

LOUP LOUP CREEK FISH PASSAGE PROJECT FINAL DESIGN PLAN SET

PROJECT PARTNERS



CONFEDERATED TRIBES OF THE COLVILLE RESERVATION
21 COLVILLE STREET
NESPELEM, WASHINGTON 99155



BONNEVILLE POWER ADMINISTRATION
P.O. BOX 3621
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PROJECT DESCRIPTION

THE CONFEDERATED TRIBES OF THE COLVILLE RESERVATION (CTCR) FISH AND WILDLIFE DEPARTMENT RETAINED RIVER DESIGN GROUP, INC. TO ASSIST WITH SURVEY, ANALYSIS AND DESIGN FOR THE LOUP LOUP CREEK FISH PASSAGE PROJECT. THE OBJECTIVE OF THIS PROJECT IS TO IMPROVE FISH PASSAGE AT A SERIES OF NATURAL BARRIERS ON LOUP LOUP CREEK. THIS PROJECT WILL HELP TO ACHIEVE RECOVERY GOALS FOR UPPER COLUMBIA RIVER SUMMER STEELHEAD, A FEDERALLY-LISTED ENDANGERED SPECIES. THE PREFERRED ALTERNATIVE, CONSTRUCTION OF A SERIES OF STEP-POOL CHANNELS, WAS SELECTED FOLLOWING DISCUSSIONS WITH THE LANDOWNER, PROJECT PARTNERS AND PERMITTING AGENCIES. THIS PLAN SET REPRESENTS THE FINAL DESIGN FOR THE PREFERRED ALTERNATIVE. THE PROPOSED STEP-POOL CHANNEL IS DESIGNED TO PROVIDE PASSAGE FOR ADULT STEELHEAD OVER THE COURSE OF THE SPRING MIGRATION PERIOD WITH FLOWS RANGING FROM 15 CFS TO 50 CFS.

THE LOUP LOUP CREEK FISH PASSAGE PROJECT IS BEING FUNDED BY THE BONNEVILLE POWER ADMINISTRATION (BPA) UNDER THE NORTHWEST POWER AND CONSERVATION COUNCIL'S COLUMBIA BASIN FISH AND WILDLIFE PROGRAM. FOR ADDITIONAL INFORMATION REGARDING PROJECT PLANNING AND ANALYSIS SEE LOUP LOUP CREEK FISH PASSAGE PROJECT DESIGN REPORT.

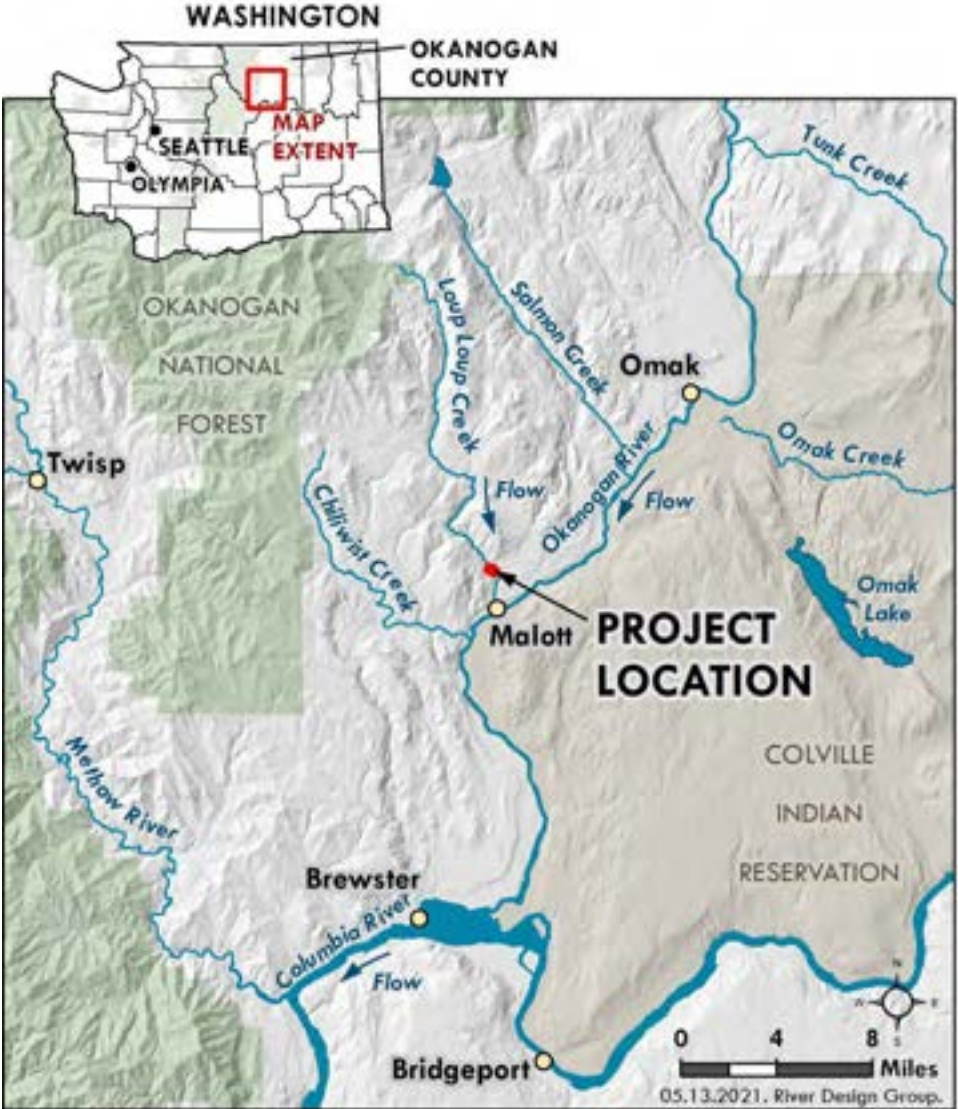
GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS IN THE FIELD PRIOR TO CONSTRUCTION. IF NECESSARY, ADJUSTMENTS TO THE DRAWINGS WILL BE MADE AS DIRECTED BY THE ENGINEER.
2. MODIFICATIONS TO THE DESIGN THAT HAVE POTENTIAL TO CHANGE PROJECT PERFORMANCE MUST BE APPROVED IN WRITING BY THE ENGINEER.
3. TOPOGRAPHY SHOWN ON THE DRAWINGS IS BASED ON LIDAR DATA COLLECTED IN NOVEMBER 2021 BY ELEVATE UAS.
4. UTILITIES IDENTIFIED ON THE DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT ABSOLUTE HORIZONTAL AND VERTICAL LOCATIONS. THE CONTRACTOR MUST OBTAIN A CURRENT LOCATE OF UNDERGROUND FACILITIES FROM THE ONE CALL UTILITIES UNDERGROUND LOCATION CENTER (800-424-5555) PRIOR TO PERFORMING EXCAVATING OR OTHER GROUND PENETRATING ACTIVITIES.
5. THE CONTRACTOR IS RESPONSIBLE FOR INDEPENDENTLY ENSURING THAT ALL SAFETY REQUIREMENTS ARE MET, WHETHER OR NOT IDENTIFIED IN THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL PROTECT ALL TREES AND LAND AREAS NOT LOCATED WITHIN THE PROJECT CONSTRUCTION, STAGING OR CONSTRUCTION LIMITS. EXERCISE CARE IN AREAS NOT MARKED TO AVOID DAMAGE TO EXISTING VEGETATION.
7. THE ENGINEER WILL PROVIDE SURVEY CONTROL AND DESIGN INFORMATION. THE CONTRACTOR SHALL PROVIDE SURVEY STAKING AND LAYOUT FOR CONSTRUCTION. LAYOUT FOR CONSTRUCTION. ENGINEER SHALL VERIFY STAKING AND LAYOUT PRIOR TO CONSTRUCTION.
8. VERTICAL TOLERANCE FOR CONSTRUCTION COMPLIANCE WILL BE 0.2 FEET. HORIZONTAL TOLERANCE WILL BE 1.0 FEET.
9. THE CONTRACTOR SHALL CONFIRM QUANTITIES SHOWN ON THE DRAWINGS AND FOR OWNER-SUPPLIED MATERIALS.
10. EARTHWORK QUANTITIES REPORTED ON THE DRAWINGS ARE NEAT LINE QUANTITIES CALCULATED FROM THE DIFFERENCE BETWEEN THE FINISHED GROUND SURFACE AND EXISTING GROUND SURFACE.
11. THE VOLUME OF MATERIAL REQUIRED FOR FILL SURFACES MAY VARY DEPENDING ON COMPACTION AND MOISTURE CONTENT.
12. EARTHWORK QUANTITIES DO NOT INCLUDE SUBGRADE EXCAVATION QUANTITIES UNLESS NOTED OTHERWISE.
13. SLOPES DESIGNATED AS 2:1, 1.5:1, ETC., ARE THE RATIOS OF HORIZONTAL DISTANCE TO VERTICAL DISTANCE.
14. DIMENSIONS ARE GIVEN IN FEET AND TENTHS OF A FOOT.
15. EXCAVATION, TRENCHING, SHORING, AND SHIELDING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING THE WORK, THESE DRAWINGS ARE NOT INTENDED TO PROVIDE MEANS OR METHODS OF CONSTRUCTION.

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LOUP LOUP CREEK VICINITY MAP



REUSE OF DRAWINGS

THESE DRAWINGS, THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF RIVER DESIGN GROUP, INC. (RDG) AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF RDG. LIKEWISE, THESE DRAWINGS MAY NOT BE ALTERED OR MODIFIED WITHOUT AUTHORIZATION OF RDG. DRAWING DUPLICATION IS ALLOWED IF THE ORIGINAL CONTENT IS NOT MODIFIED.



COVER PAGE AND NOTES

LOUP LOUP CREEK FISH PASSAGE PROJECT

MALOTT, WASHINGTON

NO.	DATE	BY	DESCRIPTION	CHK
1	08/2021	NW	30% DESIGN	CN
2	02/2022	NW	80% DESIGN	CN
	04/2022	NW	FINAL DESIGN	CN

PROJECT NUMBER
RDG-21-027

DRAWING NUMBER

1.0

Drawing 1 of 20



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IMAGE: ELEVATE 2021

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**1 EXISTING CONDITIONS
PLAN VIEW** 1" = 200'

EXISTING CONDITIONS

THE PROPOSED FISH PASSAGE PROJECT IS LOCATED ON LOUP LOUP CREEK APPROXIMATELY 2 MILES UPSTREAM FROM ITS CONFLUENCE WITH THE OKANOGAN RIVER. THE CREEK IS CHARACTERIZED BY ALTERNATING LOW TO MODERATE GRADIENT ALLUVIAL REACHES AND ADJACENT COLLUVIUM-INFLUENCED CONFINED REACHES WITH HIGHER ENERGY STREAM ENVIRONMENTS. LARGE WOOD, CHANNEL BED MATERIALS AND VEGETATION EXERT VARYING DEGREES OF INFLUENCE ON THE CHANNEL MORPHOLOGY AND HABITATS. HIGH GRADIENT CHANNEL REACHES (~7.5%) MAY NOT CREATE DISTINCT FISH PASSAGE BARRIERS, BUT DISCRETE DROPS IN THE CHANNEL PROFILE INHIBIT PASSAGE FOR ADULT STEELHEAD.

LOUP LOUP CREEK HYDROLOGY

LOW FISH PASSAGE	15 CFS
HIGH FISH PASSAGE	50 CFS
2-YR DISCHARGE	120 CFS
25-YR DISCHARGE	557 CFS
100-YR DISCHARGE	921 CFS
GRADIENT	7.5 % AVERAGE
SUBSTRATE D50	LARGE COBBLE/BOULDER
CHANNEL CLASSIFICATION	B2



EXISTING CONDITIONS
LOUP LOUP CREEK FISH PASSAGE PROJECT
MALOTT, WASHINGTON

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2	02/2022	NW	80% DESIGN	CN
	04/2022	NW	FINAL DESIGN	CN

PROJECT NUMBER
RDG-21-027

DRAWING NUMBER
2.0

Drawing 2 of 20

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IMAGE: MAXAR 2021

1 SITE PLAN PLAN VIEW
1" = 500'

ACCESS AND STAGING

- 1** FROM OLD HIGHWAY 97, TAKE TAKE B AND O ROAD FOR 1.1 MILES. TURN LEFT ONTO AN UNNAMED DIRT ROAD AND FOLLOW THE EAST SIDE OF LOUP LOUP CREEK NORTH UNTIL YOU REACH SITE 1.
- 2** DEVELOP TEMPORARY ACCESS ROADS TO ACCESS SITES 1, 2 AND SITE 3.
- 3** TEMPORARY STAGING AREAS WILL BE ESTABLISHED ON THE NORTH SIDE OF LOUP LOUP CREEK TO ACCOMMODATE THE SITES.
- 4** A TEMPORARY AGGREGATE MIXING AND STOCKPILE AREA WILL BE ESTABLISHED TO ACCOMMODATE THE EARTHWORK MATERIALS.

NOTE: CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS ROADS. EQUIPMENT, MAINTENANCE AND MATERIALS TO BE STAGED AWAY FROM THE FROM RIVER.



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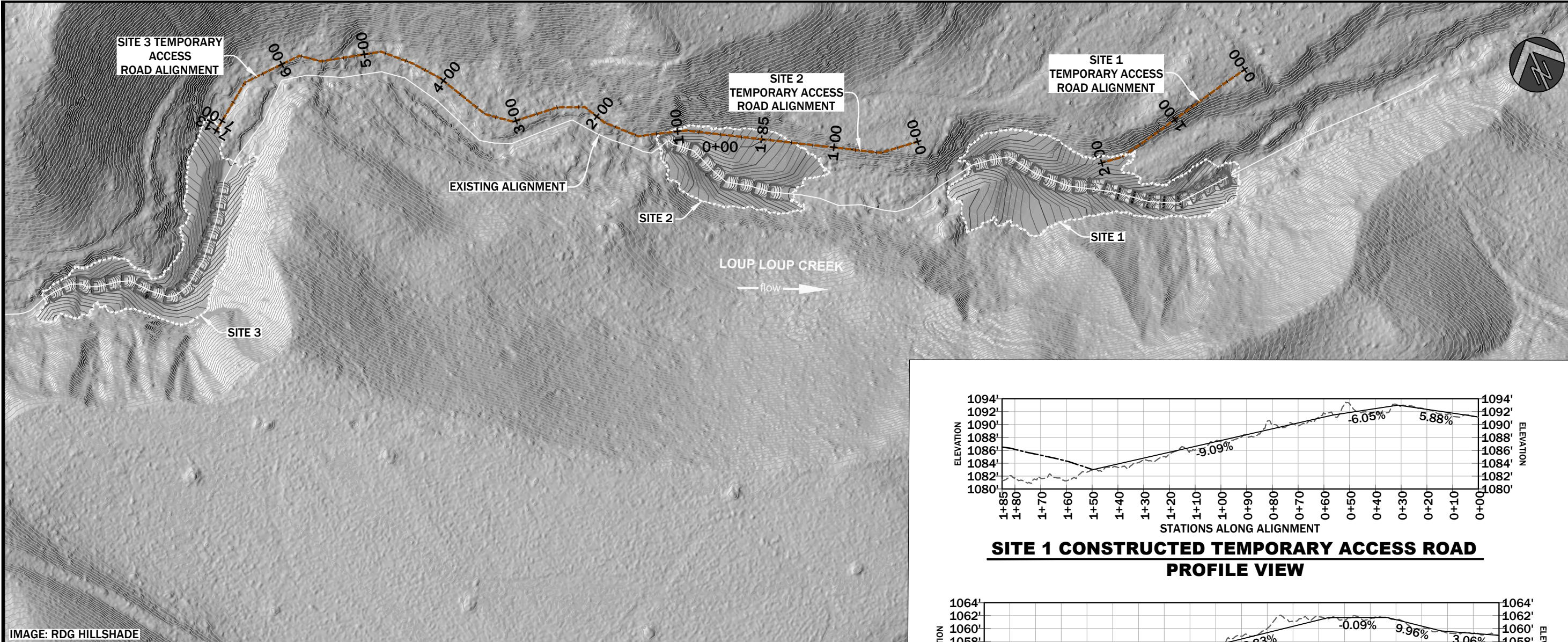
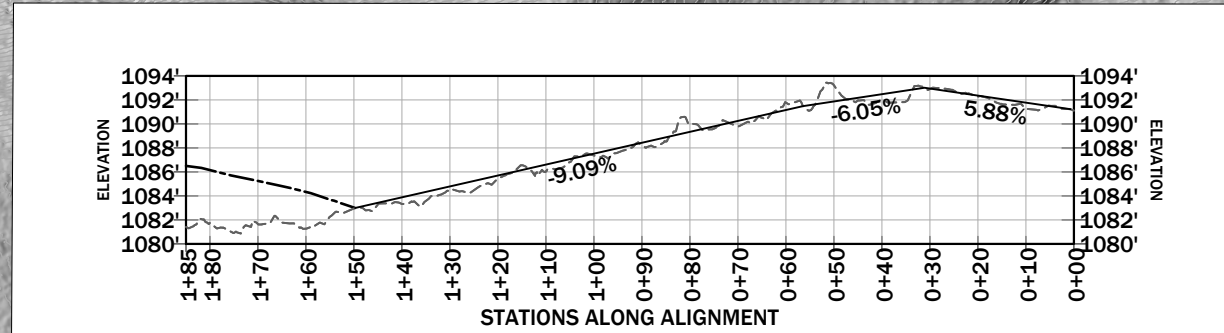
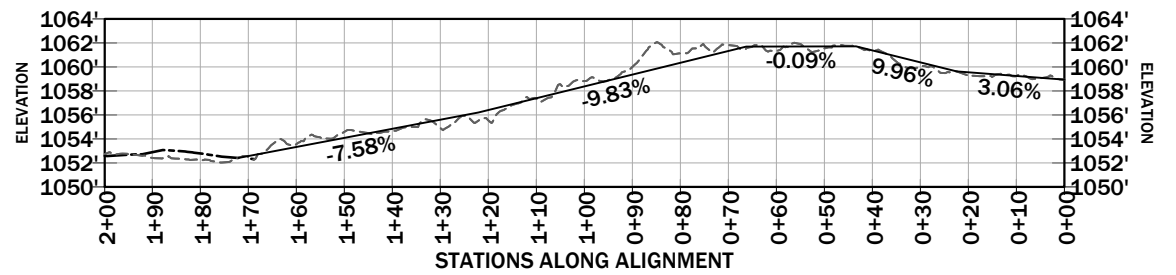


IMAGE: RDG HILLSHADE

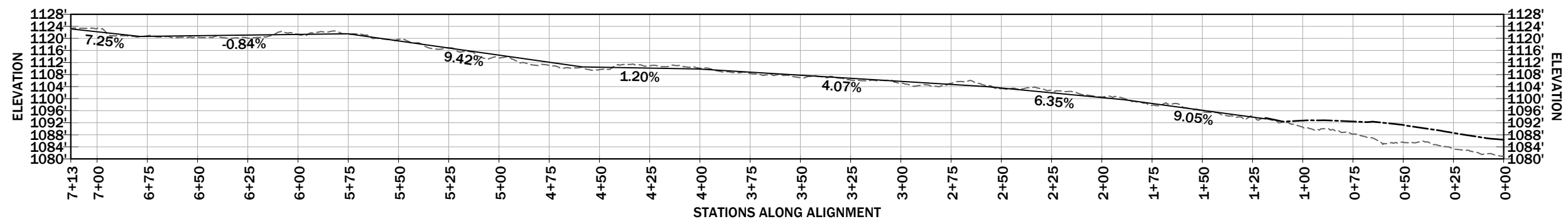
**1 CONSTRUCTED TEMPORARY ACCESS ROADS
PLAN VIEW**
1" = 100'



**SITE 1 CONSTRUCTED TEMPORARY ACCESS ROAD
PROFILE VIEW**



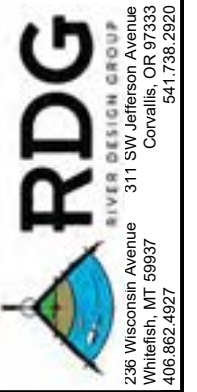
**SITE 2 CONSTRUCTED TEMPORARY ACCESS ROAD
PROFILE VIEW**



**SITE 3 CONSTRUCTED TEMPORARY ACCESS ROAD
PROFILE VIEW**

LEGEND
 --- EXISTING GROUND ELEVATION
 - - - DESIGN GRADING SURFACE
 ——— TEMPORARY ROAD GRADE

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TEMPORARY ACCESS ROAD PLAN AND PROFILES
 LOUP LOUP CREEK FISH PASSAGE PROJECT
 MALOTT, WASHINGTON

NO.	DATE	BY	DESCRIPTION	CHK
*	08/2021	NW	30% DESIGN	CN
1	02/2022	NW	80% DESIGN	CN
2	04/2022	NW	FINAL DESIGN	CN

PROJECT NUMBER
RDG-21-027
 DRAWING NUMBER
3.1
 Drawing .4 of 20

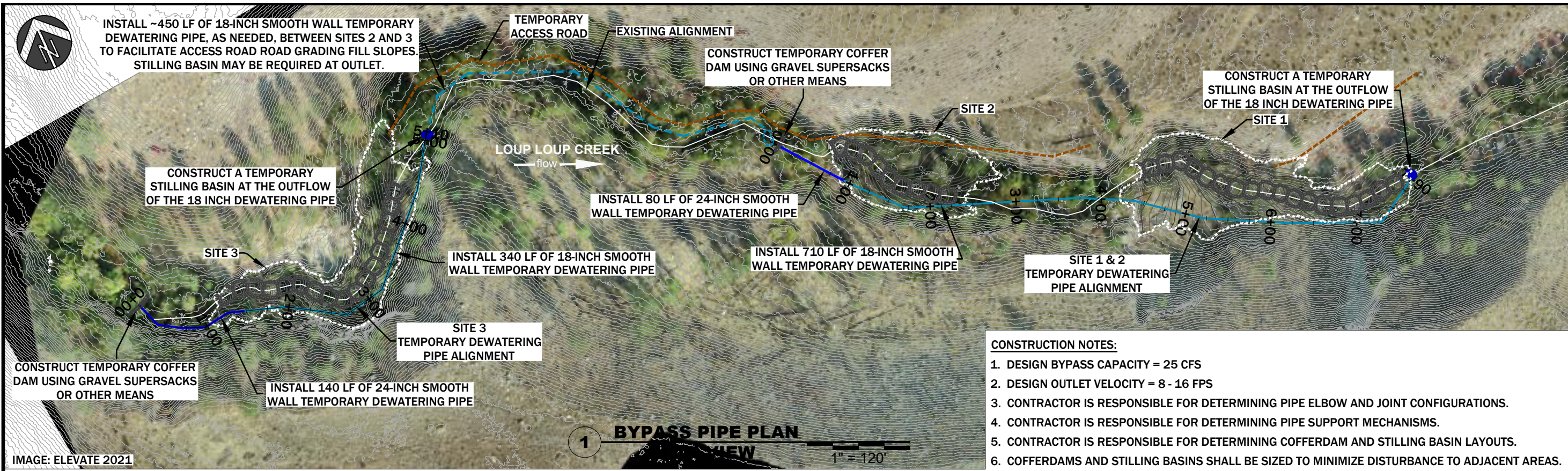
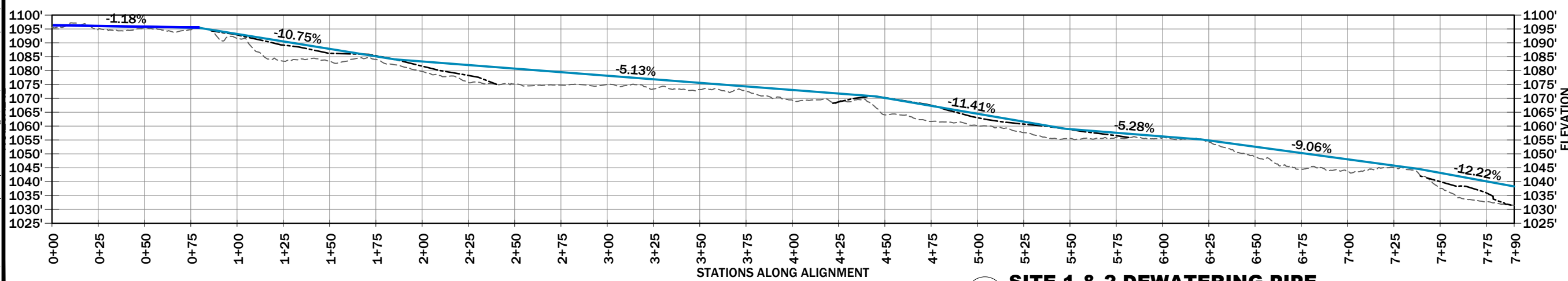
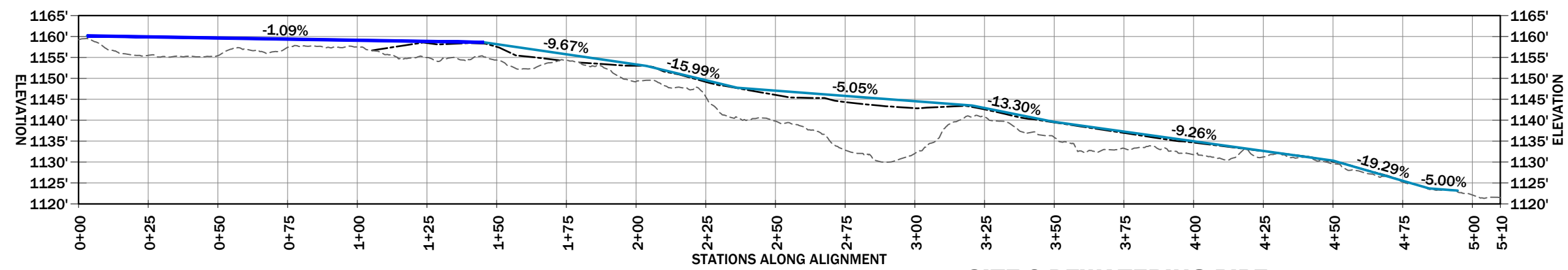
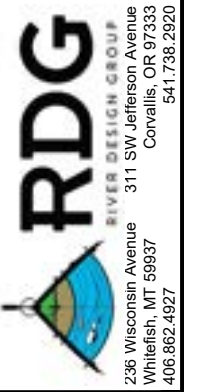


IMAGE: ELEVATE 2021



LEGEND

EXISTING GROUND ELEVATION DESIGN GRADING SURFACE DEWATERING PIPE PROFILE



BYPASS PIPE PLAN AND PROFILES
 LOUP LOUP CREEK FISH PASSAGE PROJECT
 MALOTT, WASHINGTON

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1	08/2021	NW	30% DESIGN	CN
2	02/2022	NW	80% DESIGN	CN
3	04/2023	NW	FINAL DESIGN	CN
	04/2023	LS	DEWATER PIPE REV	CN

PROJECT NUMBER: RDG-21-027
 DRAWING NUMBER: **3.2**
 Drawing 5 of 20

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