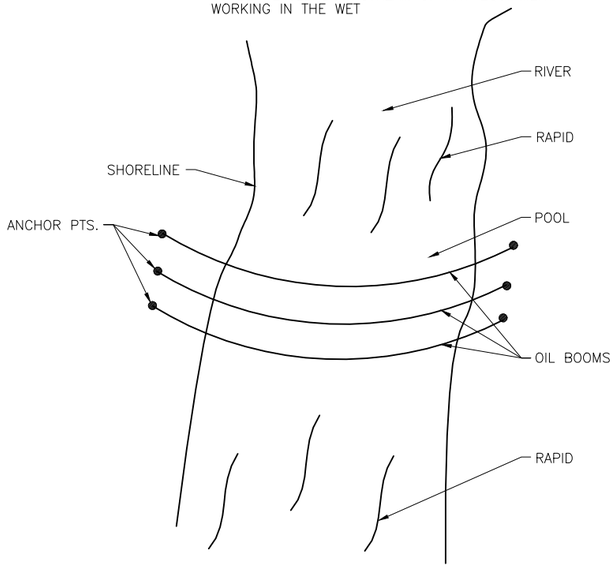
SILTMASTER II PERMEABLE GEOTEXTILE
DREDGE BARRIER NON–WOVEN DBNW
BY PARKERSYSTEMS OR EQUIVALENT

2 TW05 TURBIDITY CURTAIN (TYP.)
PROFILE–NTS

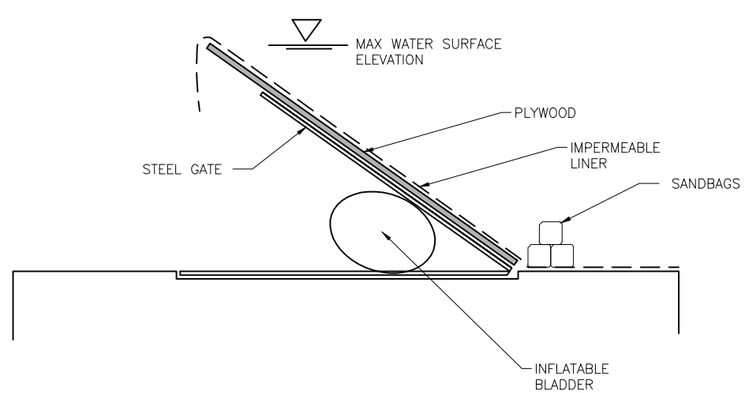


3 TW05 TURBIDITY CURTAIN (TYP.)
PLAN–NTS

TYPICAL LAYOUT FOR STREAMS AND RIVERS
TO BE PLACED DOWNSTREAM OF ANY EQUIPMENT
WORKING IN THE WET



4 TW05 OIL BOOM (TYP.)
PLAN–NTS



5 TW05 GATE SUPPLEMENT
NTS

6 TW05 ALTERNATE WORK AREA ISOLATION DETAIL
NTS

REVISIONS			
No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE OREGON MAY 11, 2004 KEVIN JOHN TIMMONS
EXPIRES: 6/30/16

SURVEYED:
DESIGNED: JO
DRAWN: SLR
CHECKED: QLD
CRP No.
SCALE: AS SHOWN

otak
HerrmannGlobal Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: SEPT 2016

Bend Park & Recreation DISTRICT

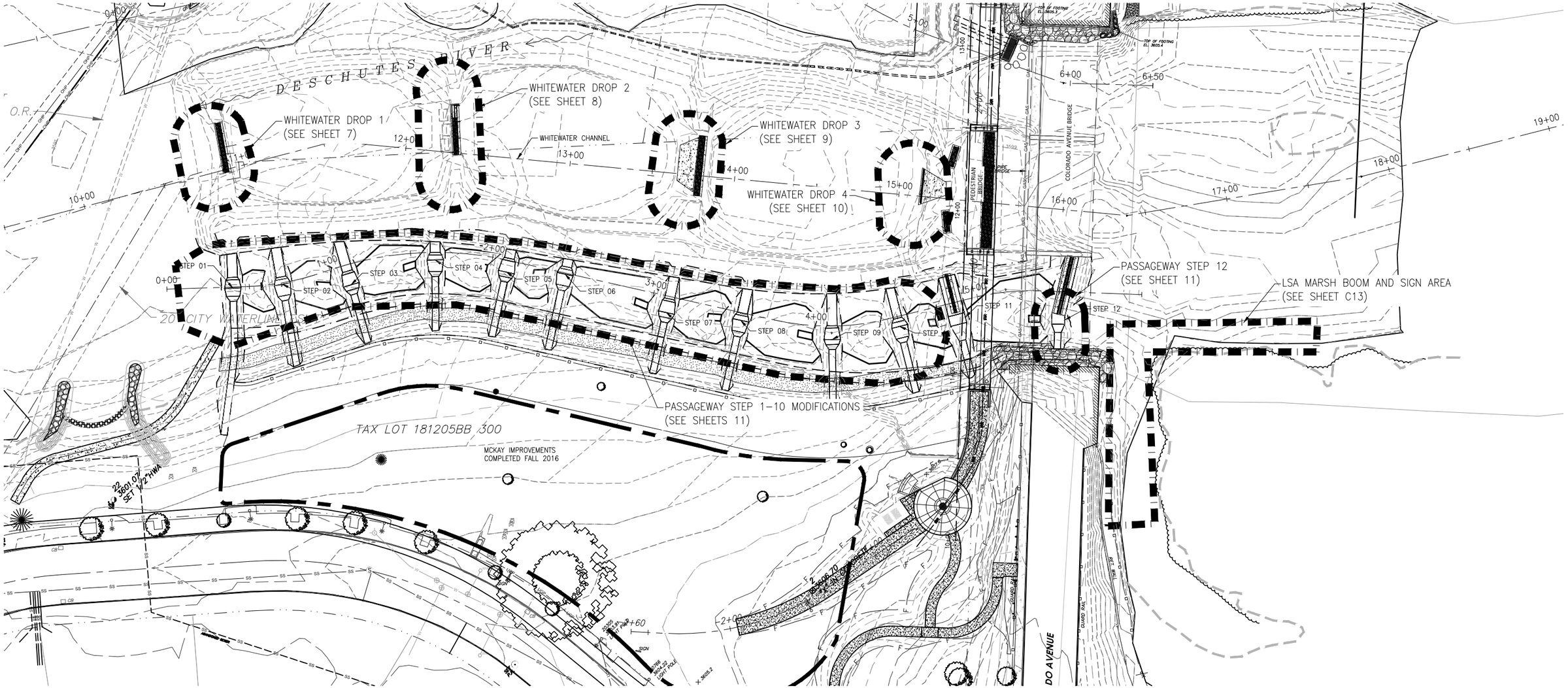
BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT
TEMPORARY WATER MANAGEMENT PLAN DETAILS

SHEET 5
FILE: C15960-W17-050

Plotted: Sep 22, 2016 – 2:15pm Joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-050.dwg Layout Name: 050

XREF LIST
Ltscale: 1
Resolved
O960X191
O960X193_MCKAY
C960X001
C960X365
C960X465
C960X290
T960X800
C960X600
O960X192_MILLER
O960X190
C960X360
C960X900



PLAN
SCALE: 1"=30'

30' 0' 30' 60'
SCALE IN FEET

REVISIONS			
No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE
OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011/12/13
DESIGNED: JMO
DRAWN: SLR
CHECKED: QLD
CRP No.
SCALE: 1"=30'

otak
Hanna/Global Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: September 15, 2016

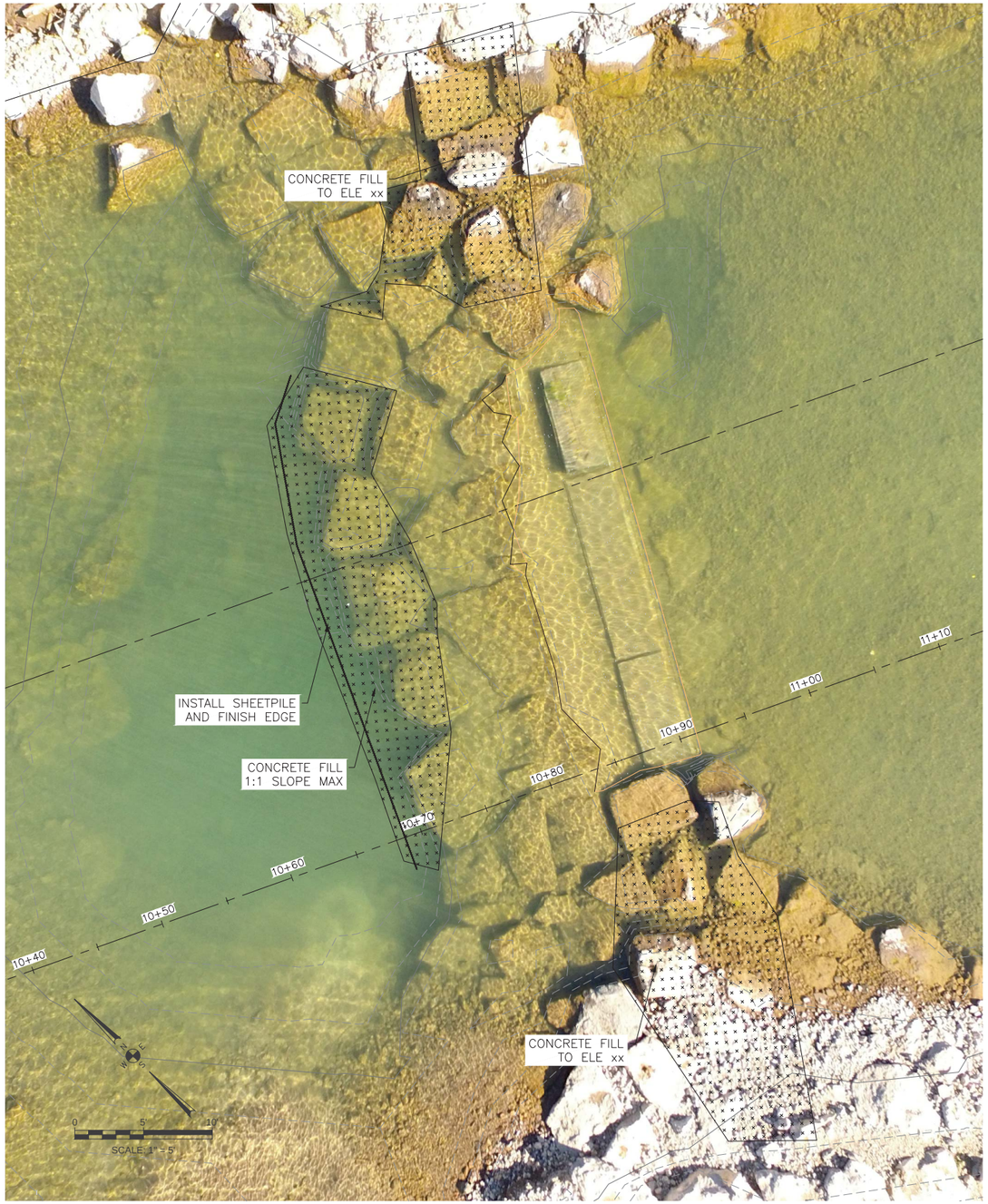
Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

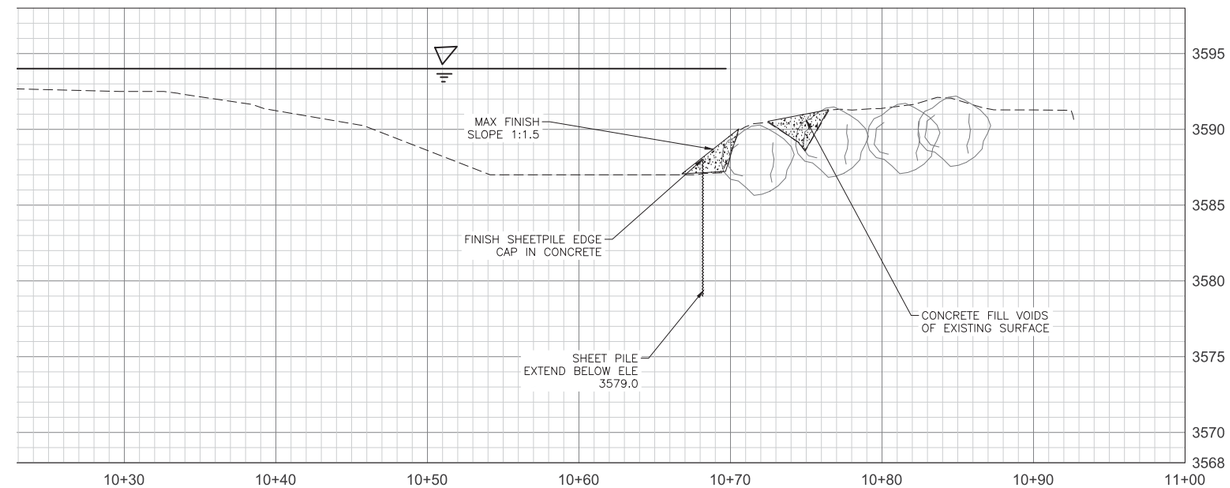
COLORADO DAM SAFE PASSAGE PROJECT
OVERALL SITE IMPROVEMENTS PLAN
Enclosure

SHEET 6
FILE: C15960-W17-060

Plotted: Sep 22, 2016 - 2:17pm joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-060.dwg Layout Name: 060



PLAN



PROFILE 20' RIGHT OFFSET

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	JPC	9-13-16	DROP 4 FLOOR DESIGN

SURVEYED:
DESIGNED: JPC
DRAWN: JPC
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION.ORG
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE: SEPT 13, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

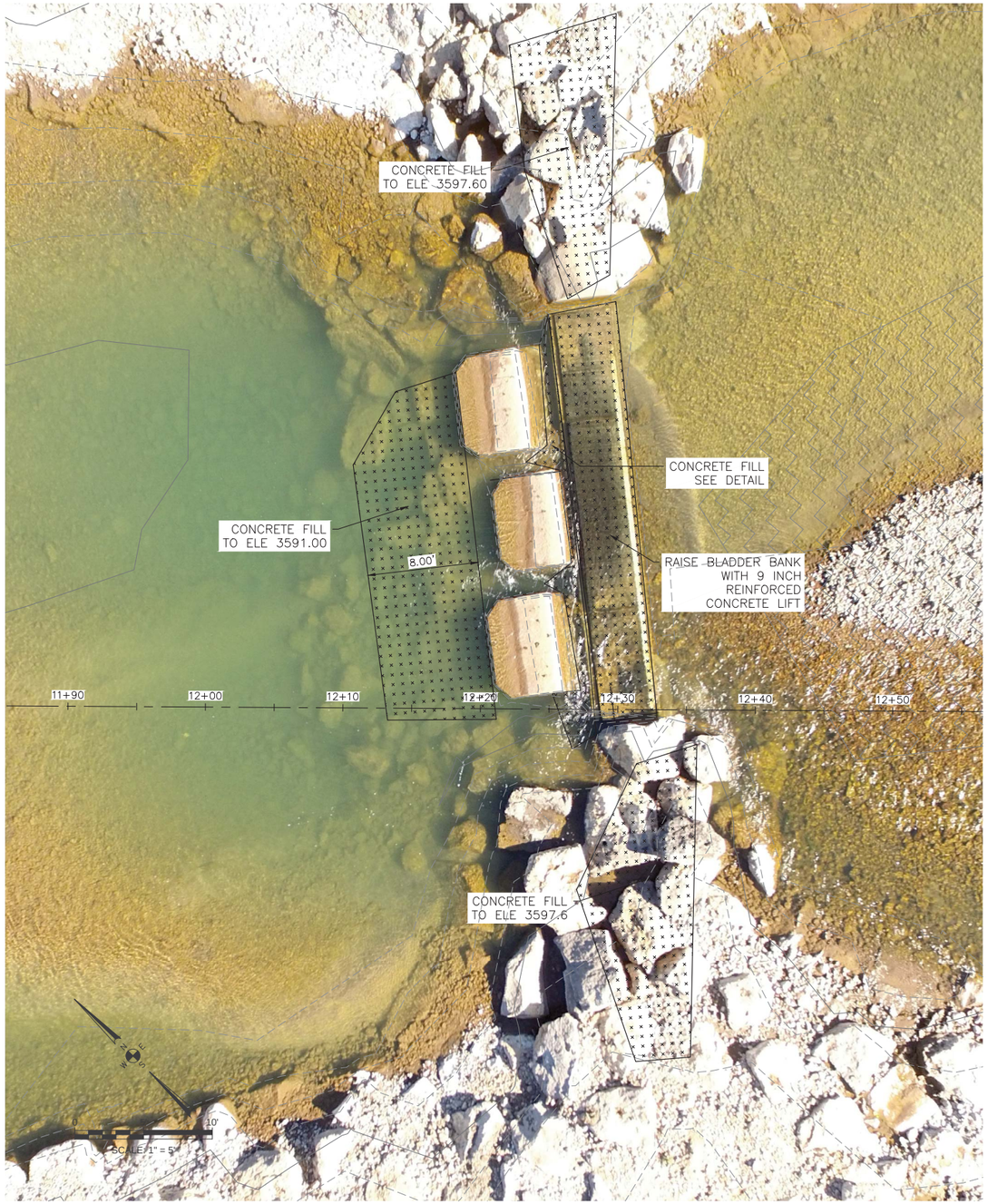
COLORADO DAM SAFE PASSAGE PROJECT

2016 DROP 4 MODIFICATION PLAN AND PROFILE

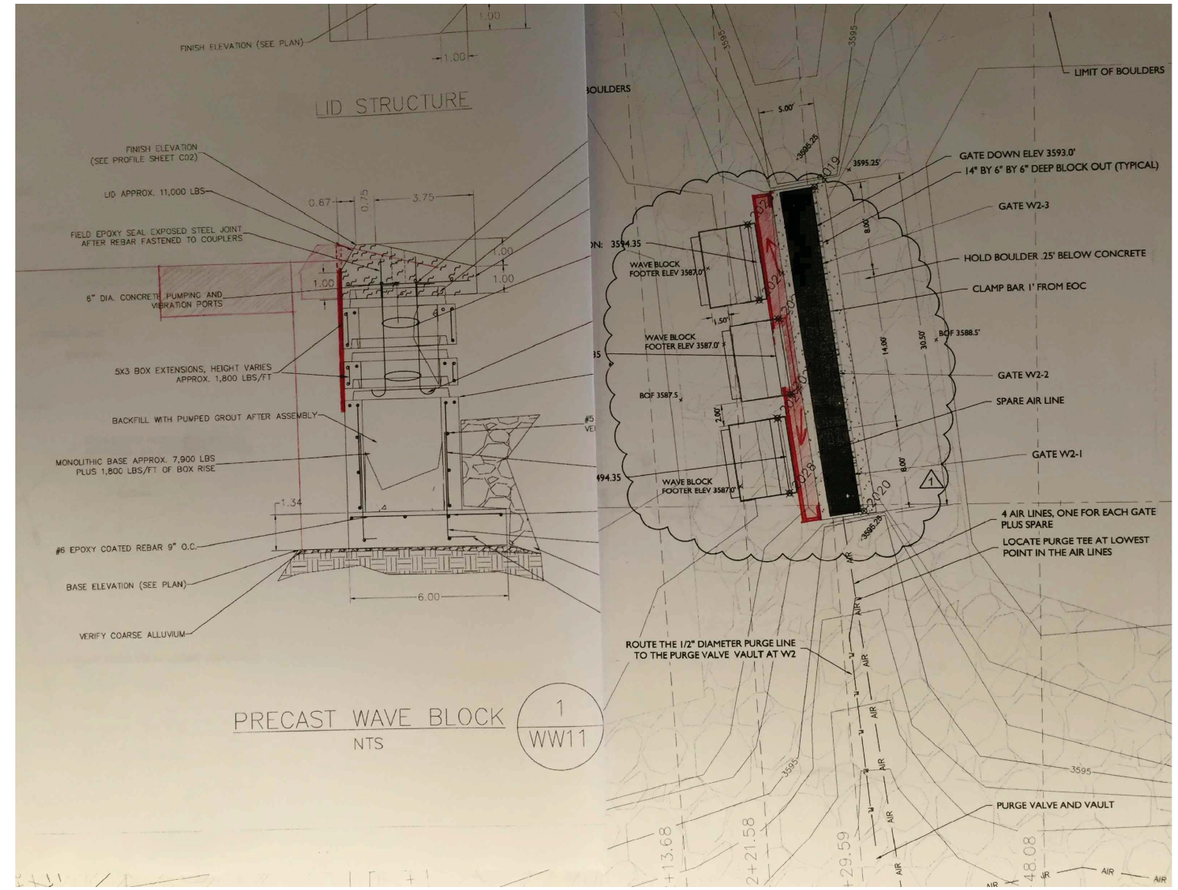
SHEET MOD3

FILE:

Plotted: Sep 14, 2016 9:22am jason.carey Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop1 Plan and Profile (2)



PLAN



DROP 2 VOID FILL DETAIL

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	JPC	9-13-16	DROP 2 WING RAISE
2	JPC	9-19-16	DROP 2 BLADDER BANK RAISE

SURVEYED:
DESIGNED: JPC
DRAWN: JPC
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: SEPT 13, 2016

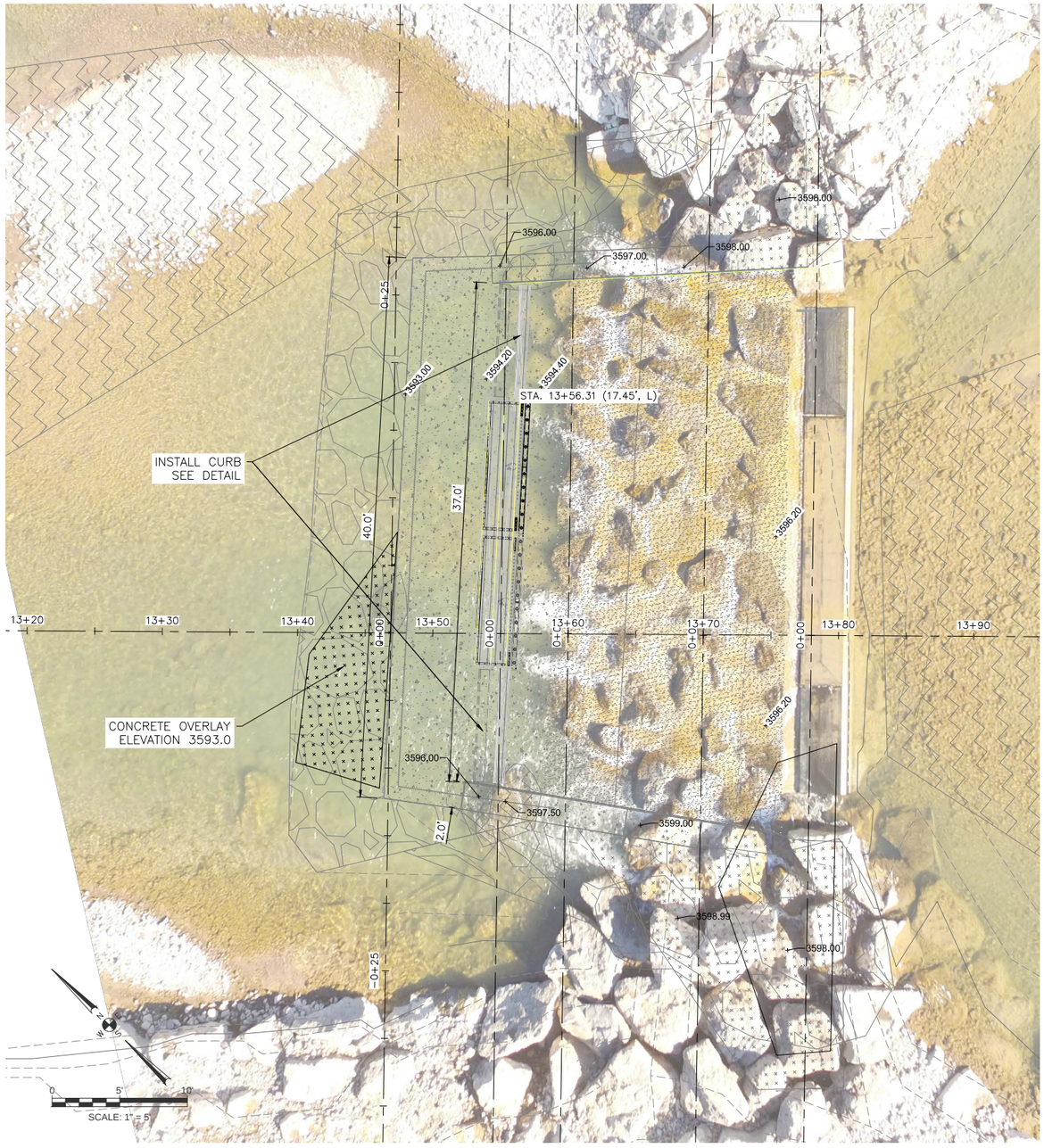
Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

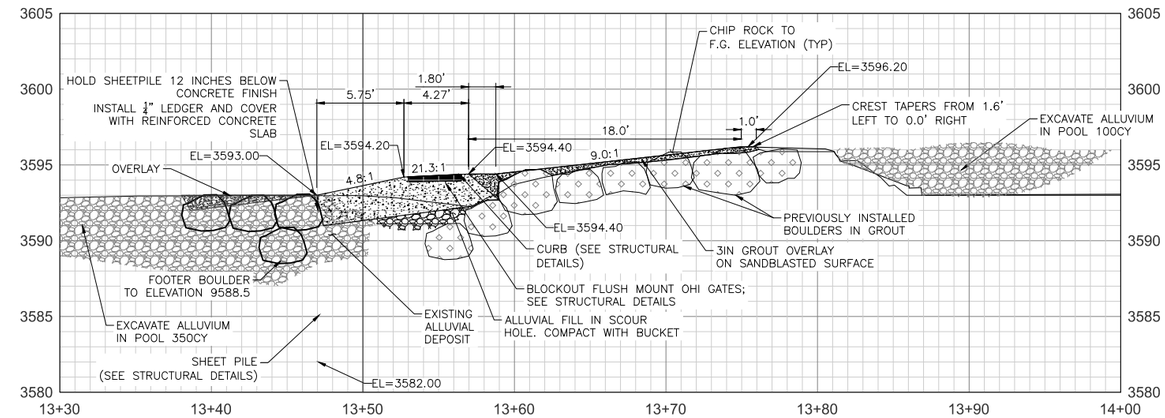
COLORADO DAM SAFE PASSAGE PROJECT
2016 DROP 2

SHEET MOD3
FILE:

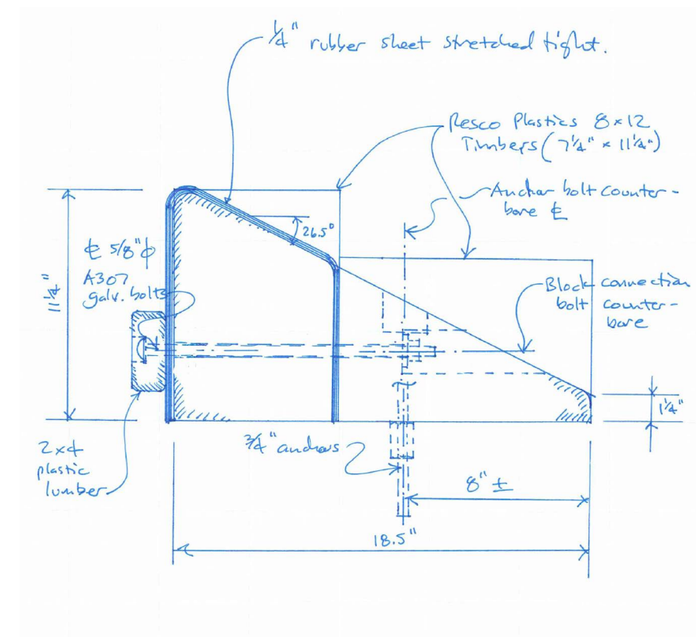
Plotted: Sep 22, 2016 - 1:19pm jason.carey Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop2 Plan and Profile (2)



PLAN



PROFILE



CURB DETAIL

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	SEP	9-13-14	DROP 3 RUNOUT OVERLAY

SURVEYED:
DESIGNED: JPC
DRAWN: SEP
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION.ORG
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE: SEPT 13, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

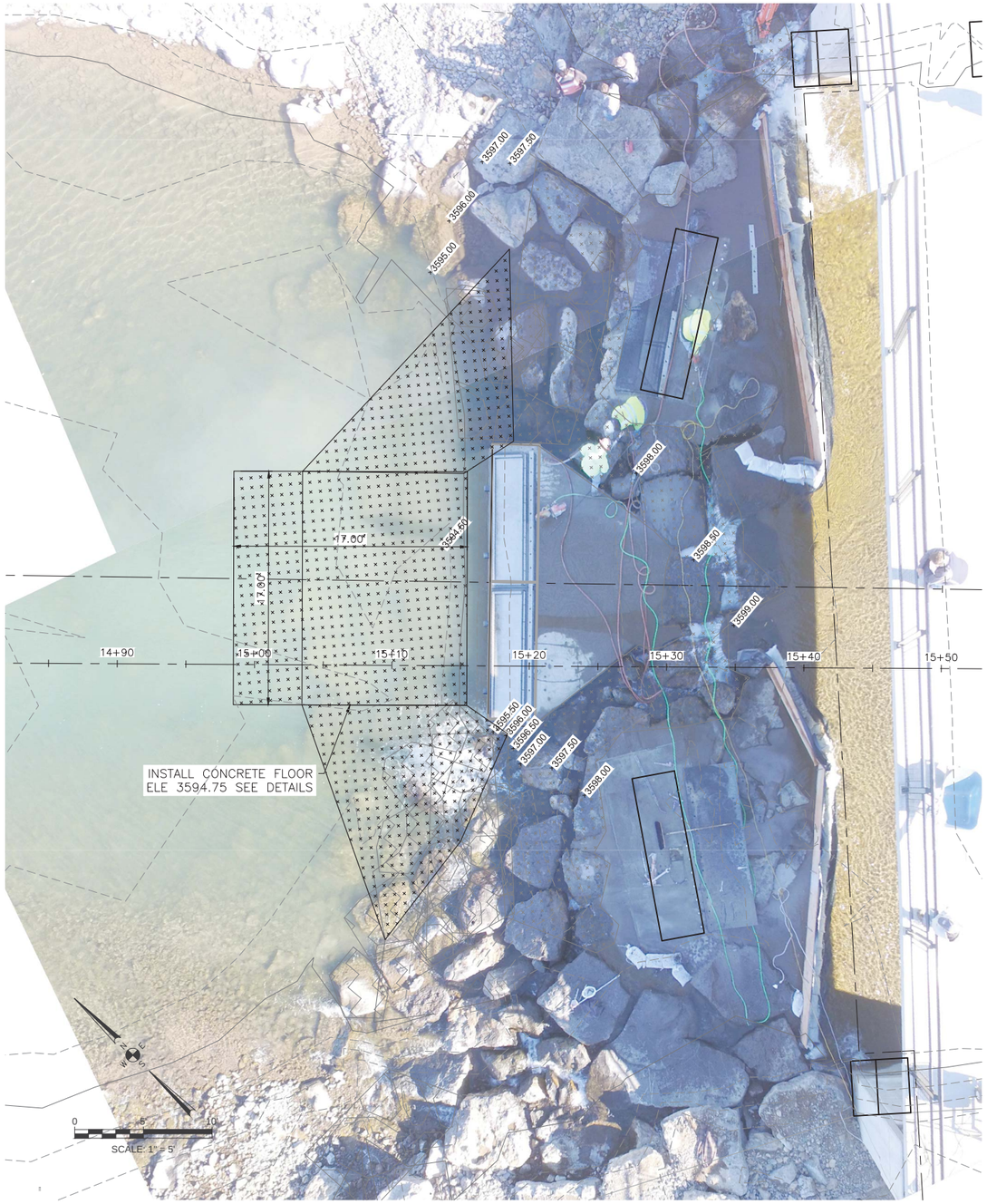
COLORADO DAM SAFE PASSAGE PROJECT

DROP 3 MODIFICATION
PLAN AND PROFILE

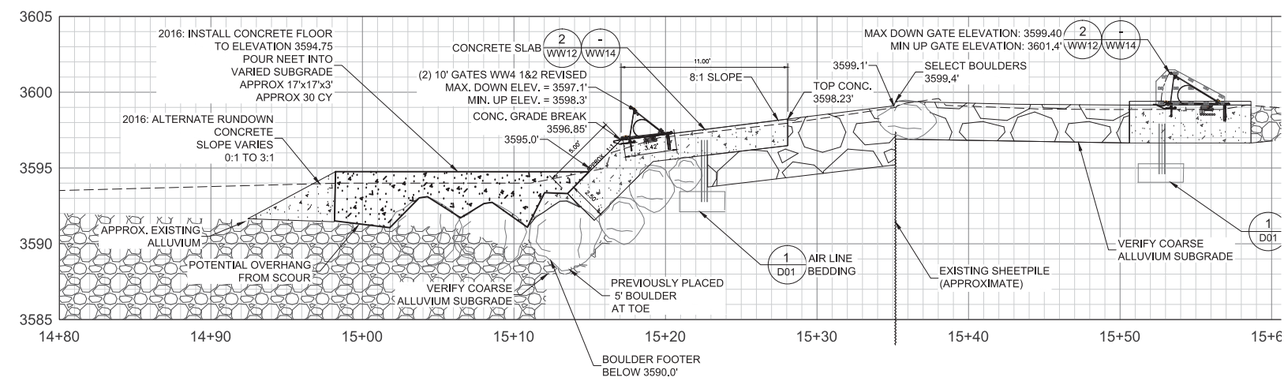
SHEET MOD1

FILE: Enclosure

Plotted: Sep 15, 2016 – 3:33pm FRANCOIS Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop 3 Plan and Profile



PLAN



PROFILE

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	JPC	9-13-16	DROP 4 FLOOR DESIGN

SURVEYED:
DESIGNED: JPC
DRAWN: JPC
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION.ORG
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 1"
BAR EQUALS INCH
ON ORIGINAL DRAWING
DATE:
SEPT 13, 2016

Bend Park & Recreation DISTRICT

BEND PARK &
RECREATION DISTRICT

799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT

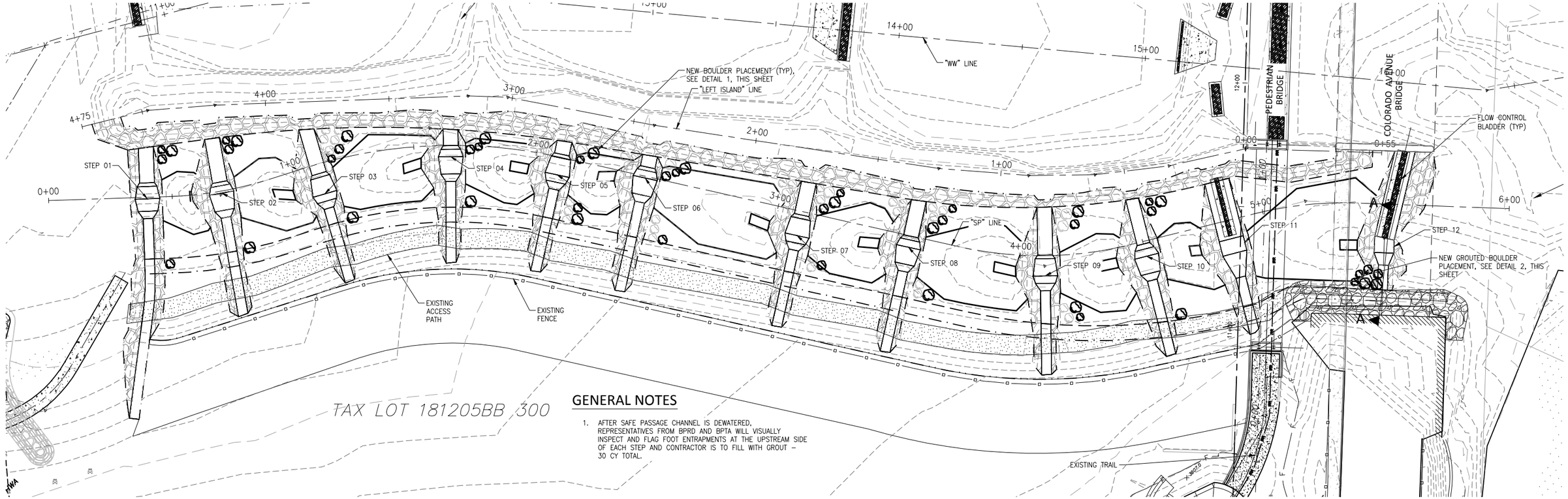
2016 DROP 4 MODIFICATION
PLAN AND PROFILE

SHEET
MOD3
FILE:

Plotted: Sep 22, 2016 - 1:27pm jason.carey Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop4 Plan and Profile

XREF LIST
Ltscale: 1

Resolved
O960X191
O960X193_MCKAY
C960X001
C960X365
C960X465
C960X290
T960X800
C960X600
O960X192_MILLER
O960X190
C960X360
C960X900

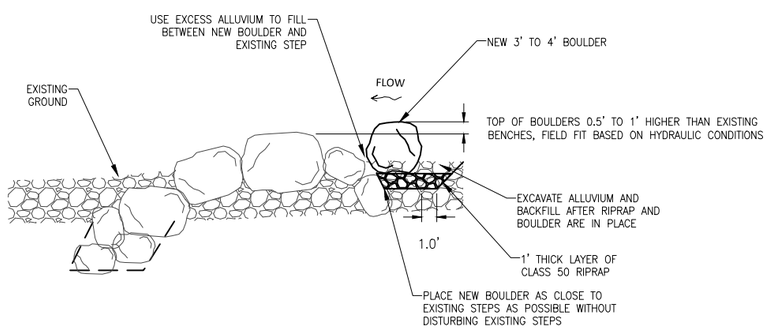


GENERAL NOTES

1. AFTER SAFE PASSAGE CHANNEL IS DEWATERED, REPRESENTATIVES FROM BPRD AND BPTA WILL VISUALLY INSPECT AND FLAG FOOT ENTRAPMENTS AT THE UPSTREAM SIDE OF EACH STEP AND CONTRACTOR IS TO FILL WITH GROUT – 30 CY TOTAL.

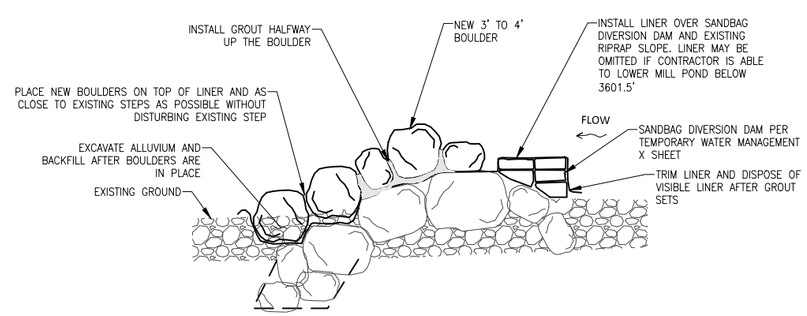
PLAN
SCALE: 1"=20'

20' 0' 20' 40'
SCALE IN FEET



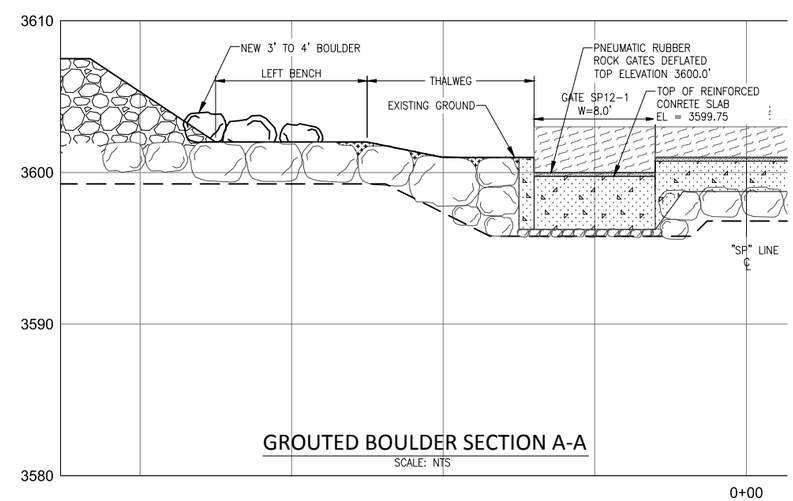
QUANTITIES:
30 CY – CLASS 50 RIPRAP
150 TON – 3' TO 4' BOULDERS (~50 BOULDERS TOTAL), INCLUDES 25% EXTRA FOR SELECTION

1 BOULDER PLACEMENT DETAIL
NTS



QUANTITIES:
10 CY – GROUT
24 TON – 3' TO 4' BOULDERS (~8 BOULDERS TOTAL), INCLUDES 25% EXTRA FOR SELECTION

2 GROUTED BOULDER PLACEMENT DETAIL
NTS



GROUTED BOULDER SECTION A-A
SCALE: NTS

REVISIONS			
No.	BY	DATE	DESCRIPTION
NWP-2013-83/1			

REGISTERED PROFESSIONAL ENGINEER 74834PE OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011/12/13
DESIGNED: JMO
DRAWN: SLR
CHECKED: QLD
CRP No.
SCALE: 1"=20'

otak
HerrerGlobal Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: September 15, 2016

Bend Park & Recreation DISTRICT

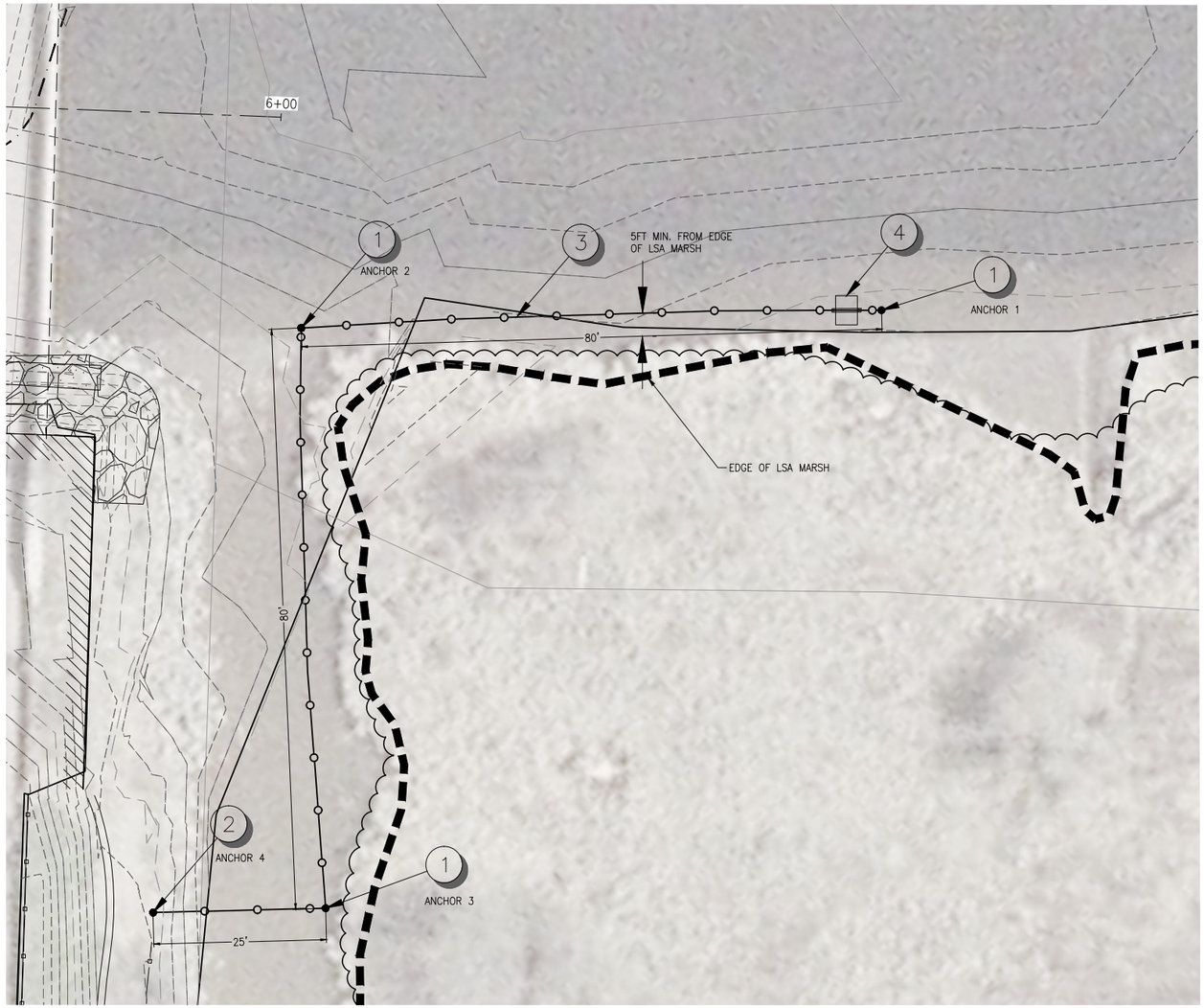
BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT
SAFE PASSAGE CHANNEL PLAN AND DETAILS Enclosure

SHEET 11
FILE: C15960-W17-110

Plotted: Sep 22, 2016 – 2:20pm Joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-110.dwg Layout Name: 110

XREF LIST
Ltscale: 1
Resolved
O960X191
O960X193_MCKAY
C960X001
C960X365
C960X465
C960X290
T960X800
C960X600
O960X192_MILLER
O960X190
C960X360
C960X900



CONSTRUCTION NOTES

1. CONSTRUCT IN-WATER ANCHOR SYSTEM. SEE DETAIL THIS SHEET.
2. CONSTRUCT LAND ANCHOR SYSTEM. SEE DETAIL THIS SHEET.
3. INSTALL 185 LF OF WORTHINGTON TUFFBUOY OR APPROVED EQUAL
4. INSTALL 185 LF OF WORTHINGTON TUFFBUOY OR APPROVED EQUAL

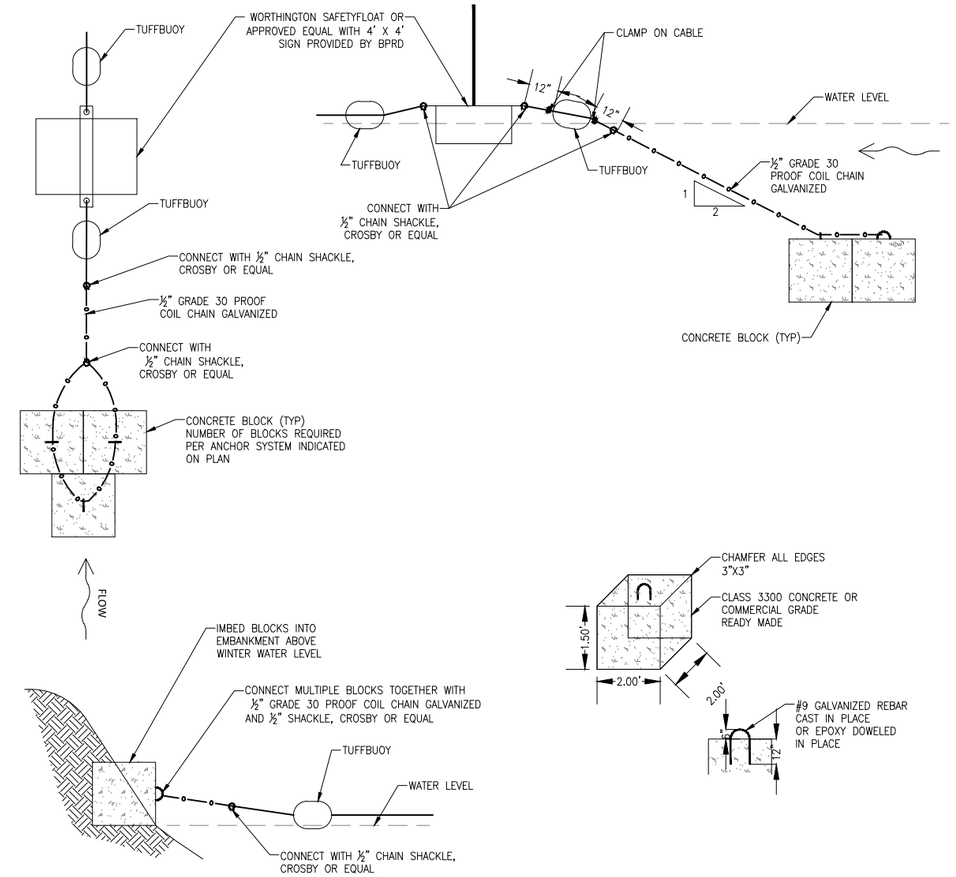
GENERAL NOTES

TUFFBUOY TO CONSIST OF 13" DIAMETER, CABLE THROUGH, BROWN OVAL BUOY SPACED 5' ON CENTER. USE ⅜" VINYL COATED GALVANIZED CABLE WITH CLAMPS ON BOTH SIDES OF EACH BUOY TO PREVENT BUOY MIGRATION ALONG CABLE. CABLE SHALL BE CONTINUOUS FROM SAFETYFLOAT TO TERMINATION. INSTALLATION LENGTH DOES NOT INCLUDE ADDITIONAL CABLE OR CHAIN REQUIRED FOR ATTACHING TO ANCHORS

SAFETYFLOAT SHALL HAVE FRAME SUITABLE FOR MOUNTING A 4'X4' SIGN, SIGN TO BE PROVIDED BY THE DISTRICT

10' 0' 10' 20'
SCALE IN FEET

PLAN
SCALE: 1"=10'



NOTES:

1. TOTAL WEIGHT OF BLOCKS SHALL BE MINIMUM 800 LBS MULTIPLIED NUMBER OF BLOCKS REQUIRED, SEE TABLE THIS SHEET.
2. MAXIMUM BLOCK HEIGHT = 1.5 FT, OTHER DIMENSIONS MAY VARY.
3. TOTAL NUMBER OF BLOCKS MAY VARY DEPENDING ON SIZE.
4. BLOCKS SHALL BE PLACED TIGHTLY TOGETHER.
5. USE ½" CHAIN SHACKLE, CROSBY OR EQUAL, AROUND TUFFBOUY CABLE TO CONNECT INTERMEDIATE ANCHORS 2 AND 3. INSTALL CABLE CLAMPS ON BOTH SIDE OF SHACKLE CONNECTION TO PREVENT SHACKLE FROM MOVING ALONG CABLE.

ANCHOR	# OF BLOCKS	SAFETYFLOAT AND BUOY
1	3	YES
2	4	NO
3	3	NO
4	2	NO

REVISIONS

No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011/12/13
DESIGNED: JMO
DRAWN: RCH
CHECKED: JMO
CRP No.
SCALE: 1"=10'

otak
HamwellGlobal Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: September 16, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

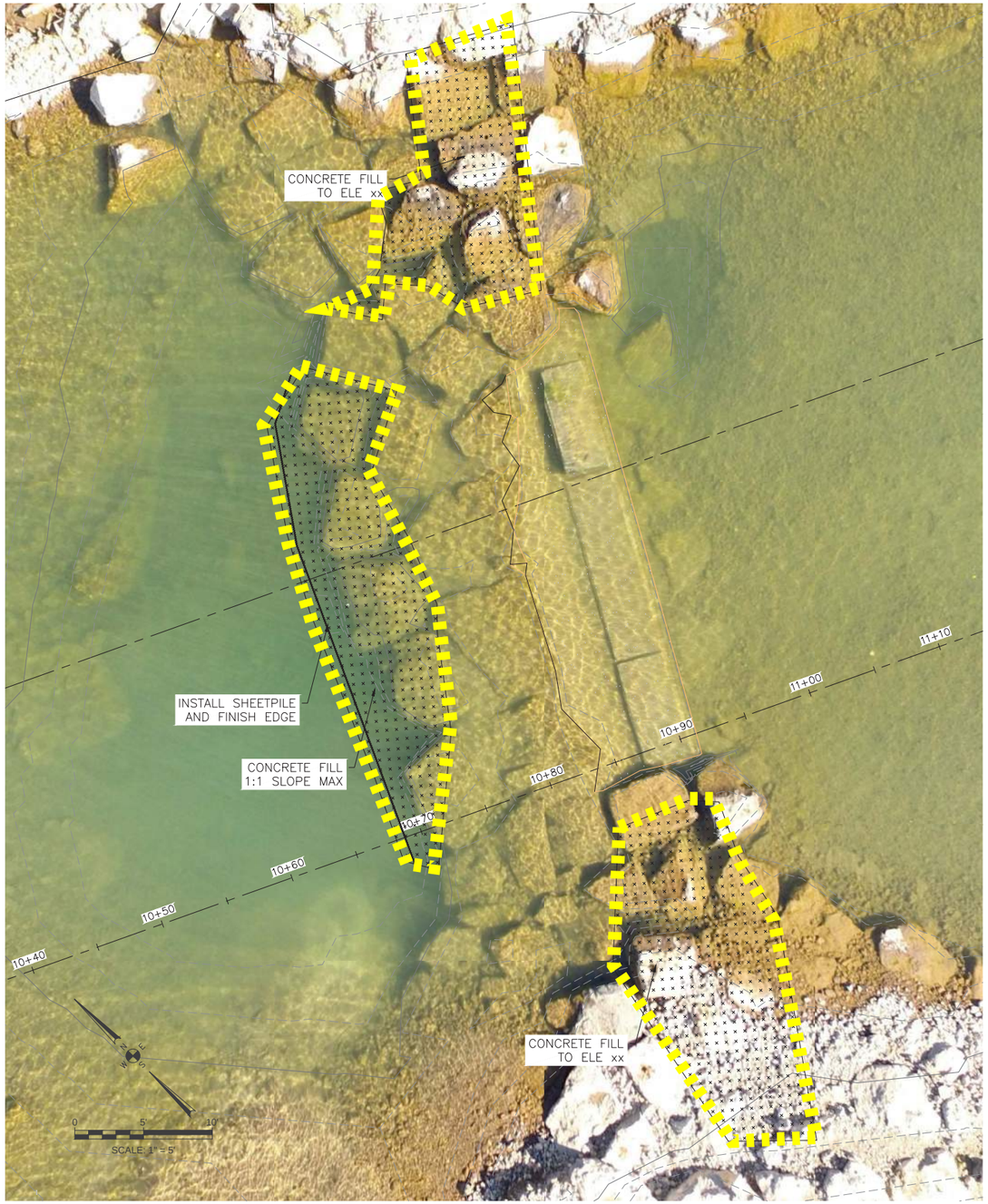
COLORADO DAM SAFE PASSAGE PROJECT

LSA MARSH BOOM PLAN AND DETAILS Enclosure

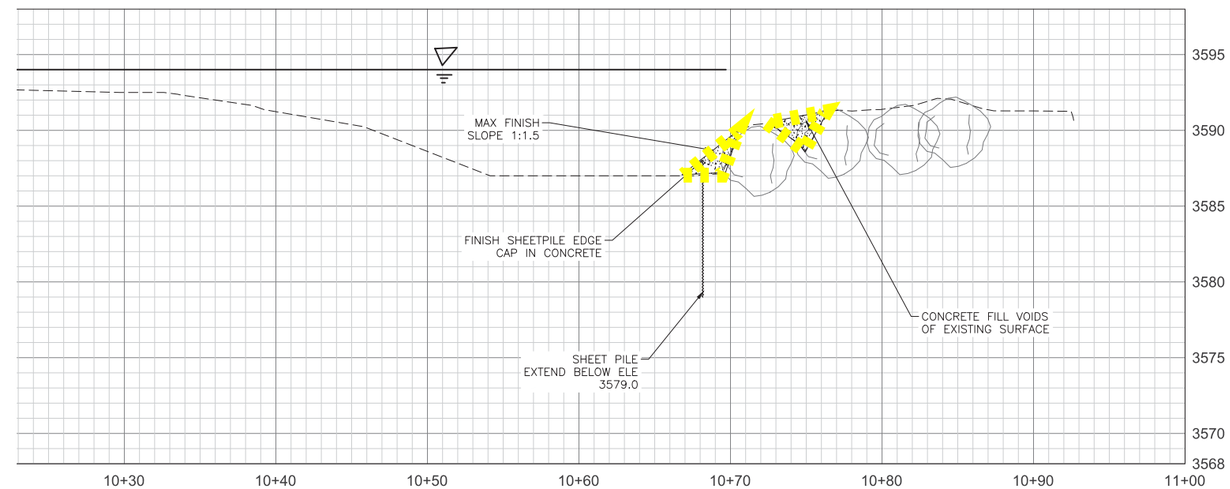
SHEET 12

FILE: C15960-W17-120

Plotted: Sep 22, 2016 – 2:22pm joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-120.dwg Layout Name: 120



PLAN



PROFILE 20' RIGHT OFFSET

Plotted: Sep 14, 2016 9:22am jason.carey Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop1 Plan and Profile (2)

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	JPC	9-13-16	DROP 4 FLOOR DESIGN

SURVEYED:
DESIGNED: JPC
DRAWN: JPC
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION.ORG
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE: SEPT 13, 2016

Bend Park & Recreation DISTRICT

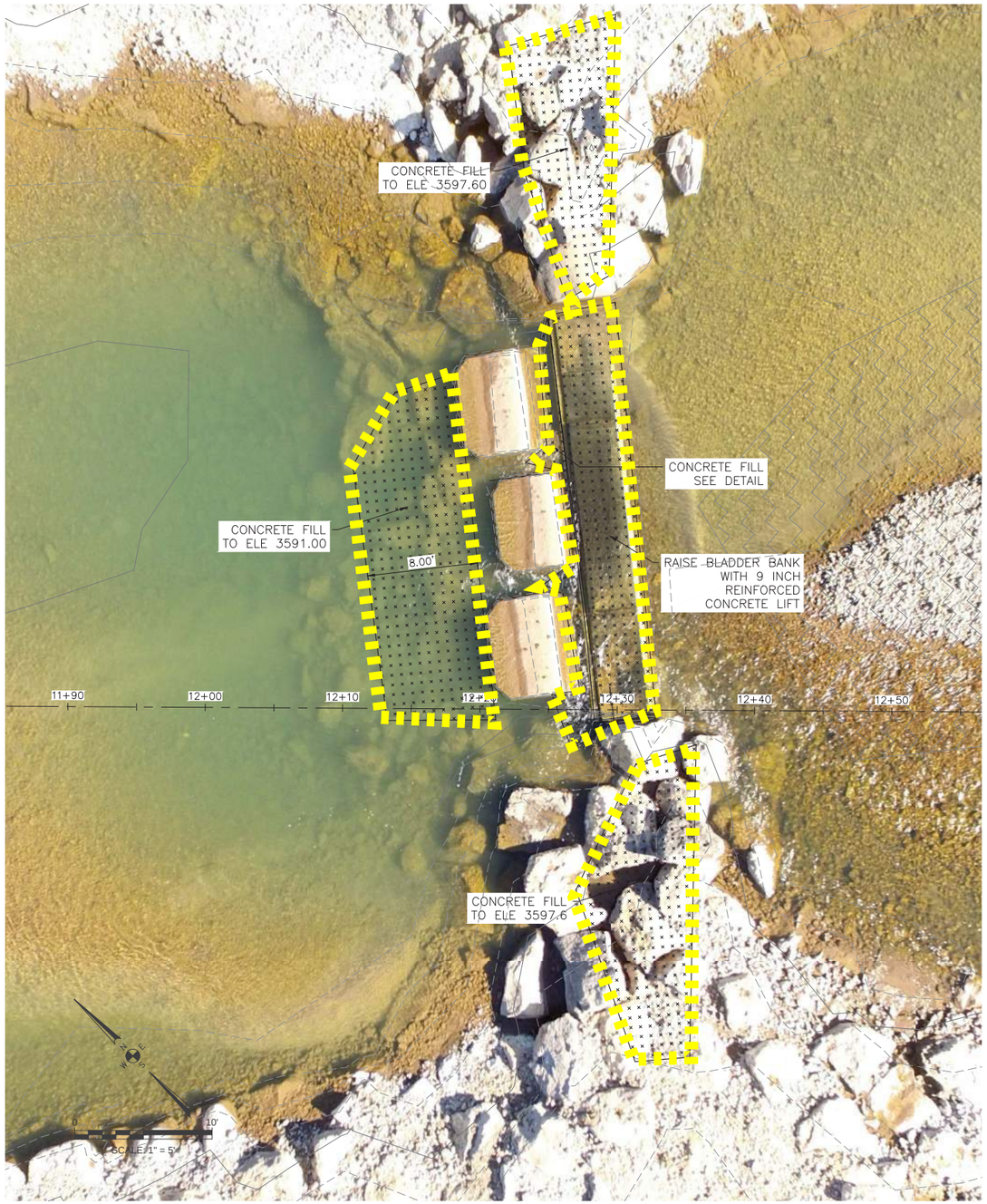
BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT

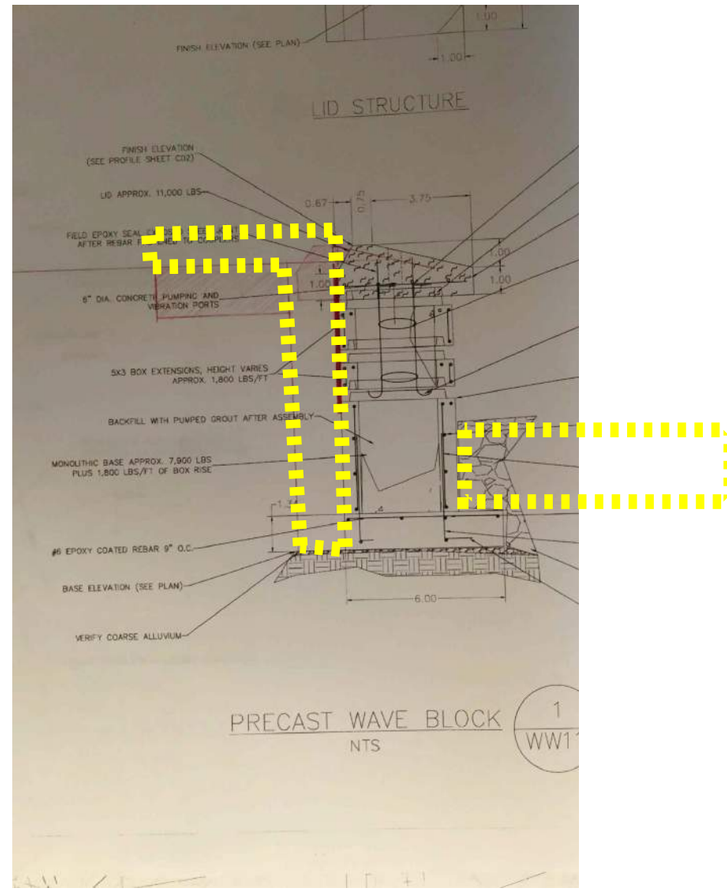
2016 DROP 1 MODIFICATION PLAN AND PROFILE

SHEET 7

FILE:



PLAN



DROP 2 VOID FILL DETAIL

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	JPC	9-13-16	DROP 2 WING RAISE
2	JPC	9-19-16	DROP 2 BLADDER BANK RAISE

SURVEYED:
DESIGNED: JPC
DRAWN: JPC
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: SEPT 13, 2016

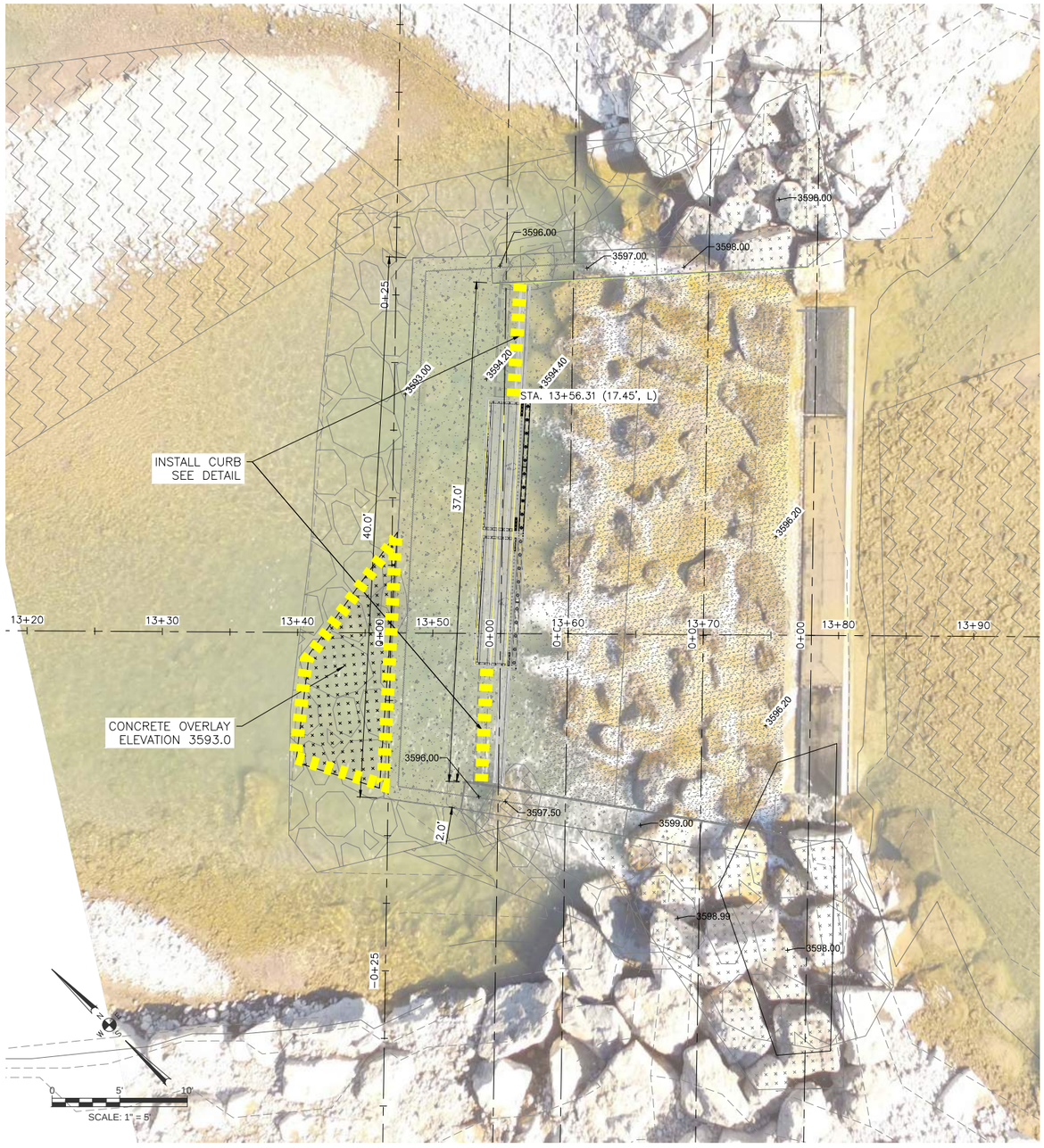
Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

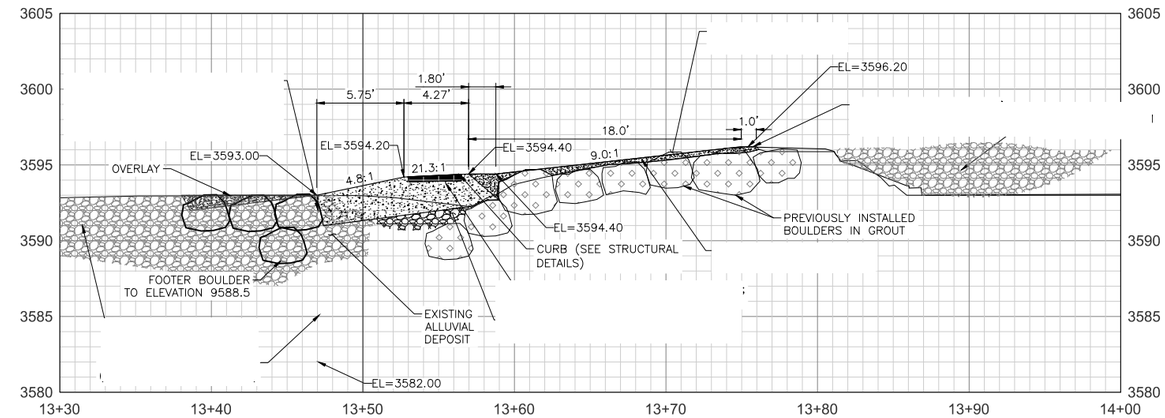
COLORADO DAM SAFE PASSAGE PROJECT
2016 DROP 2

SHEET 8 3
FILE:

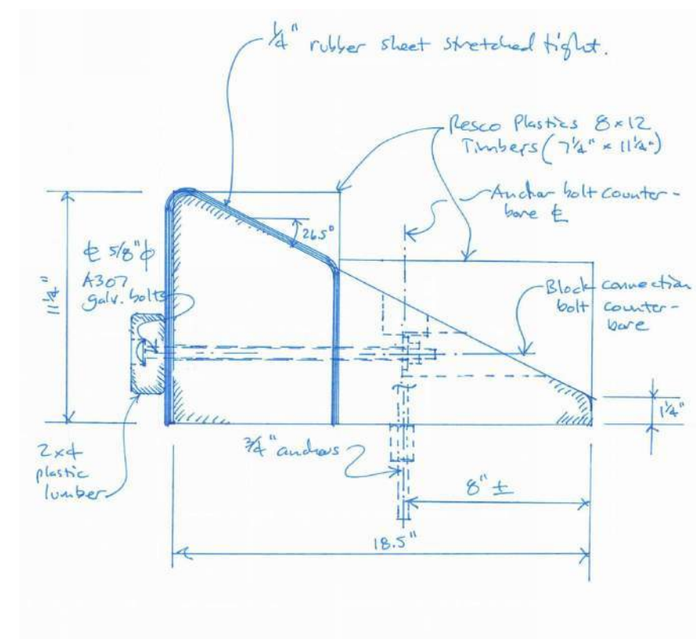
Plotted: Sep 22, 2016 - 1:19pm jason.carey Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop2 Plan and Profile (2)



PLAN



PROFILE



CURB DETAIL

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	SEP	9-13-14	DROP 3 RUNOUT OVERLAY

SURVEYED:
DESIGNED: JPC
DRAWN: SEP
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION.ORG
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 — 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE: SEPT 13, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

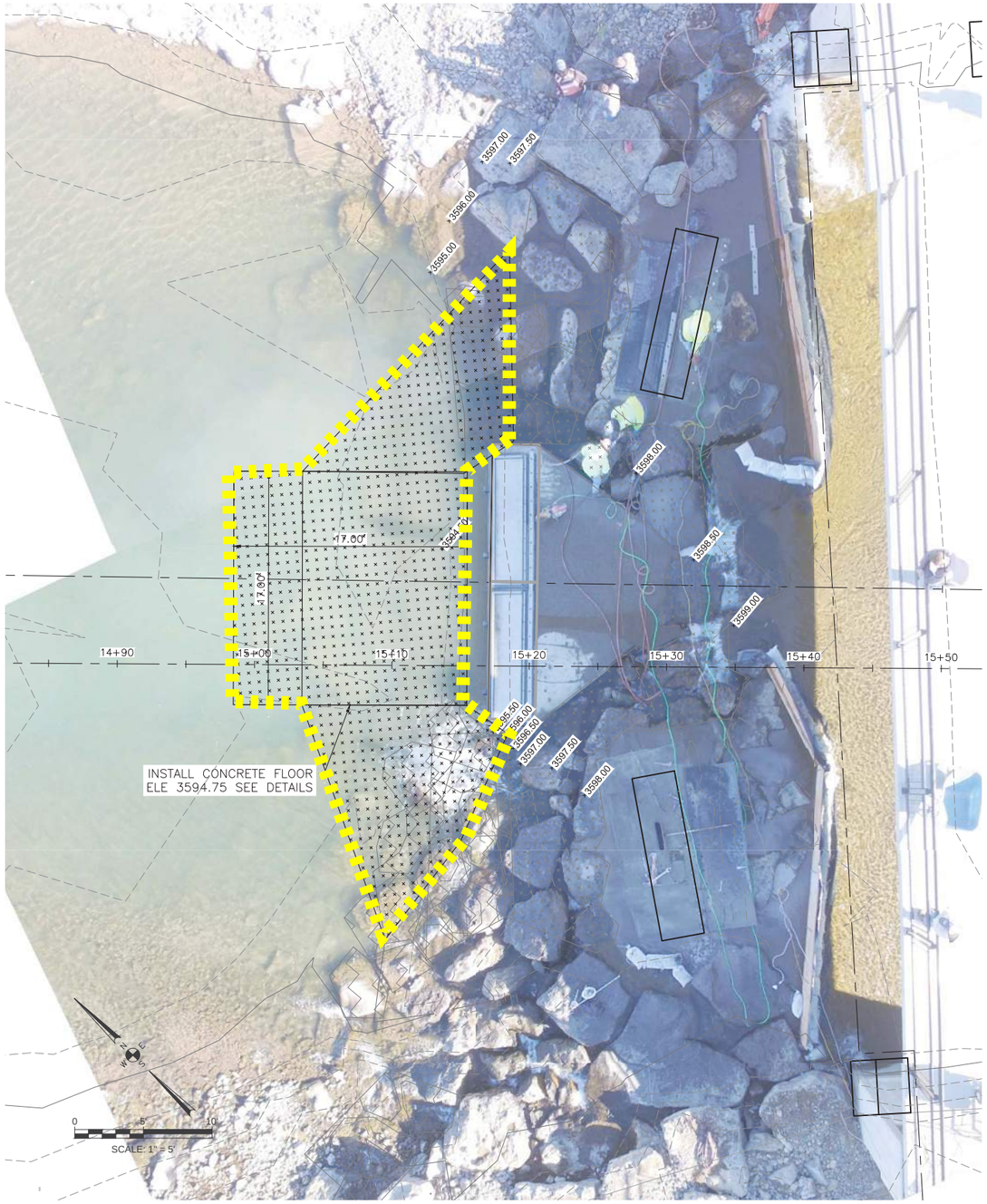
COLORADO DAM SAFE PASSAGE PROJECT

DROP 3 MODIFICATION
PLAN AND PROFILE

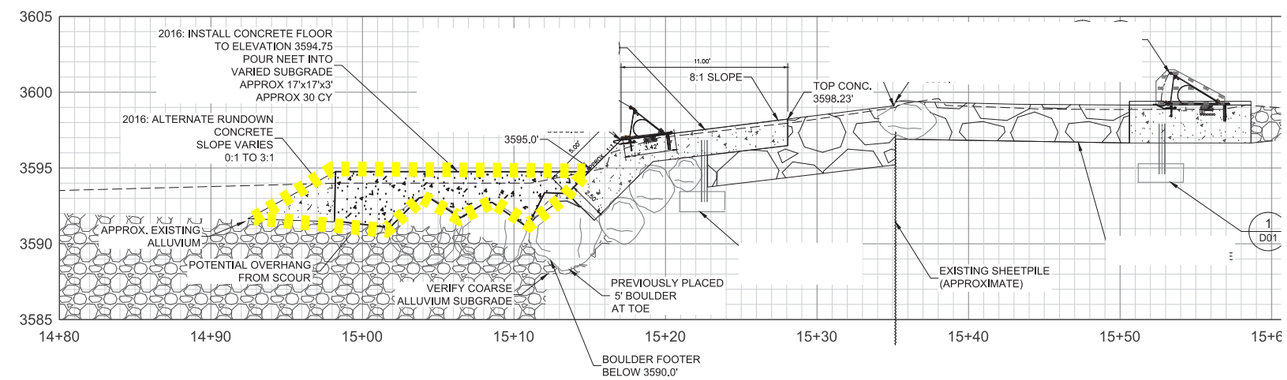
SHEET 9

FILE:

Plotted: Sep 15, 2016 – 3:33pm FRANCOIS Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop 3 Plan and Profile



PLAN



PROFILE

REVISIONS			
No.	BY	DATE	DESCRIPTION
1	JPC	9-13-16	DROP 4 FLOOR DESIGN

SURVEYED:
DESIGNED: JPC
DRAWN: JPC
CHECKED:
CRP No.
SCALE: AS SHOWN

RIVER RESTORATION CORP.
P.O. Box 248
Carbondale, CO 81623
www.RiverRestoration.org

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE: SEPT 13, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT

2016 DROP 4 MODIFICATION
PLAN AND PROFILE

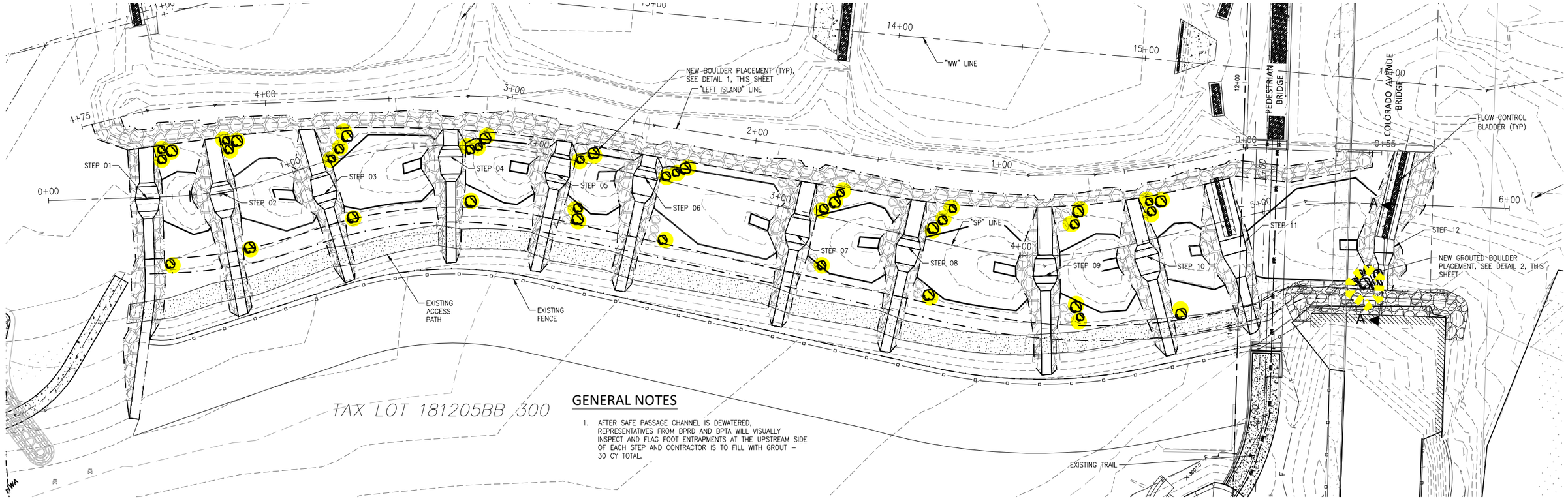
SHEET 10

FILE:

Plotted: Sep 22, 2016 - 1:27pm jason.carey Y:\02-Projects-RECREATION\OREGON\Bend\200-DRAWINGS\004-RR Working Drawings\Drop3and4Mod_Dec2015.dwg Layout Name: Drop4 Plan and Profile

XREF LIST
Ltscale: 1

Resolved
O960X191
O960X193_MCKAY
C960X001
C960X365
C960X465
C960X290
T960X800
C960X600
O960X192_MILLER
O960X190
C960X360
C960X900



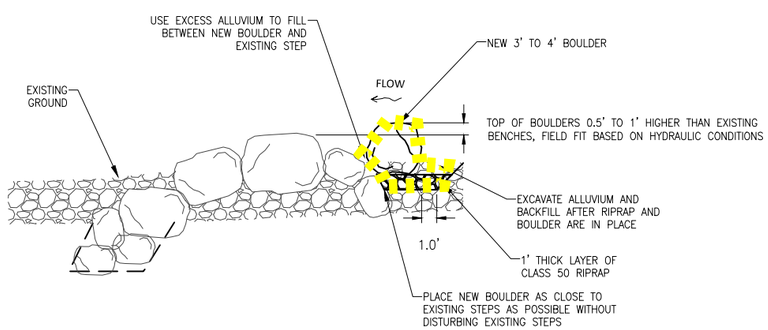
GENERAL NOTES

1. AFTER SAFE PASSAGE CHANNEL IS DEWATERED, REPRESENTATIVES FROM BPRD AND BPTA WILL VISUALLY INSPECT AND FLAG FOOT ENTRAPMENTS AT THE UPSTREAM SIDE OF EACH STEP AND CONTRACTOR IS TO FILL WITH GROUT – 30 CY TOTAL.

PLAN

SCALE: 1"=20'

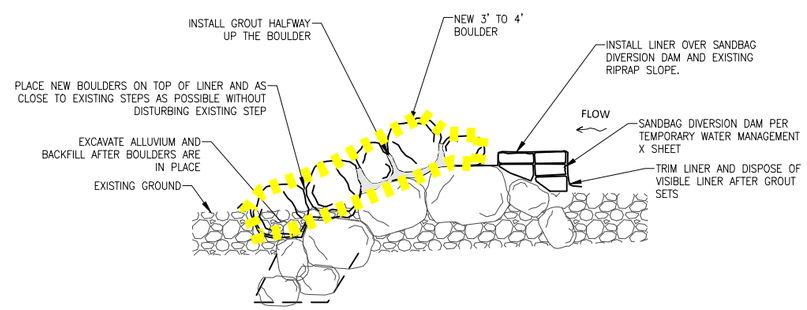
20' 0' 20' 40'
SCALE IN FEET



QUANTITIES:
30 CY – CLASS 50 RIPRAP
150 TON – 3' TO 4' BOULDERS (~50 BOULDERS TOTAL), INCLUDES 25% EXTRA FOR SELECTION

1 BOULDER PLACEMENT DETAIL

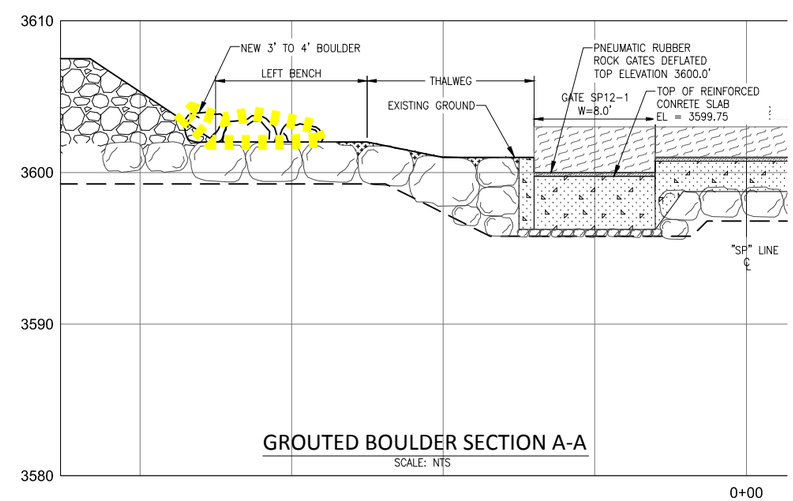
NTS



QUANTITIES:
10 CY – GROUT
24 TON – 3' TO 4' BOULDERS (~8 BOULDERS TOTAL), INCLUDES 25% EXTRA FOR SELECTION

2 GROUTED BOULDER PLACEMENT DETAIL

NTS



GROUTED BOULDER SECTION A-A

SCALE: NTS

REVISIONS			
No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011/12/13
DESIGNED: JMO
DRAWN: SLR
CHECKED: QLD
CRP No.
SCALE: 1"=20'

otak
Harwell Global Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING

DATE: September 15, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT

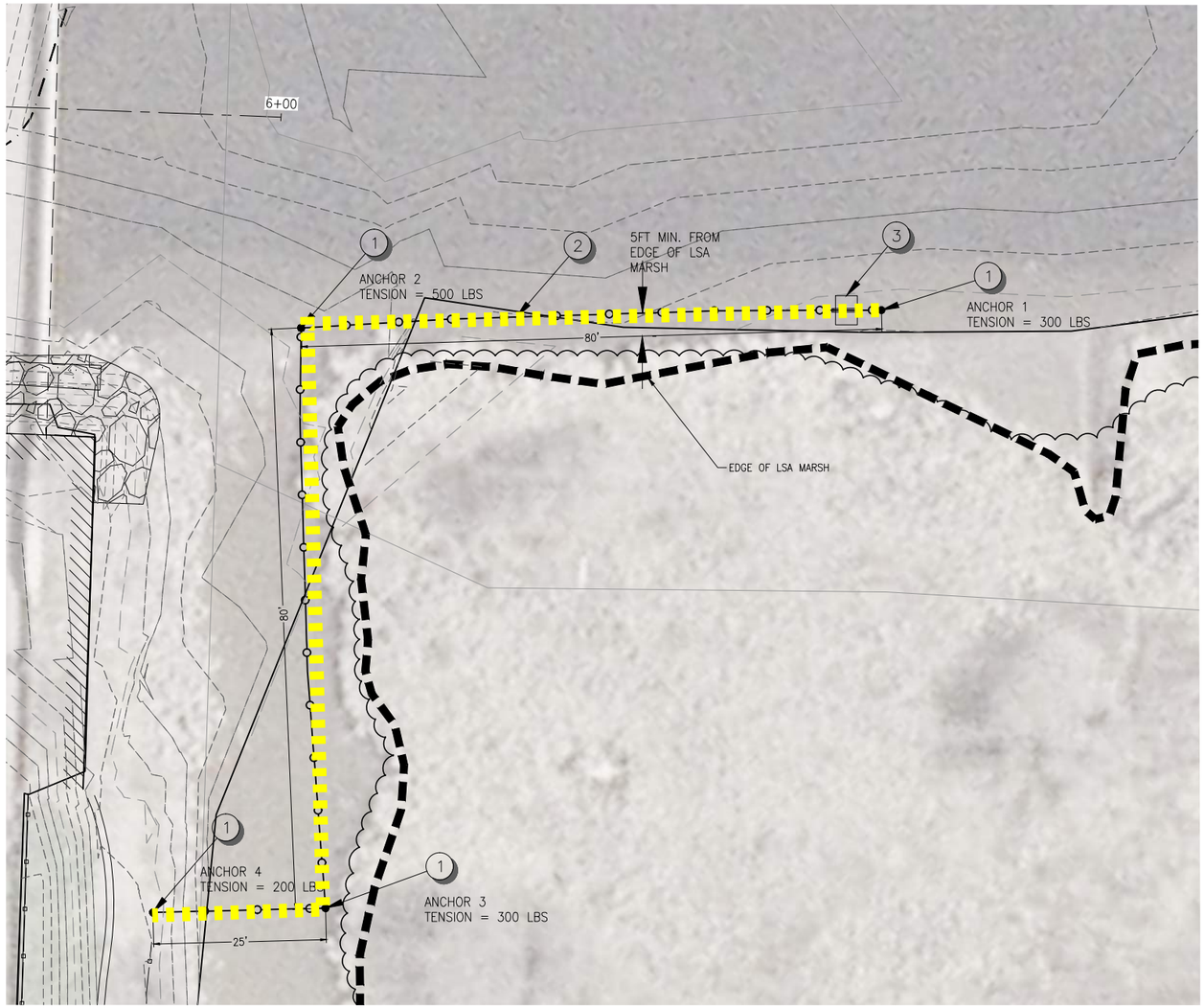
SAFE PASSAGE CHANNEL PLAN AND DETAILS Enclosure

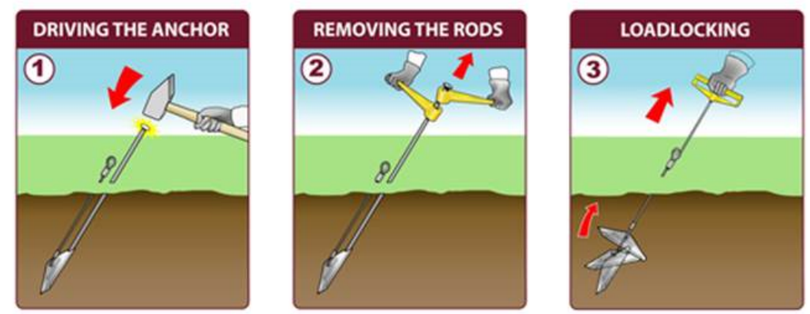
SHEET 11

FILE: C15960-W17-110

Plotted: Sep 30, 2016 – 12:41pm joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-110.dwg Layout Name: 110

XREF LIST
Ltscale: 1
Resolved
O960X191
O960X193_MCKAY
C960X001
C960X365
C960X465
C960X290
T960X800
C960X600
O960X192_MILLER
O960X190
C960X360
C960X900





CONSTRUCTION NOTES

1. CONSTRUCT CONTRACTOR DESIGNED ANCHOR SYSTEM TO HOLD TENSIONS AS SHOWN ON PLANS.
2. INSTALL 185 LF OF WORTHINGTON TUFFBUOY OR APPROVED EQUAL.
3. INSTALL SAFETYFLOAT INLINE WITH TUFFBOUY. ATTACH ANCHOR AND/OR TUFFBOUY AT CENTER LINE OF SAFETYFLOAT

GENERAL NOTES

TUFFBUOY TO CONSIST OF 13" DIAMETER, CABLE THROUGH, BROWN OVAL BUOY SPACED 5' ON CENTER. USE ⅜" VINYL COATED GALVANIZED CABLE WITH CLAMPS ON BOTH SIDES OF EACH BUOY TO PREVENT BUOY MIGRATION ALONG CABLE. CABLE SHALL BE CONTINUOUS FROM SAFETYFLOAT TO TERMINATION. INSTALLATION LENGTH DOES NOT INCLUDE ADDITIONAL CABLE OR CHAIN REQUIRED FOR ATTACHING TO ANCHORS.

SAFETYFLOAT SHALL HAVE FRAME SUITABLE FOR MOUNTING A 4'X4' SIGN, SIGN TO BE PROVIDED BY THE DISTRICT

CHAINS OR CABLES USED TO ATTACH ANCHORS TO TUFFBUOY SHALL BE INSTALLED WITH A MAXIMUM INCLINATION SLOPE OF 1H:1V FROM CHANNEL BED TO WATER SURFACE WITH ASSUMED WATER SURFACE ELEVATION OF 3604.5

10' 0' 10' 20'
SCALE IN FEET

PLAN
SCALE: 1"=10'

REVISIONS			
No.	BY	DATE	DESCRIPTION

NWP-2013-83/1

REGISTERED PROFESSIONAL ENGINEER 74834PE OREGON MAY 11, 2004 KEVIN JOHN TIMMINS
EXPIRES: 6/30/16

SURVEYED: 2011/12/13
DESIGNED: JMO
DRAWN: RCH
CHECKED: JMO
CRP No.
SCALE: 1"=10'

otak
Hanwell Global Partner
808 SW 3rd Ave., Ste. 300
Portland, OR 97204
Phone: (503) 287-6825
Fax: (503) 415-2304
www.otak.com

VERIFY SCALES
0 1"
BAR EQUALS INCH ON ORIGINAL DRAWING
DATE: September 16, 2016

Bend Park & Recreation DISTRICT

BEND PARK & RECREATION DISTRICT
799 SW COLUMBIA STREET
BEND, OREGON 97702
TEL:(541) 706-6155 FAX:(541) 388-5429

COLORADO DAM SAFE PASSAGE PROJECT
LSA MARSH BOOM PLAN AND DETAILS Enclosure

SHEET 12
FILE: C15960-W17-120

Plotted: Sep 30, 2016 - 1:06pm joshuao L:\Project\15900\15960\Dwg\Winter 2017 Mods\C15960-W17-120.dwg Layout Name: 120