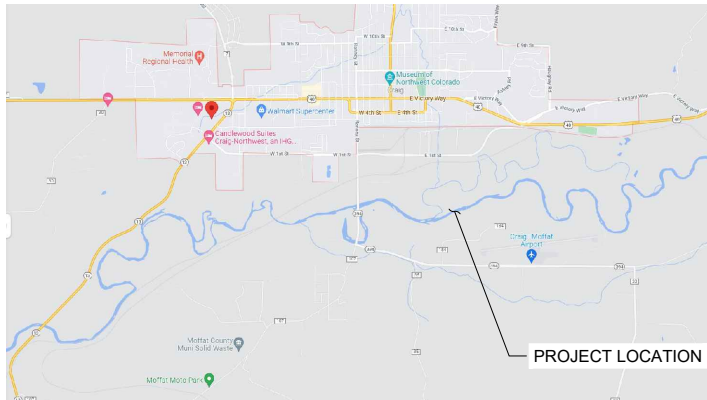


DIVERSION PARK IMPROVEMENTS PROJECT

MOFFAT COUNTY

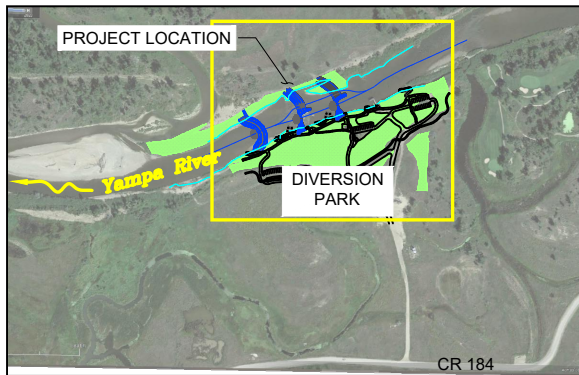
MAY 2022

PERMIT REVIEW SET



VICINITY MAP

SCALE: 1"=1,000' (FOR 22X34" SHEETS)



SITE PLAN

SCALE: 1"=500' (FOR 22X34" SHEETS)



PROJECT LOCATION:

LATITUDE 40°29'57.44"N  
LONGITUDE 107°32'11.86"W

MOFFAT COUNTY

PROJECT NOTES:

- RWE STAFF SHALL BE PRESENT FOR CONSTRUCTION OF KEY ASPECTS OF THIS PROJECT
- THESE DRAWINGS NOT INTENDED FOR PERMITTING, BIDDING OR CONSTRUCTION.
- CONTRACTOR SHALL COMPLY WITH ALL PERMIT CONDITIONS REFERENCED IN UNITED STATES ARMY CORPS OF ENGINEERS 404 PERMIT NUMBER: \_\_\_\_\_
- CONTRACTOR SHALL CONTACT AND FILE APPROPRIATE NOTIFICATION WITH COLORADO 811 PRIOR TO CONSTRUCTION.

IMPACT NOTES:

WETLAND REMEDIATION FACTOR: 0.33 ACRES  
INSTREAM WETLAND IMPACTS: 0.38 ACRES  
UPLAND WETLAND IMPACTS 0.68 ACRES  
PERMANENT STREAMBED IMPACTS 0.68 ACRES  
TEMPORARY IMPACTS FROM COFFERDAMS DURING CONSTRUCTION 1.54 ACRES  
LENGTH OF STREAM IMPACTED: 540 FT

WETLAND DELINEATION: OCTOBER 2018, OCTOBER 2021 AND APRIL 2022  
CRAIG WHITEWATER DIVERSION PARK AQUATIC RESOURCE DELINEATION  
CRAIG, MOFFAT COUNTY, COLORADO  
WESTWATER ENGINEERING 2516 FORESIGHT CIRCLE #1  
GRAND JUNCTION, COLORADO 81505

SURVEY NOTES:

ALL SURVEY WORK COMPLETED BY PETER EPP OF EPP & ASSOCIATES INC. PROFESSIONAL LAND SURVEYORS.

433 4TH AVENUE WEST  
PO BOX 837  
CRAIG, CO 81625

PHONE (970) 824-8236  
FAX (970) 824-5227

PROJECT OWNER:

CITY OF CRAIG  
C/O PETER BRIXIUS CITY MANAGER  
300 W 4TH STREET  
CRAIG, COLORADO, 81625  
970-826-2000

ENGINEER OF RECORD:

SHANE SIGLE, P.E.  
RIVERWISE ENGINEERING, LLC  
PO BOX 706  
DURANGO, CO 81302  
303-808-7734  
INFO@RIVERWISE.ORG

SHEET INDEX:

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C-03	OVERVIEW PLAN
C-04	PROJECT STAGING PLAN
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C-06	STREAMBED AND WETLANDS IMPACTS
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T-07	SPECIFICATIONS (1)
T-08	SPECIFICATIONS (2)

ABBREVIATIONS:

AVG	AVERAGE	N	NORTH
DTL	DETAIL	NTS	NOT TO SCALE
E	EAST	OC	ON CENTER
ELEV	ELEVATION	OHWM	ORDINARY HIGH WATER MARK
FT	FEET	SHT	SHEET
IN	INCHES	STA	STATION
MAX	MAXIMUM	STD	STANDARD
MIN	MINIMUM	TYP	TYPICAL



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CITY OF CRAIG  
C/O Peter Brixius, City Manager  
300 West 4th Street  
Craig, CO 81625

DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
TABLE OF CONTENTS

REVISIONS:	
NO.	DATE
DESIGNED: SS, AR	DRAFTED: AR, RG
CHECKED: SS	
PLOT DATE:	5/11/22

DRAWING NO.

C-01

SHEET C-01 OF 21

Craig Diversion Park Structure Improvements Yampa River, Craig, Colorado Conceptual Cost Estimate Instream Improvements				
Item Number	Work Item	Estimated Quantity	Unit	Description
1	Mobilization	1	L.S.	Includes all costs associated with mobilization for all staging areas including, but not limited to, staging area preparation, vehicle tracking control, bonding, BMP's, waste borrow, topsoil storage, fuel storage, fencing, stormwater controls, clearing and grubbing, access roads, machinery transportation, staging, removal of all machinery, and restoration of all impacted areas. Includes seeding and monitoring. No other items associated with mobilization and demobilization will be paid. Includes miscellaneous items needed for the project that are not incidental to other items and not specifically noted as items.
2	Cofferdam Installation and Removal	3	L.S.	Includes installation, boltering, maintenance, and removal of all cofferdams associated with the instream structures, as noted in the drawings.
3	Safety Closure	450	L.F.	Pay item is to cover temporary fencing, gates, barricades and closure material placement, maintenance, and removal during construction project. These closures shall be designed to protect the public from the construction area.
4	Silt Fencing	600	L.F.	Includes acquisition, placement, maintenance, and removal of silt fencing surrounding, and/or within the south staging area.
5	Dam Demolition	1	L.S.	Includes demolition and replacement of deteriorating existing weir as needed
Access Points				
6	Put In One Rock Terracing	206	Cubic Yards Grouled Rock	Includes acquisition of boulders, transport, placement as directed and noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
7	Put In One Concrete Trail	15	Cubic Yards Concrete	Includes forming, approval by RWE representative, placement of concrete, cold-weather precautions (if needed), scribing to boulders at edges, broom finish, control joints to be 8' o.c., finishing, testing, modifications, and final approval by RWE representative.
8	Put In One Concrete Trail Subgrade	31	Cubic Yards	Includes subgrade preparation as noted in the drawings and specifications as approved by RWE representative
9	Put In Two Rock Terracing	114	Cubic Yards Grouled Rock	Includes acquisition of boulders, transport, placement as directed and noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
10	Put In Two Concrete Trail	12	Cubic Yards Concrete	Includes forming, approval by RWE representative, placement of concrete, cold-weather precautions (if needed), scribing to boulders at edges, broom finish, control joints to be 8' o.c., finishing, testing, modifications, and final approval by RWE representative.
11	Put In Two Concrete Trail Subgrade	24	Cubic Yards	Includes subgrade preparation as noted in the drawings and specifications as approved by RWE representative
12	Take Out Terracing	136	Cubic Yards Grouled Rock	Includes acquisition of boulders, transport, placement as directed and noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
13	Take Out Concrete Trail	11	Cubic Yards Concrete	Includes forming, approval by RWE representative, placement of concrete, cold-weather precautions (if needed), scribing to boulders at edges, broom finish, control joints to be 8' o.c., finishing, testing, modifications, and final approval by RWE representative.
14	Take Out Concrete Trail Subgrade	21	Cubic Yards	Includes subgrade preparation as noted in the drawings and specifications as approved by RWE representative
15	Stabilization and Revegetation.	1	L.S.	Includes the acquisition of all trees, shrubs, ground covers, seeding with soil prep and fine grading within 1" of finished grade. To include plant basins, fertilizer and staking, pre-emergent weed control, required mulch and 1 year warranty from date of installation.
Amphitheater 1				
16	Boulder Fill: Includes excavation/fill, placement, grouting, and backfill.	75	Cubic Yards Grouled Rock	Includes acquisition of boulders, transport, placement as directed, preparation for grouting, grouting, finishing the grout surface as noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
Amphitheater 2				
17	Boulder Fill: Includes excavation/fill, placement, grouting, and backfill.	86	Cubic Yards Grouled Rock	Includes acquisition of boulders, transport, placement as directed, preparation for grouting, grouting, finishing the grout surface as noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
Terracing				
18	Boulder Fill: Includes excavation/fill, placement, grouting, and backfill.	617	Cubic Yards	Includes acquisition of boulders, transport, placement as directed and noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
Structure 1				
19	Boulder Fill: Includes excavation/fill, placement, grouting, and backfill. Includes 20% recycled existing material.	765	Cubic Yards Grouled Rock	Includes acquisition of boulders, transport, placement as directed, preparation for grouting, grouting, finishing the grout surface as noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
20	Fill Between Sills: Type VH Riprap	1360	Cubic Yards	Includes acquisition of Riprap, transport, placement as directed and noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading as approved by RWE representative
21	Concrete - Low Flow	13	Cubic Yards Concrete	Includes subgrade preparation, forming, approval by RWE representative, placement of concrete, cold-weather precautions (if needed), finishing, testing, modifications, and final approval by RWE representative.
22	Subgrade: 3"-6" angular cobble, 24" depth.	639	Cubic Yards	Includes subgrade preparation as noted in the drawings and specifications as approved by RWE representative
23	Pool Armoring: Type VH Riprap	333	Cubic Yards	Includes acquisition, transport, placement as directed and final grading.
Structure 2				
24	Boulder Fill: Includes excavation/fill, placement, grouting, and backfill.	724	Cubic Yards Grouled Rock	Includes acquisition of boulders, transport, placement as directed, preparation for grouting, grouting, finishing the grout surface as noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
25	Fill Between Sills: Type VH Riprap	1351	Cubic Yards	Includes acquisition of Riprap, transport, placement as directed and noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading as approved by RWE representative
26	Concrete - Low Flow	13	Cubic Yards Concrete	Includes subgrade preparation, forming, approval by RWE representative, placement of concrete, cold-weather precautions (if needed), finishing, testing, modifications, and final approval by RWE representative.
27	Subgrade: 3"-6" angular cobble, 24" depth.	322	Cubic Yards	Includes subgrade preparation as noted in the drawings and specifications as approved by RWE representative
28	Pool Armoring: Type VH Riprap	333	Cubic Yards	Includes acquisition, transport, placement as directed and final grading.
Structure #3 Constructed Riffle Fish Passage				
29	Boulder Fill: Includes excavation/fill, placement, and backfill of 3' boulders	567	Cubic Yards	Includes acquisition of boulders, transport, placement as directed and noted in the drawings and specifications, testing, modifications as noted in the bid narrative, and final grading.
30	Subgrade: 3"-6" angular cobble, 24" depth.	926	Cubic Yards	Includes subgrade preparation as noted in the drawings and specifications as approved by RWE representative
31	Pool Armoring: Type VH Riprap	333	Cubic Yards	Includes acquisition, transport, placement as directed and final grading.
Miscellaneous				
32	Random Boulders: Includes acquisition and placement of 8' boulders.	6	Each	Includes acquisition of boulders, transport, placement as directed, preparation of subgrade, and re-placement/tuning of location as the project progresses. It should be expected that the boulders will be moved and tuned as the project progresses.
33	Relocate and Extend Existing Storm Drain	80	Feet	Includes acquisition of 18" RCP, transport, placement as directed, preparation of subgrade, and backfill.
34	Enhanced fencing and security around intake structure	1	L.S.	Pay item is to cover permanent fencing, gates, barricades around the existing intake structure as noted in the drawings and specifications.
35	Signage	1	L.S.	Includes the acquisition and installation of 11 signs. Architect will work with sign supplier, and contractor will be responsible for submittals to approve art work by sign supplier. Footing and installation to be included under this line item.
36	Miscellaneous Equipment Hours	60	Hours	Includes use of 300 series or larger (approx. 60,000 lbs. or greater) trackhoe as directed by an RWE representative. No work shall occur under this item unless approved by RWE representative in writing.

PAY ITEM DESCRIPTIONS



RIVERWISE  
ENGINEERING, LLC  
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PROJECT OWNER:  
  
CITY OF CRAIG  
c/o Peter Brixius, City Manager  
300 West 4th Street  
Craig, CO 81625

DIVERSION PARK IMPROVEMENTS PROJECT

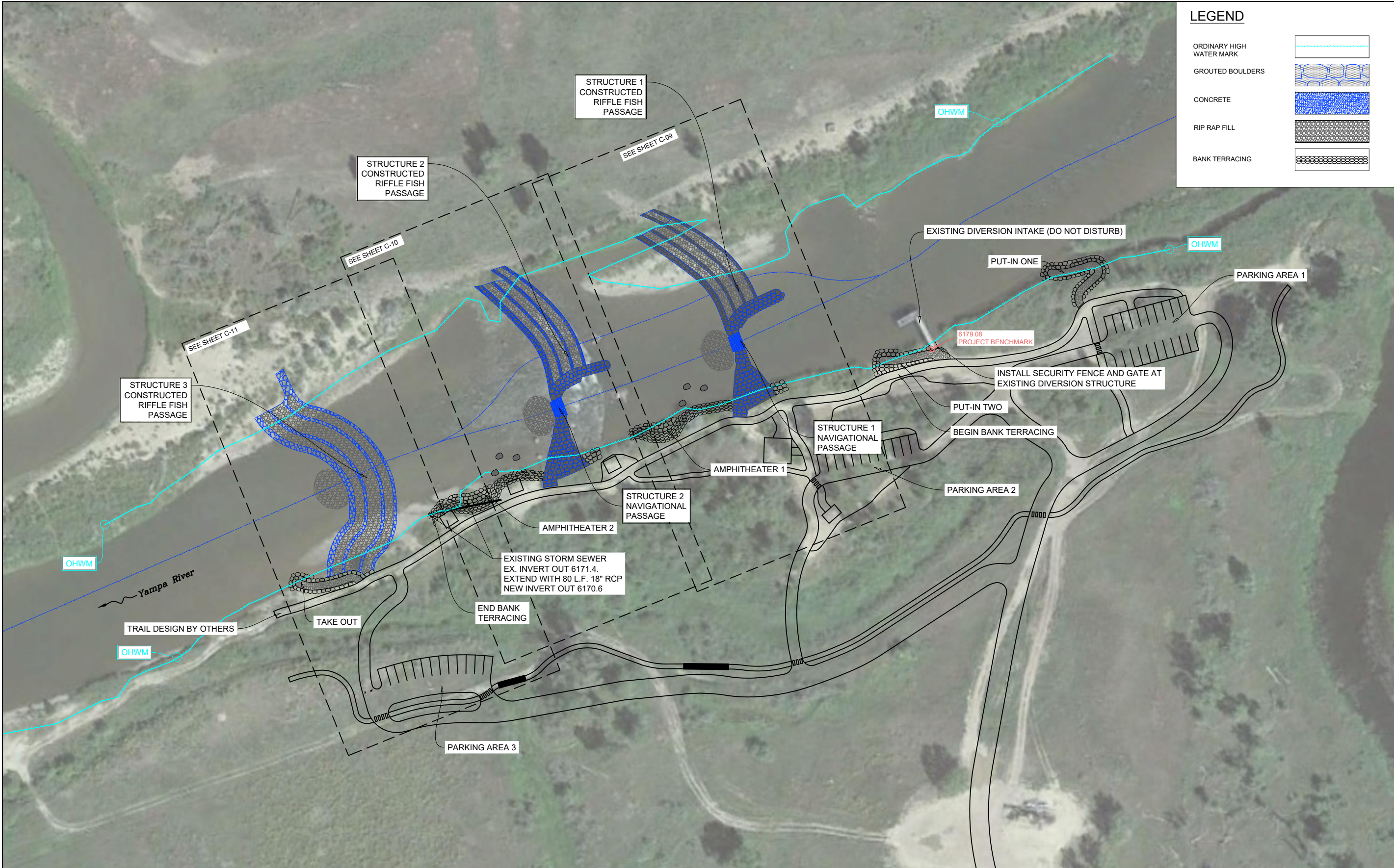
SS, AR

YAMPA RIVER, MOFFAT COUNTY

PAY ITEM DESCRIPTIONS

REVISIONS:	
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PLOT DATE: 5/11/22	
DRAWING NO.	
C-02	
SHEET C-02 OF 21	



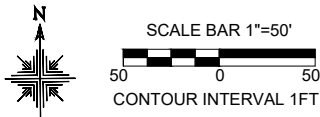


LEGEND

ORDINARY HIGH WATER MARK	
GROUTED BOULDERS	
CONCRETE	
RIP RAP FILL	
BANK TERRACING	

OVERVIEW PLAN

SCALE: 1"=50'



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DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
OVERVIEW PLAN

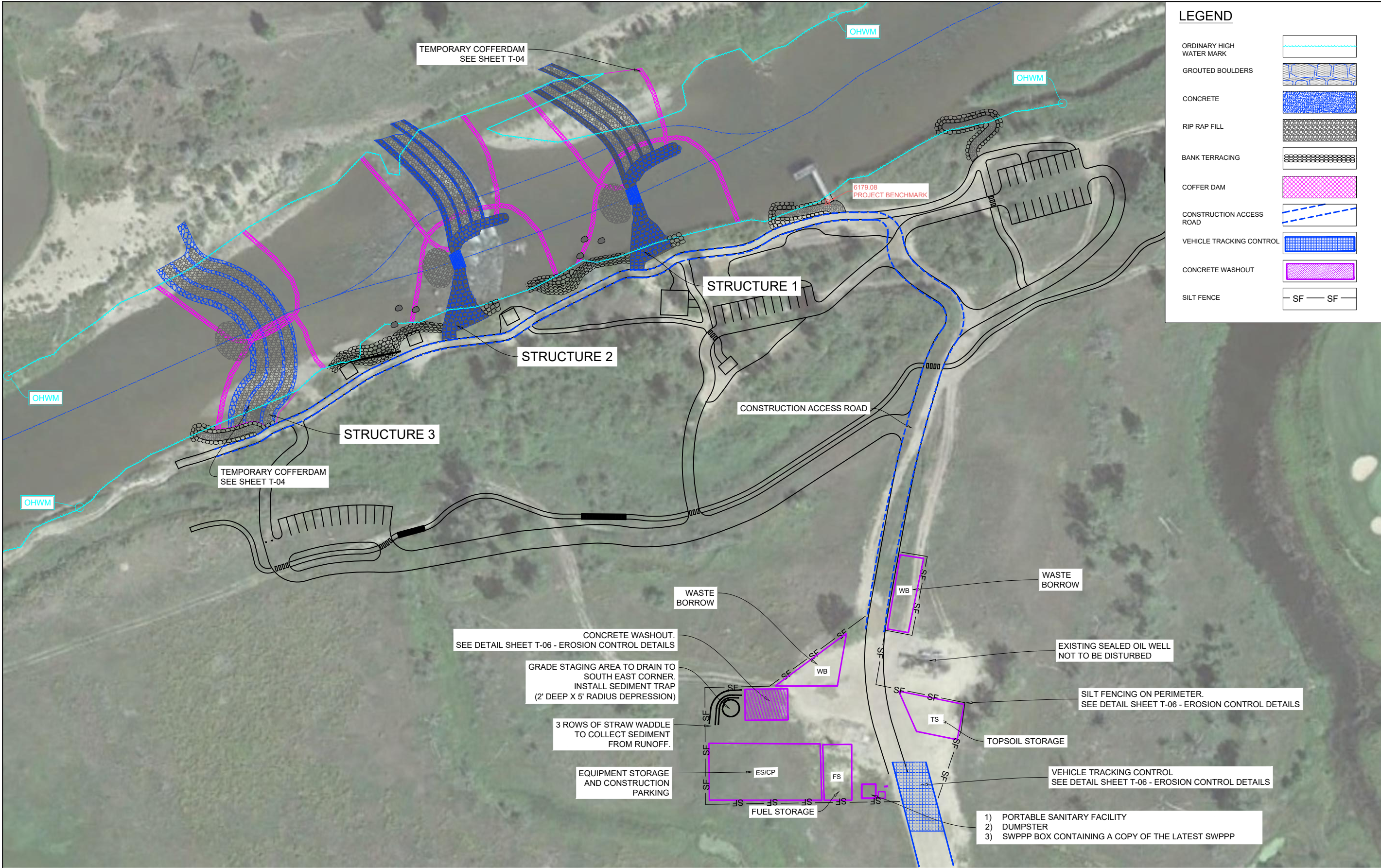
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PLOT DATE:	5/11/22

DRAWING NO.

C-03

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LEGEND

ORDINARY HIGH WATER MARK	
GROUTED BOULDERS	
CONCRETE	
RIP RAP FILL	
BANK TERRACING	
COFFER DAM	
CONSTRUCTION ACCESS ROAD	
VEHICLE TRACKING CONTROL	
CONCRETE WASHOUT	
SILT FENCE	



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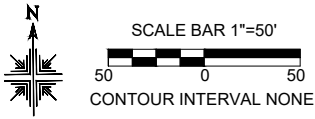
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Craig, CO 81625

DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
PROJECT STAGING PLAN

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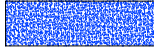
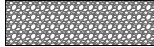





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**C-04**  
SHEET C-04 OF 21

PROJECT STAGING PLAN  
SCALE: 1"=50'

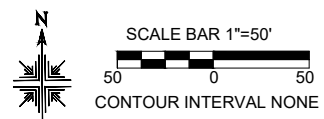




# LEGEND

ORDINARY HIGH WATER MARK	
GROUTED BOULDERS	
CONCRETE	
RIP RAP FILL	
BANK TERRACING	
CONSTRUCTED RIFFLE FISH PASSAGE	
COFFER DAM	
AREA OF POTENTIAL EFFECTS (APE)	
CONSTRUCTION BOUNDARY	

SCALE: 1"=50'






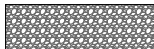
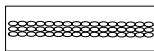


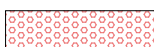

DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY





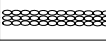




## AREA OF POTENTIAL EFFECTS

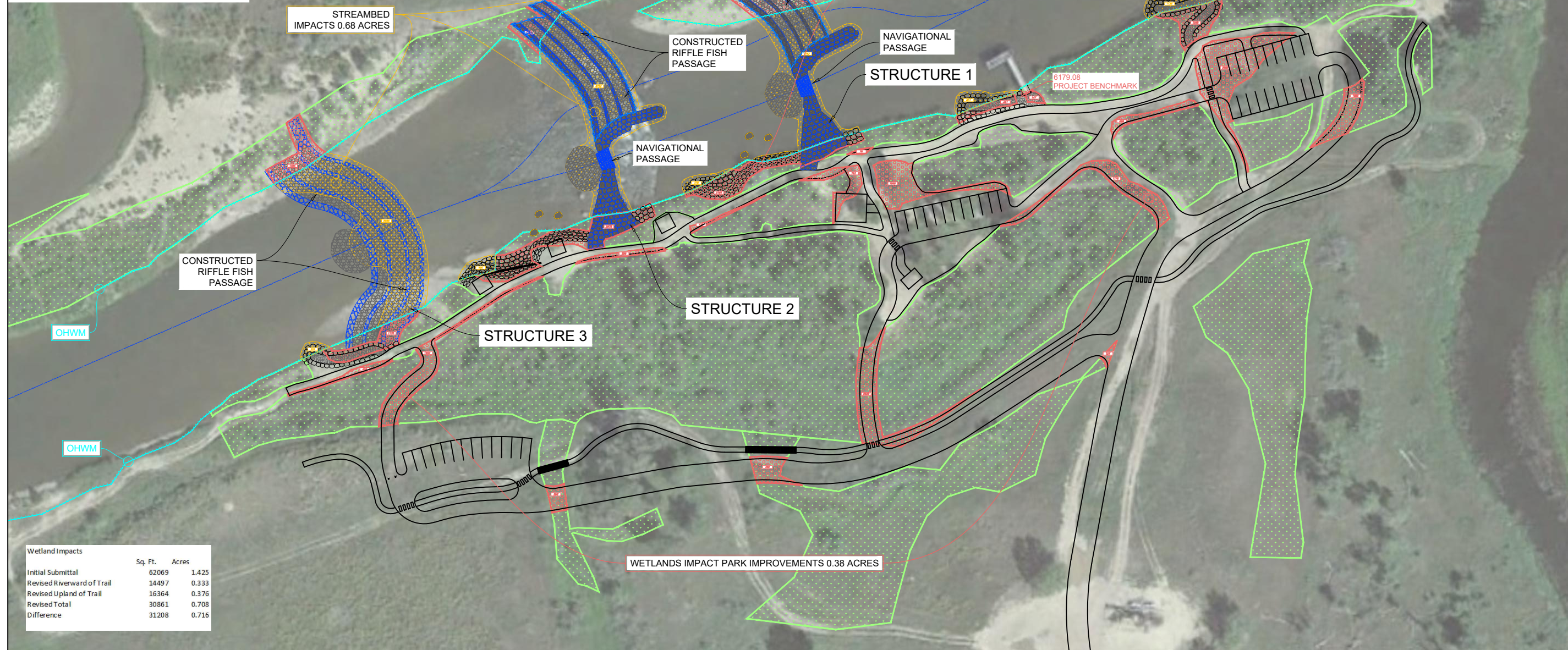
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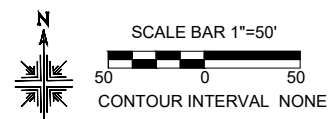
# LEGEND

ORDINARY HIGH WATER MARK	
GROUTED BOULDERS	
CONCRETE	
RIP RAP FILL	
BANK TERRACING	
CONSTRUCTED RIFFLE FISH PASSAGE	
EXISTING WETLANDS	
WETLANDS IMPACT	
STREAMBED IMPACTS	

ORDINARY HIGH WATER MARK	
GROUTED BOULDERS	
CONCRETE	
RIP RAP FILL	
BANK TERRACING	
CONSTRUCTED RIFFLE FISH PASSAGE	
EXISTING WETLANDS	
WETLANDS IMPACT	
STREAMBED IMPACTS	



SCALE: 1"=50'



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PROJECT OWNER:  
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Craig, CO 81625

# DIVERSION PARK IMPROVEMENTS PROJECT

## YAMPA RIVER, MOFFAT COUNTY

## S | REAMBED AND WETLANDS IMPACTS

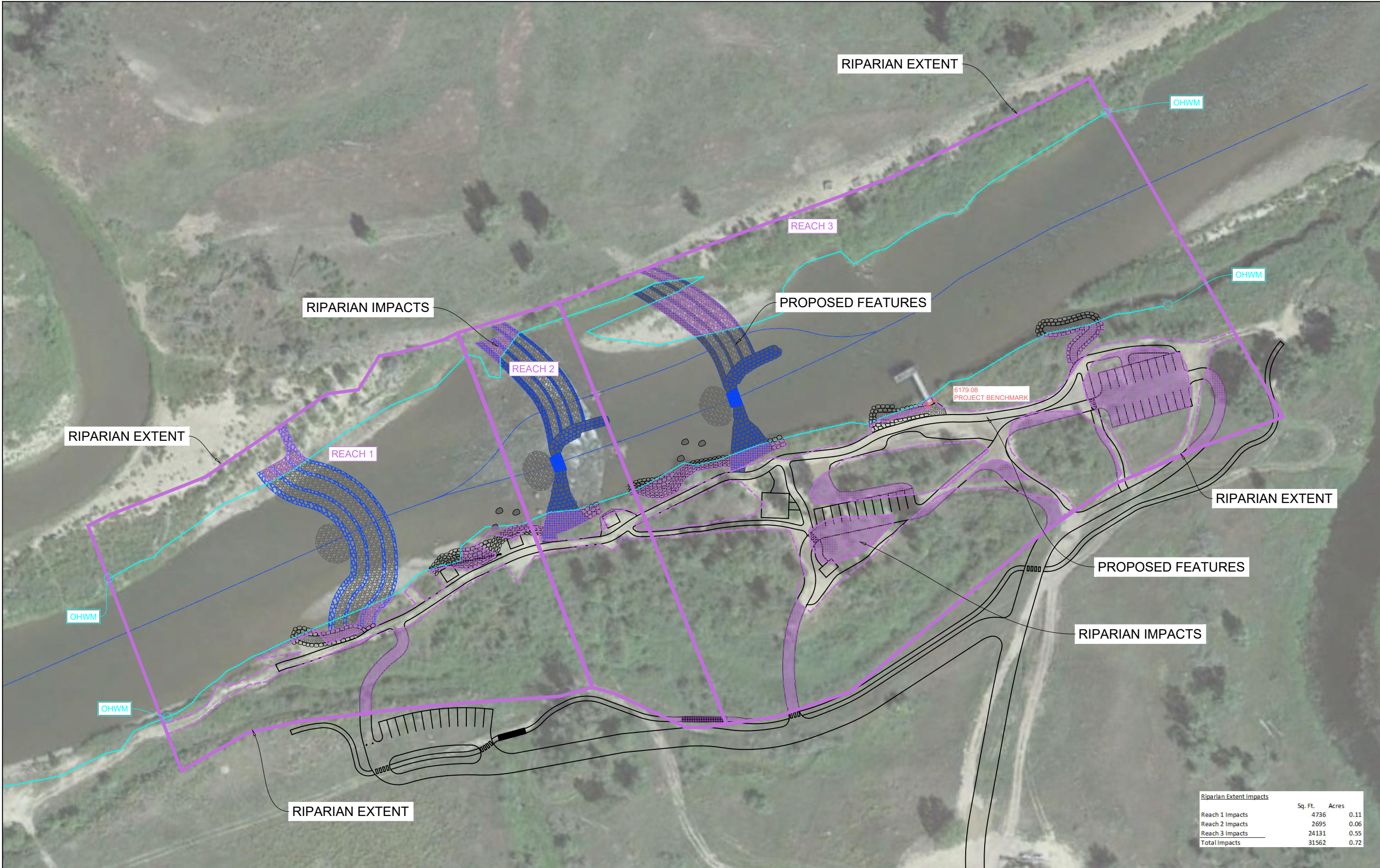
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**C-06**

SHEET C-06 OF 21

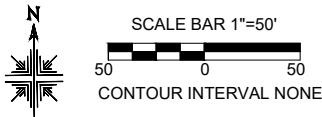




Riparian Extent Impacts		
	Sq. Ft.	Acres
Reach 1 Impacts	4736	0.11
Reach 2 Impacts	2695	0.06
Reach 3 Impacts	24131	0.55
Total Impacts	31562	0.72

RIPARIAN IMPACTS FOR CSQT ANALYSIS

SCALE: 1"=50'



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DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY

RIPARIAN IMPACTS FOR CSQT ANALYSIS

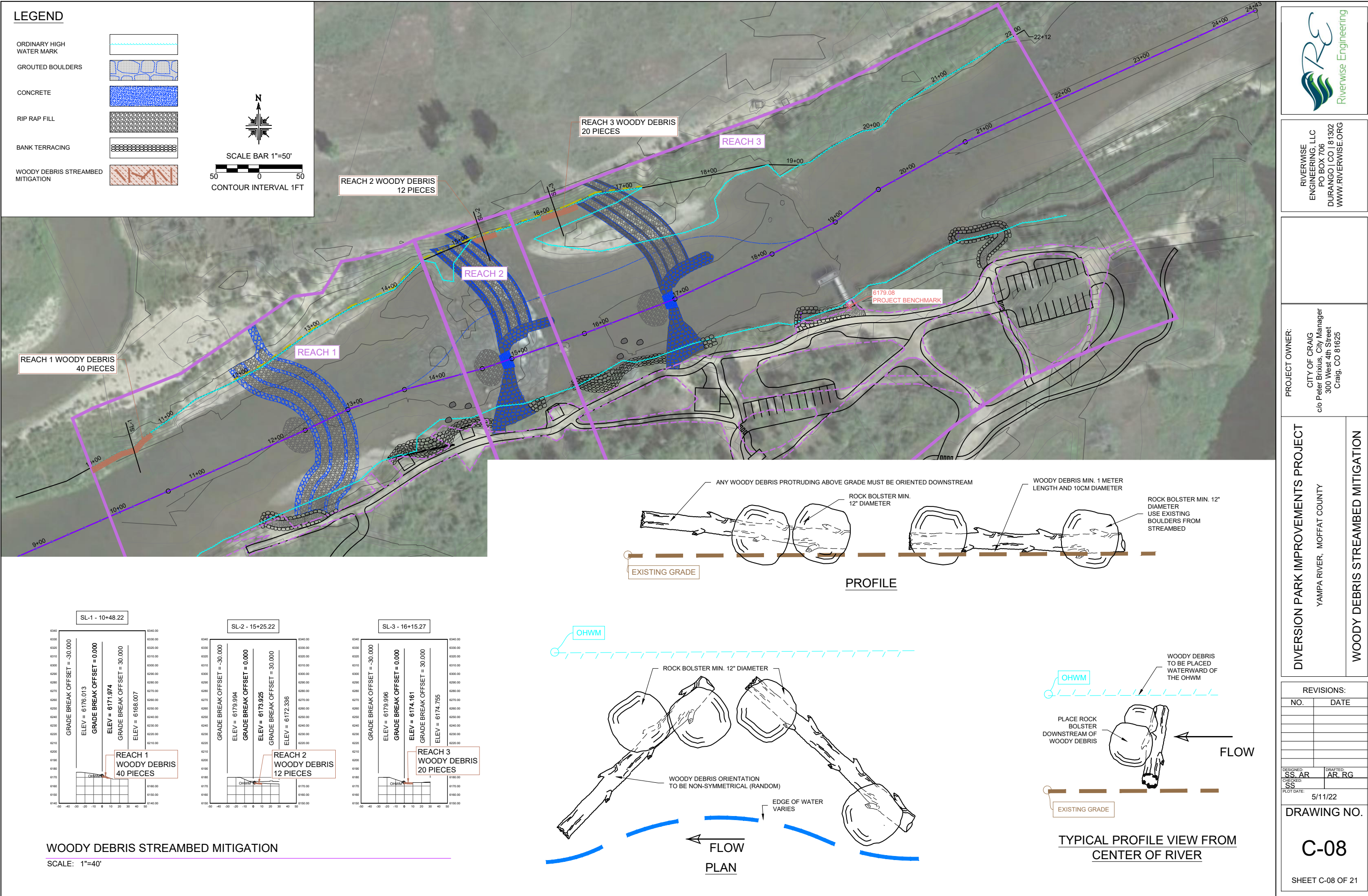
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PLOT DATE:	5/11/22

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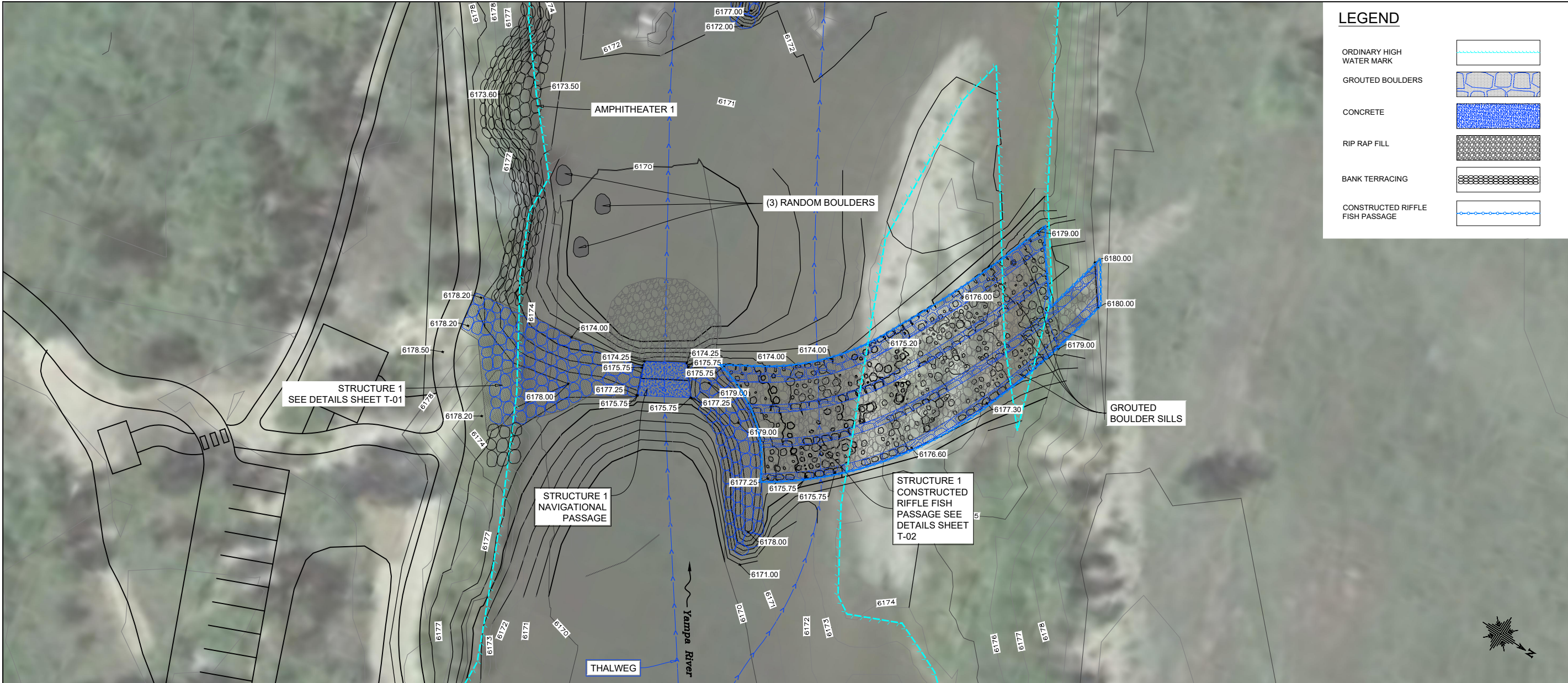
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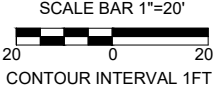
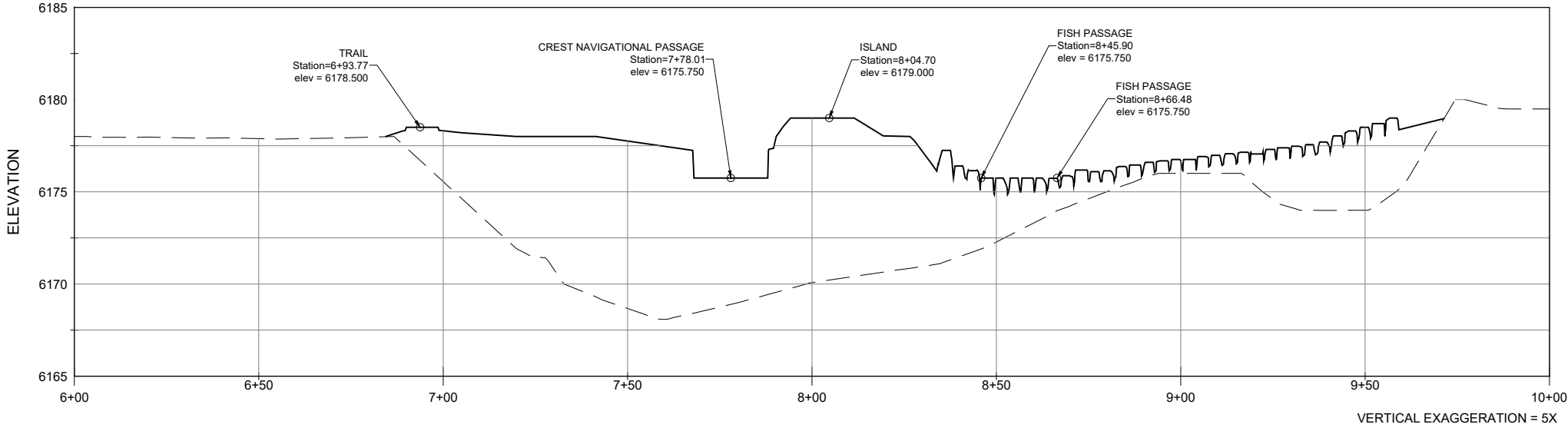




STRUCTURE 1 PLAN VIEW (20 SCALE)

SCALE: 1"=20'

STRUCTURE 1 - CREST (SECTION LOOKING DOWNSTREAM)



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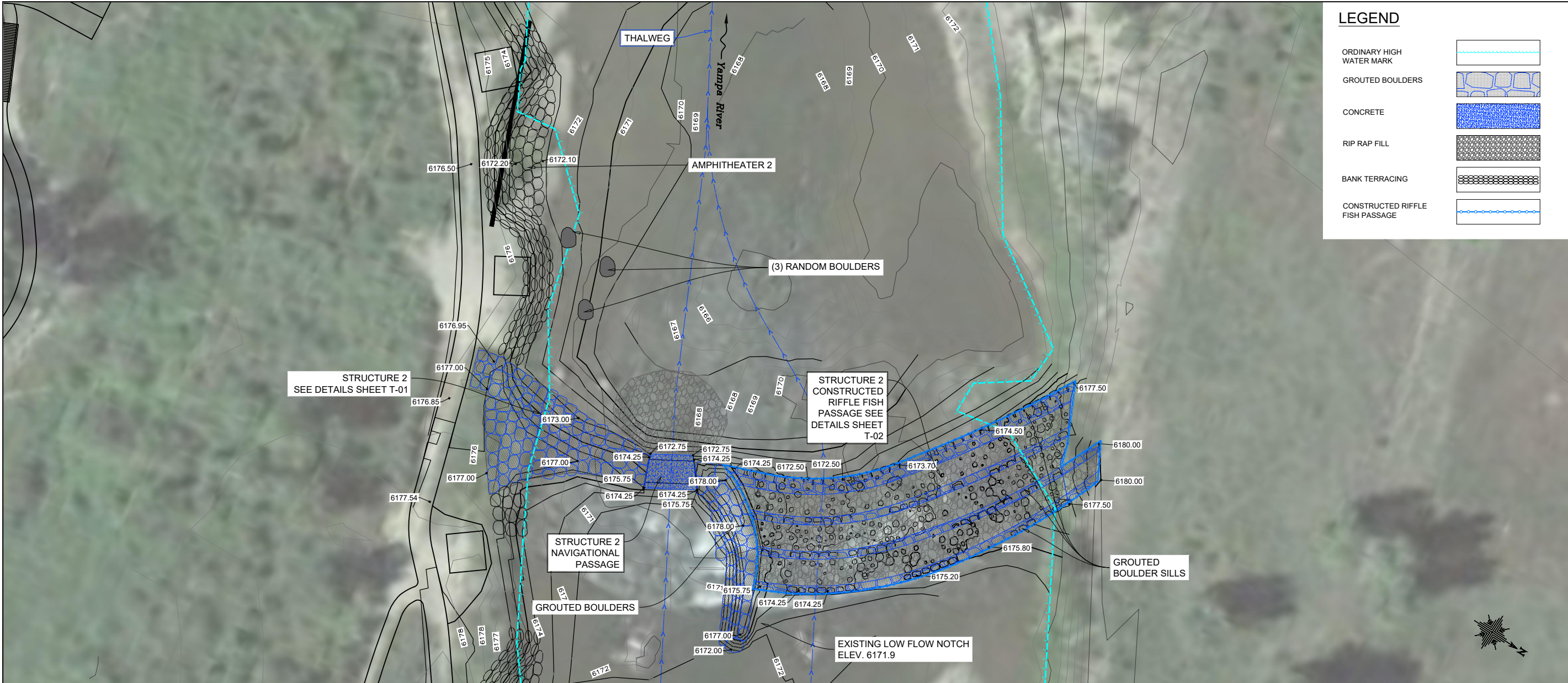
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300 West 4th Street  
Craig, CO 81625

DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
STRUCTURE 1 PLAN VIEW (20 SCALE)

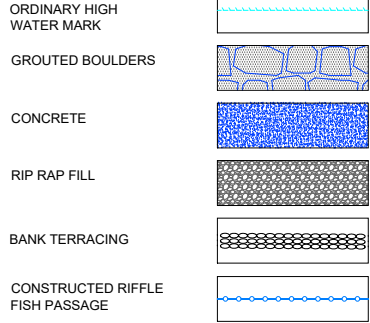
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CHECKED: SS	
PLOT DATE:	5/11/22

DRAWING NO.  
**C-09**  
SHEET C-09 OF 21





LEGEND



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DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
STRUCTURE 2 PLAN VIEW (20 SCALE)

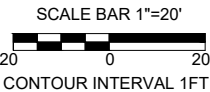
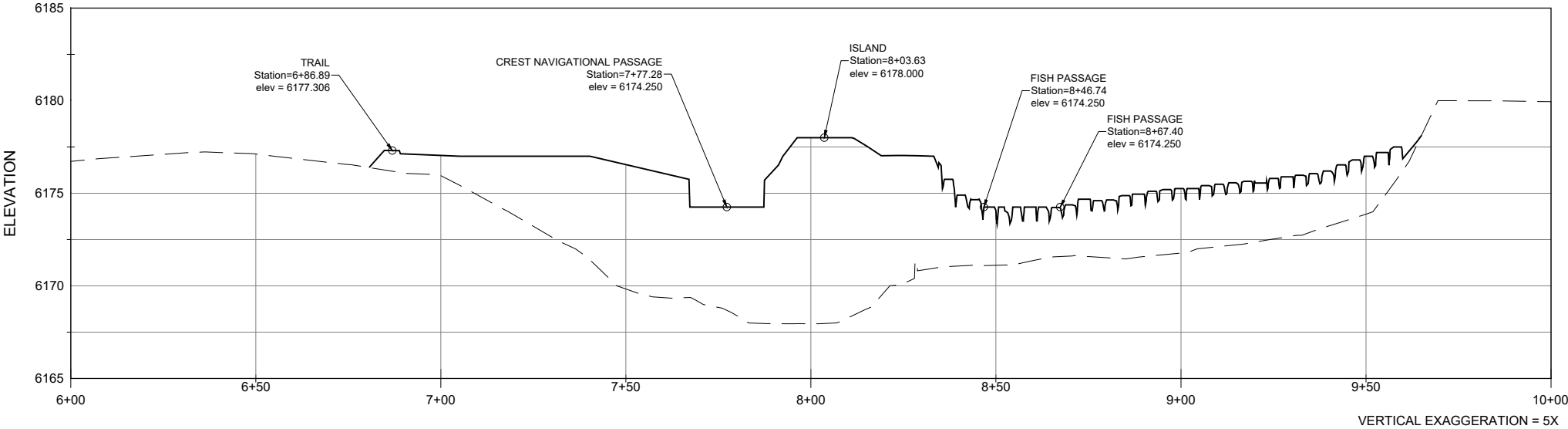
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PLOT DATE:	5/11/22

DRAWING NO.  
**C-10**  
SHEET C-10 OF 21

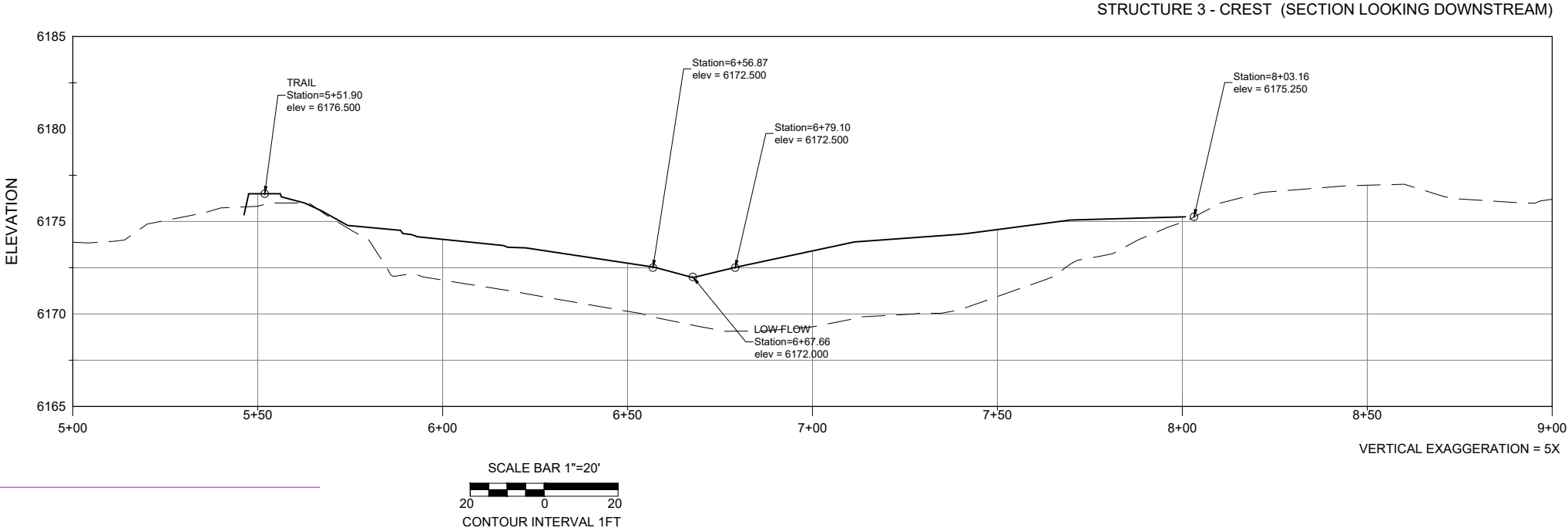
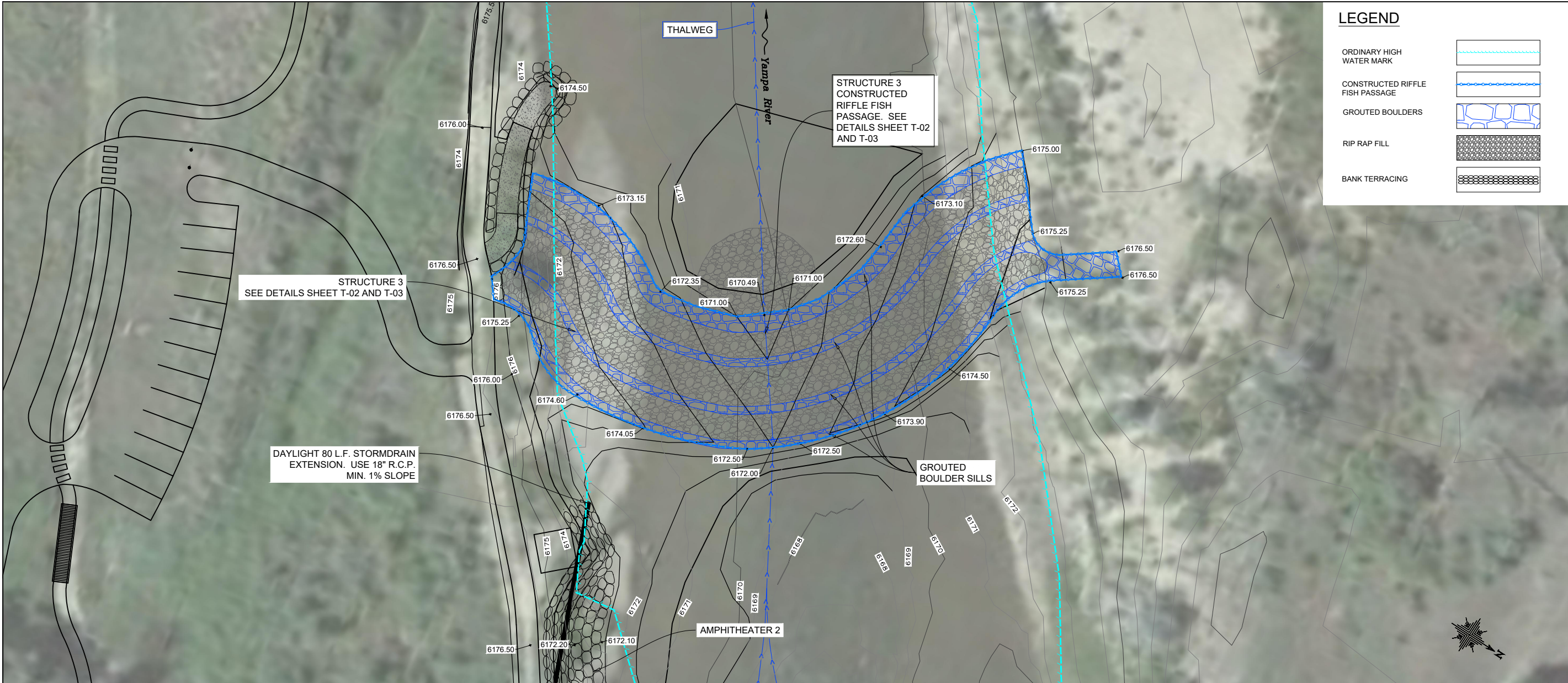
STRUCTURE 2 PLAN VIEW (20 SCALE)

SCALE: 1"=20'

STRUCTURE 2 - CREST (SECTION LOOKING DOWNSTREAM)







STRUCTURE 3 PLAN VIEW (20 SCALE)

SCALE: 1"=20'



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300 West 4th Street  
Craig, CO 81625

DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY

STRUCTURE 3 PLAN VIEW (20 SCALE)

REVISIONS:	
NO.	DATE
DESIGNED: SS, AR	DRAFTED: AR, RG
CHECKED: SS	
PLOT DATE:	5/11/22



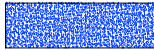
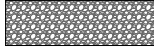


DRAWING NO.



**C-11**

SHEET C-11 OF 21



# LEGEND

ORDINARY HIGH WATER MARK	
GROUTED BOULDERS	
CONCRETE	
RIP RAP FILL	
BANK TERRACING	
PROPOSED SIGN LOCATION	



SCALE: 1"=50'

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WWW.RIVERWISE.ORG

**DIVERSION PARK IMPROVEMENTS PROJECT**  
**YAMPA RIVER, MOFFAT COUNTY**

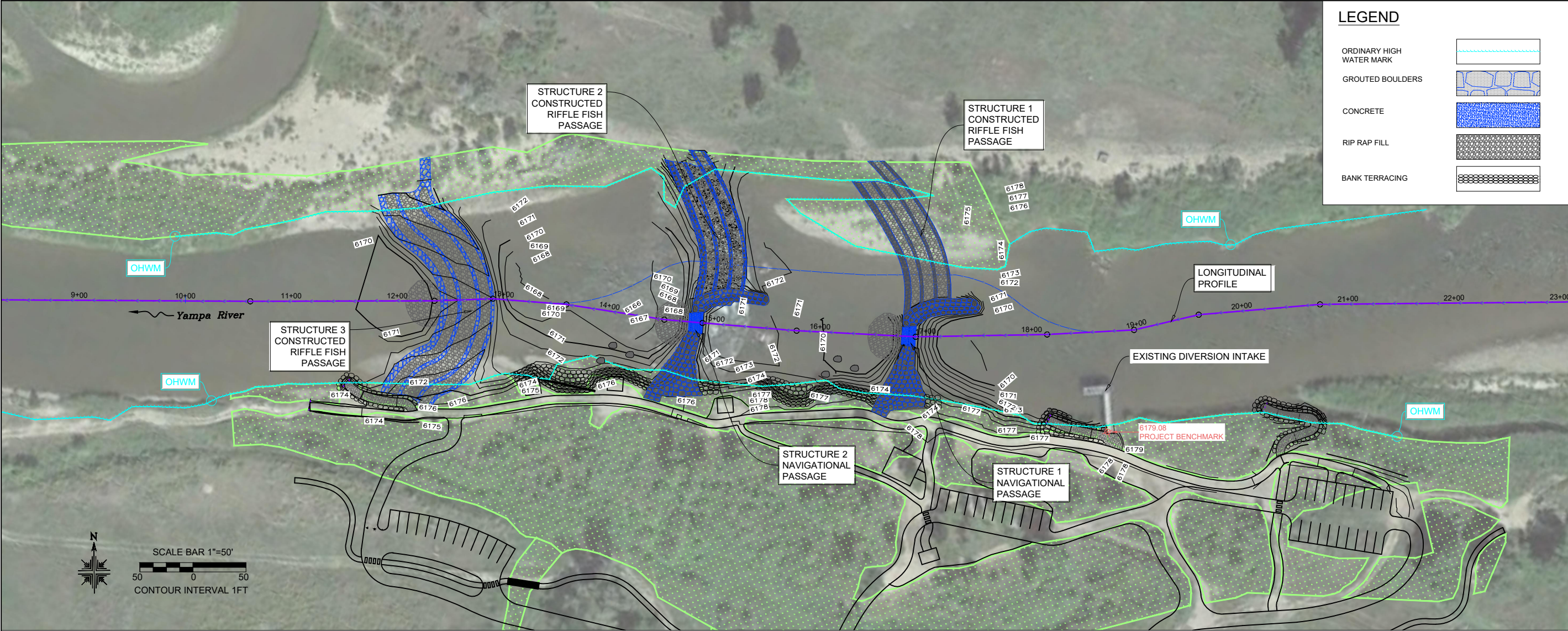
PROJECT SIGNAGE PLAN

DRAWING NO.

DRAWING NO.

SHEET C-12 OF 21





LEGEND

- ORDINARY HIGH WATER MARK
- GROUTED BOULDERS
- CONCRETE
- RIP RAP FILL
- BANK TERRACING



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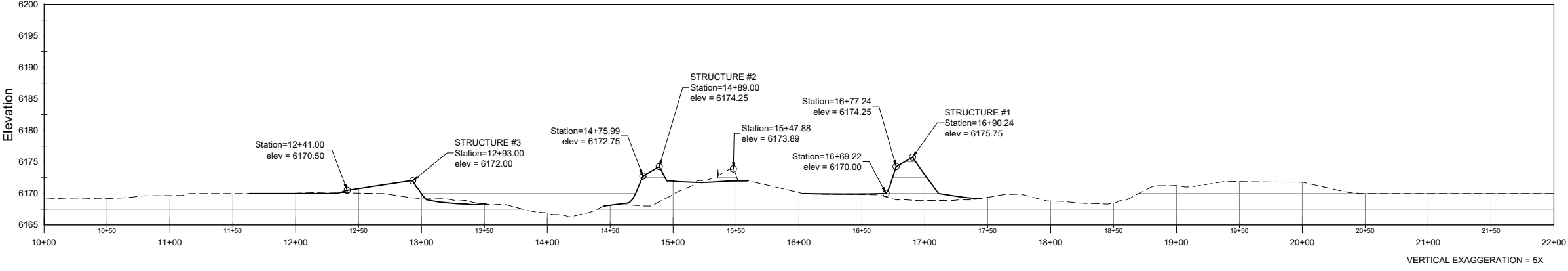
PROJECT OWNER:  
CITY OF CRAIG  
c/o Peter Brixius, City Manager  
300 West 4th Street  
Craig, CO 81625

DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
LONGITUDINAL PROFILE

REVISIONS:	
NO.	DATE
DESIGNED: SS, AR	DRAFTED: AR, RG
CHECKED: SS	
PLOT DATE:	5/11/22

DRAWING NO.  
**C-13**  
SHEET C-13 OF 21

LONGITUDINAL PROFILE

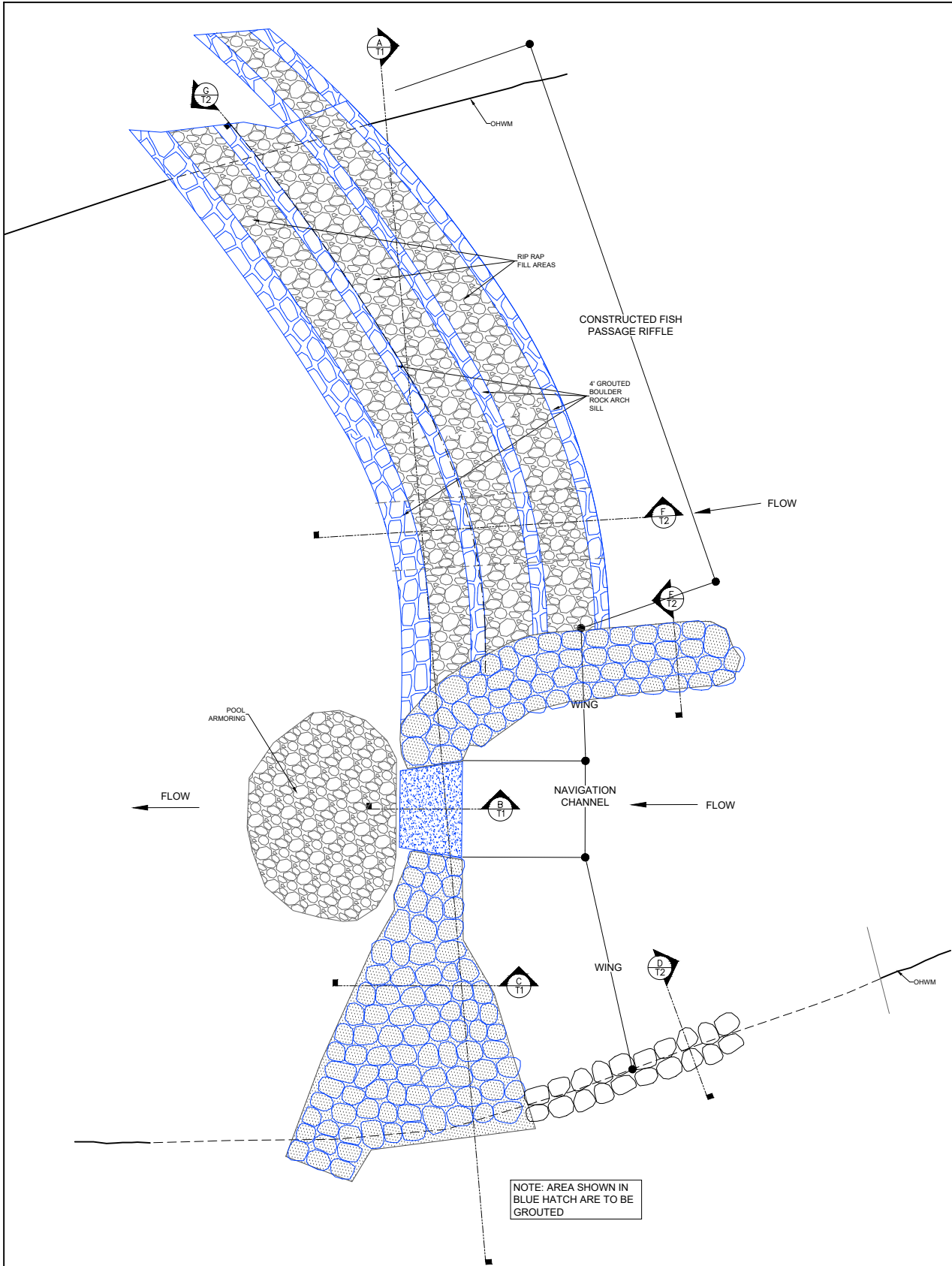


PROFILE AND SECTION SCALES  
HORIZONTAL SCALE: 1" = 50'  
VERTICAL SCALE: 1" = 10'  
0 50'

LONGITUDINAL PROFILE  
SCALE: 1"=50'

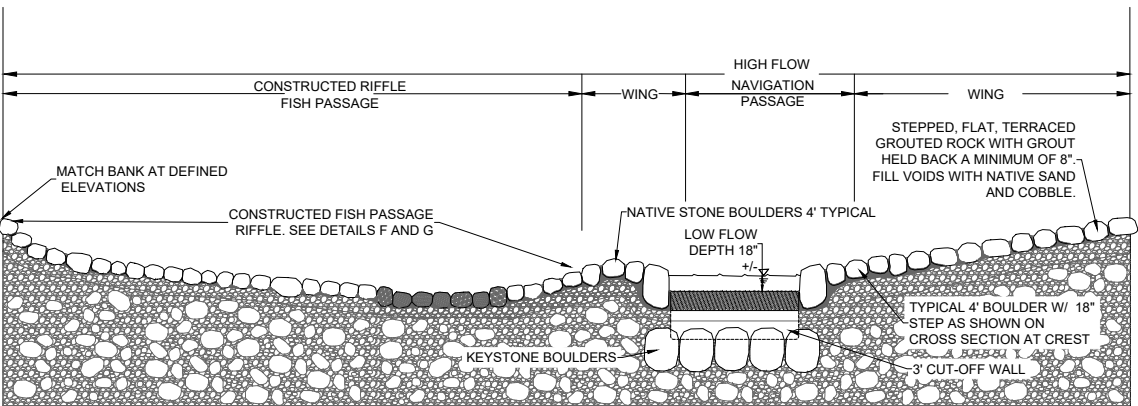
EXISTING GROUND  
PROPOSED GRADE





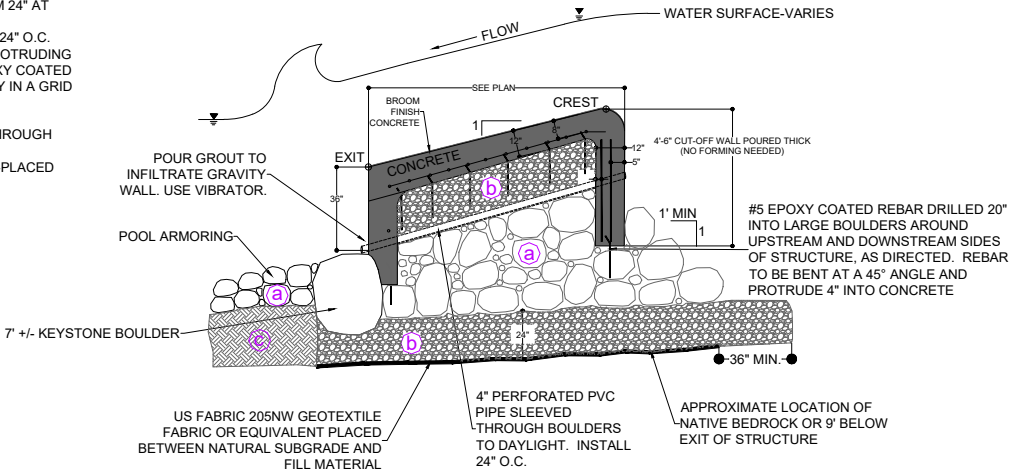
KEY TO STRUCTURE #1 AND #2  
DETAILS

STRUCTURE 1 AND 2 DETAILS  
SCALE: NTS



SECTION A  
STRUCTURE #1 AND #2 CROSS SECTION  
VIEW UPSTREAM - NTS

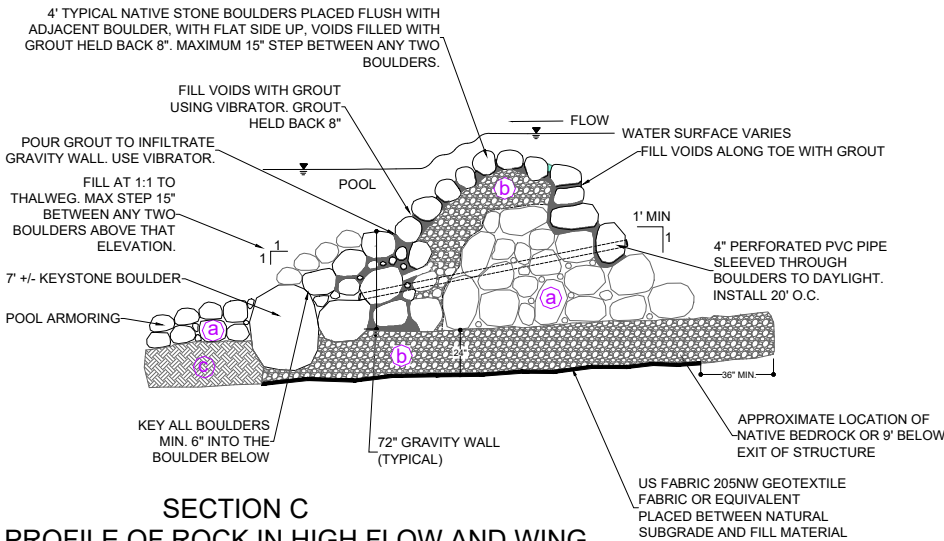
NOTES:  
A) TAPER CONCRETE THICKNESS FROM 24" AT STRUCTURE EXIT TO 12" AT CREST.  
B) 16" LONG #5 EPOXY COATED REBAR 24" O.C. BENT AT 45° SET IN SUBGRADE AND PROTRUDING MIN. 4" INTO CONCRETE. WITH #5 EPOXY COATED REBAR HORIZONTAL 12" O.C. EACH WAY IN A GRID PATTERN.  
C) USE GREY CONCRETE.  
D) PVC PIPES MUST BE DAYLIGHTED THROUGH GROUT.  
E) BOULDERS MAY BE PLACED AND RE-PLACED AS DIRECTED BY ENGINEER.



SECTION B  
TYPICAL NAVIGATION CHANNEL  
(LOW-FLOW)  
(NTS)

SUBGRADE LEGEND  
(a) TYPE H, D50 = 18", DEPTH = 36" OR AS SHOWN  
(b) SUITABLE SUBGRADE OR 3"- 6" ANGULAR COBBLE, DEPTH = 24" OR AS SHOWN. SUBGRADE TO BE DETERMINED BY THE ENGINEER  
(c) NATIVE MATERIAL

NOTE:  
A) FILL VOIDS FLUSH ALONG UPSTREAM AND DOWNSTREAM TOE WITH GROUT AND ALL OTHER VOIDS FILLED WITH GROUT HELD BACK 8". ALL ROCK TO TO BE CLEAN AND SWEEPED AFTER GROUTING. USE VIBRATOR.  
B) MAKE WING ROUNDED TO PREVENT DEEP WATER BOAT PINS ON UPSTREAM SIDE AS SPECIFIED BY PROJECT ENGINEER.  
C) STEP BACK SIDE OF WINGS WITH 15" STEPS TO BREAK UP HYDRAULICS.  
D) USE GREY GROUT.  
E) ALL BOULDERS TO BE PLACED FLUSH WITH ADJACENT BOULDER.  
F) 4' BOULDERS MAY BE PLACED AND RE-PLACED TO ATTAIN DESIRED FIT.  
G) PVC PIPE MUST BE DAYLIGHTED THROUGH GROUT.  
H) RWE TO FIELD MARK GROUT LINE PRIOR TO INSTALLATION.



SECTION C  
TYPICAL PROFILE OF ROCK IN HIGH FLOW AND WING  
(NTS)



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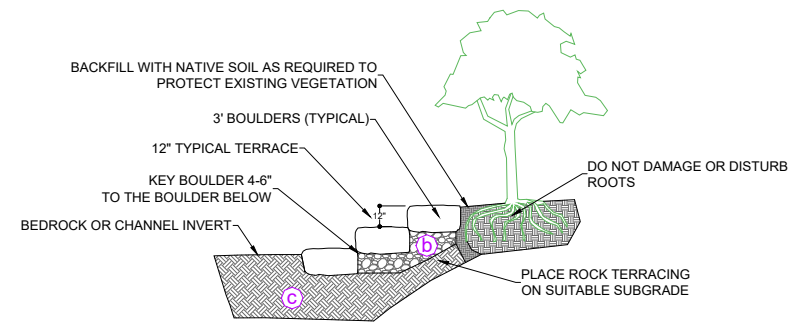
PROJECT OWNER:  
CITY OF CRAIG  
c/o Peter Brixius, City Manager  
300 West 4th Street  
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DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
STRUCTURE 1 AND 2 DETAILS

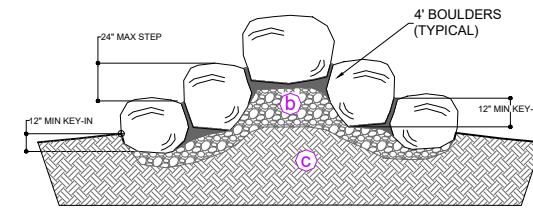
REVISIONS:	
NO.	DATE
DESIGNED: SS, AR	DRAFTED: AR, RG
CHECKED: SS	
PLOT DATE:	5/11/22

DRAWING NO.  
T-01  
SHEET T-01 OF 21

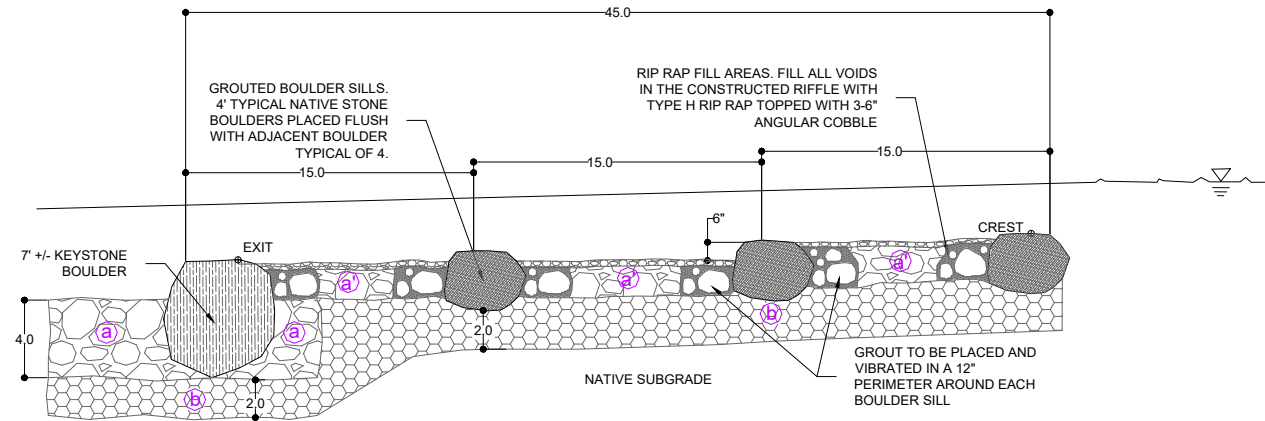




SECTION D  
BANK TERRACING  
N.T.S

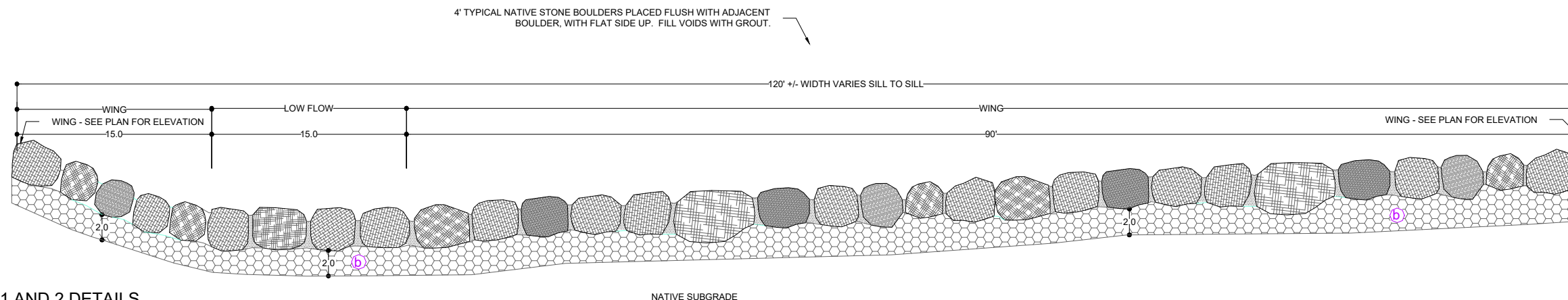


SECTION E  
CENTER WING  
(NTS)



SECTION F  
CONSTRUCTED RIFFLE FISH PASSAGE PROFILE  
(NTS)

SUBGRADE LEGEND	
(a)	TYPE H, D50 18", DEPTH = 36" OR AS SHOWN
(a')	TYPE H, "VOID FILLED" D50 18", DEPTH = 36" OR AS SHOWN. PROVIDE TOPPING OF 3-6" ANGULAR ROCKED PACKED TIGHTLY
(b)	SUITABLE SUBGRADE OR 3"- 6" ANGULAR COBBLE, DEPTH = 24" OR AS SHOWN. SUBGRADE TO BE DETERMINED BY THE ENGINEER
(c)	NATIVE MATERIAL



STRUCTURE 1 AND 2 DETAILS  
SCALE: NTS

SECTION G  
CONSTRUCTED RIFFLE FISH PASSAGE SECTION  
LOOKING DOWNSTREAM  
(NTS)



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DIVERSION PARK IMPROVEMENTS PROJECT

YAMPA RIVER, MOFFAT COUNTY

STRUCTURE 1 AND 2 DETAILS

REVISIONS:

NO.	DATE

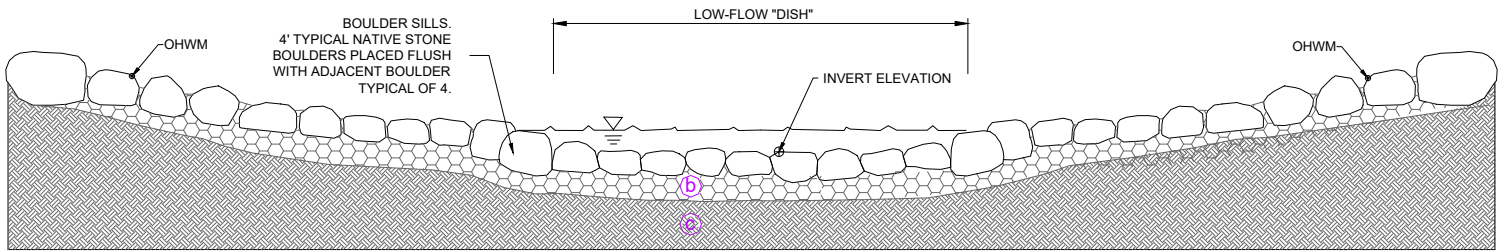
DESIGNED: SS, AR  
CHECKED: SS  
PLOT DATE: 5/11/22

DRAWING NO.

T-02

SHEET T-02 OF 21

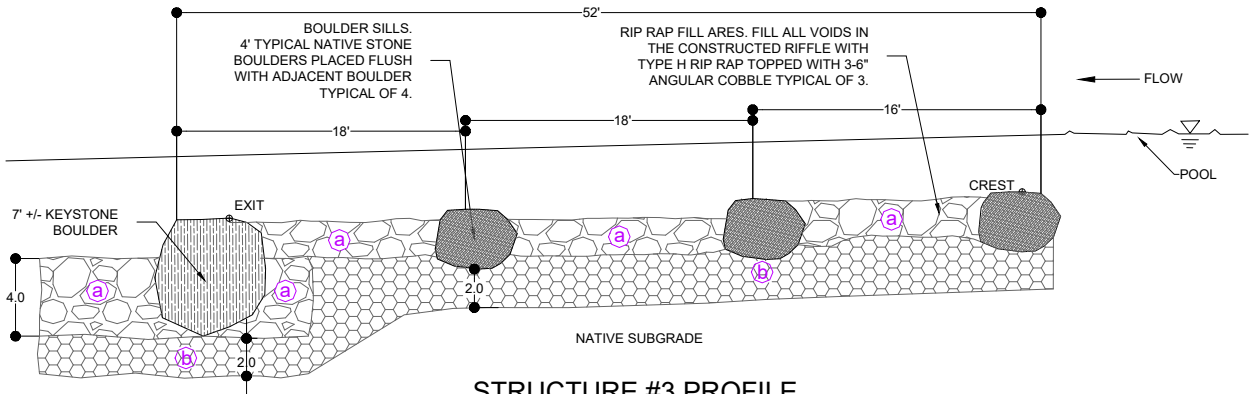




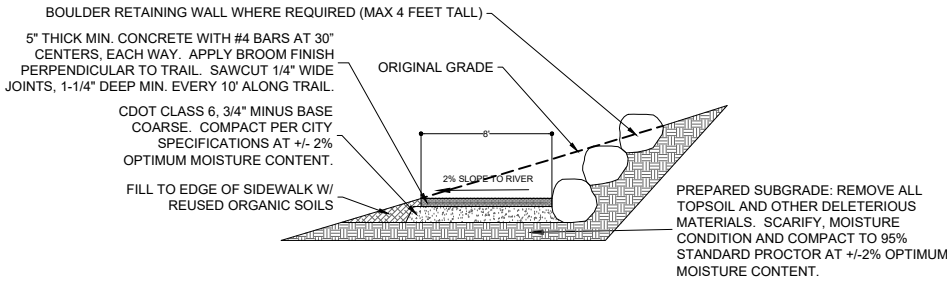
STRUCTURE #3 CROSS SECTION (NTS)

SUBGRADE LEGEND	
(a)	TYPE H, D50 = 18", DEPTH = 36" OR AS SHOWN
(b)	SUITABLE SUBGRADE OR 3"- 6" ANGULAR COBBLE, DEPTH = 24" OR AS SHOWN. SUBGRADE TO BE DETERMINED BY THE ENGINEER
(c)	NATIVE MATERIAL

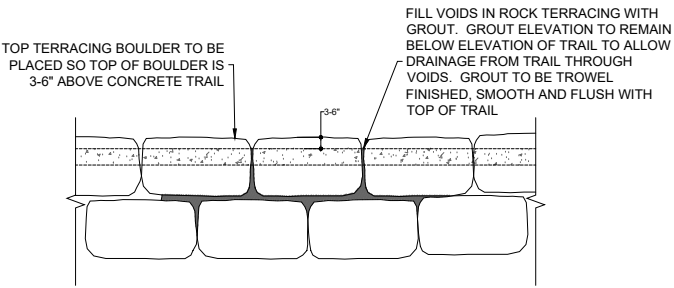
NOTES:  
1) GRADE CONTROL MATTRESSES ARE TO BE SET TIGHT TO AVOID FOOT ENTRAPMENT VOIDS.  
2) THE MATTRESS INVERT ELEVATION IS A CRITICAL ELEVATION THAT WILL BE CHECKED BY AN RWE REPRESENTATIVE DURING CONSTRUCTION



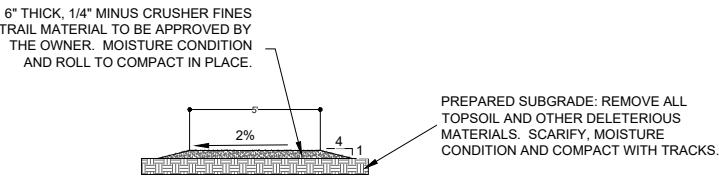
STRUCTURE #3 PROFILE (NTS)



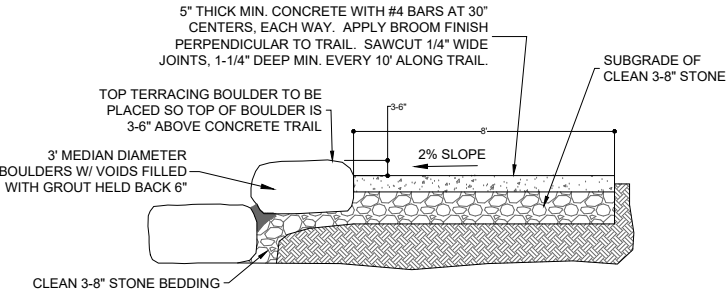
CONCRETE TRAIL SECTION



TYPICAL CONCRETE TRAIL PROFILE



CRUSHER FINES TRAIL



TYPICAL CONCRETE TRAIL SECTION AT STRUCTURE WING

STRUCTURE 3 AND TRAIL DETAILS

SCALE: NTS



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DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
STRUCTURE 3 AND TRAIL DETAILS

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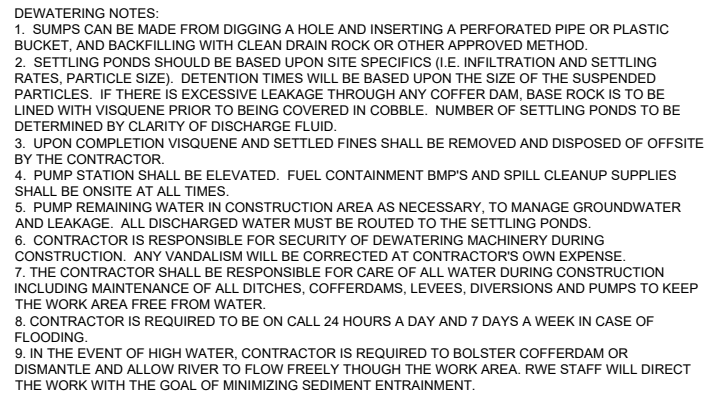
DRAWING NO.

T-03

SHEET T-03 OF 21



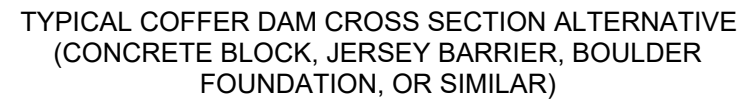
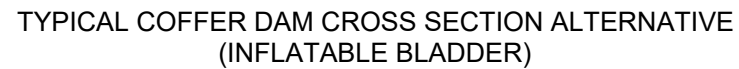
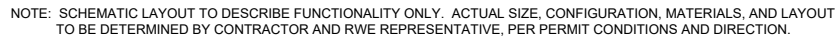
NOTE: SCHEMATIC LAYOUT TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL LAYOUT TO BE DETERMINED BY QUALIFIED CONTRACTOR AND RWE REPRESENTATIVE , PER PERMIT CONDITIONS AND DIRECTION.



GENERAL NOTES:  
ALTERNATE METHODS PRESENTED TO DESCRIBE FUNCTIONALITY ONLY. ACTUAL METHOD TO BE  
DETERMINED BY QUALIFIED CONTRACTOR IN ORDER TO ACHIEVE DRY WORK AREA.

CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL DEWATERING AND COFFERDAMS DURING CONSTRUCTION. REPAIRS AND REPLACEMENTS DUE TO NATURAL CAUSES ARE AT THE SOLE EXPENSE OF THE CONTRACTOR.

IF THE CONTRACTOR CHOOSES NOT TO USE ONE OF THE ALTERNATIVES PRESENTED OR WOULD LIKE TO DEVIATE FROM THE ALTERNATIVES, THEY MUST SUBMIT A DEWATERING PLAN TO THE PROJECT ENGINEER FOR APPROVAL.







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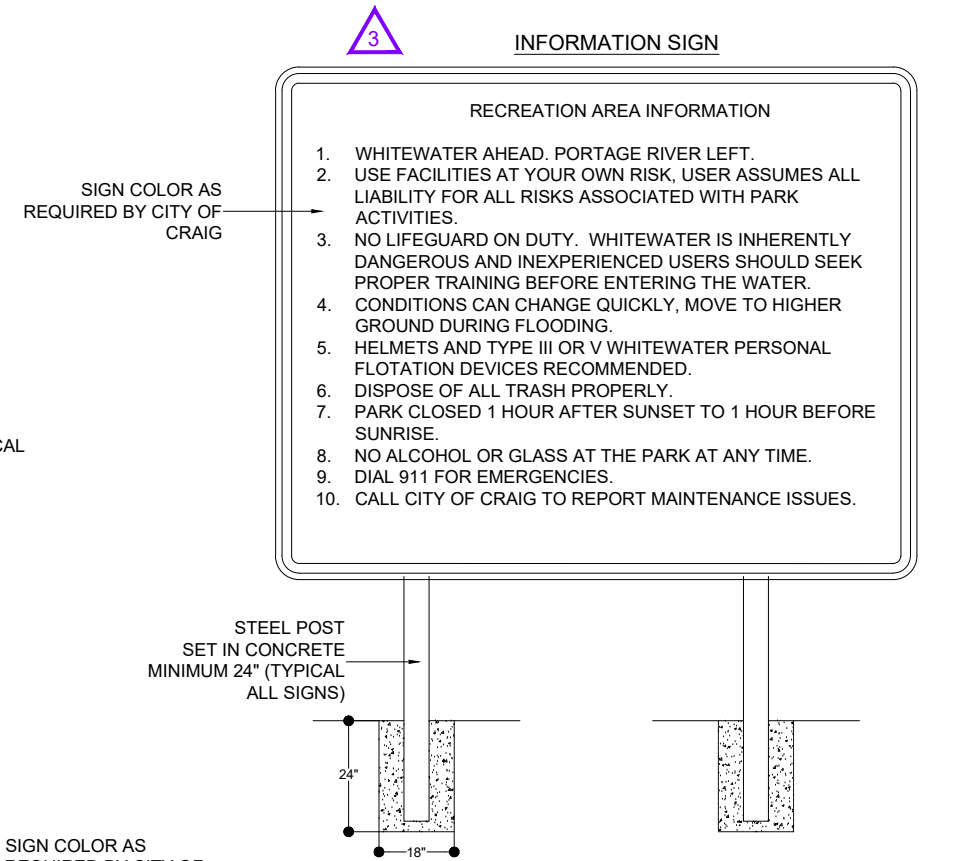
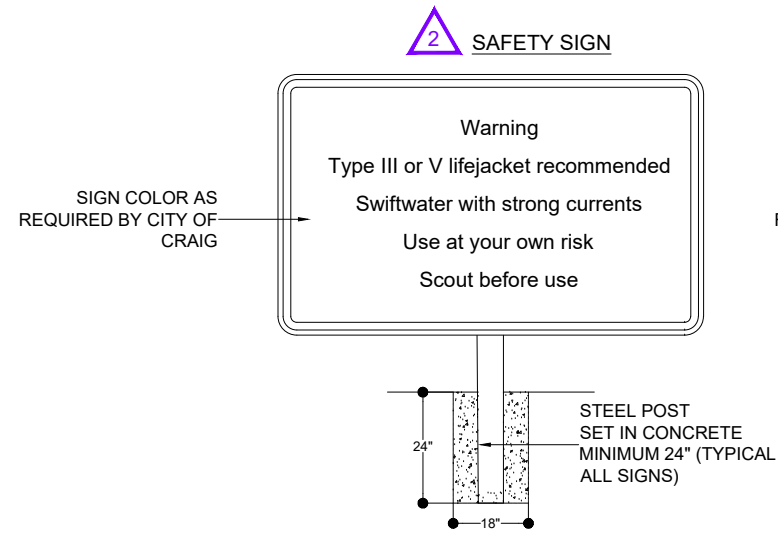
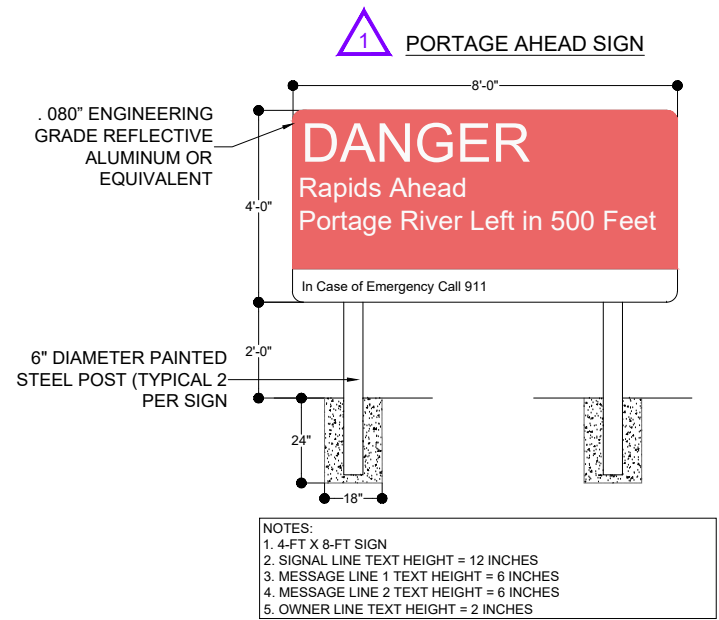
DIVERSION PARK IMPROVEMENTS PROJECT  
YAMPA RIVER, MOFFAT COUNTY  
PROJECT SIGNAGE

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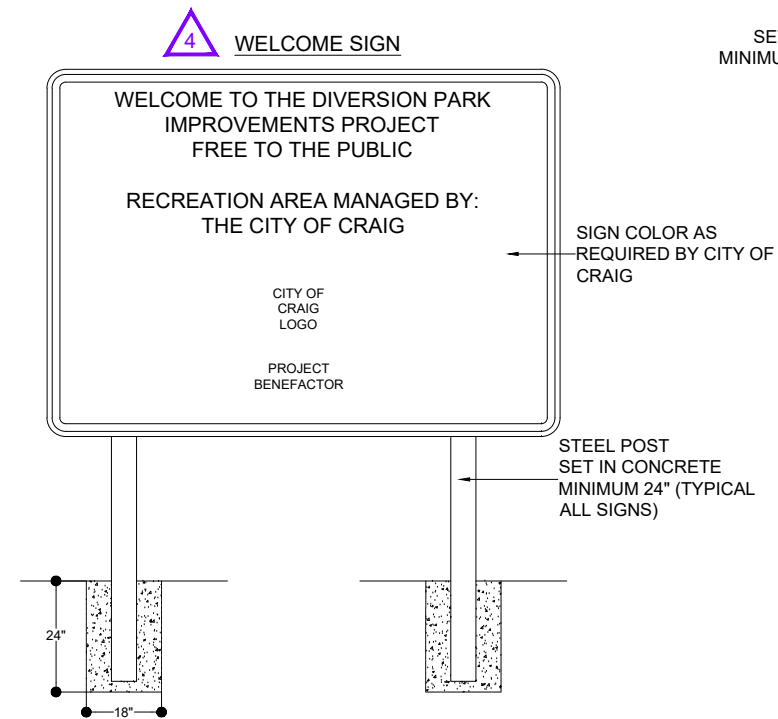
DRAWING NO.

T-05

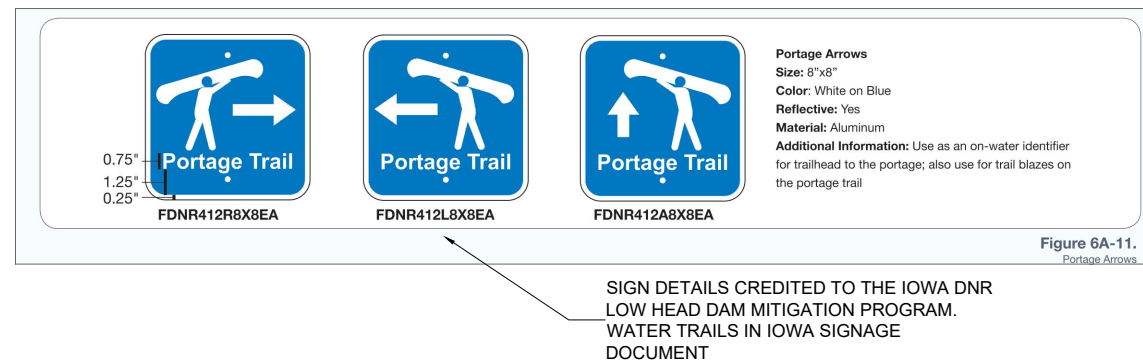
SHEET T-05 OF 21



NOTE:  
Confirm with an RWE Representative and the Owner's representative for the final sign text prior to ordering or fabricating any signs.



**5 PORTAGE DIRECTION SIGNS**

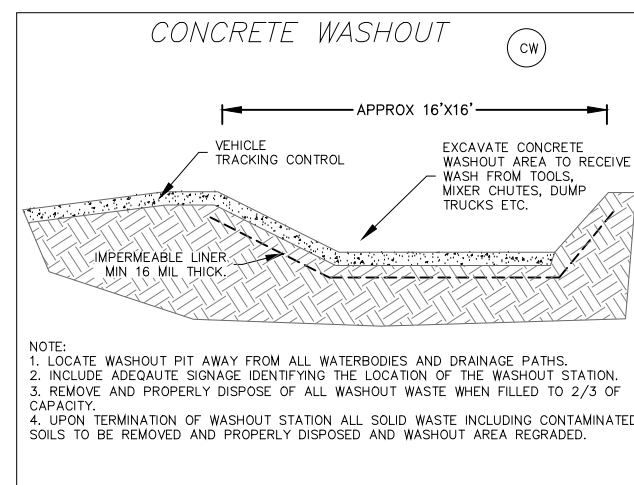
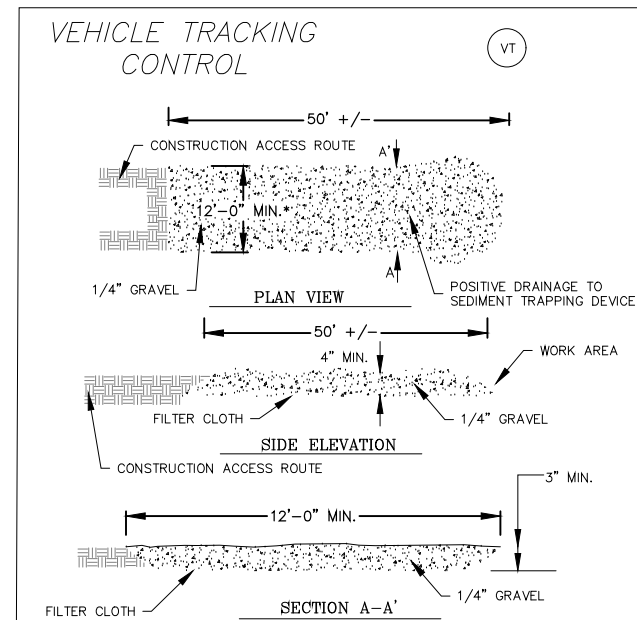


PROJECT SIGNAGE

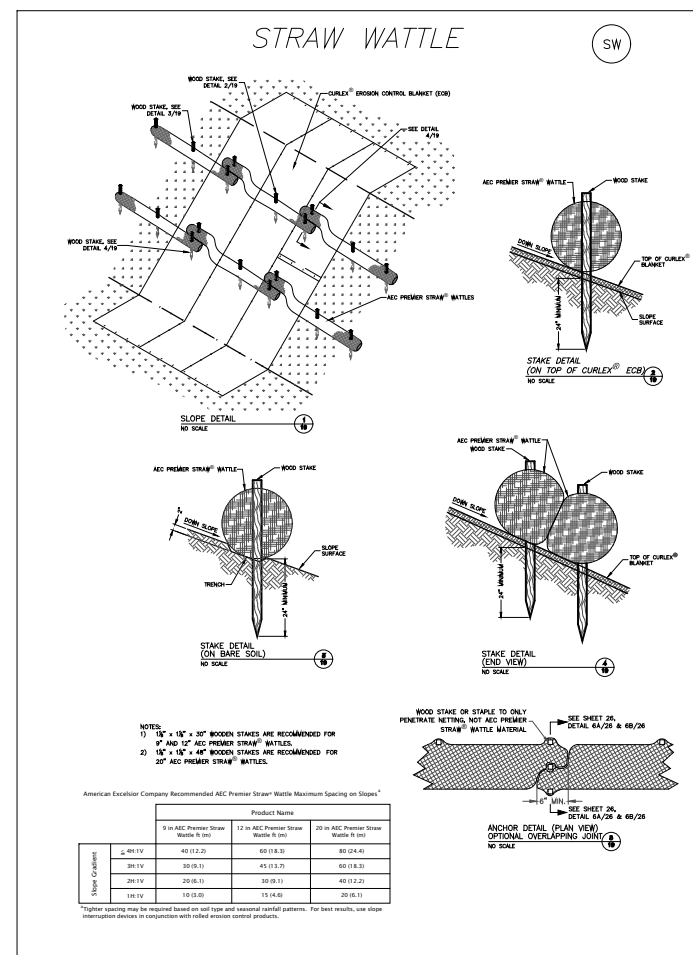
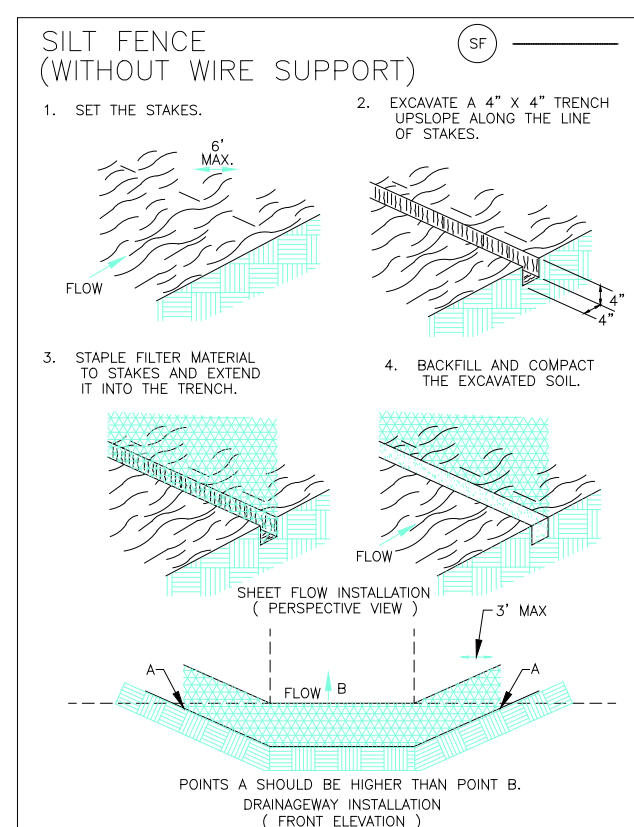
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EROSION CONTROL DETAILS:



NOTE:  
FOR FUEL STORAGE AREAS, PROVIDE CONTAINMENT FOR ENTIRE SPILL VOLUME OR CURBING AND ROUTING TO A CONTAINMENT BASIN CAPABLE OF RETAINING THE LARGEST TANK OR FUEL STORAGE DEVICE. THE SPILL CONTAINMENT AREA MUST HAVE AN IMPERMEABLE SURFACE TO PREVENT GROUNDWATER CONTAMINATION. THE CONTAINMENT SYSTEM MUST ENABLE CONSOLIDATION AND REMOVAL OF SPILLED MATERIAL THROUGH APPROPRIATE MEASURES



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DIVERSION PARK IMPROVEMENTS PROJECT

YAMPA RIVER, MOFFAT COUNTY

## EROSION CONTROL DETAILS

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CHECKED: <b>SS</b>	
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DRAWING NO.

T-06

SHEET T-06 OF 21



GENERAL NOTES

1. GENERAL

- 1.1. ALL ELEVATIONS GIVEN IN FEET ABOVE SEA LEVEL (VERTICAL DATUM NAVD 1989).
- 1.2. THE "ENGINEER" SHALL BE ANY PROJECT OWNER'S REPRESENTATIVE AND MAY INCLUDE STAFF FROM THE CITY OF CRAIG, RIVERWISE ENGINEERING, MILLER DESIGN GROUP, GEI, AND OTHERS.
- 1.3. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO ALL PLANS AND SPECIFICATIONS, INCLUDING BID DOCUMENTS, CONSTRUCTION DRAWINGS, SPECIAL PROVISIONS, PERMIT CONDITIONS, ETC.
- 1.4. IF TWO CONDITIONS, DIMENSIONS, SPECIFICATIONS, NOTES, STANDARDS, ETC. ARE FOUND TO BE CONTRADICTIONARY OR DIFFERENT, THE MORE STRINGENT ONE SHALL BE USED. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE ENGINEER TO DISCUSS ANY OF THESE SITUATIONS.
- 1.5. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING ALL PLANS AND REQUIRED DOCUMENTS ASSOCIATED WITH SHOP DRAWINGS SUCH AS DEWATERING PLANS, ACCESS AND STAGING PLANS, STORMWATER CONTROL PLANS, AND EMERGENCY SPILL PLANS.
- 1.6. THE CONTRACTOR MUST BE AVAILABLE DURING PERIODIC INSPECTIONS FROM THE ENGINEER.
- 1.7. CONTRACTOR SHALL SUSPEND INSTREAM WORK ANYTIME, WHEN IN THE OPINION OF THE ENGINEER, WORK CANNOT BE PERFORMED IN ACCORDANCE WITH THE PROJECT DRAWINGS AND SPECIFICATIONS DUE TO ENVIRONMENTAL CONDITIONS SUCH AS RAIN, FLOODING, LIGHTNING, AND COLD WEATHER.
- 1.8. RWE RECOMMENDS A SAFETY, FUNCTIONALITY, AND FLUVIAL GEOMORPHOLOGICAL SITE VISIT ANNUALLY AND FOLLOWING ANY DISCHARGE EVENT EXCEEDING 20-YEAR RECURRENCE INTERVAL TO MONITOR THE FOLLOWING:
- 1.8.1. STABILITY TO DETERMINE IF THE STRUCTURES HAVE MOVED, SETTLED, OR BEEN IMPACTED IN A WAY THAT COMPROMISES THE FUNCTION.
- 1.8.2. DAMAGE FROM FLOWS, SEDIMENT, FLOATING OBJECTS, ETC.
- 1.8.3. AGGRADATION AND/OR EROSION THAT MAY COMPROMISE STABILITY AND/OR LEAD TO STRUCTURE FAILURE.
- 1.8.4. NAVIGATIONAL ISSUES.
- 1.9. CONTRACTOR IS RESPONSIBLE FOR IMPACTS TO ALL EXISTING INFRASTRUCTURE.

2. ENGINEERS OVERSIGHT

- 2.1. THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY, AND IS NOT LIABLE FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY OR FOR PROBLEMS WHICH ARISE FROM OTHERS OR OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES, AMBIGUITIES OR CONFLICTS.
- 2.2. ALL ELEVATIONS, DIMENSIONS, ALIGNMENTS AND ORIENTATION OF ALL ELEMENTS SHOWN IN THE PLANS MUST BE APPROVED BY THE ENGINEER.
- 2.3. WORK SHALL NOT COMMENCE UNTIL AFTER THE DATE OF THE ON-SITE PRE-CONSTRUCTION MEETING WHICH WILL BE ATTENDED BY REPRESENTATIVES OF THE PROJECT OWNER, ENGINEER, CONTRACTOR AND ANY SUB-CONTRACTORS. IN THE EVENT THAT WORK DOES NOT BEGIN IMMEDIATELY FOLLOWING THE PRE-CONSTRUCTION MEETING, THE CONTRACTOR SHALL PROVIDE REPRESENTATIVES OF THE PROJECT OWNER, ENGINEER, ANY SUB-CONTRACTORS, AND RELEVANT AGENCIES NOTED IN THE PERMITS, TWO WEEKS NOTICE BEFORE CONSTRUCTION COMMENCES.
- 2.4. ALL CONSTRUCTION WORK SHALL CONFORM TO THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT STANDARD SPECIFICATIONS, LATEST EDITION. STANDARD SPECIFICATIONS OF MATERIALS FOR AGGREGATES AND SOIL AGGREGATE SUB-BASE, BASE AND SURFACE COURSES SHALL BE GOVERNED BY AASHTO DESIGNATION M147-65 (1993) OR LATEST REVISION. ALL CONSTRUCTION SHALL CONFORM TO CITY, COUNTY, STATE, AND FEDERAL STANDARDS AND SPECIFICATIONS AS APPLICABLE.
- 2.5. WHENEVER THE INCLUDED DRAWINGS ARE FOUND TO BE INCONSISTENT WITH ANY OTHER RESOLUTION, ORDINANCE, CODE, REGULATION, PERMIT, OR OTHER STANDARDS REFERENCED, THE ENACTMENT IMPOSING THE MORE RESTRICTIVE STANDARDS OR REQUIREMENTS SHALL CONTROL.
- 2.6. THE CONTRACTOR SHALL NOT COMMENCE CONSTRUCTION WITHOUT CONSTRUCTION PLAN APPROVAL BY ALL RELEVANT AGENCIES. A COPY OF THE APPROVED PLANS SHALL BE AVAILABLE AT THE CONSTRUCTION SITE AT ALL TIMES DURING WORKING HOURS. A COPY OF ALL PERMITS SHALL BE AVAILABLE AND VISIBLE AT THE CONSTRUCTION SITE AT ALL TIMES.

3. UTILITIES

- 3.1. A MINIMUM OF 12 INCHES OF SEPARATION MUST BE MAINTAINED BETWEEN UTILITY LINES.
- 3.2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION OF ALL EXISTING UTILITIES AND SHOULD NOT RELY SOLELY ON THESE CONSTRUCTION PLANS FOR UTILITY LOCATIONS. CONTRACTOR MUST COMPLETE ALL UTILITY LOCATES PRIOR TO CONSTRUCTION. LOCATES CAN BE COORDINATED WITH THE COLORADO ONE CALL 1-800-922-1987. DAMAGE TO ANY EXISTING UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

4. SURVEY

- 4.1. THE CONSTRUCTION SURVEYOR SHALL VERIFY PROPOSED GRADES AND INVERT ELEVATIONS, FLOW LINES, ALIGNMENTS, SETBACKS AND TOPOGRAPHY PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR THE SURVEYING AND ASSOCIATED COSTS.
- 4.2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL SURVEY EQUIPMENT, STAKING, CONTROL POINT LOCATIONS, AND TOOLS FOR ELEVATION DETERMINATION.
- 4.3. THE CONTRACTOR IS RESPONSIBLE TO SET UP CONTROL POINTS NEAR EACH FEATURE. THESE CONTROL POINTS MUST OVERLAP SO GRADES MAY BE CHECKED FROM MULTIPLE CONTROL POINTS.
- 4.4. THE CONTRACTOR IS RESPONSIBLE FOR COMPLETING AN AS-BUILT SURVEY, FOLLOWING COMPLETION OF THE FINAL GRADES. THE SURVEY SHALL INCLUDE ALL NOTED POINTS IN THE POINTS TABLES PROVIDED IN THE CONSTRUCTION DRAWINGS. DELIVERABLES SHALL BE PRODUCED IN AUTOCAD AND PDF FORMAT.
- 4.5. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF EXISTING TOPO IN RELATION TO THE DESIGN GRADES. SURVEY LOCATIONS AND ELEVATIONS OF NOTED POINTS SHALL BE REVIEWED AND FIELD APPROVED BY THE ENGINEER.

5. GENERAL ENVIRONMENTAL

- 5.1. WORK SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL AGENCIES' LAWS, RULES, REGULATIONS, AND PERMITS. ALL WORK SHALL BE SUBJECT TO INSPECTIONS AND SITE INVESTIGATION BY REGULATORY AGENCIES. FAILURE TO COMPLY WITH THESE REGULATIONS IS SUBJECT TO LEGAL ENFORCEMENT ACTION.

- 5.2. CONTRACTOR IS RESPONSIBLE FOR GOOD HOUSEKEEPING PRACTICES AS NOTED IN THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, URBAN STORM DRAINAGE CRITERIA MANUAL: VOLUME 3: STORMWATER QUALITY GOOD HOUSEKEEPING PRACTICES (MM-3), VEHICLE MAINTENANCE, FUELING AND STORAGE (S-7), AND TEMPORARY ENVIRONMENTAL CONTROLS (SECTION 01 57 196).
- 5.3. A PRE-CONSTRUCTION MEETING WITH EQUIPMENT OPERATORS SHALL BE HELD TO DISCUSS THE PROJECT REQUIREMENTS AS THEY RELATE TO ENVIRONMENTAL PERMIT COMPLIANCE.
- 5.4. ON-SITE CONSTRUCTION REVIEWS SHALL BE CONDUCTED TO IDENTIFY MAINTENANCE NEEDS AND CHRONIC PROBLEMS THAT MAY BE OCCURRING. APPROPRIATE REMEDIAL ACTIONS SHALL BE IMPLEMENTED IN A TIMELY MANNER.
- 5.5. IF PREVIOUSLY UNKNOWN ARCHEOLOGICAL MATERIALS ARE DISCOVERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL STOP IMMEDIATELY AND THE ENGINEER AND OWNER SHALL BE CONTACTED.

6. SEDIMENT AND POLLUTION CONTROL

- 6.1. ALL APPROPRIATE SEDIMENT AND POLLUTION CONTROL MEASURES, AND BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE IN PLACE TO MINIMIZE SEDIMENTATION AND RIVERBED IMPACTS PRIOR TO INITIATING IN-RIVER / RIVERBANK WORK. ALL BMP'S SHOULD BE INSTALLED AND MAINTAINED BASED ON GUIDANCE AND CRITERIA SET FORTH IN THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, URBAN STORM DRAINAGE CRITERIA MANUAL.
- 6.2. CONTRACTOR SHALL BE WHOLLY RESPONSIBLE FOR THE DESIGN, IMPLEMENTATION, AND MAINTENANCE OF SEDIMENT AND EROSION CONTROLS IN CONFORMANCE WITH CONSTRUCTION STANDARDS AND THE REQUIREMENTS OF REGULATORY AGENCIES THROUGHOUT THE CONSTRUCTION PERIOD. THE ENGINEER WILL NOT BE ON-SITE TO APPROVE, REVIEW, OR MAINTAIN THE CONTROLS. STORMWATER MEASURES MAY BE REQUIRED TO BE INSTALLED AT ANY TIME DURING CONSTRUCTION AT THE DIRECTION OF THE ENGINEER OR OWNER.
- 6.3. IN ADDITION TO CONSTRUCTION BMP'S, TEMPORARY SEDIMENT AND EROSION CONTROLS (E.G., TEMPORARY SEEDING, MULCHING, SILT FENCE, STRAW WADDLE) SHALL BE IMPLEMENTED FOR ALL AREAS ANTICIPATED TO BE DISTURBED. PERMANENT SOIL STABILIZATION (E.G., PERMANENT SEEDING, EROSION CONTROL FABRIC) SHALL BE IMPLEMENTED ON DISTURBED AREAS WITHIN 2-DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE PROJECT AREA.
- 6.4. SILT FENCING SHALL BE INSTALLED AND MAINTAINED AS NOTED IN THE COLORADO DEPARTMENT OF TRANSPORTATION, EROSION CONTROL AND STORMWATER QUALITY FIELD GUIDE (2011).
- 6.5. SPOIL PILES SHALL BE COVERED OR OTHERWISE MANAGED TO REDUCE SEDIMENTATION. ALL MATERIAL WHICH IS TO BE PLACED AT UPLAND SITE SHALL BE DISPOSED OF IN SUCH A WAY THAT SEDIMENT RUNOFF IS CONTROLLED AND MINIMIZED. THEY SHALL BE INSTALLED AND MAINTAINED AS NOTED IN THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, URBAN STORM DRAINAGE CRITERIA MANUAL, VOLUME 3, MATERIALS MANAGEMENT, MM-2.
- 6.6. CONTRACTOR SHALL NOT STORE EQUIPMENT BELOW THE ORDINARY HIGH WATER LINE, AND TAKES FULL RESPONSIBILITY FOR ANY MATERIALS VANDALIZED, DAMAGED, BROKEN, OR LOST AS A RESULT OF RIVER EVENTS.
- 6.7. ALL FUELING OPERATIONS, LUBRICATING, HYDRAULIC TOPPING OFF, FUEL TANK PURGING, AND EQUIPMENT MAINTENANCE/REPAIRS SHALL BE PERFORMED AT AN UPLAND SITE OUTSIDE OF THE BANKS OF ANY SITE WATERWAYS AT A LOCATION TO BE DETERMINED BY THE ENGINEER OR OWNER. THESE ACTIVITIES SHALL TAKE PLACE ON AN APPROVED PAD WITH SPILL CONTROL/ COLLECTION DEVICES IN PLACE.
- 6.8. ALL CONSTRUCTION EQUIPMENT SHALL BE INSPECTED DAILY FOR HYDRAULIC AND FUEL LEAKS. LEAKS SHALL BE REPAIRED PRIOR TO OPERATION WITHIN THE 100-YEAR FLOODPLAIN. WHEN NOT IN USE, FUEL AND HYDRAULIC FLUIDS SHALL BE STORED AT AN UPLAND SITE OUTSIDE OF THE 100-YEAR FLOODPLAIN. EMERGENCY SPILL RESPONSE DEVICES SHALL BE ON-SITE AT ALL TIMES DURING CONSTRUCTION IN WATERWAYS AND FLOODPLAINS AND SHALL BE READY TO DEPLOY IN THE EVENT OF A SPILL.
- 6.9. NO CHEMICALS, FUELS, LUBRICANTS, BRUSH, ETC. SHALL BE DISCHARGED OR DISPOSED OF INTO OR ALONGSIDE ANY STREAM, WATERCOURSE, OR FLOODPLAIN UNDER ANY CIRCUMSTANCES.
- 6.10. LITTER AND CONSTRUCTION DEBRIS SHALL BE CONTAINED DAILY. ALL CONSTRUCTION DEBRIS AND LITTER SHALL BE COMPLETELY REMOVED OFFSITE AND DISPOSED OF PROPERLY UPON PROJECT COMPLETION.
- 6.11. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS NECESSARY TO PROVIDE ACCESS TO CONSTRUCTION AREAS FROM ALL EXISTING ROADWAYS AND PATHS TO MINIMIZE GROUND DISTURBANCE AND SEDIMENT TRACKING FROM VEHICLE TIRES. ADJACENT ROADWAYS AND PATHS SHALL BE VISUALLY INSPECTED DAILY TO ENSURE THAT SEDIMENT IS NOT BEING CARRIED OFF-SITE. IF SEDIMENT IS BEING CARRIED OFF-SITE, THE ADJACENT ROADWAYS AND PATHS SHALL BE SWEEPED CLEAN DAILY.
- 6.12. BMP'S PLUS TEMPORARY SEDIMENT AND EROSION CONTROLS SHALL BE MAINTAINED TO BE FUNCTIONAL UNTIL THE SITE HAS REACHED FINAL STABILIZATION. THE PROJECT AREA SHALL BE CONSIDERED TO HAVE REACHED FINAL STABILIZATION WHEN:
- 6.12.1. A PERENNIAL, VEGETATIVE COVER HAS GROWN TO A 80-PERCENT DENSITY THROUGHOUT THE ENTIRE DISTURBED AREA.
- 6.12.2. ALL TEMPORARY SEDIMENT AND EROSION CONTROLS HAVE BEEN REMOVED AND DISPOSED OF PROPERLY.
- 6.12.3. ALL TRAPPED SEDIMENT HAS BEEN REMOVED AND PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION.
- 6.12.4. ALL CONSTRUCTION ACTIVITIES HAVE CEASED.

7. BEST MANAGEMENT PRACTICES (BMP'S)

- 7.1. BMP'S SUCH AS DRAINAGE CHANNELS, PERIMETER FENCING, DETENTION BASINS, AND VEHICLE TRACKING CONTROLS MUST BE INSTALLED PRIOR TO CONSTRUCTION ACTIVITIES. EFFECTIVE EROSION CONTROL REQUIRES ADAPTATION AND CHANGES DURING CONSTRUCTION THAT CANNOT BE DESIGNED OR ANTICIPATED PRIOR TO CONSTRUCTION. A CERTIFIED STORMWATER SUPERVISOR MUST CHECK AND REPORT ON ALL BMP'S REGULARLY AND NOTIFY THE ENGINEER IF THERE ARE QUESTIONS OR CONCERNS. THE ENGINEER ACCEPTS NO LIABILITY FOR THE PLACEMENT, EFFECTIVENESS, MAINTENANCE, OR CHOICE OF BMP ON THE SITE IF THE ENGINEER AND/OR ENGINEER'S REPRESENTATIVE ARE NOT PRESENT.
- 7.2. THE CONTRACTOR SHALL IMPLEMENT THE NECESSARY SITE EROSION CONTROL MEASURES FOR INHIBITING DUST, WIND, AND AIR SEDIMENT MOVEMENT OFFSITE DURING ALL PHASES OR STAGES OF CONSTRUCTION.
- 7.3. THE CONTRACTOR SHALL PROVIDE AN AREA TO STORE CONSTRUCTION DEBRIS WHERE IT WILL NOT BE A NUISANCE TO THE SURROUNDING NEIGHBORHOOD. ALL DEBRIS SHALL BE CONTAINED IN SUCH A MANNER THAT WILL PREVENT SCATTERING. ALL DEBRIS, INCLUDING TREES AND UNDERGROWTH

SHALL BE DISPOSED OF PROPERLY. ALL DEBRIS SHALL BE REMOVED FROM THE SITE PRIOR TO FINAL SITE INSPECTION.

- 7.4. CONTRACTOR SHALL LIMIT THE AREAS OF DISTURBANCE AND COMPLETE CONSTRUCTION WITH PHASES IN MIND.
- 7.5. CONTRACTOR SHALL LIMIT DIRECTLY CONNECTED IMPERVIOUS AREAS (DCIA).
- 7.6. BUFFER STRIPS SHOULD BE USED DURING CONSTRUCTION TO LIMIT THE DCIA'S. WHEN POSSIBLE, TRANSITIONING CHANGES IN SLOPE, TERRACING LONGER SLOPES, SURFACE ROUGHENING, AND CONTOUR FURROWS SHOULD BE USED TO MINIMIZE CONSOLIDATED FLOW.
- 7.7. ANY STAGED GRADING MUST BE DONE TO DIRECT STORMWATER TOWARDS THE APPROPRIATE BMP'S.
- 7.8. DURING CONSTRUCTION, STRAW WADDLES, COMPACTED SOIL BERMS, AGGREGATE BAGS, OR SIMILAR MUST BE USED ON ALL DISTURBED SLOPES OF 3:1 AND GREATER THAN 20 FEET IN LENGTH.
- 7.9. SILT FENCING LOCATED ON THE PERIMETER OF DISTURBED AREAS SHOULD BE CHECKED AT LEAST DAILY, FOLLOWING SIGNIFICANT STORM EVENTS, OR AS NOTED WITHIN PERMITTING DOCUMENTS TO ENSURE IT IS WORKING PROPERLY.
- 7.10. SEDIMENT ENTRAINMENT FACILITIES HAVE BEEN DESIGNED TO STORE THE APPROPRIATE VOLUME OF STORMWATER DISCHARGE, BUT CONTAIN MINIMAL ADDITIONAL CAPACITY. THEY MUST BE MAINTAINED AND DREDGED AS NECESSARY.

8. MATERIAL HANDLING

- 8.1. A LIST OF ALL POTENTIALLY TOXIC OR HAZARDOUS CHEMICALS THAT WILL BE USED OR STORED ON-SITE SHALL BE MAINTAINED WITH THE EROSION CONTROL SUPERVISOR, IF APPLICABLE. WARNING LABELS MUST BE ATTACHED. MATERIAL SAFETY DATA SHEETS (MSDS) AND OTHER SAFETY INFORMATION FOR A POTENTIALLY TOXIC OR HAZARDOUS SUBSTANCE MUST BE ON THE SITE WHILE THE SUBSTANCE IS USED OR STORED.
- 8.2. THE FOLLOWING MATERIALS MANAGEMENT PRACTICES MUST BE FOLLOWED:
- 8.2.1. THE QUANTITY OF FUEL AND LUBRICANT AT THE CONSTRUCTION SITE MUST BE MINIMIZED.
- 8.2.2. STRICT STORAGE PRACTICES (I.E. OFF-SITE STORAGE) ARE PREFERABLE. FUEL, HYDRAULIC OIL, AND FORM OIL MUST BE STORED OFFSITE.
- 8.2.3. MATERIALS STORED AT THE CONSTRUCTION SITE MUST BE PROPERLY PROTECTED FROM THE ELEMENTS.
- 8.2.4. MATERIALS MUST BE HANDLED IN ACCORDANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS AND MANUFACTURERS' INSTRUCTIONS.
- 8.2.5. CHEMICALS REGULATED UNDER THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA) WILL BE DOCUMENTED.

9. SPILL REMEDIATION PRACTICES

- 9.1. ALL CONSTRUCTION SITE PERSONNEL MUST FOLLOW SPILL PREVENTION AND CONTROL PRACTICES AS FOLLOWS:
- 9.1.1. RWE STAFF (SHANE SIGLE 303-808-7734), LOCAL FIRE AND RESCUE (911), MUST BE CONTACTED IMMEDIATELY FOLLOWING ANY SPILL. THE SENIOR SAFETY MANAGER (OR DESIGNEE) MUST IN TURN REPORT THE SPILL TO THE APPROPRIATE FEDERAL, STATE, OR LOCAL AGENCIES IN ACCORDANCE WITH APPLICABLE REGULATIONS AND/OR PERMIT REQUIREMENTS.
- 9.2. PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE EQUIPMENT.
- 9.3. THERE MUST BE A DESIGNATED INDIVIDUAL ON THE SITE TRAINED IN THE APPROPRIATE CLEANUP PROCEDURES FOR VARIOUS TYPES OF CHEMICALS AND THE LOCATION OF INFORMATION AND CLEANUP SUPPLIES.
- 9.4. THE MSDS OF ANY MATERIAL SHOULD BE CONSULTED ON THE EVENT OF A SPILL. THE MSDS FOR ALL CHEMICALS USED ON THE SITE WILL BE KEPT ON THE SITE, AND WORKERS WILL BE REQUIRED TO REVIEW MSDS'S.
- 9.5. SPILL KITS MUST BE LOCATED ON-SITE. SUBCONTRACTORS MUST BE NOTIFIED OF THEIR LOCATION AND INSTRUCTED HOW TO USE THEM WHEN NECESSARY.
- 9.6. SPILLS MUST BE CLEANED UP PROMPTLY AFTER DISCOVERY, AND MATERIALS USED FOR CLEANUP MUST BE DISPOSED OF OFF-SITE AT AN APPROVED FACILITY.

10. WORK LIMITS AND LAYDOWN

- 10.1. WORK LIMITS, ACCESS, STAGING, LAYDOWN, AND STOCKPILE AREAS SHALL BE LOCATED WHERE SHOWN ON THE CONSTRUCTION DRAWINGS OR OTHERWISE AS APPROVED BY THE ENGINEER OR OWNER.
- 10.2. ALL CONSTRUCTION ACTIVITIES SHALL OCCUR WITHIN CURRENTLY DISTURBED AREAS TO THE EXTENT POSSIBLE.
- 10.3. DISTURBED/ EXPOSED RIVERBANKS AND STAGING AND PROJECT ACCESS AREAS SHALL BE PROPERLY STABILIZED (SEEDED, MULCHED, OR OTHERWISE) WITH NATIVE VEGETATION IMMEDIATELY AFTER GRADING TO PREVENT EROSION AND ESTABLISHMENT OF INVASIVE PLANT SPECIES.
- 10.4. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO VEGETATION OR PROPERTY OUTSIDE THE WORK LIMITS RESULTING FROM CONSTRUCTION OPERATIONS.
- 10.5. ALL AREAS TEMPORARILY DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, SLOPES, AND ELEVATIONS, UNLESS OTHERWISE NOTED IN THE CONSTRUCTION DRAWINGS.

11. ROCK QUALITY

- 11.1. INDIVIDUAL STONE BOULDERS SHALL BE DENSE, SOUND AND FREE FROM CRACKS, SEAMS AND OTHER DEFECTS CONDUCIVE TO ACCELERATED WEATHERING.
- 11.2. AT A MINIMUM EXPOSED ROCK SHOULD HAVE ONE FLAT SURFACE AND THIS SHOULD BE THE ONLY EXPOSED SURFACE.
- 11.3. THE ROCK SHALL HAVE THE FOLLOWING PROPERTIES:
- 11.3.1. BULK SPECIFIC GRAVITY (SATURATED SURFACE-DRY BASIS) NOT LESS THAN 2.5.
- 11.3.2. ABSORPTION NOT MORE THAN 2% BY WEIGHT.
- 11.3.3. THE BULK SPECIFIC GRAVITY AND ABSORPTION SHALL BE DETERMINED BY ASTM METHOD C-127.
- 11.4. ROCK THAT FAILS TO MEET THESE REQUIREMENTS MAY BE ACCEPTED ONLY IF SIMILAR ROCK FROM THE SAME SOURCE HAS BEEN DEMONSTRATED TO BE SOUND AFTER FIVE YEARS OR MORE OF SERVICE UNDER CONDITIONS OF WEATHER, WETTING AND DRYING, AND EROSIIVE FORCES SIMILAR TO THOSE ANTICIPATED. ALTERNATIVELY, NATIVE OR IMPORTED STONE, ALREADY AT THE SITE AND MEETING THE STANDARDS OUTLINED ABOVE, MAY BE USED.
- 11.5. THE ENGINEER RETAINS RIGHT OF REFUSAL FOR ANY ROCK BROUGHT TO THE SITE WHICH IS NOT SUITABLE AND DOES NOT MEET THE ABOVE CRITERIA AND/OR SHOWS EXCESSIVE WEATHERING, CRACKING OR DEFORMATION.
- 11.6. MINIMUM ROCK DIMENSIONS FOR 3', 4', 6' AND 7' BOULDERS SHALL BE NOTED

DIMENSION FOR THREE DIMENSIONS. SEE DRAWINGS FOR SPECIFIC DIMENSIONS.

- 11.7. ALL RIP RAP TO MEET ASTM C-535-69, AASHTO TEST 103 AND HAVE A SPECIFIC GRAVITY OF 2.65. THE ENGINEER TAKES NO RESPONSIBILITY FOR MATERIAL USED NOT MEETING THESE SPECIFICATIONS OR NOT APPROVED ON-SITE BY THE ENGINEER OR OWNER.
- 11.8. ALL RIPRAP AND POOL ARMORING SHALL HAVE THE GRADATIONS AS NOTED IN SECTION 28 OF THE GENERAL NOTES AND THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT (UDFCD) GRADATION TABLE AS PROVIDED IN THE URBAN STORM DRAINAGE CRITERIA MANUAL (2016).
12. SITE PREPARATION-ROCK EXCAVATION
- 12.1. CONTRACTOR SHALL USE SUITABLE EXCAVATION TECHNIQUES THAT INCLUDE HYDRAULIC RIPPERS AND HAMMERS, STANDARD BUCKET EXCAVATION, AND HYDRAULIC BREAKERS. STANDARD BUCKET EXCAVATION AND ROCK PLACEMENT SHALL INCLUDE A HYDRAULIC THUMB. NO BLASTING OR EXPLOSIVES MAY BE USED WITHOUT PRIOR APPROVAL.
- 12.2. SUBGRADE, BASE MATERIAL, AND SURFACE COURSE IS TO BE COMPACTED TO 95% STANDARD PROCTOR WITH A MOISTURE CONTENT WITHIN 2% OF OPTIMAL PER ASTM D1558 AND AASHTO T180.

13. SITE PREPARATION- STONES PLACED IN CHANNEL

- 13.1. NO ROCK PLACEMENT SHALL OCCUR IN CHANNEL UNTIL APPROPRIATE WATER CONTROL MEASURES ARE IN PLACE (AS OUTLINED IN THE DEWATERING PLAN)
- 13.2. EACH STONE SHALL BE PLACED TO THE FINAL POSITION BY SUITABLE EQUIPMENT FOR HANDLING MATERIAL AND, IF NECESSARY, THE STONE SHALL BE PICKED UP AND REPOSITIONED.
- 13.3. IT SHOULD BE ANTICIPATED THAT RE-HANDLING OF INDIVIDUAL STONES, AFTER INITIAL PLACEMENT WILL BE REQUIRED TO ACHIEVE REQUIRED SLOPES, GRADES, ELEVATIONS AND POSITION.
- 13.4. THE ENGINEER SHALL OBSERVE AND APPROVE CONTRACTOR'S METHOD FOR STONE PLACEMENT IN A REPRESENTATIVE AREA FOR EACH PROJECT COMPONENT.

14. SITE PREPARATION-ROCKS PLACED IN STONE TERRACING

- 14.1. ALL ROCKS PLACED AS STONE TERRACING MUST BE PLACED WITH FLAT SIDE FACING UP AND BE CLEAN OF ALL SHARP PROTRUSIONS THAT COULD CREATE A SAFETY HAZARD.
- 14.2. IT SHOULD BE ANTICIPATED THAT RE-HANDLING OF INDIVIDUAL STONES, AFTER INITIAL PLACEMENT WILL BE REQUIRED TO ACHIEVE REQUIRED SLOPES, GRADES, ELEVATIONS AND POSITION.
- 14.3. ALL PLACED ROCKS MUST BE KEYED IN 12-INCHES IN BOTH THE HORIZONTAL AND VERTICAL DIRECTIONS.
- 14.4. ALL STONE TERRACING SHALL BE PLACED WITH SUITABLE GEO-TEXTILE UNDERLYING THE MATERIAL (IF INCLUDED IN THE DESIGN) AND BACKFILLED WITH CLEAN NATIVE FILL.
- 14.5. ALL PLACED STONES SHALL BE PLACED ON SUITABLE SUBGRADE APPROVED BY ENGINEER. IF UNSUITABLE SUBGRADE IS EXPERIENCED, CONTRACTOR MUST INCLUDE SUITABLE SUBGRADE MATERIAL AS NOTED ON THE DRAWINGS.

15. REVEGETATION NOTES

- 15.1. ANY REVEGETATION OR PLANTING SHALL OCCUR WITHIN THE PLANTING WINDOWS SPECIFIED BY THE ENGINEER.
- 15.2. THE CONTRACTOR SHALL PLANT THE TYPE OF PLANT MATERIAL AND MIX OF SPECIES INDICATED FOR EACH MIX, TREE OR SHRUB. LOCATIONS OF TREE AND SHRUB PLANTINGS WILL BE MARKED IN THE FIELD UPON COMPLETION OF EARTHWORK BY THE ENGINEER, AND MAY VARY FROM THOSE SHOWN ON THE DRAWING DUE TO ACTUAL SITE CONDITIONS.
- 15.3. ALL SUITABLE TOPSOIL SHALL BE STOCKPILED DURING CONSTRUCTION AND PLACED WITHIN THE SEEDED AREAS IN MINIMUM 3-INCH DEPTHS.
- 15.4. CONTRACTOR SHALL MAINTAIN ALL PLANT MATERIAL IN A VIABLE CONDITION UP TO THE TIME OF PLANTING AND SHALL NOT PLANT DEAD, DISEASED, OR DAMAGED PLANTS OR SEEDS.
- 15.5. NO PLANTING OR SEEDING SHALL OCCUR UNTIL THE AREA HAS BEEN PROPERLY PREPARED AND APPROVED BY THE ENGINEER (INCLUDING SOILS BEING SATURATED AND/OR FLOODED TO APPROPRIATE WATER DEPTHS).
- 15.6. PLANT MATERIALS SHALL BE INSTALLED USING STANDARD PRACTICES FOR THE TYPE OF MATERIAL.

16. SEEDING

- 16.1. ALL SEEDING SHALL BE COMPLETED BASED THE COLORADO DEPARTMENT OF TRANSPORTATION, EROSION CONTROL AND STORMWATER QUALITY FIELD GUIDE (2011) OR AS NOTED BELOW.
- 16.2. THE UPPER THREE (3) INCHES (MINIMUM) OF THE AREA TO BE SEEDED SHALL BE IN A LOOSE AND FRIABLE CONDITION SUITABLE FOR SEEDING. IF NECESSARY, AREAS TO BE SEEDED WILL BE TILLED TO RELIEVE COMPACTION PRIOR TO SEEDING. ONCE SEEDING IS COMPLETE, NO MORE THAN 0.5-INCHES OF SOIL MAY BE PLACED OVER THE SEED.
- 16.3. 0.25 TONS PER ACRE OF SEED SHALL BE APPLIED IMMEDIATELY AFTER TILLING OR GROUND PREPARATION.
- 16.4. CONTROL ANY SURFACE FLOW TO ENABLE SEEDING. THE SEED MIXES SPECIFIED SHALL BE BROADCAST SEEDED IN WETLAND PLANTING AND TRANSITION AREAS AND SHALL BE DRILL SEEDED IN OTHER AREAS. SEPARATE SEED BOXES SHALL BE USED AS NEEDED, TO ACCOMMODATE THE SEED SIZES IN THE MIXTURES.
- 16.5. MULCH SHALL BE CRIMPED OR TACKIFIER APPLIED TO PREVENT MOVEMENT. IF TACKIFIER IS USED, IT SHALL BE "M-BINDER" TACKIFIER APPLIED AT A RATE OF 100 POUNDS PER ACRE.
- 16.6. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHMENT OF SEED TO 70% OF PRE-EXISTING CONDITION



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PROJECT OWNER:

CITY OF CRAIG  
c/o Peter Brixius, City Manager  
300 West 4th Street  
Craig, CO 81625

DIVERSION PARK IMPROVEMENTS PROJECT

YAMPA RIVER, MOFFAT COUNTY

SPECIFICATIONS (1)

REVISIONS:

NO.	DATE

DESIGNED: SS, AR	DRAFTED: AR, RG
CHECKED: SS	
DATE:	5/11/22

DRAWING NO.

T-07

SHEET T-07 OF 21



17. WATER CONTROL

- 17.1. CONTRACTOR SHALL PREPARE A DEWATERING PLAN TO BE APPROVED BY THE ENGINEER OR OWNER PRIOR TO COMMENCEMENT OF ANY DEWATERING ACTIVITIES IF THE PRESENTED ALTERNATIVES ARE NOT USED.
- 17.2. CONTRACTOR TO FOLLOW GUIDELINES IN THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, URBAN STORM DRAINAGE CRITERIA MANUAL, SECTION 31 23
- 17.3. STEPS SHALL BE EMPLOYED THROUGHOUT THE COURSE OF THE PROJECT TO AVOID THE CREATION OF EXCESSIVE TURBIDITY WHICH MAY DEGRADE WATER QUALITY OR ADVERSELY AFFECT AQUATIC LIFE.
- 17.4. THE WATERWAY MAY EXPERIENCE FLOODING AND CHANGES IN WATER LEVEL AT ANY TIME. IT IS THE CONTRACTORS RESPONSIBILITY TO MONITOR AND ANTICIPATE CHANGES AND PLAN ACCORDINGLY. ANY DAMAGE, LOSSES, PERMIT CONDITION VIOLATIONS, ETC. AS A RESULT OF FLOODING IN THE WATERWAY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 17.5. PRIOR TO CREATION OF COFFERDAMS OR DIVERTING WATER IN ANY MANNER, THE CONTRACTOR MUST REVIEW ALL RELEVANT PERMIT CONDITIONS AND INFORM THE ENGINEER OF THEIR TIMING, METHODS, AND TECHNIQUES FOR WATER CONTROL.
- 17.6. UNLESS PRIOR APPROVAL HAS BEEN GRANTED, THE CONTRACTOR MUST ONLY CONSTRUCT AND WORK WITHIN ONE COFFERDAM AT A TIME.
- 17.7. ANY COFFERDAM FAILURE MUST BE REPORTED TO THE ENGINEER AND/OR OWNER IMMEDIATELY.

18. EMERGENCY PLANNING

- 18.1. CONTRACTOR SHALL CREATE AND HOLD ON FILE AN EMERGENCY ACTION PLAN. THAT PLAN MUST INCLUDE CONTACT NUMBERS FOR ALL UTILITIES LOCATED WITHIN THE PROJECT SITE, IN ADDITION TO PHONE NUMBERS FOR ALL PERMIT UTILITY PROJECT MANAGERS.
- 18.2. THE ENGINEER AND THE OWNER MUST BE NOTIFIED IMMEDIATELY FOLLOWING AN EMERGENCY SITUATION.

19. BOULDER PLACEMENT

- 19.1. PLACE BOULDERS WITH THE REQUIRED BOULDER HEIGHT (VERTICAL). PLACE BOULDERS AS TIGHTLY TOGETHER AS POSSIBLE (WITHOUT TOUCHING).
20. OTHER
- 20.1. IN THE EVENT AN ITEM IS NOT COVERED IN THE SPECIFICATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND THEY MUST APPROVE ANY ADDITIONS OR MODIFICATIONS TO THE SPECIFICATIONS IN WRITING PRIOR TO COMPLETION OF THE WORK.
- 20.2. ALL WASTE MATERIAL AND/OR EXCESS EXCAVATION NOT USED AS PART OF THE WORK SHALL BE REMOVED FROM THE JOB SITE AND DISPOSED OF AT ACCEPTABLE LOCATIONS IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
- 20.3. THE CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLAN FOR REVIEW AND APPROVAL PRIOR TO MOBILIZATION ON SITE, AND AT ALL TIMES DURING CONSTRUCTION SHALL PROVIDE WARNING SIGNS, BARRICADES, AND OTHER SAFETY DEVICES (INCLUDING TEMPORARY FENCING AROUND THE JOB SITE) TO PROTECT PUBLIC SAFETY AND HEALTH IN COMPLIANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY AND TRAFFIC CONTROL, IN ADDITION TO INSTREAM USERS.
- 20.4. THE CONTRACTOR SHALL CONFINE HIS OPERATIONS TO THE CONSTRUCTION LIMITS OF THE PROJECT AND IN NO WAY SHALL ENCRoACHMENT OCCUR ONTO ADJACENT PROPERTIES UNLESS LEGAL EASEMENTS ARE OBTAINED. ALL FILL AND CUT SLOPES SHALL BE SETBACK FROM PROPERTY LINES IN ACCORDANCE WITH CHAPTER 70 OF THE UNIFORM BUILDING CODE. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY AGREEMENTS NECESSARY OR DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES TO PUBLIC OR PRIVATE PROPERTY, INCLUDING UTILITIES.
- 20.5. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING INFRASTRUCTURE. ANY DAMAGE IS THE RESPONSIBILITY OF THE CONTRACTOR.
- 20.6. CONTRACTOR IS REQUIRED TO USE THE DESIGNATED RIVER ACCESS POINT. NO OTHER ACCESS POINTS MAY BE USED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.
- 20.7. CONTRACTOR IS REQUIRED TO USE THE DESIGNATED STAGING AREA. NO OTHER STAGING AREAS MAY BE USED.

21. GRADATION TABLE

Riprap Designation	% Smaller Than Given Size By Weight	Intermediate Rock Dimension (inches)	d <sub>50</sub> * (inches)
Type VL	70 - 100	12	6**
	50 - 70	9	
	35 - 50	6	
	2 - 10	2	
Type L	70 - 100	15	9**
	50 - 70	12	
	35 - 50	9	
	2 - 10	3	
Type M	70 - 100	21	12**
	50 - 70	18	
	35 - 50	12	
	2 - 10	4	
Type H	70 - 100	30	18
	50 - 70	24	
	35 - 50	18	
	2 - 10	6	
Type VH	70 - 100	41	24
	50 - 70	33	
	35 - 50	24	
	2 - 10	9	

\*d<sub>50</sub> = Mean Particle Size

\*\*Mix VL, L, and M riprap with 35% topsoil (by volume) and bury it with 4 to 6 inches of topsoil, all vibration compacted, and revegetate.

22. GROUT/CONCRETE SPECIFICATIONS

- 22.1. IF NOT NOTED OR CONTRADICTED BELOW, CONTRACTOR TO FOLLOW URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, URBAN STORM DRAINAGE CRITERIA MANUAL, SECTION 03 60 00.
- 22.2. ALL GROUT/CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH EQUAL TO 4000 PSI.
- 22.3. GROUT/CONCRETE SHALL CONSIST OF PORTLAND CEMENT, SAND, AND GRAVEL, THOROUGHLY MIXED WITH WATER TO PRODUCE A THICK, CREAMY CONSISTENCY. THE MINIMUM AMOUNT OF WATER SHOULD BE USED TO PREVENT EXCESS SHRINKAGE OF THE CONCRETE AFTER PLACEMENT AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION C150.
- 22.4. THE WATER CEMENT RATIO SHALL NOT EXCEED 0.48. A STIFFER MIX SHALL BE USED FOR STEEPER APPLICATIONS. AIR ENTRAINMENT SHALL BE USED FOR ALL APPLICATIONS.
- 22.5. AIR ENTRAINMENT SHALL BE BETWEEN 5.5% AND 7.5%. AIR ENTRAINING AGENTS SHALL CONFORM TO ASTM C260 AND WATER REDUCING AGENTS SHALL CONFORM TO ASTM C494.
- 22.6. THE AGGREGATE SHALL BE COMPRISED OF 70% NATURAL SAND (FINES) AND 30% 3/8-INCH ROCK (COARSE) AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM C33.
- 22.7. ONE CUBIC YARD OF GROUT/CONCRETE SHALL HAVE A MINIMUM OF SIX (6) SACKS OF TYPE II PORTLAND CEMENT.
- 22.8. A MAXIMUM OF 25% TYPE F FLY ASH MAY BE SUBSTITUTED FOR THE PORTLAND CEMENT.
- 22.9. THE GROUT/CONCRETE SLUMP SHALL BE BETWEEN 4-INCHES TO 11-INCHES.
- 22.10. TO CONTROL SHRINKAGE AND CRACKING, 1.5 POUNDS OF FIBERMESH, OR EQUIVALENT, SHALL BE USED PER CUBIC YARD OF GROUT/CONCRETE.
- 22.11. COLOR ADDITIVE IN REQUIRED AMOUNTS SHALL BE USED AS SPECIFIED BY ENGINEER.
- 22.12. ADMIXTURES: SHALL BE USED FOR ADJUSTING FLOW AND WORKABILITY, AS REQUIRED, AND COULD CONSIST OF WATER-REDUCERS, RETARDERS, PLASTICIZERS, SUPERPLASTICIZERS, OR NONCHLORIDE ACCELERATORS. ALL ADMIXTURES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C494 AND ASTM C1017 AS APPLICABLE.
23. GROUT/CONCRETE PLACEMENT SPECIFICATIONS (PER UDFCD CRITERIA MANUAL, 2016)
- 23.1. SPECIAL PROCEDURES SHALL BE REQUIRED FOR GROUT/CONCRETE PLACEMENT WHEN THE AIR TEMPERATURES ARE LESS THAN 40°F OR GREATER THAN 90°F. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER OF THE PROCEDURES TO BE USED FOR PROTECTING THE GROUT/CONCRETE. SEE "COLD WEATER PLACEMENT" SECTION.
- 23.2. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE A MINIMUM OF 48 HOURS PRIOR TO THE PLACEMENT OF CONCRETE OR GROUT. THE OWNER'S REPRESENTATIVE MUST APPROVE THE FORM WORK AND REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE OR GROUT. FILL LEVELS SHALL BE MARKED ON THE BOULDERS.
- 23.3. GROUT AND CONCRETE SHALL BE DELIVERED BY MEANS OF A LOW PRESSURE (LESS THAN 10 PSI) PUMP USING A 4-INCH DIAMETER (MAXIMUM) NOZZLE.
- 23.4. FULL DEPTH PENETRATION OF THE GROUT INTO THE BOULDER VOIDS SHALL BE ACHIEVED BY INJECTING GROUT STARTING WITH THE NOZZLE NEAR THE BOTTOM AND RAISING IT AS THE GROUT FILLS. WHILE VIBRATING GROUT INTO PLACE USING A PENCIL VIBRATOR.
- 23.5. CONTRACTOR IS REQUIRED TO HAVE AT LEAST ONE BACKUP VIBRATOR AND POWER SOURCE ON-SITE.
- 23.6. ALL GROUT BETWEEN BOULDERS SHALL BE TREATED WITH A BROOM FINISH.
- 23.7. AFTER GROUT/CONCRETE PLACEMENT, EXPOSED BOULDER FACES SHALL BE CLEANED AND FREE OF GROUT/CONCRETE.
- 23.8. ALL EXPOSED GROUT AND CONCRETE TO HAVE A BULL-NOSE OF AT LEAST 1.5" REGARDLESS OF EDGE CONTACT POINT.
- 23.9. WHERE GROUT OR CONCRETE CONTACTS BOULDERS, A 1.5" FILLET IS REQUIRED WITH ALL GROUT CLEANED FROM THE BOULDER SURFACE USING BRUSHES.
- 23.10. ALL FINISHED GROUT OR CONCRETE SURFACES SHALL BE SPRAYED WITH A CLEAR LIQUID MEMBRANE CURING COMPOUND AS SPECIFIED IN ASTM C309 IF SPECIFIED.
- 23.11. THE TIME INTERVAL BETWEEN GROUT AND CONCRETE BATCHING, AND PLACEMENT, SHALL BE 90 MINUTES. THIS REQUIREMENT MAY BE WAIVED IF, AFTER 90 MINUTES, THE GROUT OR CONCRETE CAN STILL BE PLACED WITHOUT ADDING WATER (TO REDUCE SLUMP) TO THE BATCH. FIELD PACKS OF WATER REDUCING ADMIXTURES MAY BE ADDED TO THE BATCH TO INCREASE SLUMP/WORKABILITY. MAXIMUM TIME INTERVAL, REGARDLESS OF SLUMP, SHALL BE 180 MINUTES.
- 23.12. IN ANY CASE, GROUT AND CONCRETE SHALL BE CONVEYED FROM THE MIXER TO THE FINAL PLACEMENT AS RAPIDLY AS PRACTICABLE AND MANAGEABLE BY FINISHERS, BY METHODS THAT WILL PREVENT SEGREGATION OF THE AGGREGATES AND/OR LOSS OF CEMENTITIOUS MATERIALS.
- 23.13. GROUT AND CONCRETE MIX SHALL NOT BE ALLOWED TO FREE FALL MORE THAN FIVE (5) FEET UNLESS SUITABLE EQUIPMENT IS USED TO PREVENT SEGREGATION.
- 23.14. THE GROUT AND CONCRETE MIXES SHALL NOT BE PLACED UNTIL THE AFFECTED AREA HAS BEEN INSPECTED AND APPROVED BY THE DESIGNER FOR PLACEMENT.
- 23.15. CONCRETE WITHIN THE LOW FLOW AREA IS TO BE BROOM FINISHED.
- 23.16. THE CONTRACTOR IS REQUIRED TO FINISH ALL GROUT AND CONCRETE INTERFACING WITH BOULDER, WITHIN THE INSTREAM STRUCTURES AND TERRACING, USING THE FOLLOWING TECHNIQUE:
- 23.16.1 FOLLOWING INITIAL PLACEMENT, A TROWEL WILL BE USED TO REMOVE ALL SPILLED, SPLATTERED, AND DUMPED MATERIAL FROM ROCK FACES AND EXPOSED SURFACES.
- 23.16.2 ONCE THE MATERIAL HAS BEEN REMOVED BY A TROWEL, ALL SURFACES ARE TO BE TROWEL FINISHED AND SMOOTHED.
- 23.17. FOLLOWING TROWEL WORK, WET BROOMS AND BRUSHES ARE TO BE USED IN COMBINATION WITH BUCKETS OF WATER TO CLEAN ALL EXPOSED SURFACES AND TRANSITIONS FROM ROCK TO GROUT/CONCRETE WITH THE INTENTION OF MAKING THE GROUT/CONCRETE BLEND WITH THE ENVIRONMENT.
- 23.18. FOLLOWING COMPLETION OF PLACEMENT, THE WORK AREA SHOULD BE FLOODED TO ENSURE OPTIMAL CURING. THE WORK AREA SHALL BE ISOLATED TO ENSURE THERE IS NO CONTACT WITH THE LIVE RIVER. THE STATIC WATER LEVEL IN THE WORK

AREA SHOULD EQUAL THE WATER LEVEL IN THE LIVE RIVER.

- 23.19. THE STRUCTURE SHALL BE LEFT AS NOTED IN 22.17 FOR A MINIMUM OF 24 HOURS BEFORE CONTACT WITH THE LIVE RIVER MAY OCCUR. APPROVAL MUST BE GAINED FROM THE ENGINEER PRIOR TO BREACHING OF THE COFFERDAM AND EXPOSING GROUT OR CONCRETE TO THE LIVE RIVER. STANDARD PRACTICES FOR CURINGS, AS NOTED IN ACI STANDARD 308.1 SHALL BE FOLLOWED.

24. PRODUCT OPTIMIZATION

- 24.1. FOLLOWING COMPLETION OF STRUCTURE #1 AND #2 RIVER LEFT COFFERDAMMED AREA AND PRIOR TO THE COMPLETE REMOVAL OF THE COFFERDAM, IT SHALL BE BREACHED TO ALLOW >80% OF TOTAL FLOW TO INUNDATE THE LOW FLOW PORTION OF THE STRUCTURE. THE ENGINEER WILL PRODUCT TEST AT THAT TIME. THE COFFERDAM WILL THEN BE CLOSED AND MODIFICATIONS WILL BE REQUESTED BY THE ENGINEER. THE CONTRACTOR SHOULD ANTICIPATE THE ADDITION OR SUBTRACTION OF UP TO 50 CUBIC YARDS OF MATERIAL AT THIS TIME.
- 24.2. FOLLOWING COMPLETION OF STRUCTURE #1 AND #2 RIVER RIGHT COFFERDAMMED AREA AND PRIOR TO THE COMPLETE REMOVAL OF THE COFFERDAM, IT SHALL BE BREACHED TO ALLOW >80% OF TOTAL FLOW TO INUNDATE THE FISH PASSAGE. THE ENGINEER WILL PRODUCT TEST AT THAT TIME. THE COFFERDAM WILL THEN BE CLOSED AND MODIFICATIONS WILL BE REQUESTED BY THE ENGINEER. THE CONTRACTOR SHOULD ANTICIPATE THE ADDITION OR SUBTRACTION OF UP TO 20 CUBIC YARDS OF MATERIAL AT THIS TIME.

25. COLD WEATHER PLACEMENT

- 25.1. CONTRACTOR MUST FOLLOW RECOMMENDATIONS SET IN THE AMERICAN CONCRETE INSTITUTE COMMITTEE 306 (ACI 306R-88). WHEN PLACING CONCRETE AFTER THE FIRST FROST OR WHEN THE MEAN DAILY TEMPERATURES ARE BELOW 40° F.
- 25.2. HEAT AGGREGATES AND WATER IN ORDER TO PLACE GROUT/CONCRETE AT TEMPERATURES BETWEEN 50° F AND 80° F.
- 25.3. PLACING OF CONCRETE MAY BEGIN IN MORNING, BUT SHALL BE DISCONTINUED AT 3:00 PM OF SAME DAY IF FREEZING WEATHER THREATENS.
- 25.4. AFTER CONCRETE IS PLACED, PROVIDE SUFFICIENT PROTECTION SUCH AS COVER, CANVAS, FRAMEWORK, HEATING APPARATUS, ETC., TO ENCLOSE AND PROTECT GROUT/CONCRETE AND MAINTAIN TEMPERATURE OF 70° F FOR 3 DAYS OR 50° F FOR 5 DAYS AFTER PLACING.
- 25.5. IF FLAKING OR SPAWLING IS FOUND, THAT PORTION OF THE CONCRETE DID NOT APPROPRIATELY CURE AND WILL BE RE-DONE AT THE EXPENSE OF THE CONTRACTOR.
- 25.6. IF IN THE OPINION OF ENGINEER OR OWNER, PROTECTION IS NOT ADEQUATE, CEASE PLACEMENT UNTIL CONDITIONS OR PROCEDURES ARE SATISFACTORY TO OWNER'S REPRESENTATIVE.

26. INSPECTING AND TESTING FRESH GROUT/CONCRETE

- 26.1. THE ENGINEER SHALL HAVE FREE ACCESS TO ALL PARTS OF THE CONTRACTOR'S PLANT AND EQUIPMENT UTILIZED FOR MIXING AND PLACING GROUT/CONCRETE DURING THE PERIOD OF THE CONTRACT. PROPER FACILITIES SHALL BE PROVIDED FOR THE ENGINEER TO SAMPLE MATERIALS AND VIEW PROCESSES IMPLEMENTED IN THE MIXING AND PLACING OF GROUT/CONCRETE AS WELL AS FOR SECURING GROUT/CONCRETE TEST SAMPLES. ALL TESTS AND INSPECTIONS SHALL BE SO CONDUCTED AS A MINIMUM OF INTERFERENCE TO THE CONTRACTOR'S OPERATION OCCURS.
- 26.2. GROUT/CONCRETE SHALL BE TESTED FOR SLUMP, TEMPERATURE, AIR ENTRAINMENT, 7 AND 28 DAY STRENGTH BY A TESTING LABORATORY OPERATED UNDER THE DIRECTION OF A PROFESSIONAL ENGINEER. TESTING SERVICES SHALL BE PROVIDED BY THE OWNER.
- 26.3. FOR READY-MIXED GROUT/CONCRETE, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER A STATEMENT OF DELIVERY TICKET FOR EACH BATCH DELIVERED TO THE SITE. THE TICKET SHALL PROVIDE AS A MINIMUM: WEIGHTS IN POUNDS OF CEMENT, AGGREGATES (FINE AND COARSE), WATER; WEIGHT IN OUNCES OF AIR-ENTRAINING AGENT; TIME OF LOADING; AND, THE REVOLUTION COUNTER READING AT THE TIME BATCHING WAS STARTED.



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DIVERSION PARK IMPROVEMENTS PROJECT

YAMPA RIVER, MOFFAT COUNTY

SPECIFICATIONS (2)

REVISIONS:

NO.	DATE
DESIGNED: SS, AR	DRAFTED: AR, RG
CHECKED: SS	
PLOT DATE:	5/11/22

DRAWING NO.

T-08

SHEET T-08 OF 21