

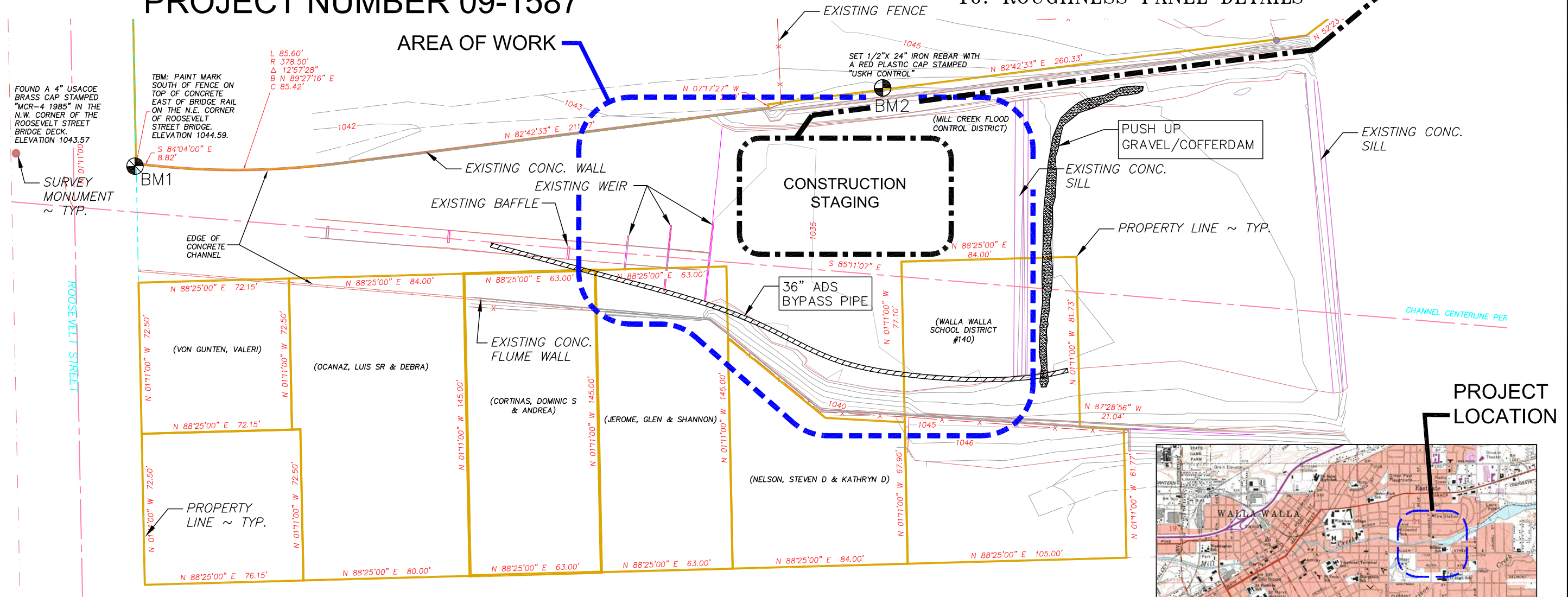
# CONSTRUCTION DOCUMENT FOR:

# MILL CREEK ROOSEVELT STREET FISH PASSAGE

PROJECT NUMBER 09-1587

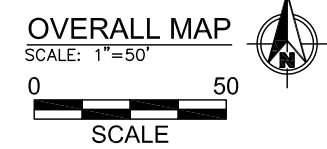
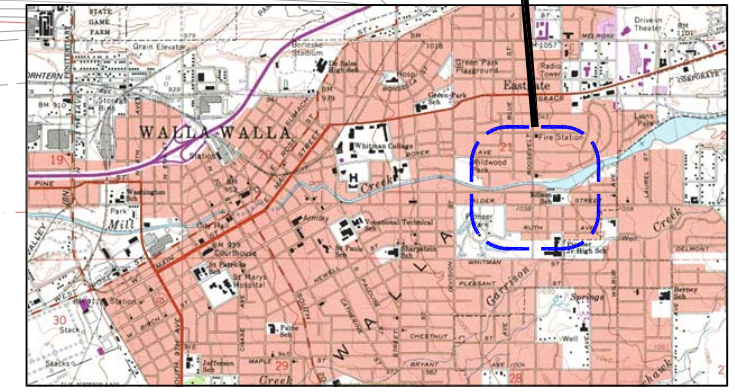
## DRAWING INDEX:

1. COVER SHEET
2. LEGEND AND NOTES
3. ENLARGED SITE PLAN
4. PROFILE AND SECTION
5. SECTIONS AND DETAIL
6. SECTIONS
7. DETAILS
8. RESTING POOL DETAILS
9. SILL DETAILS
10. ROUGHNESS PANEL DETAILS



CONSTRUCTION ACCESS OFF FRANCIS AVE.

PROJECT LOCATION



LEGAL: MILL CREEK CHANNEL  
NE 1/4 OF THE SE 1/4 OF SECTION 21, TOWNSHIP 7 NORTH, RANGE 36 EAST, WILLAMETTE MERIDIAN, WALLA WALLA COUNTY, WASHINGTON.

VICINITY MAP NOT TO SCALE



MILL CREEK  
ROOSEVELT STREET  
FISH PASSAGE



REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

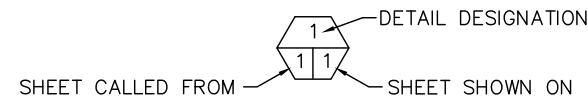
SCALE VERIFICATION: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING  
DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN  
DATE:  
6/24/11

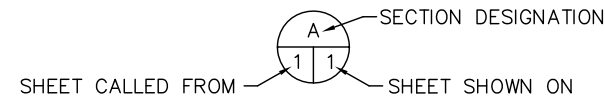
COVER SHEET

1 10  
SHEET OF

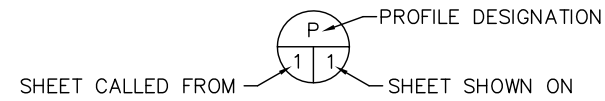
## SHEET SYMBOLS



**DETAIL CALLOUT**



**SECTION CALLOUT**



**PROFILE CALLOUT**

## LINETYPES

WATER MAIN	
FENCE	
GAS LINE	
STORM DRAIN	
SAN SEWER	
OVERHEAD POWER	
OVERHEAD TELEPHONE	
ORDINARY HIGH WATER	
UNDERGROUND TELEPHONE	
UNDERGROUND POWER	
TRACKS	
EXISTING THALWEG	

## ABBREVIATIONS

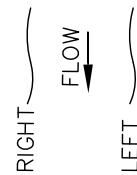
"	- INCHES	MISC.	- MISCELLANEOUS
'	- FEET	MPH	- MILES PER HOUR
APPROX.	- APPROXIMATELY	O.C.	- ON CENTER
B&B	- BALLED AND BURLAPPED	O.D.	- OUTSIDE DIAMETER
BW	- BOTH WAYS	OHW	- ORDINARY HIGH WATER
BM	- BENCH MARK	PK	- PARKER-KALON
∅	- CENTERLINE	R.O.W.	- RIGHT OF WAY
CAL.	- CALIPER	REQ'D	- REQUIRED
CFS	- CUBIC FEET PER SECOND	SEC.	- SECTION
CLR.	- CLEARANCE	S.F.	- SQUARE FEET
CMP	- CORRUGATED METAL PIPE	SHT.	- SHEET
CONC.	- CONCRETE	SPEC'S.	- PROJECT SPECIFICATIONS
DIA.	- DIAMETER	STA.	- STATION
ELEV.	- ELEVATION	SS	- STAINLESS STEEL
EQ.	- EQUAL	TEMP.	- TEMPORARY
FTG.	- FOOTING	TYP.	- TYPICAL
HDPE	- HIGH DENSITY POLYETHYLENE	W.S.	- WATER SURFACE
HT.	- HEIGHT	WSDOT	- WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
GAL.	- GALLON	WSEL	- WATER SURFACE ELEVATION
I.D.	- INSIDE DIAMETER		
I.E.	- INVERT ELEVATION		
LBS.	- POUNDS		
LWD	- LARGE WOODY DEBRIS		
MAX.	- MAXIMUM		
MFG.	- MANUFACTURER'S		
MHW	- MEAN HIGH WATER		
MHHW	- MEAN HIGHER HIGH WATER		
MIN.	- MINIMUM		
MISC.	- MISCELLANEOUS		

## LEGEND

	ROUGHNESS PANEL CONCRETE
	PROPOSED CONCRETE
	EXISTING CALLOUT
	NEW CALLOUT
	SURVEY POINT
	EXISTING TREES TO REMAIN
	PROJECT BENCH MARK
	BORING LOCATIONS
	SANDBAGS
	NOTE CALLOUT
	STATION CALLOUT
	PHOTO CALLOUT
	WETLAND DELINEATION
	DEMO
	ELEVATION MARKER
	TREE TO BE REMOVED
	TREE TO REMAIN

## NOTES

References to Right and Left as viewed downstream



BENCH MARK COORDINATES			
POINT #	EASTING	NORTHING	ELEV
BM1	2195621.8838	276029.9834	1044.59
BM2	2202721.7714	278733.5432	1042.66

### Survey Notes:

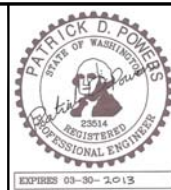
BEARINGS ARE BASED ON THE WASHINGTON COORDINATE SYSTEM SOUTH ZONE. THE CONVERGENCE ANGLE IS 01°35'21". THE COMBINED GROUND TO GRID SCALE FACTOR IS 0.99990831617. DISTANCES SHOWN ARE GROUND DISTANCES THE VERTICAL DATUM IS NAVD 88 ORTHOMETRIC HEIGHTS DETERMINED BY GPS OBSERVATIONS WHILE CONNECTED TO THE WASHINGTON STATE REFERENCE NETWORK SOUTHEAST WASHINGTON.

### APPOXIMATE QUANTITIES:

<b>CHANNEL EXCAVATION:</b>	1700 CY
<b>HEAVY LOOSE RIPRAP:</b>	900 CY
<b>HABITAT BOULDERS</b>	30 TOTAL
<b>ROUGHNED CHANNEL MIX</b>	250 CY
<b>GRAVEL BORROW</b>	53 CY
<b>FLUME CONCRETE (CIP)</b>	
<b>CONCRETE (PRECAST)</b>	



# MILL CREEK ROOSEVELT STREET FISH PASSAGE

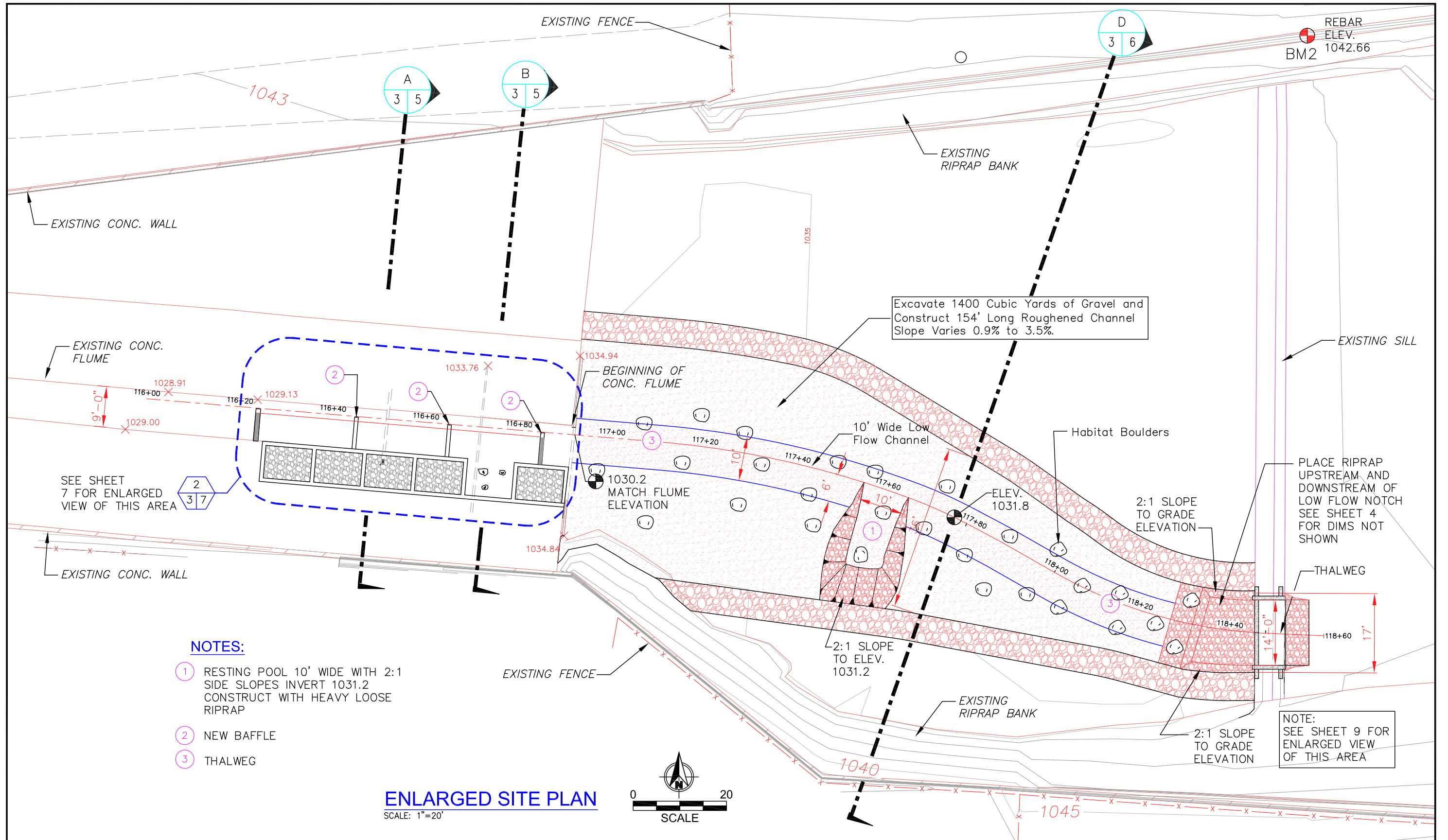


REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

SCALE VERIFICATION: 1" = 100'

DESIGNED BY: WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING  
DRAWN BY: DIMENSIONS DRAFTING & DESIGN  
DATE: 6/24/11

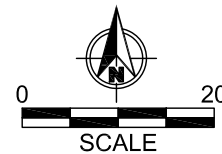
### LEGEND AND NOTES



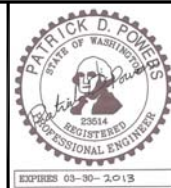
**NOTES:**

- ① RESTING POOL 10' WIDE WITH 2:1 SIDE SLOPES INVERT 1031.2 CONSTRUCT WITH HEAVY LOOSE RIPRAP
- ② NEW BAFFLE
- ③ THALWEG

**ENLARGED SITE PLAN**  
SCALE: 1"=20'



**MILL CREEK  
ROOSEVELT STREET  
FISH PASSAGE**



REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

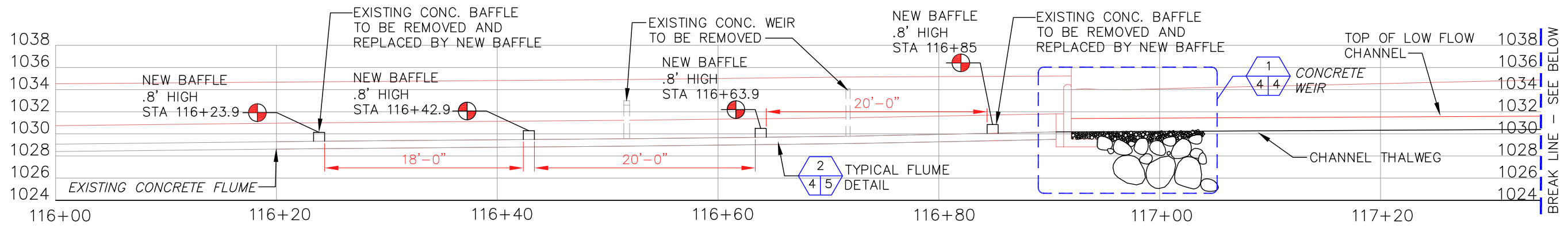
BAR IS ONE INCH ON ORIGINAL DRAWING. SCALE VERIFICATION: 0 1" IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING

DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN

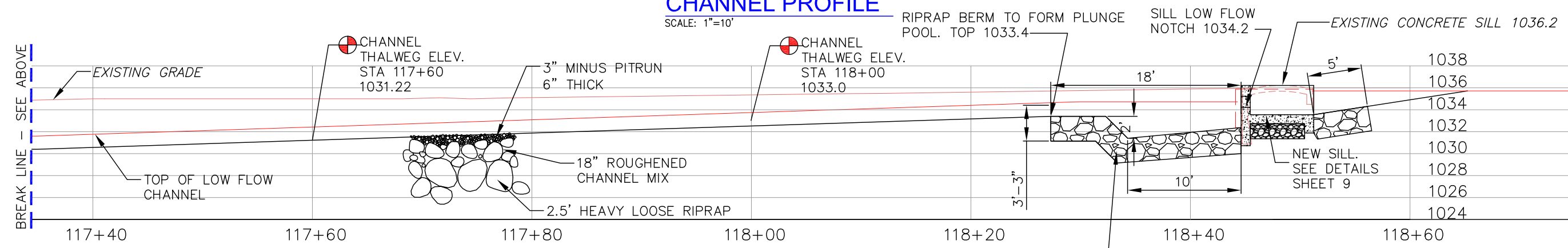
DATE:  
6/24/11

**ENLARGED SITE PLAN**



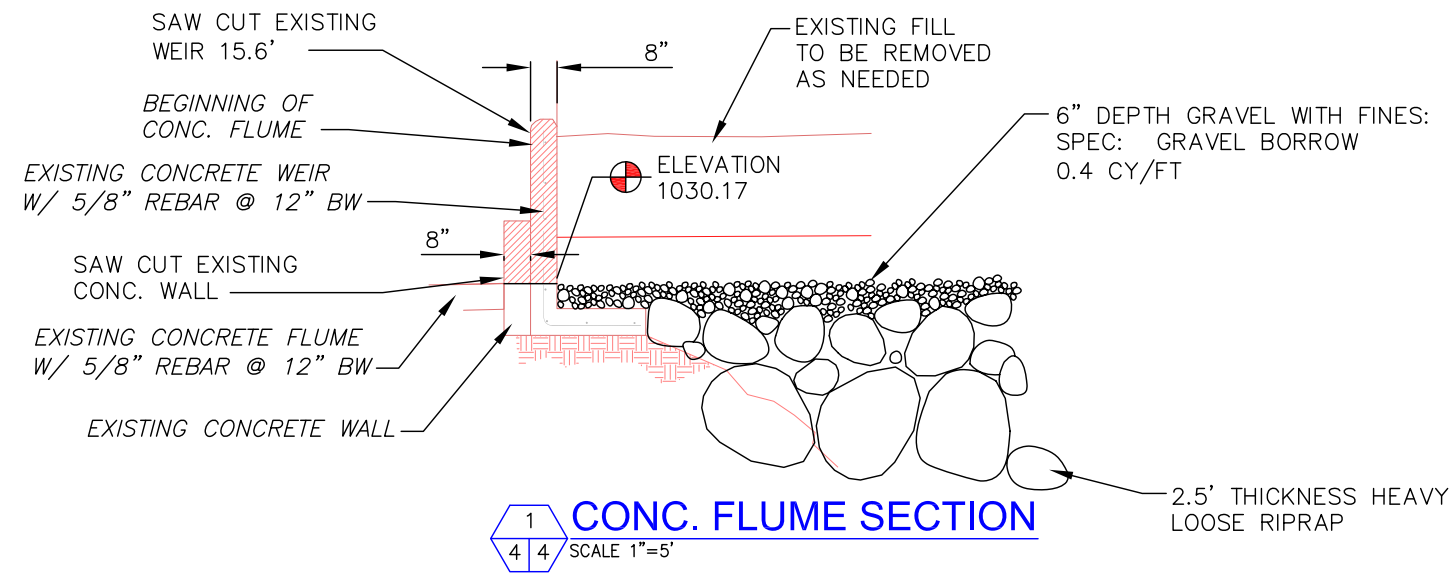
**CHANNEL PROFILE**

SCALE: 1"=10'



**CHANNEL PROFILE - CONTINUED**

SCALE: 1"=10'



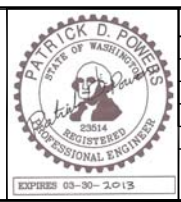
**CONC. FLUME SECTION**

SCALE 1"=5'

CHANNEL TABLE			
STA.	THALWEG ELEVATION	SLOPE	EXCAVATION TOP WIDTH
117+00	1030.2		50'
117+40	1030.6	0.85%	60'
117+80	1032.0	3.50%	46'
118+20	1033.2	3%	30'



**MILL CREEK  
ROOSEVELT STREET  
FISH PASSAGE**



REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

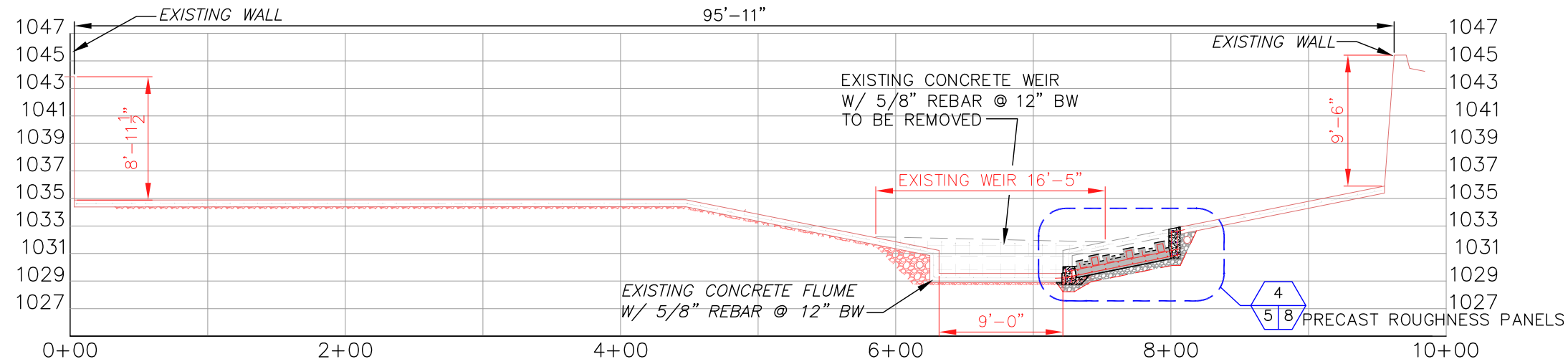
SCALE VERIFICATION: 1" = 10'

DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING

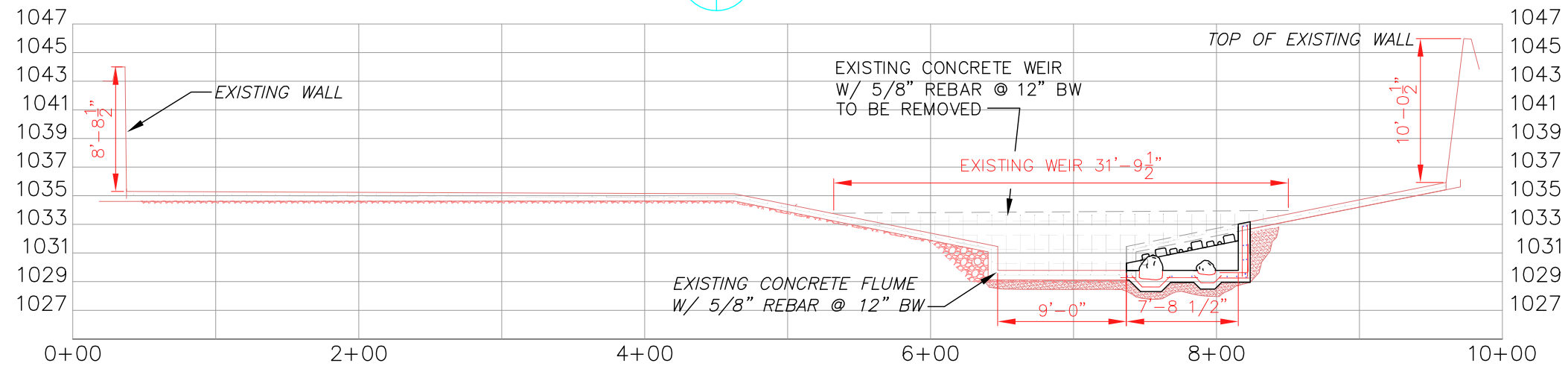
DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN

DATE:  
6/24/11

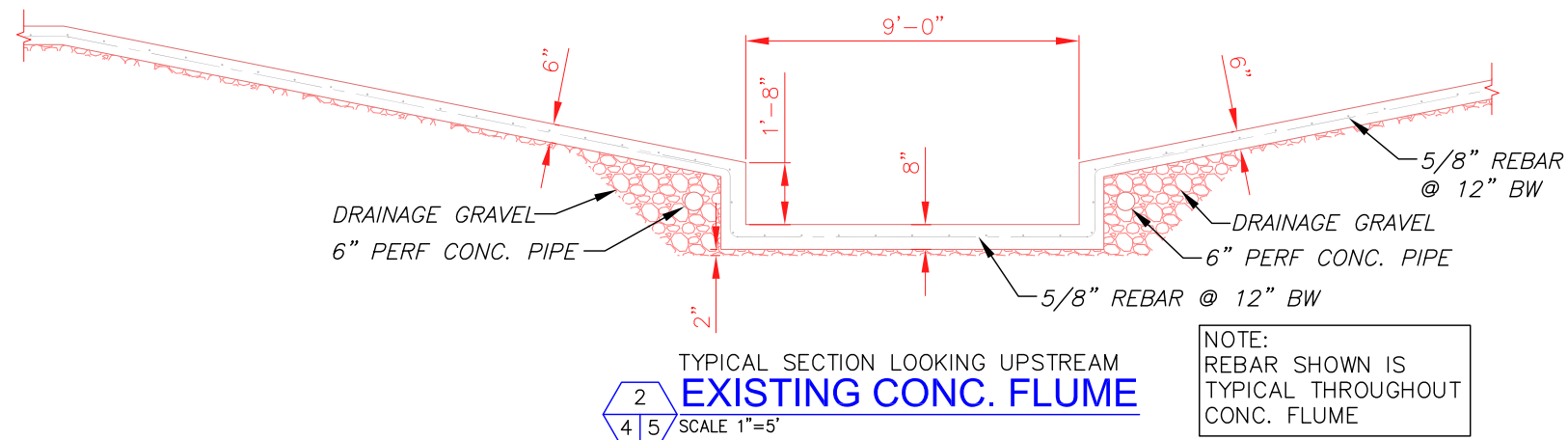
**PROFILE AND SECTIONS**



LOOKING UPSTREAM  
**CONC. FLUME SECTION**  
 A  
 3 | 5  
 NOT TO SCALE



LOOKING UPSTREAM  
**CONC. FLUME - SECTION**  
 B  
 3 | 5  
 NOT TO SCALE

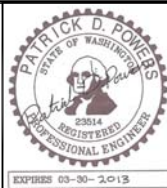


TYPICAL SECTION LOOKING UPSTREAM  
**EXISTING CONC. FLUME**  
 2  
 4 | 5  
 SCALE 1"=5'

NOTE:  
 REBAR SHOWN IS  
 TYPICAL THROUGHOUT  
 CONC. FLUME



**MILL CREEK  
 ROOSEVELT STREET  
 FISH PASSAGE**

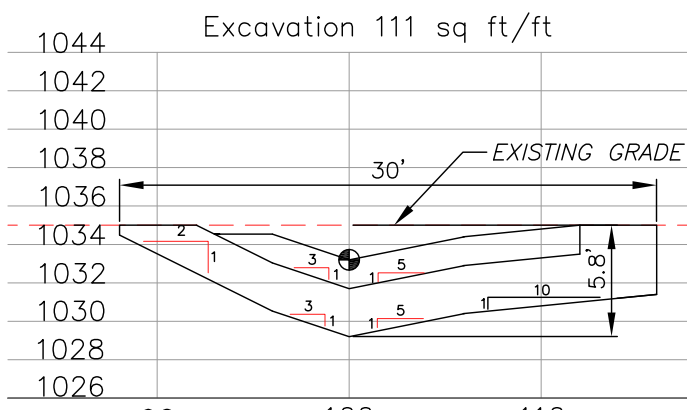


REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

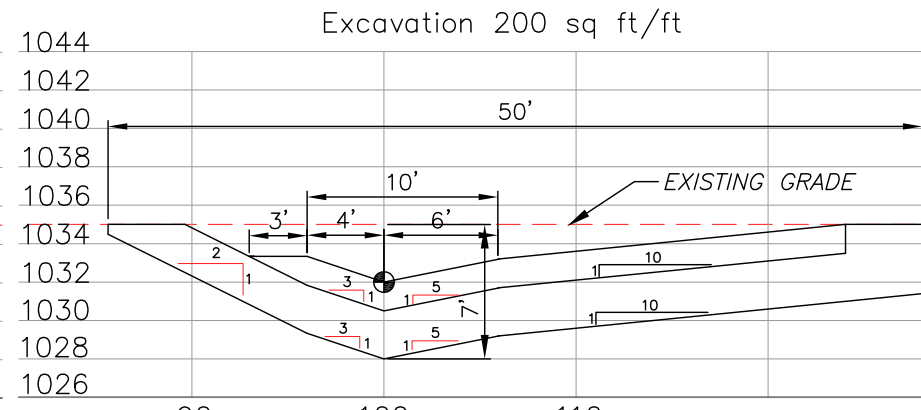
SCALE VERIFICATION  
 BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DESIGNED BY:  
 WATERFALL ENGINEERING, LLC  
 CHINOOK ENGINEERING  
 DRAWN BY:  
 DIMENSIONS DRAFTING & DESIGN  
 DATE:  
 6/24/11

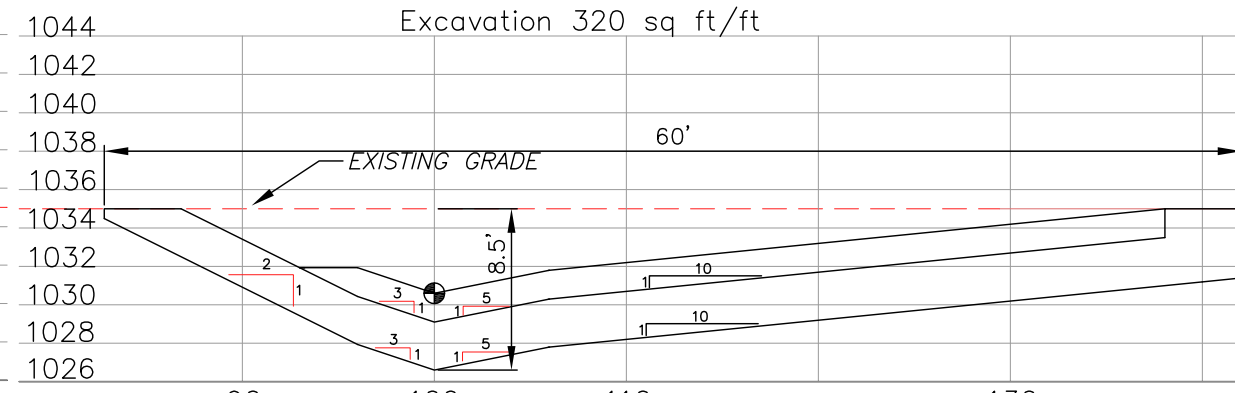
**SECTIONS AND DETAIL**



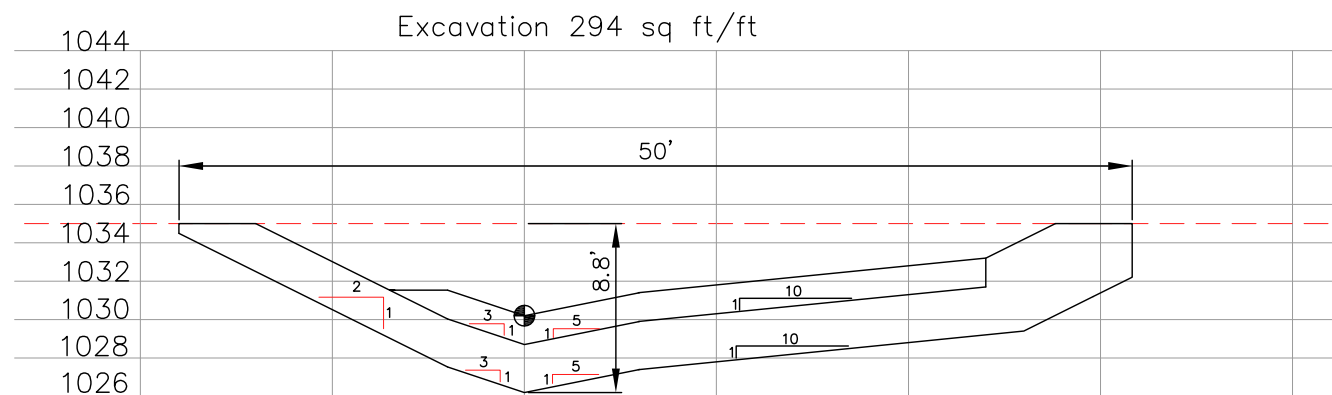
**STA 118+20** LOOKING UPSTREAM  
SCALE: 1"=10'



**STA 117+80** LOOKING UPSTREAM  
SCALE: 1"=10'



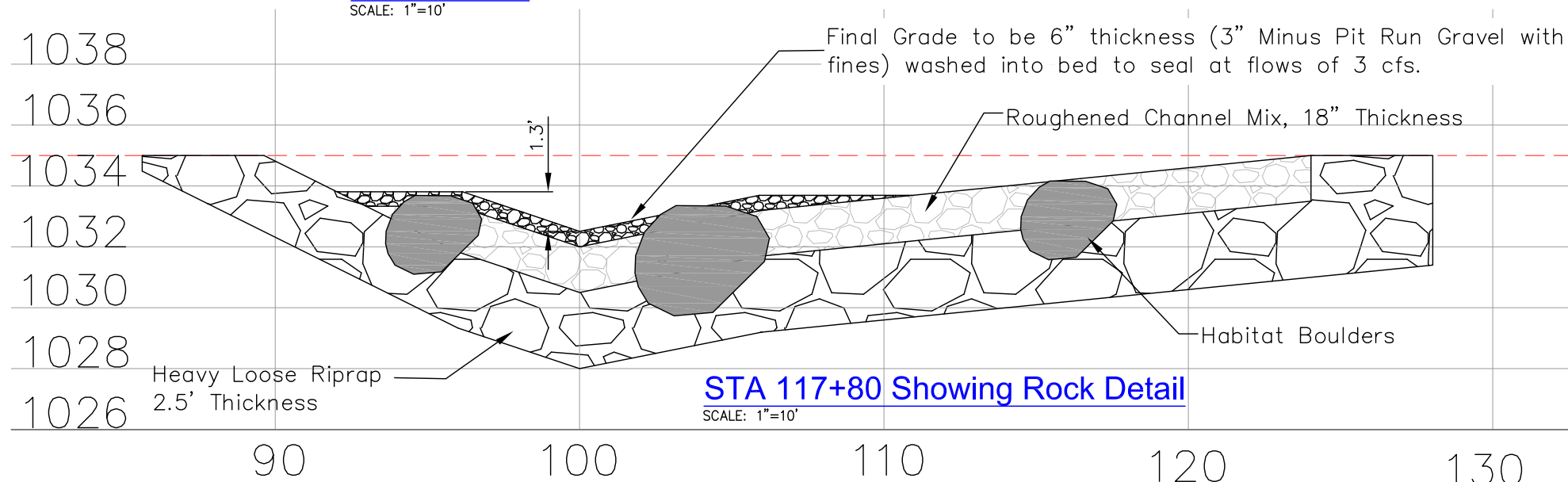
**STA 117+40** LOOKING UPSTREAM  
SCALE: 1"=10'



**STA 117+00** LOOKING UPSTREAM  
SCALE: 1"=10'

**Construction Notes**

1. Excavate Thalweg to Cut Depths Shown on Above Sections.
2. Place 2.5' Thickness of Riprap to Extent Shown on Sections.
3. Place Habitat Boulders and Wedge Into Riprap. Compact Riprap around Habitat Boulders.
4. Backfill with Roughened Channel Mix. Before placement Roughened Channel Materials shall be approved by the Engineer before being combined and hauled to the site. Mix shall be worked into gaps in Riprap and Compacted with Excavator Bucket to Elevations and Slopes shown.
5. Backfill fill final grade with 3" minus pitrun gravel. Work fines into bed to seal bed to 3 cfs flow for a depth of 1.3' above the channel thalweg.



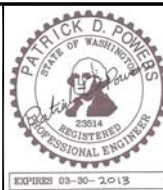
**STA 117+80 Showing Rock Detail**  
SCALE: 1"=10'

Roughened Channel Mix (280 Cu. Yds.)	
Percent by Volume	Diameter
10	15" - 18"
35	9" - 12"
35	6" - 9"
15	3" - 6"

**Habitat Boulders**  
Three to Four Man Rock (28" TO 48").  
Place 15' O.C. Embed Min 1/3 Dia Into Riprap (30 Rocks Total)



**MILL CREEK  
ROOSEVELT STREET  
FISH PASSAGE**



REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

SCALE VERIFICATION: BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING

DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN

DATE:  
6/24/11

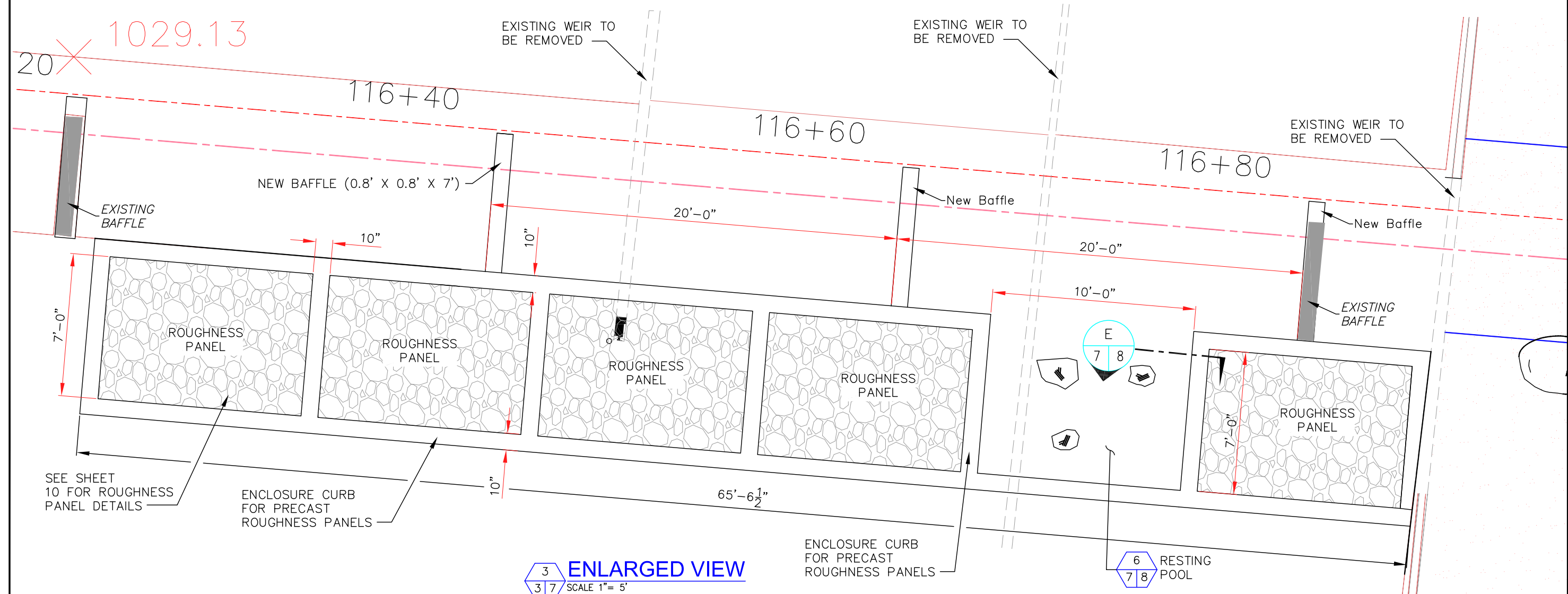
**SECTIONS**

**6 10**  
SHEET OF

- CONSTRUCTION NOTES:
- FORMING AND POURING OF PRECAST ROUGHNESS PANELS SHALL BE APPROVED BEFORE ANY CONCRETE WORK CAN PROCEED IN THE FLUME. ROUGHNESS PANELS MUST CURE TO A MIN COMPRESSIVE STRENGTH OF 2500 PSI BEFORE BEING MOVED INTO PLACE.
  - ROUGHNESS PANELS MUST BE PLACED AND REBAR TIED BEFORE PLACING FINAL CONCRETE.
  - ALL PRECAST PANEL SHOP DRAWINGS SHALL CLEARLY SHOW THE WEIGHT AND DIMENSIONS OF EACH PANEL. LIFTING SYSTEMS SHALL ALSO BE CALLED OUT AND SPECIFIED BY THE PRECAST PLANT. 5. PANEL MAXIMUM LENGTH SHALL NOT EXCEED 10' AND SHORTER PANELS ARE ACCEPTABLE. SHOP DRAWINGS SHALL IDENTIFY A CONFIGURATION IN PLAN VIEW AND FOR EACH PANEL LENGTH. PRECAST FORM FABRICATION, IN PLACE CONCRETE SAW CUTTING, AND PLACEMENT OF PRECAST CONCRETE SHALL NOT START UNTIL WRITTEN APPROVAL OF PRECAST CONCRETE SHOP DRAWINGS IS PROVIDED BY THE ENGINEER.

1033.76 X

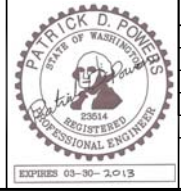
1029.13 X



**ENLARGED VIEW**  
SCALE 1" = 5'



# MILL CREEK ROOSEVELT STREET FISH PASSAGE



REVISIONS				
REV	DATE	BY	APP'D	DESCRIPTION

SCALE VERIFICATION  
0 1"

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

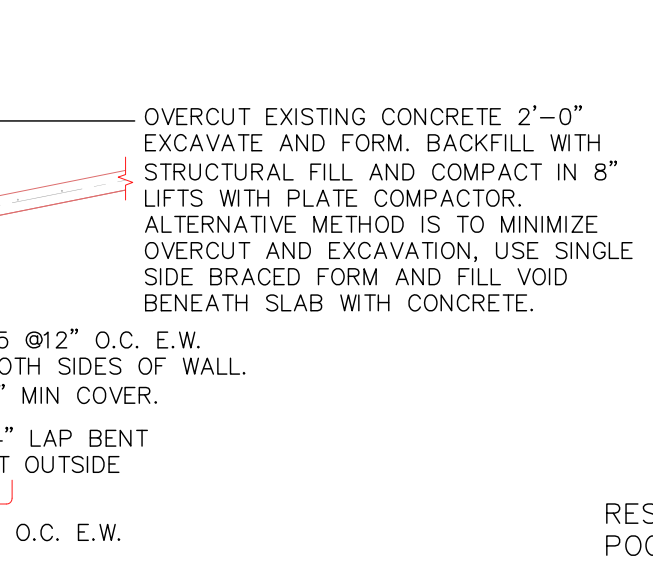
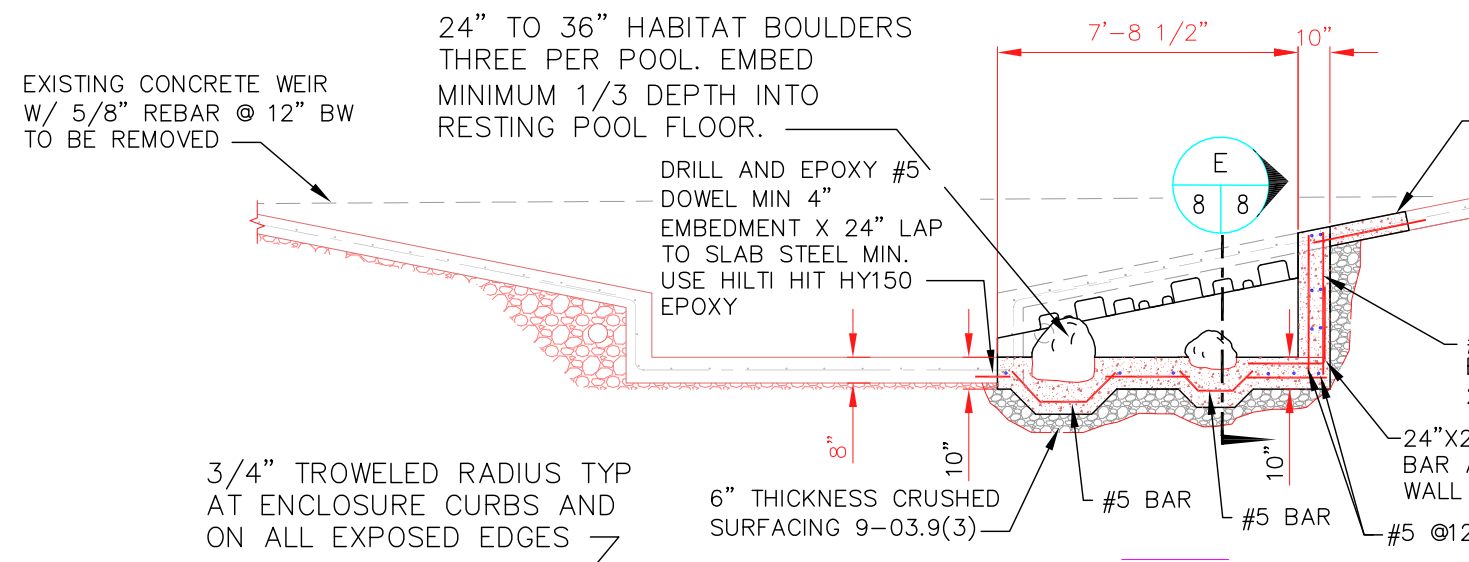
DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING

DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN

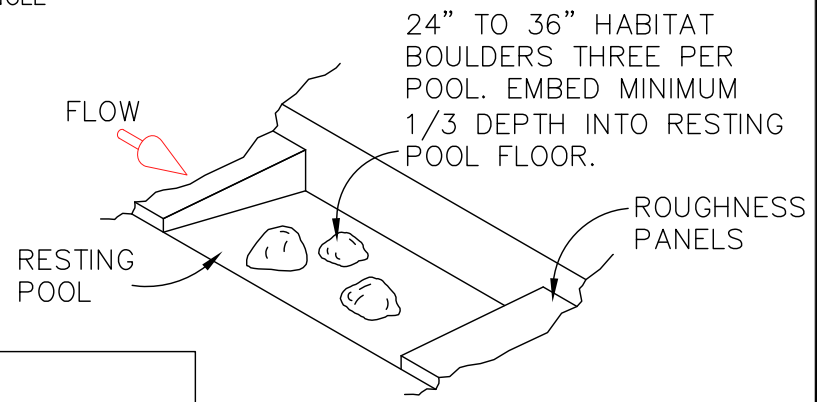
DATE:  
6/24/11

**DETAILS**

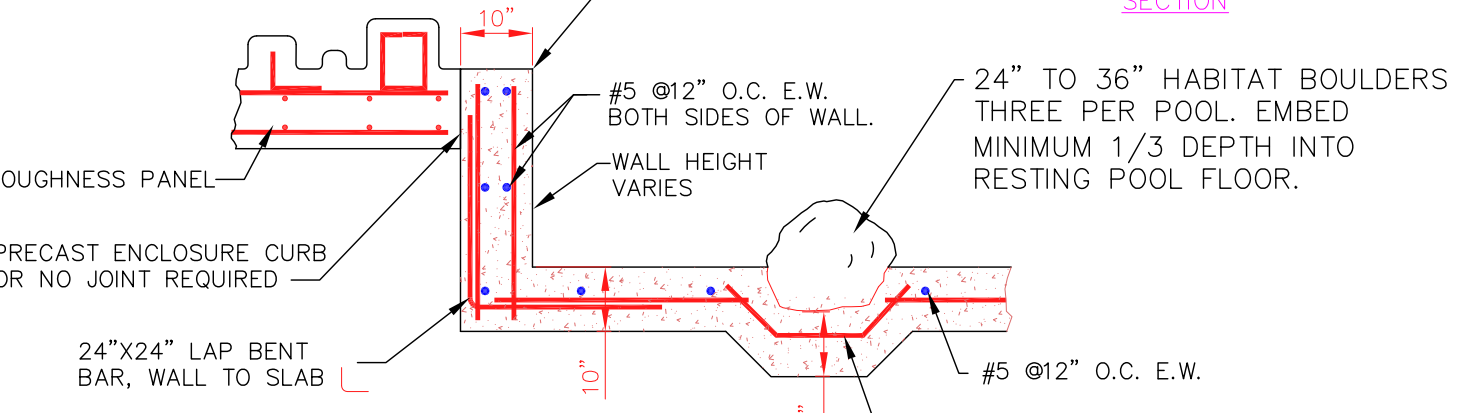
**7 10**  
SHEET OF



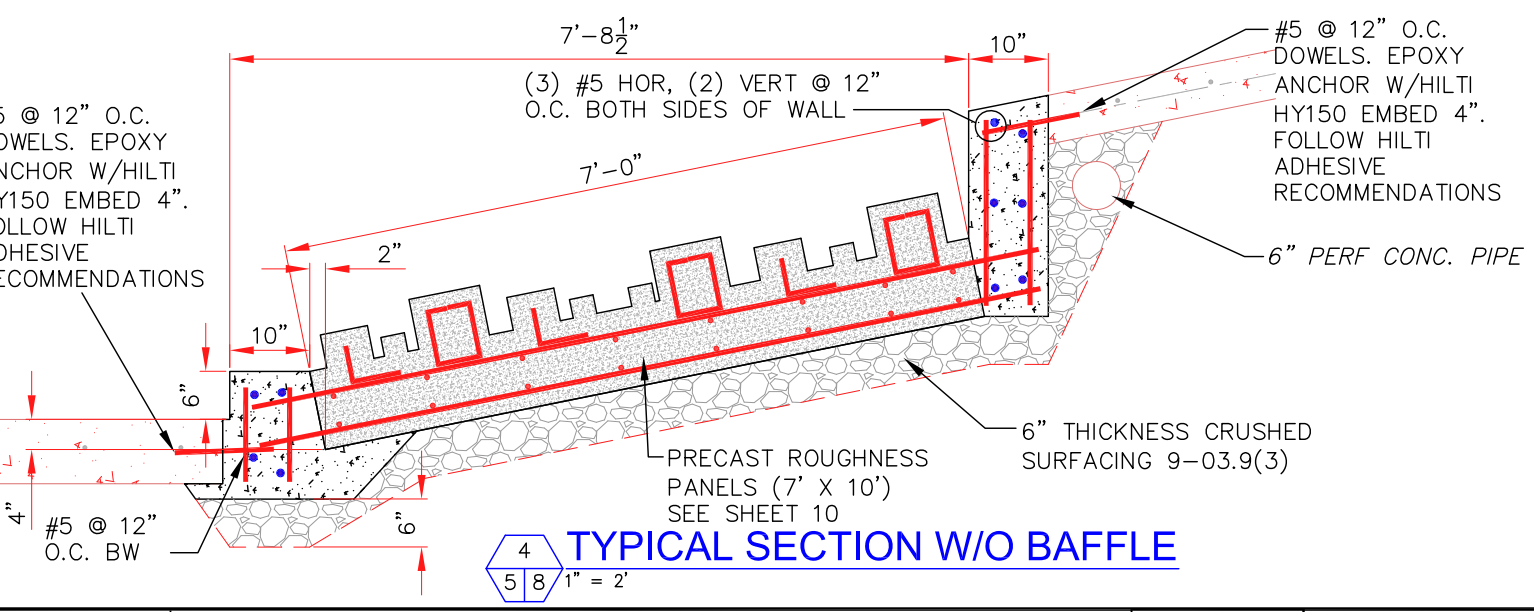
NOTE:  
ALL RESTING POOLS ALTERNATIVELY  
MAY BE PRECAST. DETAILS FOR  
PLACEMENT WITH ENCLOSURE  
CURBS SHALL BE CLEARLY SHOWN  
IN SHOP DRAWING SUBMITTAL.



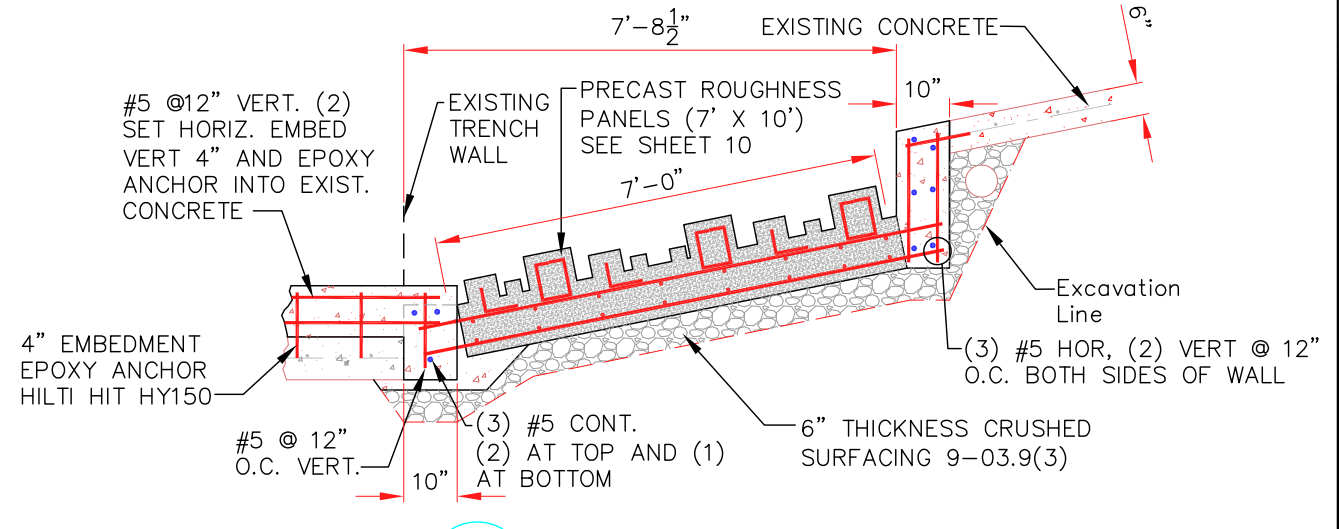
NOTE:  
1. ALL SAW CUT CONCRETE WITH EXPOSED REBAR SHALL BE CHIPPED BACK TO EXPOSE 3\"/>



**SECTION E 8/8** SCALE: 1"=2'  
**SECTION 6 7/8** RESTING POOL DETAILS NOT TO SCALE



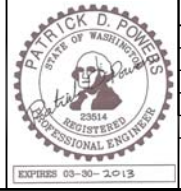
**SECTION 4 5/8** TYPICAL SECTION W/O BAFFLE SCALE: 1"=2'



**SECTION F 7/8** SECTION WITH BAFFLE SCALE: 1"=3'



**MILL CREEK  
ROOSEVELT STREET  
FISH PASSAGE**



REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

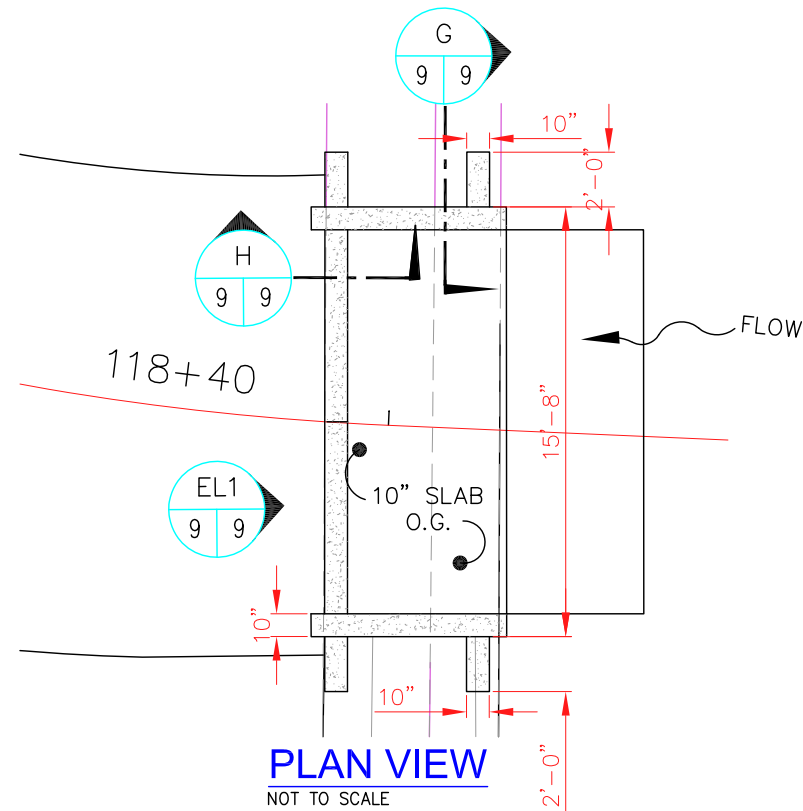
SCALE VERIFICATION: 0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING  
DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN  
DATE:  
6/24/11

**RESTING POOL DETAILS**



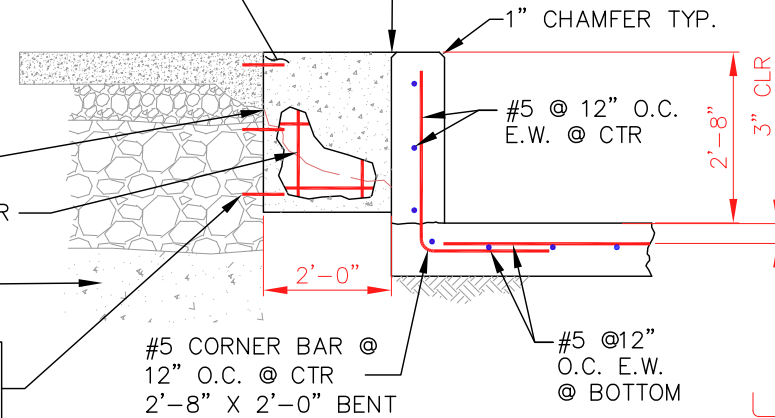


SAWCUT CONCRETE SILL CAP AND WALLS BACK. REMOVE FILL. FORM WING WALLS AND PLACE REBAR. IF CONCRETE IS COMPETENT AS DETERMINED BY ENGINEER, ROTARY DRILL AND EPOXY 4" MIN EMBEDMENT #5 REBAR TO TIE INTO NEW WING WALL AT NEW REBAR LOCATIONS NEAR AND FAR. NO DRILLING SHALL BE ALLOWED UNTIL APPROVED BY THE ENGINEER. FILL VOID WITH CIP CONCRETE AND MATCH SILL ELEVATION TO SEAL SILL TO FISHWAY.

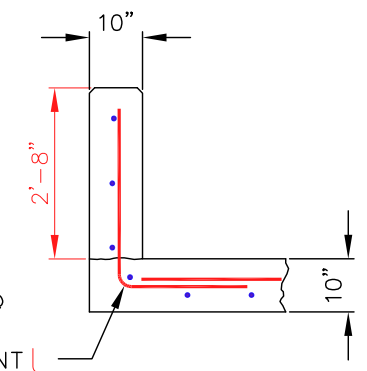
WING WALL NEAR AND FAR FULL HEIGHT OF EXIST STRUCTURE. ENCAPSULATE SILL FILL MATERIAL AND TROWEL MATCH CONCRETE CAP ELEVATIONS

- #5 @12" O.C. E.W. @ CTR
- EXIST. SILL WALL NEAR AND FAR
- NOTE:  
1. ALL DOWELS SHALL BE EPOXY ANCHORED REBAR.  
2. ALL REBAR SHALL BE #5 BARS  
3. ALL EPOXY SHALL BE HILTI HIT HY 150.

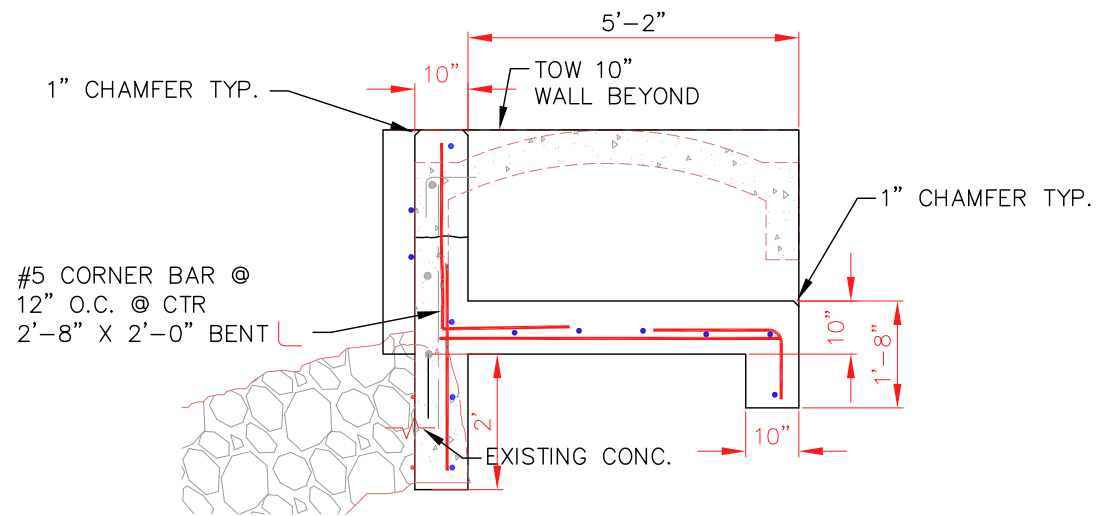
IF PRECAST CONCRETE IS PROVIDED; DRILL AND EPOXY ANCHOR WITH HILTI HY150 REINFORCEMENT INTO PRECAST STRUCTURE FOR SILL WING WALLS. IF CIP CONCRETE PROVIDED FOR FISHWAY PROVIDE BENT BARS SIMILAR TO DETAIL G FOR WALLS.



**SECTION**  
SCALE: 1"=3'

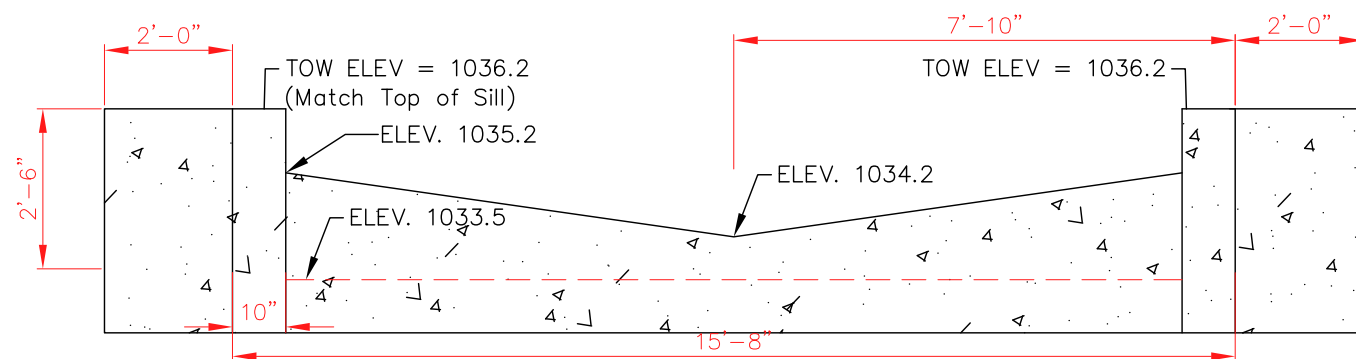


**SECTION**  
SCALE: 1"=3'



**SECTION**  
SCALE: 1"=3'

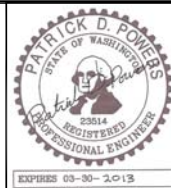
NOTE:  
WING WALL FULL HEIGHT OF SILL STRUCTURE SIMILAR TO DETAIL G



**ELEVATION**  
SCALE: 1"=3'



**MILL CREEK  
ROOSEVELT STREET  
FISH PASSAGE**



REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

SCALE VERIFICATION

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING

DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN

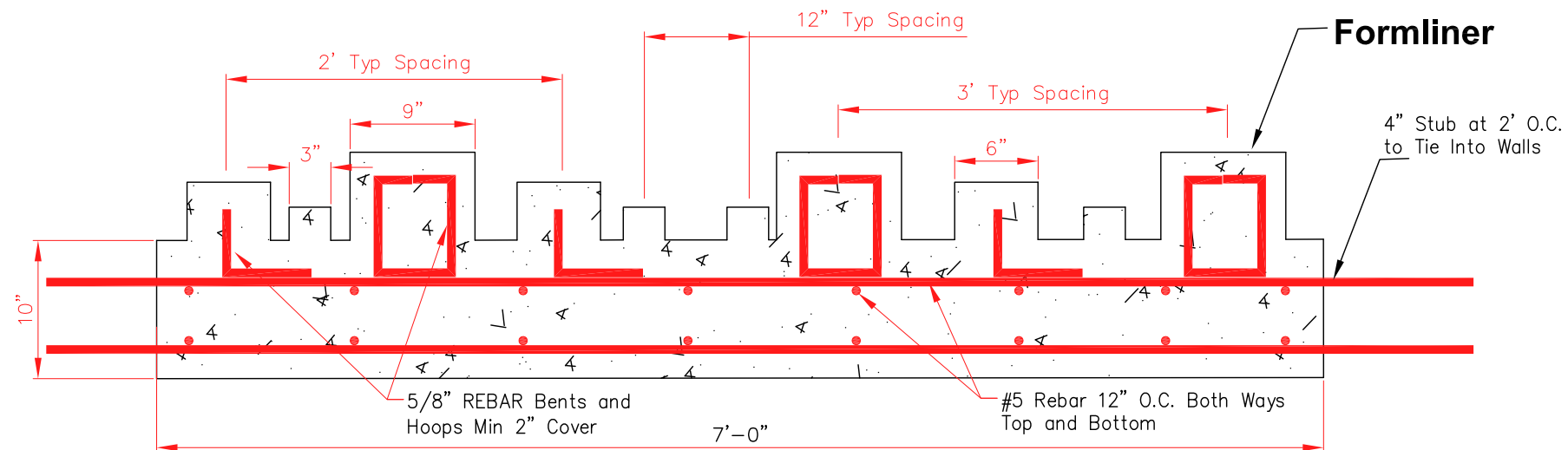
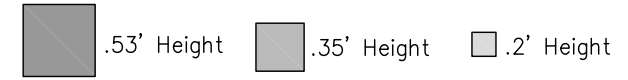
DATE:  
6/24/11

**SILL DETAILS**

**9 10**  
SHEET OF

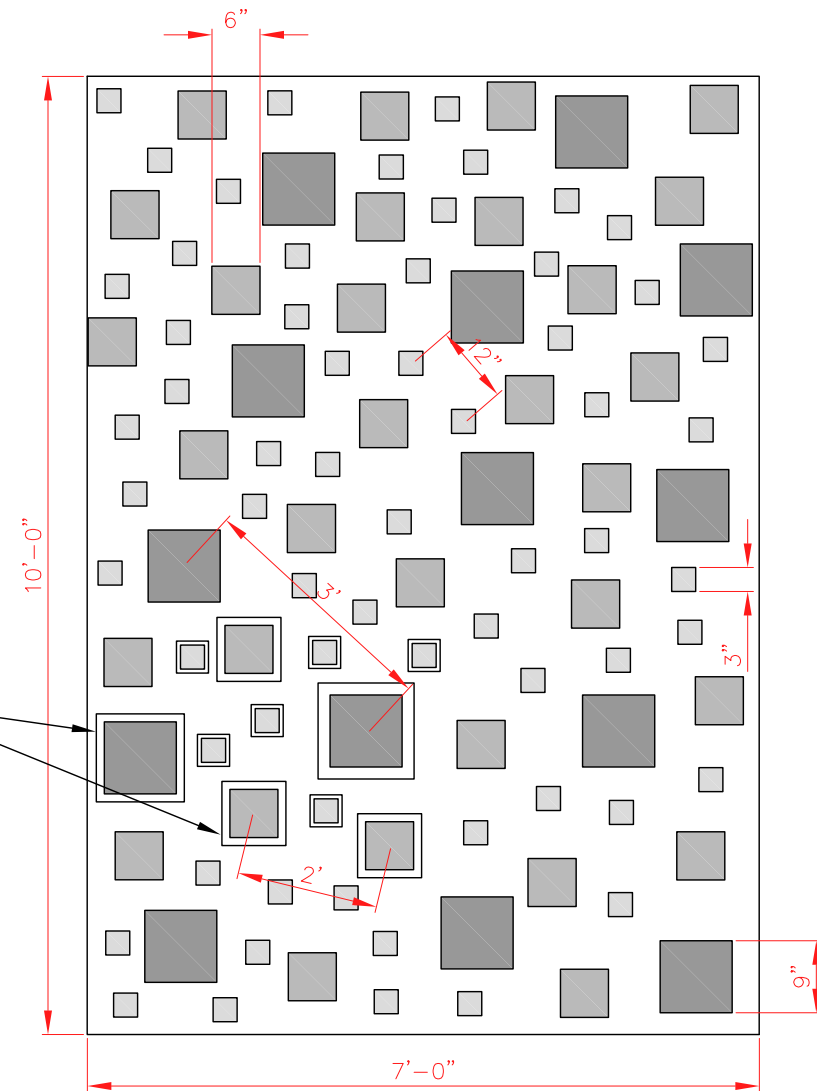
**CONSTRUCTION NOTES:**

1. THE ROUGHNESS PANELS SHALL BE PRECAST CONCRETE PANELS.
2. AFTER CONCRETE STRENGTH HAS REACH 2500 PSI THE PANELS MAY BE PLACED WITHIN THE PROJECT.
3. PRECAST PANELS SHALL BE DRAWN, AND DESCRIBED IN FORMAL SHOP DRAWINGS APPROVED IN WRITING BY THE ENGINEER PRIOR TO CASTING.
4. ALL PRECAST PANEL SHOP DRAWINGS SHALL CLEARLY SHOW THE WEIGHT AND DIMENSIONS OF EACH PANEL. LIFTING SYSTEMS SHALL ALSO BE CALLED OUT AND SPECIFIED BY THE PRECAST PLANT.
5. PANEL MAXIMUM LENGTH SHALL NOT EXCEED 10' AND SHORTER PANELS ARE ACCEPTABLE. SHOP DRAWINGS SHALL IDENTIFY A CONFIGURATION IN PLAN VIEW AND FOR EACH PANEL LENGTH.



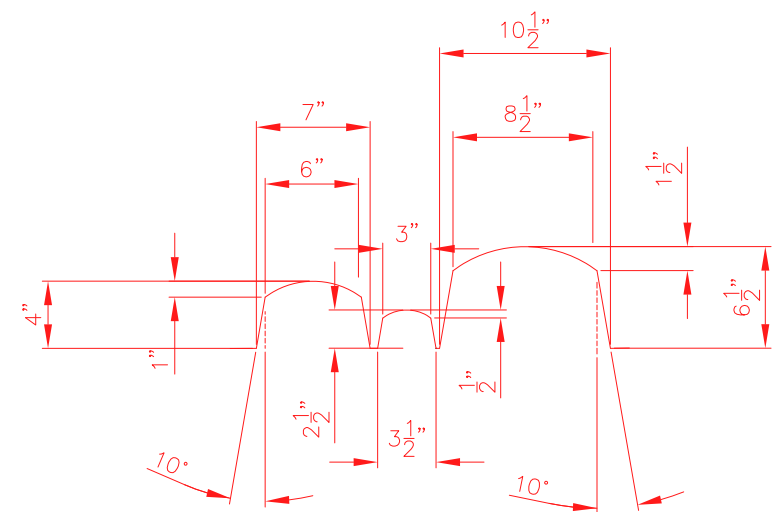
**TYPICAL SECTION (Does Not Show Rounded Tops or Angled Walls)**

SCALE 1"=1'



**ROUGHNESS PANEL - PLAN (Make 3)**

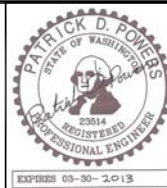
SCALE 1"=2'



**Roughness Details for Formliner (Scale 1"=1')**



**MILL CREEK  
ROOSEVELT STREET  
FISH PASSAGE**



REVISIONS				
REV	DATE	BY	APPD	DESCRIPTION

SCALE VERIFICATION: 0 1"

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

DESIGNED BY:  
WATERFALL ENGINEERING, LLC  
CHINOOK ENGINEERING

DRAWN BY:  
DIMENSIONS DRAFTING & DESIGN

DATE:  
6/24/11

**ROUGHNESS PANEL DETAILS**