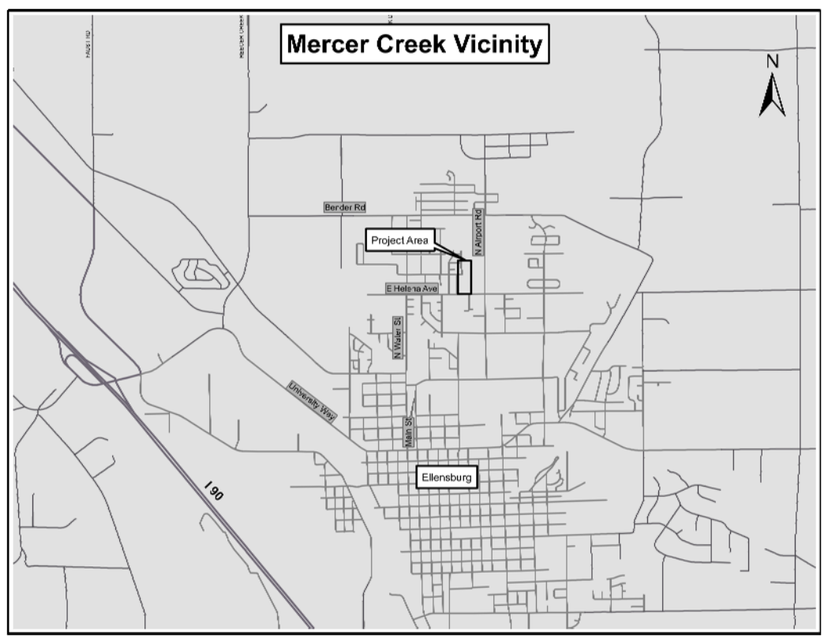
Mercer Creek Floodplain

Kittitas County Washington

Partnered with Mid Columbia Fisheries
and Washington Department of Fish and Wildlife

DRAFT



Sheet Index

01:	GE-##	General Notes
02:	EX-##	Existing Conditions
03:	GR-##	Grading Plan
04:	SP-##	Site Plan
05-09:	PP-##	Plan and Profile
10:	XS-##	Cross Sections
11-18:	DT-##	Details

FROM THE CASCADES . . .TO THE COLUMBIA

KITTITAS COUNTY

General Notes

The basis for control of work shall be as follows:

A. It is the responsibility of the applicant, contractor, and their agents to have an approved set of plans and any necessary permits on the job site wherever work is being accomplished.

B. The county shall have the authority to enforce these standards, as well as all other referenced or pertinent specifications. The County Engineer will appoint designees, project engineers, assistants, and inspectors as necessary to inspect the work, and they will exercise such authority as the County Engineer may delegate.

C. It is the responsibility of the applicant, contractor, or their agents to notify the county in advance of beginning work on any project. A pre-construction meeting and/or field review shall be required before the commencement of work.

D. Failure to comply with the provisions of these standards may result in stop work orders, removal of work accomplished, or other penalties as established by law.

E. Provisions of Section 1-05 (Control of Work) of the WSDOT Standard Specifications, most recent edition, shall apply, with the term "Engineer" therein construed to be the County Engineer.

F. Unless otherwise approved or directed, all construction work shall be done in accordance with the WSDOT Standard Specifications.

G. A total of 9 Large Woody Structures and 9 Habitat pools (placed directly upstream of the Large Woody Structure) to be placed throughout the project site. Locations may vary slightly from plan at the descretion of the engineer.

H. Unless otherwise specified, the profile matches the alignment shown.

Construction Notes

Construction sites shall be maintained for access, accessibility, and safety at all times. Site maintenance activities shall include, but are not limited to the following:

A. On existing roads, two-way traffic and all existing lanes of traffic shall be maintained at all times unless detour and/or traffic control plans have been approved in advance by the County Engineer. See KCC 12.05.03 for construction traffic control requirements.

B. Roads shall be kept free of dirt and debris.

C. Pedestrian and bicycle facilities shall be kept free of obstructions, and in compliance with ADA guidelines.

D. Drainage facilities shall be maintained to ensure proper function, and stormwater, erosion, and sedimentation control devices shall be maintained and fully functional at all times. See KCC 12.04.05 for stormwater requirements.

E. On-site grading shall be sequenced to minimize off-site erosion and siltation in conformance with all statutory requirements, permits, and approved plans.Work should be sequenced to start work at the creek bank and work east to avoid unnecessary tracking on newly constructed floodplain.

F. Project Area limited to west bank except where specifically called out for in the plans or as directed by the project manager/project engineer. The exception to this is crack willow removal and hazardous limb removal as necessary.

G. No fill in creek channel except if needed in removed crack willow rootwad holes as directed by the project manager/project engineer.

H. Tree location is approximate. Contractor to verify with project manager/engineer on site.

Legend

- Edge of Creek
- Floodplain Extents
- Floodplain Feature
- Crack Willow Tree
- Contour Line
- Channel Extents
- Channel Centerline

Abrieviations

PALS: Post Assisted Log Structure

DRAFT

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

General Notes

GE-01

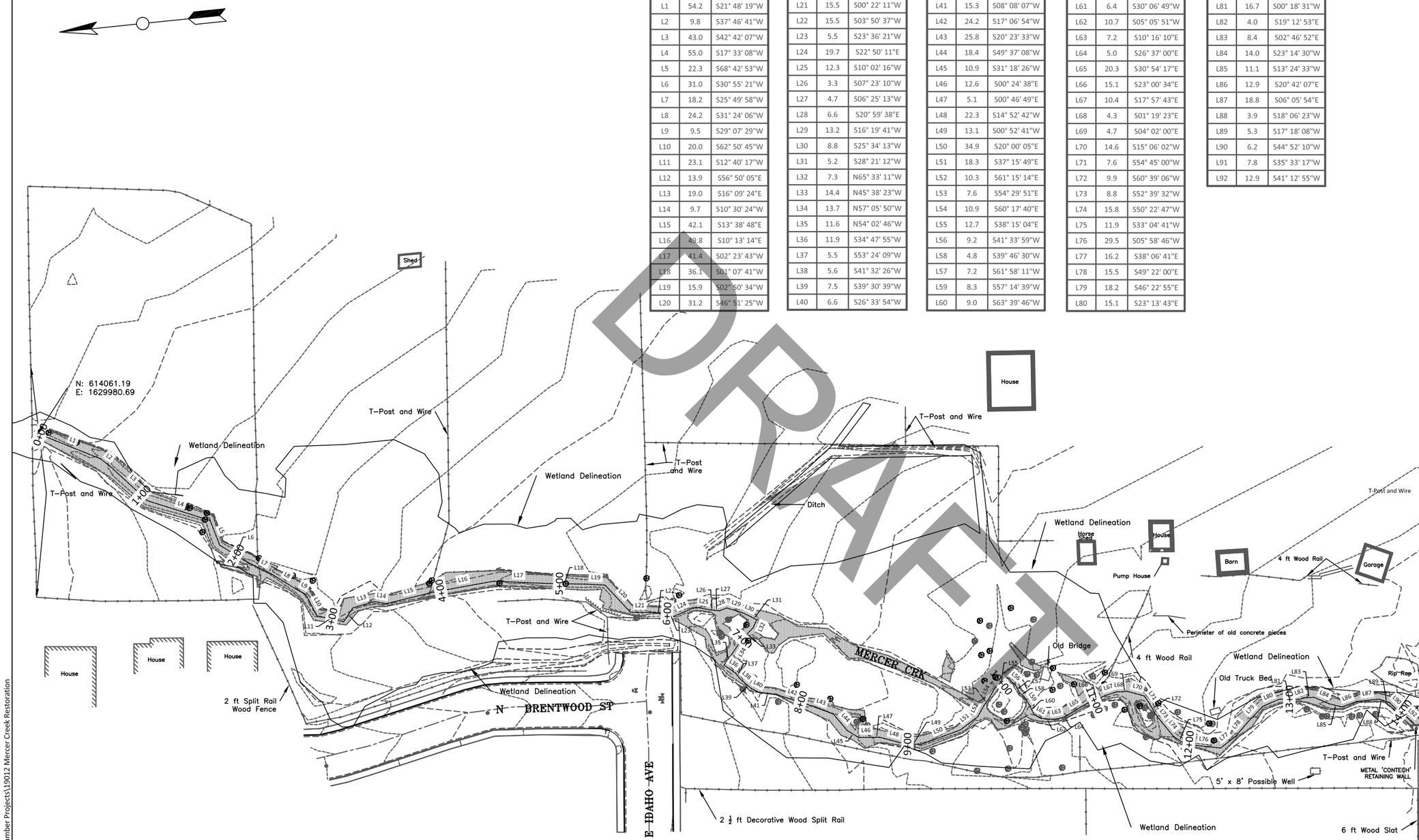
Center Line: Mercer Creek		
Line #	Length	Direction
L1	54.2	S21° 48' 19"W
L2	9.8	S37° 46' 41"W
L3	43.0	S42° 42' 07"W
L4	55.0	S17° 33' 08"W
L5	22.3	S68° 42' 53"W
L6	31.0	S30° 55' 21"W
L7	18.2	S25° 49' 58"W
L8	24.2	S31° 24' 06"W
L9	9.5	S29° 07' 29"W
L10	20.0	S62° 50' 45"W
L11	23.1	S12° 40' 17"W
L12	13.9	S56° 50' 05"E
L13	19.0	S16° 09' 24"E
L14	9.7	S10° 30' 24"W
L15	42.1	S13° 38' 48"E
L16	49.8	S10° 13' 14"E
L17	41.4	S02° 23' 43"W
L18	36.1	S01° 07' 41"W
L19	15.9	S02° 50' 34"W
L20	31.2	S46° 51' 25"W

Center Line: Mercer Creek		
Line #	Length	Direction
L21	15.5	S00° 22' 11"W
L22	15.5	S03° 50' 37"W
L23	5.5	S23° 36' 21"W
L24	19.7	S22° 50' 11"E
L25	12.3	S10° 02' 16"W
L26	3.3	S07° 23' 10"W
L27	4.7	S06° 25' 13"W
L28	6.6	S20° 59' 38"E
L29	13.2	S16° 19' 41"W
L30	8.8	S25° 34' 13"W
L31	5.2	S28° 21' 12"W
L32	7.3	N65° 33' 11"W
L33	14.4	N45° 38' 23"W
L34	13.7	N57° 05' 50"W
L35	11.6	N54° 02' 46"W
L36	11.9	S34° 47' 55"W
L37	5.5	S53° 24' 09"W
L38	5.6	S41° 32' 26"W
L39	7.5	S39° 30' 39"W
L40	6.6	S26° 33' 54"W

Center Line: Mercer Creek		
Line #	Length	Direction
L41	15.3	S08° 08' 07"W
L42	24.2	S17° 06' 54"W
L43	25.8	S20° 23' 33"W
L44	18.4	S49° 37' 08"W
L45	10.9	S31° 18' 26"W
L46	12.6	S00° 24' 38"E
L47	5.1	S00° 46' 49"E
L48	22.3	S14° 52' 42"W
L49	13.1	S00° 52' 41"W
L50	34.9	S20° 00' 05"E
L51	18.3	S37° 15' 49"E
L52	10.3	S61° 15' 14"E
L53	7.6	S54° 29' 51"E
L54	10.9	S60° 17' 40"E
L55	12.7	S38° 15' 04"E
L56	9.2	S41° 33' 59"W
L58	4.8	S39° 46' 30"W
L57	7.2	S61° 58' 11"W
L59	8.3	S57° 14' 39"W
L60	9.0	S63° 39' 46"W

Center Line: Mercer Creek		
Line #	Length	Direction
L61	6.4	S30° 06' 49"W
L62	10.7	S05° 05' 51"W
L63	7.2	S10° 16' 10"E
L64	5.0	S26° 37' 00"E
L65	20.3	S30° 54' 17"E
L66	15.1	S23° 00' 34"E
L67	10.4	S17° 57' 43"E
L68	4.3	S01° 19' 23"E
L69	4.7	S04° 02' 00"E
L70	14.6	S15° 06' 02"W
L71	7.6	S54° 45' 00"W
L72	9.9	S60° 39' 06"W
L73	8.8	S52° 39' 32"W
L74	15.8	S50° 22' 47"W
L75	11.9	S33° 04' 41"W
L76	29.5	S05° 58' 46"W
L77	16.2	S38° 06' 41"E
L78	15.5	S49° 22' 00"E
L79	18.2	S46° 22' 55"E
L80	15.1	S23° 13' 43"E

Center Line: Mercer Creek		
Line #	Length	Direction
L81	16.7	S00° 18' 31"W
L82	4.0	S19° 12' 53"E
L83	8.4	S02° 46' 52"E
L84	14.0	S23° 14' 30"W
L85	11.1	S13° 24' 33"W
L86	12.9	S20° 42' 07"E
L87	18.8	S06° 05' 54"E
L88	3.9	S18° 06' 23"W
L89	5.3	S17° 18' 08"W
L90	6.2	S44° 52' 10"W
L91	7.8	S35° 33' 17"W
L92	12.9	S41° 12' 55"W



DRAFT

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

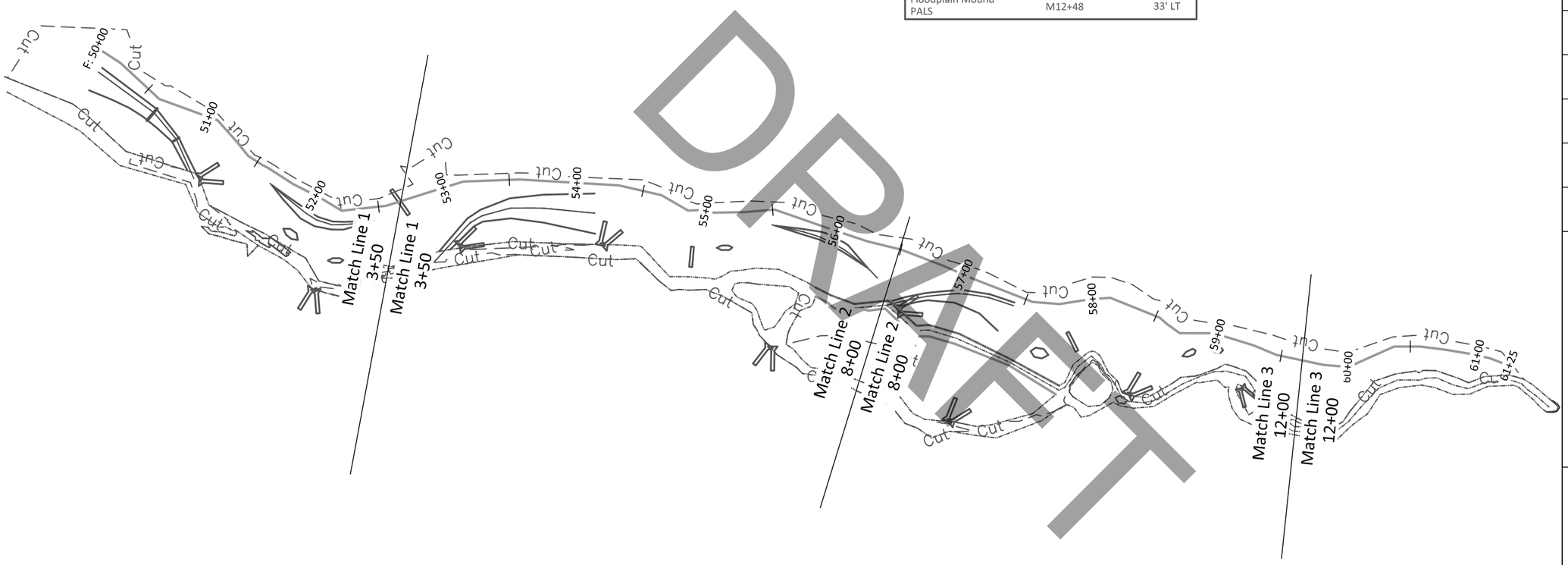
Existing Conditions

EX-01

Floodplain Elevation Table - F Alignment			
Station	Elevation	Station	Elevation
50+00	1639.3	56+00	1630.5
50+50	1638.8	56+50	1629.7
51+00	1638.0	57+00	1628.9
51+50	1637.4	57+50	1628.4
52+00	1636.9	58+00	1627.1
52+50	1635.9	58+50	1626.4
53+00	1634.8	59+00	1625.8
53+50	1634.3	59+50	1625.0
54+00	1633.7	60+00	1624.5
54+50	1633.0	60+50	1624.0
55+00	1632.2	61+00	1623.0
55+50	1631.2	61+25	1622.8

Table of LW Structures	
Feature	Station
1	M1+62
2	M2+87
3	M4+03
4	M5+10
5	M6+71
6	S100+70
7	M8+75
8	M10+48
9	M11+43

Table of Floodplain Features		
Feature	Station	Offset
Collector Channel	M1+62	0'
Swale	M2+21	39' LT
Floodplain Mound	M2+50	14' LT
Floodplain Mound	M3+00	22' LT
Disappearing Channel	M3+85	0'
PALS	M5+87	19' LT
Floodplain Mound	M6+24	24' LT
Swale	M6+45	41' LT
Disappearing Channel	S100+61	0'
Floodplain Mound	S101+79	17' LT
PALS	M10+02	17' LT
Floodplain Mound	M11+09	19' LT
Floodplain Mound	M11+23	17' LT
PALS	M12+48	33' LT



General Notes

1. The cut line represents the area within the project which will be graded or cut lower.
2. Habitat pools aren't shown, but they are associated to the Large Woody structures. Everytime a LW structure is shown, a habitat pool will also be installed.

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

Grading Plan

GR-01

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES. . .TO THE COLUMBIA
KITTITAS COUNTY

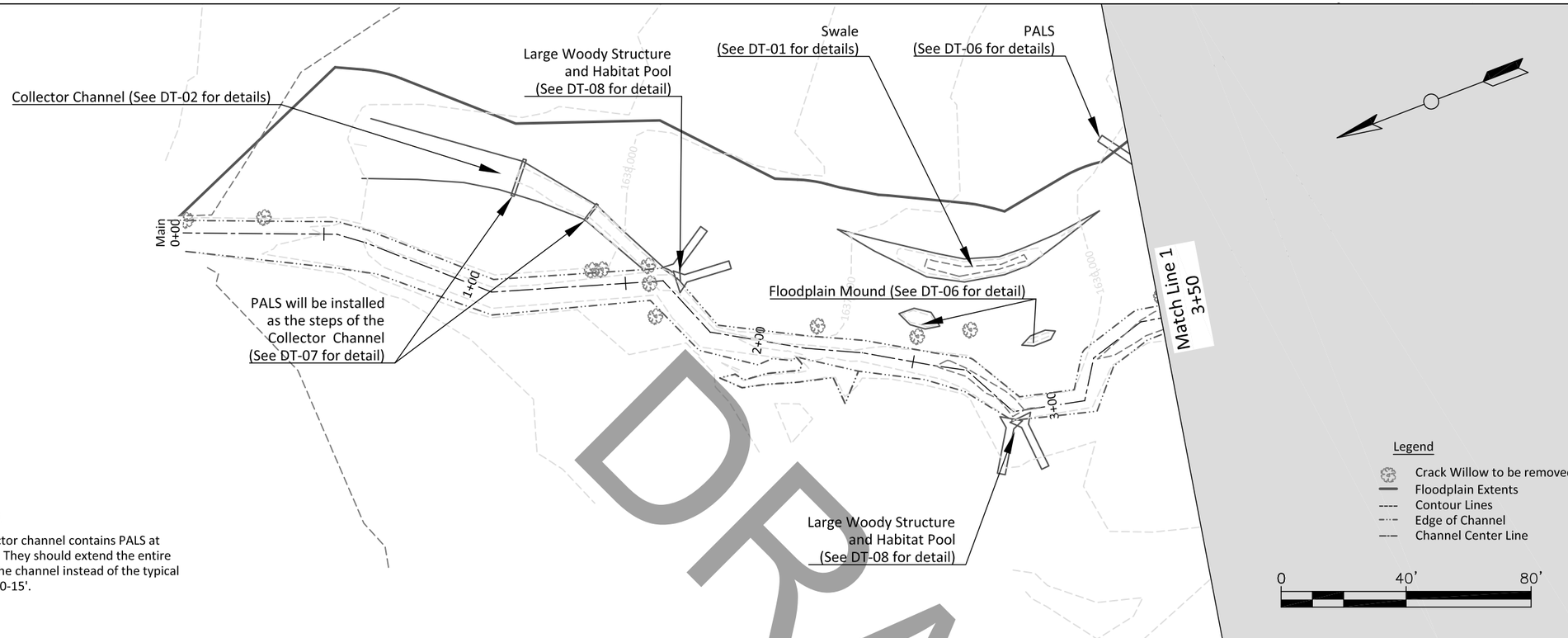
Federal Aid No.

FCZD Project #
FC5809-30

Site Plan

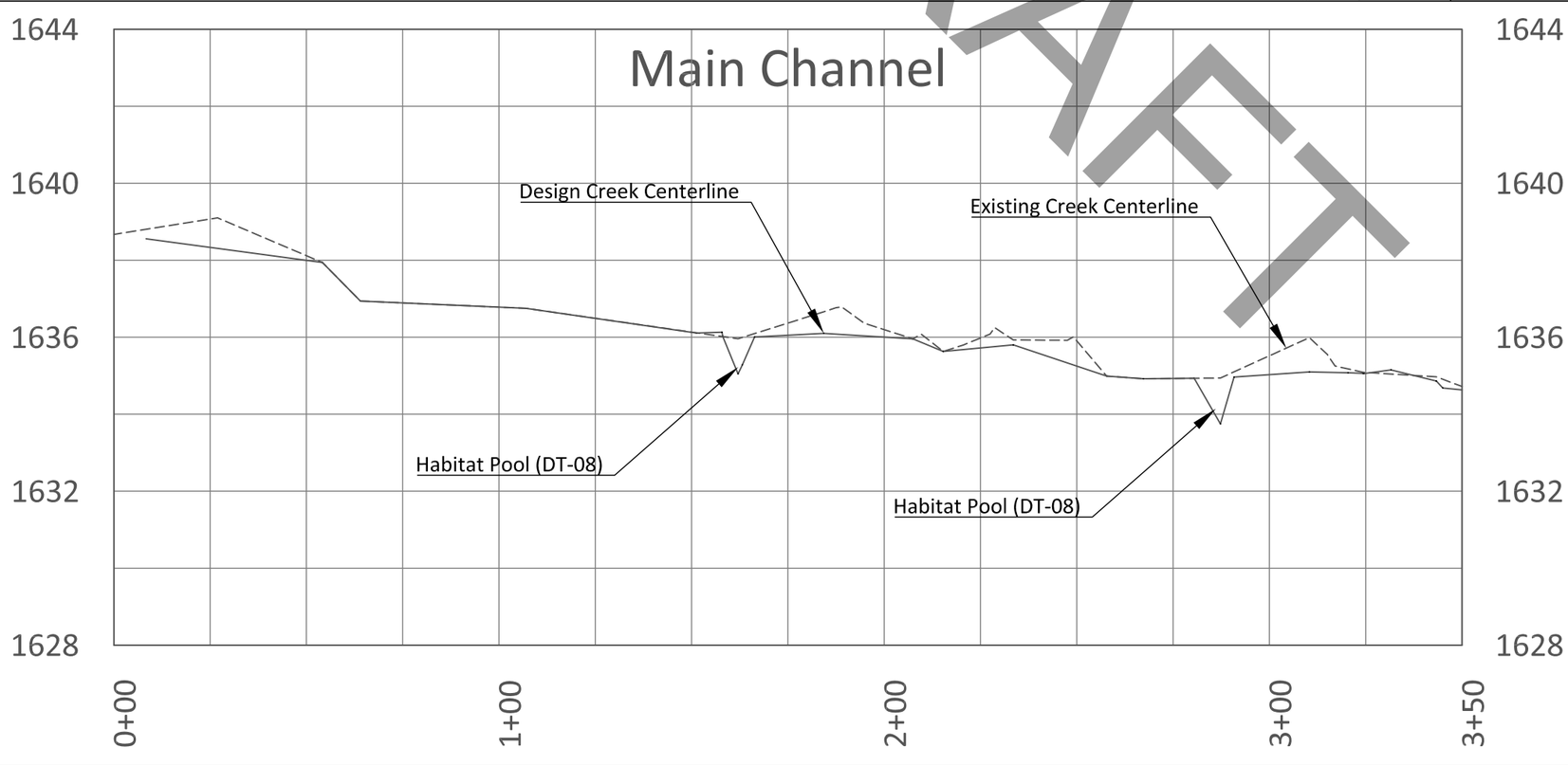
SP-01

4 / 18



General Notes

1. The Collector channel contains PALS at each step. They should extend the entire width of the channel instead of the typical width of 10-15'.



DRAFT

Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

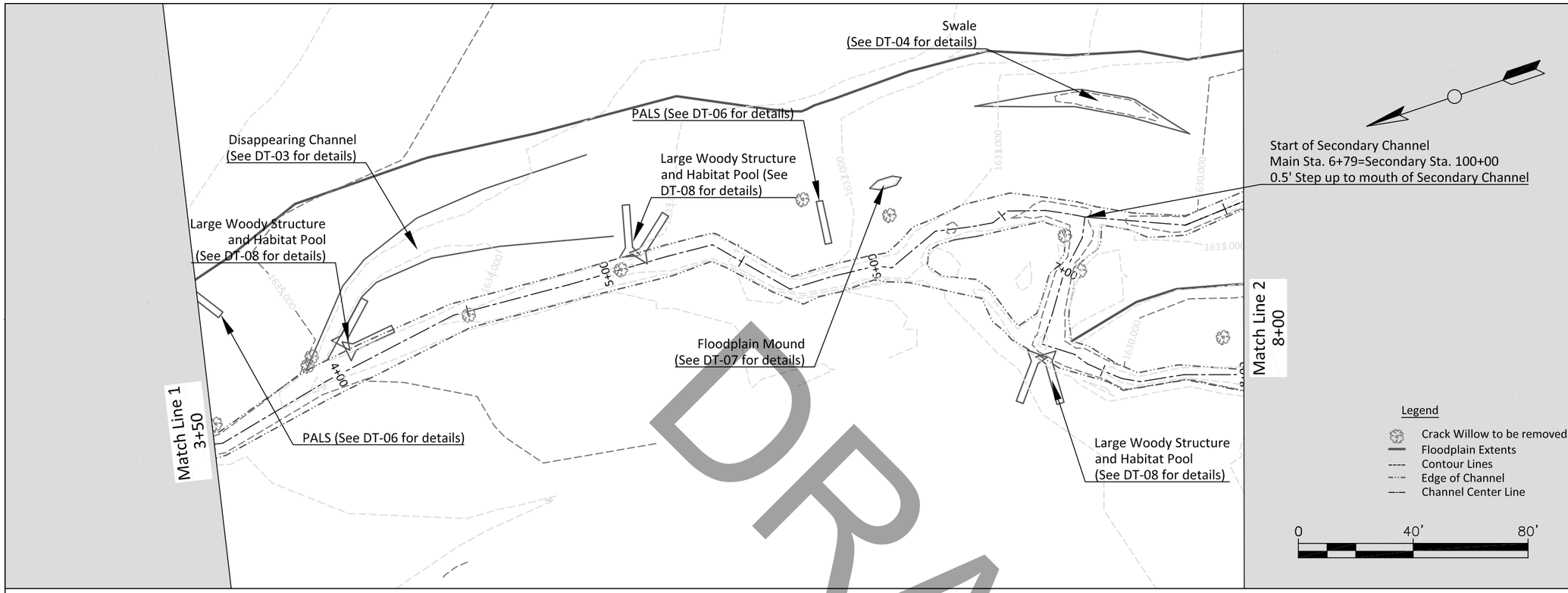
Federal Aid No.

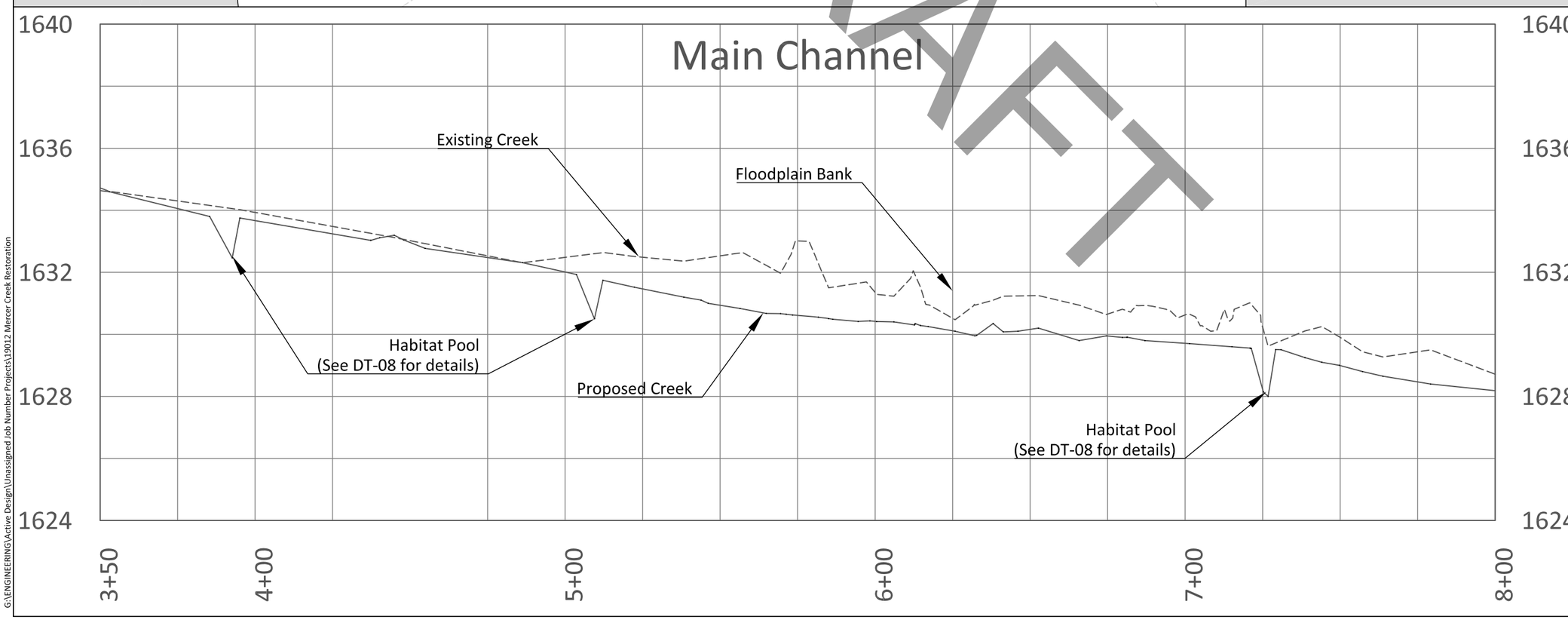
FCZD Project #
FC5809-30

Plan & Profile

PP-01

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration





Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

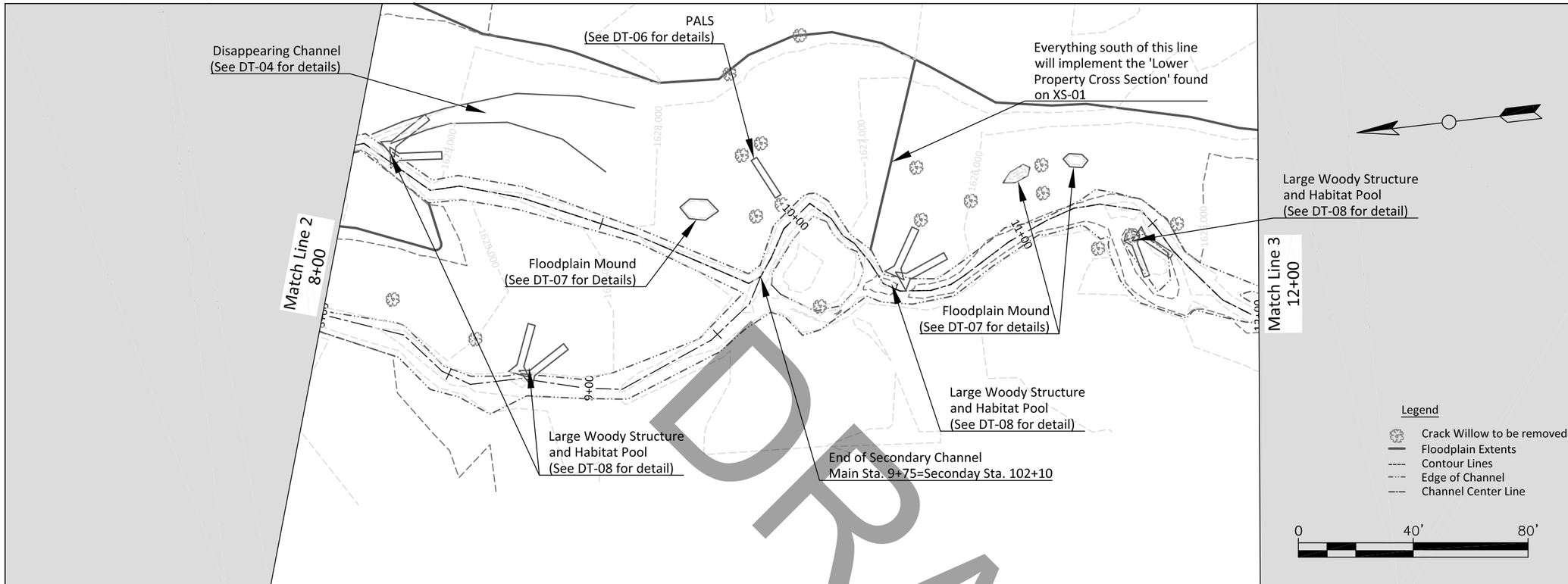
FCZD Project #
FC5809-30

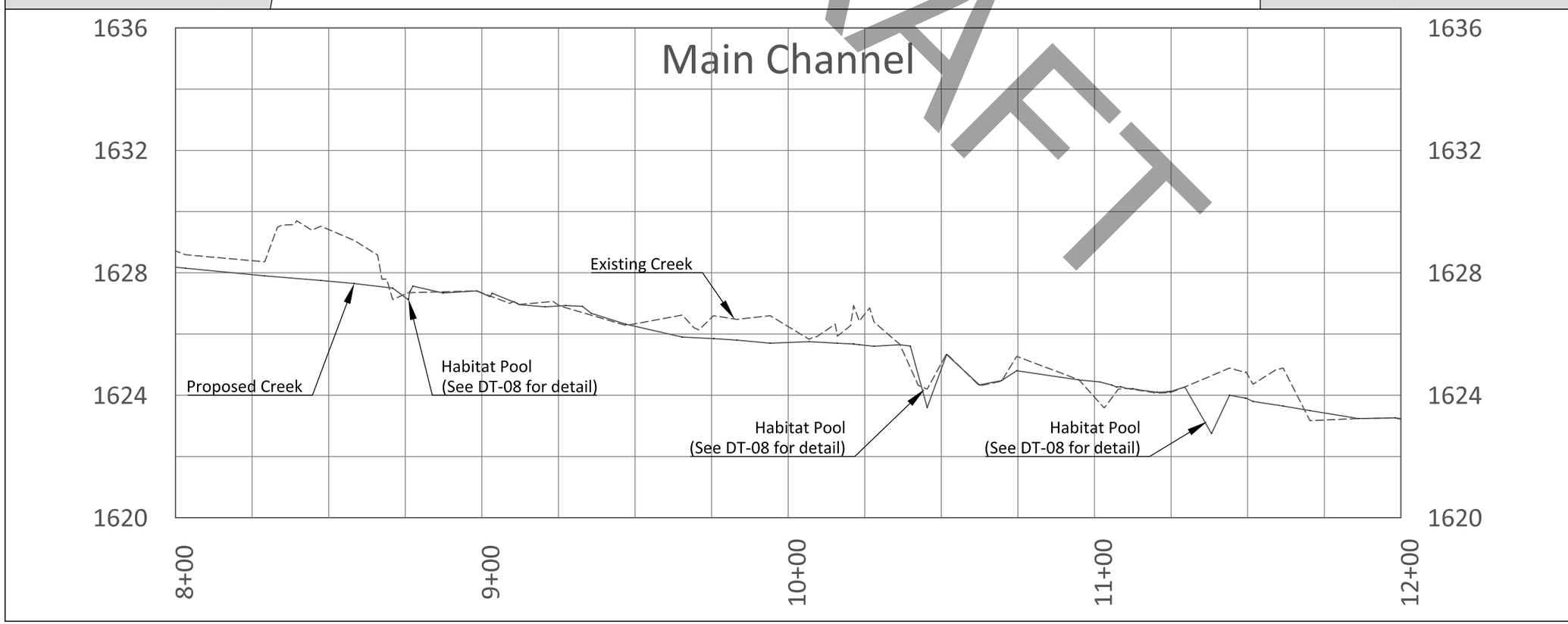
Plan & Profile

PP-02

6 / 18

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration





DRAFT

Mercer Creek

Mercer Creek Floodplain

5/11/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

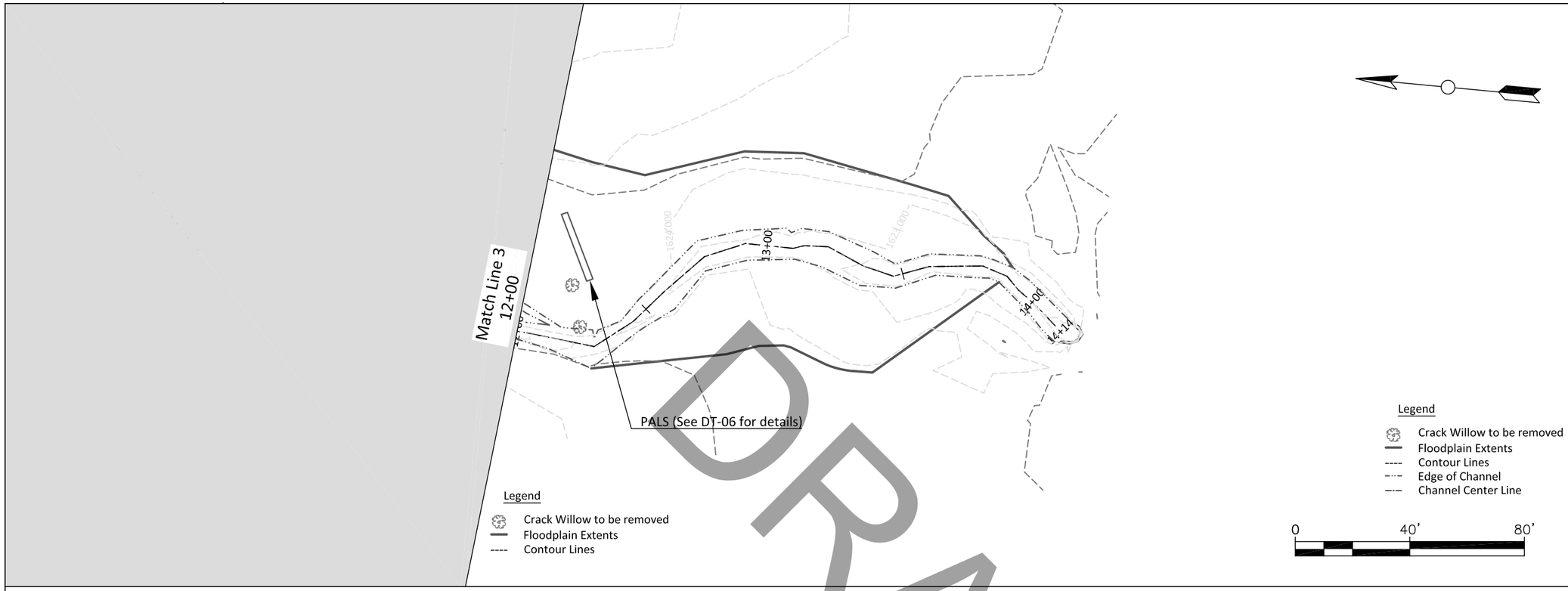
FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

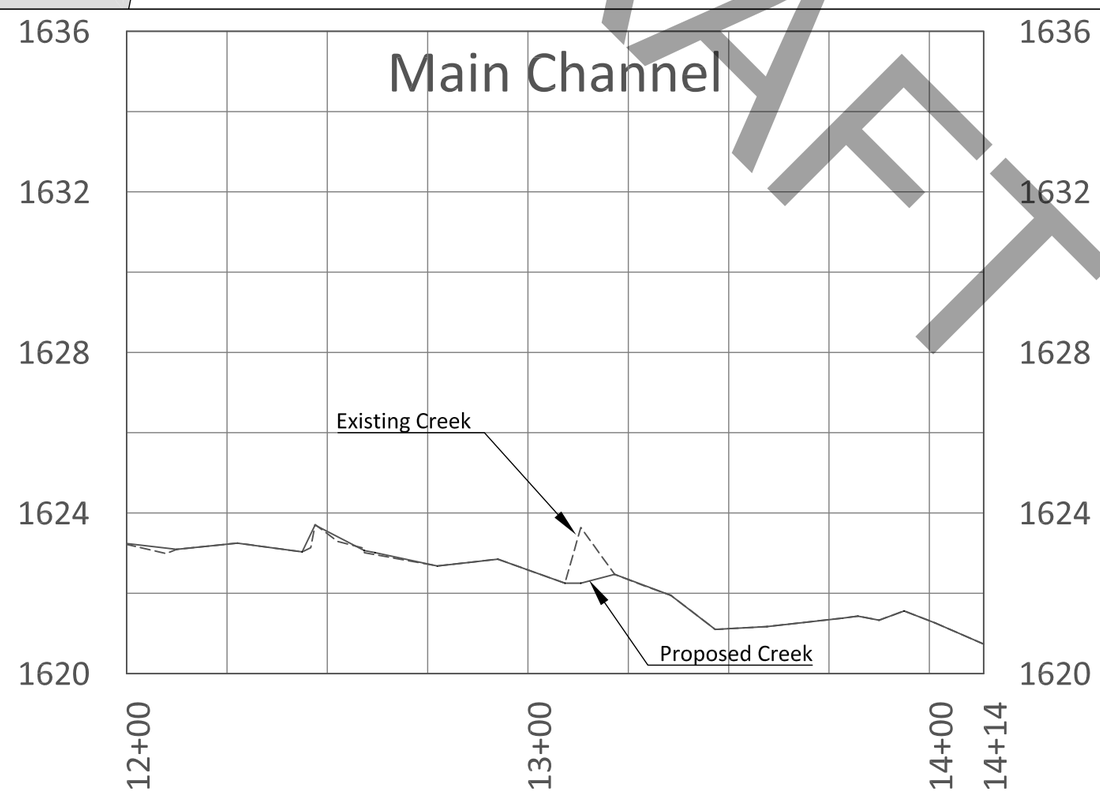
Federal Aid No.

FCZD Project #
FC5809-30

Plan & Profile

PP-03





G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

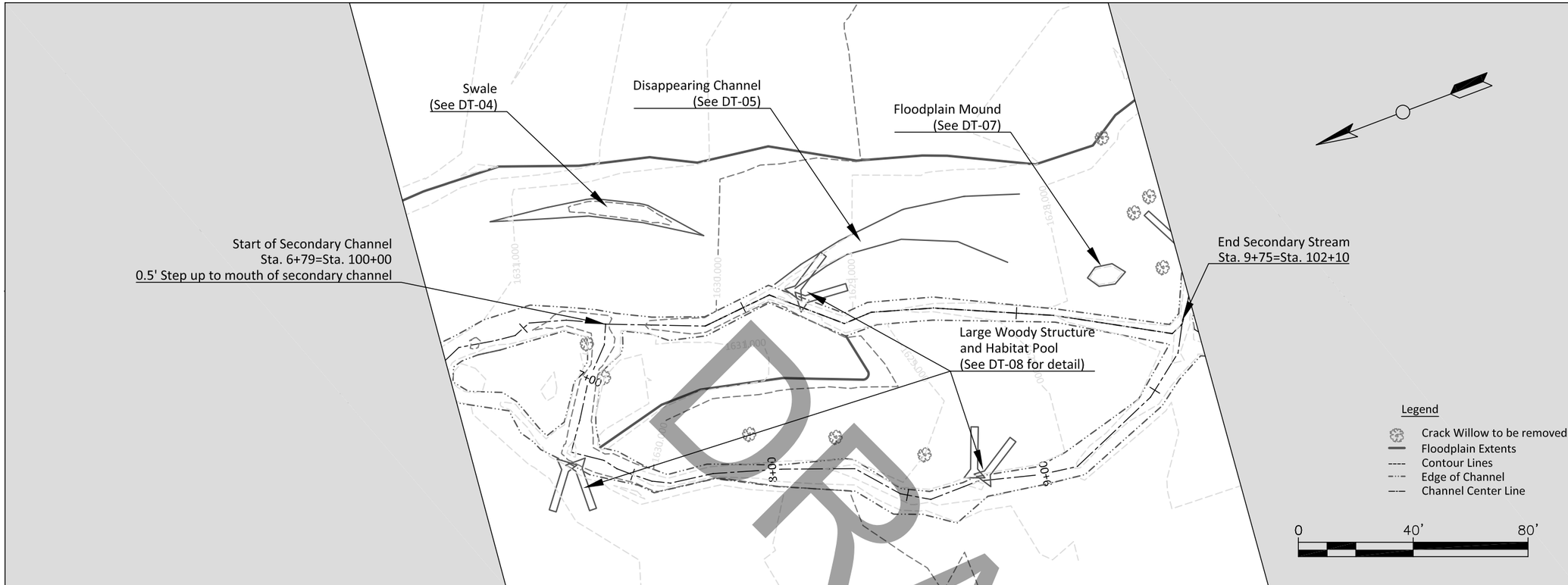
Federal Aid No.

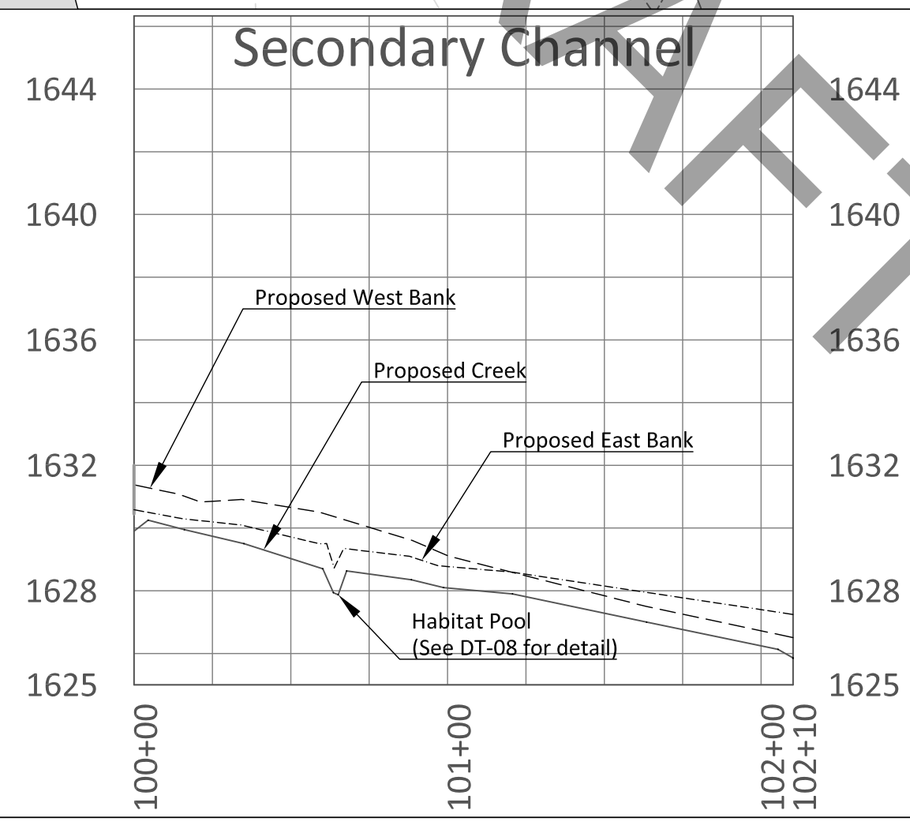
FCZD Project #
FC5809-30

Plan & Profile

PP-04

8 / 18





Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FZ5809-30

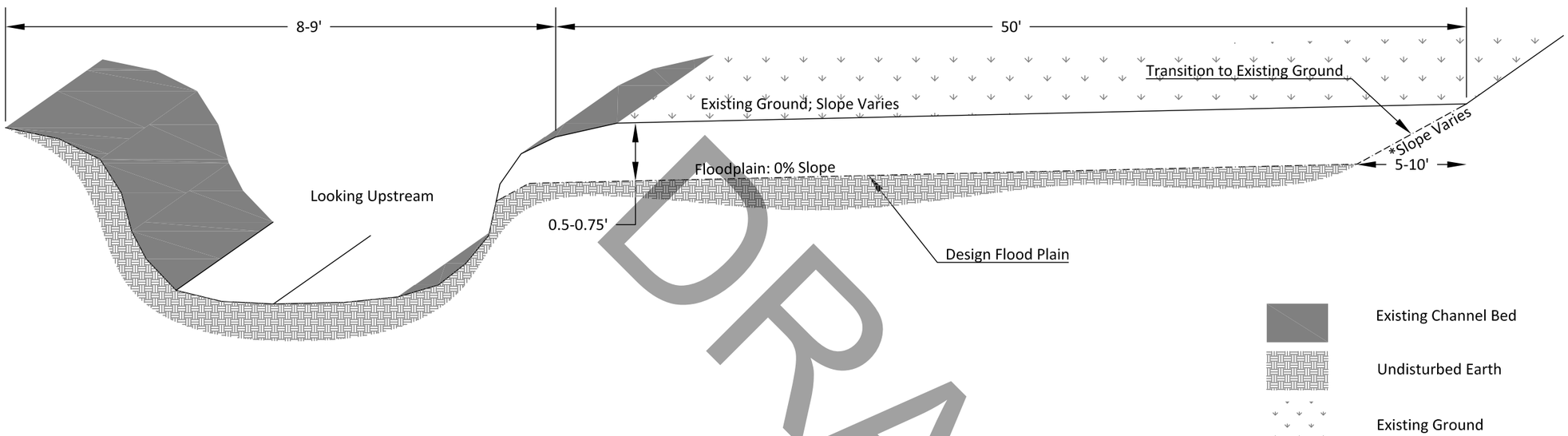
Secondary Channel Plan & Profile

PP-05

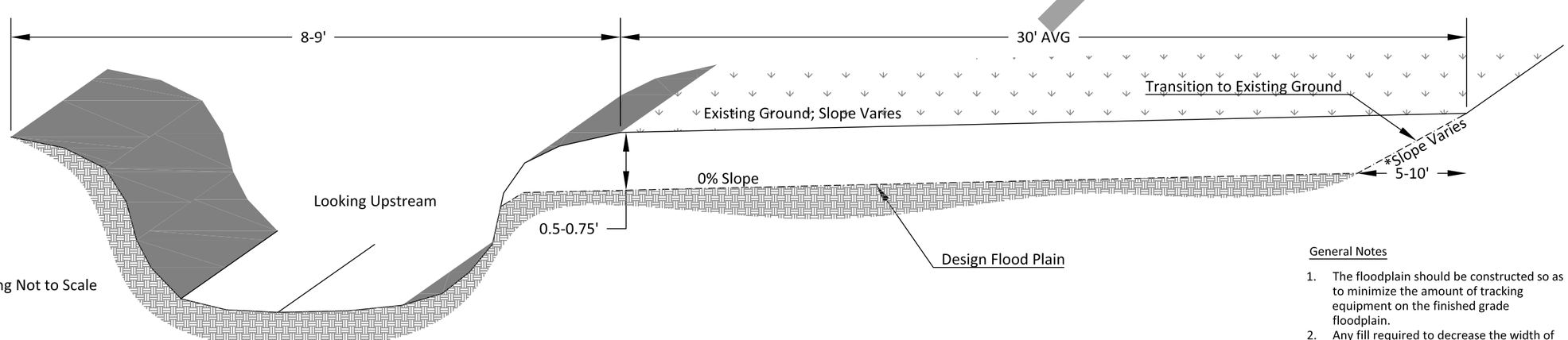
9 / 18

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Typical Channel Cross Section



Lower Property Channel Cross Section



*Drawing Not to Scale

General Notes

1. The floodplain should be constructed so as to minimize the amount of tracking equipment on the finished grade floodplain.
2. Any fill required to decrease the width of the channel should be filled on the east bank.

DRAFT

Mercer Creek		
Mercer Creek Floodplain		
7/14/2020		
Designed By:	B. Heiner	
Drawn By:	C. Curtis	
County Engineer:	M. Cook	
P.W. Director:	M. Cook	
Revision	Date	By

Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

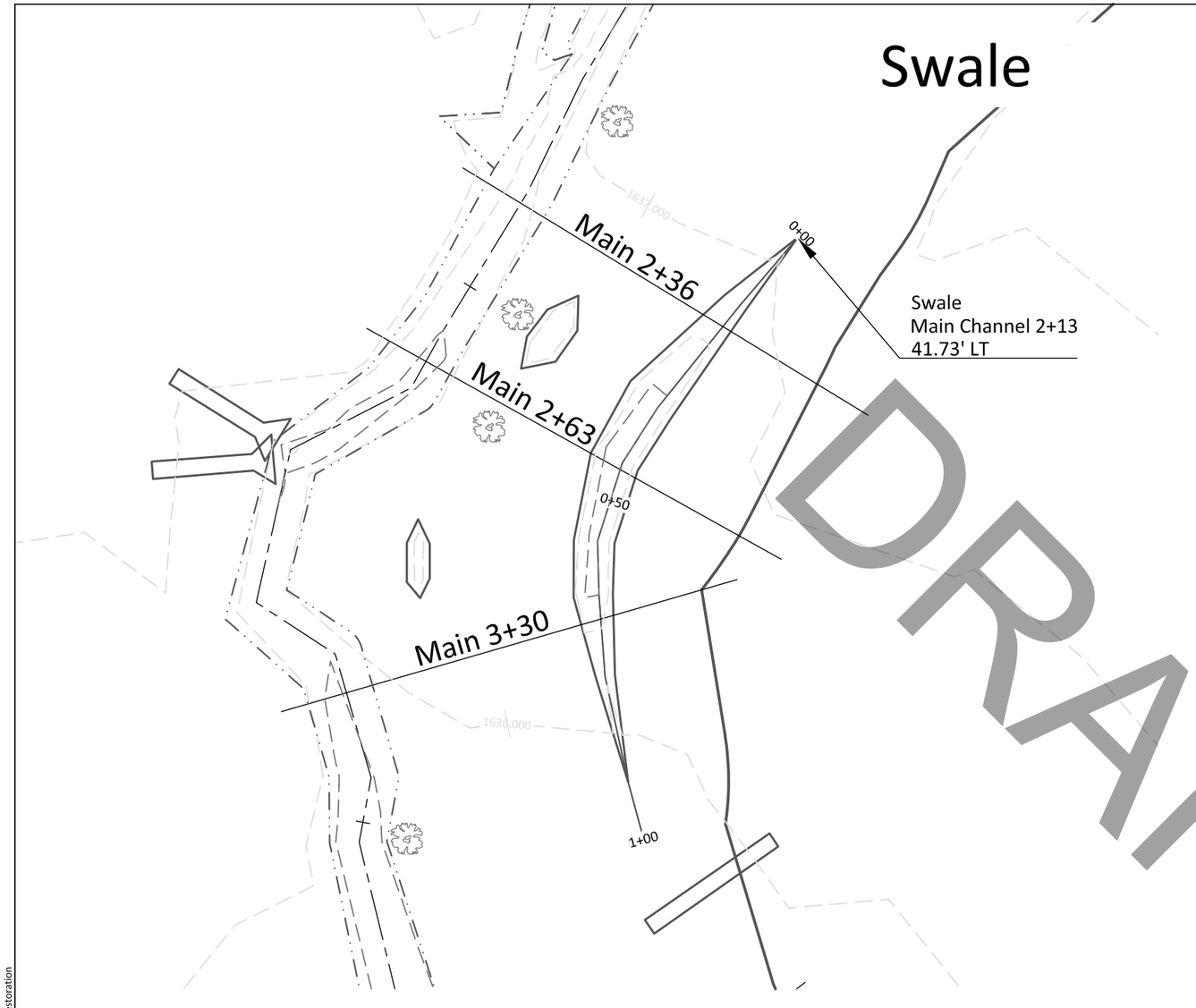
Cross Section

XS-01

10 / 18

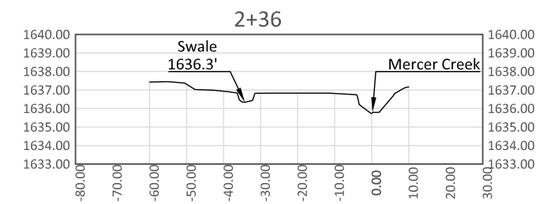
G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

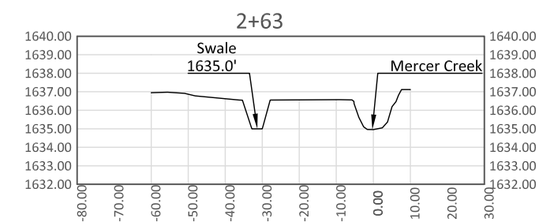
Swale

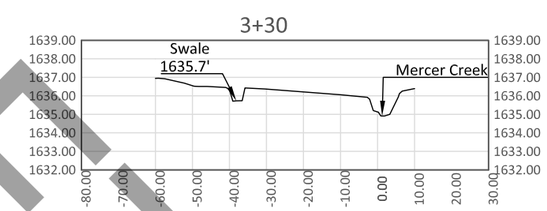


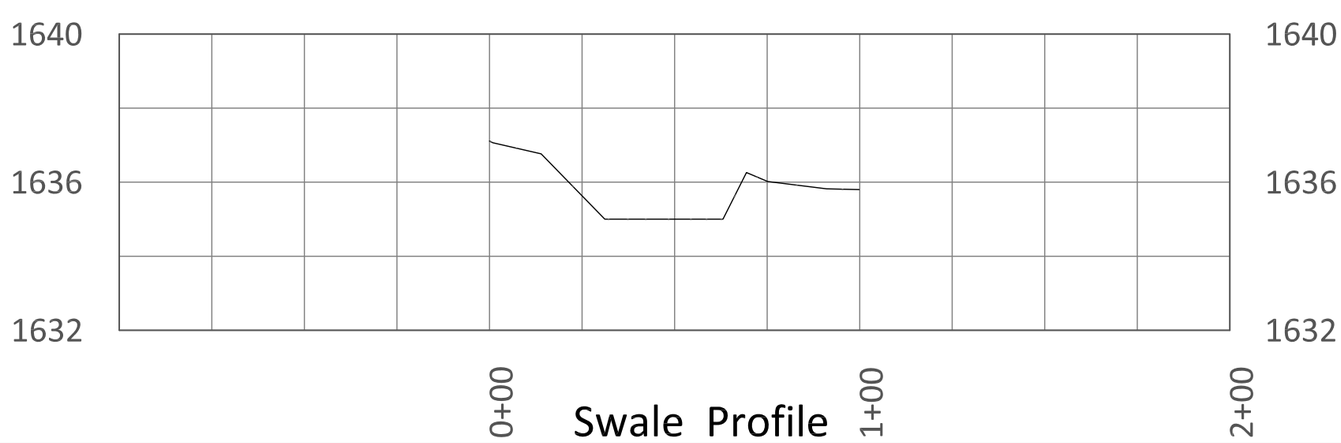
Cross Sections

(Looking Downstream)









Swale Profile

Mercer Creek	
Mercer Creek Floodplain	
7/14/2020	
Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

Know what's **below.** **Call** before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

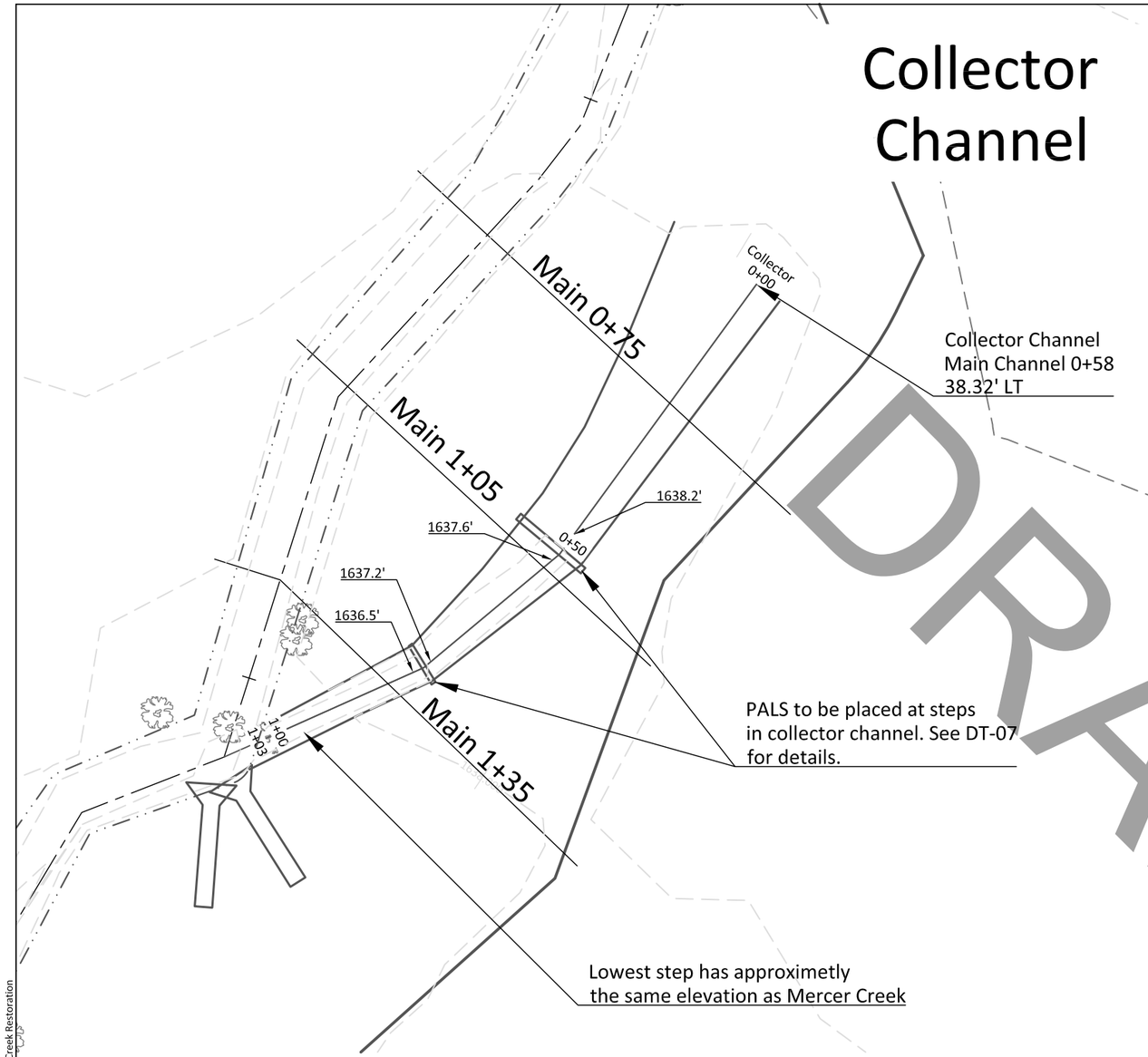
Details

DT-01

11 / 18

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

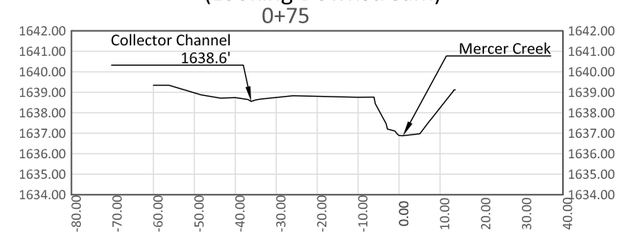
Collector Channel



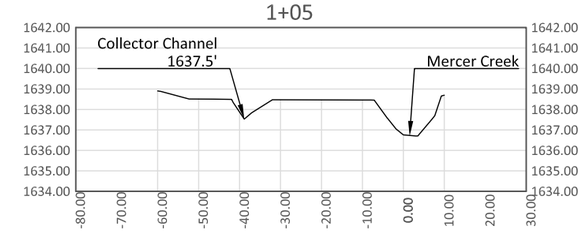
Cross Sections

(Looking Downstream)

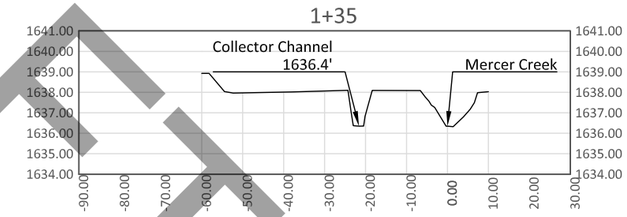
0+75

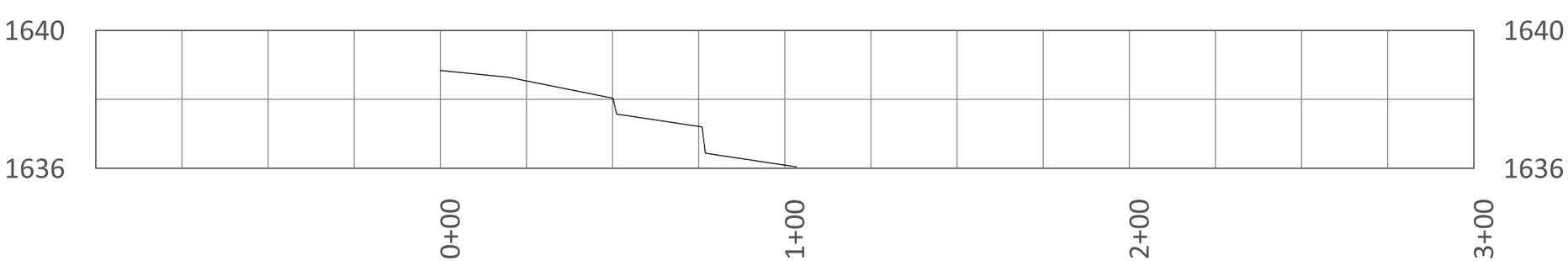


1+05



1+35





Collector Channel Profile

DRAFT

Mercer Creek	
Mercer Creek Floodplain	
7/14/2020	
Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

Know what's **below.** **Call** before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

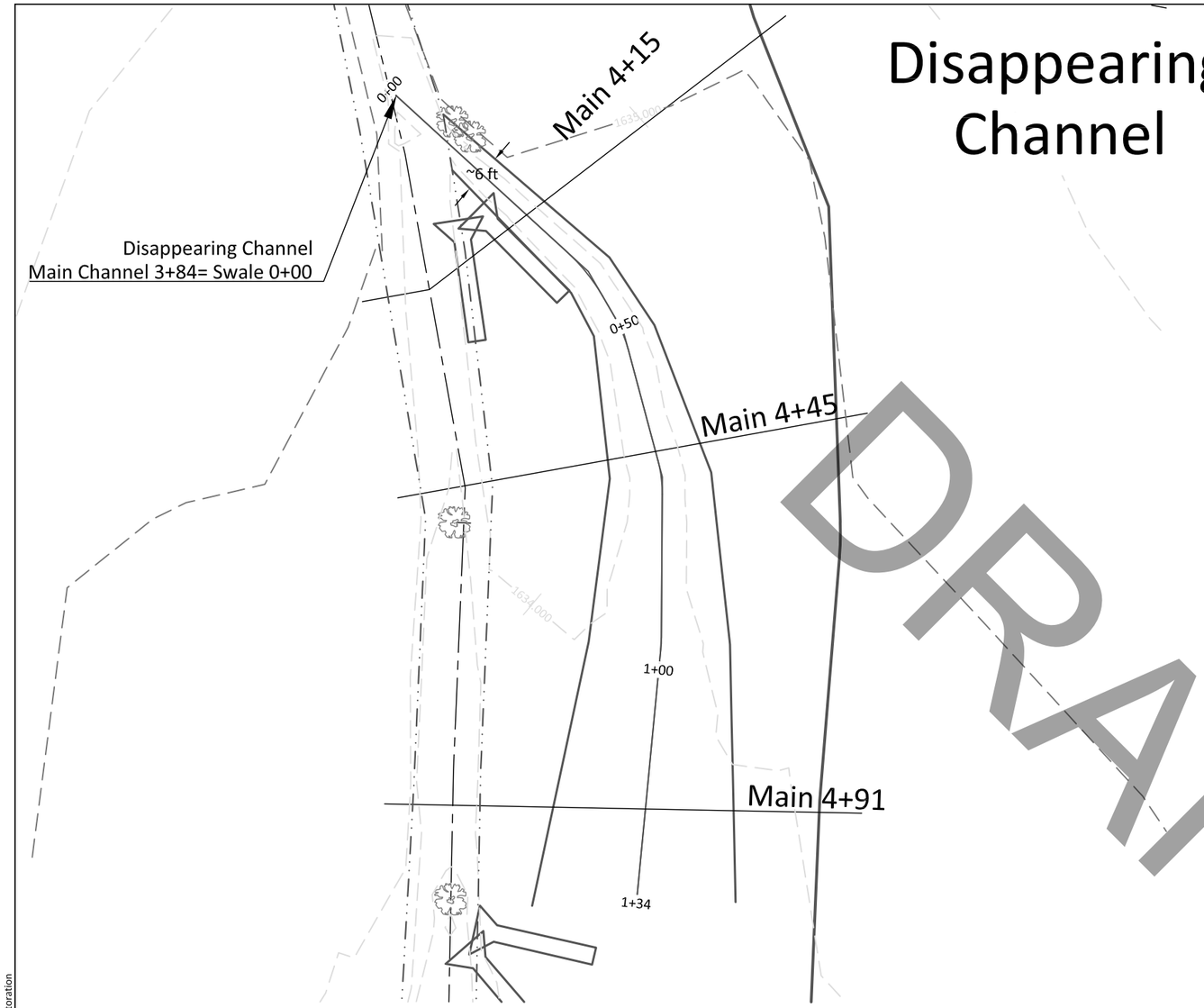
FCZD Project #
FC5809-30

Details

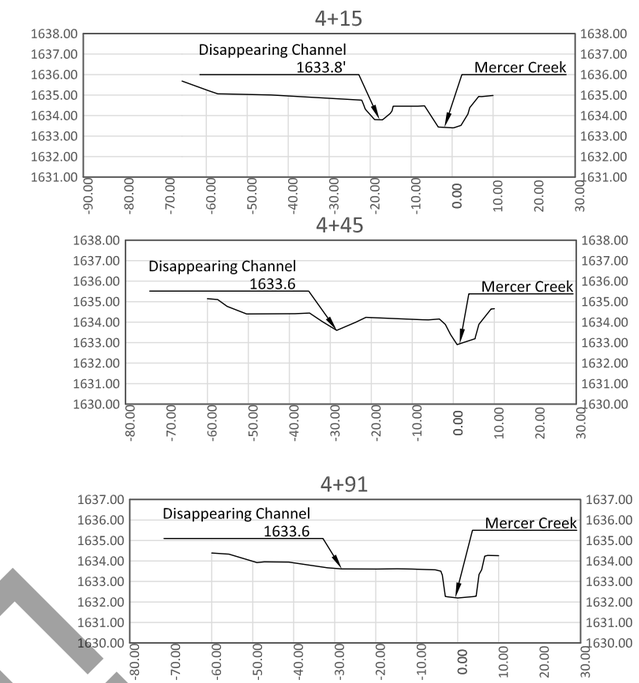
DT-02

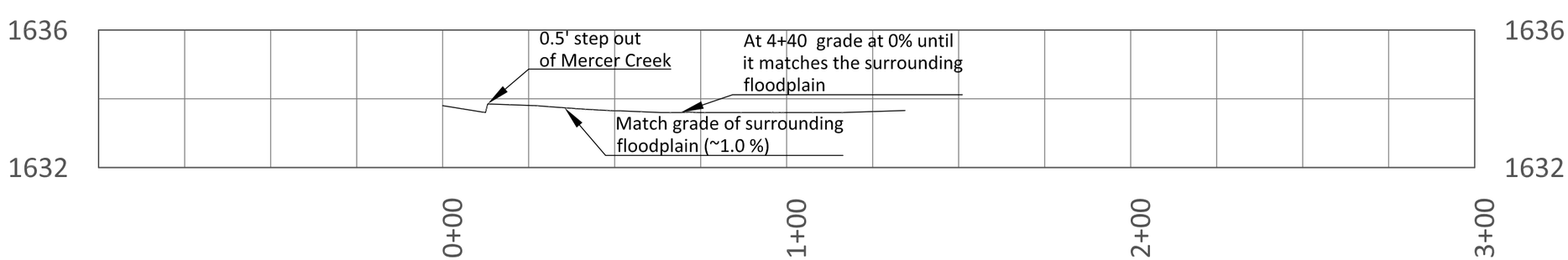
G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Disappearing Channel



Cross Sections
(Looking Downstream)





Disappearing Channel Profile

Mercer Creek		
Mercer Creek Floodplain		
7/14/2020		
Designed By:	B. Heiner	
Drawn By:	C. Curtis	
County Engineer:	M. Cook	
P.W. Director:	M. Cook	
Revision	Date	By

Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

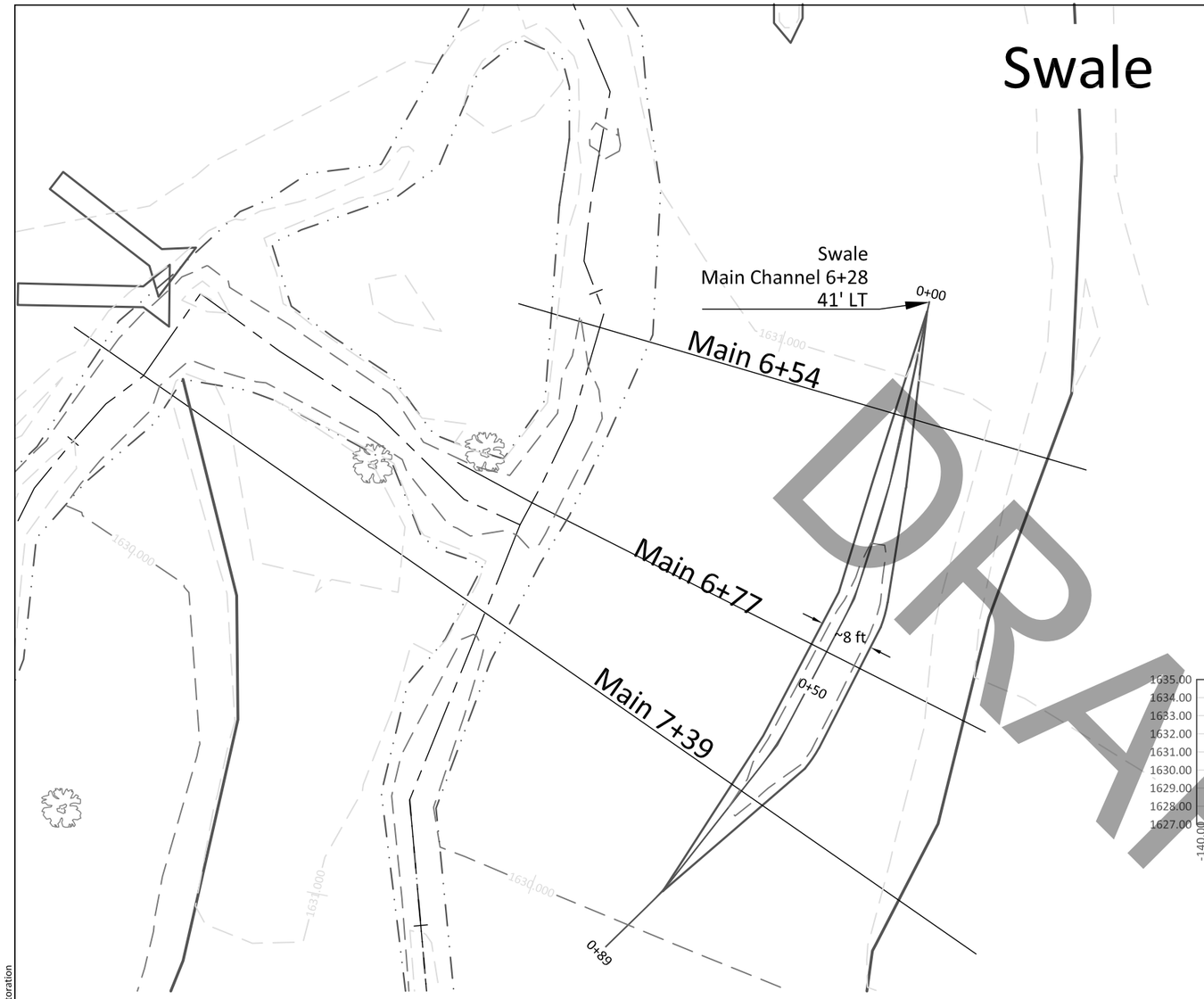
Federal Aid No.

FCZD Project #
FC5809-30

Details

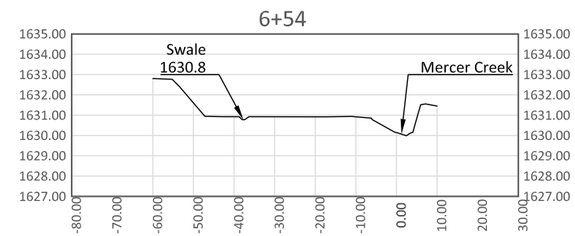
DT-03 | 13 / 18

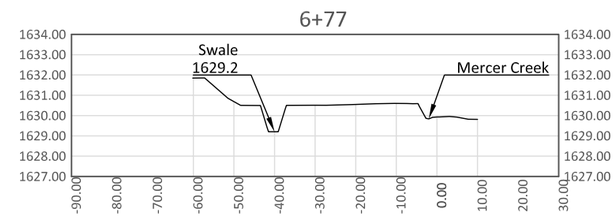
G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

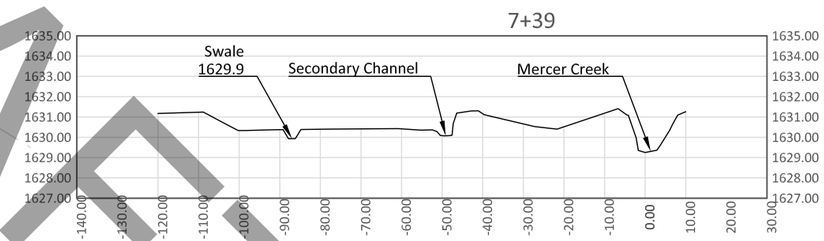


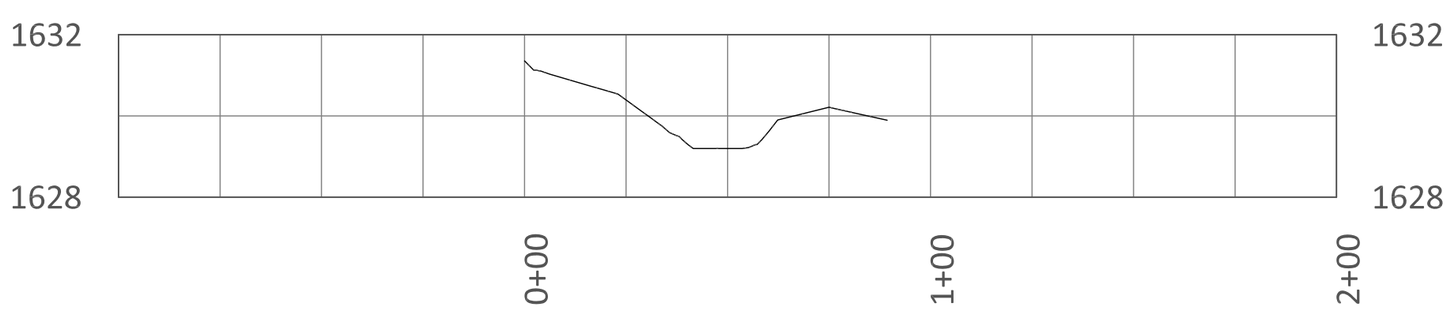
DRAFT

Cross Sections
(Looking Downstream)









Swale Profile

Mercer Creek		
Mercer Creek Floodplain		
7/14/2020		
Designed By:	B. Heiner	
Drawn By:	C. Curtis	
County Engineer:	M. Cook	
P.W. Director:	M. Cook	
Revision	Date	By

Know what's **below.** **Call** before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

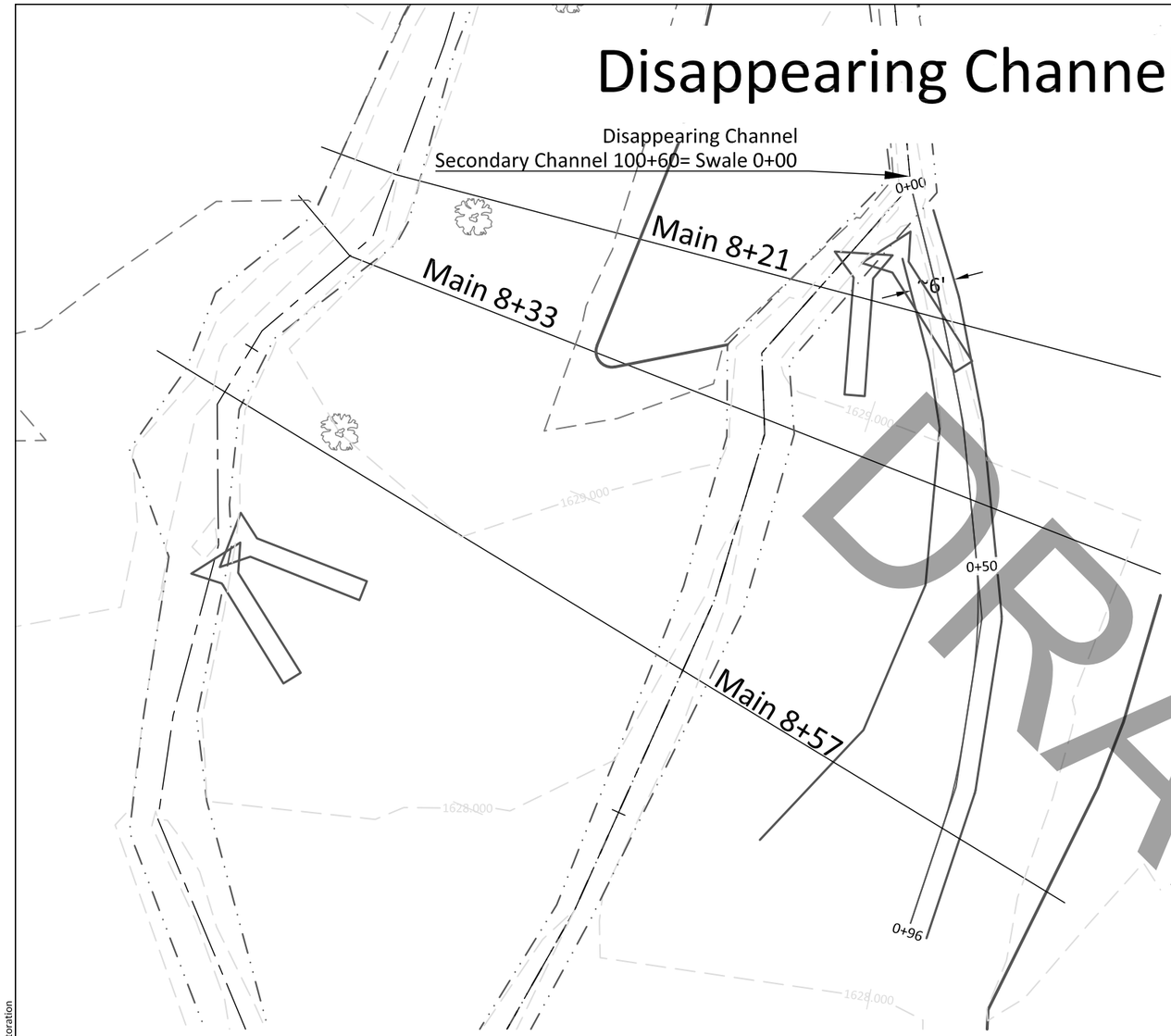
FCZD Project #
FC5809-30

Details

DT-04

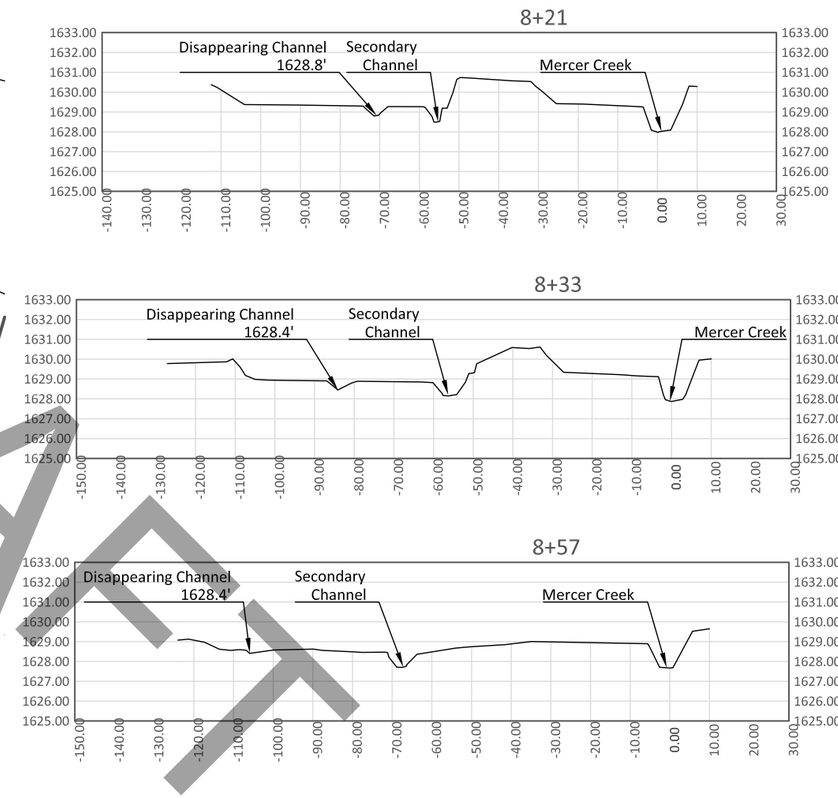
G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

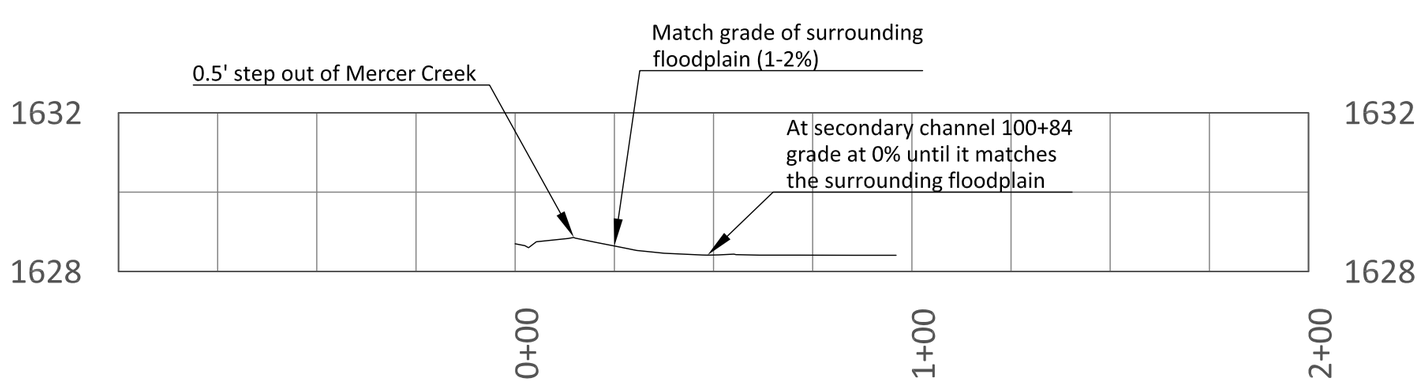
Disappearing Channel



Cross Sections

(Looking Downstream)





Disappearing Channel Profile

Mercer Creek

Mercer Creek Floodplain

7/14/2020

Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

Know what's **below.** **Call** before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

Details

DT-05

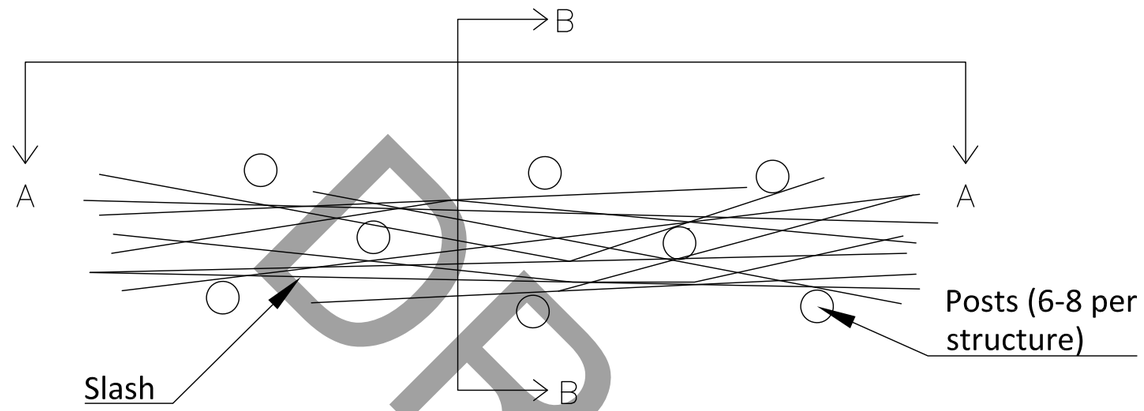
15 / 18

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

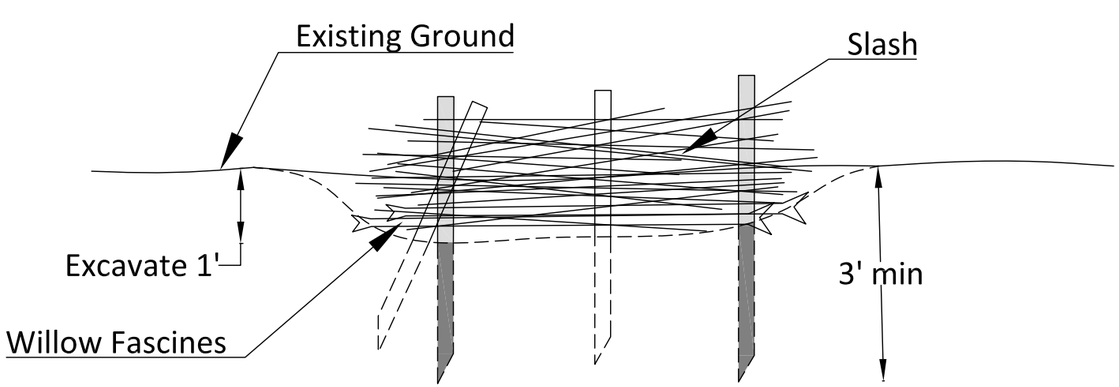
Floodplain PALS Detail

General Notes

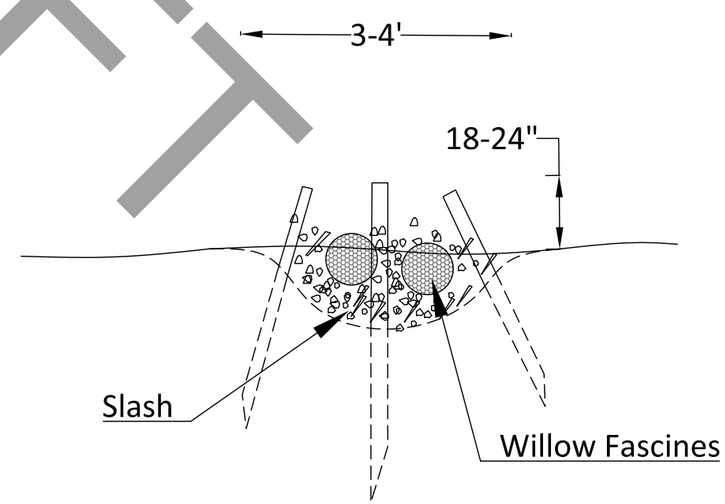
1. Wood posts with 3-4" dia and a length of 5' driven into the floodplain.
2. 2' thick layer of slash, halfway buried.
3. Willow bundles should be mostly buried, with only their tops exposed.
4. Bury the slash to ground level with excavated soil.
5. Slash will be conifer/hardwood branches and stems, up to 3" dia, 3-10' long.
6. Pack slash in tight layer before installing final posts. One line of posts to be placed, then the slash packed against them, followed by the remaining posts.
7. Angle posts to contain slash.
8. Willow bundle amterial will be coyote willow, peach leaf willow, or Mackenzie willow, unless otherwise approved by the project manager/engineer. No Pacific willow or crack willow material will be used.



Plan



Section A-A



Section B-B

*Drawing not to scale

DRAFT

Mercer Creek		
Mercer Creek Floodplain		
7/14/2020		
Designed By:	B. Heiner	
Drawn By:	C. Curtis	
County Engineer:	M. Cook	
P.W. Director:	M. Cook	
Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

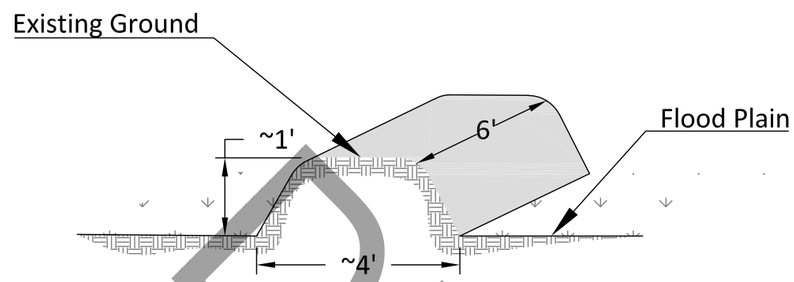
FCZD Project #
FC5809-30

Details

DT-06

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

Floodplain Mounds Detail

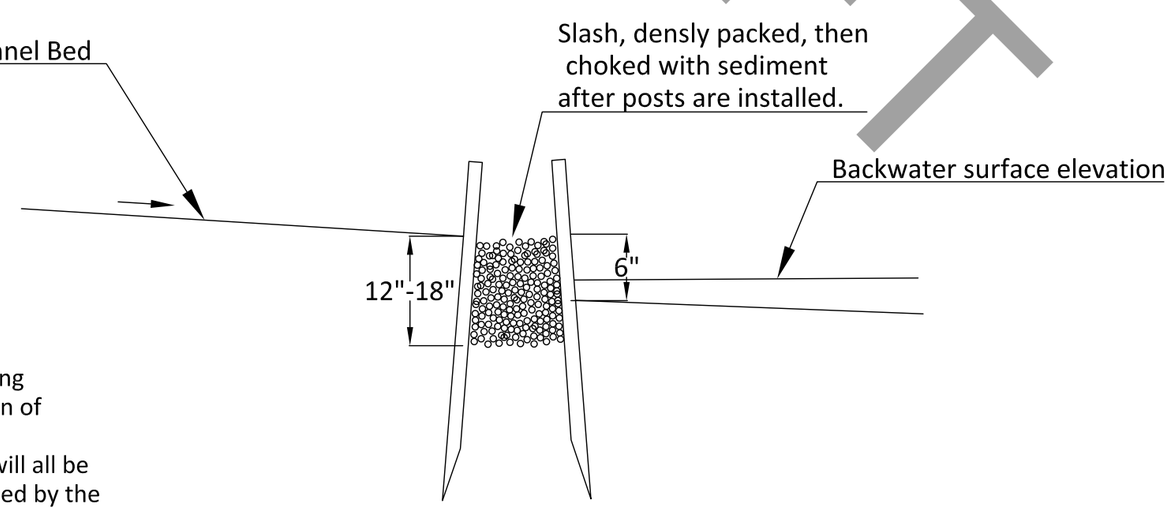


Floodplain Mound Sides

Undisturbed Earth

Existing Ground

Collector Channel PALS Detail



Profile View

General Notes

1. Floodplain mounds constructed by leaving undisturbed native soil during excavation of floodplain.
2. Floodplain mounds are not typical and will all be different heights because they are defined by the existing ground and the depth of the floodplain.
3. Slash will be conifer/hardwood branches and stems, up to 3" diameter, 3-10' long.

DRAFT

Mercer Creek	
Mercer Creek Floodplain	
7/14/2020	
Designed By:	B. Heiner
Drawn By:	C. Curtis
County Engineer:	M. Cook
P.W. Director:	M. Cook

Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

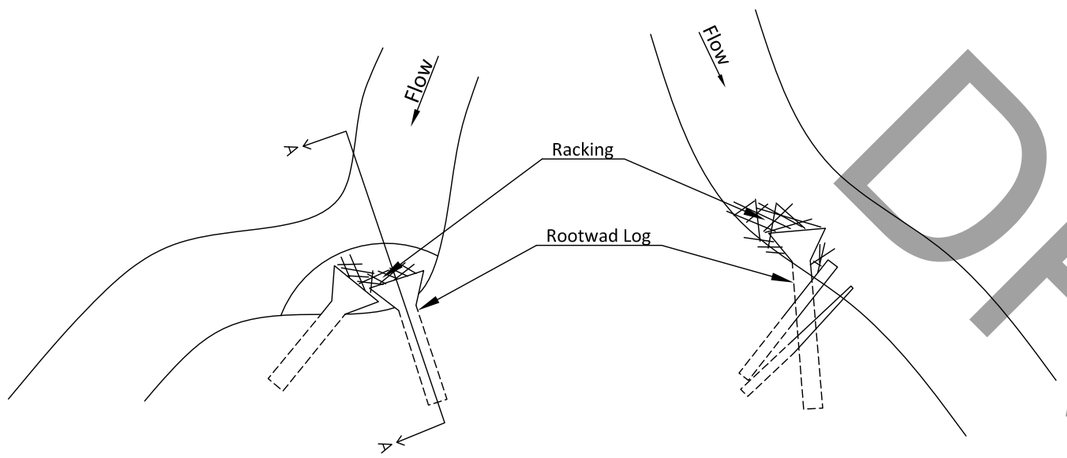
Details

DT-07

17 / 18

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration

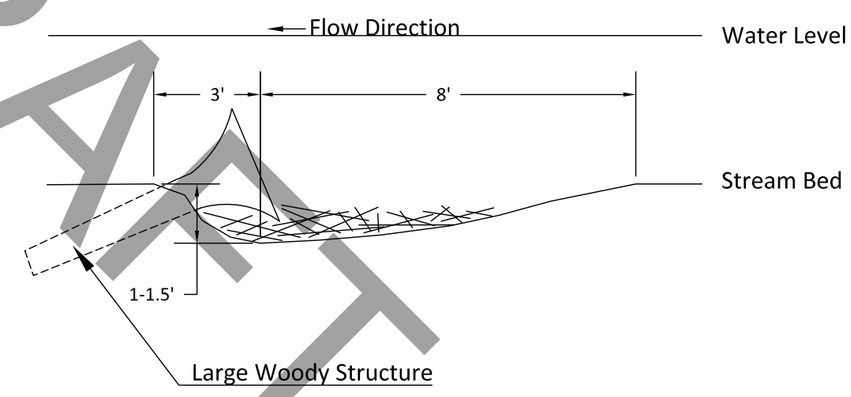
Large Woody Structure Detail



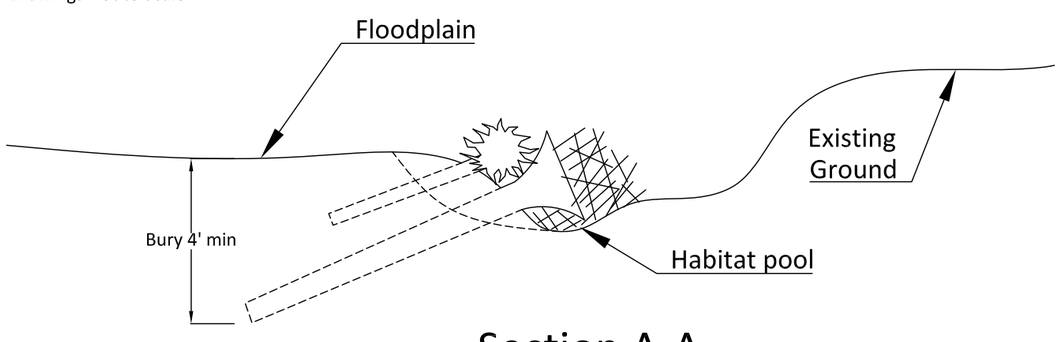
Option A

Option B

Creek Habitat Pools Detail



*Drawings Not to Scale



Section A-A

General Notes

1. Logs are 15-20' long, 16-20" dia; the rootwad will be 6' dia maximum.
2. Log species: D. Fir, Larch, Cedar, or Spruce.
3. Racking Material: logging slash, branches, shrubs; 2' thick layer of racking across face of rootwads.
4. ⅔ (miniimum) of the log shall be buried.
5. Large Woody Features and Habitat pools may be adjusted in field by engineer based on crack willow removal locations.
6. Racking material will be conifer/hardwood branches and stems up to 3" diameter, 3-10' long.

DRAFT

Mercer Creek		
Mercer Creek Floodplain		
7/14/2020		
Designed By:	B. Heiner	
Drawn By:	C. Curtis	
County Engineer:	M. Cook	
P.W. Director:	M. Cook	
Revision	Date	By

811 Know what's below. Call before you dig.

FROM THE CASCADES . . . TO THE COLUMBIA
KITTITAS COUNTY

Federal Aid No.

FCZD Project #
FC5809-30

Details

DT-08

G:\ENGINEERING\Active Design\Unassigned Job Number Projects\19012 Mercer Creek Restoration