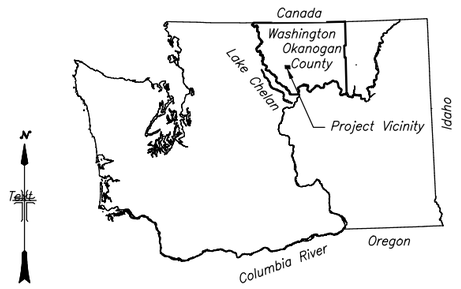
COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM
METHOW SUBBASIN
METHOW VALLEY IRRIGATION DISTRICT
INSTREAM FLOW IMPROVEMENT PROJECT
E1 LATERAL DISTRIBUTION SYSTEM



LOCATION MAP

PROJECT LOCATION:
METHOW VALLEY IRRIGATION DISTRICT, E1 LATERAL
TWISP, WA (OKANOGAN COUNTY, WA)
SECTION 17, OF TOWNSHIP 33N, RANGE 22E

PROJECT OWNER:

CONTACT: GREG NORDANG, DIRECTOR
METHOW VALLEY IRRIGATION DISTRICT
P.O. BOX 860
TWISP, WASHINGTON 98856
PHONE: (509) 997-6843

CONTRACTING AGENCY:

CONTACT: ROGER ROWATT, CONTRACTING OFFICER'S REPRESENTATIVE
WASHINGTON WATER PROJECT OF TROUT UNLIMITED
206 GLOVER STREET
P.O. BOX 1128
TWISP, WASHINGTON 98856
PHONE: (509) 699-8141
EMAIL: rrowatt@tu.org

ENGINEER:

CONTACT: JUSTIN NIELSEN, PROJECT MANGER
UNITED STATES DEPARTMENT OF INTERIOR
PACIFIC NORTHWEST REGION
1150 NORTH CURTIS ROAD, SUITE 100
BOISE, IDAHO 83706
PHONE: (208) 378-5022
EMAIL: jnielsen@usbr.gov

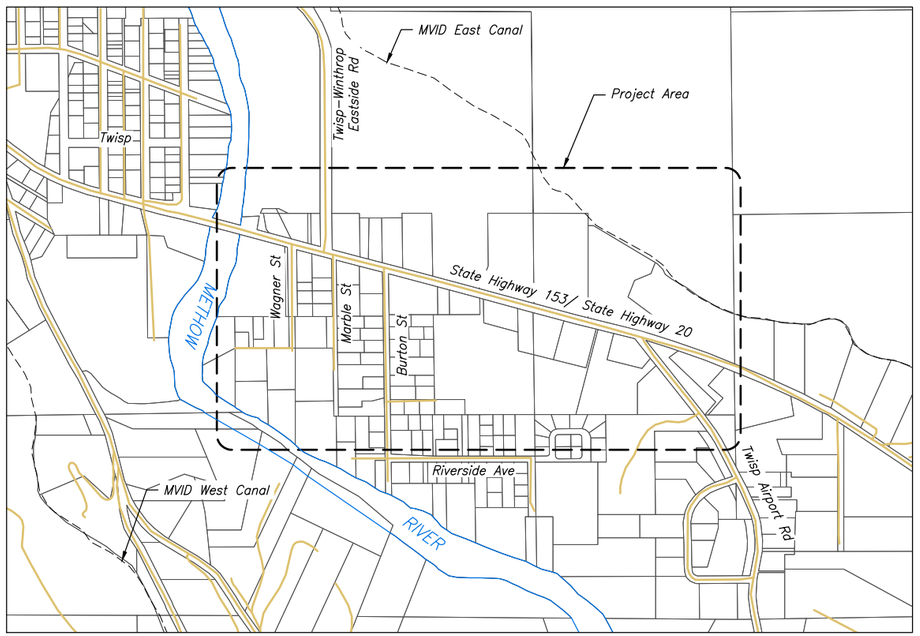
ENGINEER'S CONSULTANT:

CONTACT: DAVID RICE, P.E.
CONTACT: BOB MONTGOMERY, P.E.
ANCHOR QEA, LLC
720 OLIVE WAY, SUITE 1900
SEATTLE, WASHINGTON 98101
PHONE: (206) 287-9130
EMAIL: drice@anchorqea.com

DRAWING INDEX

SHEET NUMBER	DRAWING NUMBER	USBR DRAWING NUMBER	SHEET TITLE
1	G-1	1678-100-60010	COVER SHEET
2	G-2	1678-100-60011	OVERALL PLAN
3	G-3	1678-100-60012	GENERAL NOTES, ABBREVIATIONS, AND LEGEND
4	G-4	1678-100-60013	CONTROL POINTS
5	T-1	1678-100-60014	TEMPORARY ACCESS AND STAGING PLAN
6	T-2	1678-100-60015	TEMPORARY EROSION AND SEDIMENT CONTROL PLAN
7	T-3	1678-100-60016	TEMPORARY EROSION AND SEDIMENT CONTROL NOTES
8	T-4	1678-100-60017	TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS
9	C-1	1678-100-60018	E1 LATERAL, REACH A, PLAN AND PROFILE
10	C-2	1678-100-60019	E1 LATERAL, REACH A, PLAN AND PROFILE
11	C-3	1678-100-60020	E1 LATERAL, REACH B, PLAN AND PROFILE
12	C-4	1678-100-60021	E1 LATERAL, REACH C, PLAN AND PROFILE
13	C-5	1678-100-60022	E1 LATERAL, REACH C, PLAN AND PROFILE
14	C-6	1678-100-60023	E1 LATERAL, REACH D, PLAN AND PROFILE
15	C-7	1678-100-60024	E1 LATERAL, REACHES E AND F, PLAN AND PROFILE
16	C-8	1678-100-60025	E1 LATERAL, REACHES G AND H, PLAN AND PROFILE
17	C-9	1678-100-60026	E1 LATERAL, REACHES I AND J, PLAN AND PROFILE
18	C-10	1678-100-60027	PIPE SCHEDULE AND TYPICAL TRENCH SECTIONS
19	C-11	1678-100-60028	TYPICAL DETAILS
20	C-12	1678-100-60029	TYPICAL DETAILS
21	C-13	1678-100-60030	MISCELLANEOUS PIPELINE DETAILS

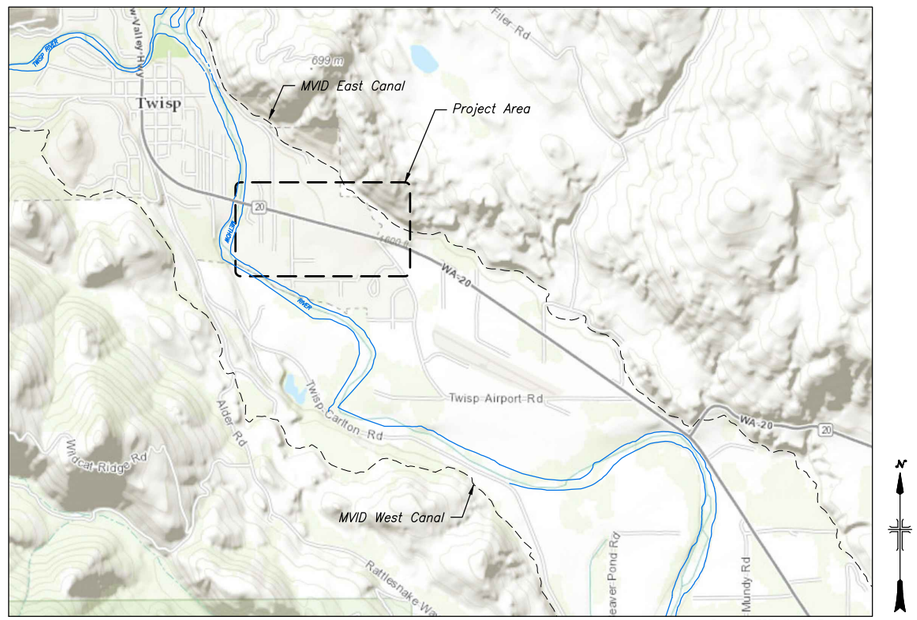
Caution: The locations of existing utilities shown on these drawings are approximate and may not be accurate or all-inclusive. The Contractor shall be responsible for locating existing utilities prior to construction. Call the Utility Locating Request Center (One-Call Center) at 811 or 1-800-424-5555 for utility locations not less than two (2) business days before the scheduled date for earthwork or trenching that may impact existing utilities.



PROJECT SITE

SCALE OF FEET: 500 0 500 1000 1500

NOTES:
1. HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 83, U.S. FEET.



Source: ESRI World Topo Map

VICINITY MAP

SCALE OF MILES: 1 0 1 2 3

RECLAMATION
Managing Water in the West

DAVID W. RICE — STATE OF WASHINGTON — 19422 — REGISTERED PROFESSIONAL ENGINEER
01/19/15

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM
METHOW SUBBASIN
E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
CHECKED _ R. MONTGOMERY
TECH. APPR. _ NAME - TITLE
APPROVED _ ADMINISTRATIVE APPROVAL - NAME - TITLE
BOISE, ID 2015-01-19

COVER SHEET

1678-100-60010
SHEET 1 OF 21

G-1

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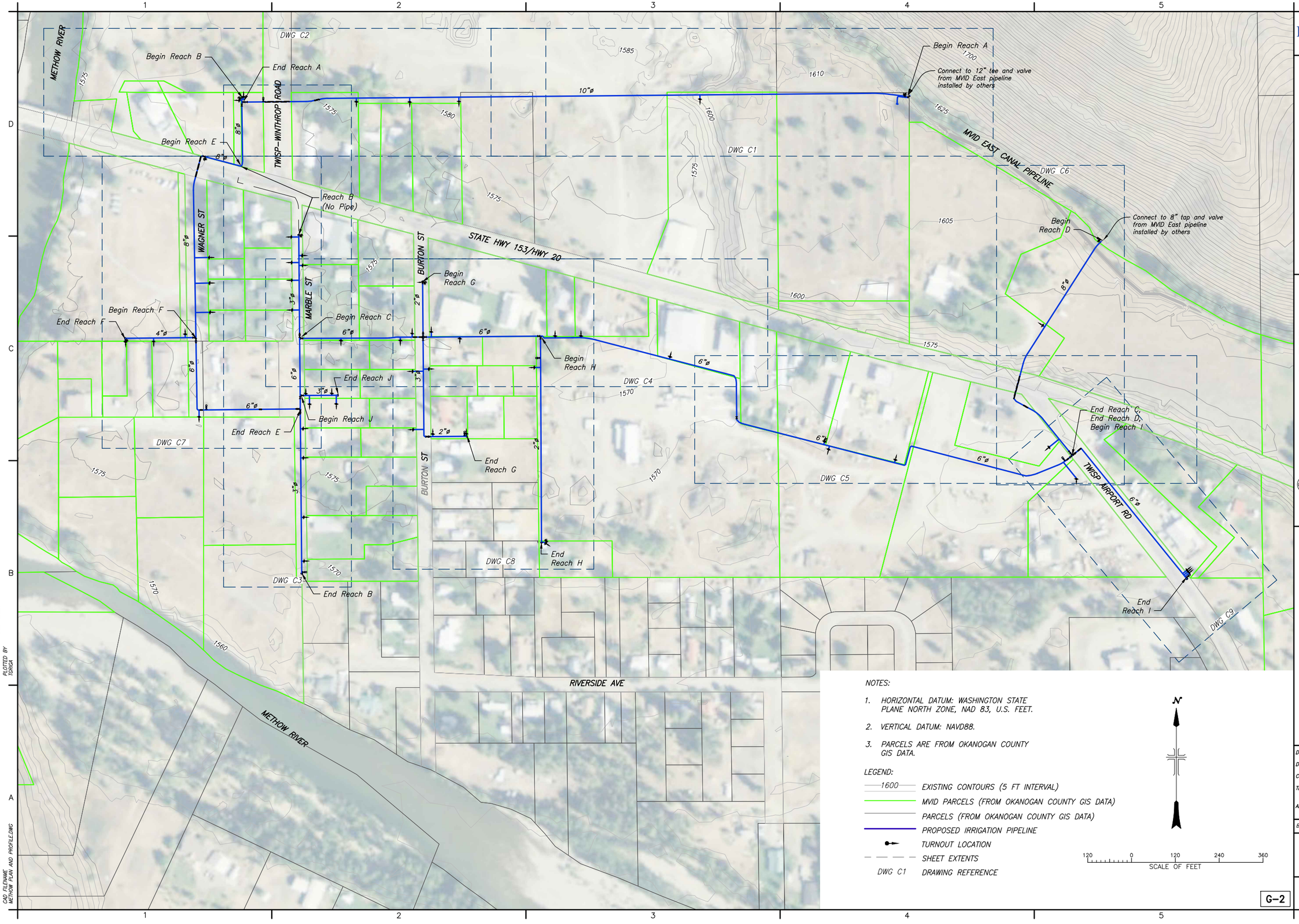
PLOTTED BY
TGRIGA



NOTES:

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NAVD88.
3. PARCELS ARE FROM OKANOGAN COUNTY GIS DATA.

LEGEND:

- 1600 — EXISTING CONTOURS (5 FT INTERVAL)
- MVID PARCELS (FROM OKANOGAN COUNTY GIS DATA)
- PARCELS (FROM OKANOGAN COUNTY GIS DATA)
- PROPOSED IRRIGATION PIPELINE
- TURNOUT LOCATION
- SHEET EXTENTS
- DWG C1 — DRAWING REFERENCE

N

120 0 120 240 360
SCALE OF FEET

G-2

RECLAMATION
Managing Water in the West

DAVID W. RICE
STATE OF WASHINGTON
16025
REGISTERED PROFESSIONAL ENGINEER
01/19/15

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APPROVED _ ADMINISTRATIVE APPROVAL - NAME - TITLE

BOISE, ID 2015-01-19

OVERALL PLAN

1678-100-60011

SHEET 2 OF 21

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TGRIGA
DATE & TIME PLOTTED
NOVEMBER 22, 2013 08:38

LEGEND (EXISTING):

- Soil
- Bedding
- Select Backfill
- Structural Fill
- Concrete
- Contour Line
- Existing Ditch Centerline
- Primary Control Point
- Found Rebar Or Iron Pipe As Notes
- Utility Pole With Underground Power
- Utility Pole
- Guy Anchor
- Power Transformer
- Phone Riser
- Fire Hydrant
- Water Meter
- Water Valve
- Water Vault
- Irrigation Control Valve
- Catch Basin
- Sewer Manhole
- Sign
- Bollards
- Tree (Evergreen)
- Tree (Deciduous)
- Fence Line
- Electric Line
- Buried Sewer Line
- Buried Water Line
- Irrigation Line
- Easement
- Parcel or Right-of-Way Boundary

LEGEND (PROPOSED):

- Gate Valve
- Reducer
- Air Release Valve Assembly
- Irrigation Pipeline
- Flush Valve Assembly
- HDPE Cap
- Turnout Location
- Pothole to Locate Existing Utility

Source of Data: Topography – Provided by USBR, as completed by Pacific Geomatic Services, December 2014.

Aerial Photography – 2011 NAIP Aerial Photo.

Parcel Boundaries – Boundaries on Overall Plan Drawing, including MVID Parcels are from Okanogan County GIS data. Parcel Boundaries, Right-of-Way Boundaries, and Easement Boundaries shown on the Plan and Profile Drawings are from a boundary survey completed by Tackman Surveying, PLLC, December 2014.

Horizontal Datum: Horizontal datum established on each control point is based on the Washington Coordinate System of 1983, North Zone (NAD 83/07) based on the Washington State Reference Network (WSRN) and measurements to WSDOT monument designated A 379 as basis of position.

Vertical Datum: Vertical datum established on each control point is based on the North American Vertical Datum of 1988 (NAVD 88) based on the WSRN and measurements to WSDOT monument designated A 379 as primary benchmark.

Scale Factor: Project grid to ground combined scale factor for this site is 1.000049652.

Surveyor Notes: All field survey work was performed between September 22 and December 3, 2014.

All underground utility locations are based on observed evidence of structures, communications paint marks set by others, and GIS information from the Town of Twisp and Okanogan County PUD.

Buried water line information provided was insufficient to locate on the survey with reasonable accuracy.

The surveyor makes no guarantee that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor does not warrant that the underground utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from the information provided.

Contour interval = 1 foot

Contractor Survey: The Contractor shall be responsible for performing survey work, as needed, to check and verify ground elevations, locations, and dimensions of existing facilities. The Contractor shall also establish control using an established benchmark to set lines and grades for the construction of the project. See Specifications for additional requirements.

GENERAL CONSTRUCTION NOTES:

1. Contract Documents refer to these drawings and the project specifications. All components of the Contract Documents shall fully apply to the work whether specifically referenced on the drawings or not. Any items not specifically referenced in the notes on the drawings shall be as described in the specifications.
2. The Contractor shall have a copy of the approved Contract Documents on the jobsite at all times.
3. A pre-construction meeting between the Contractor, Methow Valley Irrigation District, and the Contracting Officer's Representative (COR) shall be required prior to any on-site work. See Specifications for additional requirements.
4. The Contractor shall visit the job site prior to construction and shall be responsible for verifying field conditions and dimensions, and confirming that the work can be accomplished as shown on these Contract Documents. Any discrepancies between the existing field conditions and the Drawings or any inconsistencies or ambiguities between the Drawings and other Contract Documents shall be reported in writing to the COR prior to proceeding with the work. Work done by the Contractor involving such discrepancies without a written report and response from the COR shall be done at the Contractor's sole risk and expense.
5. The Contractor shall receive, in writing, authorization to proceed before starting work on any item not clearly defined or identified by the Contract Documents.
6. The Contractor shall assume sole and complete responsibility for job site conditions during the course of construction, including the safety of all persons and property. This requirement shall apply continuously and is not limited to normal working hours.
7. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work under this Contract.
8. The details provided on the Contract Documents are intended to show the final result of the design. Minor modifications may be required to suit job site dimensions or conditions. Such modifications shall be included as part of the work.
9. The Contractor shall make all necessary provisions to protect existing structures, improvements, groundwater wells, signs, fences, gates, curbs, roadways, drainage ways, culverts, and vegetation until such items are to be disturbed or removed as indicated on the Contract Documents. If such items are damaged or need to be removed or modified to facilitate construction, the Contractor shall first notify the Owner and then replace or repair the items to equal or better condition at the Contractor's expense and to the satisfaction of the Owner.
10. The Contractor shall not disturb or destroy any existing survey monument or benchmark. Any survey monument or benchmark disturbed or destroyed by the Contractor shall be replaced as directed by the COR at the Contractor's sole expense.
11. Representations of true north shall not be used to identify or establish the bearing of true north at the job site. The Contractor is advised that north arrows and orientation of the plan view sheets vary to allow for left-to-right stationing and stationing in the direction of flow.
12. Where a construction detail is not shown or noted, the detail shall be the same as for other similar work.
13. The notes, details and specifications on the Contract Documents shall take precedence over these general notes.
14. Dimension call-outs shall take precedence over scales shown on the Contract Documents.
15. Stationing, distances, and lengths shown on the Drawings are based on horizontal measurements along the pipe centerline.
16. The Contractor shall be required to control on-site storm water runoff by using temporary or permanent drainage erosion/siltation control procedures. Temporary erosion and sediment control (TESC) requirements are outlined on Drawing T-2, T-3, and T-4.
17. The Contractor shall maintain hand drawn redlines, field notes and photographs ("field documentation") of all improvements as the work progresses. The Contractor shall also take photographs and video to document conditions prior to construction. The Contractor's field documentation shall be maintained on site and shall be available for review by the Contracting Officer at all times. The Contractor shall provide field documentation to Contracting Officer for the preparation of certified record drawings prior to project acceptance.
18. These Drawings and Specifications do not validate the condition of any existing or used part of the existing irrigation system, including private irrigation systems that are supplied through the proposed improvements. Failure of any part of the existing irrigation system will be repaired at the Owner's expense.
19. These Drawings and Specifications in no way guarantee a minimum supply of water to the proposed distribution system. Operation of valves and private irrigation systems will be adjusted by MVID and individual property owner's to match available water supply.
20. See Drawings C-1 through C-9 and C-12 for turnout connection locations and requirements.
21. See Drawing C-10 for pipe materials, trenching, and backfill requirements.

STANDARD CIVIL NOTES:

1. All materials shall be new and undamaged, unless otherwise approved by the COR and the Engineer. The same manufacturer of each item shall be used throughout the work unless otherwise approved by the COR and the Engineer.
2. All site work shall be as indicated on the Contract Documents. Do not excavate and disturb beyond the clearing limits shown on the Contract Documents unless otherwise approved by the COR.
3. Rubbish, debris, and garbage shall be removed from the job site and disposed of legally, as required by the project specifications.
4. The areas of the job site disturbed by the work shall be graded smooth and protected and/or revegetated as specified herein.
5. Pipe materials shall be as indicated on the Contract Documents.

UTILITY NOTES:

1. The locations of existing utilities shown on these drawings are approximate. Where visible on the surface, utility features, such as manholes, valve covers, vaults, and utility poles, have been located as part of the topographic survey. Additional utility locations have been mapped using approximations mapped in GIS by Reclamation from utility information provided by the project stakeholders. The Contractor shall field verify utility information as indicated on the Plan and Profile Drawings.
2. Utility services have not been shown on the Plan and Profile Drawings. The Contractor shall take care not to disrupt buried utility services.
3. The Contractor shall be responsible for locating all existing utilities prior to construction. The Contractor shall contact the Utility Location Request Center (One-Call Center) at 1-800-424-5555 for utility locations not less than two (2) business days before the scheduled date for earthwork or trenching that may impact existing utilities.
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 accurately noted and placed on the Contractor's as-built drawings. See General Construction Note 17 for additional requirements related to the Contractor's as-built drawings and field documentation.
6. The Contractor shall ensure that operation of existing sewer, drainage, potable water, power, and other utility systems is not disrupted during construction without prior authorization of the utility owner and COR.

ABBREVIATIONS

ABB.	TERM
'	Feet, Minute
"	Inches, Seconds
°	Degrees
AASHTO	American Association of State Highway and Transportation Officials
APPROX	Approximate, Approximately
ASSY	Assembly
ASTM	American Society for Testing and Materials
BC	Beginning of Curve
BM	Benchmark
℄	Centerline
CDF	Controlled Density Fill
CFS	Cubic Feet Per Second
CLFMI	Chain Link Fence Manufacturers Institute
CONC	Concrete
CONT	Continued or Continuous
COR	Contracting Officer's Representative
CPLG	Coupling
CSBC	Crushed Surfacing Base Course
CSTC	Crushed Surfacing Top Course
CY	Cubic Yard
DIA	Diameter
E	East, Easting
EA	Each
EC	End of Curve
EL	Elevation
EX	Existing
FG	Finished Grade
FL	Flow line, Flange, Flanged
FT	Feet
GALV	Galvanized
GPM	Gallons Per Minute
HDPE	High Density Polyethylene
I.D.	Inside Diameter
IN.	Inch or Inches
L	Length
LF	Linear Feet
LS	Lump Sum
M.J.	Mechanical Joint
MAX	Maximum
MIN	Minimum
MVID	Methow Valley Irrigation District
N	North, Northing
NO., #	Number
O.C.	On Center
O.D.	Outside Diameter
P	Power
P.E.	Professional Engineer
PSI	Pounds Per Square Inch
PVC	Polyvinyl Chloride
Q	Flow Rate
QTY.	Quantity
R, RAD	Radius
R.O.W.	Right of Way
S	Slope, Sanitary Sewer
SPEC	Specification
STA	Station
SY	Square Yard
TESC	Temporary Erosion and Sediment Control
TU	Trout Unlimited
TYP	Typical
USBR	United States Bureau of Reclamation
W	West, Water
WSDOT	Washington State Department of Transportation

RECLAMATION
Managing Water in the West

DAVID W. RICE, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER
01/19/15

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BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN
E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED D. RICE
DRAWN T. GRIGA
CHECKED R. MONTGOMERY
TECH. APPR. NAME – TITLE
APPROVED ADMINISTRATIVE APPROVAL – NAME – TITLE

BOISE, ID 2015-01-19

GENERAL NOTES, ABBREVIATIONS, AND LEGEND

1678-100-60012

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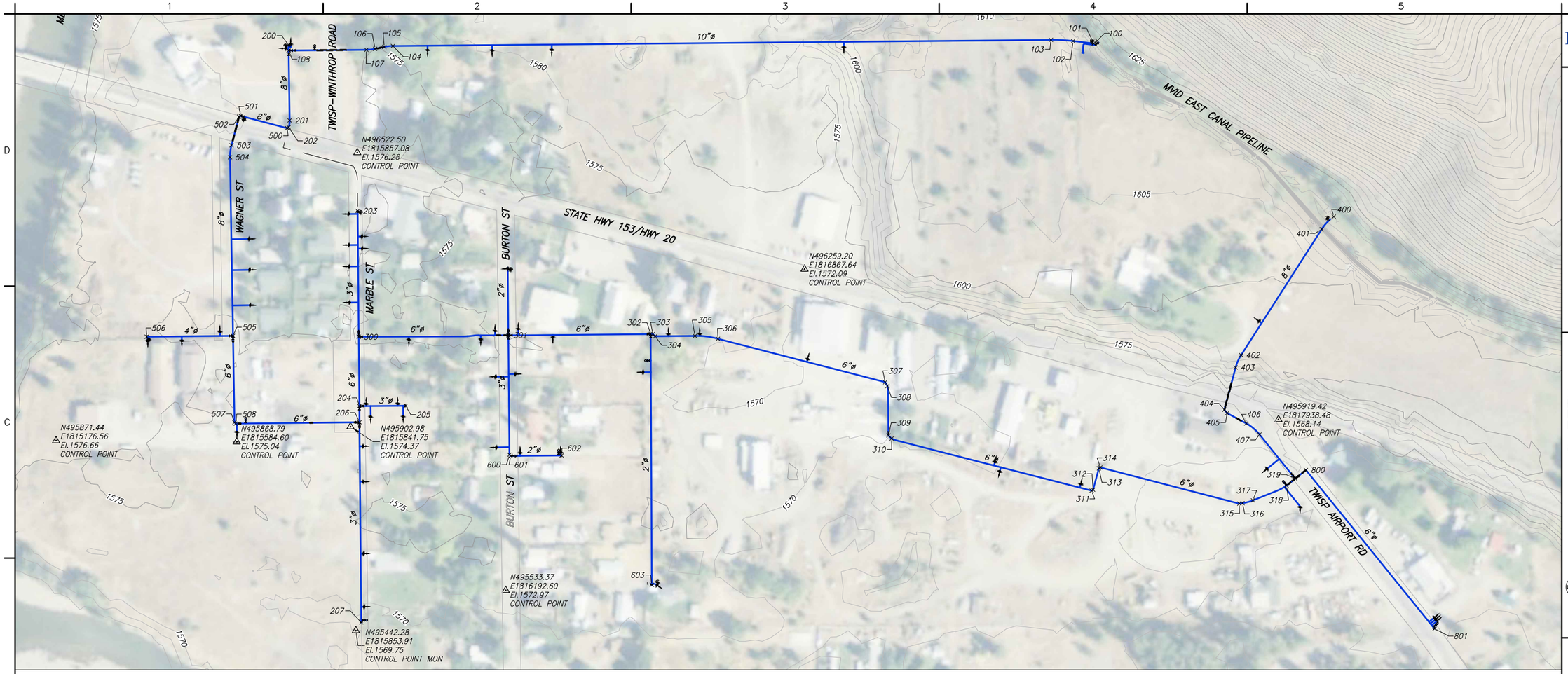

Proposed Control Point Table			
Point #	Northing	Easting	Description
100	496775.40	1817529.00	EX TEE
101	496769.19	1817521.16	45 BEND
102	496774.63	1817474.34	BC
103	496777.28	1817424.49	EC
104	496763.47	1815937.58	BC
105	496761.36	1815918.09	EC
106	496757.01	1815897.23	BC
107	496754.91	1815877.74	EC
108	496753.28	1815702.00	TEE
200	496765.83	1815701.83	CAP
201	496595.33	1815704.17	BC
202	496579.97	1815702.02	45 BEND
203	496390.70	1815857.92	CAP
204	495949.70	1815861.88	TEE
205	495950.37	1815966.17	CAP
206	495913.04	1815862.12	TEE
207	495460.88	1815866.11	CAP
300	496106.12	1815860.43	TEE
301	496109.72	1816198.41	CROSS
302	496112.32	1816520.07	TEE

Proposed Control Point Table			
Point #	Northing	Easting	Description
303	496112.36	1816525.07	45 BEND
304	496107.37	1816530.15	45 BEND
305	496108.20	1816619.96	BC
306	496101.79	1816671.96	EC
307	496003.71	1817049.89	45 BEND
308	495995.09	1817054.96	22.5 BEND
309	495883.20	1817057.25	45 BEND
310	495876.19	1817064.38	22.5 BEND
311	495758.62	1817516.25	45 BEND
312	495760.65	1817519.69	45 BEND
313	495809.03	1817532.80	45 BEND
314	495811.02	1817536.25	45 BEND
315	495729.33	1817849.90	22.5 BEND
316	495730.37	1817857.36	BC
317	495736.59	1817880.78	EC
318	495770.14	1817956.88	TEE
319	495785.73	1817976.42	TEE
400	496377.87	1818063.52	EX TEE
401	496349.29	1818036.17	EC
402	496065.04	1817854.17	BC

Proposed Control Point Table			
Point #	Northing	Easting	Description
403	496036.96	1817841.78	EC
404	495941.50	1817816.24	45 BEND
405	495933.73	1817822.54	22.5 BEND
406	495910.35	1817865.64	BC
407	495885.40	1817895.66	EC
500	496577.96	1815698.55	45 BEND
501	496605.80	1815593.42	45 BEND
502	496603.79	1815589.97	45 BEND
503	496539.22	1815572.87	BC
504	496511.95	1815569.55	EC
505	496108.41	1815576.30	TEE
506	496106.27	1815381.39	CAP
507	495912.76	1815579.58	45 BEND
508	495909.97	1815582.43	45 BEND
600	495839.84	1816200.78	45 BEND
601	495837.04	1816203.64	45 BEND
602	495838.04	1816318.77	CAP
603	495545.76	1816522.63	CAP
800	495805.25	1818000.50	90 BEND
801	495446.47	1818291.21	CAP

LEGEND:

1600 — EXISTING CONTOURS (5 FT INTERVAL)

8"ø — PROPOSED IRRIGATION PIPELINE AND SIZE

103 — CONTROL POINT

NOTES:

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NAVD88

N

120 0 120 240 360
SCALE OF FEET

G-4

RECLAMATION
Managing Water in the West

DAVID W. RICE — STATE OF WASHINGTON — 16029 — REGISTERED PROFESSIONAL ENGINEER
01/19/15

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BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
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METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
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TECH. APPR. _ NAME – TITLE
APPROVED _ ADMINISTRATIVE APPROVAL – NAME – TITLE
BOISE, ID 2015-01-19

CONTROL POINTS

1678-100-60013
SHEET 4 OF 21

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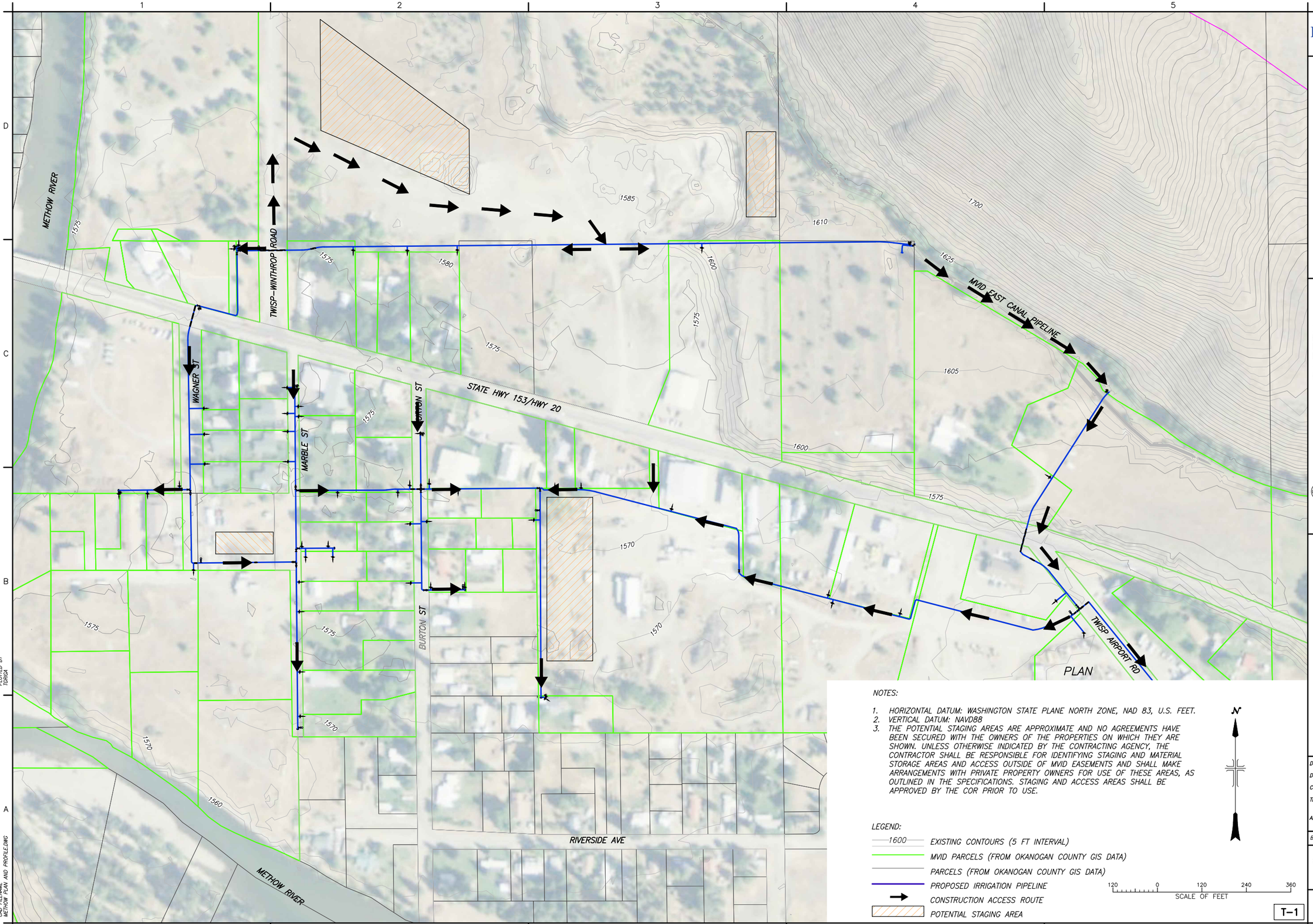
TGRIGA



PLAN

NOTES:

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NAVD88
3. THE POTENTIAL STAGING AREAS ARE APPROXIMATE AND NO AGREEMENTS HAVE BEEN SECURED WITH THE OWNERS OF THE PROPERTIES ON WHICH THEY ARE SHOWN. UNLESS OTHERWISE INDICATED BY THE CONTRACTING AGENCY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING STAGING AND MATERIAL STORAGE AREAS AND ACCESS OUTSIDE OF MVID EASEMENTS AND SHALL MAKE ARRANGEMENTS WITH PRIVATE PROPERTY OWNERS FOR USE OF THESE AREAS, AS OUTLINED IN THE SPECIFICATIONS. STAGING AND ACCESS AREAS SHALL BE APPROVED BY THE COR PRIOR TO USE.

LEGEND:

- 1600 — EXISTING CONTOURS (5 FT INTERVAL)
- MVID PARCELS (FROM OKANOGAN COUNTY GIS DATA)
- PARCELS (FROM OKANOGAN COUNTY GIS DATA)
- PROPOSED IRRIGATION PIPELINE
- CONSTRUCTION ACCESS ROUTE
- POTENTIAL STAGING AREA

N

120 0 120 240 360
SCALE OF FEET

T-1

RECLAMATION
Managing Water in the West

DAVID W. RICE
STATE OF WASHINGTON
24025
REGISTERED PROFESSIONAL ENGINEER
01/19/15

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED D. RICE
DRAWN T. GRIGA
CHECKED R. MONTGOMERY
TECH. APPR. NAME – TITLE
APPROVED ADMINISTRATIVE APPROVAL – NAME – TITLE

BOISE, ID 2015-01-19

TEMPORARY ACCESS AND STAGING PLAN

1678-100-60014

SHEET 5 OF 21

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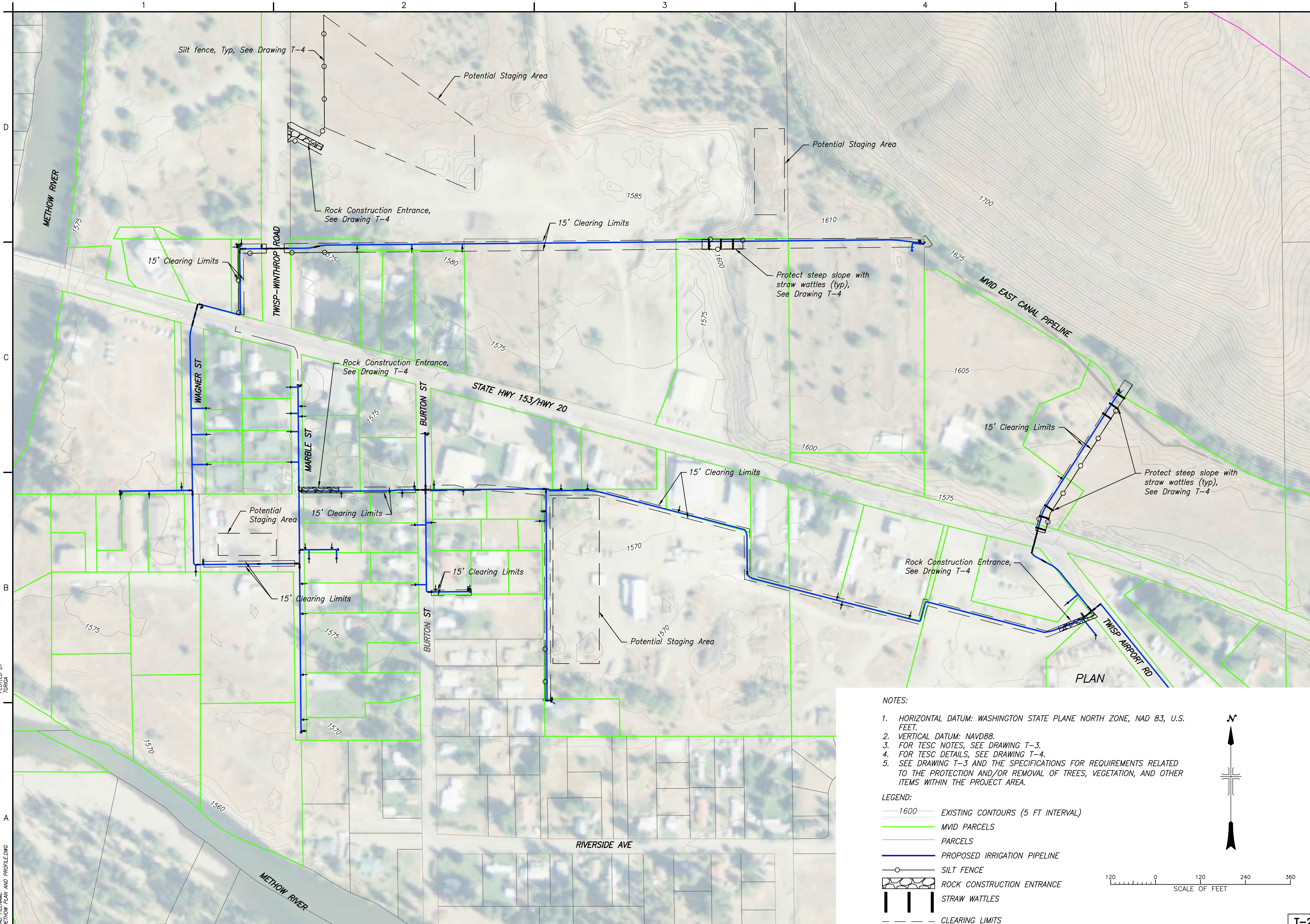
TGRIGA



NOTES:

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE NORTH ZONE, NAD 83, U.S. FEET.
2. VERTICAL DATUM: NAVD88.
3. FOR TESC NOTES, SEE DRAWING T-3.
4. FOR TESC DETAILS, SEE DRAWING T-4.
5. SEE DRAWING T-3 AND THE SPECIFICATIONS FOR REQUIREMENTS RELATED TO THE PROTECTION AND/OR REMOVAL OF TREES, VEGETATION, AND OTHER ITEMS WITHIN THE PROJECT AREA.

LEGEND:

- 1600 — EXISTING CONTOURS (5 FT INTERVAL)
- MVID PARCELS
- PARCELS
- PROPOSED IRRIGATION PIPELINE
- SILT FENCE
- ROCK CONSTRUCTION ENTRANCE
- STRAW WATTLES
- CLEARING LIMITS

T-2

RECLAMATION
Managing Water in the West

DAVID W. RICE, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER
01/19/15

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
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BOISE, ID 2015-01-19

TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

1678-100-60015

SHEET 6 OF 21

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GENERAL TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) NOTES:

1. THE CONTRACTOR SHALL PROVIDE A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL) TO MANAGE AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL FOR THE PROJECT. THE NAMED PERSON OR FIRM SHALL BE ON-SITE OR ON-CALL AT ALL TIMES.
2. THE IMPLEMENTATION OF THESE TESC DRAWINGS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
3. THE CLEARING LIMIT BOUNDARIES SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
4. THE TESC FACILITIES SHOWN ON THESE DRAWINGS MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM OR SURFACE WATER BODIES.
5. THE TESC FACILITIES SHOWN ON THESE DRAWINGS ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
6. THE TESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR-AND MAINTAINED, REPAIRED, OR AUGMENTED AS NECESSARY-TO ENSURE THEIR CONTINUED FUNCTIONING.
7. STORM DRAIN INLETS OPERABLE DURING CONSTRUCTION WITHIN THE CLEARING LIMITS OR DOWNSTREAM OF DISTURBED AREAS SHALL BE PROTECTED SO THAT STORMWATER RUNOFF DOES NOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR TREATED TO REMOVE SEDIMENT. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED AFTER CONSTRUCTION, PRIOR TO PROJECT COMPLETION AND ACCEPTANCE. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT-LADEN WATER OFFSITE WITHOUT TREATMENT.
8. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
9. FROM OCTOBER 1 THROUGH JUNE 30, NO SOILS SHALL REMAIN EXPOSED AND UNWORKED FOR MORE THAN 5 DAYS. FROM JULY 1 TO SEPTEMBER 30, NO SOILS SHALL REMAIN EXPOSED AND UNWORKED FOR MORE THAN 10 DAYS. SOILS SHALL BE STABILIZED AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST. THESE STABILIZATION REQUIREMENTS APPLY TO ALL SOILS ON SITE, WHETHER AT FINAL GRADE OR NOT. THE CONTRACTING OFFICER'S REPRESENTATIVE MAY ADJUST THESE TIME LIMITS IF IT CAN BE SHOWN THAT A DEVELOPMENT SITE'S EROSION OR RUNOFF POTENTIAL JUSTIFIES A DIFFERENT STANDARD.
10. FROM OCTOBER 1 THROUGH JUNE 30, CLEARING, GRADING, AND OTHER SOIL-DISTURBING ACTIVITIES SHALL ONLY BE PERMITTED IF SHOWN TO THE SATISFACTION OF THE LOCAL PERMITTING AUTHORITY THAT THE TRANSPORT OF SEDIMENT FROM THE CONSTRUCTION SITE TO RECEIVING WATERS WILL BE PREVENTED.
11. SOIL AND OTHER STOCKPILES MUST BE STABILIZED AND PROTECTED WITH SEDIMENT-TRAPPING MEASURES.
12. ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF STORMWATER.
13. MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES AND OTHER ACTIVITIES WHICH MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO STORMWATER RUNOFF MUST BE CONDUCTED USING SPILL PREVENTION MEASURES APPROVED BY THE CONTRACTING OFFICER'S REPRESENTATIVE. REPORT ALL SPILLS TO 911.
14. WATER FROM MOST DEWATERING OPERATIONS SHALL BE DISPERSED IN AN ADJACENT FIELD, ORCHARD, OR VACANT PROPERTY, AS APPROVED BY THE CONTRACTING OFFICER'S REPRESENTATIVE AND THE PROPERTY OWNER. THE CONTRACTOR SHALL PROTECT PRIVATE PROPERTY, EXISTING DITCHES, AND EXISTING DRAINAGE CHANNELS FROM SCOUR AND EROSION RESULTING FROM DEWATERING OPERATIONS. HIGHLY TURBID OR CONTAMINATED DEWATERING WATER SHALL BE HANDLED SEPARATELY FROM STORMWATER AND PROPERLY DISPOSED.
15. THE CONTRACTOR SHALL PRESERVE NATURAL LANDSCAPE, AND PRESERVE AND PROTECT EXISTING VEGETATION NOT REQUIRED OR OTHERWISE AUTHORIZED TO BE REMOVED, AS OUTLINED IN THE SPECIFICATIONS.
16. REPAIR OR TREAT INJURED TREES AND VEGETATION AS REQUIRED BY THE SPECIFICATIONS.
17. REMOVE AND DISPOSE OF TREES AND VEGETATION THAT ARE INJURED OR DAMAGED BEYOND SAVING AND NOT REQUIRED OR OTHERWISE AUTHORIZED FOR REMOVAL AS REQUIRED IN THE SPECIFICATIONS. REPLACE THE INJURED TREE OR SHRUB AS DIRECTED BY THE COR.

PROJECT SPECIFIC TESC NOTES:

1. THE TESC PLAN DRAWINGS SHOWN ARE CONCEPTUAL. THE CONTRACTOR IS REQUIRED TO SUBMIT DETAILED TESC PLANS AND A CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN (SWPPP) TO THE CONTRACTING OFFICER FOR APPROVAL PER THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
2. THE CONTRACTOR IS RESPONSIBLE FOR THE CARE AND DIVERSION OF WATER DURING CONSTRUCTION IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL WATER QUALITY STANDARDS AND PROJECT PERMIT REQUIREMENTS.
3. THE CONTRACTOR SHALL ENSURE NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT ANY CEMENT CONCRETE OR BY-PRODUCTS, ASPHALT CONCRETE OR BYPRODUCTS, OR ANY DISCHARGE FROM SAW CUTTING AND PLANING FROM BEING DISCHARGED INTO ANY STORM DRAIN OR SURFACE WATER SYSTEM.
4. TESC IMPLEMENTATION AND MAINTENANCE SHALL COMPLY WITH ALL PROJECT PERMIT REQUIREMENTS.
5. THE CONTRACTOR SHALL NOT FUEL EQUIPMENT OR STORE FUEL AT ELEVATIONS LOWER THAN 5 FEET ABOVE THE ORDINARY HIGH WATER (OHW) OF THE NEAREST STREAM OR SURFACE WATER BODY.
6. WASHING OF EQUIPMENT ON THE PROJECT SITE SHALL NOT BE ALLOWED UNLESS AUTHORIZED IN WRITING BY THE CONTRACTING OFFICER. SEE DRAWING T-4 AND MAINTENANCE STANDARDS FOR WHEEL WASHING AND STREET CLEANING.

CONSTRUCTION SEQUENCE:

1. SCHEDULE AND CONDUCT A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTING OFFICER'S REPRESENTATIVE, THE CONTRACTOR, SUB-CONTRACTOR SUPERINTENDENTS, THE CONTRACTOR'S CESCL, THE ENGINEER, AND LOCAL JURISDICTION REPRESENTATIVES. THIS MEETING SHALL BE HELD A MINIMUM OF 48 HOURS PRIOR TO THE START OF WORK.
2. FLAG CLEARING LIMITS AND EXISTING TREES TO REMAIN.
3. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.
4. INSTALL SILT FENCE.
5. COMPLETE CLEARING AND REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS.
6. EXCAVATE AND TRENCH FOR INSTALLATION OF DISTRIBUTION SYSTEM FACILITIES.
7. INSTALL DISTRIBUTION PIPE AND APPURTENANCES.
8. BACKFILL TRENCHES AND EXCAVATIONS AS SOON AS POSSIBLE AFTER INSTALLATION OF BURIED PIPE AND APPURTENANCES.
9. COMPLETE SURFACE REPAIR AND PLANTING.
10. DURING CONSTRUCTION, MAINTAIN AND UPGRADE TESC BMPS AS NEEDED TO PREVENT SEDIMENT FROM LEAVING THE SITE.
11. REMOVE TESC BMPS AFTER SURFACE IS REPAIRED AND/OR SEEDED AND GROWING.
12. SEQUENCE SHALL BE ADAPTED, AS NEEDED, FOR OPTIONAL ITEMS INCLUDED DURING CONSTRUCTION.

RECLAMATION
Managing Water in the West

DAVID W. RICE
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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. CRIGA
CHECKED _ R. MONTGOMERY
TECH. APPR. _ NAME - TITLE
APPROVED _ ADMINISTRATIVE APPROVAL - NAME - TITLE

BOISE, ID 2015-01-19

TEMPORARY EROSION AND SEDIMENT CONTROL NOTES

1678-100-60016

SHEET 7 OF 21

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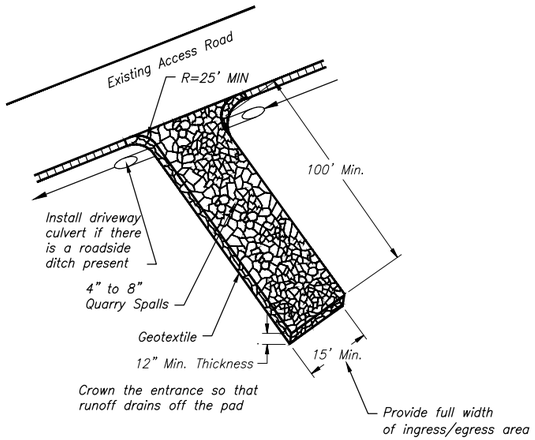
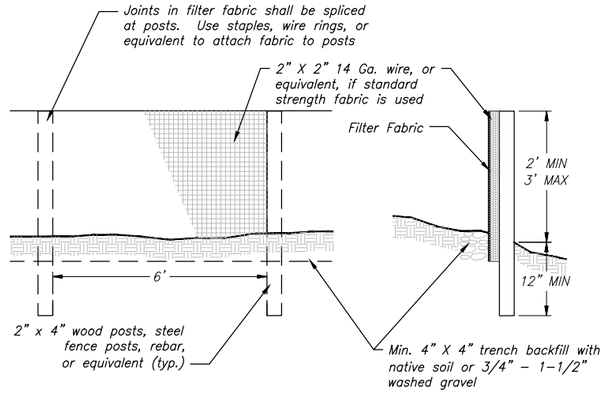


STABILIZED CONSTRUCTION ENTRANCE DETAIL

STABILIZED CONSTRUCTION ENTRANCE MAINTENANCE STANDARDS:

1. Quarry spalls (or hog fuel) shall be added if the pad is no longer in accordance with the specifications.
2. If the entrance is not preventing sediment from being tracked onto pavement, then alternative measures to keep the streets free of sediment shall be used. This may include street sweeping, an increase in the dimensions of the entrance, or the installation of a wheel wash. If washing is used, it shall be done on an area covered with crushed rock, asphalt or concrete and wash water shall drain to a sediment trap or pond. Wheel wash wastewater should not be commingled with storm water or discharged to the storm water treatment system.
3. Any sediment that is tracked onto pavement shall be removed immediately by sweeping. The sediment collected by sweeping shall be removed or stabilized on site. The pavement shall not be cleaned by washing down the street, except when sweeping is ineffective and there is a threat to public safety. If it is necessary to wash the streets, the construction of a small sump shall be considered. The sediment would then be washed into the sump where it can be controlled.
4. Any quarry spalls that are loosened from the pad and end up on the roadway shall be removed immediately.
5. If vehicles are entering or exiting the site at points other than the construction entrance(s), fencing shall be installed to control traffic.



NOTE:

Filter fabric fences shall be installed along contour whenever possible.

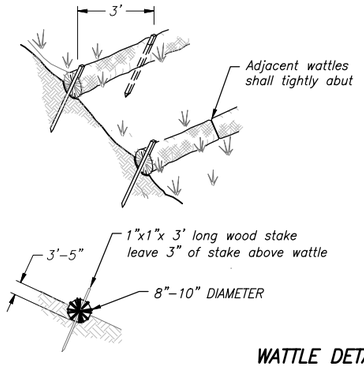
SILT FENCE DETAIL

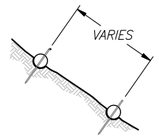
FILTER FABRIC FENCE INSTALLATION:

1. Maximum slope steepness (normal (perpendicular) to fence line): 1H:1V
2. Maximum sheet or overland flow path length to the fence: 100 feet
3. No concentrated flows greater than 0.5 cfs.
4. Filter Fabric: Mirafi 100x, or approved equal
5. The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid use of joints. when joints are necessary, filter cloth shall be spliced together only at a support post, with a minimum 6–inch overlap, and both ends securely fastened to the post.
6. Posts shall be spaced a maximum of 6 feet apart and driven securely into the ground a minimum of 18 inches. A minimum depth of 12 inches is allowed if topsoil or other soft soil is not present and a minimum depth of 18 inches cannot be reached. Fence post depths shall be increased by 6 inches if the fence is located on slopes of 3:1 or steeper.
7. A trench shall be excavated approximately 4 inches wide and 4 inches deep along the line of posts and upslope from the barrier. The trench shall be constructed to follow the contour.
8. A wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy–duty wire staples at least 1 inch long, tie wires or hog rings. The wire shall extend into the trench a minimum of 4 inches and shall not extend more than 36 inches above the original ground surface.
9. The filter fabric shall be wired to the fence, and 4 inches of the fabric shall extend into the trench. The fabric shall not extend more than 36 inches above the original ground surface.
10. Filter fabric shall not be stapled to existing trees. Other types of fabric may be stapled to the fence.

MAINTENANCE STANDARDS:

1. Any damage shall be repaired immediately.
2. If concentrated flows are evident uphill of the fence, they must be intercepted and conveyed to a sediment trap or pond.
3. It is important to check the uphill side of the fence for signs of the fence clogging and acting as a barrier to flow and then causing channelization of flows parallel to the fence. if this occurs, replace the fence or remove the trapped sediment.
4. Sediment must be removed when the sediment is 6 inches high.
5. If the filter fabric (geotextile) has deteriorated due to ultraviolet breakdown, it shall be replaced.





SPACING VARIES SEE CHART BELOW

WATTLE DETAIL

WATTLE SPACING TABLE	
SLOPE	MAX. SPACING
1H:1V	10'
2H:1V	20'
3H:1V	30'
4H:1V	40'

WATTLE NOTES:

1. Straw wattles must be placed continuously along slope contours.
2. Run–off must not be allowed to run under or around installed wattle.
3. Horizontal spacing depends on slope steepness.
4. Drive stakes perpendicularly into slope.
5. Install wattles from bottom of slope and work upward.
6. Wattles may require maintenance to ensure they are in contact with the soil and thoroughly entrenched, especially after storm events.
7. Inspect the slope after storm events and repair any areas where the wattles are not tightly butted together or water has scoured beneath the wattles.
8. Wattles shall not contain plastic.

RECLAMATION
Managing Water in the West

DAVID W. RICE — STATE OF WASHINGTON — 18429 — REGISTERED PROFESSIONAL ENGINEER
01/19/15

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BOISE, ID 2015–01–19

TEMPORARY EROSION AND SEDIMENT CONTROL DETAILS

1678–100–60017

SHEET 8 OF 21

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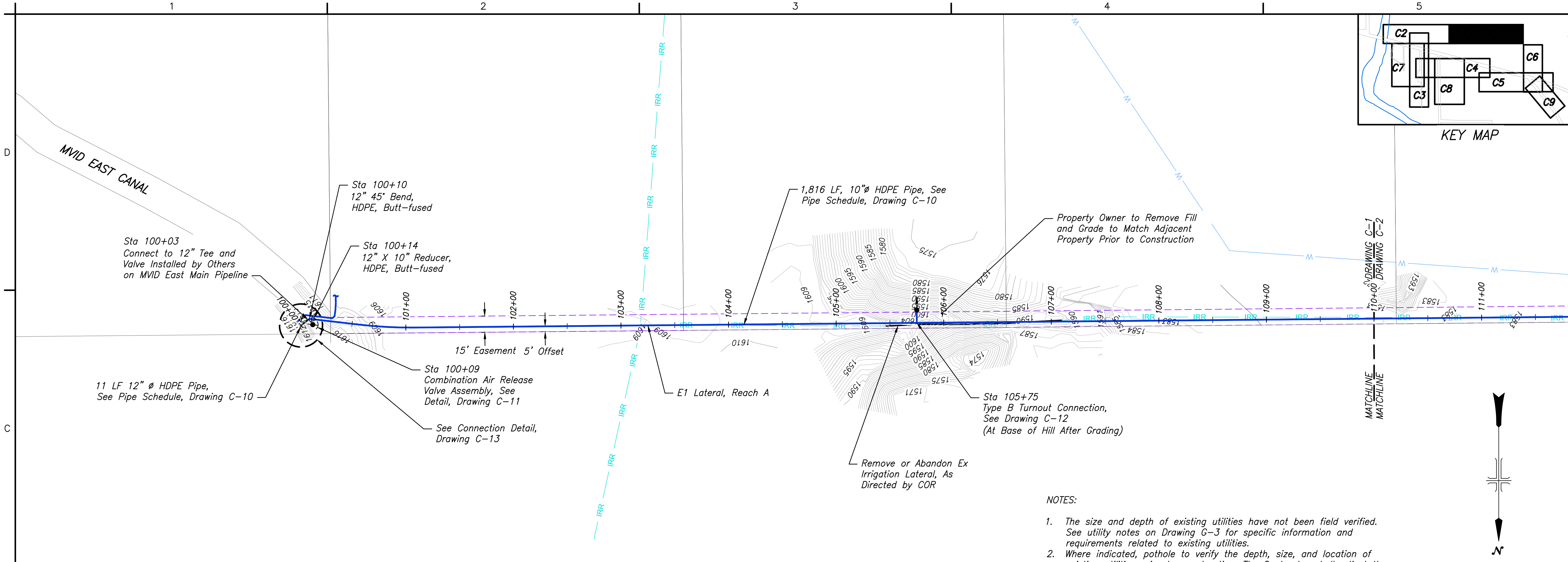
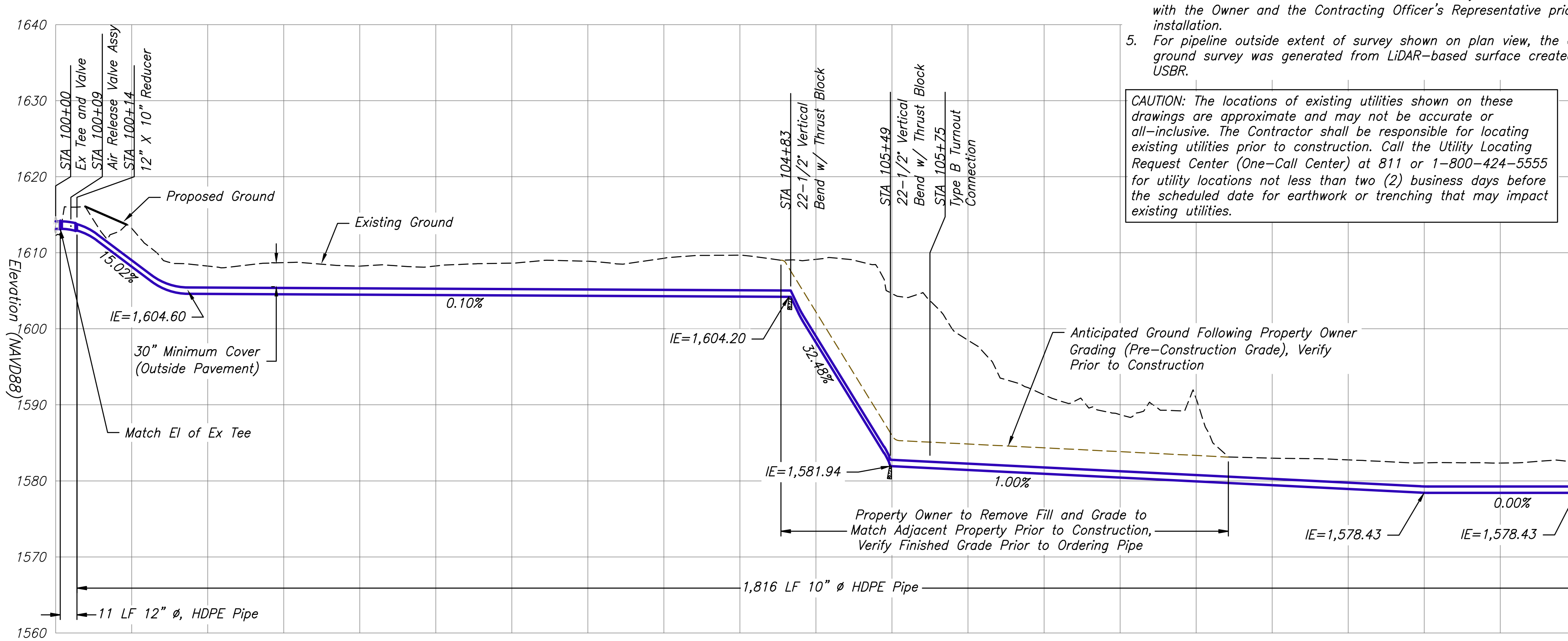


PLAN, REACH A, STA 100+00 TO STA 110+00

NOTES:

1. The size and depth of existing utilities have not been field verified. See utility notes on Drawing G–3 for specific information and requirements related to existing utilities.
2. Where indicated, pothole to verify the depth, size, and location of existing utilities prior to construction. The Contractor shall adjust the alignment and profile of proposed irrigation pipelines to protect existing utilities, as directed by the Contracting Officer's Representative.
3. See Drawing C–10 for typical trench sections and pavement repair requirements.
4. The Owner shall stake all turnout locations, Verify turnout locations with the Owner and the Contracting Officer's Representative prior to installation.
5. For pipeline outside extent of survey shown on plan view, the existing ground survey was generated from LiDAR–based surface created by USBR.

CAUTION: The locations of existing utilities shown on these drawings are approximate and may not be accurate or all–inclusive. The Contractor shall be responsible for locating existing utilities prior to construction. Call the Utility Locating Request Center (One–Call Center) at 811 or 1–800–424–5555 for utility locations not less than two (2) business days before the scheduled date for earthwork or trenching that may impact existing utilities.



PROFILE, REACH A, STA 100+00 TO STA 110+00

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Managing Water in the West

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E1 LATERAL, REACH A, PLAN AND PROFILE

1678–100–60018

SHEET 9 OF 21

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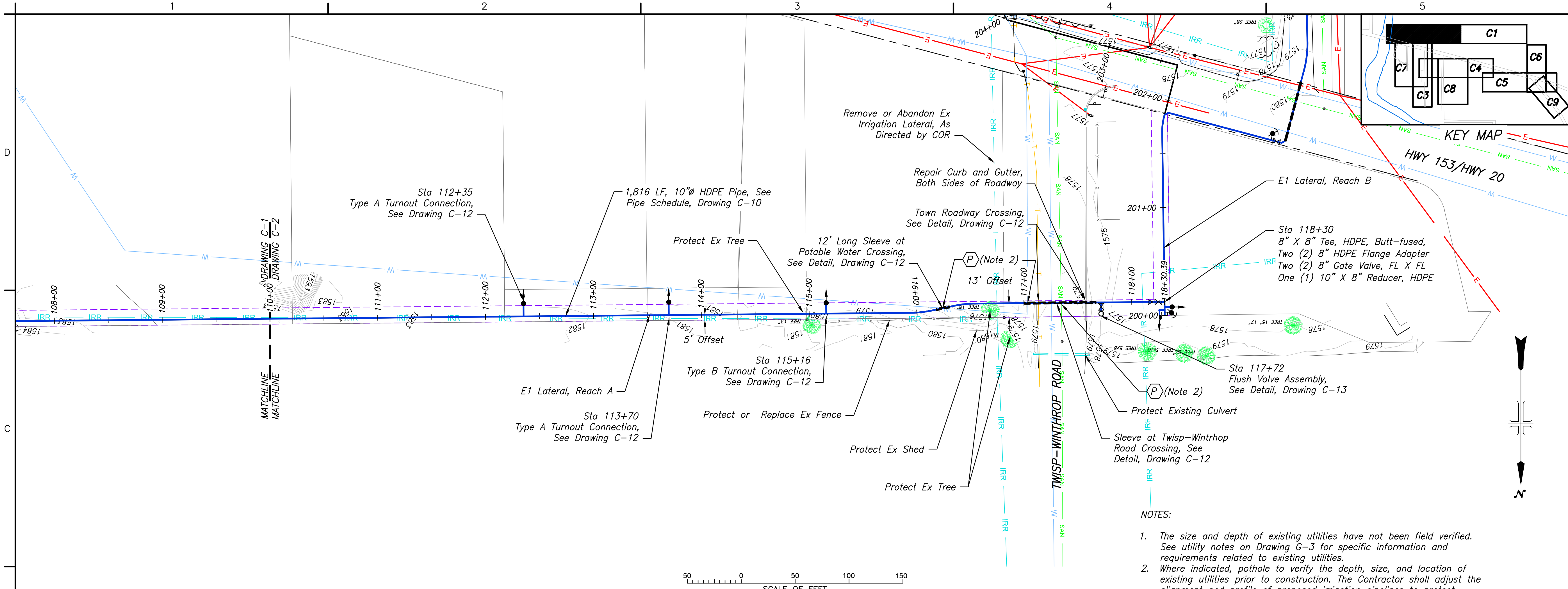

PLAN, REACH A, STA 110+00 TO STA 118+30

NOTES:

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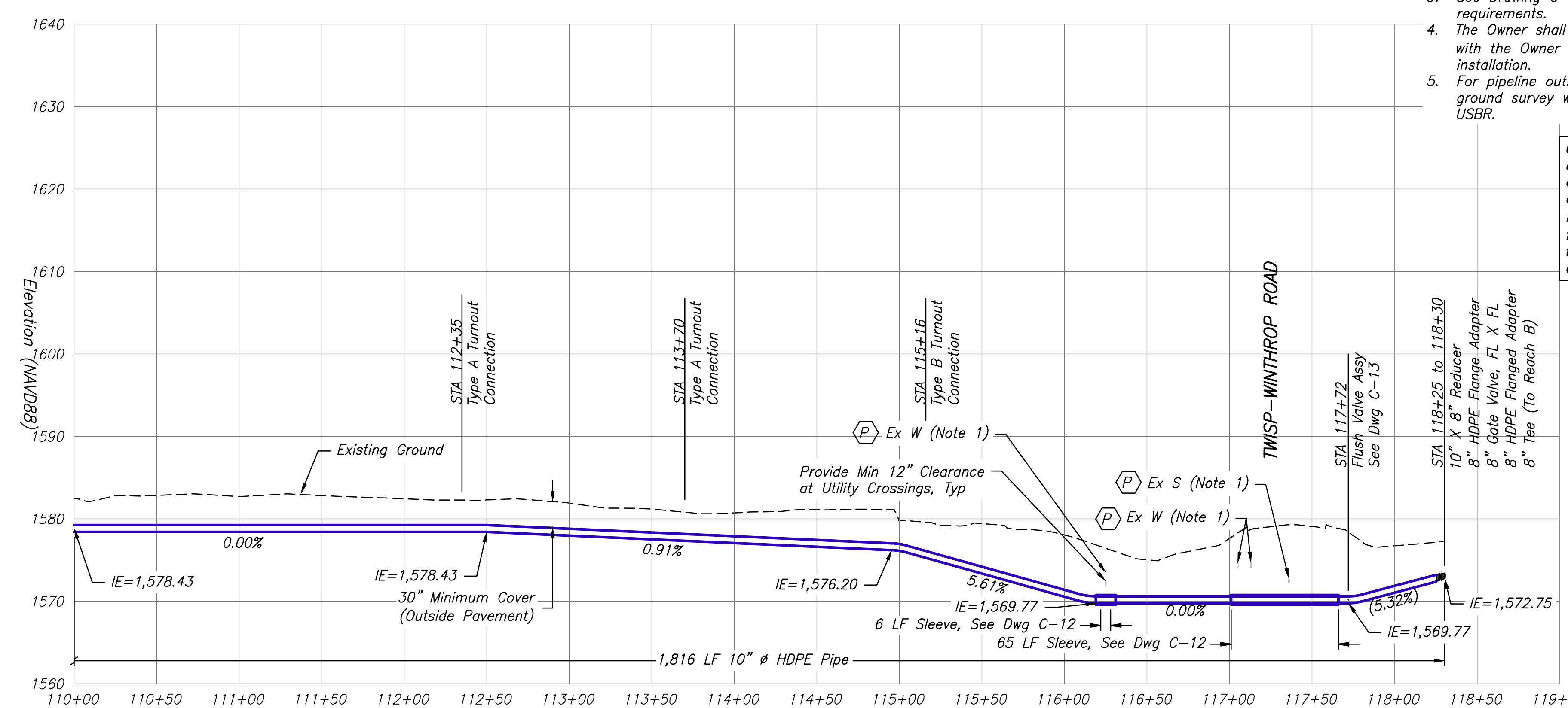

PROFILE, REACH A, STA 110+00 TO STA 118+30

RECLAMATION
Managing Water in the West

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E1 LATERAL, REACH A, PLAN AND PROFILE

1678-100-60019

SHEET 10 OF 21

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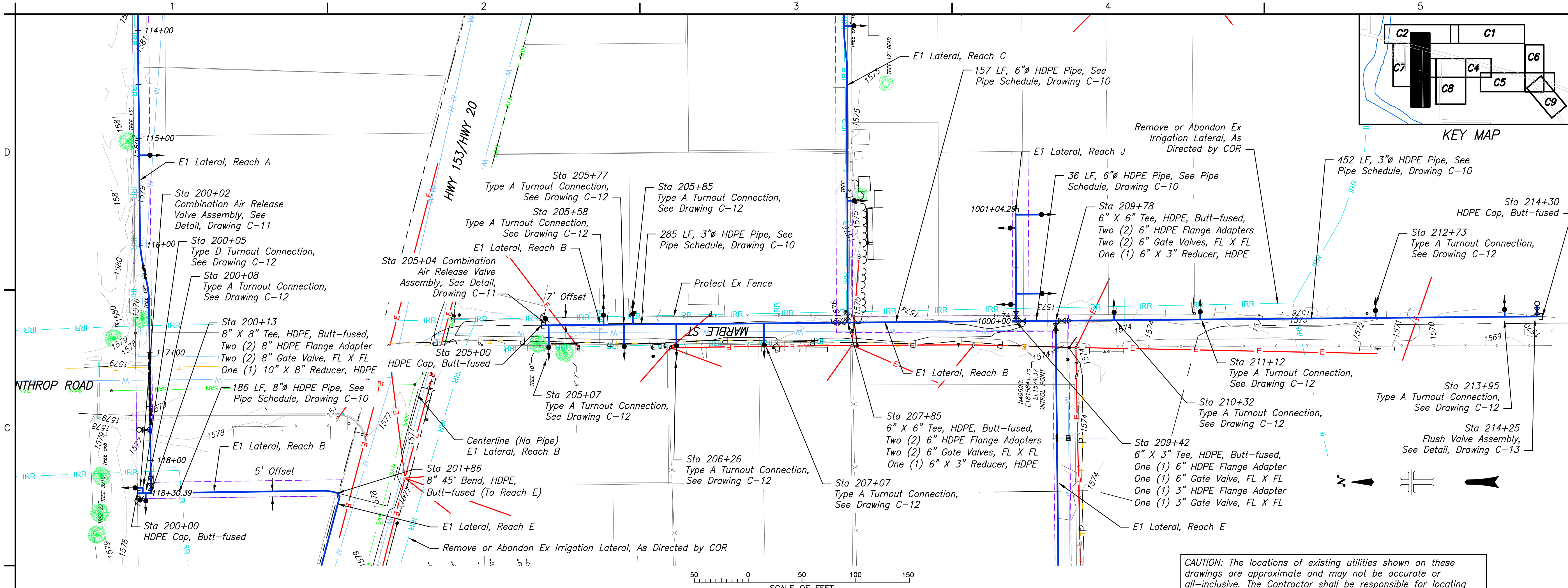

PLAN, REACH B, STA 200+00 TO 214+30

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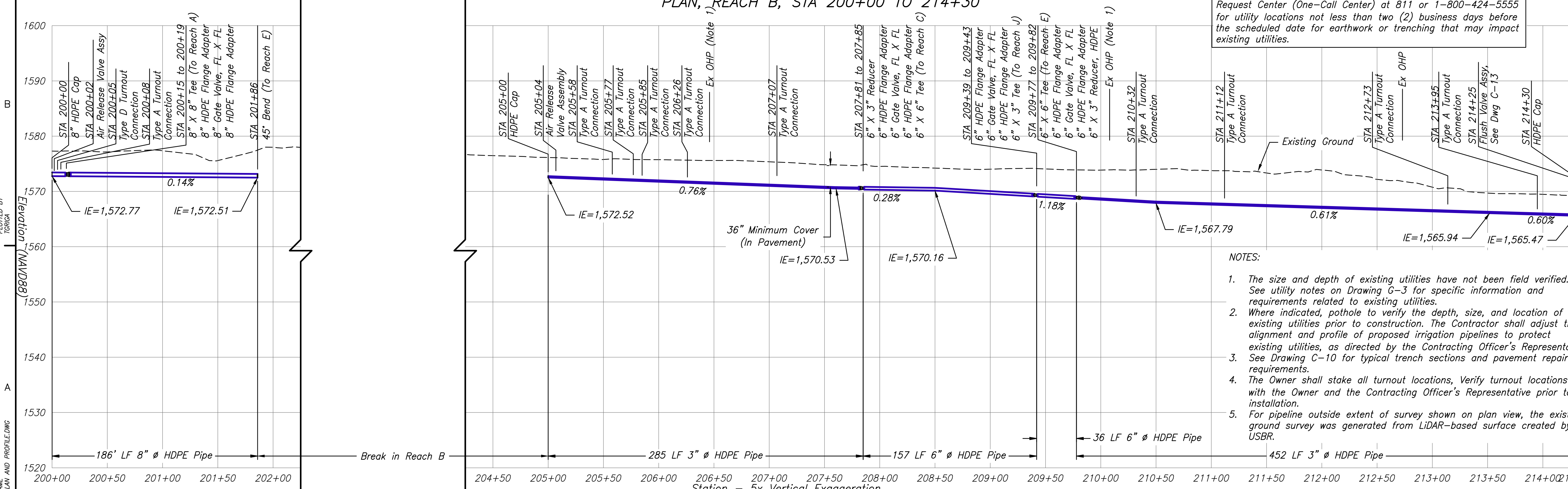

NOTES:

1. The size and depth of existing utilities have not been field verified. See utility notes on Drawing G-3 for specific information and requirements related to existing utilities.
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PROFILE, REACH B, STA 200+00 TO 214+30

RECLAMATION
Managing Water in the West

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM
METHOW SUBBASIN
E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED D. RICE
DRAWN T. GRIGA
CHECKED R. MONTGOMERY
TECH. APPR. NAME – TITLE
APPROVED ADMINISTRATIVE APPROVAL – NAME – TITLE
BOISE, ID 2015-01-19

E1 LATERAL, REACH B,
PLAN AND PROFILE

1678-100-60020

C-3

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DATE AND TIME PLOTTED NOVEMBER 22, 2013 08:38
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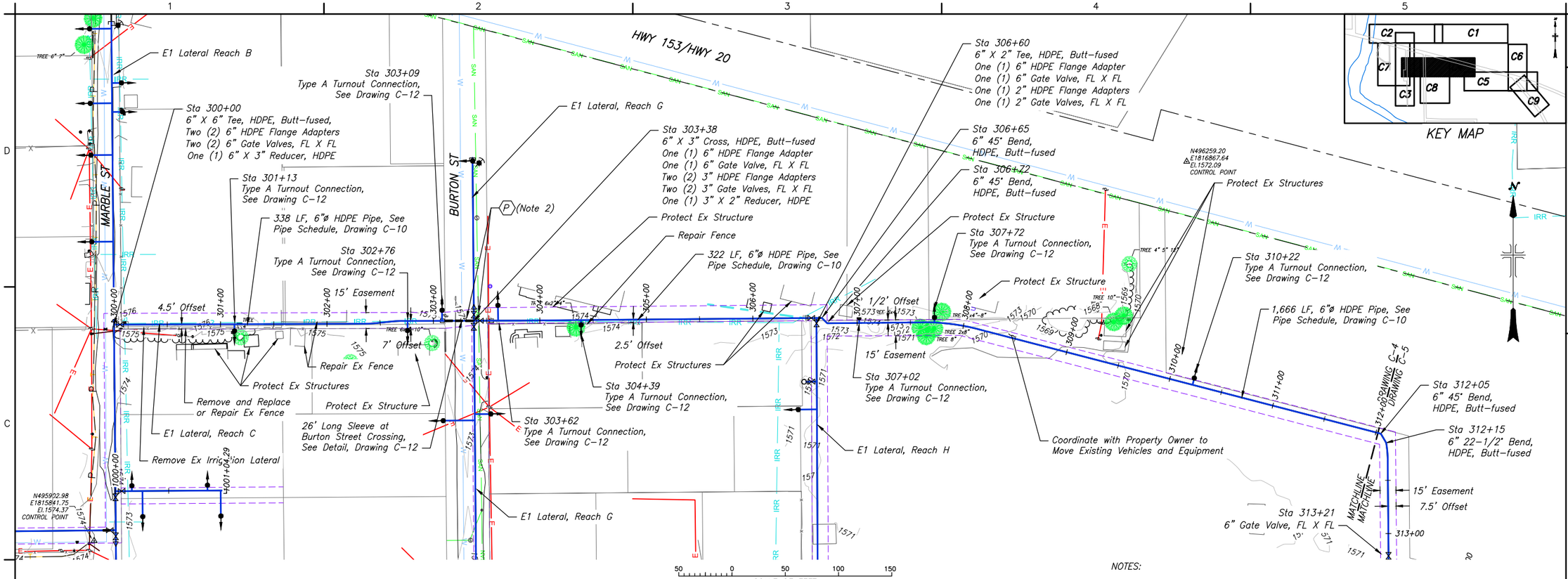
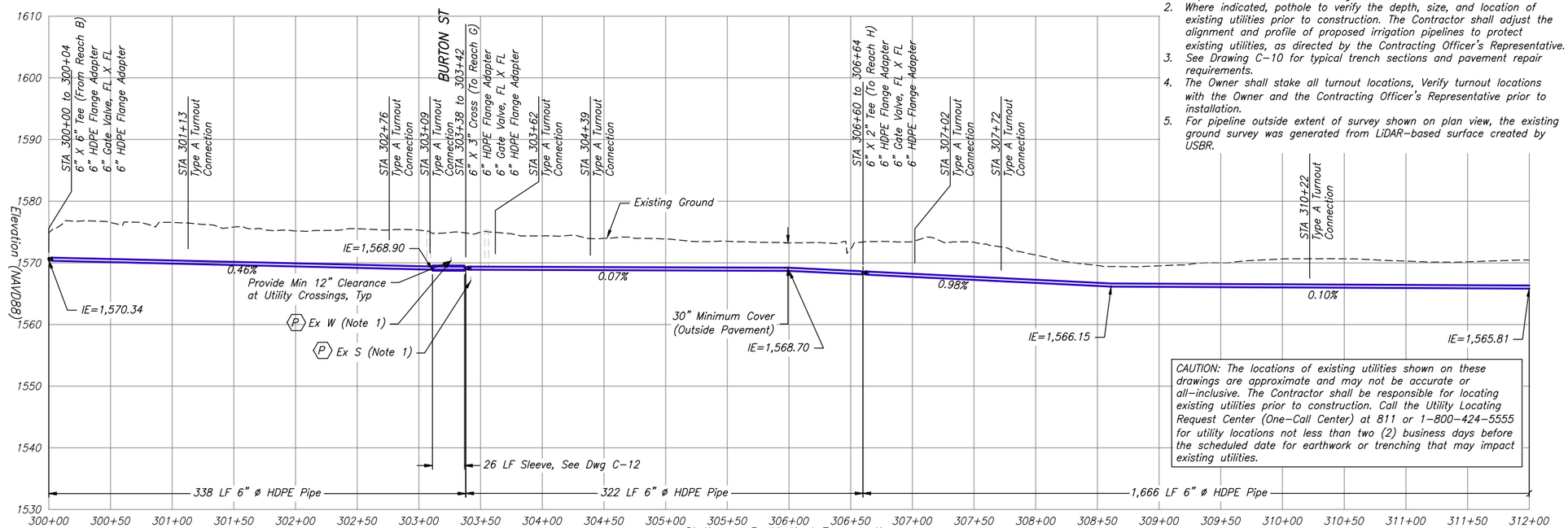
CAD SYSTEM AutoCAD Rel. 19.0s
CAD FILENAME METHOW PLAN AND PROFILE.DWG



PLAN, REACH C, STA 300+00 TO 312+00



PROFILE, REACH C, STA 300+00 TO 312+00

NOTES:

1. The size and depth of existing utilities have not been field verified. See utility notes on Drawing G-3 for specific information and requirements related to existing utilities.
2. Where indicated, pothole to verify the depth, size, and location of existing utilities prior to construction. The Contractor shall adjust the alignment and profile of proposed irrigation pipelines to protect existing utilities, as directed by the Contracting Officer's Representative.
3. See Drawing C-10 for typical trench sections and pavement repair requirements.
4. The Owner shall stake all turnout locations, Verify turnout locations with the Owner and the Contracting Officer's Representative prior to installation.
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RECLAMATION
Managing Water in the West

DAVID W. RICE
STATE OF WASHINGTON
14402
REGISTERED
PROFESSIONAL ENGINEER
01/19/15

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN
E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
CHECKED _ R. MONTGOMERY
TECH. APPR. _ NAME - TITLE
APPROVED _ ADMINISTRATIVE APPROVAL - NAME - TITLE
BOISE, ID 2015-01-19

E1 LATERAL, REACH C,
PLAN AND PROFILE

1678-100-60021
SHEET 12 OF 21

C-4

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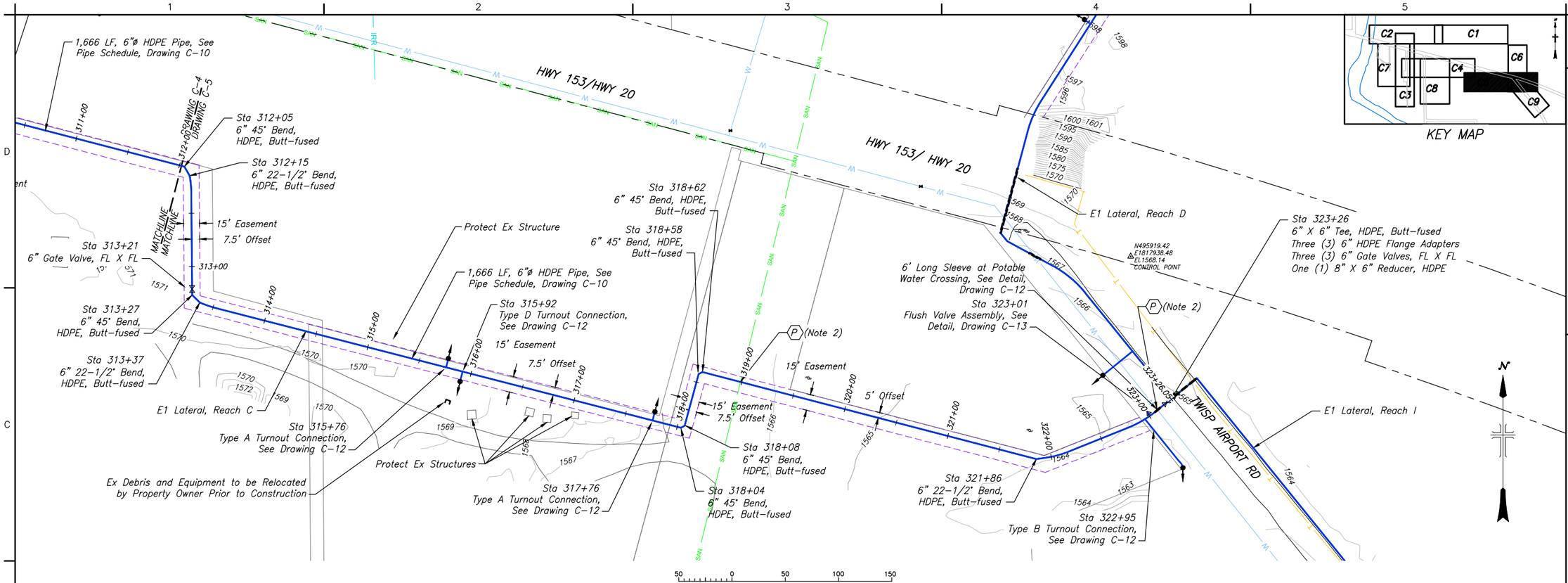
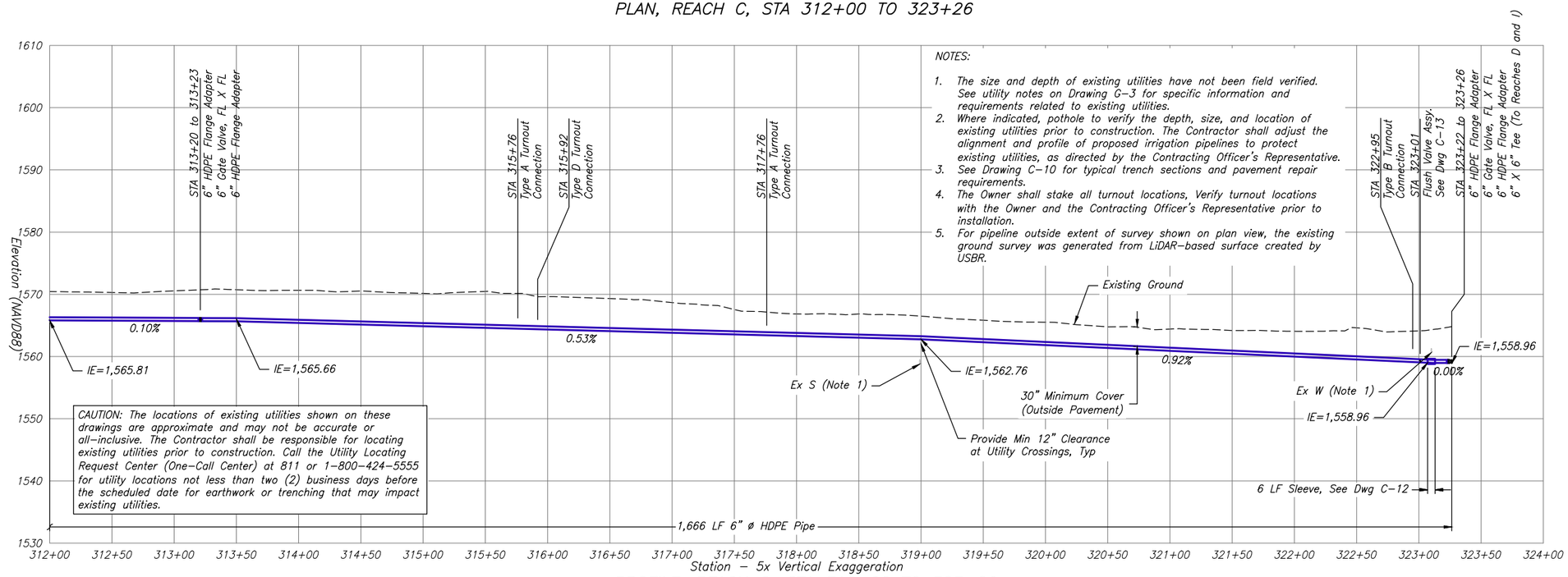
NOVEMBER 22, 2013 08:38
PLOTTED BY
TGRIGA



PLAN, REACH C, STA 312+00 TO 323+26



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PROFILE, REACH C, STA 312+00 TO 323+26

RECLAMATION
Managing Water in the West

DAVID W. RICE
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16025
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BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
CHECKED _ R. MONTGOMERY
TECH. APPR. _ NAME – TITLE
APPROVED _ ADMINISTRATIVE APPROVAL – NAME – TITLE
BOISE, ID 2015-01-19

E1 LATERAL, REACH C, PLAN AND PROFILE

1678-100-60022

SHEET 13 OF 21

C-5

Jan 19, 2015 3:47pm tgriga
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NOVEMBER 22, 2013 08:38
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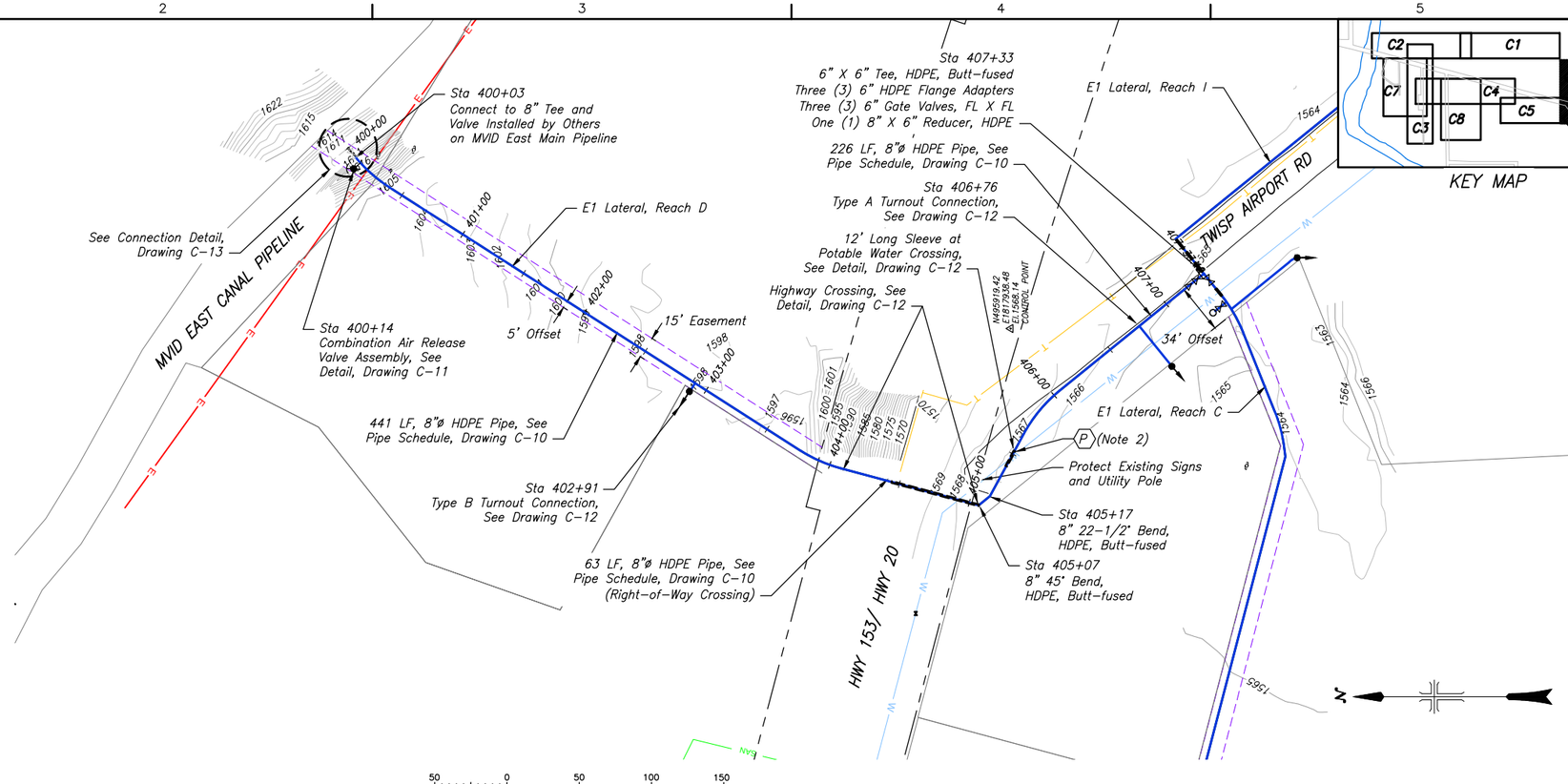
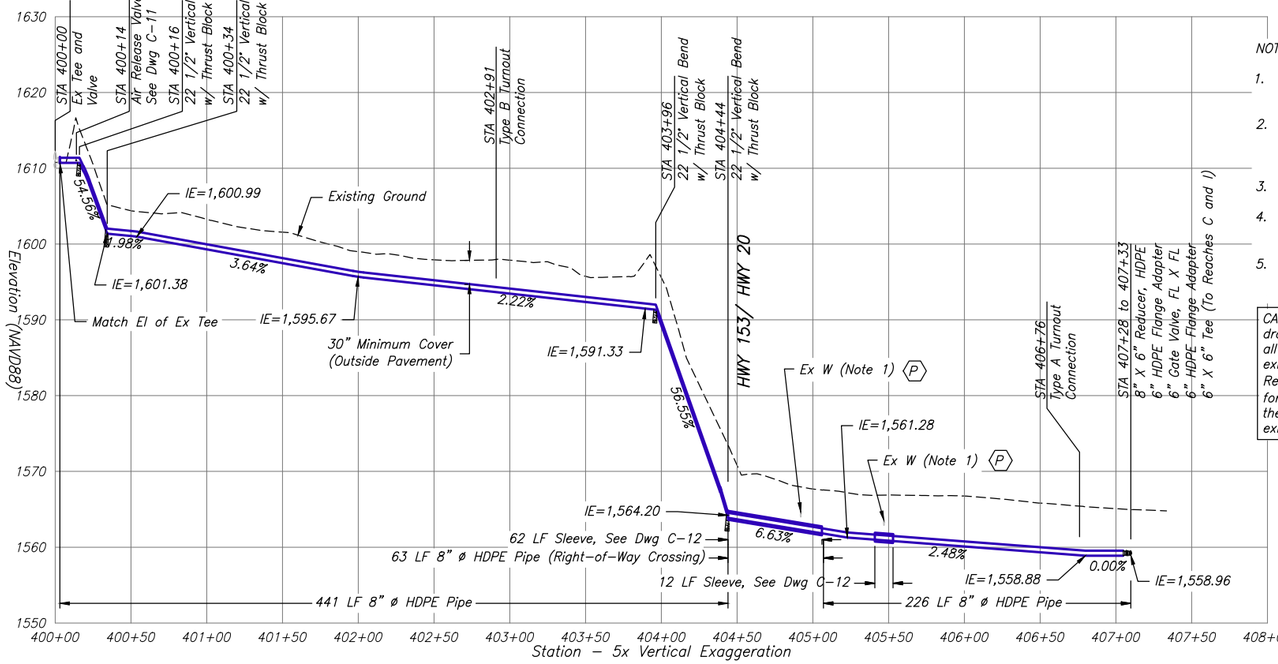
TGRIGA





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RECLAMATION
Managing Water in the West

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COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
CHECKED _ R. MONTGOMERY
TECH. APPR. _ NAME – TITLE
APPROVED _ ADMINISTRATIVE APPROVAL – NAME – TITLE

BOISE, ID 2015-01-19

E1 LATERAL, REACH D, PLAN AND PROFILE

1678-100-60023

SHEET 14 OF 21

C-6

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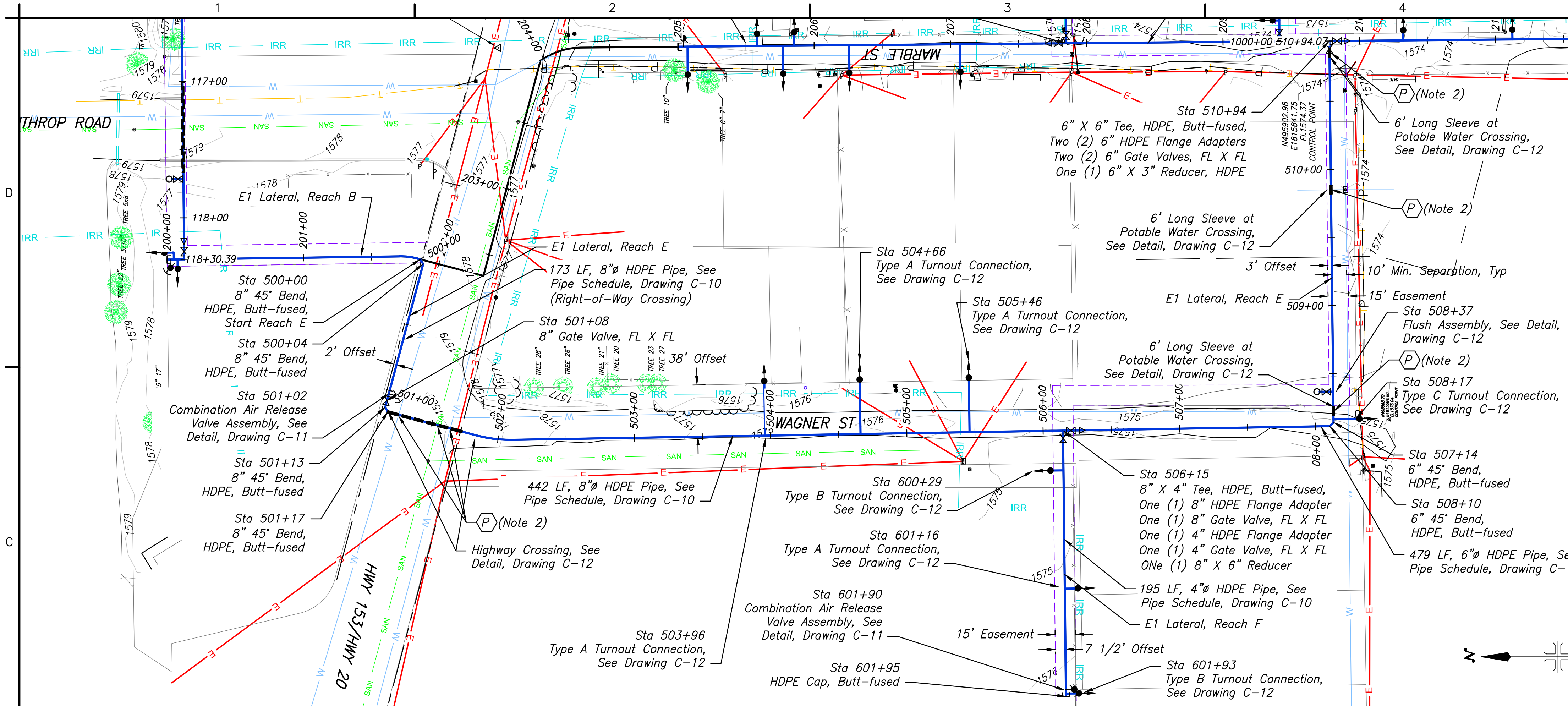
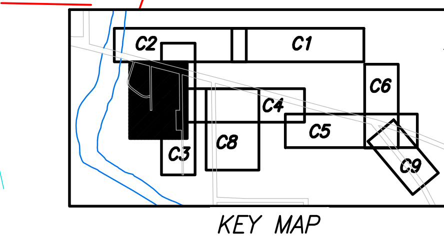
TGRIGA



PLAN, REACH E, STA 500+00 TO 510+94 AND REACH F, STA 600+00 TO 601+95



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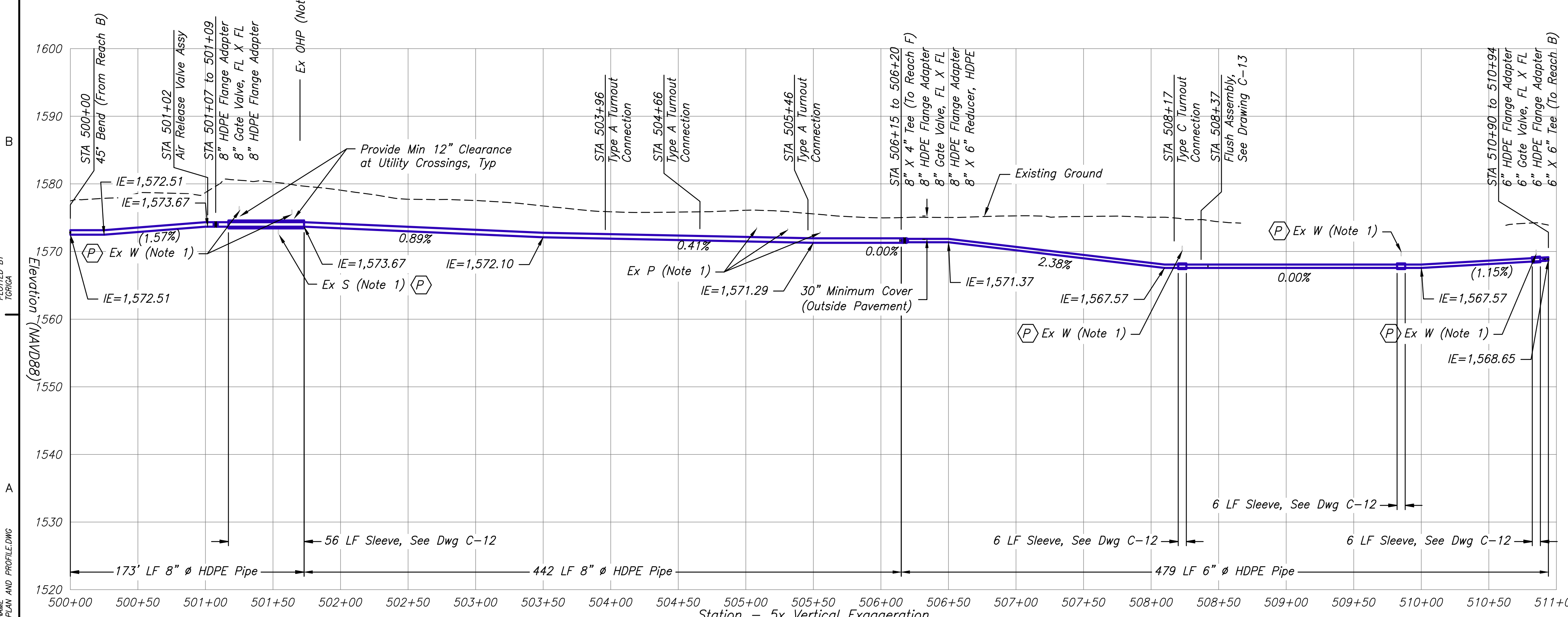
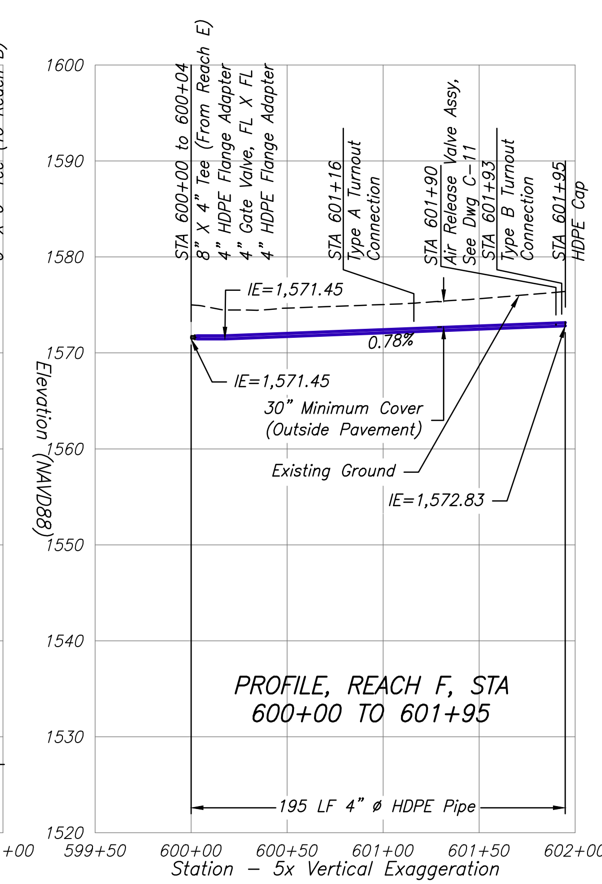


PROFILE, REACH E, STA 500+00 TO 510+94



PROFILE

C-7

RECLAMATION
Managing Water in the West

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BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN
E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED D. RICE
DRAWN T. GRIGA
CHECKED R. MONTGOMERY
TECH. APPR. NAME – TITLE
APPROVED ADMINISTRATIVE APPROVAL – NAME – TITLE

BOISE, ID 2015-01-19

E1 LATERAL, REACHES E AND F, PLAN AND PROFILE

1678-100-60024

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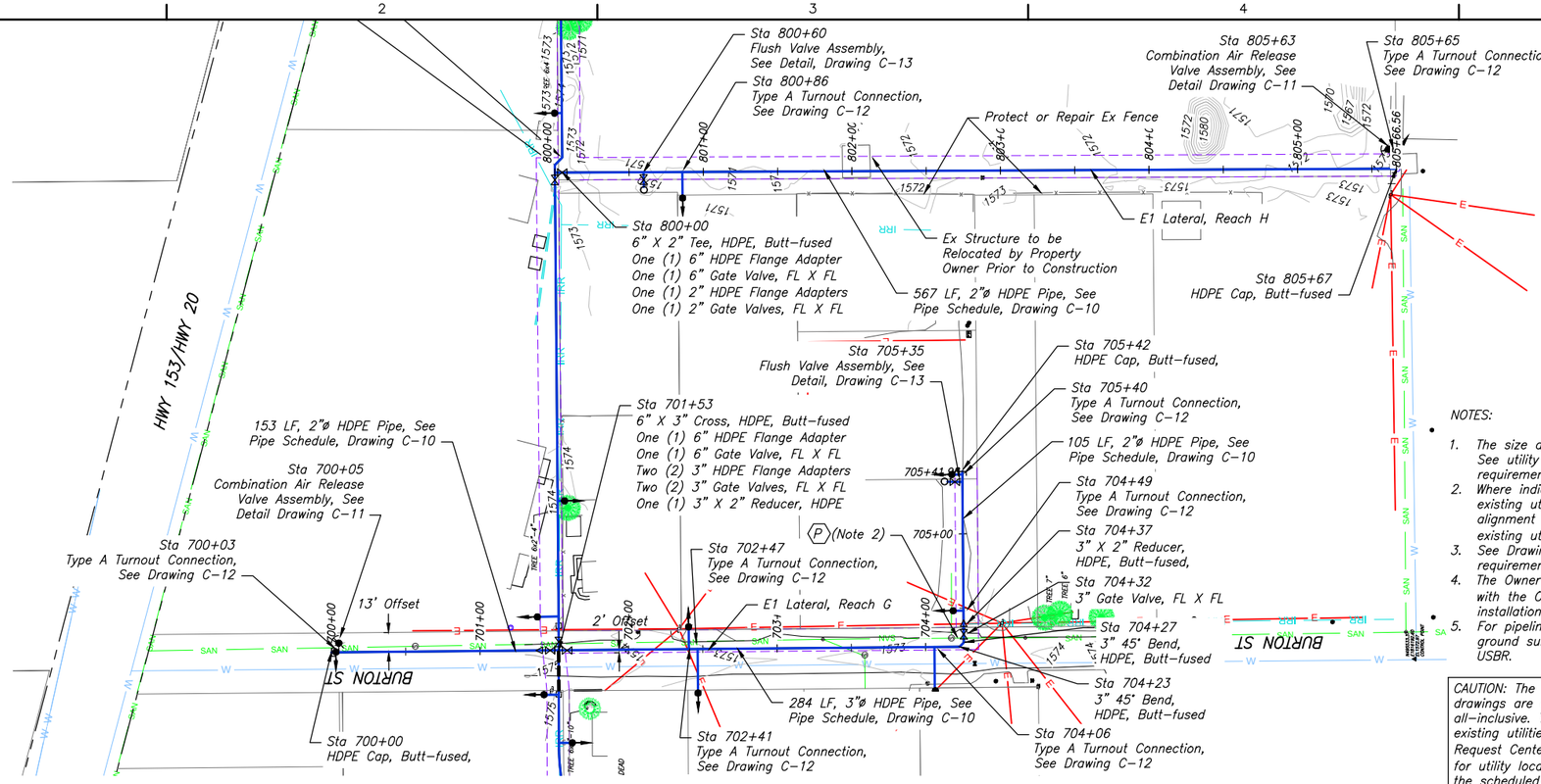
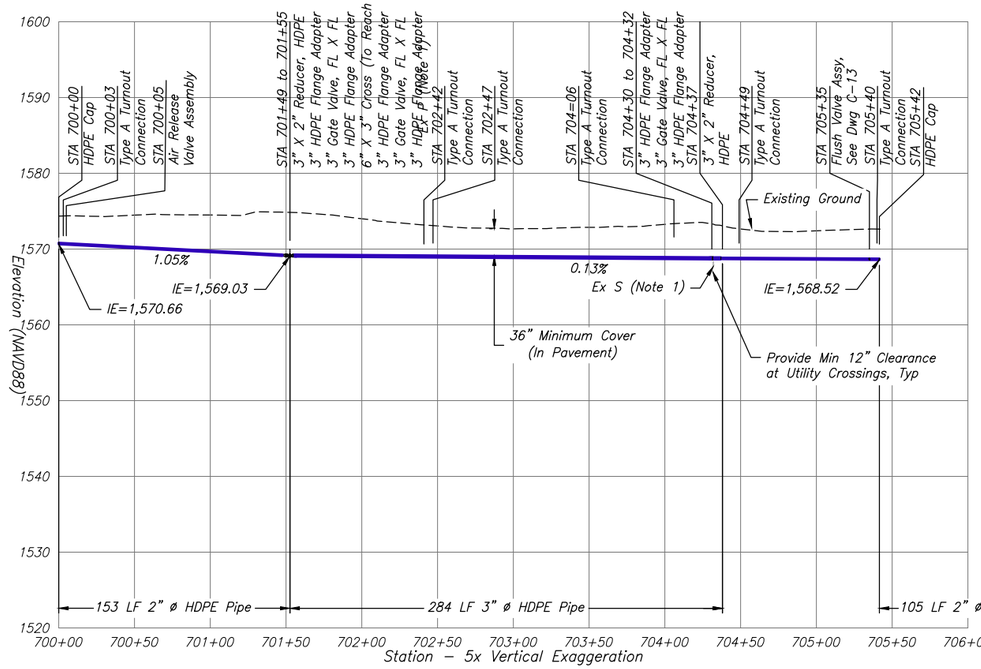
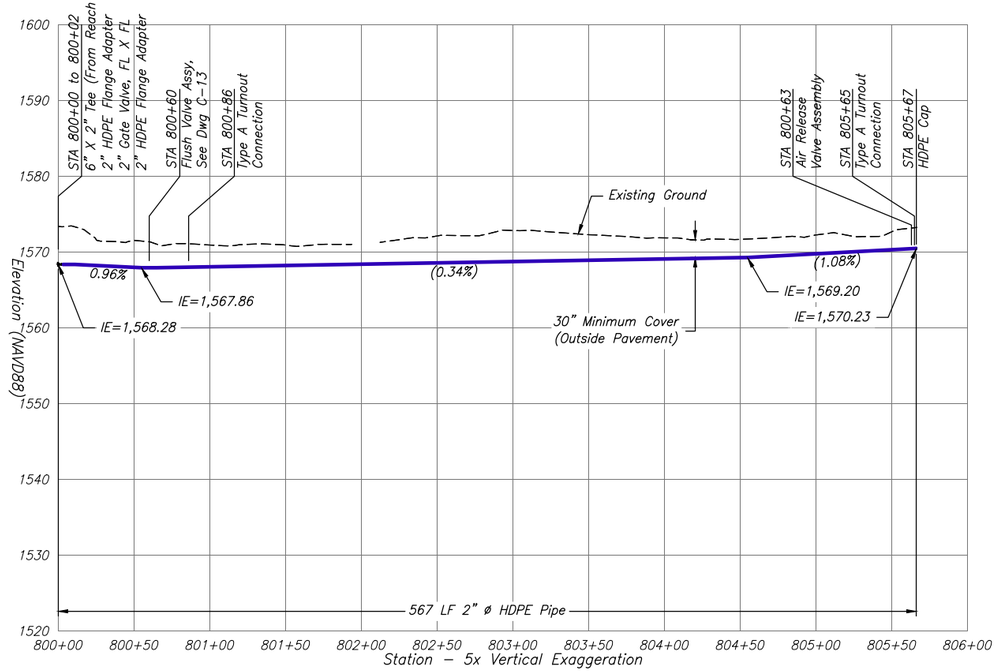


PLAN, REACH G, STA 700+00 TO 705+42 AND REACH H, STA 800+00 TO 805+67



PROFILE, REACH G, STA 700+00 TO 705+42



PROFILE, REACH H, STA 800+00 TO 805+67

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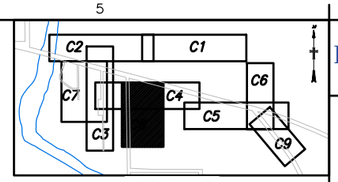

KEY MAP

RECLAMATION
Managing Water in the West

DAVID W. RICE
STATE OF WASHINGTON
24026
REGISTERED
PROFESSIONAL ENGINEER
01/19/15

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
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TECH. APPR. _ NAME – TITLE
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BOISE, ID 2015-01-19

E1 LATERAL, REACHES G AND H, PLAN AND PROFILE

1678-100-60025

SHEET 16 OF 21

C-8

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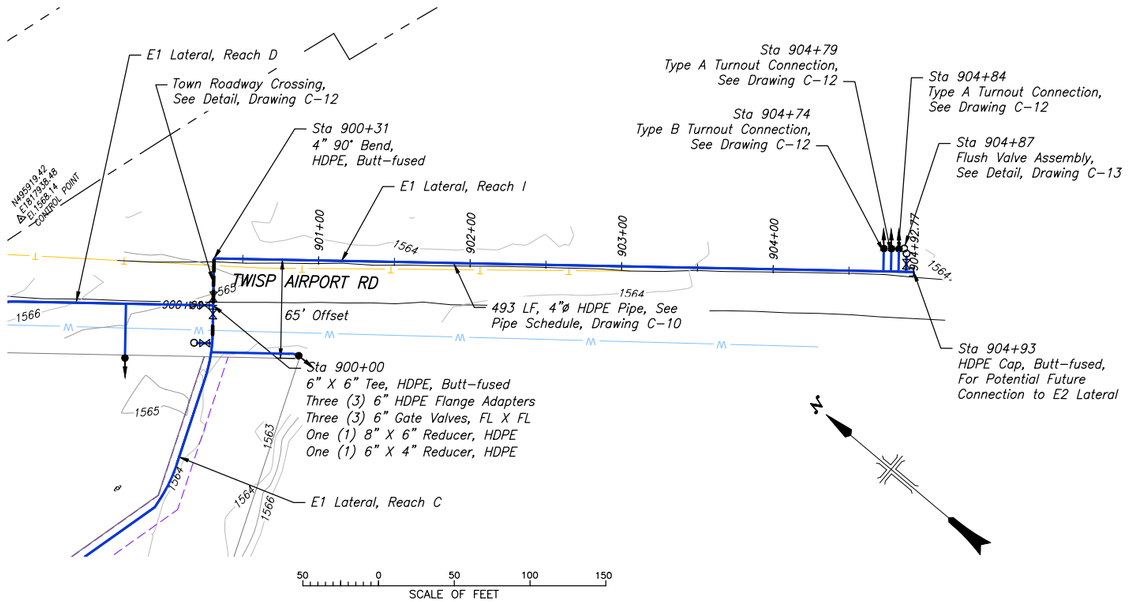
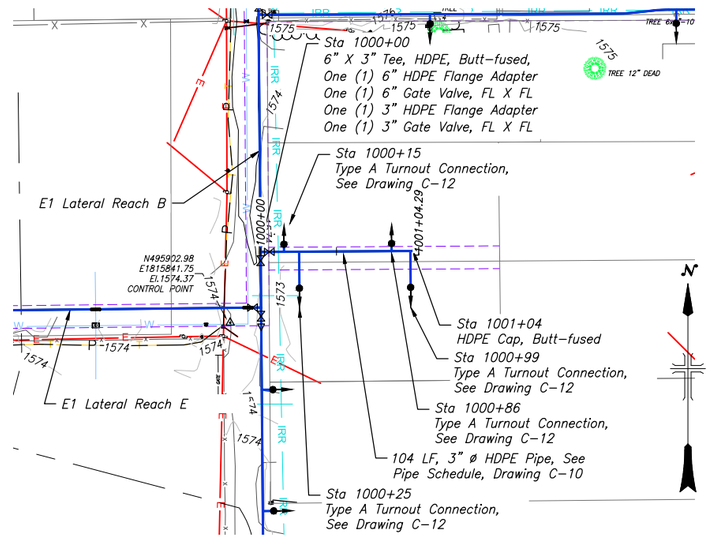
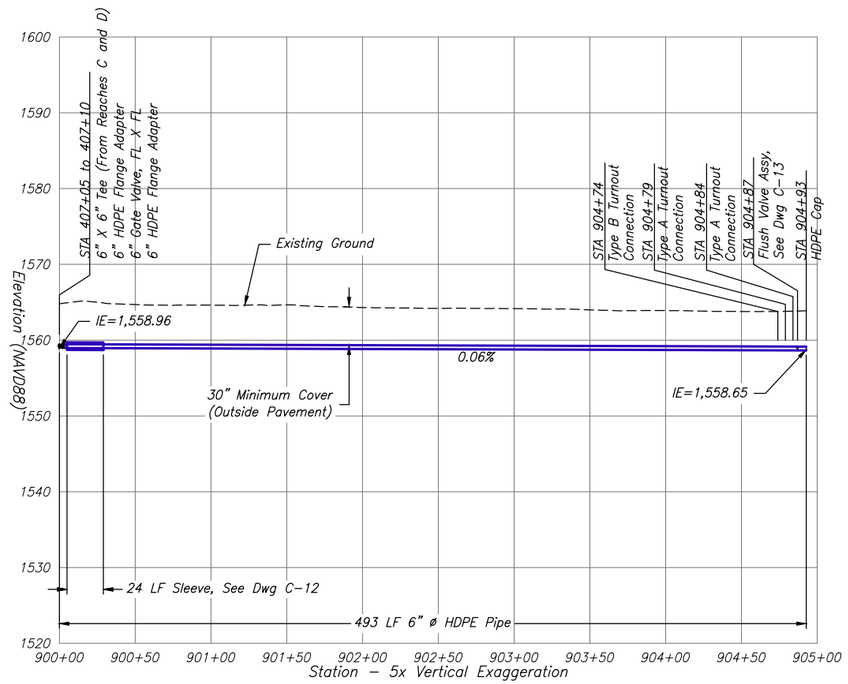


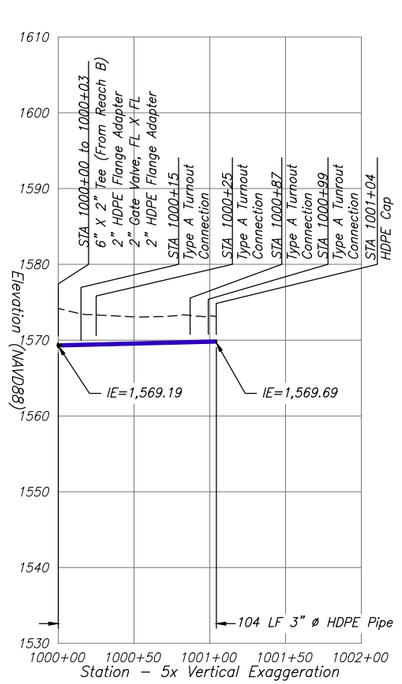
PLAN, REACH I, STA 900+00 TO 904+93



PLAN, REACH J, STA 1000+00 TO 1001+04



PROFILE, REACH I, STA 900+00 TO 904+93



PROFILE, REACH J, STA 1000+00 TO 1000+04

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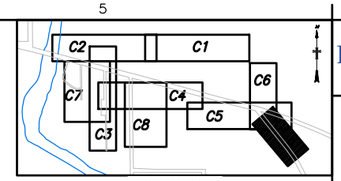

KEY MAP

RECLAMATION
Managing Water in the West

DAVID W. RICE
STATE OF WASHINGTON
24026
REGISTERED
PROFESSIONAL ENGINEER
01/19/15

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U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM

METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
CHECKED _ R. MONTGOMERY
TECH. APPR. _ NAME - TITLE
APPROVED _ ADMINISTRATIVE APPROVAL - NAME - TITLE
BOISE, ID 2015-01-19

E1 LATERAL, REACHES I AND J, PLAN AND PROFILE

1678-100-60026

C-9

SHEET 17 OF 21

Jan 19, 2015 2:11pm tgriga
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NOVEMBER 22, 2013 08:38
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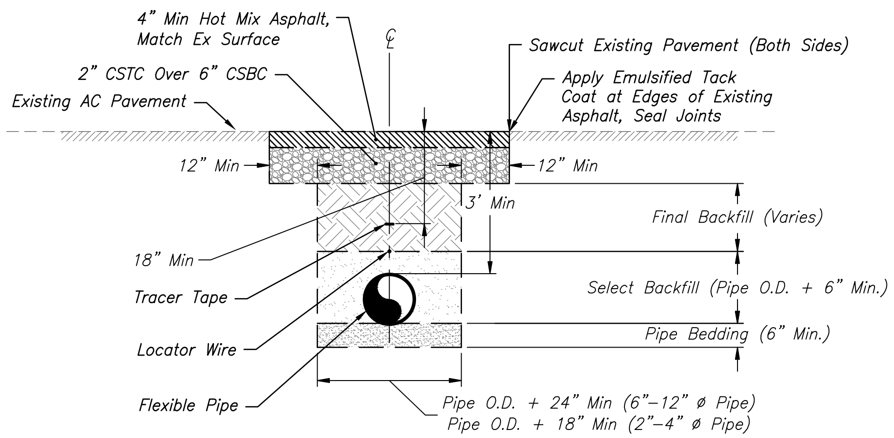
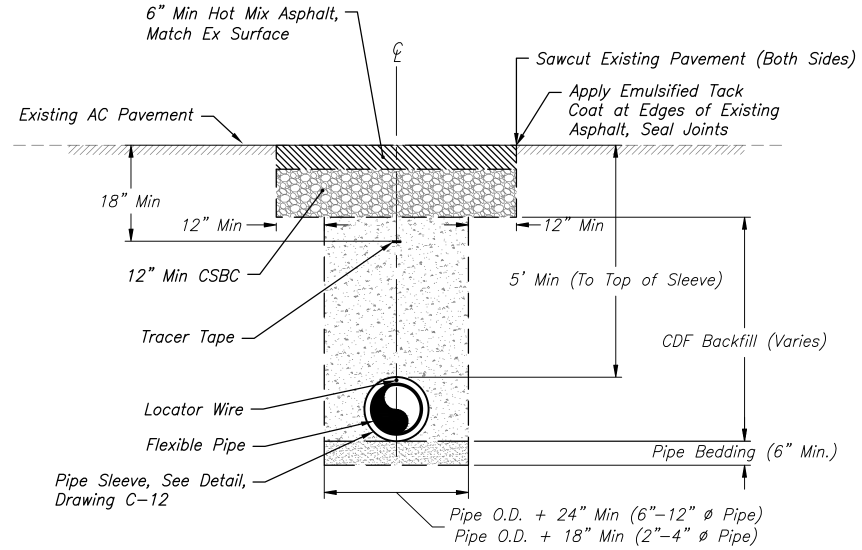
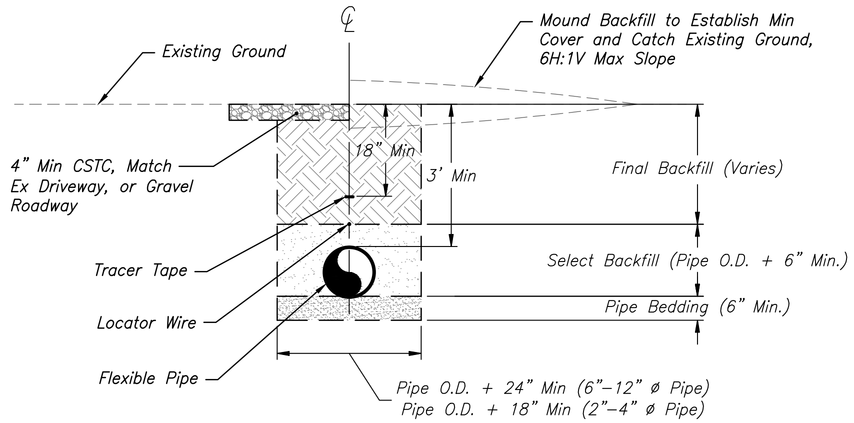
TGRIGA



Flexible Pipe Trench Requirements
A) Pipe Installed in Paved Roadway – Town Roadway
NOT TO SCALE



Flexible Pipe Trench Requirements
B) Pipe Installed in Paved Roadway – State Highway Crossing
NOT TO SCALE



Flexible Pipe Trench Requirements
C) Pipe Outside Existing Paved Area, Not in Existing Ditch
NOT TO SCALE

TYPICAL TRENCH SECTIONS

STATE HIGHWAY CROSSING NOTES:

1. The Contractor shall submit a State Highway Crossing plan detailing proposed methods, equipment, and approach for installing pipe sleeves across State Highway 153/20 at two locations. The State Highway Crossing Plan shall be approved by the COR, Engineer, Town of Twisp, and WSDOT.
2. WSDOT has indicated that they will require that the sleeves be installed using a trenchless construction method unless an open trench cut is approved by the Town of Twisp or through a variance process. The Contractin Agency will apply for a variance to request allowance for the option of an open cut trench.
3. This typical section only applies if an open trench cut is approved by the Town of Twisp and used to install sleeves at state highway crossings.
4. See the specifications for additional requirements.

MVID E1 LATERAL DISTRIBUTION SYSTEM PIPE SCHEDULE

Start Station (ft)	End Station (ft)	Pipe Length (ft)	Nominal Pipe Diameter (in)	Approximate Pipe O.D. (in)	Approximate Pipe I.D. (in)	Min. Pipe Pressure Rating (psi)	Pipe Material Specification	Minimum Pipe Bending Radius (ft)	Typical Trench Section	Comment
100+03	100+14	11	12"	12.750"	11.711"	80	HDPE IPS, DR 26, PE 4710	45	C	
100+14	117+12	1,698	10"	10.750"	9.874"	80	HDPE IPS, DR 26, PE 4710	40	C	
117+12	117+59	47	10"	10.750"	9.874"	80	HDPE IPS, DR 26, PE 4710	40	A	Sleeve
117+59	118+30	71	10"	10.750"	9.874"	80	HDPE IPS, DR 26, PE 4710	40	C	
200+00	201+86	186	8"	8.625"	7.921"	80	HDPE IPS, DR 26, PE 4710	30	C	
205+00	207+85	285	3"	3.500"	3.214"	80	HDPE IPS, DR 26, PE 4710	10	A	
207+85	209+78	193	6"	6.625"	6.084"	80	HDPE IPS, DR 26, PE 4710	25	A	
209+78	214+30	452	3"	3.500"	3.214"	80	HDPE IPS, DR 26, PE 4710	10	C	
300+00	303+10	310	6"	6.625"	6.084"	80	HDPE IPS, DR 26, PE 4710	25	C	
303+10	303+36	26	6"	6.625"	6.084"	80	HDPE IPS, DR 26, PE 4710	25	A	Sleeve
303+36	323+26	1990	6"	6.625"	6.084"	80	HDPE IPS, DR 26, PE 4710	25	C	
400+03	404+41	441	8"	8.625"	7.921"	80	HDPE IPS, DR 26, PE 4710	30	C	
404+44	405+07	63	8"	8.625"	7.921"	200	HDPE IPS, DR 11, PE 4710	30	B	Sleeve, Provide CDF Backfill
405+07	407+33	226	8"	8.625"	7.921"	80	HDPE IPS, DR 26, PE 4710	30	C	
500+00	501+17	117	8"	8.625"	7.921"	80	HDPE IPS, DR 26, PE 4710	30	C	
501+17	501+73	56	8"	8.625"	7.921"	200	HDPE IPS, DR 11, PE 4710	30	B	Sleeve, Provide CDF Backfill
501+73	506+15	442	8"	8.625"	7.921"	80	HDPE IPS, DR 26, PE 4710	30	A	
506+15	508+21	206	6"	6.625"	6.084"	80	HDPE IPS, DR 26, PE 4710	30	A	
508+21	510+94	273	6"	6.625"	6.084"	80	HDPE IPS, DR 26 PE 4710	30	C	
600+00	601+95	195	4"	4.500"	4.133"	80	HDPE IPS, DR 26, PE 4710	15	C	
700+00	701+53	153	2"	2.375"	2.180"	200	HDPE IPS, DR 11, PE 4710	10	A	
701+53	704+37	284	3"	3.500"	3.214"	80	HDPE IPS, DR 26, PE 4710	10	A	
704+38	705+42	104	2"	2.375"	2.180"	200	HDPE IPS, DR 11, PE 4710	15	C	
800+00	805+67	567	2"	2.375"	2.180"	200	HDPE IPS, DR 11, PE 4710	10	C	
900+00	900+30	30	6"	6.625"	6.084"	80	HDPE IPS, DR 26, PE 4710	25	A	Sleeve
900+30	904+93	463	6"	6.625"	6.084"	80	HDPE IPS, DR 26, PE 4710	25	C	
1000+00	1001+04	104	3"	3.500"	3.214"	80	HDPE IPS, DR 26, PE 4710	10	C	

TYPICAL TRENCH NOTES:

1. Minimum Cover – Minimum cover for all pipe shall be 3'–0" from top of pipe to finish grade, for pipe installed in the public right–of–way, and 2'–6", for pipe installed outside the public right–of–way, unless otherwise shown on the plans or approved by the Contracting Officer's Representative.
2. Pipe bedding – Pipe bedding shall be at least 6 inches deep compacted and shall meet the requirements of Section 9–03.12(3) of the WSDOT "Standard Specifications for Road, Bridge, and Municipal Construction" (2014 edition). If excavated trench bottom is unstable or not suitable, the Contractor shall excavate to a depth required by the Contracting Officer's Representative and backfill with pipe bedding. Place pipe bedding in maximum 6–inch lifts and compact to 90% of maximum dry density. The bottom of the trench shall be free of rock and smoothed to prevent bridging.
3. Select backfill – Select backfill shall also meet the requirements of Section 9–03.12(3) of the WSDOT "Standard Specifications for Road, Bridge, and Municipal Construction" (2014 edition). Place select backfill in 6–inch lifts to a minimum depth of 6 inches above the crown of the pipe and compact to 90% of maximum dry density.
4. 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 to 90% of maximum dry density. The area directly over the pipe shall not be mechanically compacted until there is a minimum of 12" of cover over a pipe.
5. Controlled Density Fill (CDF) – Where crossing an WSDOT paved right–of–way, trench excavations shall be backfilled with CDF, as shown in the crossing details on Drawing C–12. CDF shall be ready mixed, flowable, self–consolidating, low–shrink material and shall fill the trench completely without leaving any void spaces. The Contractor shall provide a mix design for approval to the Contracting Officer's Representative. CDF shall meet the requirements of Section 2–09.3(1)E of the WSDOT "Standard Specifications for Road, Bridge, and Municipal Construction" (2014 edition), except as modified by Town of Twisp, Okanogan County, or WSDOT permit approvals.
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 length of pipe installed.
7. Safety – The Contractor shall be responsible for the safety of workers. The Contractor shall provide shoring, trench boxes, or other necessary safety systems to protect workers from soil, rocks and debris that may fall into the trench, in accordance with the Specifications and OSHA and WSHA safety regulations.
8. 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 conditions before trench excavation.

PIPELINE NOTES:

1. Pipe – Pipe shall meet the material requirements indicated in the pipe schedule and Specifications, unless otherwise shown on the Drawings.
2. Fittings – Fittings shall be the same material as the adjacent pipe, unless otherwise shown on the drawings.
3. Joints – Joints between HDPE pipe and HDPE fittings shall be butt–fused, unless otherwise shown on the Drawings. Joints between HDPE pipe and flanged valves or fittings shall be made with an HDPE flange adapter. HDPE flange adapters shall have ductile iron backing rings and shall be butt–fused to adjacent HDPE pipe or fittings.
4. Alignment and Profile – The Contractor shall construct the pipeline to the lines and grades shown on these Drawings, in accordance with the Specifications and manufacturer's installation recommendations. The plan and profile drawings assume installation of HDPE pipe with standard HDPE fittings. The Contractor shall bend the pipe between fittings to match the lines and grades shown on these Drawings, in accordance with the pipe manufacturer's recommendations.
5. Changes to Alignment and Profile – The Contractor may recommend changes to the alignment and profile shown on these Drawings to avoid conflicts with other utilities, impacts to private property, or eliminate unnecessary pipe and fittings. Proposed changes shall be submitted to the Contracting Officer's Representative for approval by the Engineer prior to ordering pipe and fittings.
6. Restraint – The Contractor shall be responsible for ensuring that pipe and fittings are properly restrained against unresolved hydrostatic forces. Pressure piping systems that are joined by heat fusion and flanges may be considered restrained and do not require external joint restraints or thrust blocking, except where shown on the Drawings or where restrained fittings are in line with unrestrained joints. Pipe thrust blocking shall be provided for 4–inch and larger pipe sizes where connected to unrestrained fittings or valves, or where otherwise indicated on the Drawings. See standard thrust blocking detail, on Drawing C–12, for standard blocking requirements.

RECLAMATION
Managing Water in the West

DAVID W. RICE, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER
01/19/15

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BUREAU OF RECLAMATION
COLUMBIA/SNAKE SALMON RECOVERY PROGRAM
FCRPS HABITAT IMPROVEMENT PROGRAM
METHOW SUBBASIN
E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED D. RICE
DRAWN T. GRIGA
CHECKED R. MONTGOMERY
TECH. APPR. NAME – TITLE
APPROVED ADMINISTRATIVE APPROVAL – NAME – TITLE
BOISE, ID 2015–01–19

PIPE SCHEDULE AND TYPICAL TRENCH SECTIONS

1678–100–60027

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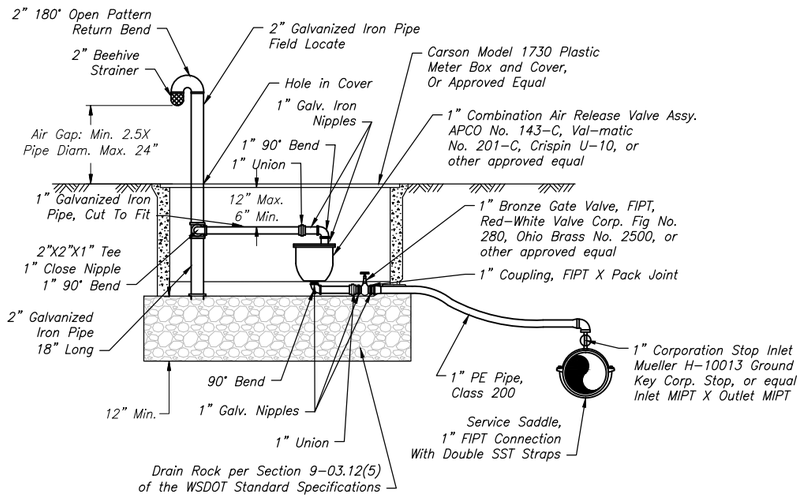
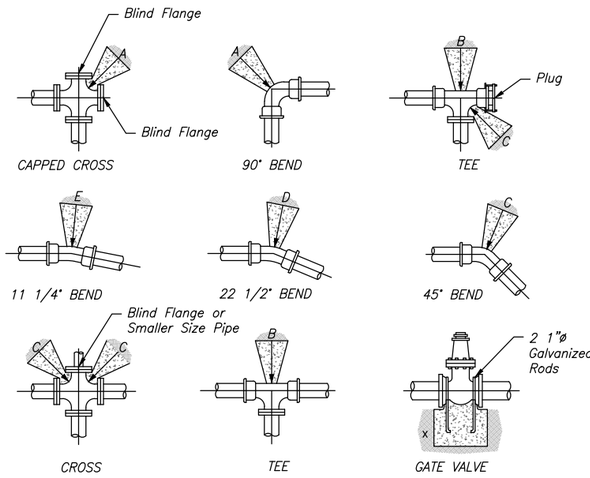


NOTES:

1. All pipe to be Class PE DR 11 (200-psi) Tubing, CTS, from water pipeline to 1-inch gate valve.
2. 2" Galvanized pipe above grade to be painted with 2 coats rustoleum high gloss white paint.
3. Install combination air release valve assembly where shown on the drawings.

COMBINATION AIR RELEASE VALVE DETAIL

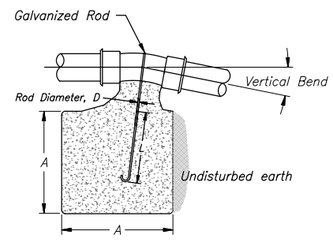
(NOT TO SCALE)



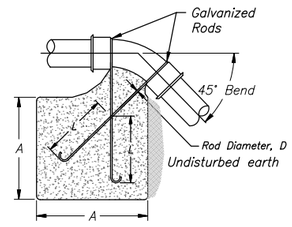
HORIZONTAL BLOCKING MIN. BEARING AREA AGAINST UNDISTURBED SOIL (SQUARE FEET)						
PIPE SIZE	A(s.f.)	B(s.f.)	C(s.f.)	D(s.f.)	E(s.f.)	X(s.f.)
4"	3	1	1	1	1	NONE
6"	4	4	2	1	1	NONE
8"	7	6	4	2	1	4
10"	11	10	6	3	2	6
12"	16	14	9	5	3	9

NOTES:

1. See pipeline notes regarding restraint on Drawing C-10.
2. The minimum bearing area of concrete thrust block is based on a 200-psi test pressure and a safe soil bearing capacity of 2,000 pounds per square foot.
3. Minimum bearing areas must be adjusted for other pipe sizes, pressures and soil conditions.
4. Concrete blocking shall be cast-in-place concrete and have a minimum of 1/4 square foot bearing against the fitting.
5. The Contractor shall install blocking adequate to withstand the full test pressure as well as to continuously withstand operational pressure, under all conditions of service.
6. Where adequate bearing area against undisturbed native soil is not available, the Contractor shall install restrained joints to adequately restrain pipe against unresolved hydrostatic forces. The number, type, and location of pipe restraints shall be approved by the Contracting Officer's Representative prior to construction.



VERTICAL BLOCKING FOR 11 1/4°, 22 1/2°, & 30° BENDS



VERTICAL BLOCKING FOR 45° BENDS

VERTICAL BLOCKING FOR 11 1/4°, 22 1/2° & 30° BENDS					
PIPE SIZE	BEND	CU FT	A	D	L
4"	11 1/4°	8	2.0'	3/4"	1.5'
	22 1/2°	11	2.2'		2.0'
	30°	17	2.6'		
6"	11 1/4°	11	2.2'	3/4"	2.0'
	22 1/2°	25	2.9'		
	30°	41	3.5'		
8"	11 1/4°	16	2.5'	3/4"	2.0'
	22 1/2°	47	3.6'		
	30°	70	4.1'	3/4"	2.5'
12"	11 1/4°	32	3.2'	3/4"	2.0'
	22 1/2°	88	4.5'	7/8"	3.0'
	30°	132	5.1'		
VERTICAL BLOCKING FOR 45° BENDS					
4"	45°	30	3.1'	3/4"	2.0'
6"		68	4.1'		
8"		123	5.0'		
12"		232	6.1'	3/4"	2.5'

THRUST BLOCK DETAILS

(NOT TO SCALE)

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Managing Water in the West

DAVID W. RICE — STATE OF WASHINGTON — 19426 — REGISTERED PROFESSIONAL ENGINEER
01/19/15

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METHOW SUBBASIN

E1 LATERAL DISTRIBUTION SYSTEM

DESIGNED _ D. RICE
DRAWN _ T. GRIGA
CHECKED _ R. MONTGOMERY
TECH. APPR. _ NAME - TITLE
APPROVED _ ADMINISTRATIVE APPROVAL - NAME - TITLE

BOISE, ID 2015-01-19

TYPICAL DETAILS

1678-100-60028

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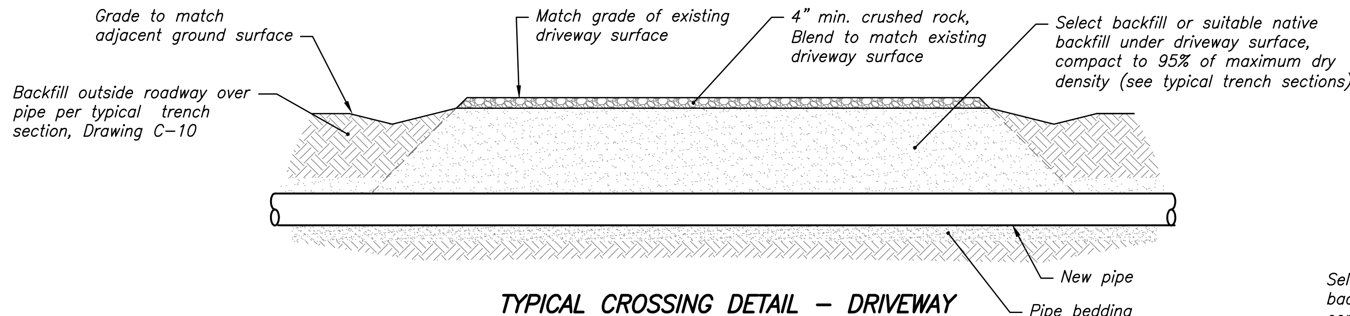
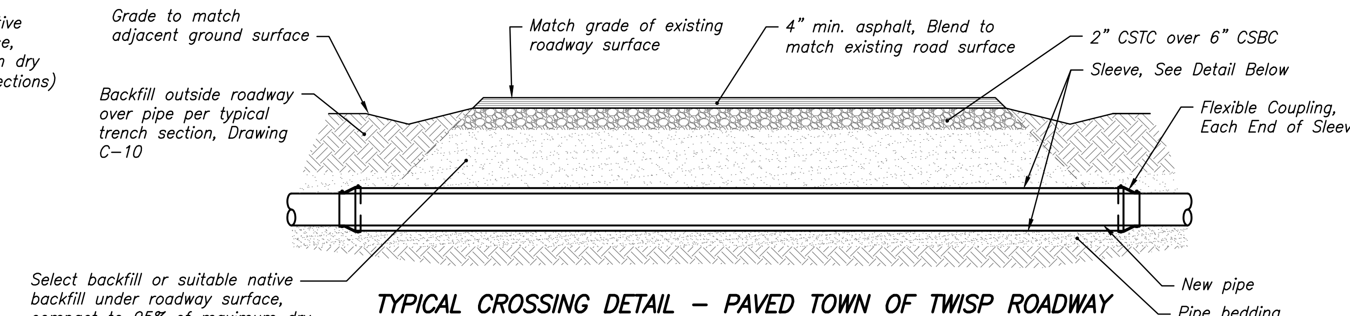
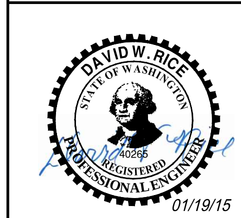
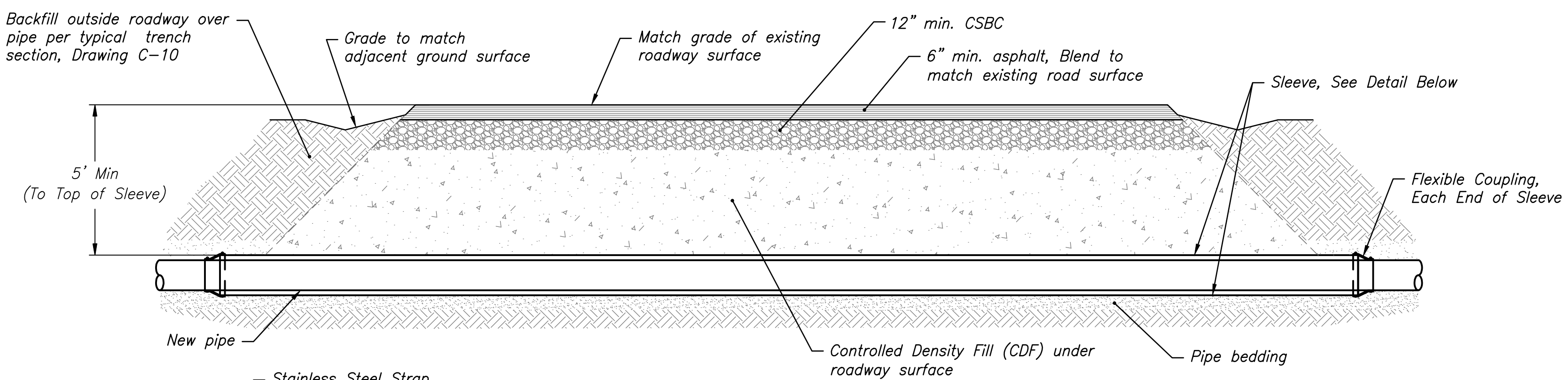


TYPICAL CROSSING DETAIL – DRIVEWAY
(Gravel Driveway or Roadway)
NOT TO SCALE



TYPICAL CROSSING DETAIL – PAVED TOWN OF TWISP ROADWAY
(Gravel Driveway or Roadway)
NOT TO SCALE





TYPICAL CROSSING DETAIL – PAVED STATE HIGHWAY
(Paved State Highway)
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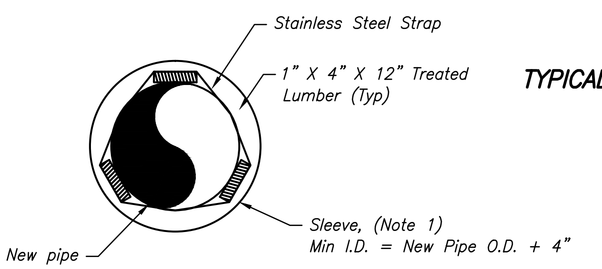
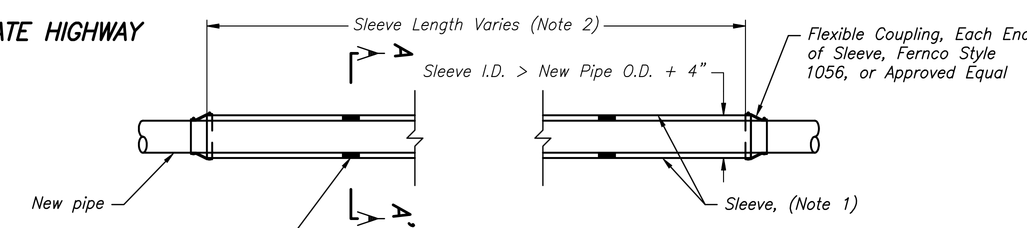


SECTION A–A'
(4X Exaggeration)



TYPICAL SLEEVE DETAIL
NOT TO SCALE

Typical Crossing Notes:

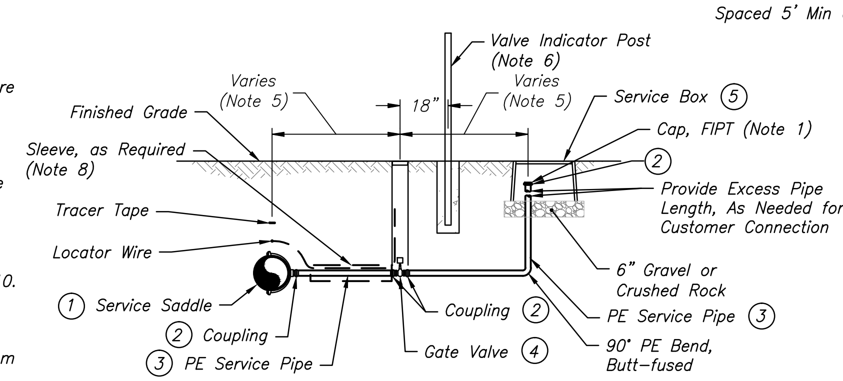
1. Roadway crossings shall be in accordance with right-of-way permits and franchise agreements with the Town of Twisp. Verify roadway crossing repair requirements the Town of Twisp prior to constructing roadway crossings.
2. For payment of materials, trench across roadway shall be as follows:
   Max Trench Width = Pipe O.D. + 24 inches
   Max Pavement Cut = Pipe O.D. + 4 feet
   Length of Cut = Width of Existing Paved Road or Driveway
   Length of Sleeve = As Indicated on Drawings
3. When directed by the Contracting Officer, new pipe shall be installed in sleeve following roadway repair to minimize interruption to traffic. Backfill and repair roadway as soon as pipe sleeve is installed and inspected to minimize interruption to traffic.
4. For trenching and backfill requirements, see Drawing C-10.
5. For state highway crossing requirements and notes, see Drawing C-10.

Typical Sleeve Notes:

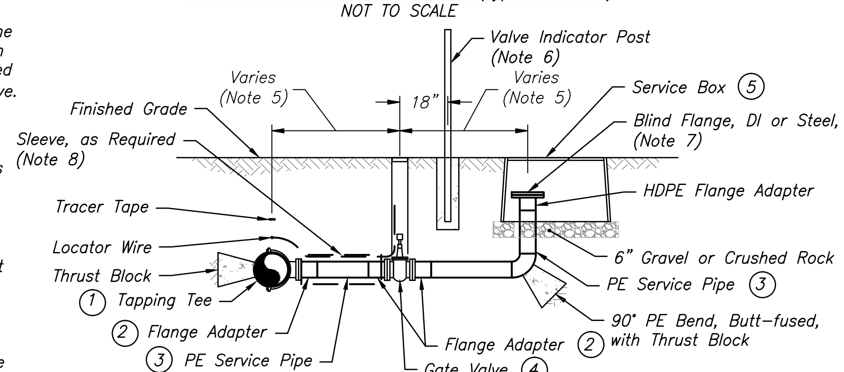
1. Pipe sleeves in Town of Twisp Roadway crossings shall be Schedule 40 PVC or SDR 51 PIP pipe with gasketed bell and spigot joints. No glued joints will be allowed. For pipe sleeve requirements in state highway crossings, see the Specifications.
2. Sleeves shall be required at all paved roadway crossings. Lengths shall be as follows:
   2.1. At Roadway Crossing: Roadway Crossing Cut Length + Min 8 feet, or as Shown on these Drawings
   2.2. At Perpendicular Crossing With Potable Water Main: Min 6 feet
   2.3. At Oblique Crossing With Potable Water Main: Min 12 feet

Typical Turnout Connection Notes:

1. All pipe and fittings shall have a pressure rating of at least 80 psi.
2. The Owner shall stake all turnout locations prior to installation. Verify turnout locations with the Owner and the Contracting Officer's Representative prior to installation.
3. For trenching and backfill requirements, see typical trench sections, Drawing C-10.
4. The Contractor shall take care to place and compact pipe bedding under service connection piping to prevent damage from compaction and settlement of fill above service connections.
5. The offset from the irrigation main to the turnout valve and box will vary based on field conditions and shall be field directed by the Contracting Officer's Representative. Base bid price on typical 10 feet offset from main line to irrigation box.
6. Indicator posts are required where valves are not installed in a roadway or driveway, as directed by the Contracting Officer's Representative. Indicator posts shall be in accordance with CLFMI 2.375-inch ø Type I or Type II post, set in a concrete base.
7. Install cap or blind flange on end of service in box, unless connection will be made to on-site irrigation system before distribution system is pressurized.
8. Sleeve services that cross under paved town roadways. See detail above.



2" and Smaller Service Connection (Types A and B)
NOT TO SCALE



3" and Larger Service Connection (Types C and D)
NOT TO SCALE

TYPICAL TURNOUT CONNECTION DETAILS

MVID E1 LATERAL DISTRIBUTION SYSTEM
Turnout Pipe Sizes and Materials

Type	Turnout Pipe Size	Acres Served	Quantity	(1) Saddle	(2) Connections	(3) Pipe Type	(4) Gate Valve	(5) Service Box
A	1-1/2"	<1	42	Double Strap Saddle Tap, Romac 202N-H, FIPT, or approved equal	Coupling, 1-1/2" MIPT X 1-1/2" Pack Joint for PE Tubing	1-1/2" PE Tubing, DR 11 (200-psi Rating), CTSM, Marked Purple	1-1/2" Bronze Gate Valve, FIPT X FIPT, with Operating Nut	HDPE Meter Box with Locking Lid, Carson 1324-15, or approved equal, Purple Cover Marked "Irrigation"
B	2"	1-5	7	Double Strap Saddle Tap, Romac 202N-H, FIPT, or approved equal	Coupling, 2" MIPT X 2" Pack Joint for PE Tubing	2" PE Tubing, DR 11 (200-psi Rating), CTS, Marked Purple	2" Resilient Wedge Gate Valve, AWWA C509, FIPT X FIPT, with Operating Nut	HDPE Meter Box with Locking Lid, Carson 1324-15, or approved equal, Purple Cover Marked "Irrigation"
C	3"	5-10	1	SST or Coated Steel Tapping Tee, FL, Romac SST-H, Romac FTS423-H, or approved equal	Flanged, 3" FL X 3" HDPE Flange Adapter	3" PE Pipe, DR 26 (80-psi Rating), IPS, Marked Purple	3" Resilient Wedge Gate Valve, AWWA C509, FL X FL, with Operating Nut	HDPE Meter Box with Locking Lid, Carson 1730-24, or approved equal, Purple Cover Marked "Irrigation"
D	6"	>20	2	SST or Coated Steel Tapping Tee, FL, Romac SST-H, Romac FTS423-H, or approved equal	Flanged, 6" FL X 6" HDPE Flange Adapter	6" PE Pipe, DR 26 (80-psi Rating), IPS, Marked Purple	6" Resilient Wedge Gate Valve, AWWA C509, FL X FL, with Operating Nut	HDPE Meter Box with Locking Lid, Carson 2436-24, or approved equal, Purple Cover Marked "Irrigation"

Materials Note:

1. Contractor may propose alternate saddles, tees, and connection fittings for turnout connections that meet the intent of the Drawings and Specifications. Turnout materials shall be submitted to the Contracting Officer's Representative for Engineer's review and approval prior to construction.

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DESIGNED D. RICE
DRAWN T. GRIGA
CHECKED R. MONTGOMERY
TECH. APPR. NAME – TITLE
APPROVED ADMINISTRATIVE APPROVAL – NAME – TITLE
BOISE, ID 2015-01-19

TYPICAL DETAILS

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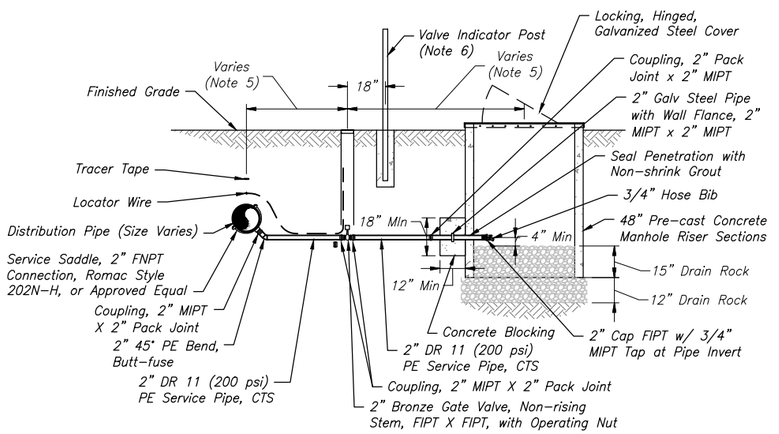
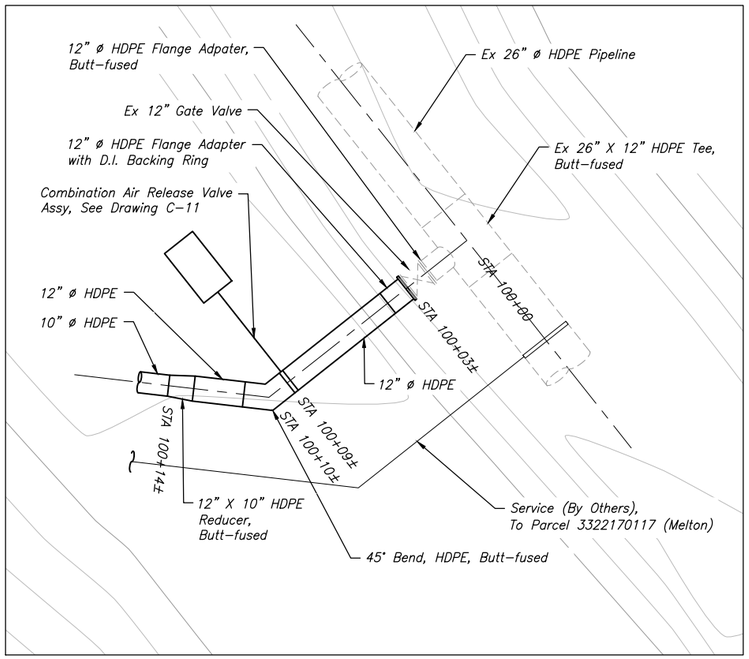


FLUSH VALVE ASSEMBLY DETAIL

NOT TO SCALE

Flush Valve Assembly Notes:

1. All pipe and fittings shall have a pressure rating of at least 80 psi.
2. Verify flush valve assembly locations with the Owner and the Contracting Officer's Representative prior to installation.
3. For trenching and backfill requirements, see typical trench sections, Drawing C-10.
4. The Contractor shall take care to place and compact pipe bedding under the flush valve connection piping to prevent damage from compaction and settlement of fill above the connection.
5. The offset from the irrigation main to the flush valve and manhole will vary based on field conditions and shall be field directed by the Contracting Officer's Representative.
6. Indicator posts are required where valves are not installed in a roadway or driveway, as directed by the Contracting Officer's Representative. Indicator posts shall be in accordance with CLFMI 2.375-inch ø Type I or Type II post, set in a concrete base.
7. Drain rock shall be gravel backfill for drains, meeting the requirements of Section 9-03.12(4) of the WSDOT Standard Specifications.



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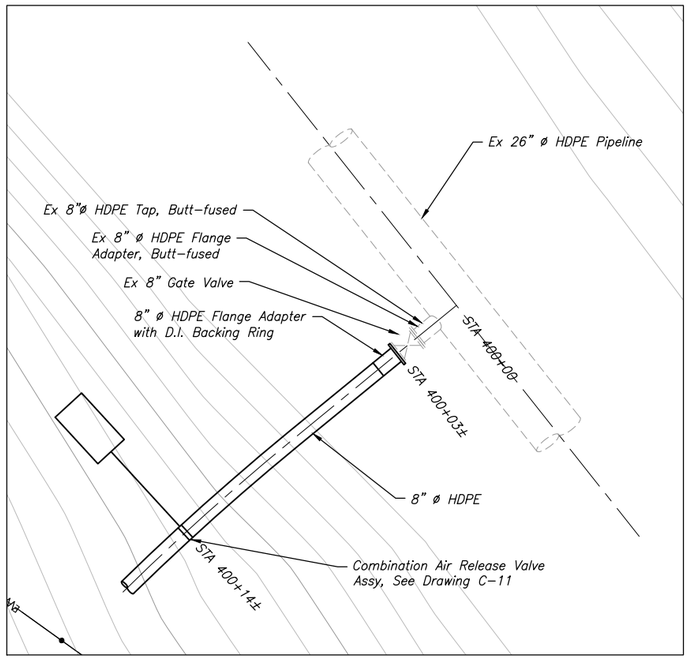

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3 0 3 6 9
SCALE OF FEET

RECLAMATION
Managing Water in the West

DAVID W. RICE
STATE OF WASHINGTON
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REGISTERED PROFESSIONAL ENGINEER
01/19/15

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TECH. APPR. _ NAME - TITLE
APPROVED _ ADMINISTRATIVE APPROVAL - NAME - TITLE

BOISE, ID 2015-01-19

MISCELLANEOUS PIPELINE DETAILS

1678-100-60030

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