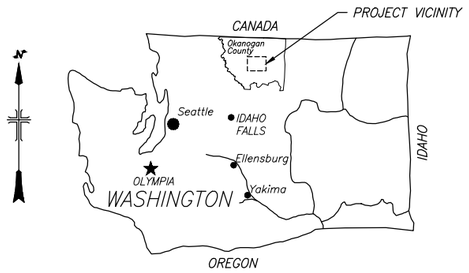
COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT
METHOW SUBBASIN
METHOW VALLEY IRRIGATION DISTRICT
INSTREAM FLOW IMPROVEMENT PROJECT
EAST MAIN PIPELINE

SITE SUMMARY
Okanogan County
Twisp, Washington
N48°21'50", W120°7'11"



LOCATION MAP

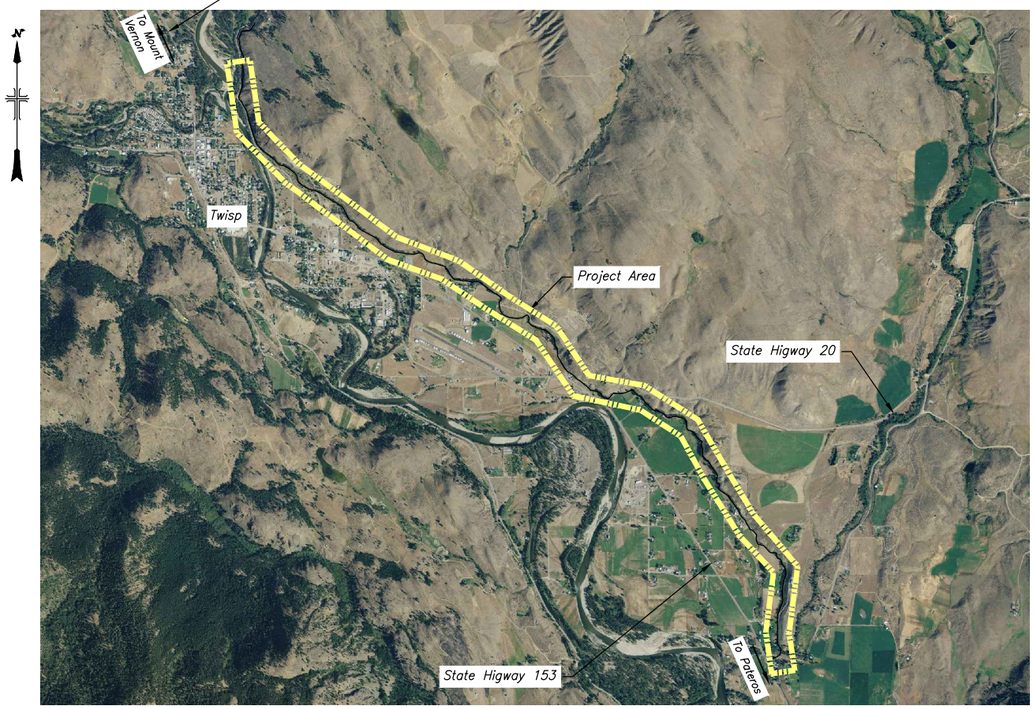
CONTRACTING AGENCY:
WASHINGTON WATER PROJECT – TROUT UNLIMITED
103 PALOUSE, SUITE 14
WENATCHEE, WASHINGTON 98801
PHONE: (509) 888-0970

ENGINEER:
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
PACIFIC NORTHWEST REGION
1150 NORTH CURTIS RD. – SUITE 100
BOISE, ID 83706
CONTACT: JUSTIN NIELSEN
PHONE: (208) 378-5022
EMAIL: jhnielsen@usbr.gov

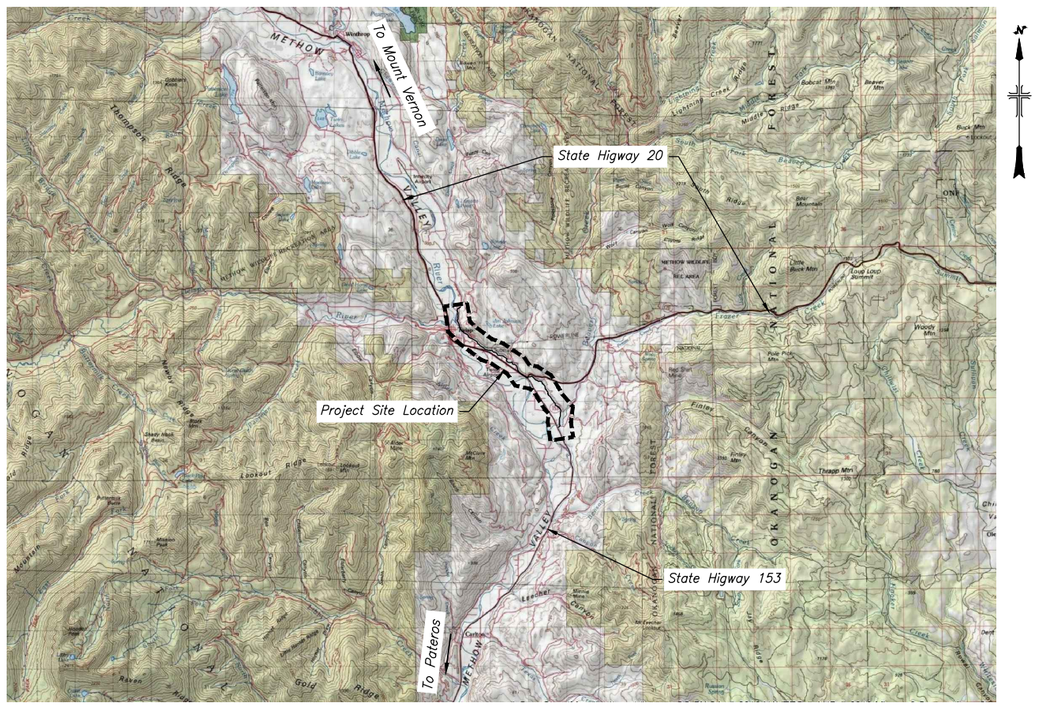
IRRIGATION DISTRICT:
METHOW VALLEY IRRIGATION DISTRICT
P.O. BOX 860
TWISP, WA 98856
PHONE: (509) 997-6843

SHEET INDEX

1	1678-100-2651	Location Map & Sheet Index
2	1678-100-2652	General Notes
3	1678-100-2653	Control Points
4	1678-100-2654	Control Points
5	1678-100-2655	Site Overview
6	1678-100-2656	Main Plan and Profile STA 206+00 to 223+45
7	1678-100-2657	Main Plan and Profile STA 223+45 to 240+92
8	1678-100-2658	Main Plan and Profile STA 240+92 to 258+39
9	1678-100-2659	Main Plan and Profile STA 258+39 to 275+86
10	1678-100-2660	Main Plan and Profile STA 275+86 to 293+33
11	1678-100-2661	Main Plan and Profile STA 293+33 to 310+80
12	1678-100-2662	Main Plan and Profile STA 310+80 to 328+27
13	1678-100-2663	Main Plan and Profile STA 328+27 to 345+74
14	1678-100-2664	Main Plan and Profile STA 345+74 to 363+21
15	1678-100-2665	Main Plan and Profile STA 363+21 to 380+68
16	1678-100-2666	Main Plan and Profile STA 380+63 to 396+81
17	1678-100-2667	Main Plan and Profile STA 396+81 to 412+28
18	1678-100-2668	Main Plan and Profile STA 412+28 to 429+75
19	1678-100-2669	Main Plan and Profile STA 429+75 to 447+22
20	1678-100-2670	Main Plan and Profile STA 447+22 to 451+87
21	1678-100-2671	End of Pipeline – Plan
22	1678-100-2672	End of Pipeline – Sections
23	1678-100-2673	Pipe Specifications and Trench Details
24	1678-100-2674	Pipe Crossing Details & Trench Plug Detail
25	1678-100-2675	Turnout and Lateral Connection Details
26	1678-100-2676	Air Valve and Thrust Block Details
27	1678-100-2677	Drain Details
28	1678-100-2678	Existing Spill/Sluice Structure
29	1678-100-2679	East Canal Screen Structure
30	1678-100-2680	Intake Structure Details



PROJECT SITE
SCALE OF FEET: 2000 0 2000 4000 6000



VICINITY MAP
SCALE OF MILES: 2 0 2 4 6

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN
MVID - INSTREAM FLOW IMPROVEMENT PROJECT
LOCATION MAP & SHEET INDEX

Justin Nielsen
DESIGNED
M. Bergstrom
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

LOCATION MAP & SHEET INDEX

1678-100-2651

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 17:08
PLOTTED BY
JHNIELSEN

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
LOCATION AND COVER SHEET.DWG

GENERAL NOTES

1. ALL COMPONENTS OF THE CONTRACT DOCUMENTS SHALL FULLY APPLY TO THE WORK WHETHER SPECIFICALLY REFERENCED IN THE DRAWINGS OR NOT. ANY ITEMS NOT SPECIFICALLY DISCUSSED IN NOTES ON SHEETS IN THE PLANS SHALL BE AS DESCRIBED IN THE SPECIFICATIONS.
2. STATIONING, DISTANCES, AND LENGTHS SHOWN ON THE DRAWINGS ARE BASED ON HORIZONTAL MEASUREMENTS ALONG THE PIPE INVERT CENTERLINE. CROSS SECTIONS, CROSSING DETAILS, AND REFERENCES TO LEFT (L) AND RIGHT (R) ON THE DRAWINGS ASSUME LOOKING IN THE DIRECTION OF INCREASING STATION ALONG PIPE INVERT CENTERLINE ALIGNMENT (FACING DOWNSTREAM).
3. ALL DIMENSIONS, INCLUDING, BUT NOT LIMITED TO, ELEVATIONS, STATIONS, AND DISTANCES ARE IN STANDARD ENGLISH UNITS.
4. ANY DISCREPANCIES FOUND BETWEEN THE DRAWINGS AND ACTUAL SITE CONDITIONS; OR ANY INCONSISTENCIES OR AMBIGUITIES BETWEEN THE DRAWINGS AND OTHER COMPONENTS OF THE CONTRACT DOCUMENTS SHALL BE IMMEDIATELY REPORTED IN WRITING TO THE ENGINEER. THE ENGINEER WILL PROMPTLY CORRECT INCONSISTENCIES OR AMBIGUITIES IN WRITING. WORK DONE BY THE CONTRACTOR INVOLVING SUCH DISCREPANCIES WITHOUT A WRITTEN REPORT AND RESPONSE FROM THE ENGINEER SHALL BE DONE AT THE CONTRACTOR'S SOLE RISK AND EXPENSE.
5. CONTRACTOR SHALL NOT DISTURB OR DESTROY ANY EXISTING SURVEY MONUMENTS OR BENCHMARKS. ANY BENCHMARKS DISTURBED OR DESTROYED BY THE CONTRACTOR SHALL BE REPLACED TO THE ENGINEER'S SATISFACTION AT THE CONTRACTOR'S SOLE EXPENSE.
6. CONTRACTOR IS ADVISED THAT NORTH ARROWS AND ORIENTATION OF PLAN VIEW SHEETS VARY TO ALLOW FOR LEFT–TO–RIGHT STATIONING AND STATIONING IN THE DIRECTION OF PIPE FLOW.
7. CONTRACTOR SHALL ENSURE THAT OPERATION OF EXISTING SEWER, DRAINAGE, DOMESTIC WATER, AND OTHER UTILITY SYSTEMS ARE CONTINUOUS DURING CONSTRUCTION.
8. IF APPLICABLE, CONSTRUCTION EASEMENTS SHALL NOT BE USED IN ANY MANNER THAT WILL CAUSE PERMANENT DAMAGE TO THE PROPERTY. DESCRIPTIONS OF THE EASEMENTS ACQUIRED FOR THE WORK WILL BE ON FILE AT THE OFFICE OF THE OWNER. CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS OF THE EASEMENT AGREEMENTS.
9. CONTRACTOR SHALL KEEP ALL CONSTRUCTION ACTIVITIES WITHIN THE CONSTRUCTION LIMITS AND ANY TEMPORARY CONSTRUCTION OR PERMANENT EASEMENTS OBTAINED FOR THIS PROJECT, IF APPLICABLE. THIS INCLUDES, BUT IS NOT LIMITED TO, VEHICLES AND EQUIPMENT, LIMITS OF EXCAVATION, STOCKPILED EXCAVATED AND IMPORTED MATERIAL, BACKFILL MATERIAL, PIPE MATERIAL, AND PIPE APPURTENANCE MATERIAL. IF THE CONTRACTOR REQUIRES ADDITIONAL CONSTRUCTION EASEMENTS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN SUCH EASEMENTS FROM INDIVIDUAL PROPERTY OWNERS AND BEAR ALL ASSOCIATED COSTS.
10. UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR SPECIFICATIONS, ALL EXISTING ITEMS INCLUDING, BUT NOT LIMITED TO, STRUCTURES, IMPROVEMENTS, GROUNDWATER WELLS, SIGNS, FENCES, GATES, CURBS, PAVEMENT, BRIDGES, UTILITIES, ON FARM IRRIGATION PIPELINES AND DITCHES, ETC. SHALL BE PROTECTED BY THE CONTRACTOR. IF SUCH ITEMS ARE DAMAGED OR MUST BE REMOVED OR MODIFIED TO FACILITATE CONSTRUCTION, CONTRACTOR SHALL FIRST NOTIFY THE OWNER AND THEN REPLACE THE ITEMS TO A LIKE OR BETTER CONDITION AT CONTRACTOR'S EXPENSE TO SATISFACTION OF OWNER OF FACILITIES.
11. REQUIREMENTS RELATED TO THE PROTECTION AND/OR REMOVAL OF TREES, VEGETATION, AND STRUCTURES WITHIN THE WORK AREA ARE DETAILED IN THE SPECIFICATIONS.
12. CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE TRENCH LIMITS NEEDED TO COMPLETE THE WORK IN CONFORMANCE WITH LOCAL, STATE AND FEDERAL CODES GOVERNING SHORING, SHEETING, BRACING OF EXCAVATIONS AND TRENCHES, AND FOR PROTECTION AND SAFETY OF THE WORKERS AND OTHER CONSTRUCTION RELATED PERSONNEL.
13. EXCAVATION SHALL MEET THE REQUIREMENTS OF OSHA 29 CFR PART 1926, SUBPART P, EXCAVATIONS. ACTUAL SLOPES SHALL NOT EXCEED THE MAXIMUM ALLOWABLE SLOPES (SUBPART P. APPENDIX B).
14. HORIZONTAL DATUM IS NAD83/91. HORIZONTAL COORDINATES SHOWN HEREIN ARE WASHINGTON STATE PLANE COORDINATE SYSTEM, NORTH ZONE, US SURVEY FEET.
15. VERTICAL DATUM IS NAVD 88, FEET.
16. ELEVATIONS GIVEN ARE TO FINISH GRADE UNLESS OTHERWISE INDICATED.
17. SLOPE UNIFORMLY BETWEEN CONTOURS AND SPOT ELEVATIONS SHOWN.
18. THE CONTRACTOR IS RESPONSIBLE FOR PRODUCING, IMPLEMENTING, ADHERING TO, AND MAINTAINING A STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THE REGULATIONS AND GUIDELINES SET FORTH AND SUBJECT TO APPROVAL BY THE STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY, WATER QUALITY PROGRAM. CONTRACTOR SHALL IMPLEMENT AND DOCUMENT ANY ADDITIONAL MEASURES NECESSARY TO PREVENT ANY EROSION OR HAZARDOUS MATERIALS FROM LEAVING THE SITE, DISCHARGING, BEING ENTRAINED, ABSORBED OR OTHERWISE ENTERING SURFACE WATERS, GROUND WATER OR SOILS.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES AT ALL TIMES. MAINTENANCE OF TEMPORARY AND PERMANENT EROSION CONTROL MEASURES SHALL BE CONSIDERED INCIDENTAL.
20. THE CONTRACTOR SHALL BE HELD SOLELY RESPONSIBLE FOR ANY NPDES OR OTHER APPLICABLE ENVIRONMENTAL PERMIT VIOLATIONS AND FINES.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED IN THE PLANS. CONTRACTOR SHALL ALSO USE ESTABLISHED CONTROL POINTS TO SET LINES AND GRADES FOR THE CONSTRUCTION OF THE PROJECT. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. ELECTRONIC BASE MAP DATA SHALL BE PROVIDED TO CONTRACTOR BY THE ENGINEER FOR USE IN ESTABLISHING CONTROL FOR CONSTRUCTION SURVEY.
22. THE CONTRACTOR SHALL MAINTAIN HAND DRAWN REDLINES, FIELD NOTES, AND PHOTOGRAPHS OF ALL IMPROVEMENTS AS THE WORK PROGRESSES. THE CONTRACTOR'S DOCUMENTATION SHALL BE MAINTAINED ON SITE AND SHALL BE AVAILABLE FOR REVIEW BY THE CONTRACTING OFFICER AT ALL TIMES. THE CONTRACTOR SHALL PROVIDE ALL DOCUMENTATION TO THE CONTRACTING OFFICER FOR THE PREPARATION OF CERTIFIED RECORD DRAWINGS PRIOR TO PROJECT ACCEPTANCE.
23. THIS DESIGN DOES NOT VALIDATE THE CONDITION OF ANY EXISTING OR USED PART OF THE PIPELINE/IRRIGATION SYSTEM INCLUDING ON FARM INFRASTRUCTURE OR LATERALS. FAILURE OF ANY EXISTING PART OF THE EXISTING IRRIGATION SYSTEM WILL BE REPAIRED AT THE INDIVIDUAL LANDOWNER OR MVID EXPENSE.
24. THIS DESIGN IN NO WAY GUARANTEES A MINIMUM SUPPLY OF WATER TO THE PROPOSED PIPELINE. OPERATION OF THE DIVERSION STRUCTURE AND ON FARM IRRIGATION SYSTEMS WILL BE ADJUSTED ACCORDINGLY TO MATCH AVAILABLE WATER SUPPLY.

UTILITY NOTES

1. THE LOCATION OF EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND HAVE NOT BEEN FIELD VERIFIED. UTILITY LOCATION AND PROTECTION IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT TYPE, OWNER, LOCATION, AND ELEVATION OF ALL BURIED AND OVERHEAD UTILITIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PERFORM THE WORK IN A SAFE MANNER AND IN ACCORDANCE WITH ANY REQUIREMENTS SET FORTH BY THE UTILITY OWNER AND APPLICABLE LAWS AND REGULATIONS.
2. CONTRACTOR SHALL NOTIFY UTILITY OWNERS WITHIN THE LIMITS OF CONSTRUCTION A MINIMUM OF TWO WEEKS PRIOR TO EXCAVATION, OR OTHER CONSTRUCTION ACTIVITY THAT MAY IMPACT THE UTILITY. CONTRACTOR SHALL ALSO CONTACT THE CONTRACTING OFFICER PRIOR TO ANY CONSTRUCTION ACTIVITY IN THE AREA. CONTRACTOR SHALL PROVIDE ACCESS TO UTILITY OWNERS FOR MAINTENANCE AND WORK ON THEIR UTILITIES DURING THE COURSE OF THE WORK.
3. RELOCATIONS AND/OR REPLACEMENTS OF EXISTING UTILITIES SHALL BE COORDINATED BY THE CONTRACTOR WITH THE UTILITY OWNER. CONTRACTOR SHALL CONTACT, SCHEDULE, AND ESTABLISH UTILITY SHUT DOWN TIMES AND DETERMINE THE RELOCATION AND/OR REPLACEMENT REQUIREMENTS OF EXISTING UTILITIES PRIOR TO THE START OF ANY WORK. THE UTILITY SHALL BE RELOCATED OR REPLACED TO THE SATISFACTION OF THE UTILITY OWNER.
4. ALL ABANDONED UTILITIES WHICH INTERFERE WITH THE EXECUTION OF THE WORK SHALL BE VERIFIED BY THE CONTRACTING OFFICER AND THE UTILITY OWNER PRIOR TO DISTURBANCE OR MODIFICATION. ONLY AFTER WRITTEN APPROVAL HAS BEEN RECEIVED FROM THE UTILITY OWNER BY THE CONTRACTING OFFICER, MAY THE CONTRACTOR TAKE ACTION.
5. THE SIZE, LOCATION AND TYPE OF UNDERGROUND UTILITIES EXPOSED OR MODIFIED BY THE CONTRACTOR SHALL BE ACCURATLEY NOTED AND PLACED ON THE CONTRACTOR'S AS–BUILT DRAWINGS.

PROJECT DESCRIPTION

THE SCOPE OF THE PROJECT ENTAILS INSTALLING APPROXIMATELY 23,600 LF OF PIPELINE IN THE EXISTING MVID EAST CANAL, MODIFYING AN EXISTING SPILL TO BECOME A SCREEN/PIPE INTAKE STRUCTURE, CONNECTING TO EXISTING LATERALS, AND TO ALLOW FOR CONNECTING TO INDIVIDUAL ON–FARM IRRIGATION TURNOUTS.

PIPELINE HYDRAULICS INFORMATION

THE PIPELINE IS SIZED TO DELIVER APPROXIMATELY 9 GPM/ACRE RESULTING IN A MAXIMUM FLOW RATE OF 13 CFS AT THE BEGINNING OF THE PIPELINE. THE PIPELINE TAPERS DOWN IN SIZE AS INDIVIDUAL TURNOUTS AND LATERALS ARE SERVED.

WATERCAD WAS RUN FOR STATIC CONDITIONS. THE MAXIMUM STATIC PRESSURE IS APPROXIMATELY 30 PSI AT THE END OF THE PIPELINE.

ALL PIPE VELOCITIES ARE DESIGNED AT OR BELOW 5 FT/S.

ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY SAFETY OFFICIALS
AGG	AGGREGATE
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY OF TESTING & MATERIALS
BM	BENCHMARK
℄	CENTERLINE
CDF	CONTROLLED DENSITY FILL
CLFMI	CHAIN LINK FENCE MANUFACTURERS INSTITUTE
CMP	CORRUGATED METAL PIPE
COMB	COMBINATION AIR VACUUM VALVE ASSEMBLY
CONC	CONCRETE
CONT	CONTINUOUS
COR	CONTRACTING ORGANIZATION REPRESENTATIVE
CP	CONTROL POINT
CSBC	CRUSHED SURFACING BASE COURSE
CSTC	CRUSHED SURFACING TOP COURSE
CY	CUBIC YARD
E	EAST
EA	EACH
EF	EACH FACE
EL	ELEVATION
EXST	EXISTING
G	GRADE
GPM	GALLONS PER MINUTE
H	HORIZONTAL
L	LENGTH
LF	LINEAR FOOT
LS	LUMP SUM
MAX	MAXIMUM
MIN	MINIMUM
MJ	MECHANICAL JOINT
MVID	METHOW VALLEY IRRIGATION DISTRICT
N	NORTH
NO.	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OG	ORDINARY GROUND
OHW	ORDINARY HIGH WATER
PIP	Plastic Irrigation Pipe
PSI	POUNDS PER SQUARE INCH
PT	POINT
Q	FLOW
ROW	RIGHT–OF–WAY
S	SOUTH
SF	SQUARE FOOT
SPEC	SPECIFICATION
SST	STAINLESS STEEL
STA	STATION
SY	SQUARE YARD
T & B	TOP & BOTTOM
TU	TROUT UNLIMITED
TYP	TYPICAL
W	WEST
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WSE	WATER SURFACE ELEVATION

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

GENERAL NOTES

REV NO	

Justin Nielsen
DESIGNED
M. Bergstrom
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014–07–23

GENERAL NOTES

1678–100–2652

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 17:06
PLOTTED BY
JHNIELSEN

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
GENERAL NOTES.DWG

Point Table

Point #	Northing	Easting	Elevation	Description
40006	501959.20	1814369.21	1612.88	CP RBC
40007	502377.22	1814840.38	1627.89	CP RBC
40008	495406.12	1819156.70	1599.28	CP RBC
40014	495818.45	1818459.10	1601.36	CP RBC 301
40035	502207.02	1814809.96	1652.26	CP H&T
40036	502129.19	1814760.67	1651.10	CP H&T
40051	502050.42	1814705.16	1651.46	CP H&T
40084	501967.02	1814526.10	1648.63	CP H&T
40172	501480.47	1814439.85	1646.95	CP H&T
40173	501225.80	1814464.11	1644.23	CP H&T
40265	501333.49	1814486.78	1645.87	CP H&T
40290	502302.76	1814877.52	1653.80	CP RBC
40528	498499.99	1815322.03	1636.38	CP H&T
40529	498385.73	1815493.57	1635.68	CP H&T
40530	498636.46	1815194.82	1636.91	CP H&T
40531	498721.85	1815077.37	1638.17	CP H&T
40552	498547.32	1815314.04	1639.30	CP scribed X
40598	498346.95	1815624.57	1635.56	CP H&T
40650	498181.94	1815836.14	1636.65	CP H&T
40651	497975.04	1815925.90	1634.92	CP H&T
40801	498282.15	1815716.53	1636.54	CP H&T
40803	497450.74	1816822.15	1634.56	CP H&T
40804	497491.39	1816619.92	1626.27	CP H&T
40971	497713.29	1816369.45	1637.97	CP H&T
40973	497383.30	1816957.73	1627.37	CP H&T
41082	497336.06	1817029.06	1622.68	CP H&T
41083	497276.50	1817117.08	1621.83	CP H&T
41139	497100.20	1817204.56	1621.63	CP H&T
41140	496980.23	1817265.18	1619.96	CP H&T
41264	496918.70	1817323.16	1619.36	CP H&T
41265	496866.37	1817410.76	1617.95	CP H&T
41395	496796.09	1817495.97	1617.34	CP H&T
41396	496718.12	1817564.16	1616.67	CP H&T
41448	496672.18	1817635.30	1615.24	CP H&T
41449	496632.26	1817721.04	1614.23	CP H&T
41498	496467.25	1817983.21	1613.76	CP H&T
41593	496315.47	1818105.33	1613.99	CP H&T
41644	496165.03	1818354.00	1613.59	CP H&T
41839	502167.74	1814777.76	1647.52	CP H&T
41942	502100.57	1814585.50	1614.70	CP H&T

N

CONTROL POINTS

1000 0 1000 2000 3000
SCALE OF FEET

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN
INSTREAM FLOW IMPROVEMENT PROJECT
MVID - INSTREAM FLOW EAST MAIN PIPELINE

REV NO

Justin Nielsen
DESIGNED
M. Bergstrom
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014-07-23

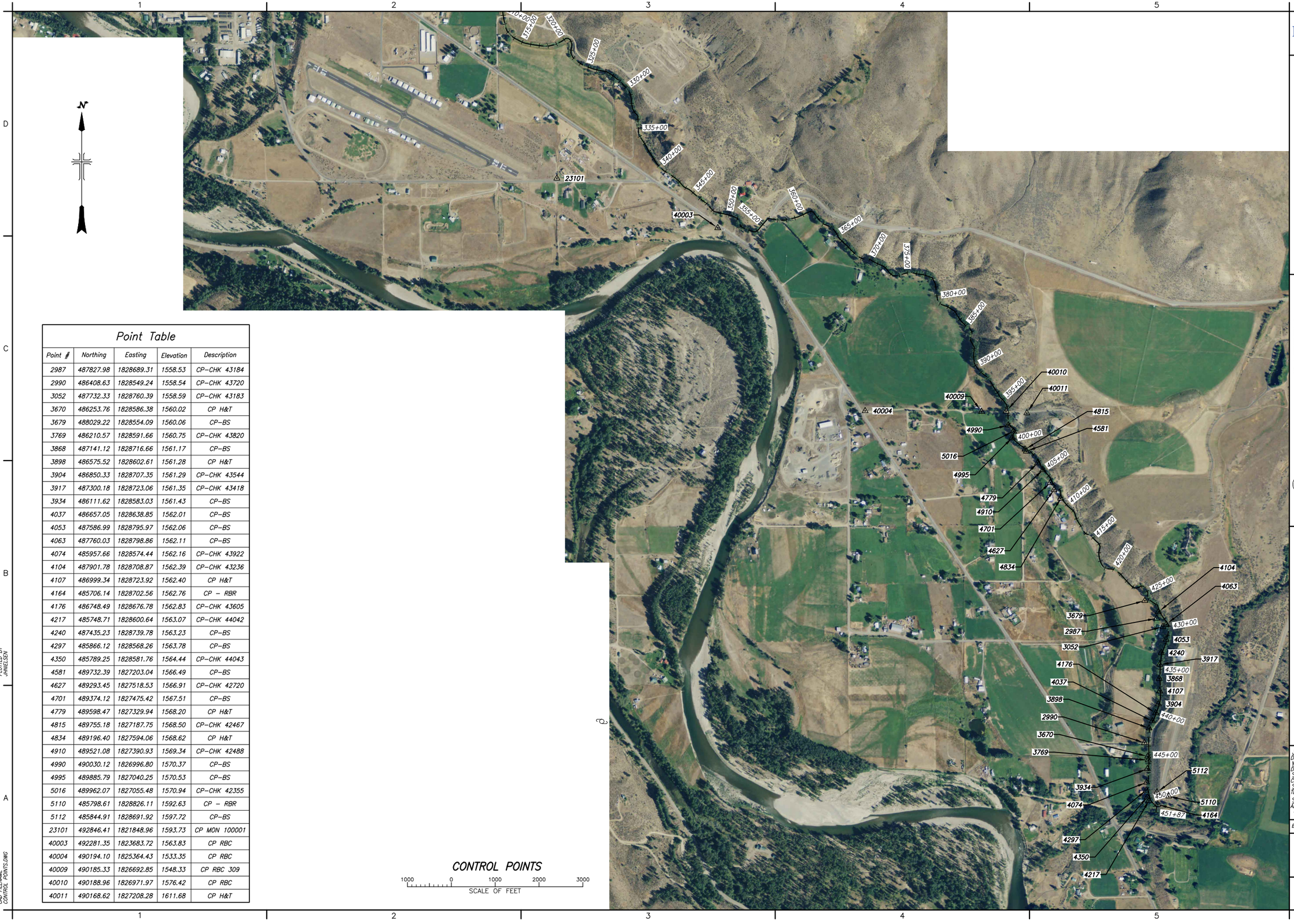
CONTROL POINTS

1678-100-2653

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:56
PLOTTED BY
JNIELSEN

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
CONTROL POINTS.DWG



Point Table

Point #	Northing	Easting	Elevation	Description
2987	487827.98	1828689.31	1558.53	CP–CHK 43184
2990	486408.63	1828549.24	1558.54	CP–CHK 43720
3052	487732.33	1828760.39	1558.59	CP–CHK 43183
3670	486253.76	1828586.38	1560.02	CP H&T
3679	488029.22	1828554.09	1560.06	CP–BS
3769	486210.57	1828591.66	1560.75	CP–CHK 43820
3868	487141.12	1828716.66	1561.17	CP–BS
3898	486575.52	1828602.61	1561.28	CP H&T
3904	486850.33	1828707.35	1561.29	CP–CHK 43544
3917	487300.18	1828723.06	1561.35	CP–CHK 43418
3934	486111.62	1828583.03	1561.43	CP–BS
4037	486657.05	1828638.85	1562.01	CP–BS
4053	487586.99	1828795.97	1562.06	CP–BS
4063	487760.03	1828798.86	1562.11	CP–BS
4074	485957.66	1828574.44	1562.16	CP–CHK 43922
4104	487901.78	1828708.87	1562.39	CP–CHK 43236
4107	486999.34	1828723.92	1562.40	CP H&T
4164	485706.14	1828702.56	1562.76	CP – RBR
4176	486748.49	1828676.78	1562.83	CP–CHK 43605
4217	485748.71	1828600.64	1563.07	CP–CHK 44042
4240	487435.23	1828739.78	1563.23	CP–BS
4297	485866.12	1828568.26	1563.78	CP–BS
4350	485789.25	1828581.76	1564.44	CP–CHK 44043
4581	489732.39	1827203.04	1566.49	CP–BS
4627	489293.45	1827518.53	1566.91	CP–CHK 42720
4701	489374.12	1827475.42	1567.51	CP–BS
4779	489598.47	1827329.94	1568.20	CP H&T
4815	489755.18	1827187.75	1568.50	CP–CHK 42467
4834	489196.40	1827594.06	1568.62	CP H&T
4910	489521.08	1827390.93	1569.34	CP–CHK 42488
4990	490030.12	1826996.80	1570.37	CP–BS
4995	489885.79	1827040.25	1570.53	CP–BS
5016	489962.07	1827055.48	1570.94	CP–CHK 42355
5110	485798.61	1828826.11	1592.63	CP – RBR
5112	485844.91	1828691.92	1597.72	CP–BS
23101	492846.41	1821848.96	1593.73	CP MON 100001
40003	492281.35	1823683.72	1563.83	CP RBC
40004	490194.10	1825364.43	1533.35	CP RBC
40009	490185.33	1826692.85	1548.33	CP RBC 309
40010	490188.96	1826971.97	1576.42	CP RBC
40011	490168.62	1827208.28	1611.68	CP H&T

CONTROL POINTS

1000 0 1000 2000 3000

SCALE OF FEET

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN
MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST MAIN PIPELINE

REV NO

Justin Nielsen
DESIGNED
M. Bergstrom
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Perkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

CONTROL POINTS

1678-100-2654

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:57
PLOTTED BY
JHNIELSEN

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
CONTROL POINTS.DWG

Notes:

1. Staging areas shown are approximate and may vary slightly from drawings.
2. COR shall coordinate and stake out staging areas and construction access in advance of contractor use.
3. Contractor may acquire additional access & staging areas. See Note 9 in General Notes Sheet (–2652).

800 0 800 1600 2400
SCALE OF FEET

LEGEND:

Access and Staging

Intake Structure/Screen
Methow River
Twisp River
–2656
–2657
–2658
–2659
–2660
–2661
–2662
–2663
–2664
–2665
–2666
–2667
–2668
–2669
–2670
Staging Areas (typ)
Town of Twisp
Highway 20
Beaver Creek
Methow River
Highway 153

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN
MVID – INSTREAM FLOW IMPROVEMENT PROJECT
SITE OVERVIEW

REV NO

Justin Nielsen — DESIGNED
M. Bergstrom — DRAWN
Steve Montague, P.E. — CHECKED
Steve Montague, P.E. — TECH. APPR. (NAME, PROF. ABBR.)
Sharon Parkinson, P.E. — ADMIN. APPROVAL (NAME, TITLE)
BOISE, ID — 2014-07-23

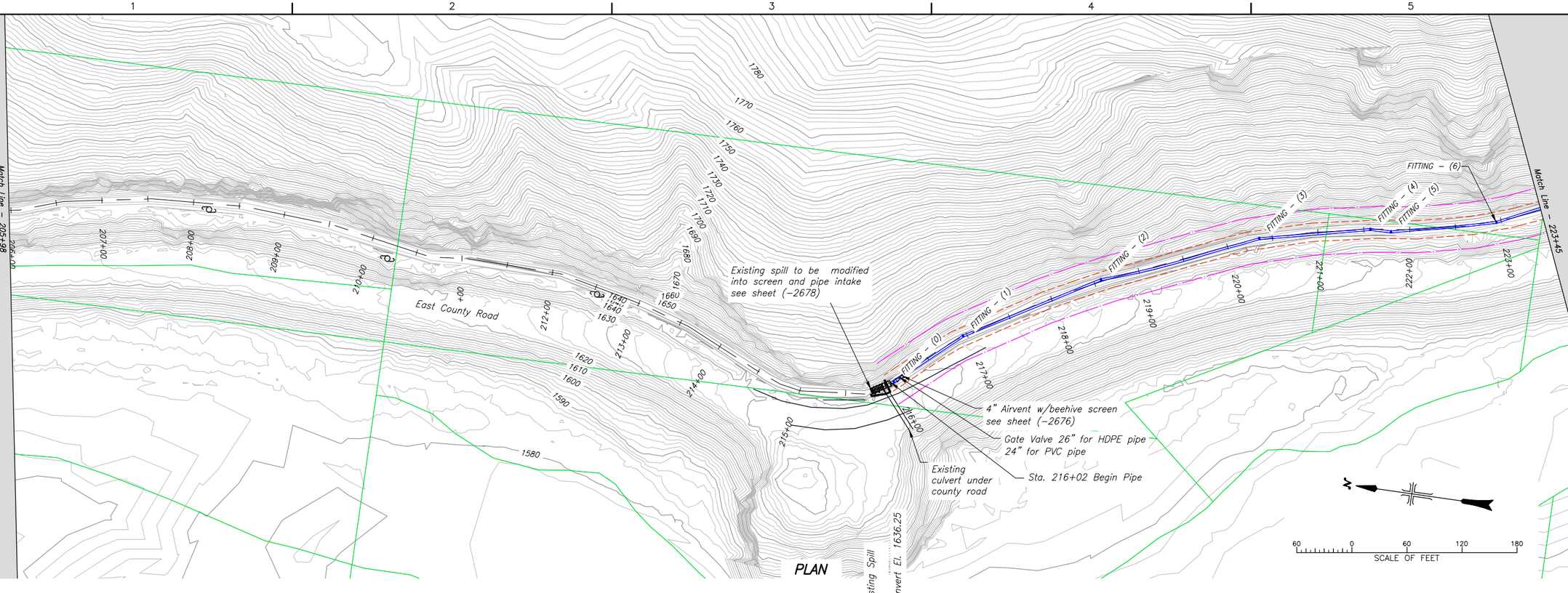
SITE OVERVIEW

1678-100-2655

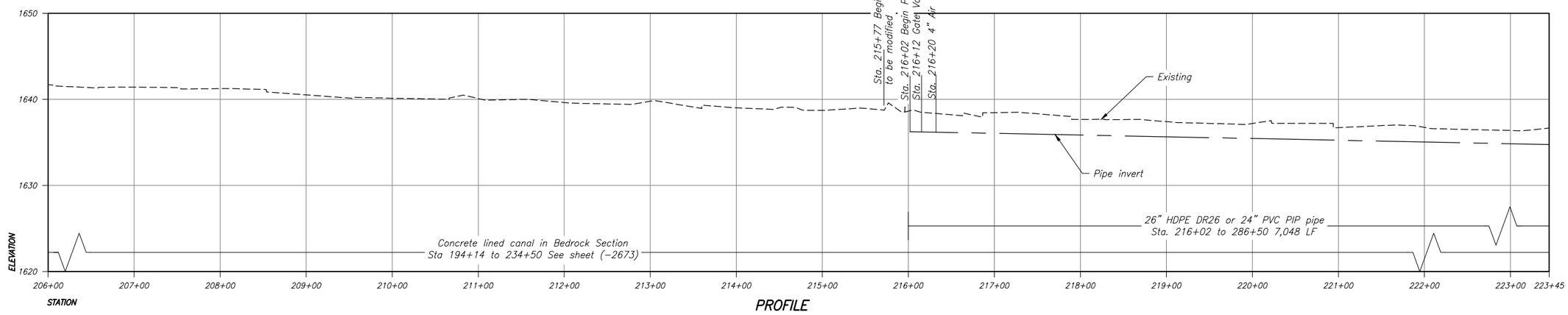
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:59
PLOTTED BY
JANIELSEN

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
SITE OVERVIEW.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (0)	500127.26	1814402.64	11.25
Fitting – (1)	500059.62	1814462.82	11.25
Fitting – (2)	499919.82	1814544.88	11.25
Fitting – (3)	499755.45	1814613.59	11.25
Fitting – (4)	499637.29	1814640.68	11.25
Fitting – (5)	499614.38	1814641.34	11.25
Fitting – (6)	499502.28	1814667.94	11.25

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

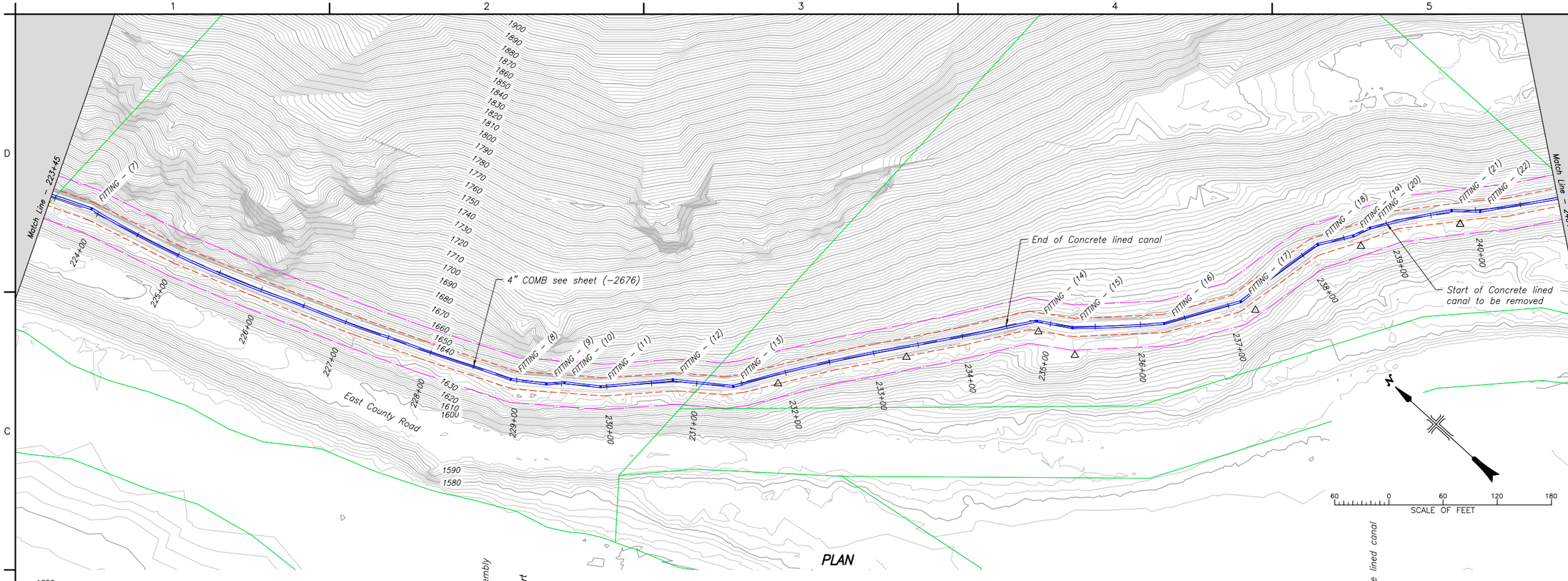
MAIN PLAN AND PROFILE STA. 206+00 TO 223+45

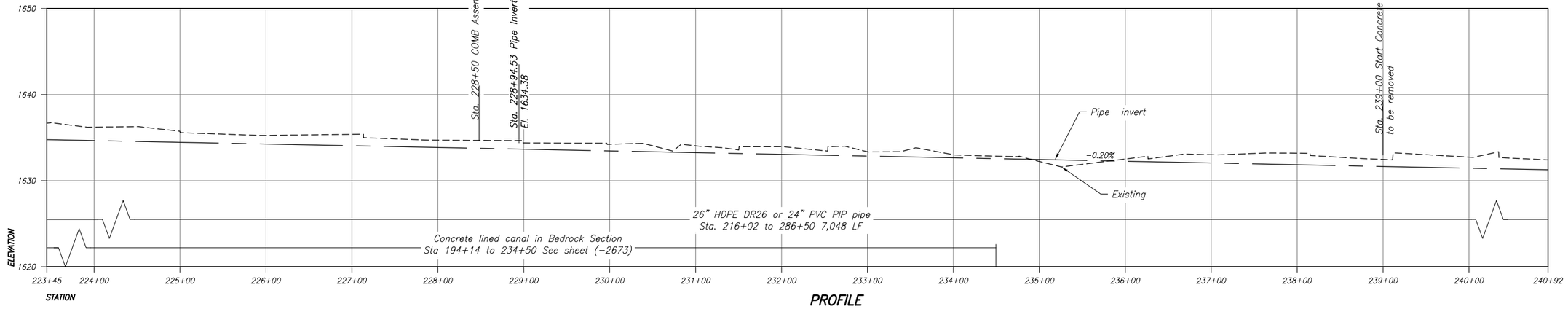
1678-100-2656

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 17:02
PLOTTED BY
JHNIELSEN

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLANPROFILE AND PIPE NETWORK_PVC_FINAL.DWG





Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (7)	499414.14	1814708.46	11.25
Fitting – (8)	498943.96	1814881.58	11.25
Fitting – (9)	498911.11	1814904.46	11.25
Fitting – (10)	498897.37	1814918.99	11.25
Fitting – (11)	498864.81	1814942.52	11.25
Fitting – (12)	498810.65	1815001.82	11.25
Fitting – (13)	498756.48	1815041.69	22.50
Fitting – (14)	498556.88	1815321.40	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (15)	498522.42	1815342.79	11.25
Fitting – (16)	498450.48	1815414.62	11.25
Fitting – (17)	498404.01	1815489.67	22.50
Fitting – (18)	498383.70	1815593.77	22.50
Fitting – (19)	498360.84	1815627.30	11.25
Fitting – (20)	498352.92	1815646.40	11.25
Fitting – (21)	498299.28	1815721.25	11.25
Fitting – (22)	498275.41	1815741.99	11.25

LEGEND
- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:
1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

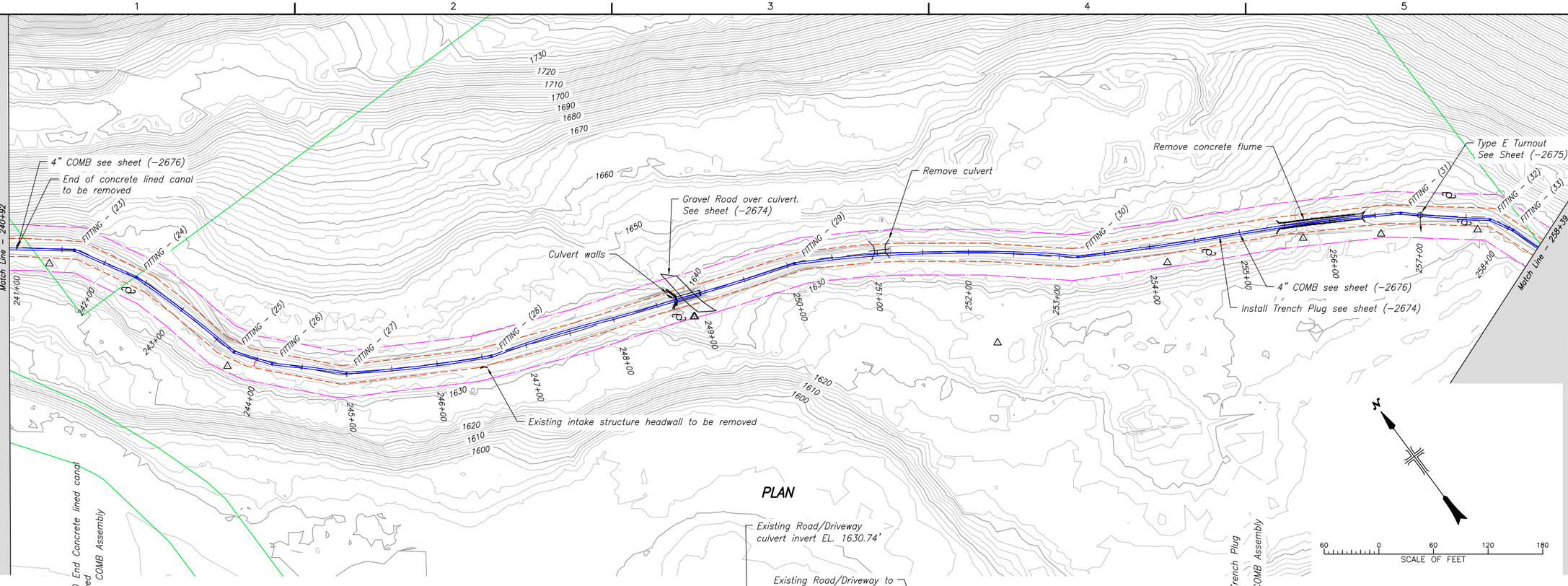
MAIN PLAN AND PROFILE STA. 223+45 TO 240+92

1678–100–2657

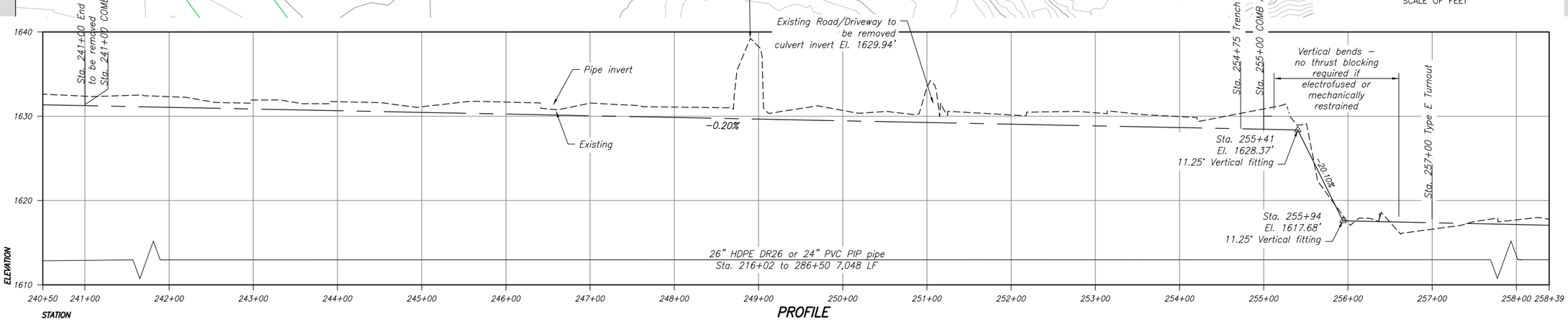
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 17:02
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (23)	498177.48	1815867.17	22.50
Fitting – (24)	498113.13	1815903.86	11.25
Fitting – (25)	497983.33	1815941.10	22.50
Fitting – (26)	497947.88	1815966.80	11.25
Fitting – (27)	497891.38	1816026.24	11.25
Fitting – (28)	497810.82	1816164.99	11.25
Fitting – (29)	497694.23	1816492.52	11.25
Fitting – (30)	497514.58	1816747.03	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (31)	497341.38	1817060.05	11.25
Fitting – (32)	497277.30	1817134.48	22.50
Fitting – (33)	497252.95	1817147.91	11.25

LEGEND
- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:
1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014–07–23

MAIN PLAN AND PROFILE STA. 240+92 TO 258+39

1678–100–2658

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 17:02
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG

Match Line – 258+39

Match Line – 275+86

Gate Valve 26" for HDPE pipe
24" for PVC pipe (–2676)

E1 Lateral connect with
26"x26"x12" tee HDPE pipe
or 24"x24"x12" tee PVC PIP pipe,
see sheet (–2675)

Type B Turnout
See sheet (–2675)

4" COMB see sheet (–2676)

Type C Turnout
see sheet (–2675)

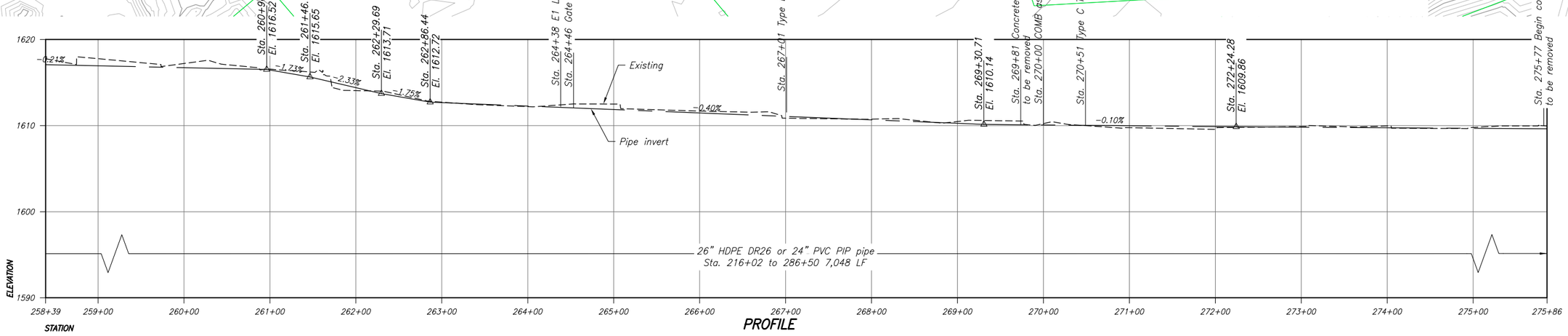
Old turnout to be removed

Concrete structures to be removed

Install 12" gate valve,
see sheet (–2675)

PLAN

SCALE OF FEET
60 0 60 120 180



Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (34)	497190.32	1817169.14	11.25
Fitting – (35)	496962.76	1817290.56	22.50
Fitting – (36)	496926.77	1817333.45	22.50
Fitting – (38)	496832.24	1817490.76	11.25
Fitting – (39)	496758.09	1817543.65	11.25
Fitting – (40)	496710.91	1817596.05	11.25
Fitting – (41)	496620.39	1817763.59	11.25
Fitting – (42)	496586.19	1817805.82	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (43)	496451.09	1818022.51	11.25
Fitting – (44)	496334.90	1818130.68	11.25
Fitting – (45)	496194.18	1818318.70	11.25

LEGEND
- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:
1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

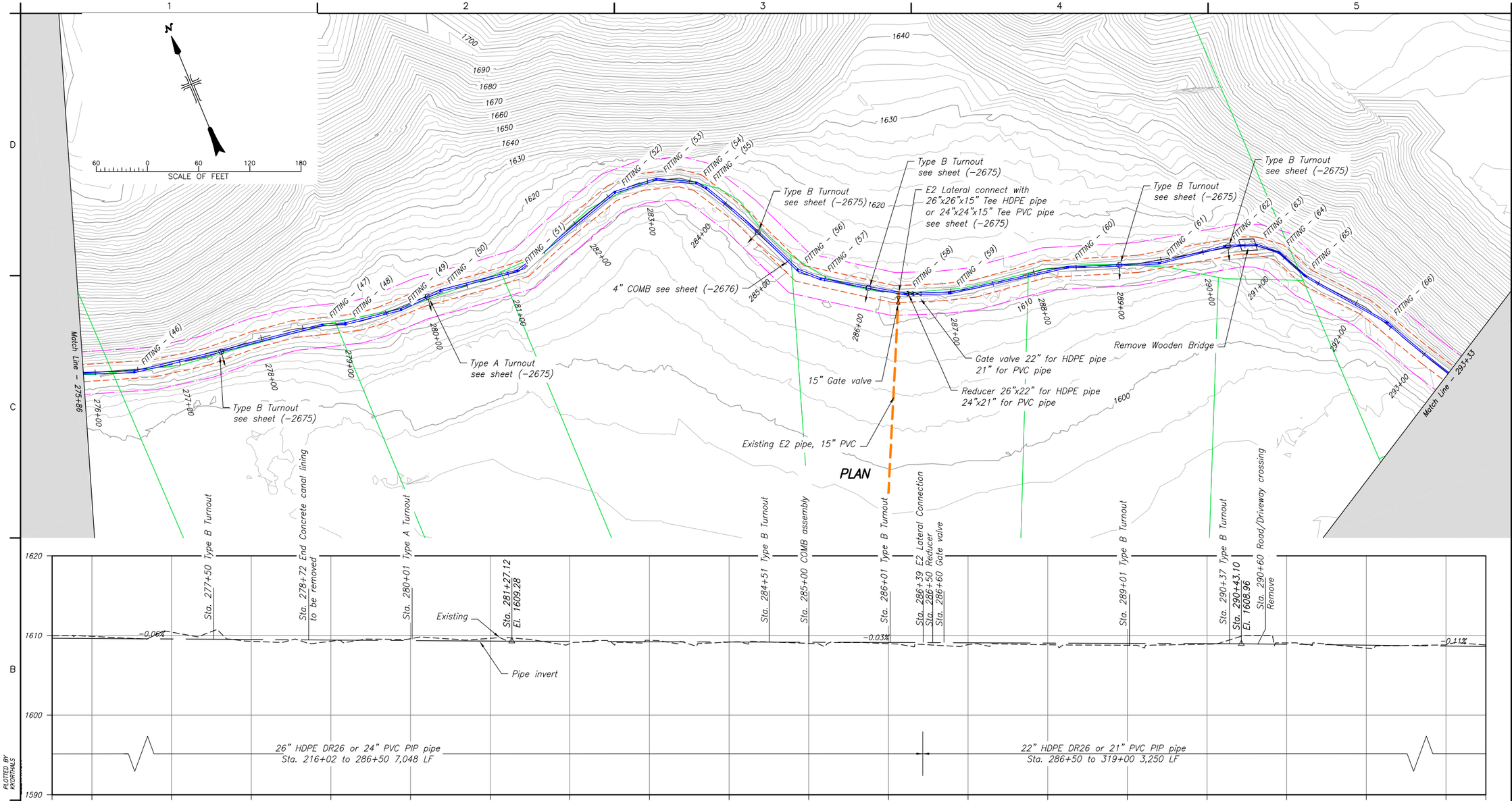
MAIN PLAN AND PROFILE STA. 258+39 TO 275+86

1678–100–2659

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 17:01
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG



Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (46)	496107.00	1818516.83	11.25
Fitting – (47)	496073.05	1818741.40	11.25
Fitting – (48)	496064.06	1818766.80	11.25
Fitting – (49)	496054.43	1818833.17	11.25
Fitting – (50)	496057.11	1818884.25	11.25
Fitting – (51)	496043.67	1818976.96	22.50
Fitting – (52)	496085.04	1819117.37	22.50
Fitting – (53)	496080.35	1819168.36	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (54)	496058.45	1819209.98	22.50
Fitting – (55)	496048.53	1819218.23	11.25
Fitting – (56)	495918.74	1819280.51	22.50
Fitting – (57)	495898.87	1819301.12	11.25
Fitting – (58)	495844.16	1819386.31	11.25
Fitting – (59)	495825.25	1819434.43	11.25
Fitting – (60)	495800.15	1819573.85	11.25
Fitting – (61)	495763.29	1819675.02	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (62)	495752.00	1819753.32	11.25
Fitting – (63)	495739.67	1819788.22	22.50
Fitting – (64)	495720.55	1819809.49	22.50
Fitting – (65)	495684.53	1819826.70	11.25
Fitting – (66)	495596.70	1819894.65	11.25
Fitting – (67)	495474.54	1819960.83	11.25

LEGEND
- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:
1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN
MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

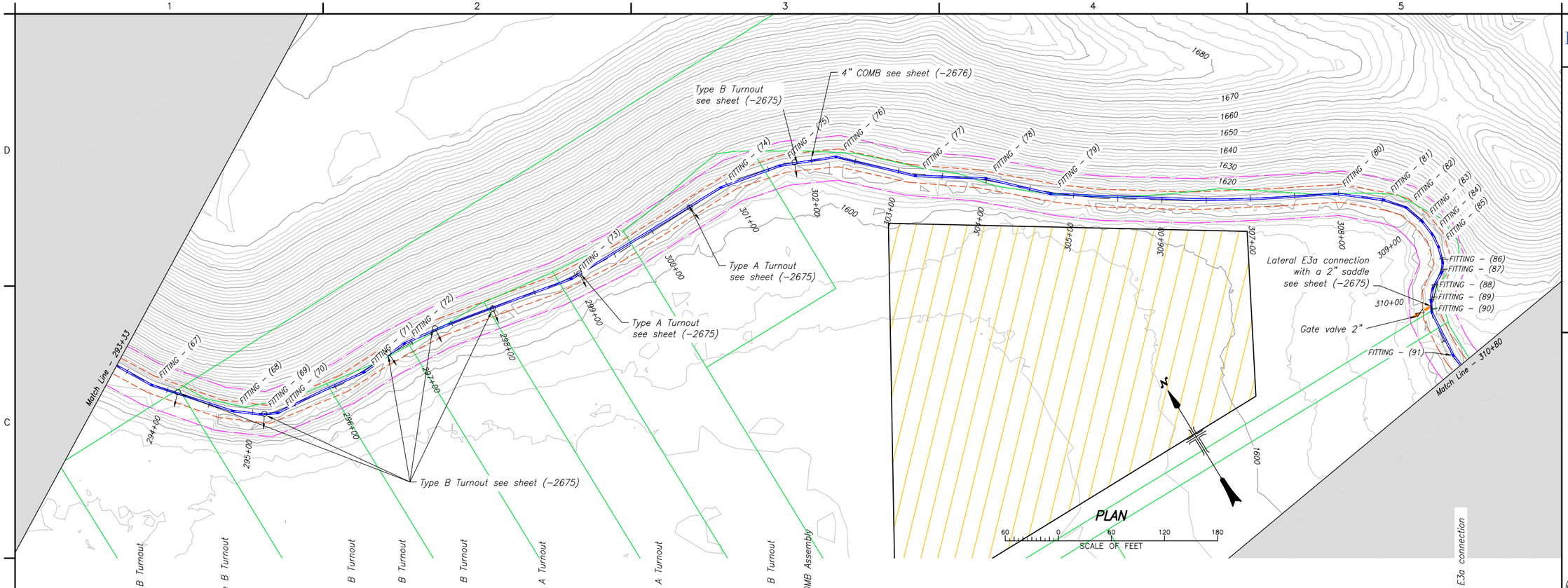
MAIN PLAN AND PROFILE STA. 275+86 TO 293+33

1678–100–2660

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 17:01
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLANPROFILE AND PIPE NETWORK_PVC_FINAL.DWG



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (67)	495474.54	1819960.83	11.25
Fitting – (68)	495402.00	1820023.43	11.25
Fitting – (69)	495382.10	1820048.95	11.25
Fitting – (70)	495373.42	1820066.21	22.50
Fitting – (71)	495362.07	1820172.85	11.25
Fitting – (72)	495366.02	1820228.70	11.25
Fitting – (73)	495330.14	1820427.78	11.25
Fitting – (74)	495330.29	1820626.21	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (75)	495316.49	1820695.85	11.25
Fitting – (76)	495291.97	1820755.18	22.50
Fitting – (77)	495227.18	1820820.36	11.25
Fitting – (78)	495183.05	1820886.93	11.25
Fitting – (79)	495130.19	1820940.16	11.25
Fitting – (80)	494962.96	1821214.74	11.25
Fitting – (81)	494928.62	1821257.65	11.25
Fitting – (82)	494907.68	1821275.28	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (83)	494884.71	1821282.56	11.25
Fitting – (84)	494866.56	1821284.57	11.25
Fitting – (85)	494850.60	1821283.20	11.25
Fitting – (86)	494833.01	1821278.09	22.50
Fitting – (87)	494824.06	1821270.93	22.50
Fitting – (88)	494814.28	1821253.16	22.50
Fitting – (89)	494802.93	1821244.08	11.25
Fitting – (90)	494791.86	1821238.34	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (91)	494737.55	1821233.66	11.25

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR.
NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014-07-23

MAIN PLAN AND PROFILE STA. 293+33 TO 310+80

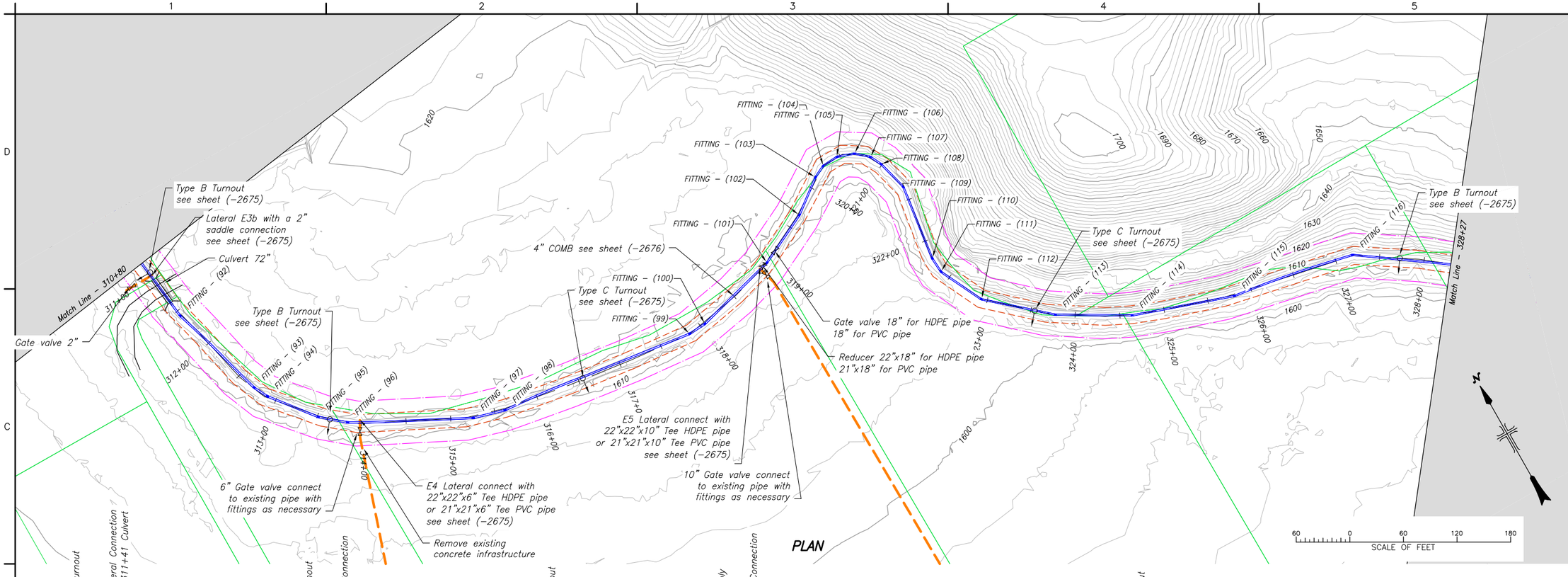
1678–100–2661

SHEET 1 OF 1

REV. NO

DATE AND TIME PLOTTED
JULY 28, 2014 17:00
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLANPROFILE AND PIPE NETWORK_PVC_FINAL.DWG



Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (92)	494651.44	1821243.83	11.25
Fitting – (93)	494540.64	1821276.13	11.25
Fitting – (94)	494524.87	1821284.22	11.25
Fitting – (95)	494476.79	1821322.33	11.25
Fitting – (96)	494455.08	1821347.88	11.25
Fitting – (97)	494390.09	1821472.57	11.25
Fitting – (98)	494380.04	1821507.97	11.25
Fitting – (99)	494352.23	1821729.72	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (100)	494353.53	1821750.09	11.25
Fitting – (101)	494378.54	1821844.10	11.25
Fitting – (102)	494406.97	1821902.01	11.25
Fitting – (103)	494434.92	1821938.57	11.25
Fitting – (104)	494441.75	1821952.47	22.50
Fitting – (105)	494442.91	1821970.77	22.50
Fitting – (106)	494436.52	1821989.48	22.50
Fitting – (107)	494424.34	1822003.33	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (108)	494411.40	1822009.68	11.25
Fitting – (109)	494377.26	1822018.76	22.50
Fitting – (110)	494291.55	1822007.33	11.25
Fitting – (111)	494273.65	1822008.47	22.50
Fitting – (112)	494224.62	1822032.54	22.50
Fitting – (113)	494168.62	1822096.16	11.25
Fitting – (114)	494125.59	1822170.39	11.25
Fitting – (115)	494087.91	1822280.76	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (116)	494062.51	1822418.42	22.50

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL

DESIGNED Justin Nielsen
DRAWN K. Korthals
CHECKED Steve Montague, P.E.
TECH. APPR. Steve Montague, P.E.
NAME, PROF. ABBR.
ADMIN. APPROVAL Sharon Parkinson, P.E.
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

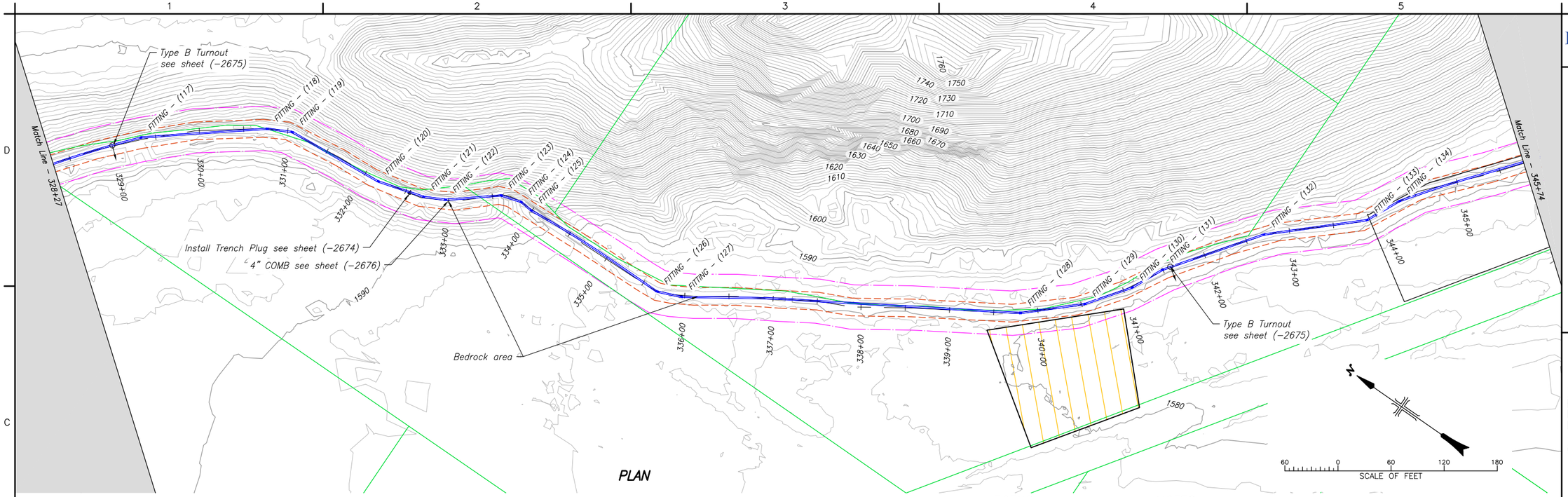
REV. NO

MAIN PLAN AND PROFILE STA. 310+80 TO 328+27

1678-100-2662

SHEET 1 OF 1

DATE AND TIME PLOTTED JULY 28, 2014 17:00
PLOTTED BY KKORTHALS
CAD SYSTEM AutoCAD Rel. 19.1s
CAD FILENAME PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG



PLAN

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (117)	493934.53	1822589.68	11.25
Fitting – (118)	493823.12	1822679.23	11.25
Fitting – (119)	493797.74	1822692.38	22.50
Fitting – (120)	493686.30	1822701.93	11.25
Fitting – (121)	493633.94	1822717.10	11.25
Fitting – (122)	493611.99	1822728.47	11.25
Fitting – (123)	493563.22	1822768.31	22.50
Fitting – (124)	493540.46	1822775.25	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (125)	493525.41	1822773.79	11.25
Fitting – (126)	493356.78	1822779.68	22.50
Fitting – (127)	493330.63	1822790.60	11.25
Fitting – (128)	493005.78	1822994.40	11.25
Fitting – (129)	492951.74	1823044.34	11.25
Fitting – (130)	492918.42	1823090.19	11.25
Fitting – (131)	492901.82	1823126.19	11.25
Fitting – (132)	492830.47	1823224.38	11.25

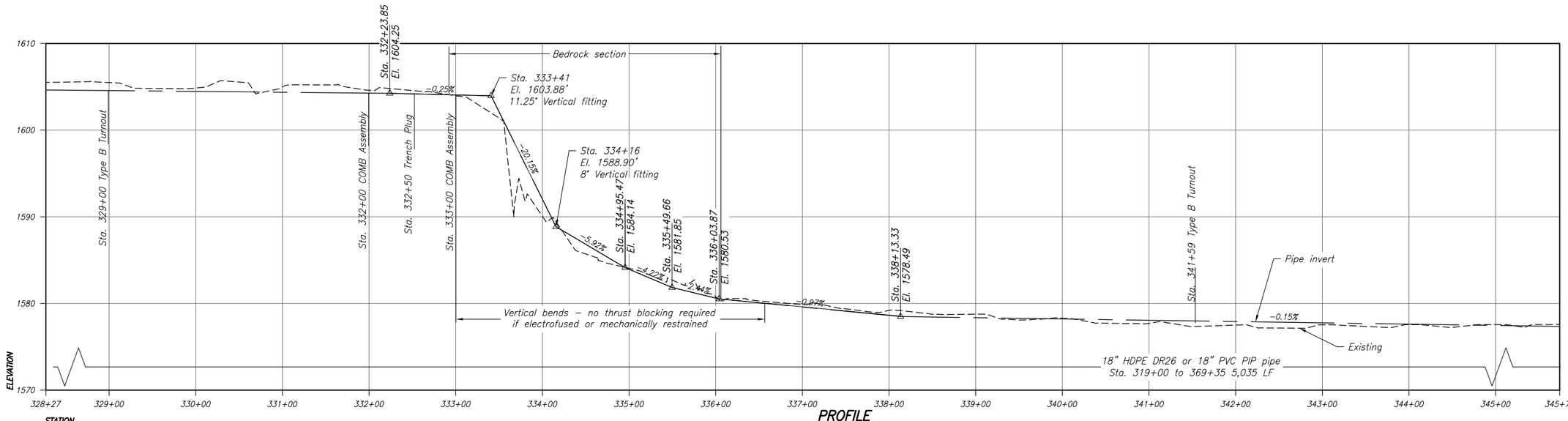
Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (133)	492744.34	1823303.97	22.50
Fitting – (134)	492726.51	1823342.64	11.25

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.



PROFILE

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL

REV. NO.

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR.
NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014-07-23

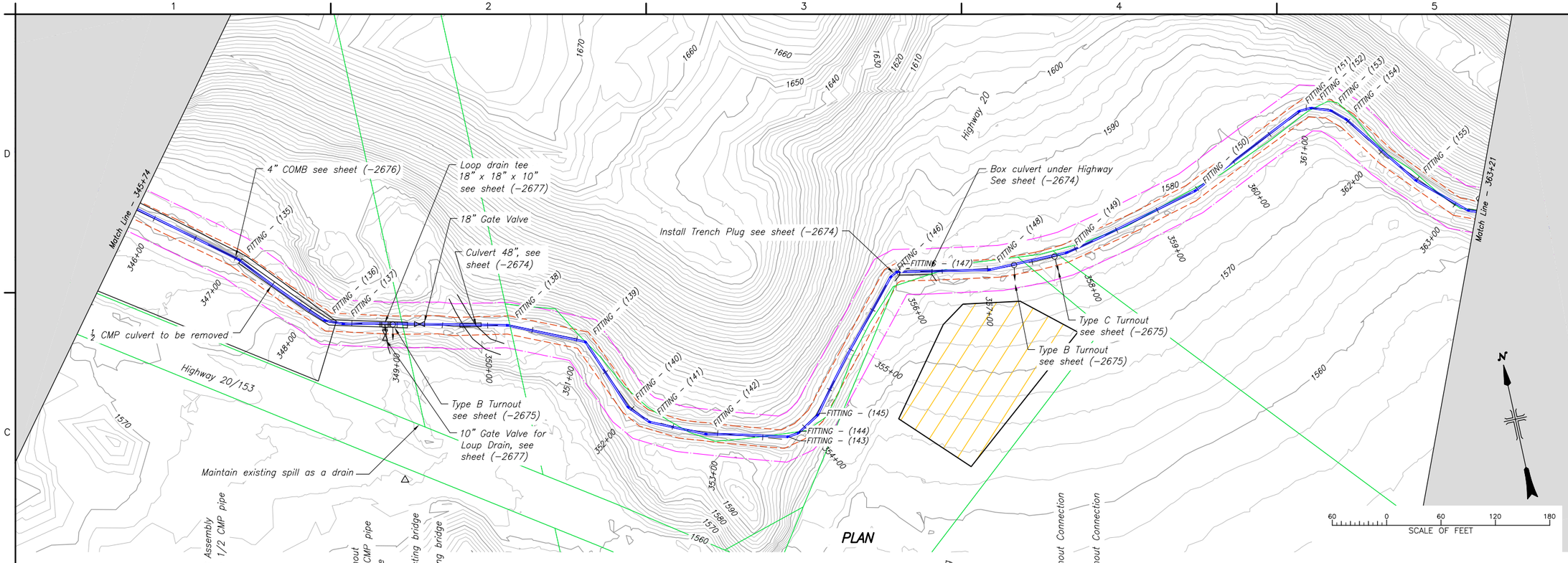
MAIN PLAN AND PROFILE
STA. 328+27 TO 345+74

1678-100-2663

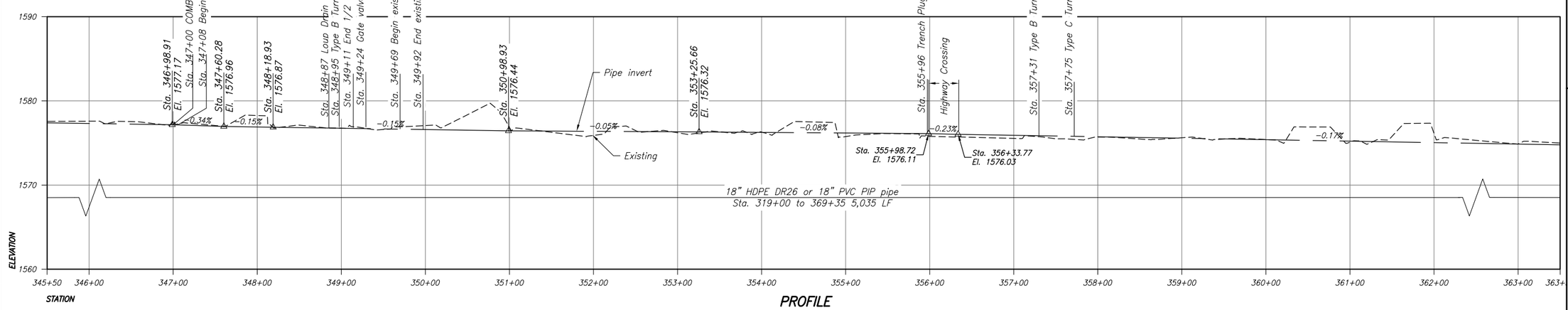
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:59
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (135)	492557.64	1823556.95	11.25
Fitting – (136)	492472.20	1823634.68	22.50
Fitting – (137)	492464.17	1823654.00	11.25
Fitting – (138)	492423.96	1823830.61	11.25
Fitting – (139)	492387.70	1823910.82	45.00
Fitting – (140)	492307.11	1823941.22	22.50
Fitting – (141)	492286.04	1823960.99	22.50
Fitting – (142)	492259.87	1824018.87	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (143)	492237.48	1824106.78	22.50
Fitting – (144)	492239.11	1824118.72	22.50
Fitting – (145)	492253.83	1824143.90	22.50
Fitting – (146)	492385.85	1824255.24	22.50
Fitting – (147)	492389.72	1824263.08	37.36
Fitting – (148)	492370.07	1824363.13	11.25
Fitting – (149)	492370.36	1824450.64	11.25
Fitting – (150)	492406.73	1824603.76	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (151)	492468.09	1824734.33	22.50
Fitting – (152)	492468.73	1824748.03	22.50
Fitting – (153)	492461.19	1824768.96	22.50
Fitting – (154)	492448.14	1824783.28	11.25
Fitting – (155)	492365.88	1824843.97	11.25
Fitting – (156)	492321.00	1824893.25	22.50

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN
INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL
MVID – INSTREAM FLOW

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014–07–23

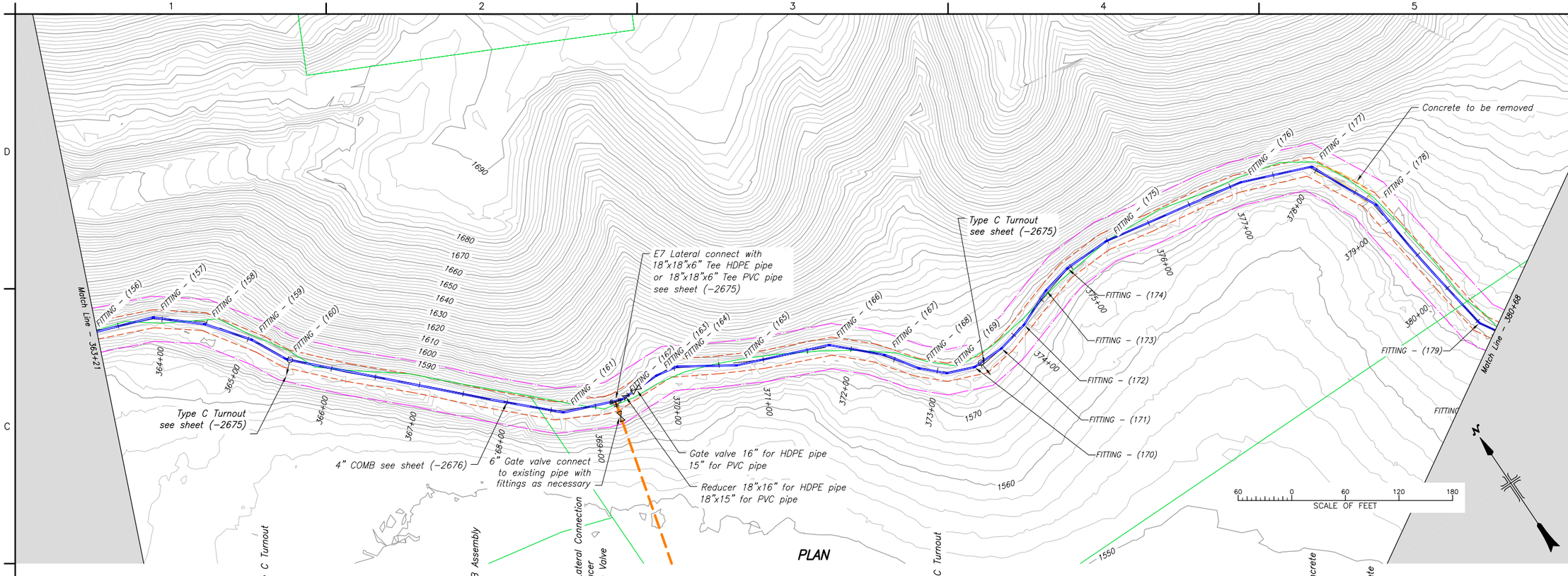
MAIN PLAN AND PROFILE STA. 345+74 TO 363+21

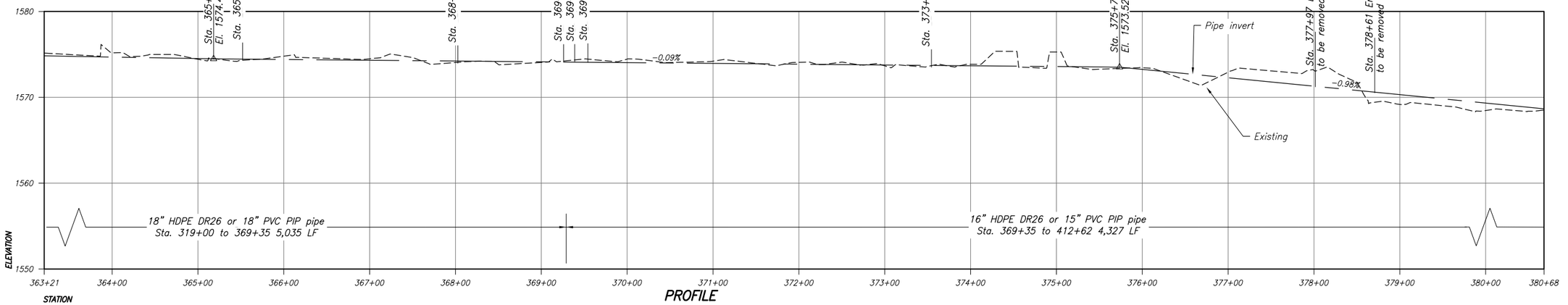
1678–100–2664

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:59
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG





Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (157)	492295.78	1824963.18	22.50
Fitting – (158)	492257.42	1825006.45	11.25
Fitting – (159)	492213.50	1825040.48	11.25
Fitting – (160)	492173.96	1825060.21	18.04
Fitting – (161)	491950.91	1825283.89	22.50
Fitting – (162)	491926.05	1825346.55	22.50
Fitting – (163)	491926.76	1825393.43	11.25
Fitting – (164)	491922.23	1825418.14	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (165)	491886.00	1825474.16	11.25
Fitting – (166)	491846.85	1825572.84	22.50
Fitting – (167)	491802.88	1825618.15	11.25
Fitting – (168)	491769.10	1825641.47	11.25
Fitting – (169)	491747.01	1825664.23	22.50
Fitting – (170)	491735.33	1825693.68	22.50
Fitting – (171)	491735.88	1825730.38	11.25
Fitting – (172)	491743.55	1825766.13	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (173)	491761.69	1825808.14	11.25
Fitting – (174)	491768.89	1825841.70	11.25
Fitting – (175)	491769.69	1825894.79	11.25
Fitting – (176)	491740.10	1826056.19	11.25
Fitting – (177)	491709.92	1826132.27	45.00
Fitting – (178)	491634.34	1826167.95	22.50
Fitting – (179)	491460.01	1826189.73	22.50

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014–07–23

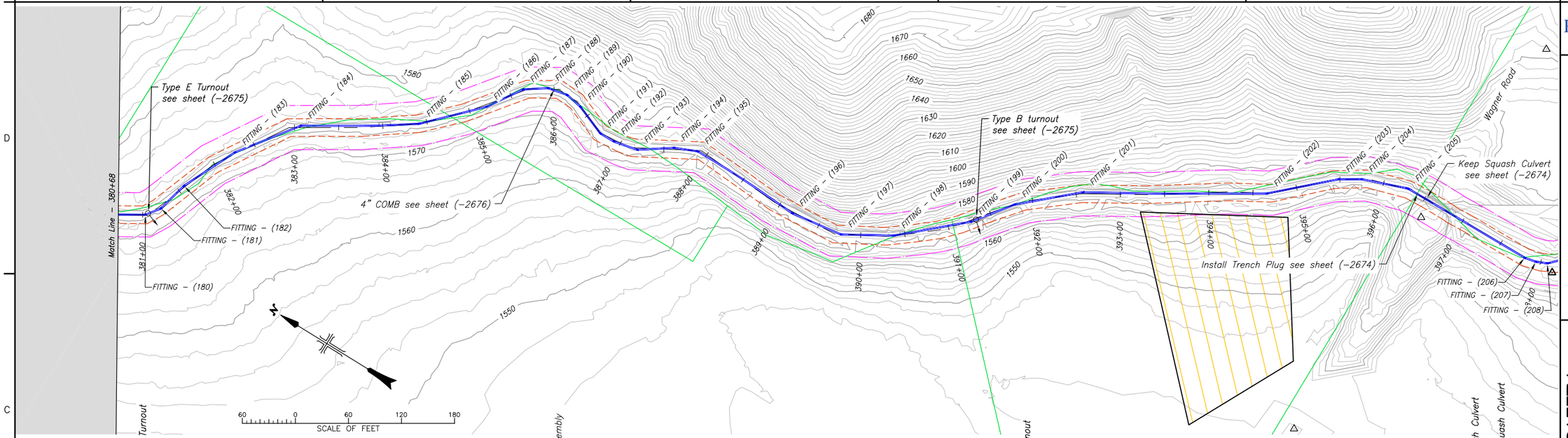
MAIN PLAN AND PROFILE STA. 363+21 TO 380+68

1678–100–2665

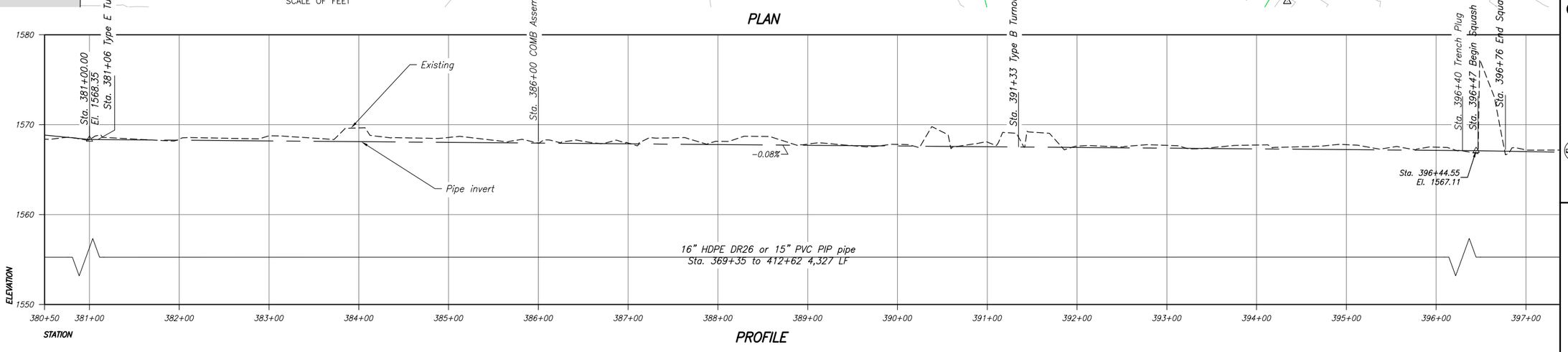
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:58
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
I:\PLAN\PROFILE AND PIPE NETWORK_PIC_FINAL.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (180)	491417.39	1826215.60	22.50
Fitting – (181)	491406.18	1826230.91	22.50
Fitting – (182)	491397.48	1826266.46	11.25
Fitting – (183)	491368.29	1826329.11	11.25
Fitting – (184)	491320.79	1826393.91	22.50
Fitting – (185)	491208.00	1826466.29	11.25
Fitting – (186)	491153.52	1826522.57	11.25
Fitting – (187)	491128.71	1826561.05	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (188)	491105.40	1826577.18	22.50
Fitting – (189)	491083.10	1826581.99	22.50
Fitting – (190)	491063.11	1826578.36	11.25
Fitting – (191)	491028.27	1826564.59	22.50
Fitting – (192)	491010.33	1826564.88	11.25
Fitting – (193)	490983.12	1826570.75	22.50
Fitting – (194)	490948.77	1826594.52	11.25
Fitting – (195)	490923.94	1826605.29	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (196)	490795.95	1826601.95	11.25
Fitting – (197)	490736.56	1826610.49	22.50
Fitting – (198)	490684.80	1826641.20	11.25
Fitting – (199)	490619.30	1826700.04	11.25
Fitting – (200)	490587.31	1826742.77	11.25
Fitting – (201)	490529.08	1826795.09	11.25
Fitting – (202)	490351.55	1826903.19	11.25
Fitting – (203)	490290.79	1826959.71	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (204)	490268.67	1826973.37	11.25
Fitting – (205)	490218.55	1826992.04	19.43
Fitting – (206)	490065.22	1826994.70	11.25
Fitting – (207)	490052.12	1826997.55	11.25
Fitting – (208)	490040.12	1827002.77	22.50

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

REV. NO.

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014-07-23

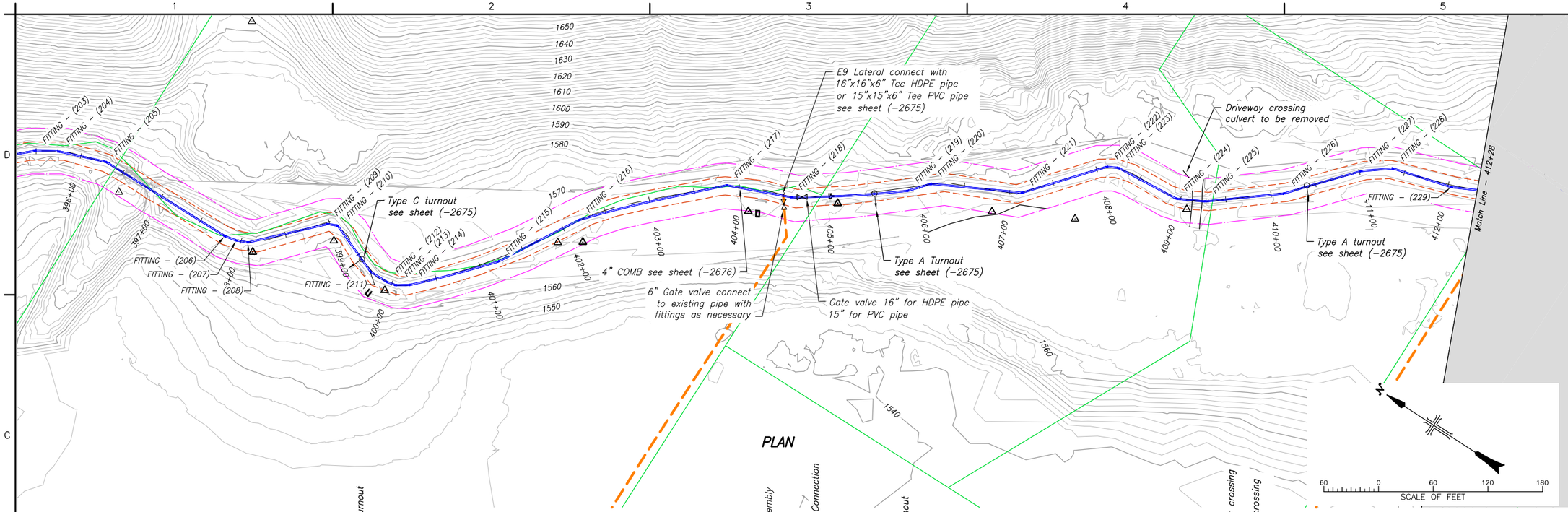
MAIN PLAN AND PROFILE STA. 380+68 TO 396+81

1678-100-2666

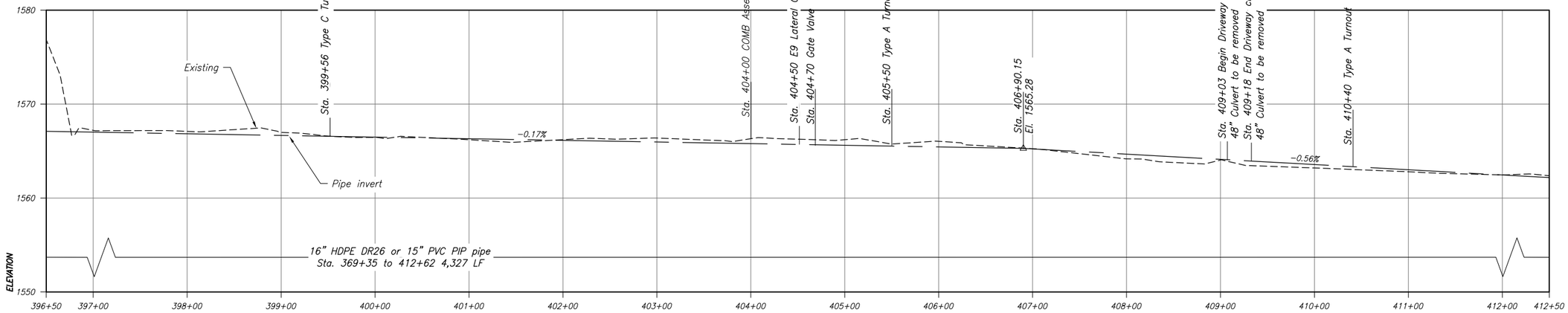
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:58
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (203)	490290.79	1826959.71	11.25
Fitting – (204)	490268.67	1826973.37	11.25
Fitting – (205)	490218.55	1826992.04	19.43
Fitting – (206)	490065.22	1826994.70	11.25
Fitting – (207)	490052.12	1826997.55	11.25
Fitting – (208)	490040.12	1827002.77	22.50
Fitting – (209)	489977.74	1827067.38	22.50
Fitting – (210)	489967.65	1827071.77	45.00

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (211)	489909.80	1827048.99	22.50
Fitting – (212)	489889.12	1827049.36	11.25
Fitting – (213)	489878.62	1827051.64	22.50
Fitting – (214)	489865.52	1827060.74	11.25
Fitting – (215)	489798.54	1827134.59	11.25
Fitting – (216)	489749.19	1827220.97	11.25
Fitting – (217)	489633.82	1827341.33	22.50
Fitting – (218)	489567.44	1827368.84	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (219)	489463.98	1827444.43	11.25
Fitting – (220)	489447.18	1827464.46	22.50
Fitting – (221)	489357.67	1827511.07	22.50
Fitting – (222)	489295.28	1827585.44	22.50
Fitting – (223)	489284.00	1827591.32	22.50
Fitting – (224)	489212.27	1827597.61	22.50
Fitting – (225)	489184.02	1827612.32	11.25
Fitting – (226)	489116.32	1827666.66	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (227)	489058.82	1827733.37	11.25
Fitting – (228)	489031.14	1827754.81	22.50
Fitting – (229)	488966.12	1827772.55	11.25

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

MVID

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR.
NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014–07–23

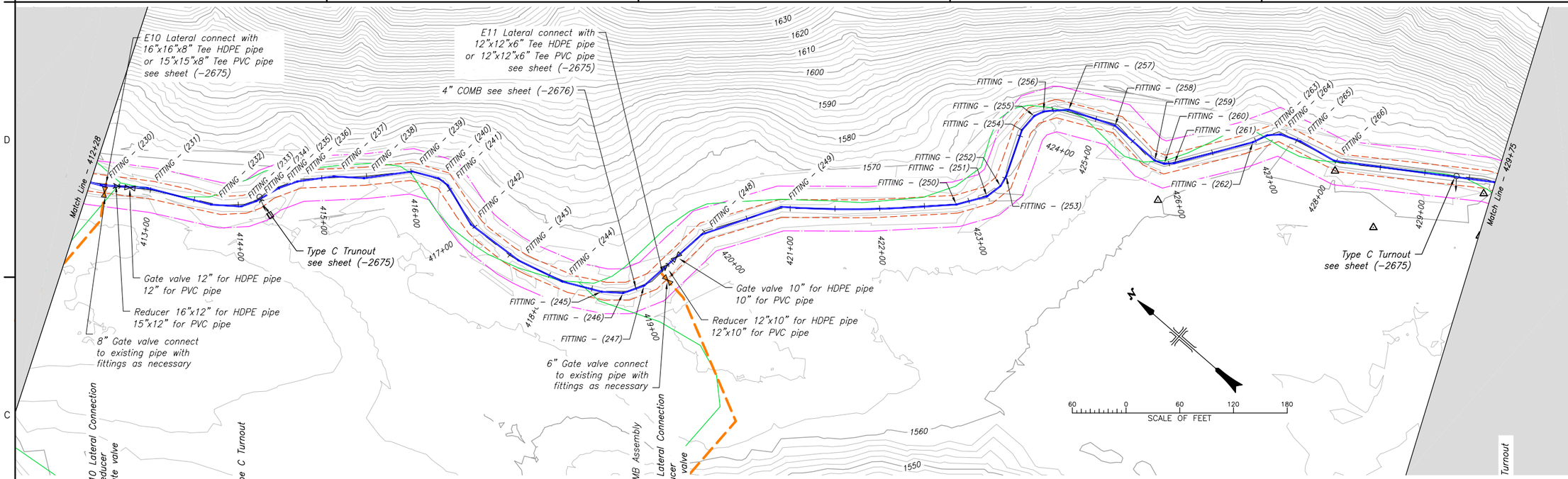
MAIN PLAN AND PROFILE STA. 396+81 TO 412+28

1678–100–2667

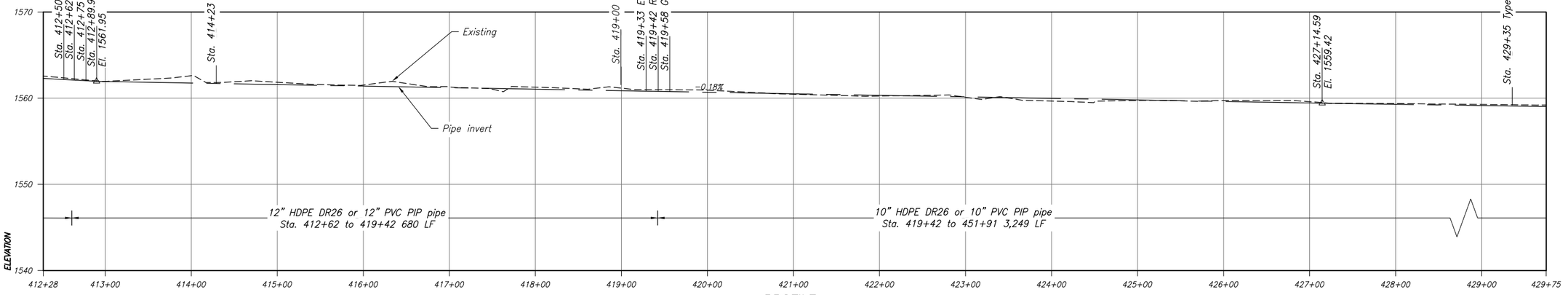
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:57
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN&PROFILE AND PIPE NETWORK_PVC_TYP4.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (230)	488929.17	1827790.98	11.25
Fitting – (231)	488888.53	1827822.46	11.25
Fitting – (232)	488822.27	1827855.50	11.25
Fitting – (233)	488795.93	1827875.90	22.50
Fitting – (234)	488787.12	1827891.32	11.25
Fitting – (235)	488777.77	1827919.27	11.25
Fitting – (236)	488766.93	1827938.24	11.25
Fitting – (237)	488739.93	1827969.31	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (238)	488713.30	1827989.94	11.25
Fitting – (239)	488677.75	1828030.85	22.50
Fitting – (240)	488650.36	1828044.51	22.50
Fitting – (241)	488637.50	1828045.41	22.50
Fitting – (242)	488589.52	1828029.36	22.50
Fitting – (243)	488523.11	1828034.02	11.25
Fitting – (244)	488471.00	1828048.23	11.25
Fitting – (245)	488430.14	1828068.61	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (246)	488410.98	1828083.45	22.50
Fitting – (247)	488398.71	1828104.93	22.50
Fitting – (248)	488387.85	1828190.45	22.50
Fitting – (249)	488341.23	1828272.04	22.50
Fitting – (250)	488195.61	1828402.61	11.25
Fitting – (251)	488175.86	1828431.91	22.50
Fitting – (252)	488172.08	1828450.47	22.50
Fitting – (253)	488174.44	1828462.61	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (254)	488195.22	1828513.36	22.50
Fitting – (255)	488195.13	1828534.38	22.50
Fitting – (256)	488190.60	1828545.18	22.50
Fitting – (257)	488170.98	1828564.63	22.50
Fitting – (258)	488120.18	1828585.43	22.50
Fitting – (259)	488061.06	1828585.18	22.50
Fitting – (260)	488050.78	1828589.39	22.50
Fitting – (261)	488042.77	1828597.32	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (262)	487991.91	1828672.75	11.25
Fitting – (263)	487985.15	1828688.88	22.50
Fitting – (264)	487974.44	1828699.50	22.50
Fitting – (265)	487952.71	1828708.39	11.25
Fitting – (266)	487909.91	1828716.72	22.50

LEGEND
- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:
1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL

MVID

DESIGNED	Justin Nielsen
DRAWN	K. Korthals
CHECKED	Steve Montague, P.E.
TECH. APPR.	NAME, PROF. ABBR.
ADMIN. APPROVAL	Sharon Parkinson, P.E.
	NAME: SHARON PARKINSON, P.E.
	TITLE: DESIGN PROGRAM MANAGER
BOISE, ID	2014-07-23

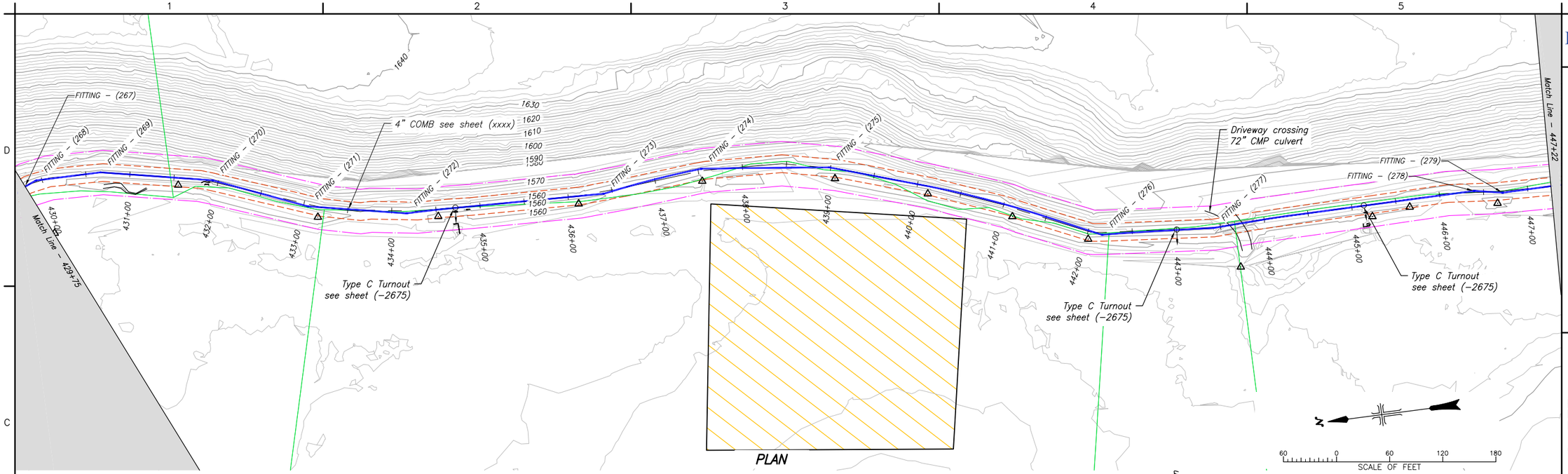
MAIN PLAN AND PROFILE
STA. 412+28 TO 429+75

1678-100-2668

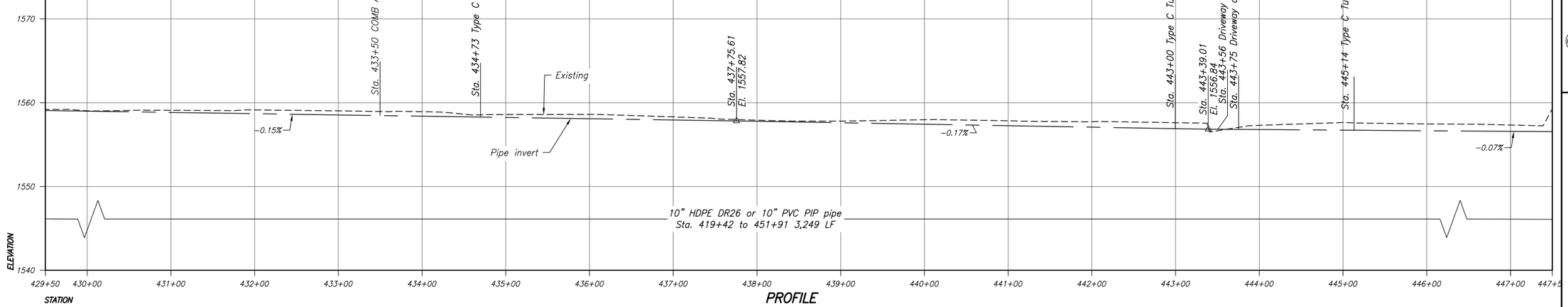
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:57
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FITTING.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (267)	487759.16	1828816.53	11.25
Fitting – (268)	487745.76	1828822.02	22.50
Fitting – (269)	487672.46	1828821.71	11.25
Fitting – (270)	487547.50	1828796.30	11.25
Fitting – (271)	487445.04	1828753.35	11.25
Fitting – (272)	487335.33	1828731.05	11.25
Fitting – (273)	487111.35	1828724.25	11.25
Fitting – (274)	486998.50	1828737.94	11.25

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (275)	486855.23	1828720.80	11.25
Fitting – (276)	486559.20	1828605.39	22.50
Fitting – (277)	486432.85	1828596.80	6.24
Fitting – (278)	486135.96	1828600.21	11.25
Fitting – (279)	486104.31	1828594.05	11.25

LEGEND
- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:
1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL

REV. NO.

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR.
NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014–07–23

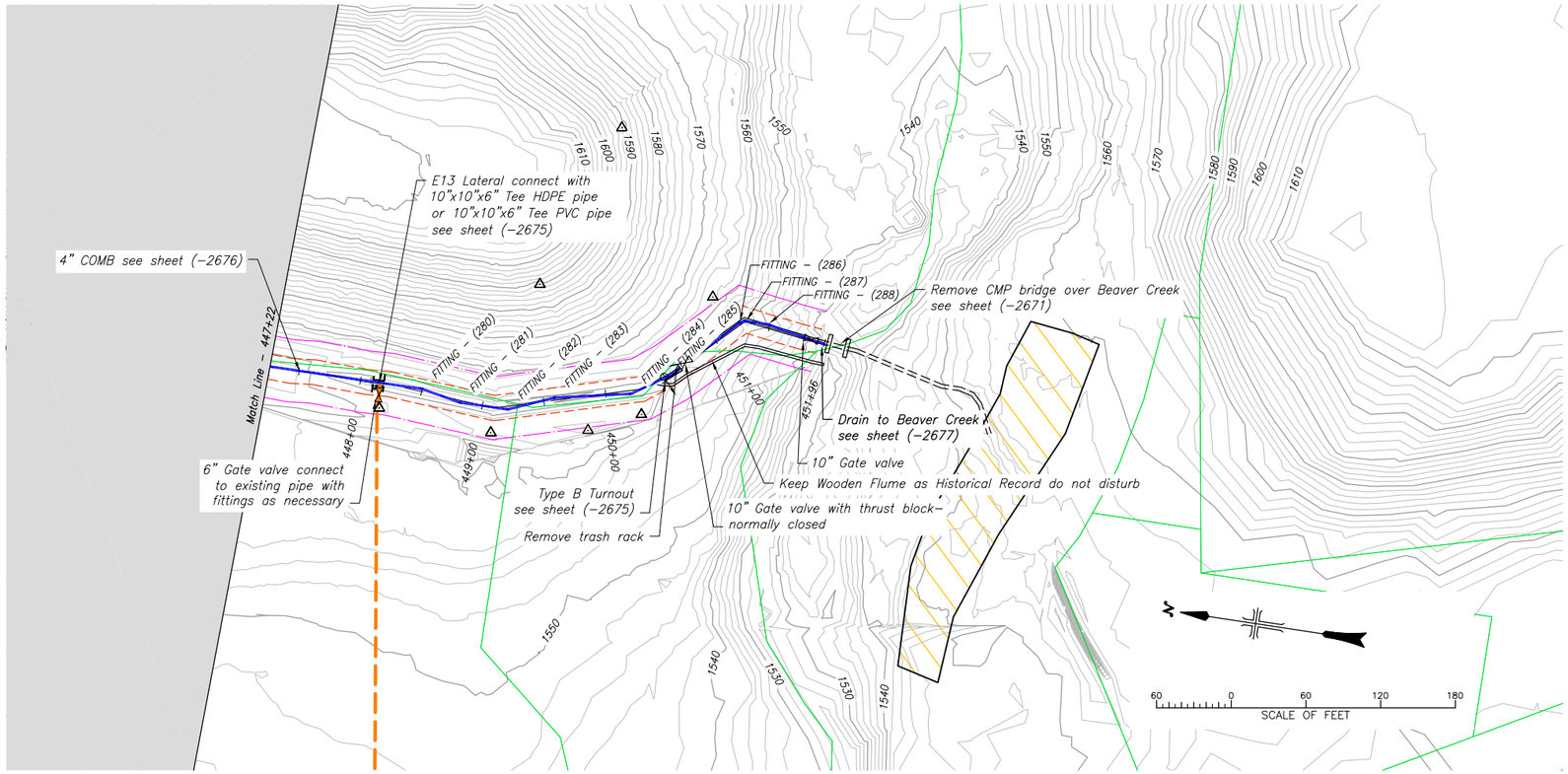
MAIN PLAN AND PROFILE
STA. 429+75 TO 447+22

1678–100–2669

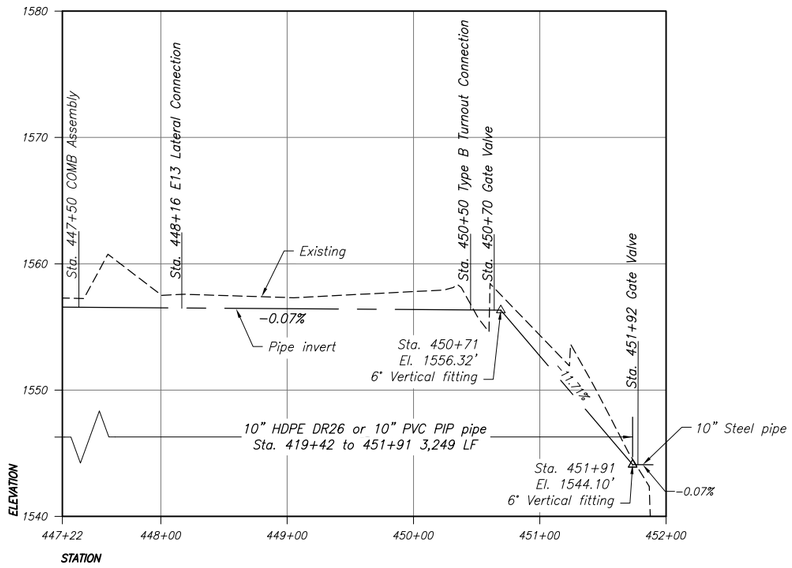
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:56
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLANPROFILE AND PIPE NETWORK_PVC_FINAL.DWG



PLAN



PROFILE

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (280)	485926.30	1828594.74	11.25
Fitting – (281)	485894.50	1828588.55	11.25
Fitting – (282)	485855.50	1828588.70	22.50
Fitting – (283)	485819.79	1828603.66	11.25
Fitting – (284)	485759.46	1828615.90	22.50
Fitting – (285)	485732.87	1828633.82	11.25
Fitting – (286)	485681.73	1828685.36	22.50
Fitting – (287)	485676.90	1828687.39	22.50

Fitting Table			
Fitting Name	Northing	Easting	Horizontal Angle
Fitting – (288)	485659.12	1828687.45	11.25

LEGEND

- Pipeline Corridor
- Clearing Limits
- Property Boundaries
- Staging Area
- Control Point (see drawing –2653, –2654)

NOTES:

1. The contractor shall be responsible for installing the pipe to match the grades shown. The horizontal alignment shown is intended for PVC pipe and uses standard fittings when possible. The contractor is allowed to vary from this horizontal alignment as long as the vertical profile is maintained and the adjusted alignment stays within the pipeline corridor under the direction of the contracting officer.
2. The contractor shall furnish additional fittings or bend the pipe per the manufacturer's recommendations to match the alignments and grades shown.
3. The contractor's attention is called to the steep hill slopes surrounding the existing canal. In many locations the centerline of the canal will be the optimum location for the pipe horizontal alignment. Native backfill may not exist in locations of the canal and fill will need to be imported.
4. Turnout and lateral locations shown are approximate. Final location to be determined by COR with Landowner and MVID approval prior to installation.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT

EAST CANAL

REV NO

Justin Nielsen
DESIGNED
K. Korthals
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR.
NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014-07-23

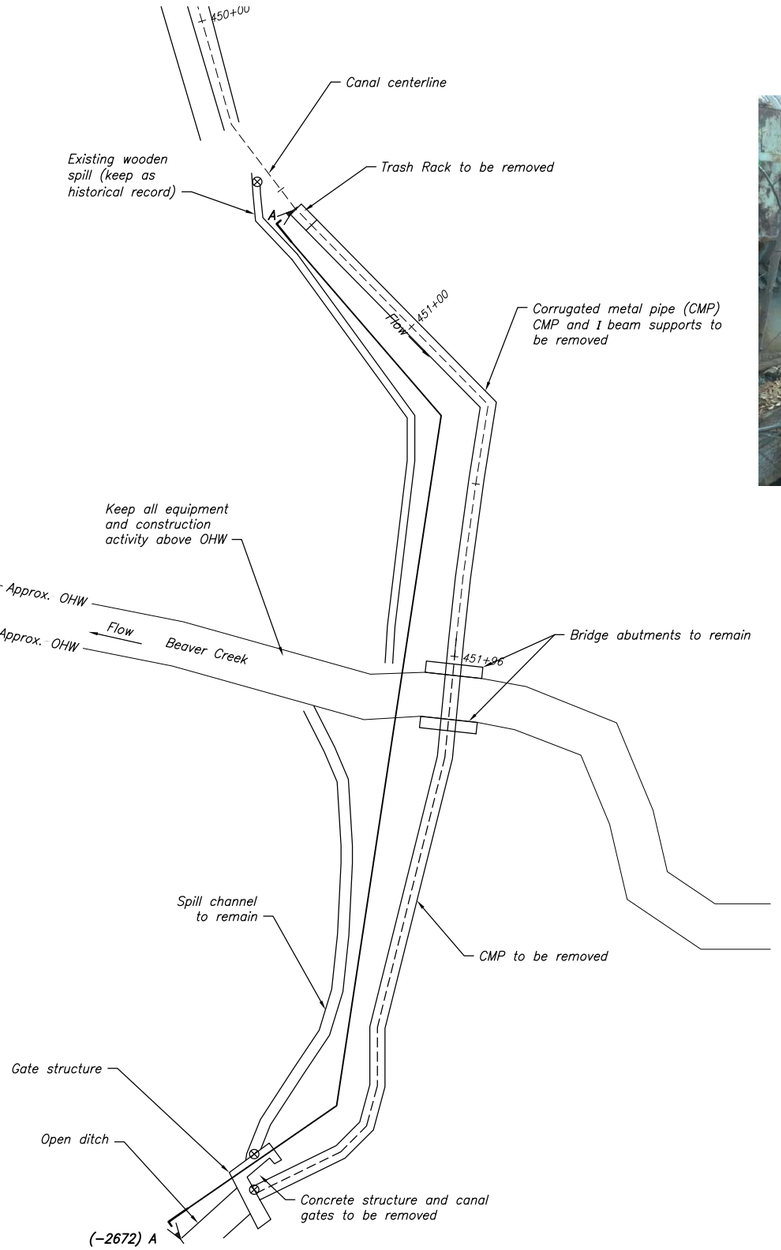
MAIN PLAN AND PROFILE STA. 447+22 TO 451+87

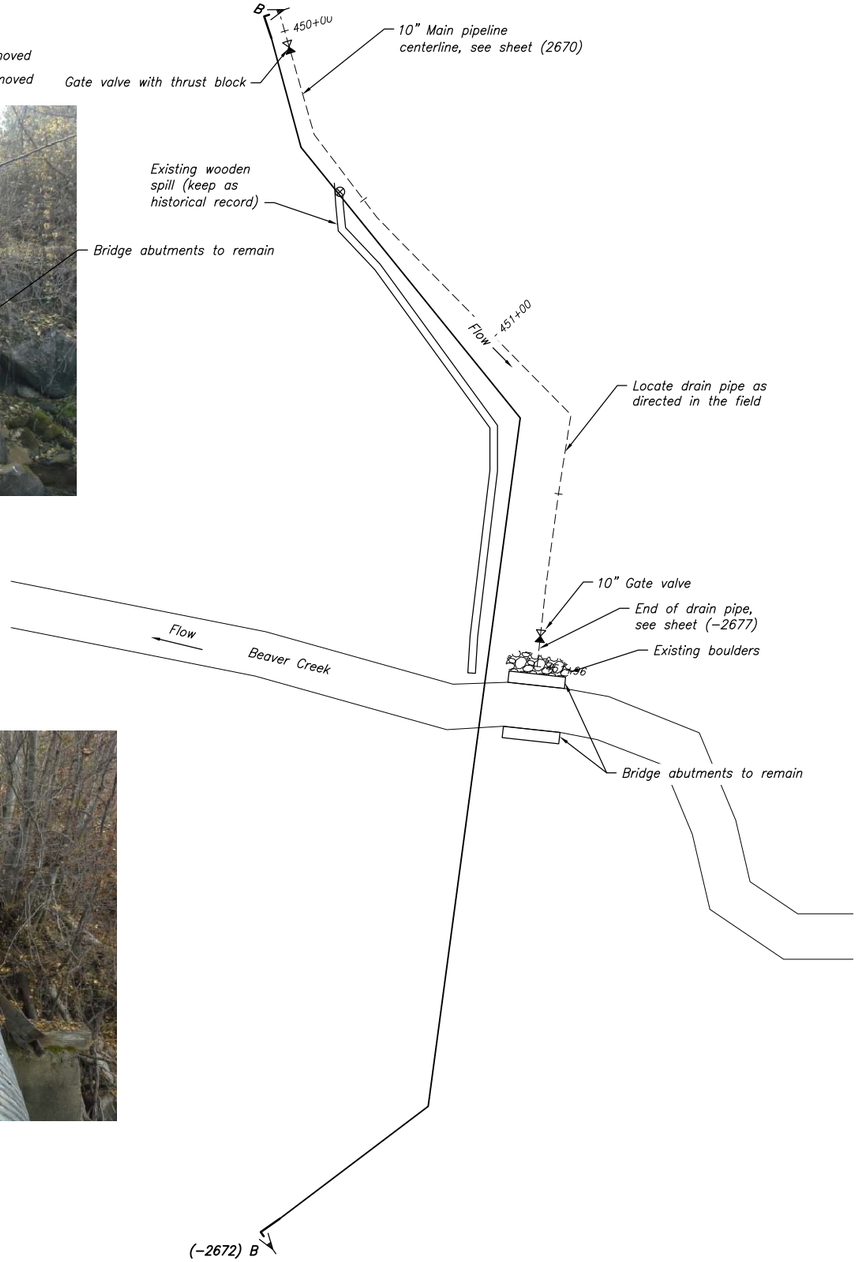
1678-100-2670

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:56
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PLAN\PROFILE AND PIPE NETWORK_PVC_FINAL.DWG





BEAVER CREEK SPILL – EXISTING CONDITIONS

20 0 20 40 60
SCALE OF FEET

BEAVER CREEK SPILL – PROPOSED CONDITIONS

20 0 20 40 60
SCALE OF FEET

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID INSTREAM FLOW IMPROVEMENT PROJECT

END OF PIPELINE PLAN

REV NO.

Justin Nielsen
DESIGNED
A. Hatch
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR.
NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014-07-23

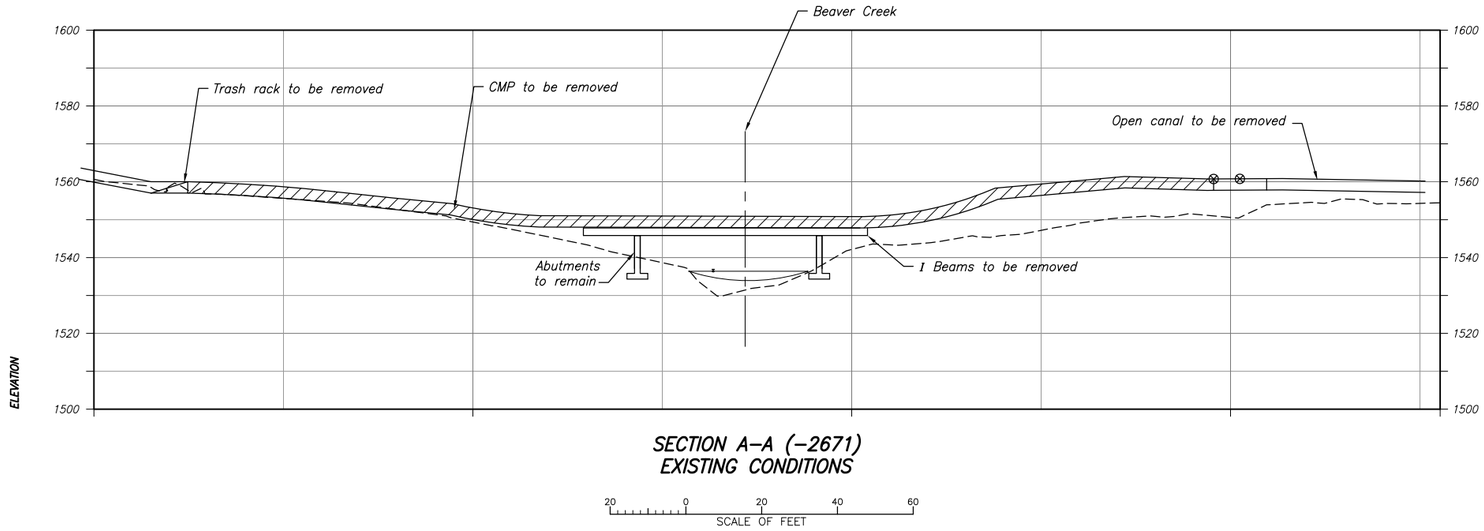
END OF PIPELINE PLAN

1678-100-2671

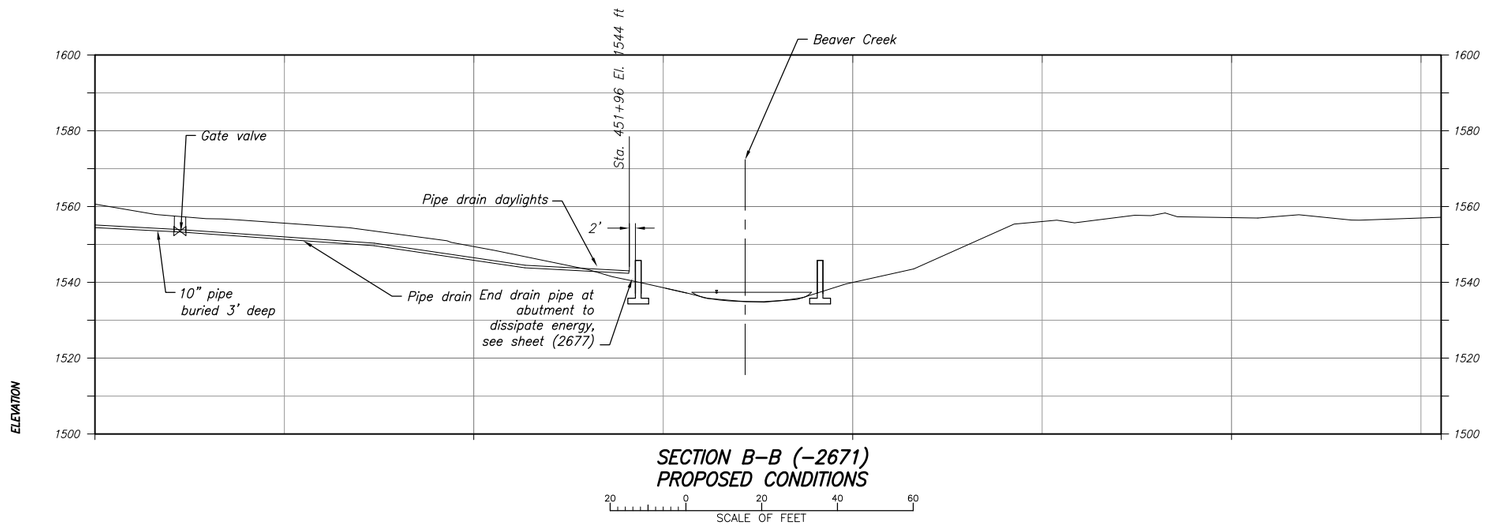
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:54
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
END OF PIPELINE.DWG



SECTION A–A (–2671)
EXISTING CONDITIONS



SECTION B–B (–2671)
PROPOSED CONDITIONS

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID INSTREAM FLOW IMPROVEMENT PROJECT
END OF PIPELINE SECTIONS

REV. NO

Justin Nielsen
DESIGNED
A. Hatch
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014-07-23

END OF PIPELINE
SECTIONS AND DETAILS

1678–100–2672

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:53
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
END OF PIPELINE.DWG

MVID MAIN PIPELINE PVC SPECIFICATION

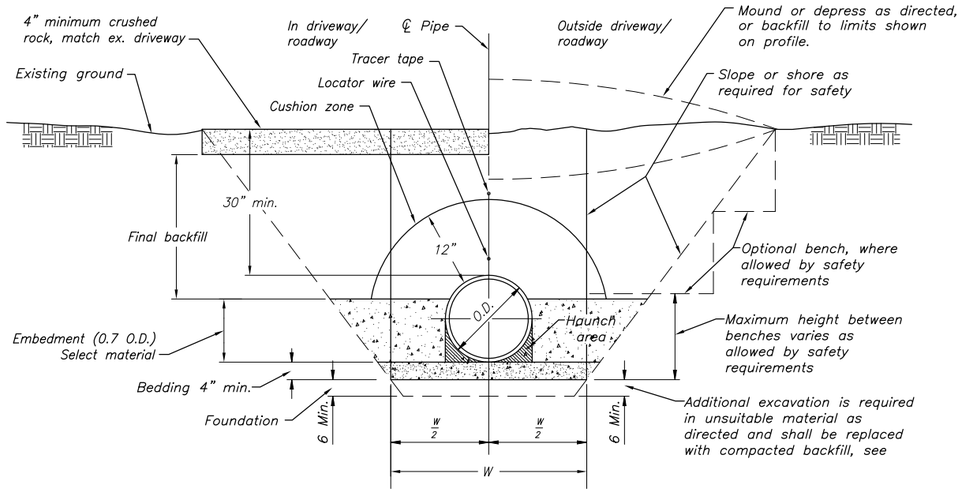
Start Station (ft)	End Station (ft)	Pipe Length (ft)	Pipe Diameter (inches)	Pipe Pressure Rating (psi)	Pipe Material Specification	Minimum Pipe Bending Radius (ft)	Comment
216+02	286+50	7,048	24	80	PVC, DR 51, P.I.P	0	Deflection allowed only according to manufacturers specification
286+50	319+00	3,250	21	80	PVC, DR 51, P.I.P	0	Deflection allowed only according to manufacturers specification
319+00	369+35	5,035	18	80	PVC, DR 51, P.I.P	0	Deflection allowed only according to manufacturers specification
369+35	412+62	4,327	15	80	PVC, DR 51, P.I.P	0	Deflection allowed only according to manufacturers specification
412+62	419+42	680	12	80	PVC, DR 51, P.I.P	250	Deflection allowed only according to manufacturers specification
419+42	451+91	3,249	10	80	PVC, DR 51, P.I.P	200	Deflection allowed only according to manufacturers specification

MVID MAIN PIPELINE HDPE SPECIFICATION

Start Station (ft)	End Station (ft)	Pipe Length (ft)	Pipe Diameter (inches)	Pipe Pressure Rating (psi)	Pipe Material Specification	Minimum Pipe Bending Radius (ft)	Comment
216+02	286+50	7,048	26	80	HDPE IPS, DR 26, PE 4710	65	Deflection allowed only according to manufacturers specification
286+50	319+00	3,250	22	80	HDPE IPS, DR 26, PE 4710	55	Deflection allowed only according to manufacturers specification
319+00	369+35	5,035	18	80	HDPE IPS, DR 26, PE 4710	45	Deflection allowed only according to manufacturers specification
369+35	412+62	4,327	16	80	HDPE IPS, DR 26, PE 4710	40	Deflection allowed only according to manufacturers specification
412+62	419+42	680	12	80	HDPE IPS, DR 26, PE 4710	30	Deflection allowed only according to manufacturers specification
419+42	451+91	3,249	10	80	HDPE IPS, DR 26, PE 4710	25	Deflection allowed only according to manufacturers specification

Pipeline Notes:

1. The Contractor is allowed to construct the pipeline from either HDPE and/or PVC PIP according to the pipeline specification and manufacturer's specification. The plan and profile drawings are laid out according to a typical PVC PIP design utilizing common fittings when possible. For HDPE pipe, the contractor may bend the pipe according to the specifications and manufacturers specifications and may avoid using fittings.
2. Pressure piping systems that are joined by heat fusion, electrofusion, flanges, and MJ adapters are fully restrained and do not require external joint restraints or thrust block joint anchors. Pipe thrust blocking shall be provided for 4" and larger pipe sizes if the above conditions are not met according to the specifications.
3. Maintain minimum cover 2.5–feet; except where otherwise shown on plan and profiles.
4. Sloping shoring, and benching shall be in accordance with OSHA Standards.



TYPICAL TRENCH DETAILS

MINIMUM INSTALLATION WIDTH

PIPE I.D. (INCHES)	W (FEET)
6 and less	2.0
Over 6 thru 26	pipe O.D. + 2 min.

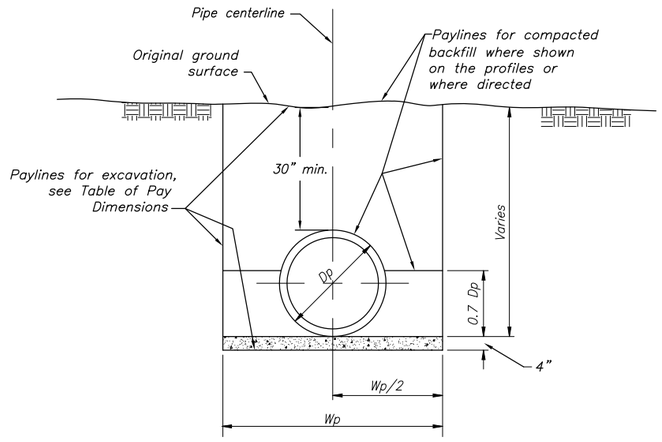
GRADATION LIMITS FOR SELECT MATERIAL

PIPE SIZE	MAX PARTICAL* SIZE
<10"	<0.75"
10–16"	<1"
>16"	<1.5"

* Material shall be well graded.

TABLE OF PAY DIMENSIONS

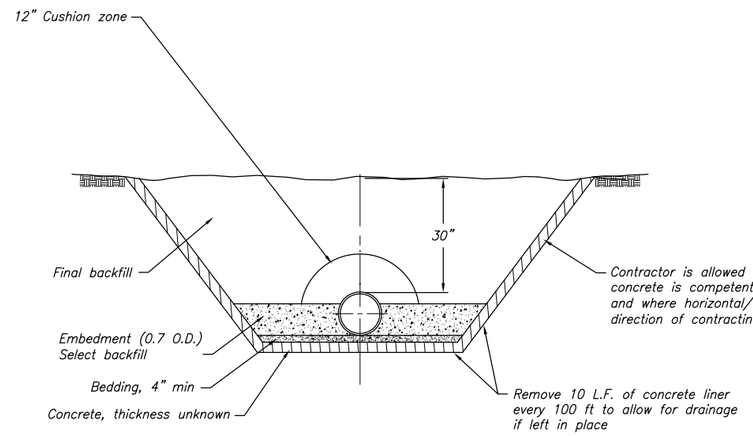
Pipe I.D. (Inches)	Dp (Inches)	Wp (Feet)
6 and less	I.D. + 2	2.0
Over 6 thru 26	I.D. + 4	pipe Dp + 2



TRENCH FOR PAYLINES ONLY

TYPICAL TRENCH NOTES:

1. Minimum cover for all pipe shall be thirty inches (30") from top of pipe to finish grade unless otherwise shown on the plans or approved by the Contracting Officer.
2. Foundation – If excavated trench bottom is unstable or not suitable, the Contractor shall excavate to a depth required by the Contracting Officer and backfill with pipe bedding. Place pipe bedding in maximum 6–inch lifts and compact to 90% of maximum dry density. Bottom of trench will be free of rock and smoothed to prevent bridging.
2. Pipe bedding – Select backfill for pipe bedding shall be at least 4 inches deep and shall meet the requirements of the specifications. Bedding may be compacted or un–compacted depending on the recommendations of the pipe manufacturer.
3. Embedment – Select backfill for embedment shall be placed at least 70% of the pipe diameter (O.D.) deep and shall meet the requirements of the specifications. Place select backfill in 6–inch lifts and compact according to the specifications and approval of COR.
4. Inner Cushion Zone – The Contractor shall backfill the area within 12" of the pipe with excavated native material or imported material that has a maximum particle size of select backfill material and is free from organic material. The backfill shall be well drained and suitable for placement and compaction. Place backfill in maximum 6–inch lifts and compact according to the specifications and approval of COR with the exception of the area directly over the top of the pipe. The area directly over the top of the pipe shall not be mechanically compacted until there is a minimum of 12" of cover over the pipe.
5. Final backfill – The Contractor shall backfill the remaining portion of the trench to the lines and grades shown with excavated native material or imported material that has a maximum particle size of 3 inches and is free from organic material. The backfill shall be well drained and suitable for placement and compaction. Place backfill in maximum 6–inch lifts and compact according to the specifications and approval of COR.
6. Tracer tape and locator wire – Tracer tape shall meet the requirements of section 9–15.18 of the WSDOT "Standard Specifications for Road, Bridge, and Municipal Construction" (2014 edition). Locator wire shall be 12 ga. copper multi–strand RHW, certified for direct burial. The tracer tape and locator wire shall be installed along the entire profile of the pressurized pipe (Sta. 216+02 to end).
7. Existing soil conditions – No subsurface exploration has been done along the alignment of the proposed pipeline. The Contractor shall be responsible for assessing existing soil, and ground water conditions before trench excavation.



TRENCH SECTION THROUGH EXISTING CONCRETE LINED CANAL

Sta. 216+50 to Sta. 234+50

NOTES

1. Dp and Wp are used for calculating pay quantities for all pipe and trench types. Calculations are based on vertical walls.
2. Paylines for backfill will be the paylines for excavation, except the volume of the pipe, based on the diameter Dp will be deducted, and except where the depth of backfill is limited as shown on profiles.
3. W is minimum width of excavation in feet at bottom of bedding.
4. Pipe diameters shown are the nominal inside diameter (I.D.) of the pipe in inches unless otherwise indicated, O.D. is outside diameter in inches of the pipe actually installed.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT
PIPE SPECIFICATION AND TRENCHING DETAILS

REV. NO.

Justin Nielsen
DESIGNED
A. Hatch
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, ID 2014–07–23

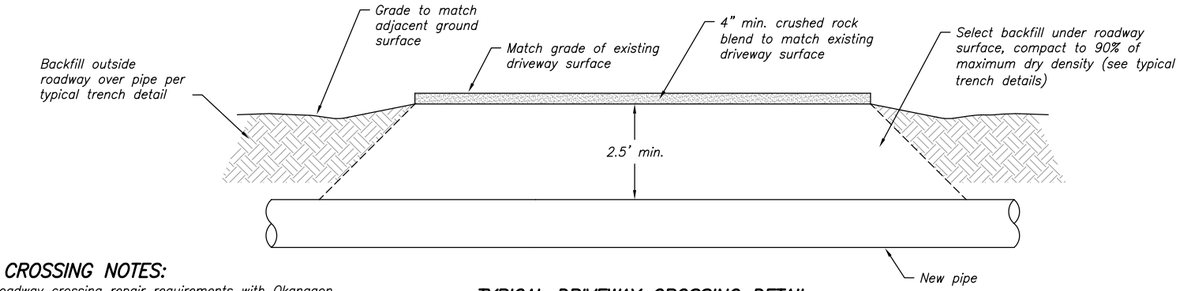
PIPE SPECIFICATIONS AND TRENCH DETAILS

1678–100–2673

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:51
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PIPE DETAILS IL_IN.DWG

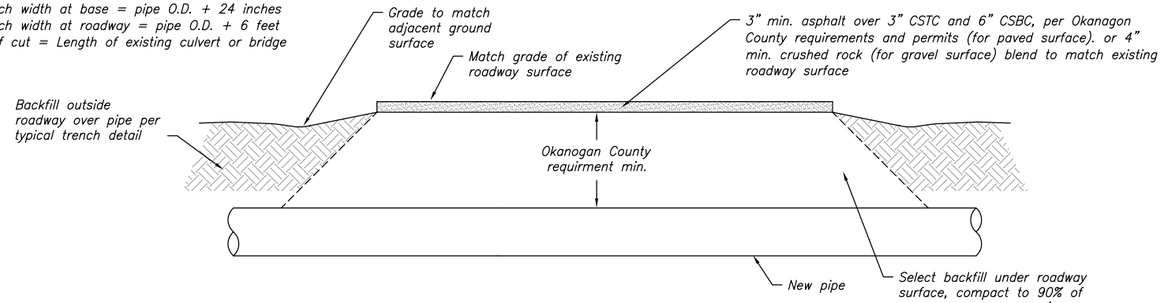


TYPICAL DRIVEWAY CROSSING DETAIL

(Private driveway or roadway)
N.T.S.

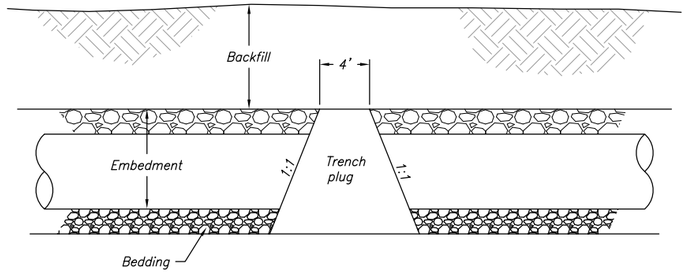
TYPICAL CROSSING NOTES:

1. Verify roadway crossing repair requirements with Okanagon County prior to constructing roadway crossing.
2. For payment of materials, trench across roadway shall be as follows:
   Max trench width at base = pipe O.D. + 24 inches
   Max trench width at roadway = pipe O.D. + 6 feet
   Length of cut = Length of existing culvert or bridge



TYPICAL ROADWAY CROSSING DETAIL

(County roadway)
N.T.S.

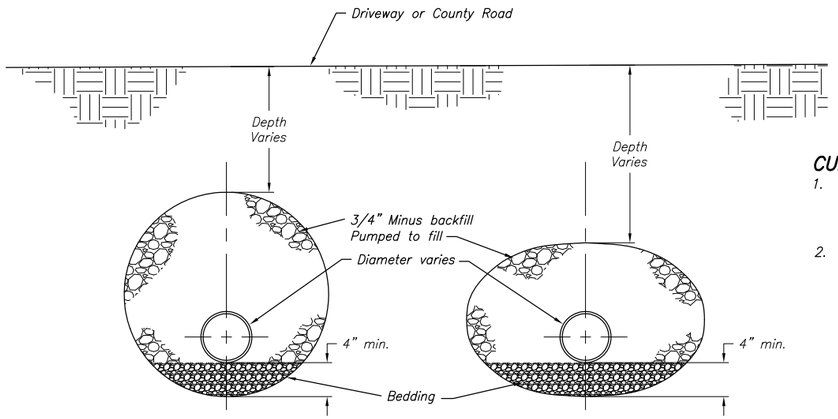


TRENCH PLUG DETAIL

N.T.S.

TRENCH PLUG NOTES:

1. Trench plug shall be constructed from compacted cohesive impervious soils. Soils appropriate for trench plugs shall be GC, SC, CL or any borderline soil beginning with one of these symbols (e.g. CL/ML) according to Unified Soil Classification System.
2. Plugs shall be compacted to 90% dry density.
3. Do not place bedding under pipe at trench plug.

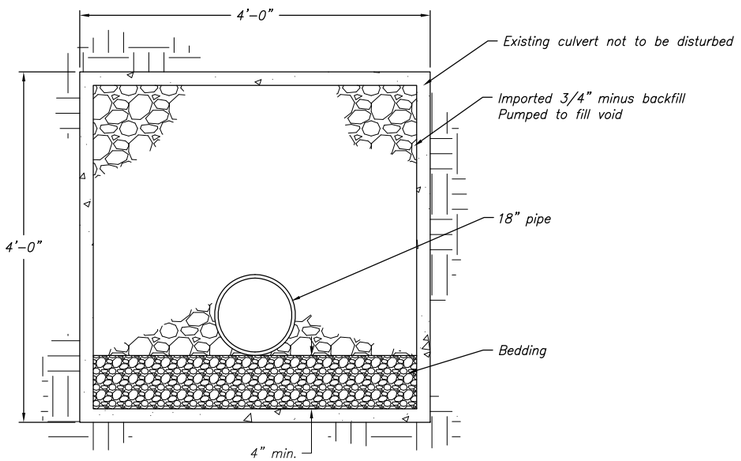


TYPICAL CULVERT DETAIL

N.T.S.

CULVERT NOTES:

1. With the exception of Highway 20 culvert which must be slipped, contractor can elect to slip the pipe through existing culverts or remove culverts under the direction of the contracting officer.
2. Pipes slipped through existing culverts shall have a minimum of 4" of bedding material and completely embedded in 3/4" minus backfill for support.



BOX CULVERT HIGHWAY 20 CROSSING

N.T.S.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

MVID - INSTREAM FLOW IMPROVEMENT PROJECT
PIPE CROSSING DETAILS AND TRENCH PLUG DETAIL

REV NO

DESIGNED	Justin Nielsen
DRAWN	A. Hatch
CHECKED	Steve Montague, P.E.
TECH. APPR. (NAME, PROF. ABBR.)	Steve Montague, P.E.
ADMIN. APPROVAL (NAME: SHARON PARKINSON, P.E. TITLE: DESIGN PROGRAM MANAGER)	Sharon Parkinson, P.E.
BOISE, ID	2014-07-23

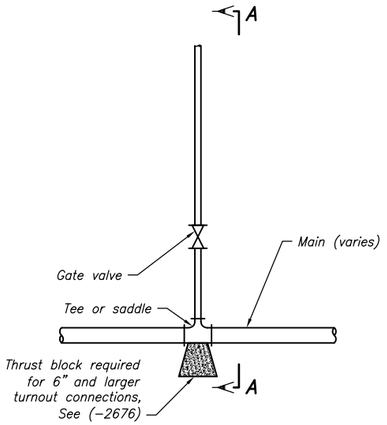
PIPE CROSSING DETAILS AND TRENCH PLUG DETAIL

1678-100-2674

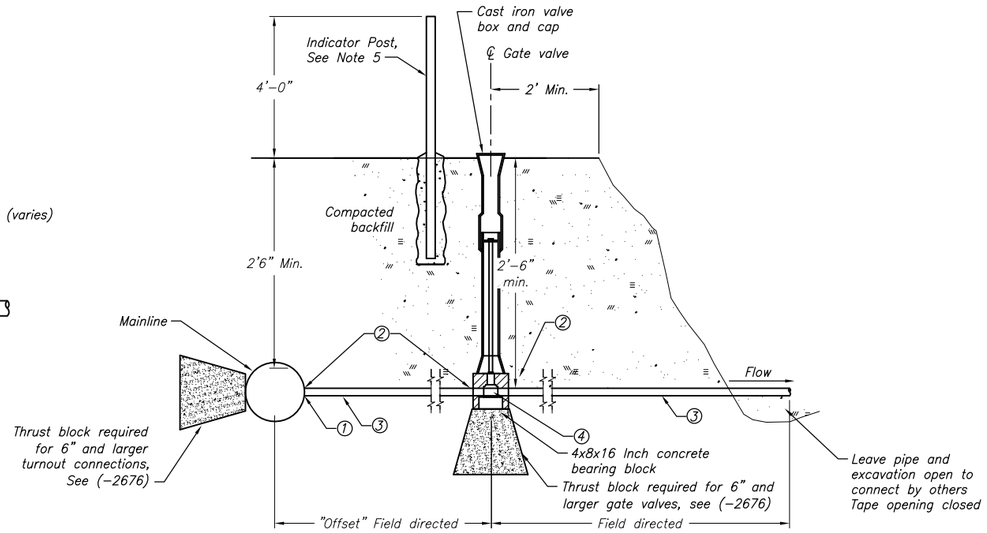
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:51
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PIPE DETAILS IL_IN.DWG

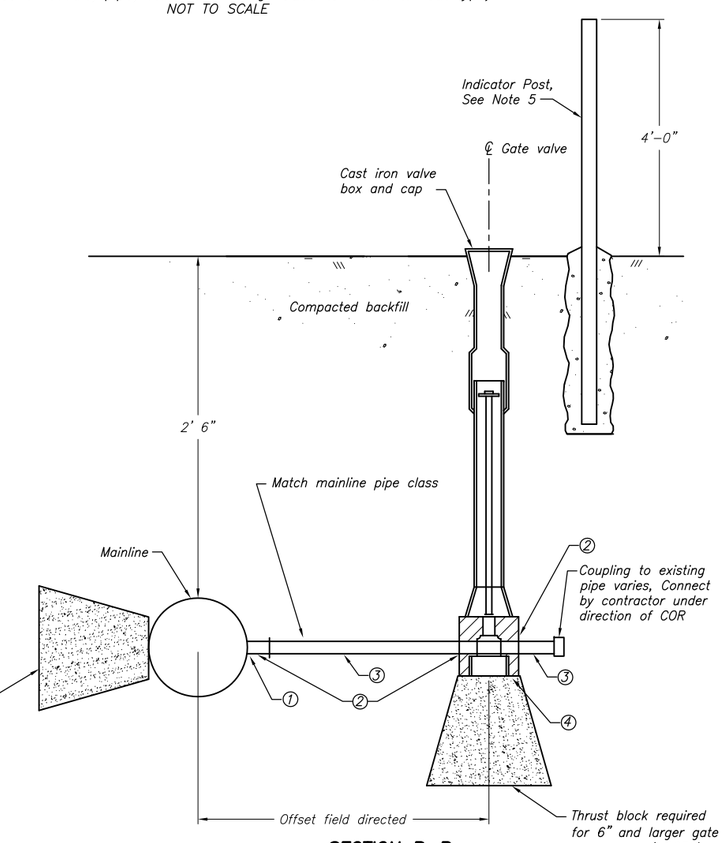


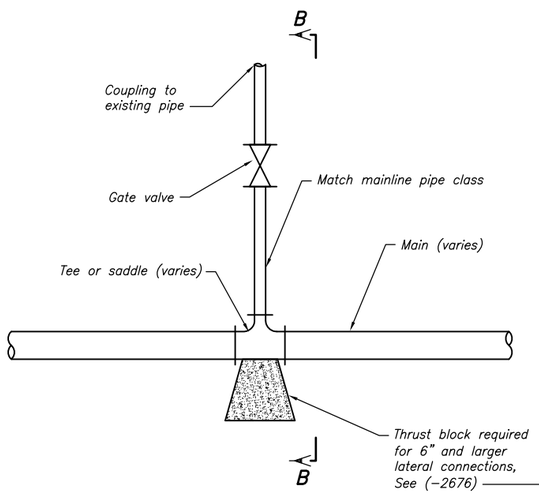
TURNOUT CONNECTION
NOT TO SCALE



SECTION A–A
(Tee or saddle, pipe, valve, and fittings sized to match turnout type)
NOT TO SCALE

TURNOUT PIPE SIZE							
Type	Pipe Size	Acres	Quantity	① Saddle	② Connections	③ Pipe Type	④ Gate Valve
A	1–1/2"	<1	5	Double Strap Saddle Tap, Romac 202S FIPT, or approved equivalent	Coupling, 1 1/2" MIPT X 1 1/2" Pack Joint for PE Tubing	1 1/2"PE Tubing CL200	1 1/2" Gate Valve FIPT X FIPT, with Operating Nut
B	2"	1–5	21	Double Strap Saddle Tap, Romac 202S FIPT, or approved equivalent	Coupling, 2" MIPT X 2" Pack Joint for PE Tubing	2"PE Tubing CL200	2" Gate Valve FIPT X FIPT, with Operating Nut
C	3"	5–10	12	Clamp on Saddle Tap, Morrill Industries 1095 or 1096 FIPT, or approved equivalent	Coupling, 3" MIPT X 3" Pack Joint for PE Tubing	3"PE Tubing CL200	3" Gate Valve FIPT X FIPT, with Operating Nut
E	6"	>20	2	_x_x6" Tee, PIP PVC SDR51 matched to mainline pipe size (varies)	Mechanical Joint at gate valve, gasket at tee	6" PIP PVC SDR 51	6" Gate Valve MJ X MJ, with Operating Nut





LATERAL CONNECTION DETAIL
NOT TO SCALE

SECTION B–B
NOT TO SCALE
(Tee or saddle, pipe, valve, and fittings sized to match lateral pipe specification)

LATERAL CONNECTION SPECIFICATIONS							
A Lateral	Mainline Station Lateral Connection	B Gate Valve Size (in)	①Tee or Saddle	②Connections	③ Pipe Type	④Gate Valve	Existing Pipe Connection (Y or N)
E1	264+38	12	24 X 24 x 12" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	12" PIP PVC SDR51	12" Gate Valve MJ X MJ, with Operating Nut	N, Stub 2' minimum beyond gate valve, tape closed opening
E2	286+39	15	24 X 24 x 15" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	15" PIP PVC SDR51	15" Gate Valve MJ X MJ, with Operating Nut	Y, Connect to existing 15" PVC unknown type
E3a	310+07	2	Double Strap Saddle Tap, Romac 202S FIPT, or approved equivalent	Coupling, 2" MIPT X 2" Pack Joint for PE Tubing	2"PE Tubing CL200	2" Gate Valve FIPT X FIPT, with Operating Nut	N, Stub 2' minimum beyond gate valve, tape closed opening
E3b	311+01	2	Double Strap Saddle Tap, Romac 202S FIPT, or approved equivalent	Coupling, 2" MIPT X 2" Pack Joint for PE Tubing	2"PE Tubing CL200	2" Gate Valve FIPT X FIPT, with Operating Nut	N, Stub 2' minimum beyond gate valve, tape closed opening
E4	314+02	6	21 X 21 x 6" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	6" PIP PVC SDR51	6" Gate Valve MJ X MJ, with Operating Nut	Y, Connect to existing 6" PVC unknown type
E5	318+93	10	21 X 21 x 10" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	10" PIP PVC SDR51	10" Gate Valve MJ X MJ, with Operating Nut	Y, Connect to existing 10" PVC unknown type
E7	369+23	6	18 X 18 x 6" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	6" PIP PVC SDR51	6" Gate Valve MJ X MJ, with Operating Nut	N, Stub 2' minimum beyond gate valve, tape closed opening
E9	404+50	6	15 X 15 x 6" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	6" PIP PVC SDR51	6" Gate Valve MJ X MJ, with Operating Nut	N, Stub 2' minimum beyond gate valve, tape closed opening
E10	412+50	8	15 X 15 x 8" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	8" PIP PVC SDR51	8" Gate Valve MJ X MJ, with Operating Nut	N, Stub 2' minimum beyond gate valve, tape closed opening
E11	419+33	6	12 X 12 x 6" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	6" PIP PVC SDR51	6" Gate Valve MJ X MJ, with Operating Nut	N, Stub 2' minimum beyond gate valve, tape closed opening
E13	448+16	6	10 X 10 x 6" Tee, PIP PVC SDR51	Tee gasketed, MJ Gate Valve	6" PIP PVC SDR51	6" Gate Valve MJ X MJ, with Operating Nut	Y, Connect to existing 6" PVC unknown type

Notes:

1. Locate valve boxes out of traffic areas, as approved.
2. Compact backfill at bends, tee outlets for deliveries, drains and valves, other pipe crossings.
3. Maintain minimum cover 2.5–feet; except where otherwise shown on plan and profiles.
4. Turnout lateral tables assume PVC installation. If HDPE pipe is used for mainline, use HDPE tees, pipe and appropriate connections as approved by COR.
5. Indicator posts shall be in accordance with CLFMI 2.375"Ø Type I or II pipe post, set in concrete base.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN
M/I/D – INSTREAM FLOW IMPROVEMENT PROJECT
TURNOUT AND LATERAL CONNECTION DETAILS

Justin Nielsen	DESIGNED
A. Hatch	DRAWN
Steve Montague, P.E.	CHECKED
Steve Montague, P.E.	TECH. APPR. (NAME, PROF. ABBR.)
Sharon Parkinson, P.E.	ADMIN. APPROVAL (NAME: SHARON PARKINSON, P.E. TITLE: DESIGN PROGRAM MANAGER)
BOISE, ID	2014–07–23

TURNOUT AND LATERAL CONNECTION DETAILS

1678–100–2675

SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:51
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PIPE DETAILS TL_IA.DWG

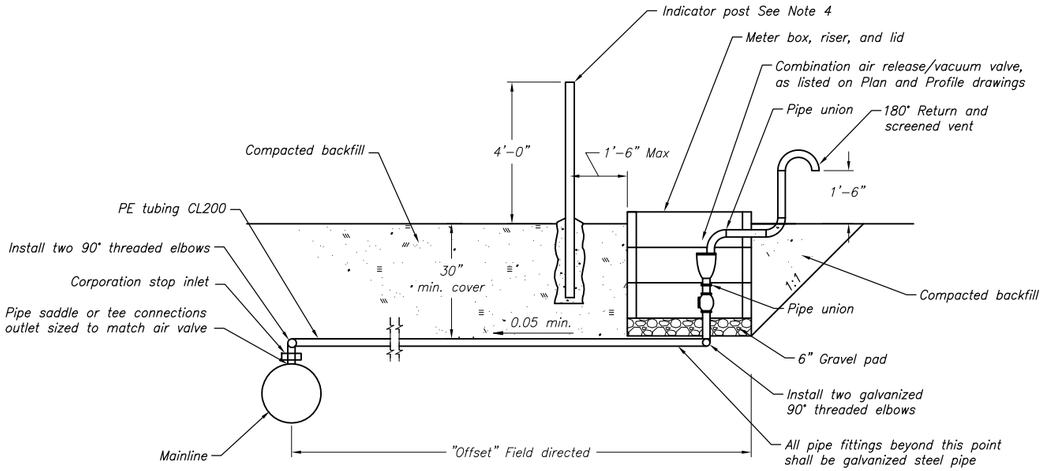
COMBINATION AIR/VACUUM VALVE (COMB) SPECIFICATIONS

Station	Combination Air/Vac Valve (COMB) Diameter (inches)	Number of Valves	Valve Specification	Body Style	Installation Type	Pressure Rating (psi)
228+50	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
241+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
255+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
270+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
285+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
302+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
318+50	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
332+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
347+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
368+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
386+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
404+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
419+00	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
433+50	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80
447+50	4	1	4" Val-Matic Model No. 204-C.2	Single	Off Set Vault	80

Equivalent valves from other manufacturers are acceptable.

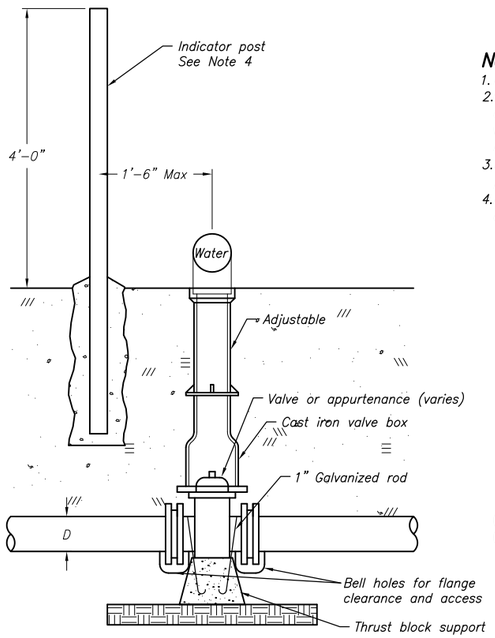
THRUST BLOCK MIN. BEARING AREA AGAINST UNDISTURBED SOIL (SQUARE FEET)

Pipe Size (in)	11.25°	22.5°	30°	45°	90°	Tee/ Dead End/ Reducer	Gate Valve
4	0	0	0	1	1	1	1
6	0	0	0	1	1	1	1
8	0	1	1	1	2	2	1
10	0	1	1	2	3	2	2
12	1	1	2	3	5	4	3
15	1	2	3	4	8	6	4
18	2	3	4	6	12	8	6
21	2	4	6	9	16	11	9
24	3	6	7	11	20	14	11



COMBINATION AIR RELEASE/VACUUM VALVE LAYOUT (COMB)

(Pipe, valve, and fittings sized to match pipe outlet diameters)
NOT TO SCALE

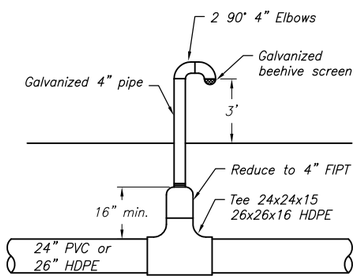


GATE VALVE DETAIL

NOT TO SCALE

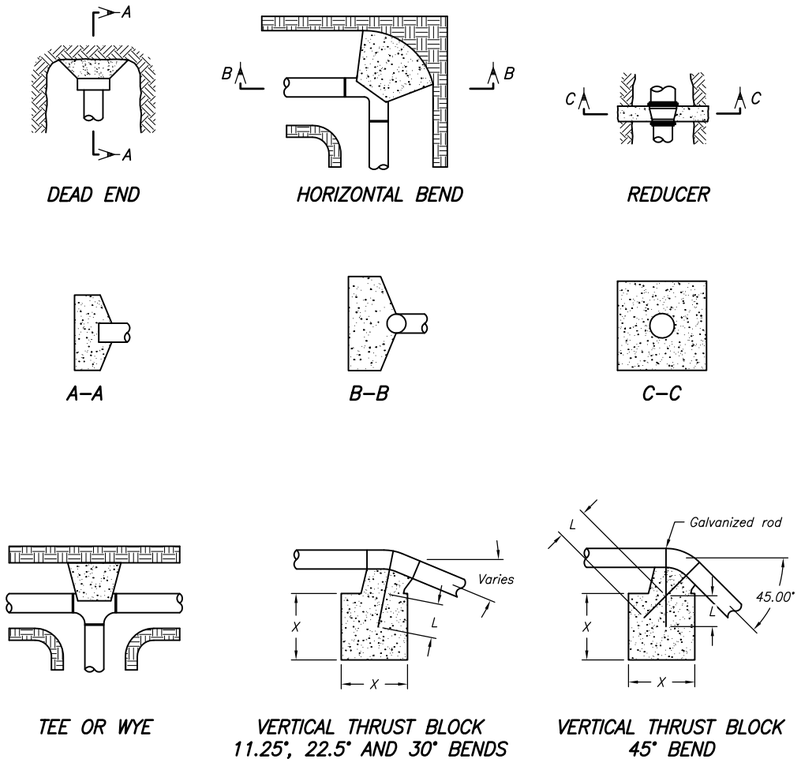
Notes:

1. For other degree bends use next largest angle size shown.
2. Contractor may elect to use a mechanical joint restraint device in place of thrust blocking for horizontal and vertical bends with COR approval under the direction of the Engineer.
3. Thrust block volumes exceeding 2 cy shall have #4 rebar placed on 1 ft centers horizontally and vertically.
4. Indicator posts shall be in accordance with CLFMI 2.375" dia. Type I or II Pipe Post, set in concrete.



AIR VENT WITH BEEHIVE SCREEN

STA 216+20
NOT TO SCALE



Note:
For other degree bends use next largest angle size shown.

VERTICAL BLOCKING FOR BENDS

Pipe Size (in)	Vertical Bend	CU FT	X (ft)	Rod Dia	L (ft)
4	11.25°	2	1.4	3/4"	0.9
4	22.5°	5	1.7	3/4"	1.2
4	30°	7	1.9	3/4"	1.4
4	45°	10	2.1	3/4"	1.6
6	11.25°	2	1.3	3/4"	0.8
6	22.5°	5	1.7	3/4"	1.2
6	30°	6	1.8	3/4"	1.3
6	45°	9	2.1	3/4"	1.6
8	11.25°	4	1.6	3/4"	1.1
8	22.5°	8	2.0	3/4"	1.5
8	30°	11	2.2	3/4"	1.7
8	45°	16	2.5	3/4"	2.0
10	11.25°	6	1.9	3/4"	1.4
10	22.5°	13	2.3	3/4"	1.8
10	30°	17	2.6	3/4"	2.1
10	45°	25	2.9	3/4"	2.4
12	11.25°	9	2.1	3/4"	1.6
12	22.5°	18	2.6	3/4"	2.1
12	30°	24	2.9	3/4"	2.4
12	45°	36	3.3	3/4"	2.8
15	11.25°	14	2.4	1"	1.9
15	22.5°	29	3.1	1"	2.6
15	30°	38	3.4	1"	2.9
15	45°	56	3.8	1"	3.3
18	11.25°	22	2.8	1 1/8"	2.3
18	22.5°	43	3.5	1 1/8"	3.0
18	30°	57	3.8	1 1/8"	3.3
18	45°	84	4.4	1 1/8"	3.9
21	11.25°	30	3.1	1 1/4"	2.6
21	22.5°	60	3.9	1 1/4"	3.4
21	30°	79	4.3	1 1/4"	3.8
21	45°	117	4.9	1 1/4"	4.4
24	11.25°	38	3.4	1 3/8"	2.9
24	22.5°	75	4.2	1 3/8"	3.7
24	30°	100	4.6	1 3/8"	4.1
24	45°	148	5.3	1 3/8"	4.8

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
SUB DIVISION (DIVISION AND UNIT) OR STATE

METHOW SUBBASIN

MVID - INSTREAM FLOW IMPROVEMENT PROJECT
AIR VALVE AND THRUST BLOCK DETAILS

DESIGNED	Justin Nielsen
DRAWN	A. Hatch
CHECKED	Steve Montague, P.E.
TECH. APPR. (NAME, PROF. ABBR.)	Steve Montague, P.E.
ADMIN. APPROVAL (NAME: SHARON PARKINSON, P.E. TITLE: DESIGN PROGRAM MANAGER)	Sharon Parkinson, P.E.
BOISE, ID	2014-07-23

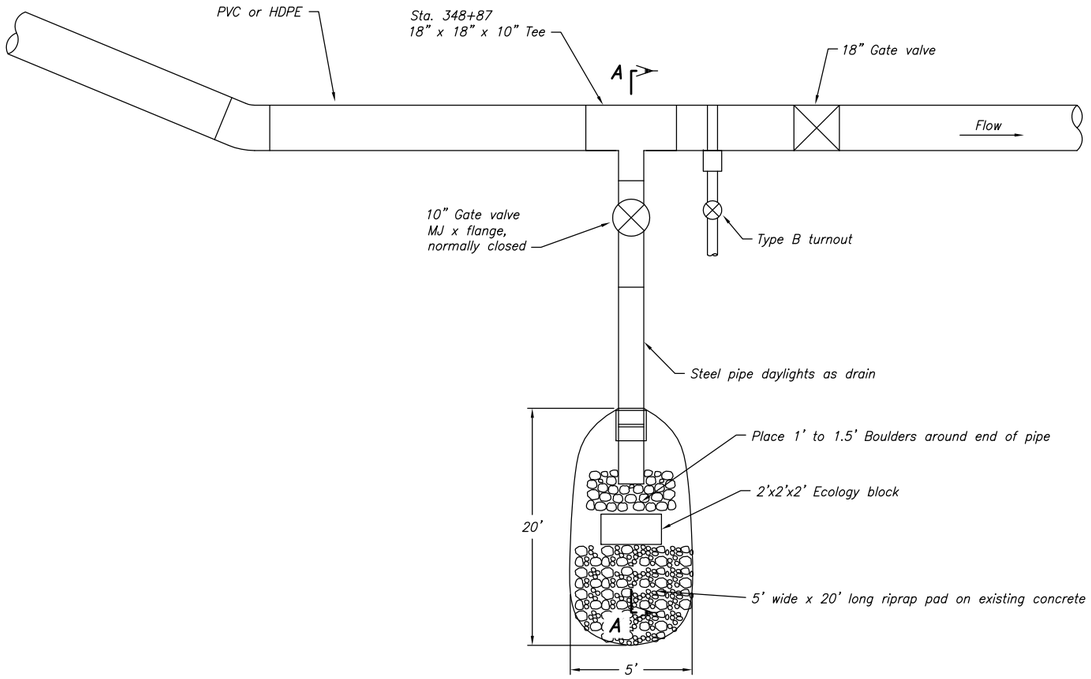
AIR VALVE AND THRUST BLOCK DETAILS

1678-100-2676

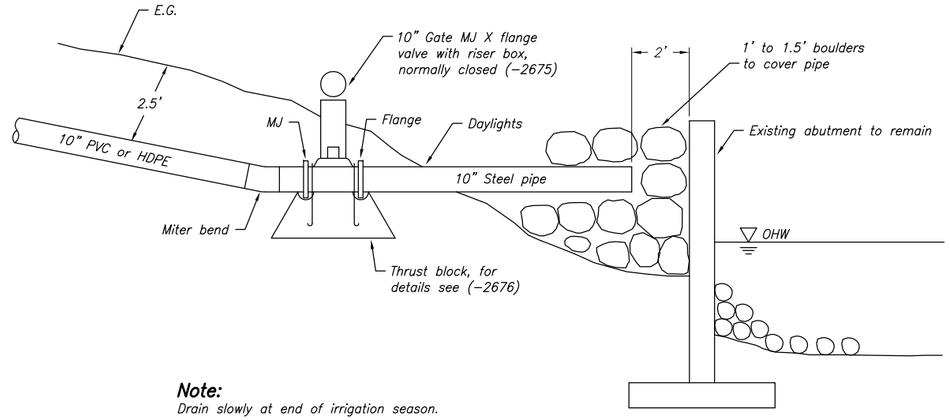
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:50
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
PIPE DETAILS II_VA.DWG

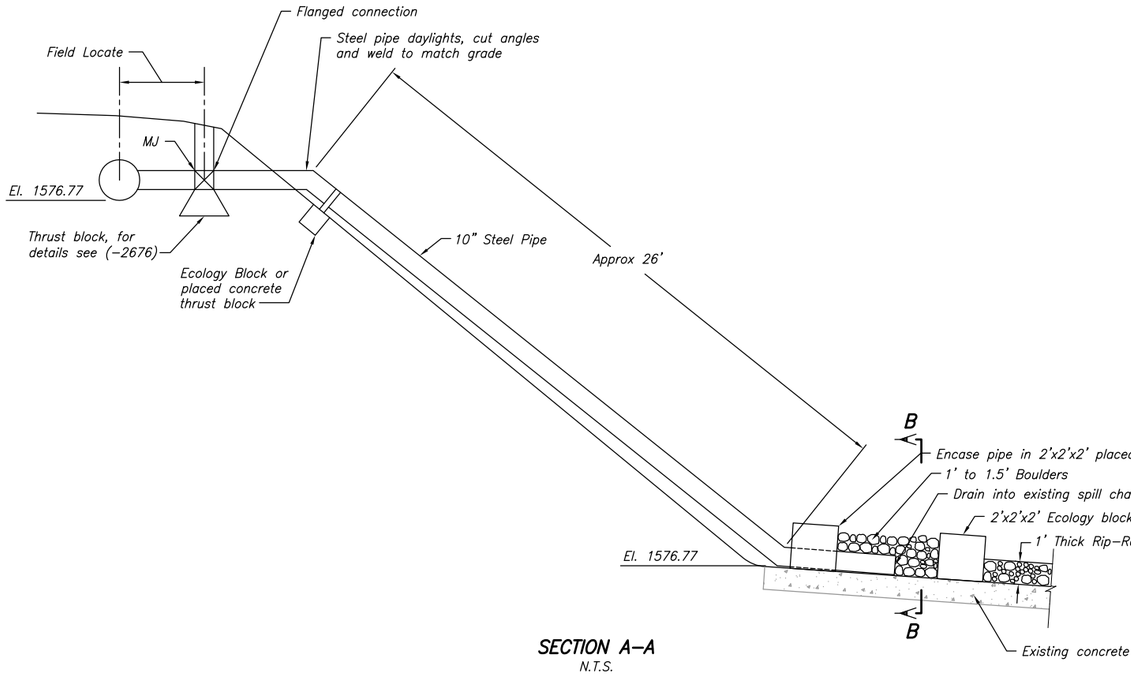


LOUP DRAIN PLAN
STA 348+80
N.T.S.

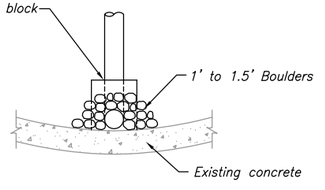


Note:
Drain slowly at end of irrigation season.

BEAVER CREEK DRAIN DETAIL
N.T.S.



SECTION A–A
N.T.S.



SECTION B–B
N.T.S.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

MVID – INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL

REV. NO.

Justin Nielsen
DESIGNED
A. Hatch
DRAWN
Steve Montague, P.E.
CHECKED
Steve Montague, P.E.
TECH. APPR. NAME, PROF. ABBR.
Sharon Parkinson, P.E.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, ID 2014–07–23

DRAIN DETAILS

1678–100–2677

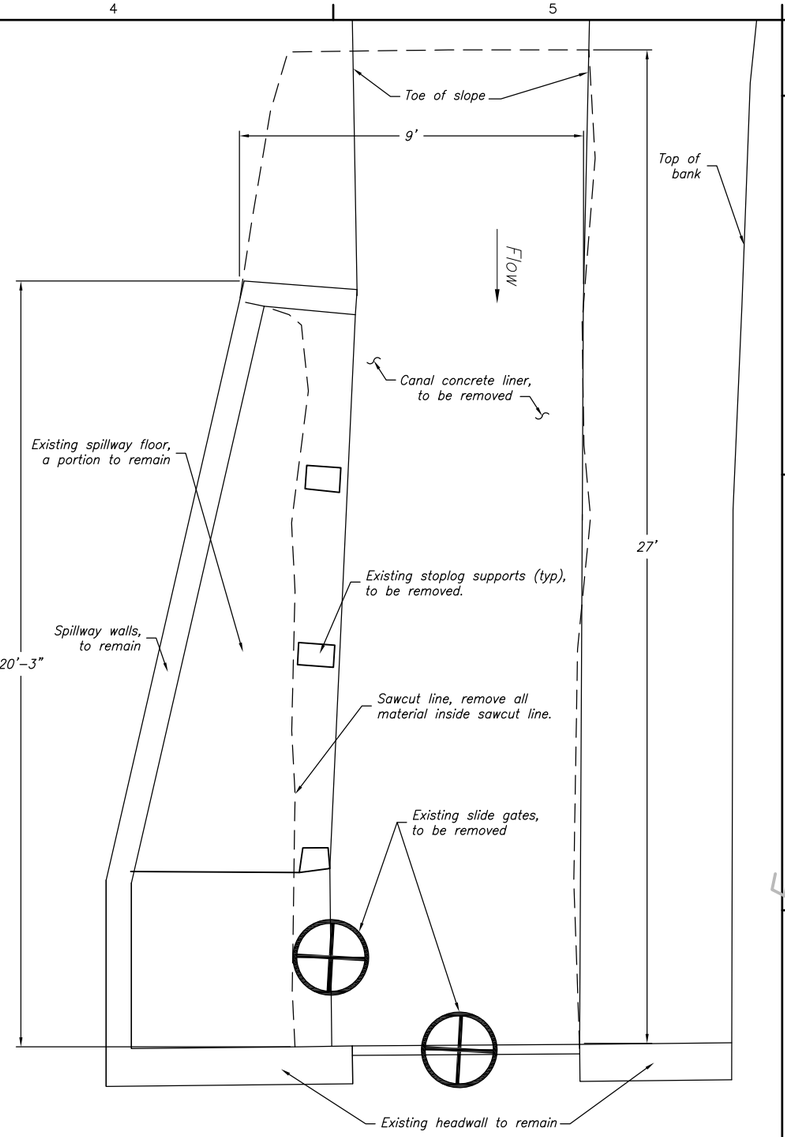
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:47
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
DRAINS.DWG

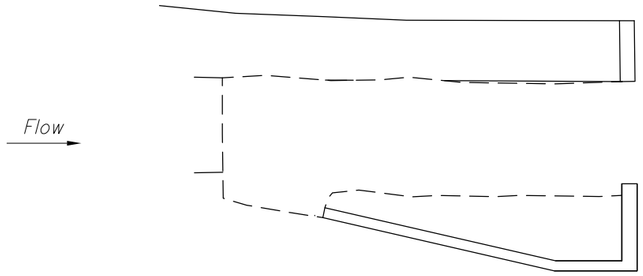
PIPE INTAKE SCREEN PLAN VIEW

10 0 10 20 30
SCALE OF FEET



EXISTING SPILL/SLUICE STRUCTURE

2 0 2 4 6
SCALE OF FEET



POST SAWCUT AND MATERIAL REMOVAL

5 0 5 10 15
SCALE OF FEET

Notes:
1. Contractor to field verify dimensions.
2. Refer to Drawing 1678-100-2678 for structure placement within sawcut area.

RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID-INSTREAM FLOW IMPROVEMENT PROJECT
EXISTING SPILL/SLUICE STRUCTURE

REV. NO

DESIGNED M. Bergstrom
DRAWN
CHECKED
TECH. APPR. NAME, PROF. ABBR.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER

BOISE, IDAHO 2014-07-23

EXISTING SPILL/SLUICE STRUCTURE

1678-100-2678

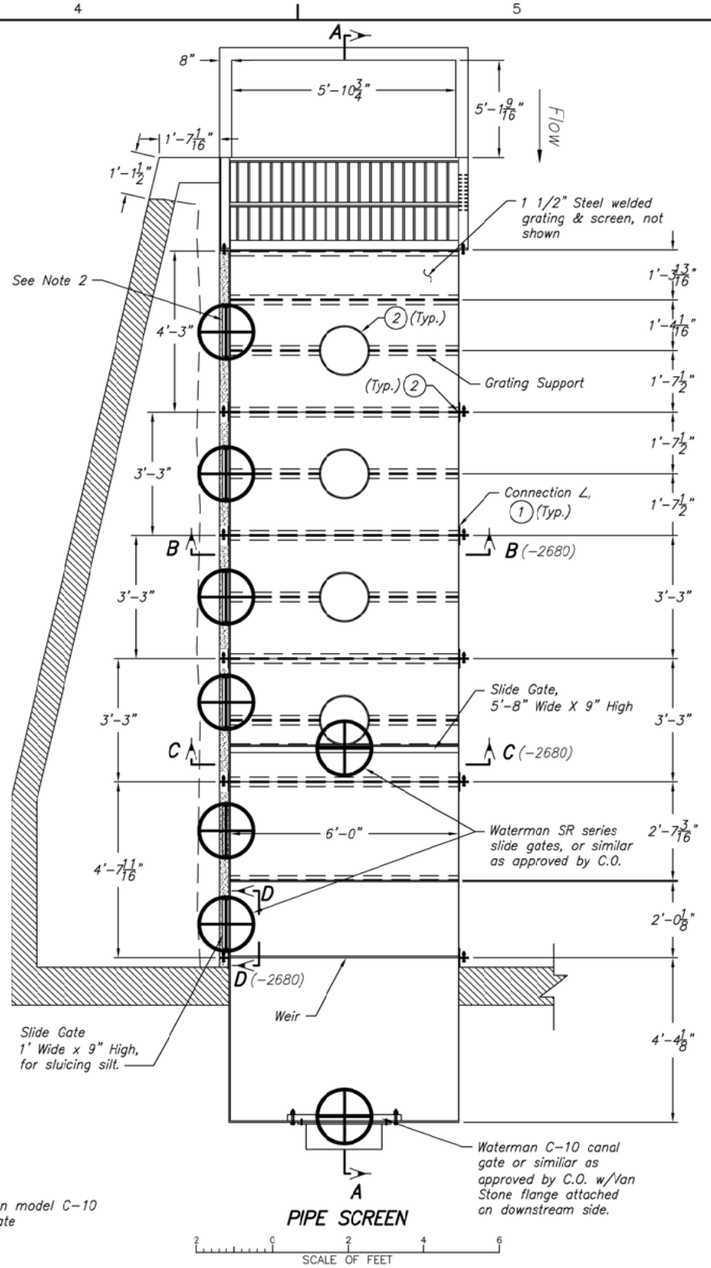
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:37
PLOTTED BY
KKORTHALS

CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
1678-100-2678.DWG

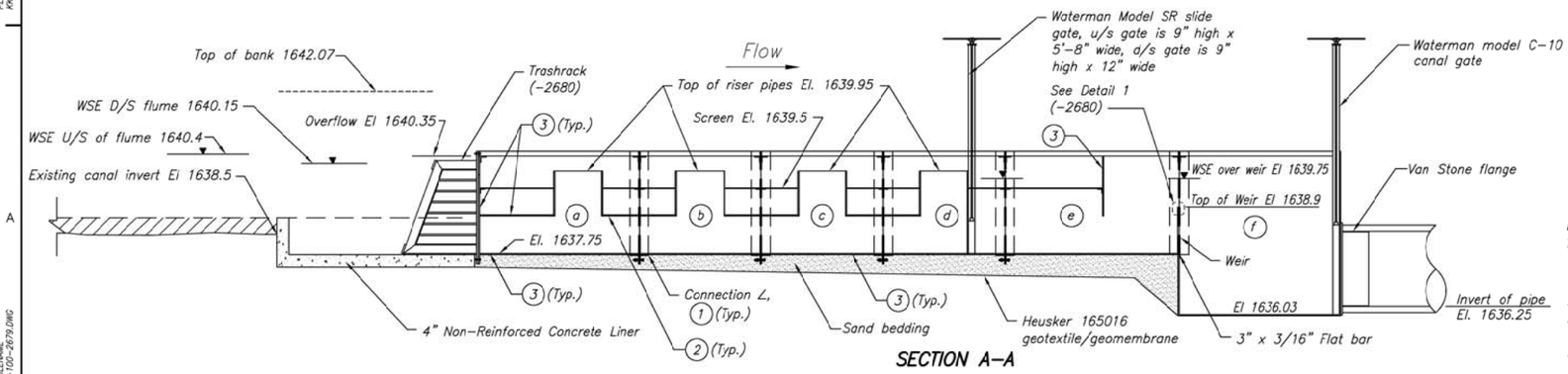
PIPE INTAKE SCREEN PLAN VIEW

SCALE OF FEET



PIPE SCREEN

SCALE OF FEET



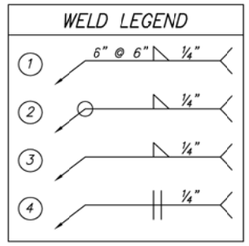
SECTION A-A

SCALE OF FEET

Notes:

1. Screen structure to be composed of 7 sections bolted together including trashrack: (a),(b),(c),(d),(e),(f)
2. 1' wide x 7" high, rectangular headgate, Typ of 5.
3. Riser pipes to be composed of 3/8" thick rolled steel plate.
4. Tap angles, drill & recess screen at 1' C.C. over all support angles. Place SS Type 302 grade phillips screws at all recessed locations.

WELD LEGEND



RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN

MVID-INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL SCREEN STRUCTURE

DESIGNED M. Bergstrom
DRAWN
CHECKED
TECH. APPR. NAME, PROF. ABBR.
ADMIN. APPROVAL
NAME: SHARON PARKINSON, P.E.
TITLE: DESIGN PROGRAM MANAGER
BOISE, IDAHO 2014-07-23

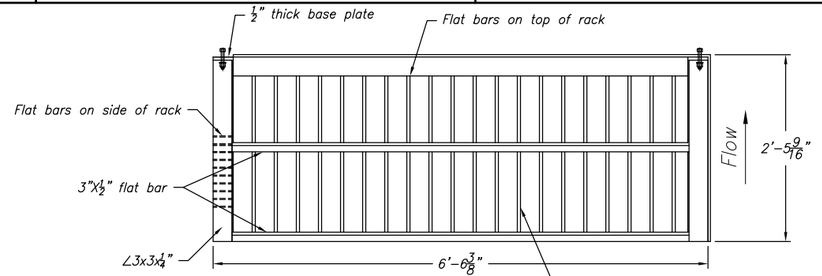
EAST CANAL SCREEN STRUCTURE

1678-100-2679

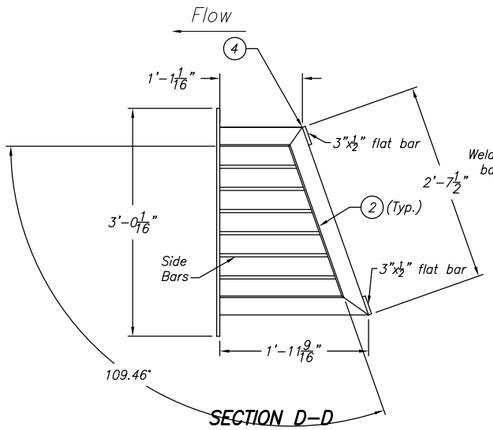
SHEET 1 OF 1

DATE AND TIME PLOTTED
JULY 28, 2014 16:43
PLOTTED BY
KKORTHALS

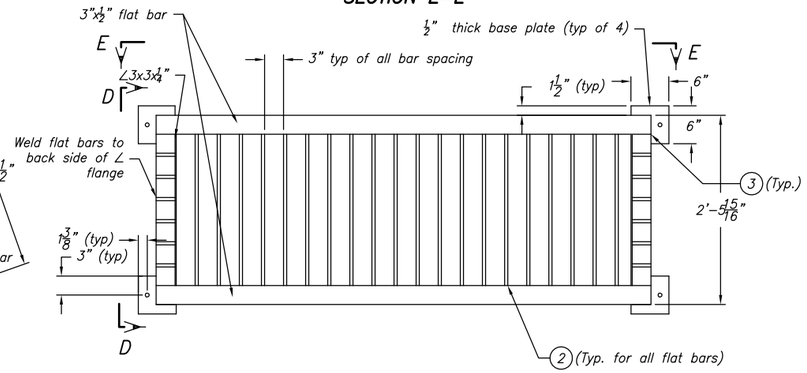
CAD SYSTEM
AutoCAD Rel. 19.1s
CAD FILENAME
1678-100-2679.DWG



SECTION E–E

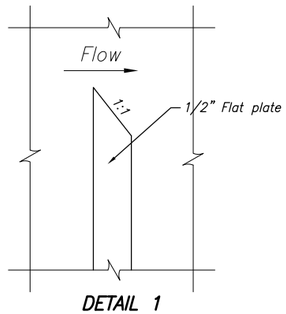


SECTION D–D

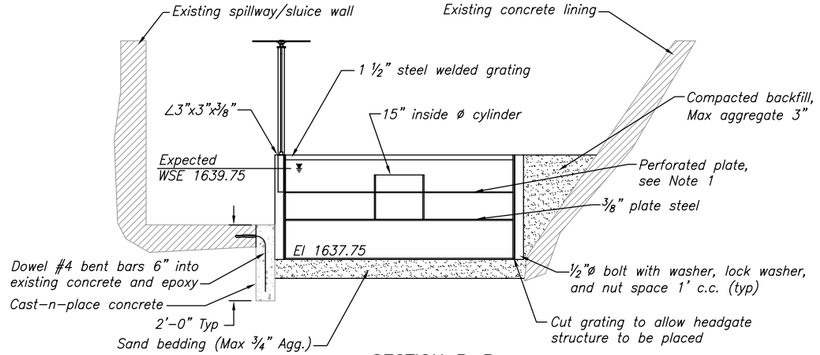


TRASHRACK – PLAN & SECTION

SCALE OF FEET

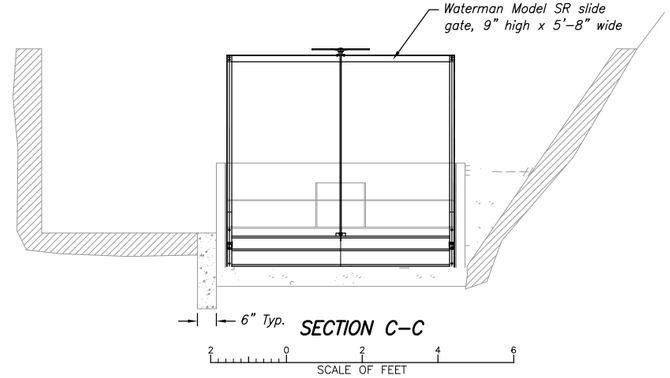


DETAIL 1



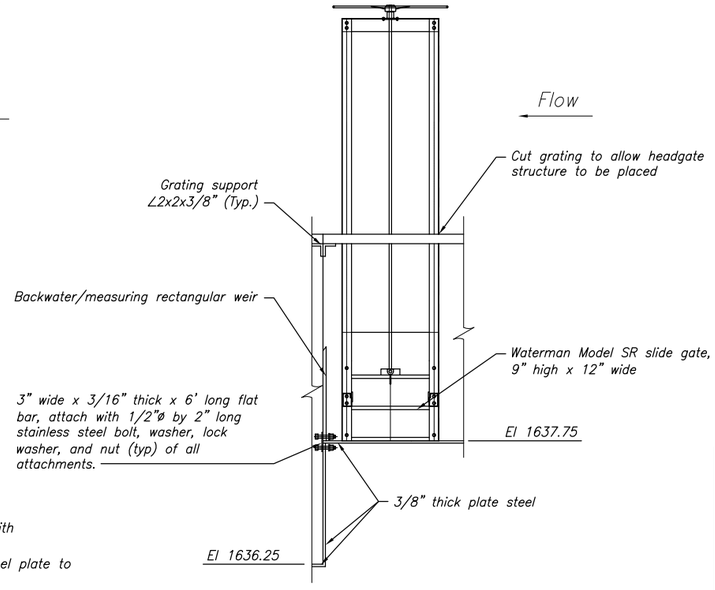
SECTION B–B

2 0 2 4 6
SCALE OF FEET



SECTION C–C

2 0 2 4 6
SCALE OF FEET



DETAIL 1

1 0 1 2 3
SCALE OF FEET

Notes:

1. 12 gauge, A304 Stainless Steel; 1/8–inch ø holes with staggered spacing, and approximately 40% open area.
2. Steel plate to be 3/8" thick for structure. Weir steel plate to be 1/2" thick.

HEAD GATE SCHEDULE		
1	9"x5'–8"	Model SR
1	24"	C–10
1	9"x12"	Model SR
5	7"x12"	Model SR

BOLT SCHEDULE		
Quantity	Size	Shape
26	1/2"ø	Hex Head

NUT SCHEDULE		
Quantity	Size	Shape
26	1/2"ø	Hex Head

WASHER SCHEDULE		
Quantity	Size	Shape
26	1/2"ø	Circular

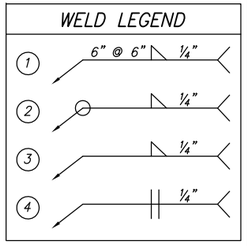
LOCK WASHER SCHEDULE		
Quantity	Size	Shape
26	1/2"ø	Circular

*Bolt assembly for gates as prescribed by manufacturer.
*Bolt assembly to be SS.

BUBBLER STRUCTURE ∠ SCHEDULE		
Quantity	Length	Shape
8	6'	∠ 3x3x1/4
1	6'	∠ 3x3x1/4
16	2'–4 5/16"	∠ 3x3x1/4
20	2'–9"	∠ 3x3x1/4
1	6'	∠ 3x3x1/4
12	6'	∠ 3x3x1/4

TRASHRACK ∠ SCHEDULE		
Quantity	Length	Shape
2	2'–7 1/2"	FB 3"x1/2"
20	2'–7 1/2"	∠ 3"x3"x1/4"
2	1'–1 1/16"	∠ 3"x3"x1/4"
2	1'–11 9/16"	∠ 3"x3"x1/4"
20	1'–1 1/16"	FB 3"x1/2"
20	1'–11 9/16"	FB 3"x1/2"
4	6'–6 3/8"	FB 3"x1/2"
2	2'–5 11/16"	FB 3"x1/2"
2	1'–0 3/16"	FB 3"x1/2"
2	1'–1 7/16"	FB 3"x1/2"
2	1'–2 11/16"	FB 3"x1/2"
2	1'–3 7/8"	FB 3"x1/2"
2	1'–5/8"	FB 3"x1/2"
2	1'–6 3/8"	FB 3"x1/2"
4	6"x6"	PL 1/2" Thick

WELD LEGEND



RECLAMATION
Managing Water in the West

ALWAYS THINK SAFETY

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE RIVER SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROJECT

METHOW SUBBASIN
MID–INSTREAM FLOW IMPROVEMENT PROJECT
EAST CANAL SCREEN STRUCTURE

REV NO

DESIGNED M. Bergstrom
DRAWN
CHECKED
TECH. APPR. NAME, PROF. ABBR.
ADMIN. APPROVAL NAME: SHARON PARKINSON, P.E. TITLE: DESIGN PROGRAM MANAGER
BOISE, IDAHO 2014–07–23

EAST CANAL SCREEN DETAILS

1678–100–2680

SHEET 1 OF 1

DATE AND TIME PLOTTED JULY 28, 2014 16:46
PLOTTED BY KKORTHALS

CAD SYSTEM AutoCAD Rel. 19.1s
CAD FILENAME 1678–100–2680.DWG