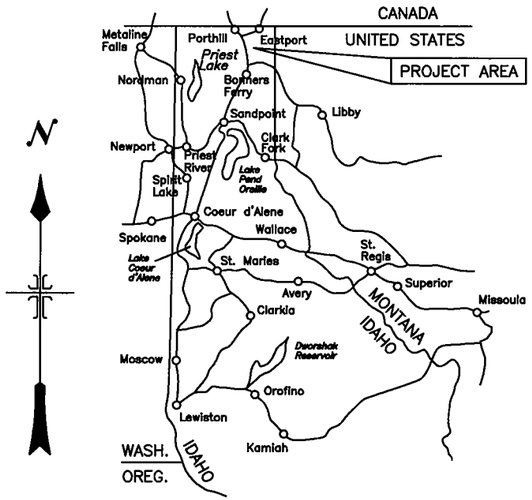
# U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE, REGION 1
DRAWINGS FOR PROPOSED
FOREST DEVELOPMENT ROADS

# EAST FORK STEW

IDAHO PANHANDLE NATIONAL FORESTS
BONNERS FERRY RANGER DISTRICT
BOUNDARY COUNTY, IDAHO




IDAHO INDEX MAP

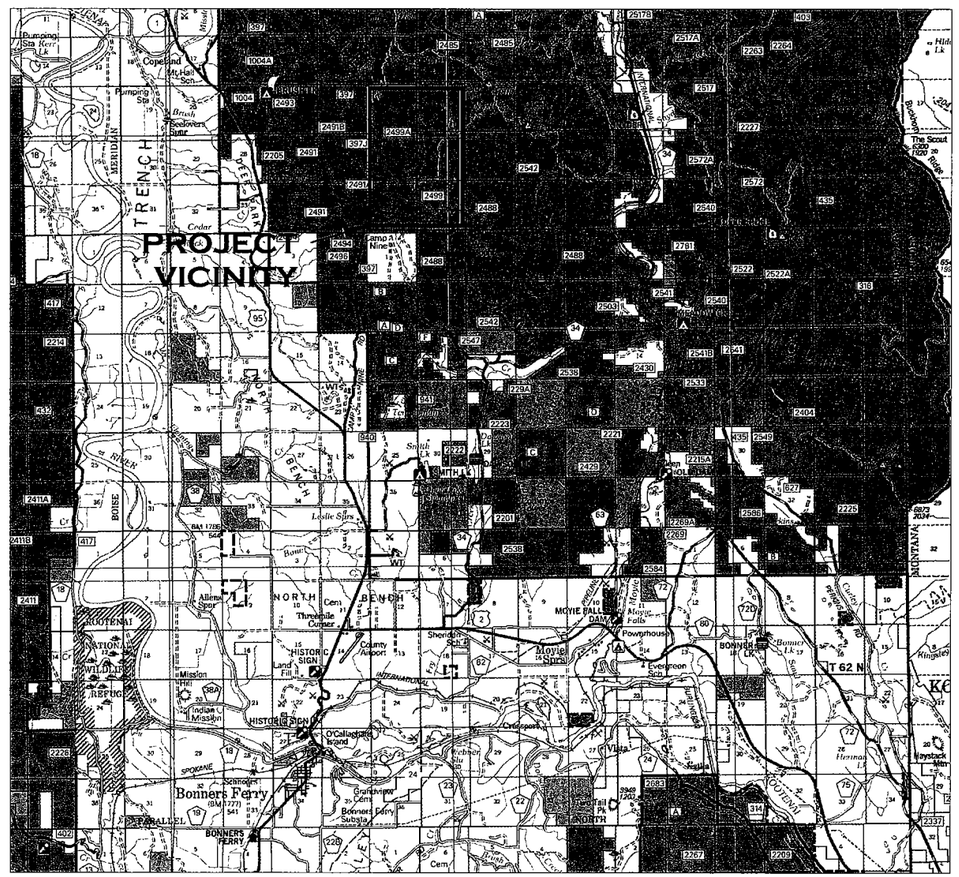
BOISE MERIDIAN

R1W R1E R2E R3E

T64N

T63N

T62N




PROJECT AREA MAP
NO SCALE

| | INDEX TO SHEETS |
|---|---|
| NO. | DESCRIPTION |
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| 2 | PROJECT VICINITY MAP |
| 3 | SIGN PLAN |
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SPECIFICATIONS:
STANDARD SPECIFICATIONS FOR CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS (FP-03) AND APPLICABLE SPECIAL PROVISIONS

APPROVED:

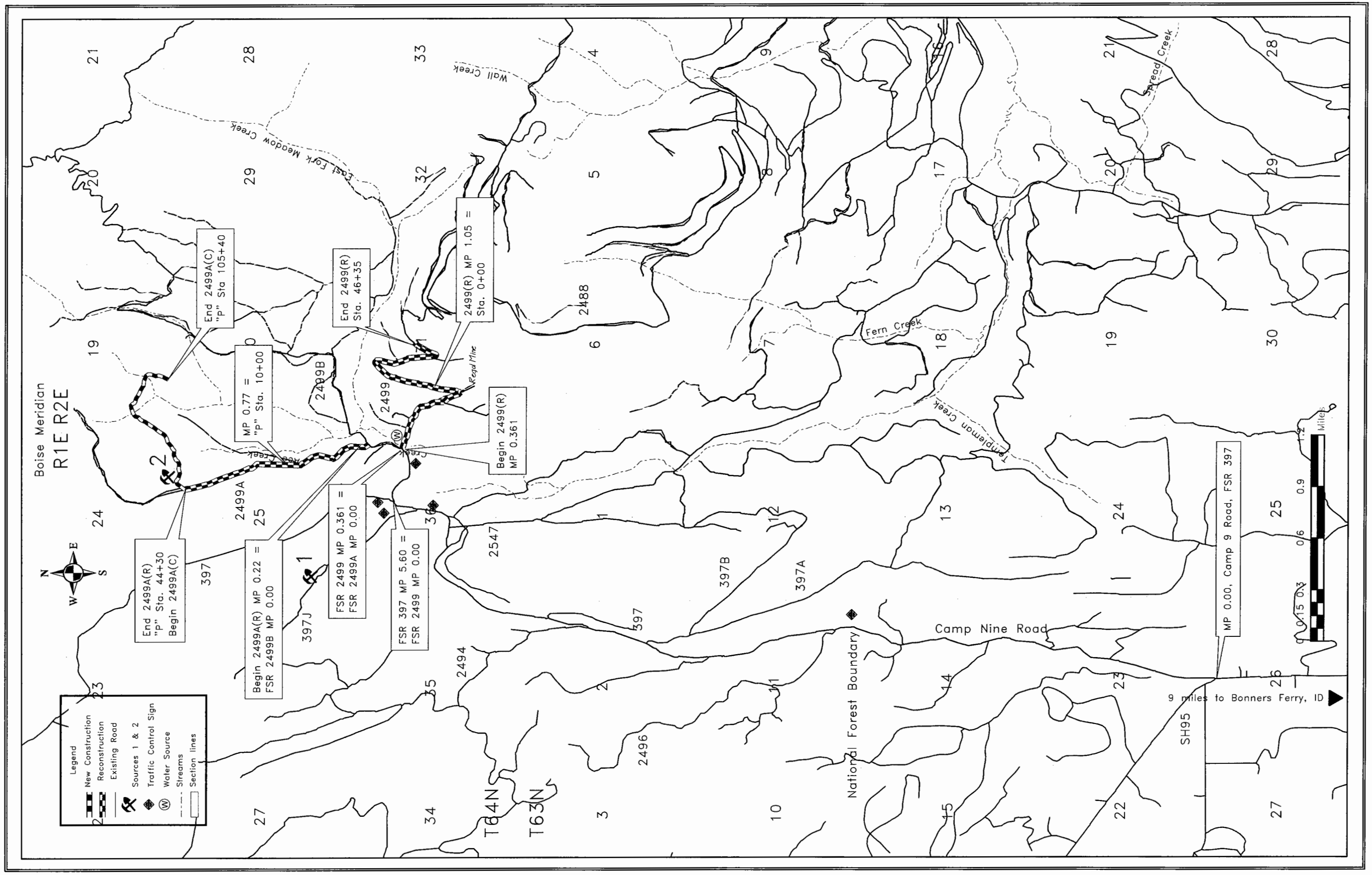
Linda McFaddan DATE 5/3/2012
DISTRICT RANGER
IDAHO PANHANDLE NATIONAL FORESTS

REVIEWED:

DATE 5/3/2012
FOREST ENGINEER
IDAHO PANHANDLE NATIONAL FORESTS

RECOMMENDED:

Rick Quiggs DATE 5/3/2012
PROJECT TEAM LEADER
IDAHO PANHANDLE NATIONAL FORESTS




U.S. DEPARTMENT OF AGRICULTURE
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NORTHERN REGION

| | | |
|---|---|---|
| Revised * | Date * | |
| Revised * | Date * | |
| Revised * | Date * | |
| Revised * | Date * | |

Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

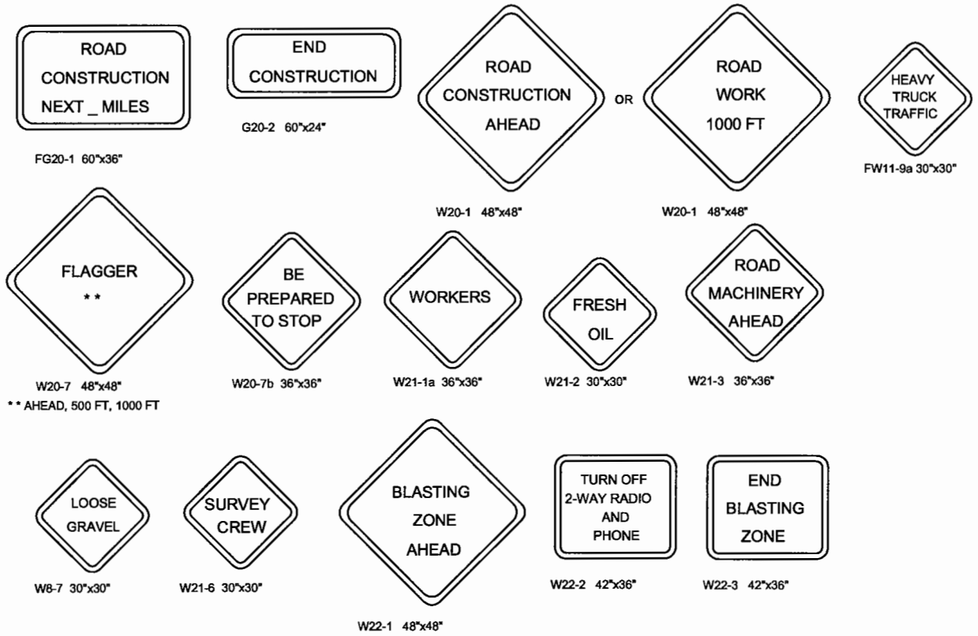
Forest
Idaho Panhandle National Forests

Project Name
East Fork Stew

Sheet Title
Project Vicinity Map

Sheet 2 of 25 Date: 4/28/2012

Warning Signs - Black on Orange




Regulatory Signs - Black on White

TYPICAL WARNING & REGULATORY SIGNS (AS PER MUTCD)

GENERAL SIGN & WARNING DEVICE NOTES

1. The Contractor shall be responsible for furnishing, installing, maintaining, and removeing signs and warning devices in conformance with the most current revision of the Manual on Uniform Traffic Control Devices (MUTCD) and the approved traffic safety sign plan.

2. A detailed "Traffic Safety Sign Plan" shall be submitted by the Contractor for Approval by the Contracting Officer. The plan shall address types, amounts, locations and timing of signs and warning devices to be used for a specific road or activity.

3. Signs and warning devices shall be installed at the approved locations prior to starting any work activities.

4. During periods of non-work (weekends, holidays, end of work day, etc.) all signs shall be covered or removed.

5. Additional signs and warning devices shall be installed by the Contractor if conditions change.

6. All signs and warning devices shall be removed from the project upon completion and acceptance of the work.

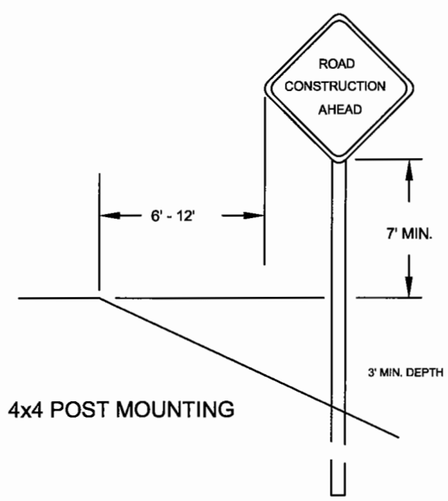
7. Payment for furnishing, installing, maintaining, and removing signs and warning devices and for preparing the plan shall be considered incidental to pay items under Section 151 - Mobilization. No seperate payment will be made.

8. Warning signgs shall be black symbol/message/border on orange background, as per MUTCD.

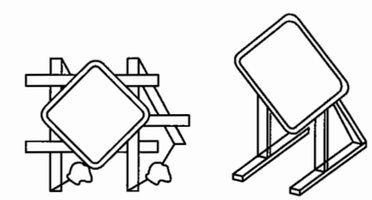
9. Regulatory signs shall be black symbol/message/border on white background, as per MUTCD.

10. All signs shall be either reflectorized with a material that has a smooth, sealed outer surface, or iluminated to show approximately the same shape and color day and night.

11. "Home-made" signs shall not be allowed. Signs shall not be attached to trees or other sign posts unless approved by the Contracting Officer.




4x4 POST MOUNTING



PORTABLE AND TEMPORARY MOUNTINGS

TYPICAL SIGN INSTALLATION (AS PER MUTCD)

U.S. DEPARTMENT OF AGRICULTURE
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NORTHERN REGION

| | | | |
|---|---|---|---|
| Revised JTNelson | Date 05/16/11 | Drawn JTNelson | Forest Idaho Panhandle National Forests |
| Revised JTNelson | Date 05/18/11 | Design DLJackson | Project Name East Fork Stew |
| Revised * | Date * | Checked Rick Driggs | Sheet Title Sign Plan |
| Revised * | Date * | Reviewed Brent Briggs | Sheet 3 of 25 Date: 4/27/2012 |

# ESTIMATE OF QUANTITIES

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | REVISION DATE | 2499[R] | 2499A[R] | 2499A[C] | TOTALS |
|---|---|---|---|---|---|---|---|---|
| | | | | ROAD NUMBER | 2499[R] | 2499A[R] | 2499A[C] | |
| | | | | MILE POST (MILES) | 1.57 | 1.21 | 1.12 | |
| | | | | | QUANTITIES | | | |
| 15101 | Mobilization | LSQ | LS | 2006 | 1.00 | 1.00 | 1.00 | Lump Sum |
| 15202 | Slope, reference, and clearing and grubbing stakes; method II, tolerance C | CQ | MI | 2006 | | 0.07 | 1.12 | 1.19 |
| 15219.01 | Establish clearing limits (both sides) | CQ | MI | 2006 | 1.44 | | | 1.44 |
| 15219.02 | Establish clearing limits (one side, as marked) | CQ | MI | 2006 | | 0.58 | | 0.58 |
| 15710 | Sediment traps | AQ | EA | 2006 | 1.00 | | 3.00 | 4.00 |
| 15756 | Erosion control, straw wattles, logs, or rolls | AQ | LF | 2006 | 100.00 | | | 100.00 |
| 20103 | Clearing and grubbing, disposal of tops and limbs 11.3, logs 8, stumps 13.1, URT 1 | CQ | MI | 2006 | | 0.66 | | 0.66 |
| 20104 | Clearing and grubbing, disposal of tops and limbs 11.3 & 12, logs 8, stumps 13.1, URT 1 | CQ | AC | 2006 | | | 4.70 | 4.70 |
| 20301 | Removal of culvert | AQ | EA | 2006 | 2.00 | | | 2.00 |
| 20401 | Roadway excavation, compaction method G, finishing method A | CQ | CY | 2006 | | | 8,885.00 | 8,885.00 |
| 20418.DA | Drainage excavation, type ditch armor (Commercial source) | CQ | CY | 2006 | 35.00 | | 40.00 | 75.00 |
| 20419.DT | Drainage excavation, type ditch | AQ | LF | 2006 | 220.00 | | | 220.00 |
| 20419.OD | Drainage excavation, type outlet ditch | AQ | LF | 2006 | 40.00 | | 60.00 | 100.00 |
| 20701 | Earthwork geotextile type III-A (woven) | CQ | SY | 2006 | | | 1,400.00 | 1,400.00 |
| 21201 | Linear grading | CQ | MI | 2006 | 1.44 | | | 1.44 |
| 21202 | Linear grading (spots) | LSQ | LS | 2006 | | 1.00 | | Lump Sum |
| 23050 | Brushing | CQ | MI | 2006 | 0.13 | | | 0.13 |
| 25101 | Placed riprap, class II - III (Commercial source) | CQ | CY | 2006 | 45.00 | | 20.00 | 65.00 |
| 30122.01 | Pit run maximum size 4", compaction method A (Government source 1) | CQ | CY | 2006 | 80.00 | | | 80.00 |
| 30122.02 | Pit run maximum size 4", compaction method A (Government source 2) | CQ | CY | 2006 | | | 310.00 | 310.00 |
| 30326 | Road reconditioning (comp mthd A) | CQ | MI | 2006 | 0.13 | | | 0.13 |
| 30605 | Calcium Chloride (pellet @ 94% minimum concentration) | AQ | TON | 2006 | | 5.90 | | 5.90 |
| 30805 | Bedding and backfill aggregate, compaction method C (Government source 1) | CQ | CY | 2006 | | | 36.00 | 36.00 |
| 32140 | Haul and place stockpiled aggregate, compaction method A (Government source 1) | CQ | CY | 2006 | 117.00 | | 180.00 | 297.00 |
| 60201.18 | 18 inch pipe culvert (incl culv excav, comp mthd C) | AQ | LF | 2006 | 86.00 | | 354.00 | 440.00 |
| 60201.24 | 24 inch pipe culvert (incl culv excav, comp mthd C) | AQ | LF | 2006 | | | 64.00 | 64.00 |
| 60201.30 | 30 inch pipe culvert (incl culv excav, comp mthd C) | AQ | LF | 2006 | | | 44.00 | 44.00 |
| 60201.42 | 42 inch pipe culvert (incl culv excav, comp mthd C) | AQ | LF | 2006 | | | 50.00 | 50.00 |
| 62501 | Seeding, dry method (w/out mulch) | CQ | AC | 2006 | | | 1.90 | 1.90 |
| 65102.01 | Pit and Quarry Development (Government source 1) | LSQ | LS | 2006 | 1.00 | | | Lump Sum |
| 65102.02 | Pit and Quarry Development (Government source 2) | LSQ | LS | 2006 | | | 1.00 | Lump Sum |
| | | | | | | | | |
| | | | | | | | | |

| 2499[R] | | | |
|---|---|---|---|
| Mile Post | Culv DIA | *Culv Length | Culv Skew |
| miles | in. | ft. | deg. |
| 0.431 | 18 | 34 | as marked |
| 0.535 | 18 | 26 | as marked |
| 0.597 | 18 | 26 | as marked |

| 2499A[C] | | | |
|---|---|---|---|
| L-Stn | Culv DIA | *Culv Length | Culv Skew |
| ft. | in. | ft. | deg. |
| 44+70.10 | 18 | 40 | 30 RHB |
| 47+30.80 | 30 | 44 | 90 |
| 53+15.80 | 18 | 38 | 90 |
| 56+92.50 | 18 | 48 | 90 |
| 58+74.14 | 18 | 34 | 90 |
| 63+85.50 | 18 | 30 | 30 RHB |
| 71+28.70 | 18 | 26 | 90 |
| 75+38.26 | 18 | 36 | 90 |
| 78+55.40 | 24 | 32 | 90 |
| 83+91.60 | 42 | 50 | 90 |
| 85+54.60 | 18 | 36 | 90 |
| 91+97.10 | 24 | 32 | 90 |
| 95+50.10 | 18 | 30 | 90 |
| 99+38.30 | 18 | 36 | 30 RHB |
| RHB - right hand back | | | |

NOTE: Culvert lengths listed above are estimated only. Contractor shall survey and verify lengths of all culverts. Notify Contracting officer of culvert lengths prior to ordering culverts as per specification 602. Survey and Verification indirectly paid under Pay Item 15202.

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Revised * Date *
Revised * Date *
Revised * Date *
Revised * Date *

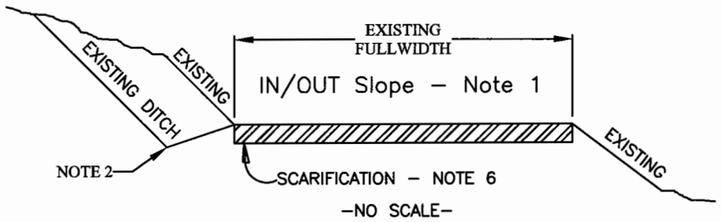
Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

Forest
Idaho Panhandle National Forests
Project Name
East Fork Stew

Sheet Title
Summary Estimated Quantities & Culvert List
Sheet 4 of 25 Date: 5/01/2012

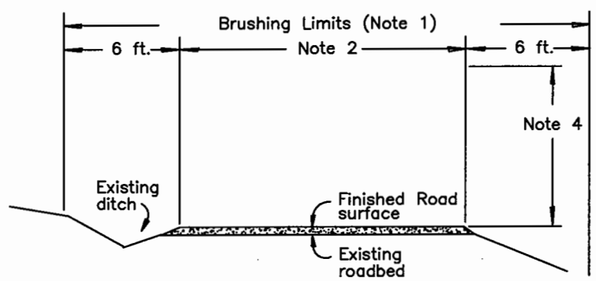
# ITEM 30326 RECONDITIONING OF ROADBED

## TYPICAL SECTION




ROAD RECONDITIONING NOTES:

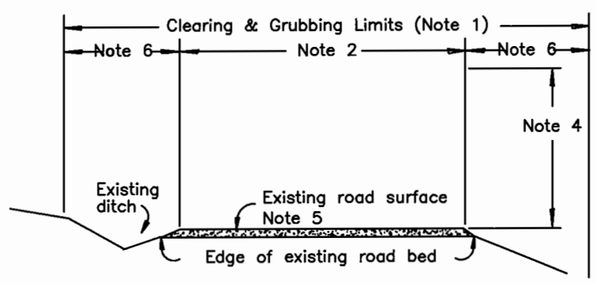
1. Inslope 2% to 4% in ditch sections and Outslope 2% to 4% in non ditch sections.
2. Typical minimum ditch dimensions shall be 3:1 Inslope at minimum 1' depth.
3. Typical Catch Basin as per Sheet 20. All existing culverts may not be shown in the drawings, however all culverts shall have the inlets and outlets cleaned and incidental to Items under Section 303.
4. Treat intersecting roads for a distance of 50 feet.
5. Item 30318 includes blading and shaping, and cleaning all ditches and catch basins.
6. Scarification is not required.




Brushing Typical
Items 23050

BRUSHING NOTES:

1. Includes Existing Traveled Way and Shoulders
2. Existing Traveled Way and Shoulder width varies.
3. Stumps outside the Traveled Way, shall not extend above the finished surface of the road.
4. Minimum Clear Height is 14 feet above the Finish Road Surface.
5. Protect existing aggregate surfacing.

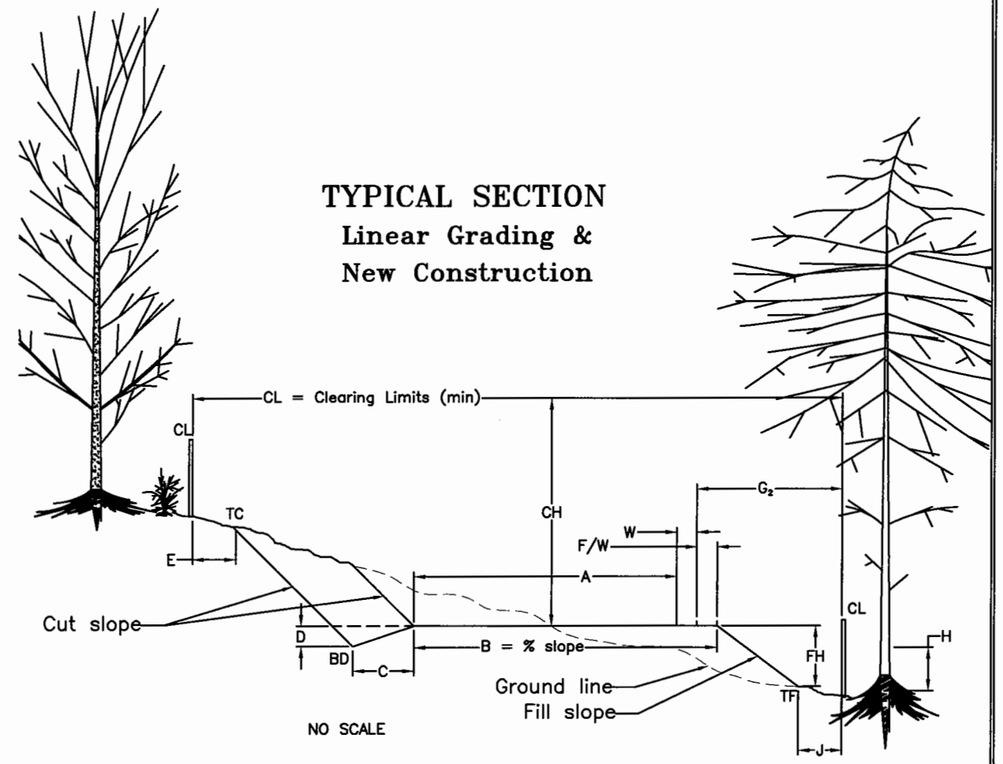



Clearing & Grubbing Typical
Item 20103, FSR 2499A(R)

CLEARING & GRUBBING NOTES:

1. Includes Existing Traveled Way and Shoulders
2. Existing Traveled Way and Shoulder width varies.
3. Stumps outside the Traveled Way, shall not extend above the finished surface of the road.
4. Minimum Clear Height is 14 feet above the Finish Road Surface.
5. Protect existing aggregate surfacing.
6. Clearing & grubbing limits shall be marked on one side of the road under Item 15219.02 and on both sides under Item 15202, as shown on the Project Work Description. Where only one side is marked, the edge of the road bed shall be considered the other limit.

## TYPICAL SECTION
### Linear Grading & New Construction




DESIGN STANDARDS

| ROAD NUMBER | A | B | C | D | E | G & G2 | H | J | FW FH = 0 to 6' | FW FH > 6' | CS | FS | W | Minimum CL & CH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All Roads | Note 1 | 2-4 | 3 | 1 | 3 | 5 | 0 | N/A | 1 | 2 | Note 2 | Note 3 | Note 4 | *24 & 14 |
| A = | Normal Subgrade Width (FtT) | | | | | | | | | | | | | |
| B = | Inslope, Outslope & Crown (%) | | | | | | | | | | | | | |
| C = | Ditch Width (Ft) | | | | | | | | | | | | | |
| D = | Ditch Depth (Ft) | | | | | | | | | | | | | |
| E = | Clearing past TC (Ft) | | | | | | | | | | | | | |
| G & G2 = | Minimum Clearing past G (cut) & G2 (fill) shoulder (Ft) | | | | | | | | | | | | | |
| H = | Maximum Fill Height on Trees (Ft) | | | | | | | | | | | | | |
| J = | Clearing distance from toe of fill for windrow (Ft) | | | | | | | | | | | | | |
| FH = | Fill Height (Ft) | | | | | | | | | | | | | |
| FW = | Fill Widening (Ft), or as shown on the DRAWINGS or AS STAKED | | | | | | | | | | | | | |
| CL/CH = | Clearing Limit & Clearing Height. *CL for road 2499[R], General Note 2.2 and 2499[R] Typical Section | | | | | | | | | | | | | |
| BD = | Bottom of Ditch | | | | | | | | | | | | | |
| TC = | Top of Cut | | | | | | | | | | | | | |
| TF = | Toe of Fill | | | | | | | | | | | | | |
| CS = | Cut Slope | | | | | | | | | | | | | |
| FS = | Fill Slope | | | | | | | | | | | | | |
| W = | Widening for curve, turnout & support for base & surface course aggregate (Ft) | | | | | | | | | | | | | |
| NOTES: | | | | | | | | | | | | | | |
| 1 | Minimum 12' with ditch, 14' without | | | | | | | | | | | | | |
| 2 | Cut Slope Ratio: 1:1, or AS STAKED | | | | | | | | | | | | | |
| 3 | Fill Slope Ratio: 1.33:1, or AS STAKED | | | | | | | | | | | | | |
| 4 | As shown on the DRAWINGS or AS STAKED | | | | | | | | | | | | | |

U.S. DEPARTMENT OF AGRICULTURE
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Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

Forest
Idaho Panhandle National Forests
Project Name
East Fork Stew

Sheet Title
Typical Sections
Sheet 5 of 25 Date: 4/28/2012

| **As per Table 204-2 | | | DESIGN CRITERIA | | | | | *12' with ditch, 14' without ditch | |
|---|---|---|---|---|---|---|---|---|---|
| ROAD NUMBER | MILES | KM | FUNCTION | SVC LVL | OPER. MAINT LVL | LANES | DESIGN SPEED | * MINIMUM ROAD WIDTH | **CONSTR TOLERANCE |
| 2499 (R) | 1.57 | 2.53 | L | D | 2 | Single | 10 | 12/14 | I |
| 2499A (R) | 1.21 | 1.95 | L | D | 2 | Single | 10 | 12/14 | I |
| 2499A (C) | 1.12 | 1.77 | L | D | 2 | Single | 10 | 12/14 | I |
| | | | | | | | | | |
| | | | | | | | | | |

## GENERAL NOTES

1. Roads to be reconstructed:
   - 1.1. Section 301. Existing subgrade width may be wider than needed to accommodate the specified Top Width & Depth of aggregate surfacing. If so, the finished Top Width will be measured from the cut or ditch side, or as marked.
   - 1.2. Section 602. Culverts in ditch sections shall have a catch basin constructed as shown on the drawings or as marked. Slash treatment shall be: T&L 11.3, stumps 11.3, logs 8, URT 1, as per Section 201. This work is an indirect payment to items under section 602.
2. Section 152. Staking.
   - 2.1. Work items, described in the Project Work Descriptions, will be marked on the ground by the Contractor, unless it is stated that the Forest Service will do the marking. Marking shall then be done by the Forest Service within 10 days upon receipt of a written request from the Contractor.
   - 2.2. Item 15219.01 for FSR 2499(R) shall be as follows (see 2499(R) Typical Section):
     - 2.2.1. Normal 14' road section – Set limit 1 = 10' from uphill side toe of cut, Set limit 2 = 30' from Set limit 1.
     - 2.2.2. Full width turnout section – Set limit 1 = 22' from uphill toe of cut, Set limit 2 = 44' from Set limit 1.
3. Section 204. Drainage excavation.
   - 3.1. Treatment methods for slash removed incidental to Item 20419.OD shall be: T&L 11.3, stumps 11.3, logs 8, URT 1, as per Section 201. This work is an indirect payment to the associated pay item.
   - 3.2. Deepen Ditch 6" if Armor Rock is specified.
4. Section 207. Geotextiles.
   - 4.1. Item 20701, shall be placed on the approved subgrade or ground prior to embankment placement, in areas shown on the Plan & Profile sheets, to the width and length shown.
   - 4.2. Estimated quantities include overlaps as per the specifications or manufacturer's recommendations.
   - 4.3. The minimum width is 12.5'. For placement under embankments, it shall support the full width of the embankment from toe to toe.
5. Section 301 & Item 32140. Aggregates.
   - 5.1. Aggregate quantities are compacted in place to the depth, top width and length shown, plus taper.
   - 5.2. Where width is indicated as "varies", width shall include the minimum normal subgrade width plus widening and turnouts, as indicated on the drawings.
   - 5.3. Item 32140, Haul & place stockpiled aggregate, shall meet the requirements of Section 301.
6. Section 306. Calcium Chloride pellet.
   - 6.1. The estimated quantities shown in the SCHEDULE are based on an application rate for CaCl pellet @ 94% minimum concentration of 1.38 #/sqyd and 12' width.
   - 6.2. Approved substitutions with a different minimum % concentration may require a change in the application rate or the quantity, as approved by the Contracting Officer.
7. Item 30805. Bedding & backfill aggregate. Culvert bedding shall be placed as shown on the drawing for the full length of the culvert. Compaction shall be in 6 inch lifts using a Forest Service approved mechanical compactor until no visible deformation is observed over the entire area of aggregate.
8. Section 602. Pipe culvert. All pipe culverts shall meet the following minimum materials and thickness requirements and compaction methods: Corrugated metal pipe, 0.064 inch thickness for steel or 0.075 inch thickness for aluminum, compaction method C, as per 209.11.
9. Section 625. Seeding. DO NOT apply fertilizer within 50' of live water.
10. Miscellaneous:
    - 10.1. MPs (mile posts) and STAs (stations) are for reference only and may not indicate actual miles.
    - 10.2. Stations noted on THE DRAWINGS are "P" (preliminary line) unless "L" (location line) is indicated.
    - 10.3. Slope staking will reference the "L" station.
    - 10.4. There are large granitic boulders scattered through out the project area.
    - 10.5. A copy of the cross sections & staking notes will be available at the Prework meeting.

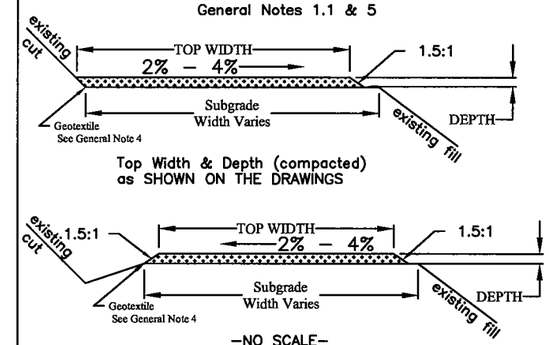
## 212 LINEAR GRADING NOTES

1. All work described under this section in the PROJECT WORK DESCRIPTION (PWD) is considered included in the cost of Items 21201 & 21202, unless noted otherwise or another Pay Item is shown.
2. Typical Sections, General Notes, Details, Design Standards and Design Criteria shown on the drawings apply to work under Section 212, unless noted otherwise.
3. Clearing, grubbing and slash disposal shall be as per section 201: tops & limbs–11.3, logs–8, stumps–11.3, unless noted otherwise.
4. Seed and fertilize all disturbed areas as per Section 625.
5. Spot work shall be completed as per the instructions for that specific spot. See the PWD.

ITEMS 30122 & 32140

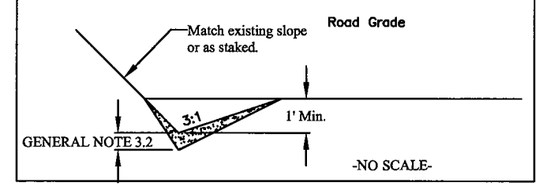
TYPICAL SECTIONS

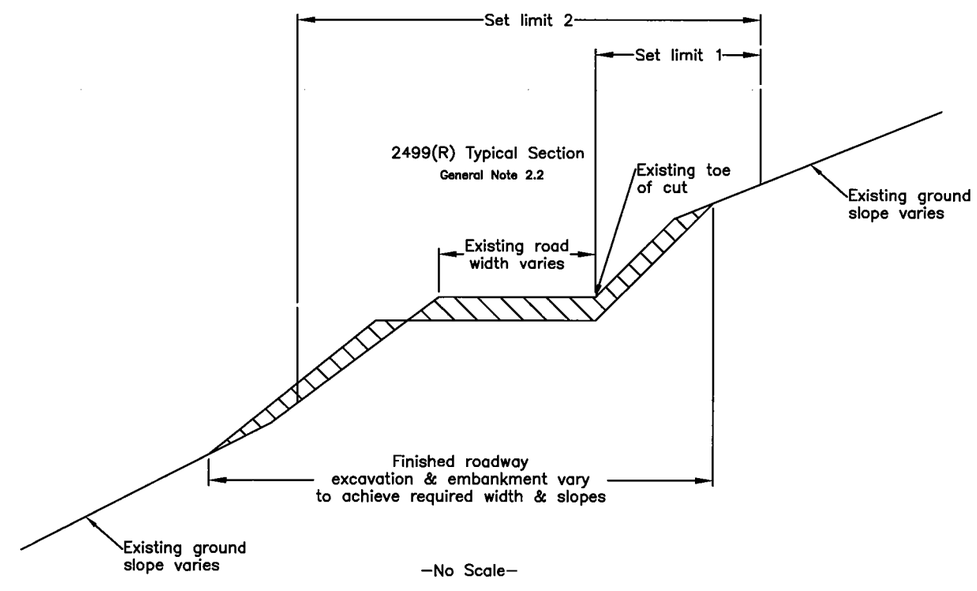
General Notes 1.1 & 5




DITCH

TYPICAL SECTION




U.S. DEPARTMENT OF AGRICULTURE
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Revised * Date *
Revised * Date *
Revised * Date *

Drawn DLJackson
Design DLJackson
Checked Rick Briggs
Reviewed Brent Briggs

Forest: Idaho Panhandle National Forests
Project Name: East Fork Stew

Sheet Title: Typical Sections, Design Criteria, General & Linear Grading Notes
Sheet 6 of 25 Date: 5/01/2012

| Project | East Fork Stew | | | | | | |
|---|---|---|---|---|---|---|---|
| Road # | 2499[R] | | | | | | |
| Mile Post | Station | Work Description | Pay Item | Estimated Quantity | Unit of Measure | Method of Measure | Remarks & Instructions |
| 0.000 | | No work | | | | | Junction FSR 397 left @ MP 5.60 |
| 0.361 | | Begin brushing | 23050 | 0.13 | MI | CQ | Begin Project. Junction FSR 2499A[R] left. |
| | | Begin road reconditioning | 30326 | 0.13 | MI | CQ | |
| | | Spot pit run (Govt source 1) | 30122 | 60 | CY | CQ | 6" depth x 14' top width, here to MP 0.40, as marked |
| | | Begin haul & place stockpiled aggregate (Govt source 1) | 32140 | 117 | CY | CQ | 4" depth x 13' top width, here to MP .493, as marked |
| 0.393 | | Erosion control, straw wattles | 15756 | 100 | LF | AQ | Existing 60"x42" pipe arch, Meadow Creek crossing. Place straw wattles at edge of road on each side from 25' before culvert to 25' past.. |
| 0.413 | | Install 18" CMP | 60201.18 | 34 | LF | AQ | Skew right-hand-back, as marked. Construct catch basin, included. |
| | | Placed riprap, class II-III (comercial source) | 25101 | 3 | CY | CQ | Place at inlet, in catch basin & outlet ditch |
| | | Drainage excavation, outlet ditch | 20419.OD | 20 | LF | AQ | Construct culvert outlet ditch, as marked |
| | | Install sediment trap | 15710 | 1 | EA | AQ | Install at end of outlet ditch using 3 straw bales |
| | | Begin drainage excavation, ditch | 20419.DT | 220 | LF | AQ | Reconstruct ditch left, here to MP 0.455 |
| | | Begin drainage excavation, ditch armor | 20418.DA | 16 | CY | CQ | Place in ditch here to MP 0.493 |
| 0.455 | | End drainage excavation, ditch | | | | | Tie into existing ditch left. Continue ditch armor |
| 0.493 | | End brushing | 23050 | | | | |
| | | End road reconditioning | 30326 | | | | |
| | | End drainage excavation, ditch armor | 20418.DA | | | | |
| | | End aggregate | 32140 | | | | |
| | | Begin establish clearing limits | 15219.01 | 1.44 | MI | CQ | |
| | | Begin linear grading | 21201 | 1.44 | MI | CQ | Reconstruct existing road, here to Sta. 46+35. All work noted ahead is included unless designated by a separate pay item. |
| 0.535 | | Removal of culvert | 20301 | 1 | EA | AQ | Remove existing 18" culvert |
| | | Install 18" CMP | 60201.18 | 26 | LF | AQ | Skew as marked. Construct catch basin, included. |
| | | Drainage excavation, outlet ditch | 20419.OD | 10 | LF | AQ | Construct culvert outlet ditch, as marked |
| | | Spot pit run (Govt source 1) | 30122 | 10 | CY | CQ | 6" depth x 12' top width over top of culvert |
| 0.540 | | Construct turnout left | | | | | Barriered road up left, 2499UE. Construct standard turnout left |
| 0.597 | | Removal of culvert | 20301 | 1 | EA | AQ | Remove existing 18" culvert |
| | | Install 18" CMP | 60201.18 | 26 | LF | AQ | Skew as marked. Construct catch basin, included. |
| | | Drainage excavation, outlet ditch | 20419.OD | 10 | LF | AQ | Construct culvert outlet ditch, as marked |
| | | Spot pit run (Govt source 1) | 30122 | 10 | CY | CQ | 6" depth x 12' top width over top of culvert |

| Road # | 2499[R] | | | | | | |
|---|---|---|---|---|---|---|---|
| Mile Post | Station | Work Description | Pay Item | Estimated Quantity | Unit of Measure | Method of Measure | Remarks & Instructions |
| 0.665 | | Existing culvert | | | | | Existing 18" culvert. Clean inlet and outlet. Reconstruct catchbasin and ditch left ahead. |
| | | Placed riprap, class II-III (comercial source) | 25101 | 2 | CY | CQ | Place at inlet, catch basin & outlet |
| | | Begin drainage excavation, ditch armor | 20418.DA | 19 | CY | CQ | Place in ditch here to MP 0.759 |
| 0.697 | | | | | | | Unit boundary |
| 0.730 | | | | | | | Junction spur down right. Maintain access. Stay left. |
| 0.759 | | End drainage excavation, ditch armor | 20418.DA | | | | End existing ditch right. Outslope ahead |
| 0.790 | | | | | | | Junction 2499UB down right. Maintain access. Stay left |
| 0.812 | | Grade dip | | | | | Replace existing water bar with grade dip |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| 0.890 | | Switchback #1 | | | | | Junction 2499UA off end of left hand switchback #1. Maintain access. Reconstruct switchback as marked. 50' minimum radius. |
| 0.930 | | Grade dip | | | | | Construct grade dip |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| 0.980 | | | | | | | Unit boundary crosses road |
| 1.050 | 0+00 | | | | | | End Mile Post (MP), change to Stationing (Sta.) |
| | 2+80 | Construct turnout left | | | | | Begin taper to full width turnout left. End at 3+90. |
| | 4+03 | Grade dip | | | | | Maintain existing grade dip |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| | 9+00 | Grade dip | | | | | Replace existing water bar with grade dip |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| | 9+25 | | | | | | Unit boundary from left & up rd |
| | 12+30 | | | | | | Unit boundary leaves road left. |
| | 14+87 | Construct turnout left | | | | | Remove water bar. Construct standard turnout left as marked |
| | 18+60 | Switchback #2 | | | | | Right hand switchback #2. Reconstruct to minimum 50' radius as marked. |
| | 20+18 | Grade dip | | | | | Replace existing water bar with grade dip |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| | 24+30 | Grade dip | | | | | Construct grade dip. Begin taper to full width standard turnout right as marked. |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| | 25+65 | | | | | | Junction 2488UEC up left. Maintain access. Stay right. |
| | 30+85 | Grade dip | | | | | Construct grade dip |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| | 36+20 | | | | | | Junction 2499UEB down right. Maintain access. Stay left. |
| | 37+95 | Switchback #3 | | | | | Left hand switchback #3. Reconstruct to minimum 50' radius as marked. |
| | 40+40 | Grade dip | | | | | Construct grade dip |
| | | Placed riprap, class II-III (comercial source) | 25101 | 5 | CY | CQ | Place in bottom & outfall of dip |
| | 46+35 | | | | | | Construct truck tumaround |
| | | End establish clearing limits | 15219 | | | | |
| | | End linear grading | 21201 | | | | End project. Existing road continues ahead. |
| | | End of project | | | | | |

U.S. DEPARTMENT OF AGRICULTURE
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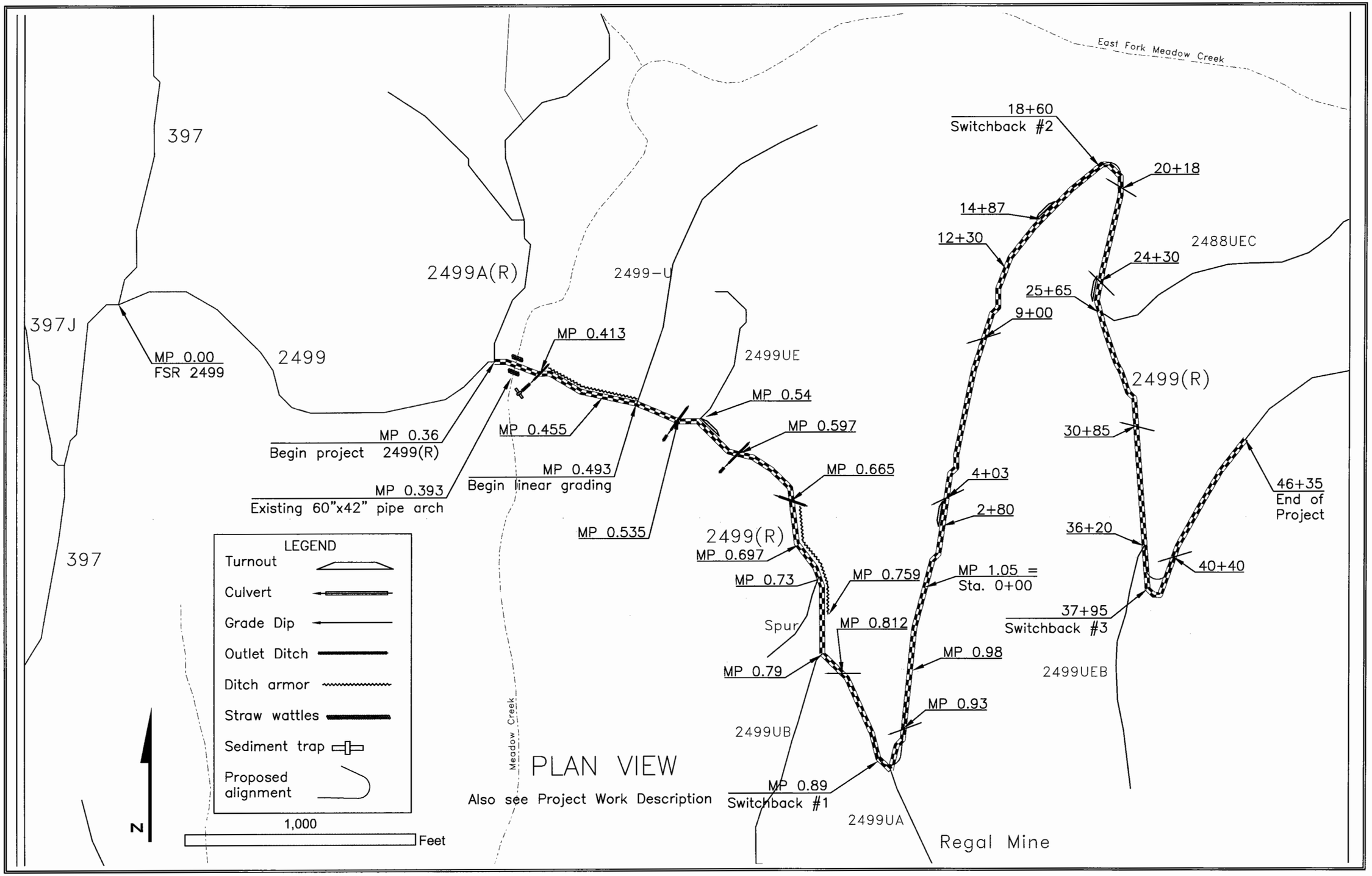
Revised * Date *

Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

Forest
Idaho Panhandle National Forests
Project Name
East Fork Stew

Sheet Title
2499(R) Project Work Description
Sheet 7 of 25 Date: 4/27/2012




PLAN VIEW

Also see Project Work Description

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|---|---|---|---|
| Revised * | Date * | | |
| Revised * | Date * | | |
| Revised * | Date * | | |
| Revised * | Date * | | |

Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

Forest
Idaho Panhandle National Forests

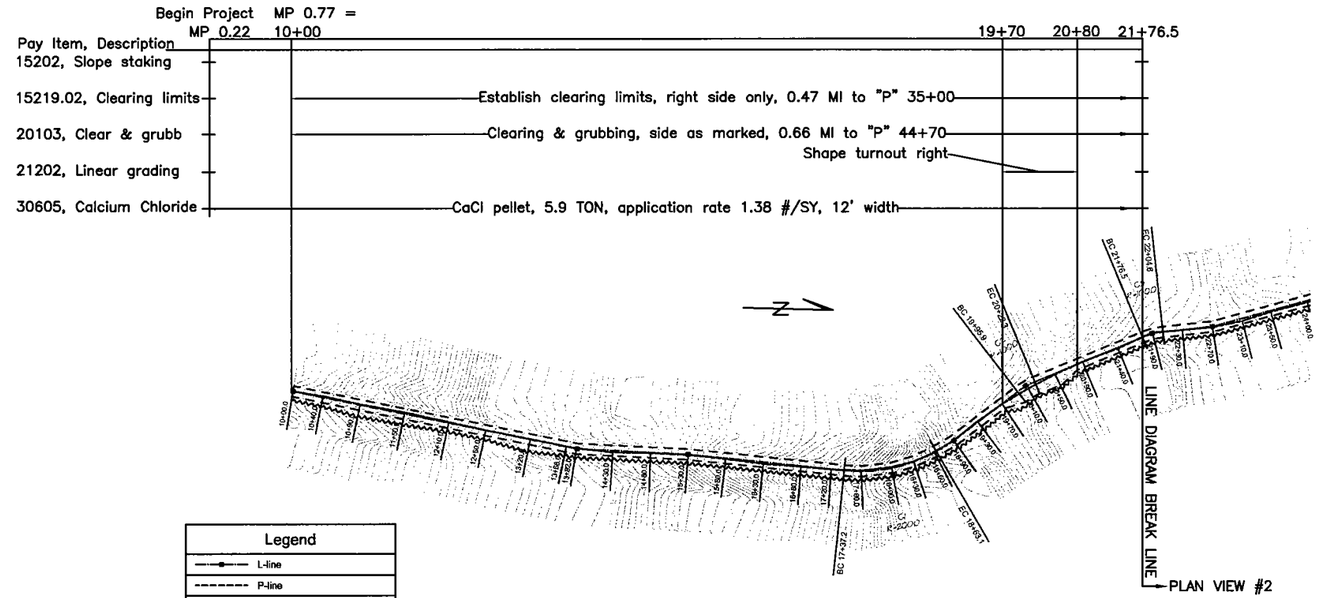
Project Name
East Fork Stew

Sheet Title
2499(R) Project Work Map

Sheet 8 of 25 Date: 4/28/2012

Project East Fork Stew
Road # 2499A[R]

| Mile Post | Station | Work Description | Pay Item | Estimated Quantity | Unit of Measure | Method of Measure | Remarks & Instructions |
|---|---|---|---|---|---|---|---|
| 0.00 | | | | | | | Junction FSR 2499 right @ MP 0.361 |
| 0.05 | | | | | | | Junction gated road right |
| 0.22 | | Begin calcium chloride (pellet @ 94% minimum concentration) | 30605 | 5.9 | TON | AQ | Begin Project. Junction FSR 2499B right. CaCl pellet @ 1.38 #/SY, 12' width, here to P Sta. 44+30 |
| 0.68 | | | | | | | Barriered road right |
| 0.71 | | | | | | | Existing culvert |
| 0.77 | 10+00 | Begin establish clearing limits, right side only | 15219.02 | 0.47 | MI | CQ | End Mile Post (MP), change to "P" Stations. Also see Plan sheets. |
| | | Begin clearing & grubbing, side as marked | 20103 | 0.66 | MI | CQ | Here to 44+30. Includes Linear Grading spots noted ahead. Protect existing aggregate surfacing. |
| | 19+70 | Linear grading (spot) | 21202 | Lump Sum | LS | LSQ | Shape new turnout right to 20+80 |
| | 28+00 | Linear grading (spot) | 21202 | Lump Sum | LS | LSQ | Shape new turnout right to 29+10 |
| | 35+00 | End establish clearing limits, right side | 15219.02 | | | | |
| | | Begin Slope staking, both sides | 15202 | 0.07 | MI | CQ | Here to 38+70 |
| | | Linear grading (spot) | 21202 | Lump Sum | LS | LSQ | Clear & grubb left side and excavate approximately 240 CY, as marked, for curves and widening here to 38+70.. Conserve existing aggregate surfacing & relay when done. Dispose of excavated material at designated area near MP 0.65, included. Seed disturbed areas, 0.05 Acres as per 625 |
| | 38+70 | End slope staking | 15202 | | | | |
| | | Begin establish clearing limits, right side only | 15219.02 | 0.11 | MI | CQ | Here to MP 44+30 |
| | | Linear grading (spot) | 21202 | Lump Sum | LS | LSQ | Shape new turnout right to 39+85 |
| | 44+30 | End establish clearing limits | 15219.02 | | | | |
| | | End clearing & grubbing | 20103 | | | | |
| | | End calcium chloride | 30605 | | | | |
| | | End Project | | | | | 2499A[C] leaves the existing road to the right. Existing road continues ahead. |
| | | | | | | | |
| Revised | 4/27/12 | | | | | | |

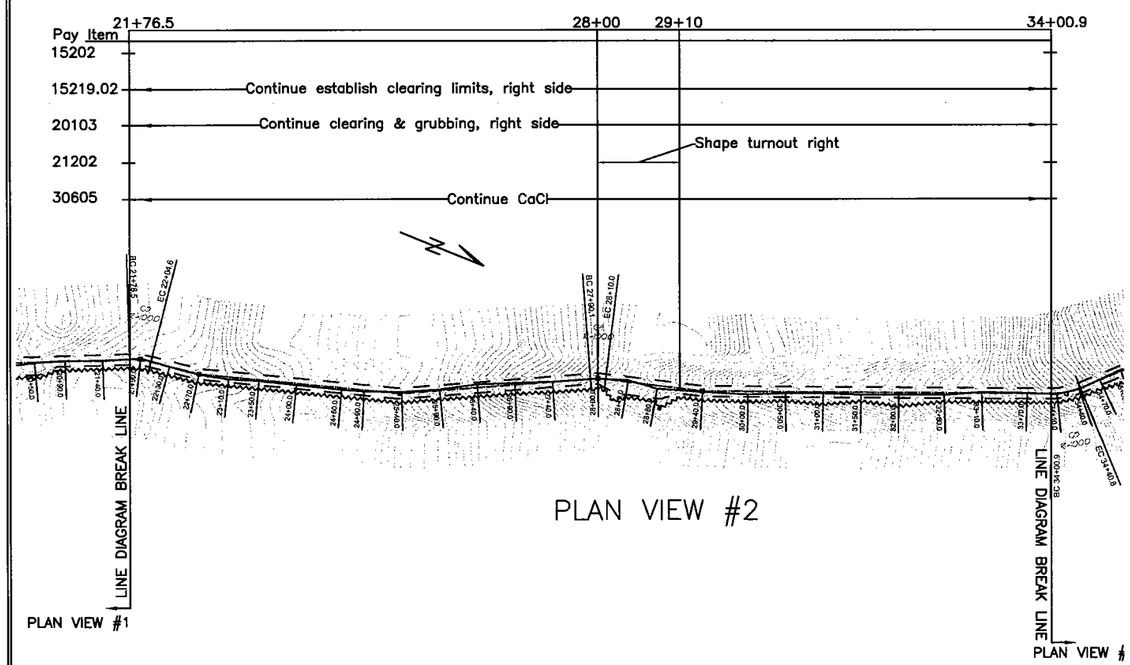



Legend
- L-line
- P-line
- Edge of road
- Clearing Limits
- Cross Section Lines

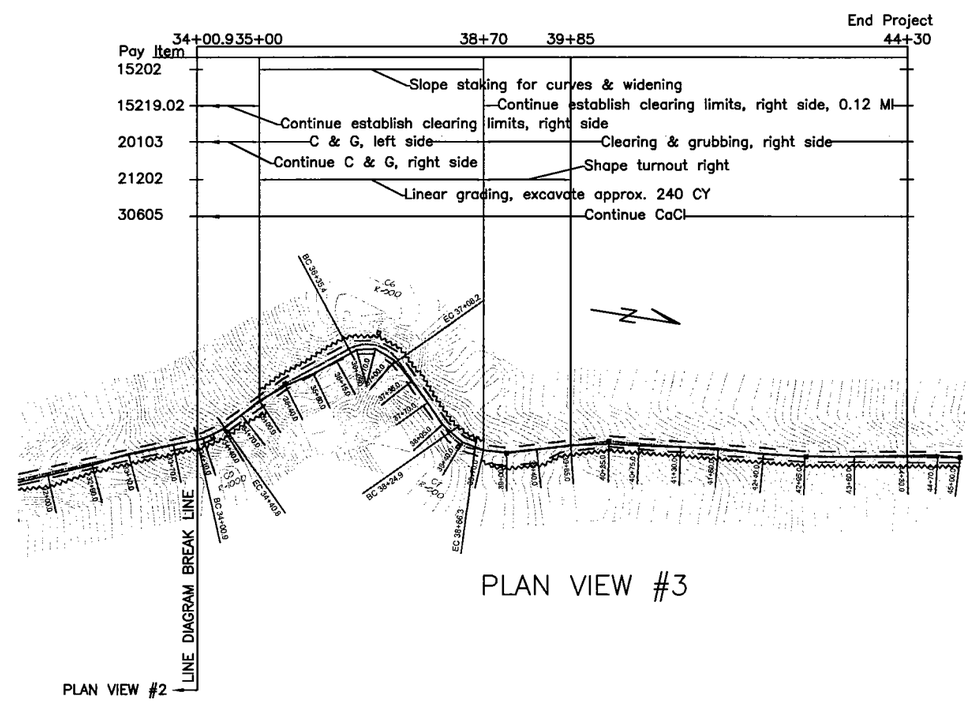
C & G = Clearing & grubbing

Scale in Feet
0 250

PLAN VIEW #1




PLAN VIEW #2




PLAN VIEW #3

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FOREST SERVICE
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NORTHERN REGION

Revised * Date *
Revised * Date *
Revised * Date *
Revised * Date *

Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

Forest
Idaho Panhandle National Forests
Project Name
East Fork Stew

Sheet Title
2499A(R) Project Work Description & Plan Views
Sheet 9 of 25
Date: 4/27/2012

| Project | East Fork Stew | | | | | |
|---|---|---|---|---|---|---|
| Road # | 2499A[C] | | | | | |
| P Station | L Station | Work Description | Pay Item | Estimated Quantity | Unit of Measure | Remarks & Instructions |
| 44+30 | 44+30 | Begin Project | | | | Conserve existing aggregate & place on new subgrade here to 45+00 |
| | | Begin slope staking | 15202 | 1.12 | MI | |
| | | Begin clearing & grubbing | 20104 | 4.7 | AC | |
| | | Begin roadway excavation | 20401 | 8885 | CY | |
| | | Begin seeding | 62501 | 1.9 | AC | All disturbed areas, here to End of Project |
| 44+70 | 44+70 | Install 18" CMP | 60201.18 | 40 | LF | With catch basin, skew 30 deg RHB, min grade 4% |
| | | Construct outlet ditch | 20419.OD | 20 | LF | |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | In catch basin |
| | | Begin pit run aggregate (Govt source 2, P 54+95) | 30122.02 | 90 | CY | 8" depth x 14' top width, here to P 46+60 |
| 45+00 | 45+00.86 | Begin earthwork geotextile | 20701 | 225 | SY | Place on approved subgrade here to 46+60 |
| 46+60 | 48+61.66 | End pit run | 30122.02 | | | |
| | | End geotextile | 20701 | | | |
| 47+26 | 47+30.8 | Install 30" CMP | 60201.30 | 44 | LF | |
| | | Place bedding aggregate (Govt source 1) | 30805 | 9 | CY | |
| | | Placed riprap (Commercial source) | 25101 | 2 | CY | Place at inlet flowline & on fill slope and at outlet |
| | | Construct sediment trap | 15710 | 1 | EA | Below outlet, as marked |
| 53+10 | 53+15.8 | Install 18" CMP | 60201.18 | 38 | LF | |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place at inlet flowline |
| 54+95 | 55+00.63 | Pit development | 65102.02 | Job | LS | Pit run source 2, see pit development plan |
| 56+85 | 56+92.5 | Install 18" CMP | 60201.18 | 48 | LF | |
| | | Construct outlet ditch | 20419.OD | 10 | LF | |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place at inlet flowline |
| 58+65 | 58+74.14 | Install 18" CMP | 60201.18 | 34 | LF | |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place at inlet flowline |
| 63+80 | 63+85.5 | Install 18" CMP | 60201.18 | 30 | LF | With catchbasin, Skew 30 deg RHB, min grade 8% |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place in catch basin |
| 66+00 | 66+04.93 | Pit development | 65102.02 | Job | LS | Pit run source 2, see pit development plan |
| 71+25 | 71+28.70 | Install 18" CMP | 60201.18 | 26 | LF | With catch basin |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place in catch basin |
| 75+36.4 | 75+38.26 | Install 18" CMP | 60201.18 | 36 | LF | With catch basin, min grade 2% |
| | | Construct outlet ditch | 20419.OD | 10 | LF | |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place in catch basin |
| | 76+64.08 | Begin ditch armor (Commercial source) | 20418.DA | 28 | CY | 6" depth in bottom of ditch, here to L 85+44.60, as marked |
| 77+00 | 77+05.56 | Begin placing stockpiled aggregate | 32140 | 54 | CY | 4" depth x 16.5' top width, here to L 79+71.68 |
| 78+30 | 78+44.73 | Begin earthwork geotextile | 20701 | 135 | SY | Place on approved ground prior to embankment placement, here to P 78+60 |
| 78+40.1 | 78+55.4 | Install 24" CMP | 60201.24 | 32 | LF | With catch basin |
| | | Place bedding aggregate (Govt source 1) | 30805 | 9 | CY | |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place in catch basin |
| 78+60 | 78+75.57 | End geotextile | 20701 | | | |
| 79+60 | 79+71.68 | End placing stockplied aggregate | 32140 | | | 4" x 16.5' top width |
| | | Begin placing stockpiled aggregate | 32140 | 126 | CY | 4" depth x 14.5' top width, here to L 86+01.09 |
| 83+77 | 83+91.6 | Install 42" CMP | 60201.42 | 50 | LF | |
| | | Place bedding aggregate (Govt source 1) | 30805 | 9 | CY | |
| | | Placed riprap (Commercial source) | 25101 | 3 | CY | Place at inlet flowline & on fill slope and at outlet |
| | | Construct sediment trap | 15710 | 1 | EA | Below outlet, as marked |
| 83+94 Bk = 84+94 Ahd | 84+11.53 | Equation statation | | | | |

| Project | East Fork Stew | | | | | |
|---|---|---|---|---|---|---|
| Road # | 2499A[C] | | | | | |
| P Station | L Station | Work Description | Pay Item | Estimated Quantity | Unit of Measure | Remarks & Instructions |
| 86+35 | 85+54.60 | Install 18" CMP | 60201.18 | 36 | LF | With catch basin |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place in catch basin |
| | 89+97.36 | Begin ditch armor (Commercial source) | 20418.DA | 5 | CY | 6" depth in bottom of ditch, here to L 91+27.33, as marked |
| 92+25 | 91+52 | Begin earthwork geotextile | 20701 | 340 | SY | Place on approved ground prior to embankment placement and on approved subgrades, as marked, here to P 94+05 |
| 92+00 | 91+27.33 | End ditch armor | 20418.DA | | | |
| 92+70 | 91+97.10 | Install 24" CMP | 60201.24 | 32 | LF | |
| | | Place bedding aggregate (Govt source 1) | 30805 | 9 | CY | |
| | | Placed riprap (Commercial source) | 25101 | 3 | CY | Place at inlet flowline & on fill slope and at outlet |
| | | Construct sediment trap | 15710 | 1 | EA | Below outlet, as marked |
| | 92+33.35 | Begin pit run aggregate (Govt source 2, P 66+00) | 30122.02 | 220 | CY | 8" depth. Top width varies 13' - 14.5', here to P 100+65 |
| | | Begin ditch armor (Commercial source) | 20418.DA | 7 | CY | 6" depth in bottom of ditch, here to L 94+28.50, as marked |
| 94+05 | 93+37.08 | End geotextile | 20701 | | | |
| 94+95 | 94+28.50 | End ditch armor | 20418.DA | | | |
| 95+75 | 95+08.97 | Begin earthwork geotextile | 20701 | 700 | SY | Place on approved ground prior to embankment placement and on approved subgrades, as marked, here to P 100+65 |
| 96+15 | 95+50.10 | Install 18" CMP | 60201.18 | 30 | LF | With catch basin |
| | | Placed riprap (Commercial source) | 25101 | 1 | CY | Place in catch basin |
| 100+00 | 99+38.30 | Install 18" CMP | 60201.18 | 36 | LF | With catchbasin, skew 30 deg RHB, min grade 8% |
| | | Construct outlet ditch | 20419.OD | 20 | LF | |
| | | Placed riprap | 25101 | 2 | CY | In catch basin & outlet ditch |
| 100+65 | 100+04.29 | End pit run aggregate | 30122.02 | | | |
| | | End geotextile | 20701 | | | |
| 105+40 | 104+81.55 | End slope staking | 15202 | | | |
| | | End clearing & grubbing | 20104 | | | |
| | | End roadway excavation | 20401 | | | |
| | | End seeding | 62501 | | | |
| | | End Project | | | | |

U.S. DEPARTMENT OF AGRICULTURE
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Revised * Date *

Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

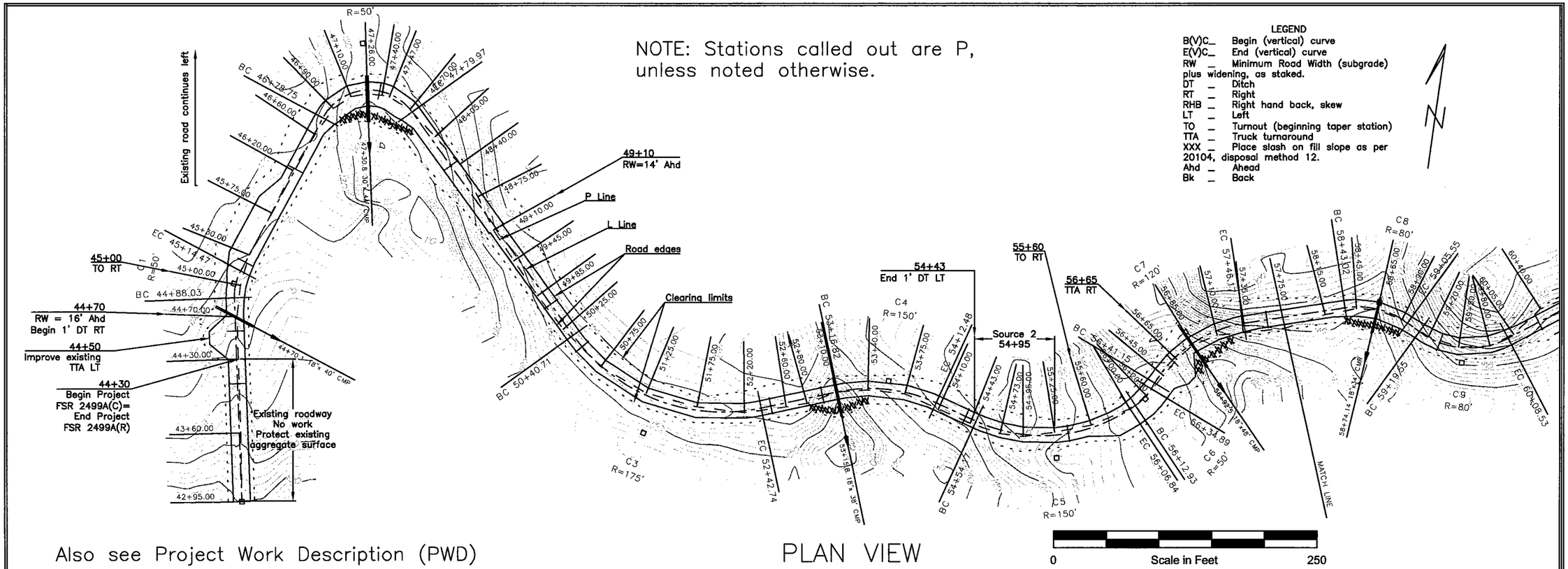
Forest
Idaho Panhandle National Forests
Project Name
East Fork Stew

Sheet Title
FSR 2499A(C) PWD
Sheet 10 of 25 Date: 4/28/2012

NOTE: Stations called out are P, unless noted otherwise.

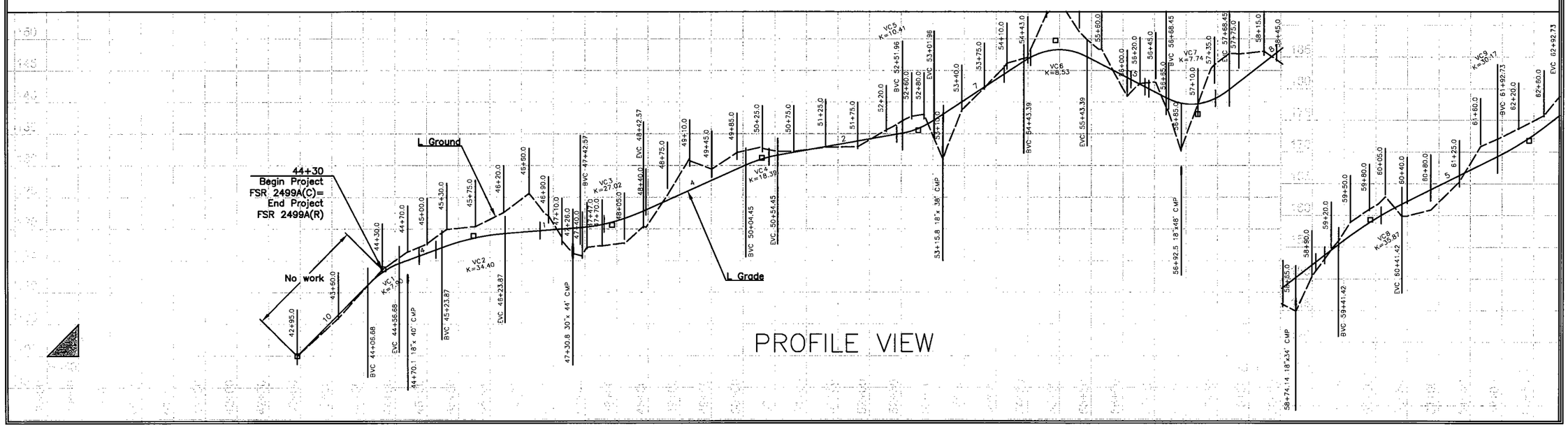
**LEGEND**

- B(V)C_ Begin (vertical) curve
- E(V)C_ End (vertical) curve
- RW _ Minimum Road Width (subgrade) plus widening, as staked.
- DT _ Ditch
- RT _ Right
- RHB _ Right hand back, skew
- LT _ Left
- TO _ Turnout (beginning taper station)
- TTA _ Truck turnaround
- XXX _ Place slash on fill slope as per 20104, disposal method 12.
- Ahd _ Ahead
- Bk _ Back




Also see Project Work Description (PWD)

PLAN VIEW




PROFILE VIEW

U.S. DEPARTMENT OF AGRICULTURE
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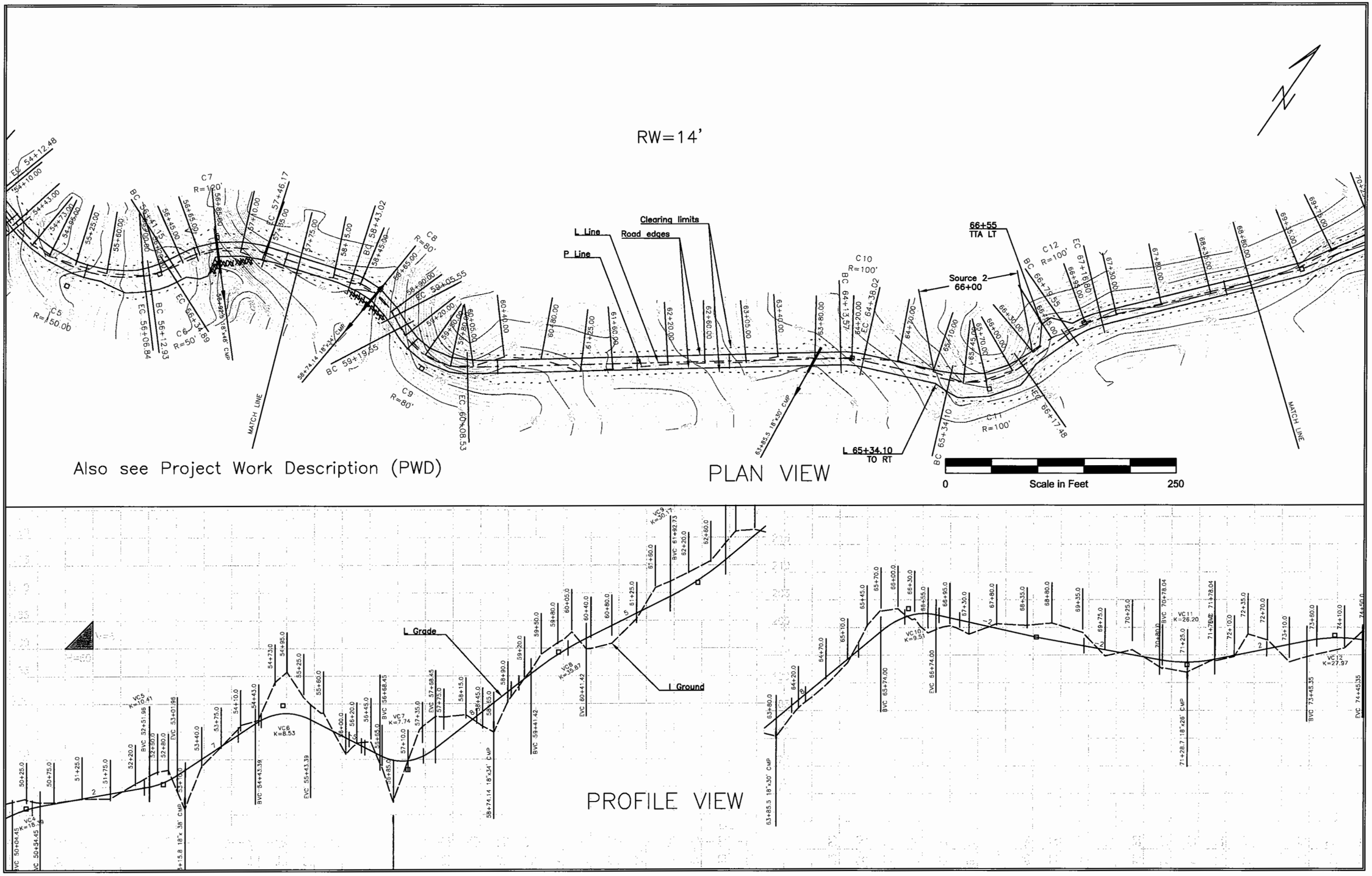
|---|---|---|---|
| Revised * | Date * | Drawn | DLJackson |
| Revised * | Date * | Design | DLJackson |
| Revised * | Date * | Checked | Rick Driggs |
| Revised * | Date * | Reviewed | Brent Briggs |

Forest: Idaho Panhandle National Forests

Project Name: East Fork Stew

Sheet Title: 2499A(C) Plan & Profile sheet 1

Sheet 11 of 25 Date: 4/28/2012

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| Revised * | Date * | | |

Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

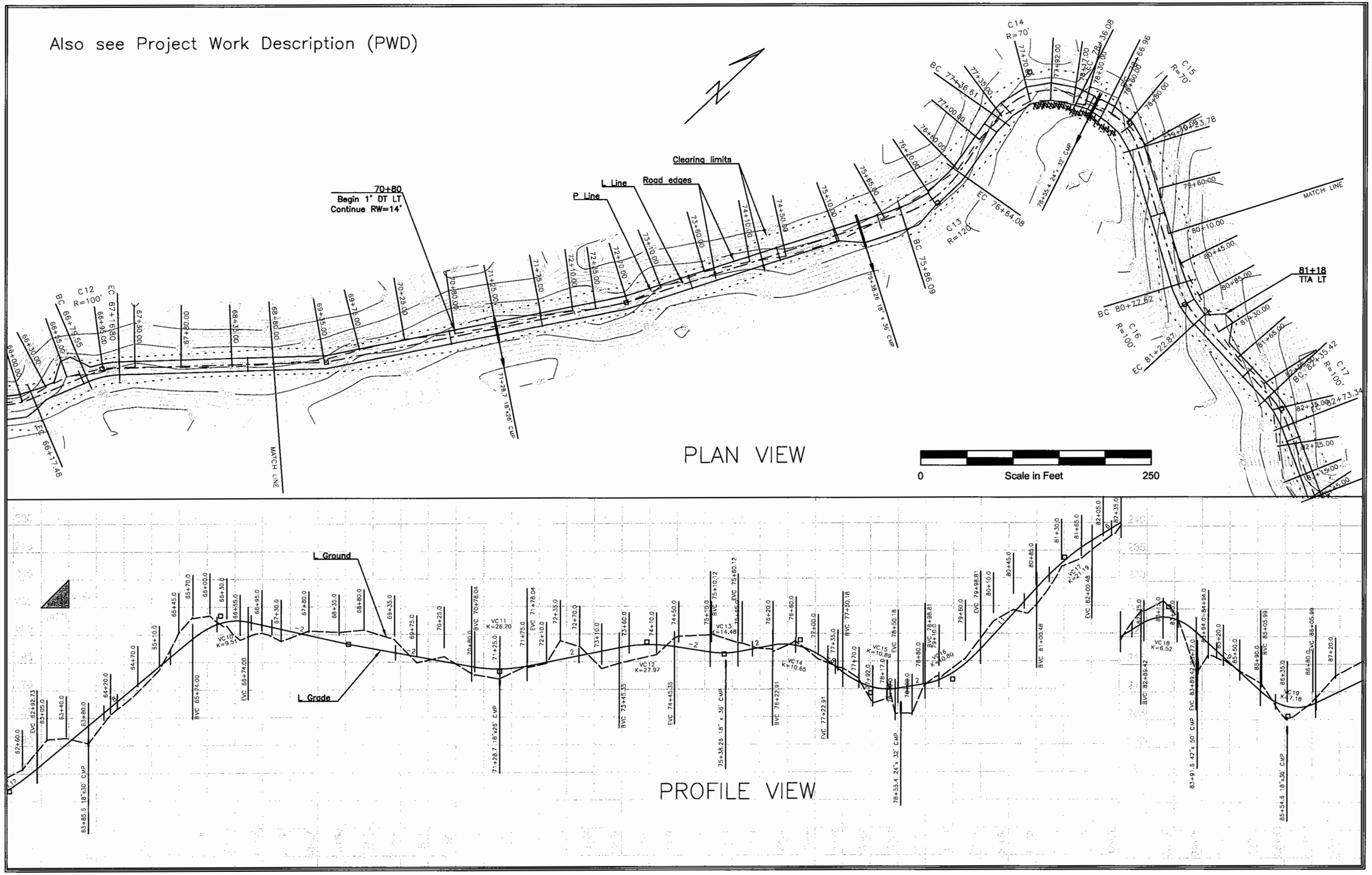
Forest
Idaho Panhandle National Forests

Project Name
East Fork Stew

Sheet Title
2499A(C) Plan & Profile sheet 2

Sheet 12 of 25 Date: 4/27/2012

Also see Project Work Description (PWD)

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| Revised | Date | | |
| Revised | Date | | |
| Revised | Date | | |
| Revised | Date | | |

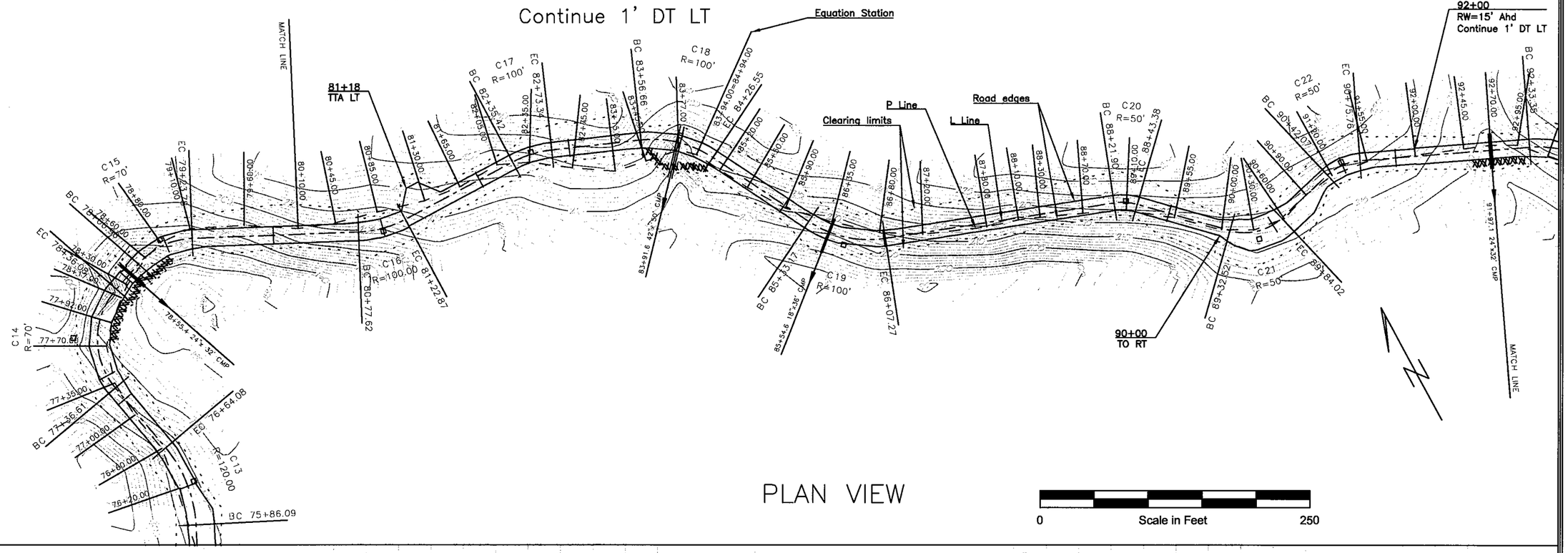
Drawn: DLJackson
Design: DLJackson
Checked: Rick Driggs
Reviewed: Brent Briggs

Forest: Idaho Panhandle National Forests
Project Name: East Fork Stew

Sheet Title: 2499A(C) Plan & Profile sheet 3
Sheet 13 of 25 Date: 4/27/2012

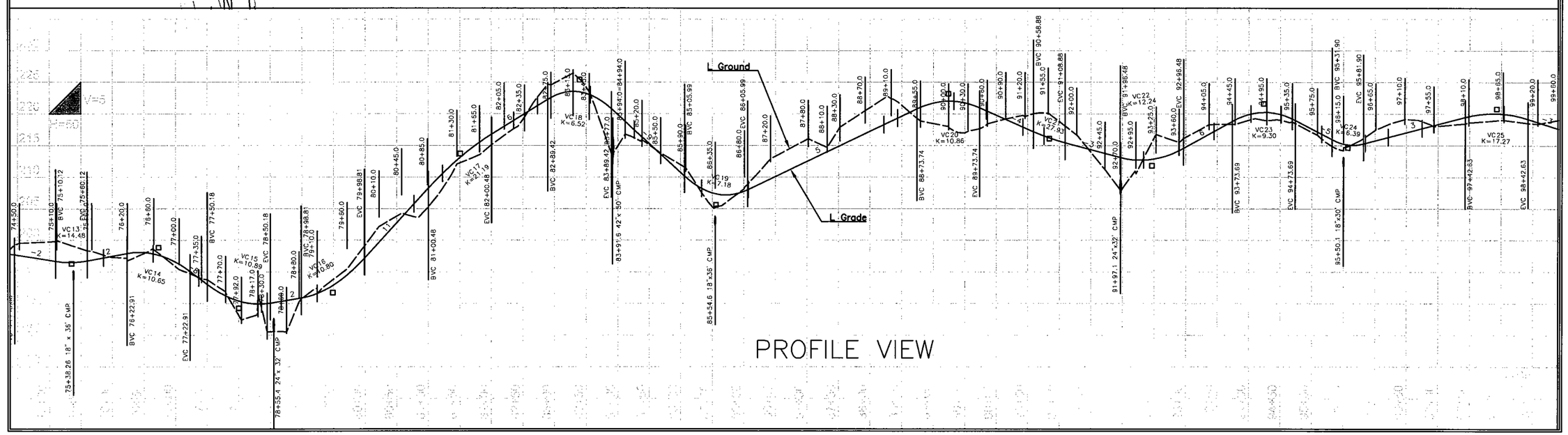
Also see Project Work Description (PWD)

Continue RW=14' to 92+00
Continue 1' DT LT




PLAN VIEW

0 Scale in Feet 250




PROFILE VIEW

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| Revised * | Date * | | |
| Revised * | Date * | | |
| Revised * | Date * | | |

Drawn DLJackson
Design DLJackson
Checked Rick Briggs
Reviewed Brent Briggs

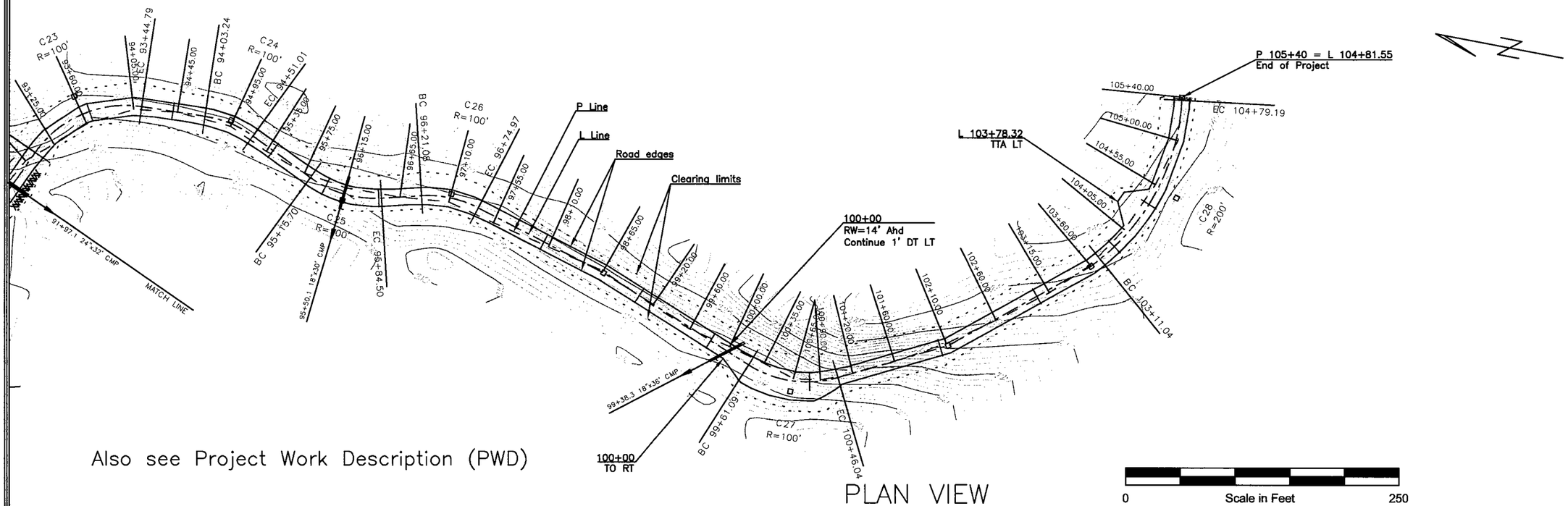
Forest
Idaho Panhandle National Forests

Project Name
East Fork Stew

Sheet Title
2499A(C) Plan & Profile sheet 4

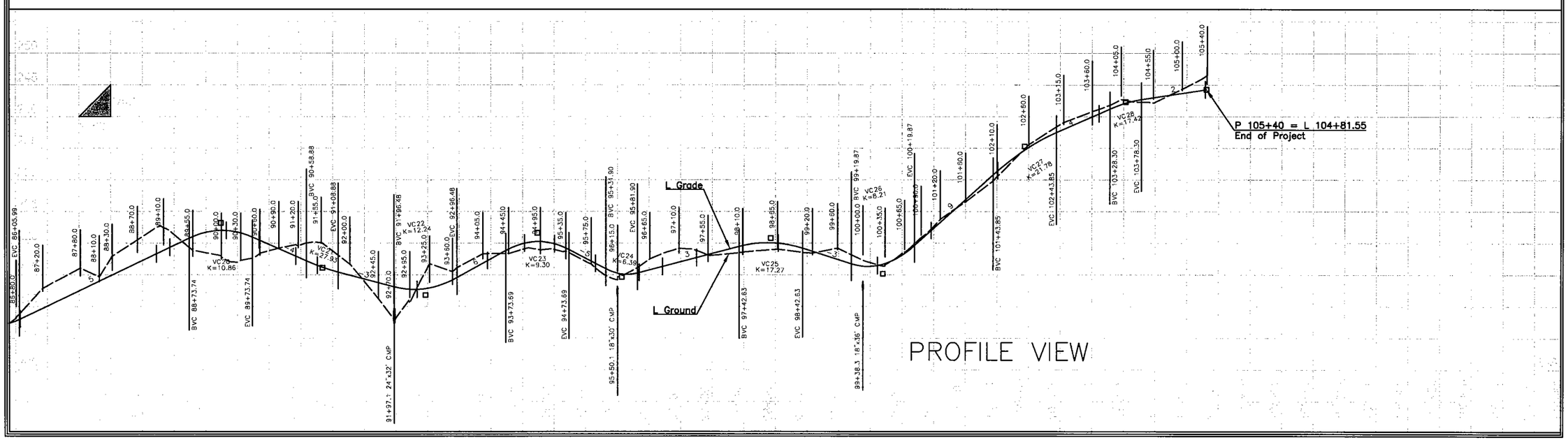
Sheet 14 of 25 Date: 4/27/2012

Continue RW=15' to 100+00
Continue 1' DT LT




Also see Project Work Description (PWD)

PLAN VIEW




PROFILE VIEW

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-1
NORTHERN REGION

| | |
|---|---|
| Revised * | Date * |
| Revised * | Date * |
| Revised * | Date * |
| Revised * | Date * |

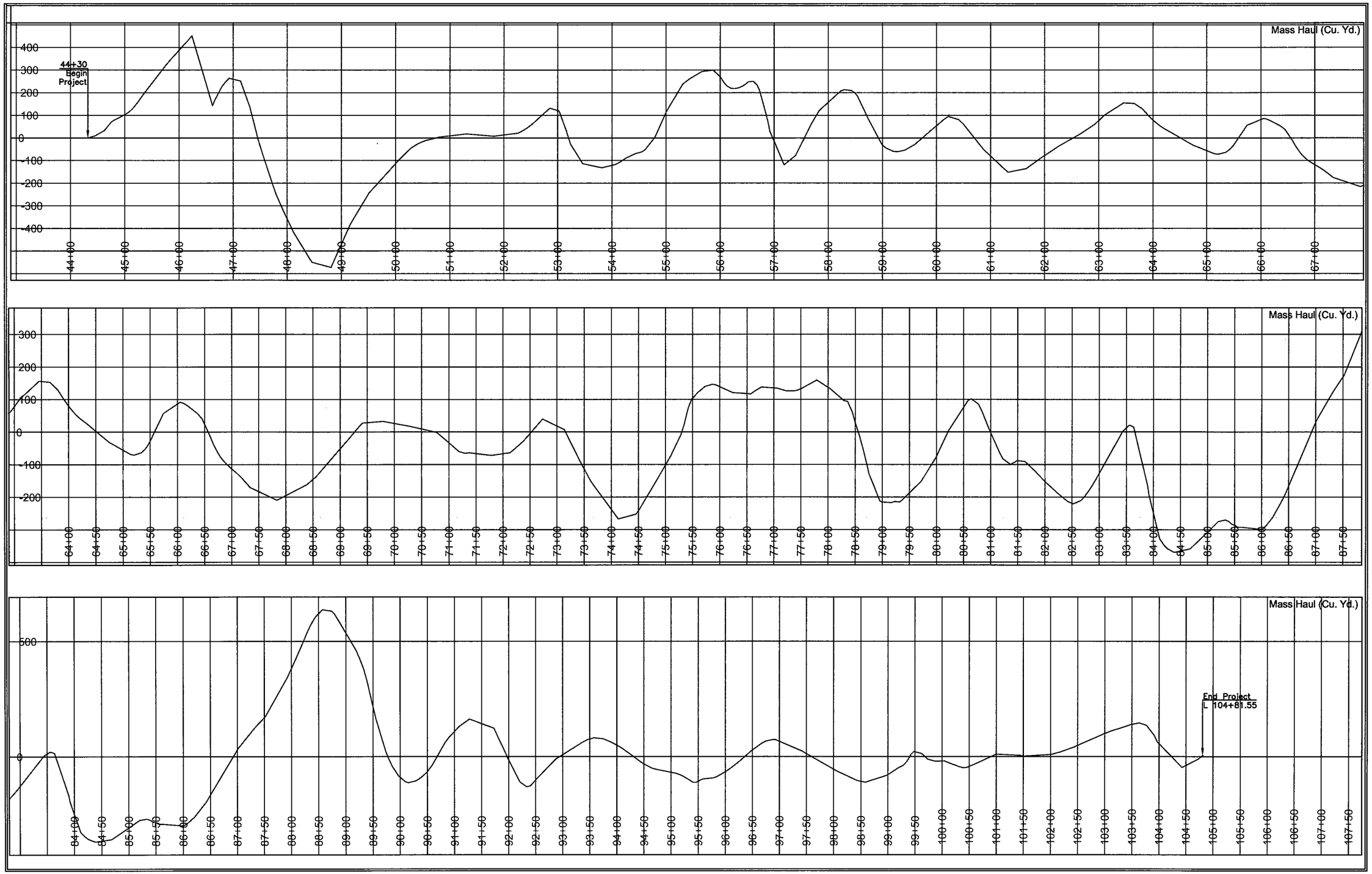
| | |
|---|---|
| Drawn | DLJackson |
| Design | DLJackson |
| Checked | Rick Driggs |
| Reviewed | Brent Briggs |

Forest
Idaho Panhandle National Forests

Project Name
East Fork Stew

Sheet Title
2499A(C) Plan & Profile sheet 5

Sheet 15 of 25 Date: 4/27/2012




U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
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NORTHERN REGION

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| Revised * | Date * | | |
| Revised * | Date * | | |
| Revised * | Date * | | |
| Revised * | Date * | | |

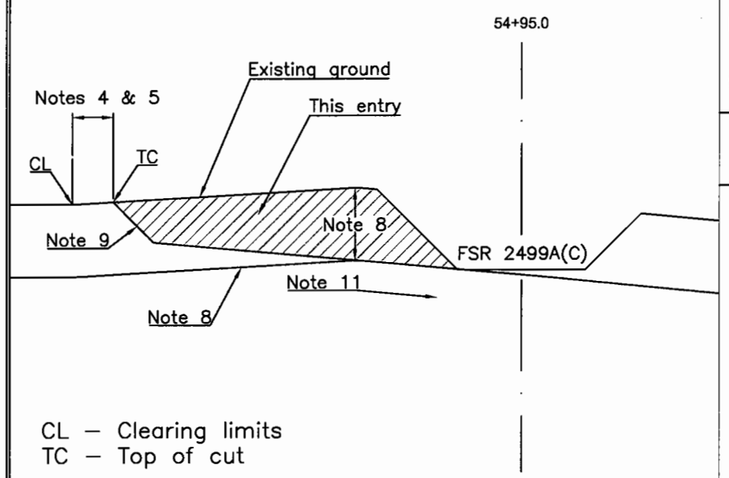
Drawn DLJackson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

Forest
Idaho Panhandle National Forests

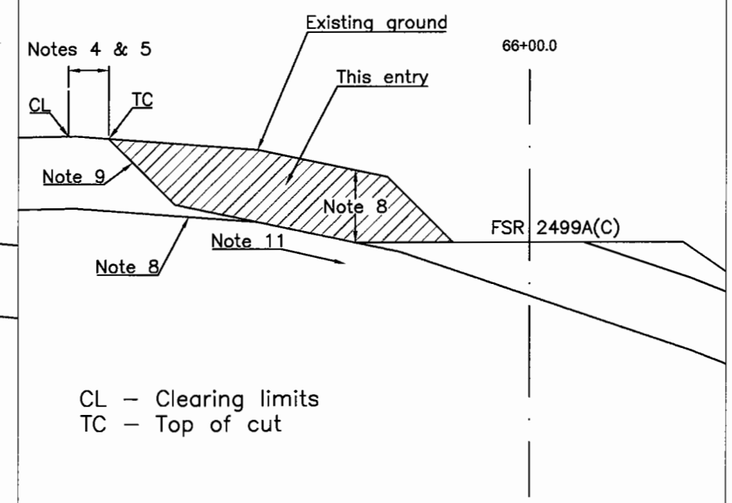
Project Name
East Fork Stew

Sheet Title
2499A(C) Mass Diagrams

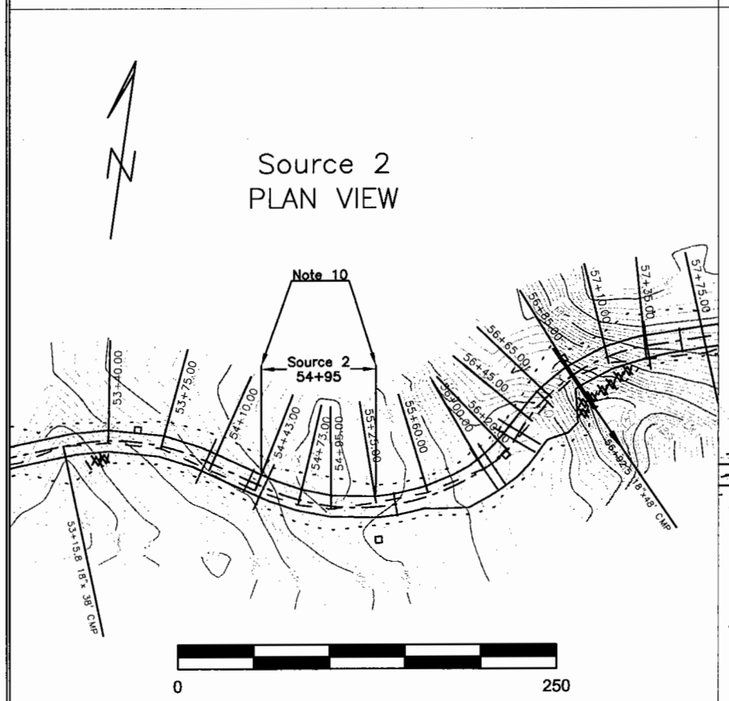
Sheet 16 of 25 Date: 4/29/2012

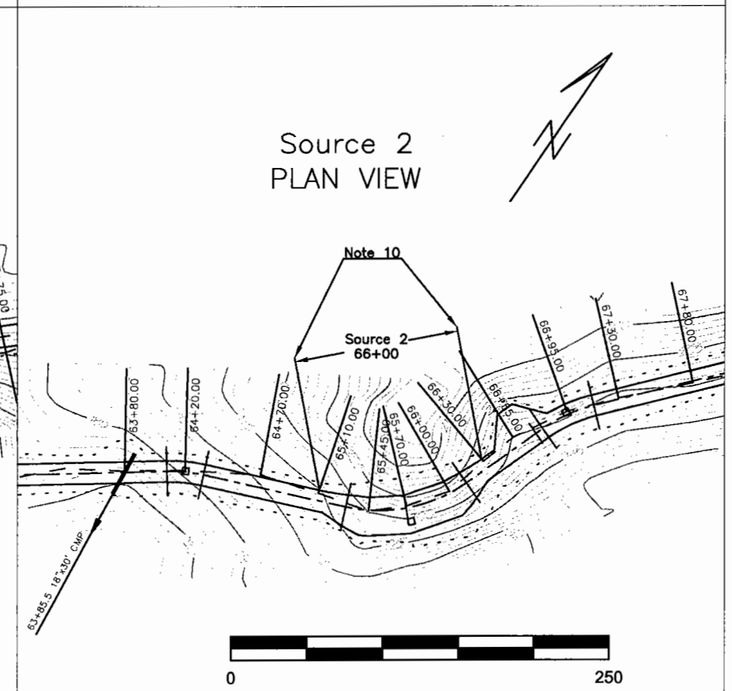



Source 2
Typical X–Section
–no scale–




Source 2
Typical x–Section
–no scale–




Government source 1

1. All work described for source 1 is included in Item 65102.01 unless noted otherwise.
2. Source 1 is an existing pit located at MP 0.75 on FSR 397J. T64N R1E SW¼ Sec25.
3. This is the source for Items 30122.01, 30805 & 32140.
4. Items 30805 & 32140 will come from existing designated stockpiles of crushed aggregate.
5. Item 30122.01 will come from a designated area within the pit. Some sorting may be required to meet the maximum size requirement.
6. Traffic control signing is included in Item 15101. See Sign Plan sheet.
7. Upon completion of hauling, the stockpile & cut faces shall be laid back to a slope not greater than 1:1 and the pit floor smoothed and shaped to drain.

Government source 2

1. All work described for source 2 is included in Item 65102.02 unless noted otherwise.
2. Source 2 consists of two side borrow entries adjacent to FSR 2499A(C) near P Stations 54+95 & 66+00.
3. This is the source for Item 30122.02
4. Clearing limits will be marked by the Forest Service. Clearing, grubbing & slash disposal shall be as per Section 201.
5. The finished top of cut shall be no closer that 3' to remaining trees.
6. Some sorting may be required to meet the maximum size requirement.
7. Oversized material shall be placed outside the roadbed, not in the ditch, so it is stable.
8. Depth to solid rock varies. The depth of excavation shall not go beyond the grade of the adjacent road or the solid rock layer, whichever is less.
9. Finished cut slope shall match the adjacent road cut or 1:1 whichever is flatter.
10. Excavation limits shall taper neatly back into the road cut at each end at the stations shown on the PLAN VIEW, or as marked.
11. The pit floor shall be smoothed & sloped to drain away and closely match the adjacent road grade or 2% minimum.
12. Recut to drain any existing ditch line.
13. Seed cuts as per Section 625.

U.S. DEPARTMENT OF AGRICULTURE
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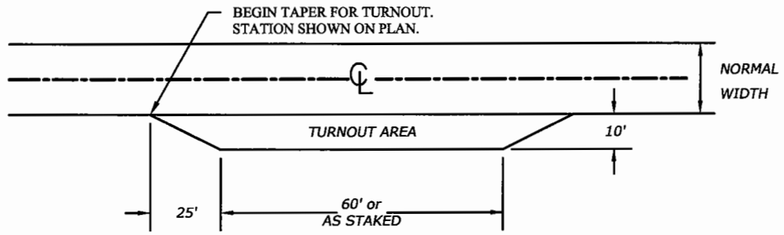
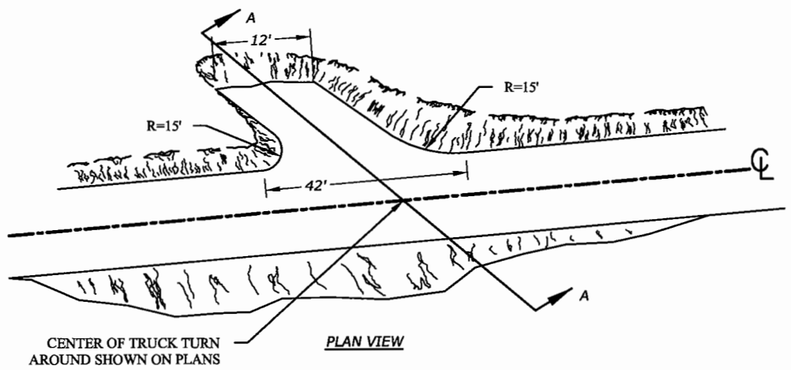
NORTHERN REGION

| | | | |
|---|---|---|---|
| Revised * | Date * | Drawn DLJackson | Forest Idaho Panhandle National Forests |
| Revised * | Date * | Design DLJackson | Project Name East Fork Stew |
| Revised * | Date * | Checked Rick Driggs | Sheet Title Pit Development Plan |
| Revised * | Date * | Reviewed Brent Briggs | Sheet 17 of 25 Date: 4/28/2012 |

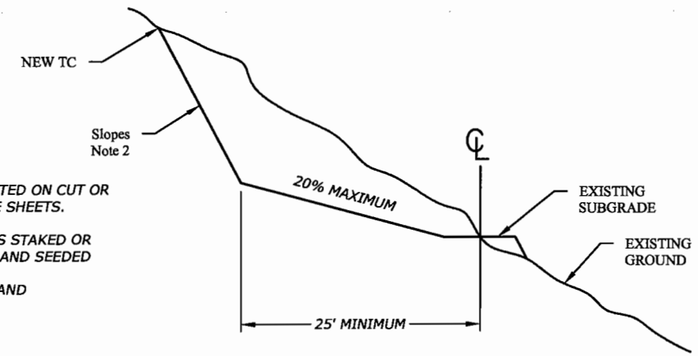



## TURN-OUT DETAIL (LEFT OR RIGHT)

NO SCALE




PLAN VIEW

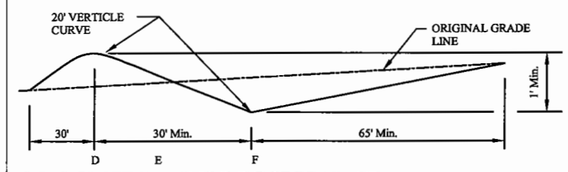



SECTION A-A

NOTE:

1. TRUCK TURN AROUND SHALL BE CONSTRUCTED ON CUT OR FILL SIDE AS SHOWN ON THE PLAN-PROFILE SHEETS.
2. CUT SLOPE AND/OR FILL SLOPE SHALL BE AS STAKED OR CONFORM TO ADJACENT ROADWAY SLOPES AND SEEDED
3. EARTHWORK IS INCLUDED IN EXCAVATION AND EMBANKMENT QUANTITIES.

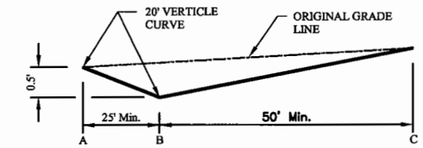
## TRUCK TURN AROUND DETAIL




ROAD PROFILE ALONG D-E-F OF DRAIN DIP

DIP WILL MATCH THE ORIGINAL GRADE LINE IN DITCH SECTIONS, OR AS MARKED.

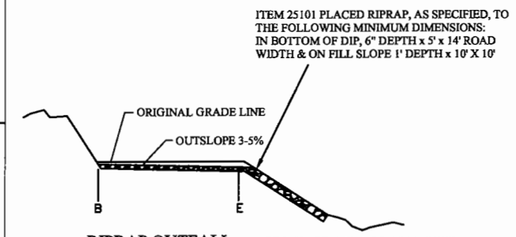
SEE NOTE 8




ROAD PROFILE ALONG A-B-C OF DRAIN DIP

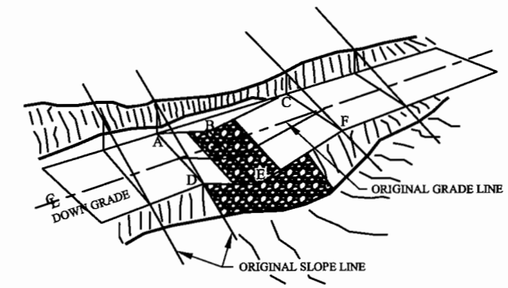
DIP WILL MATCH BOTTOM OF DITCH IN DITCH SECTIONS, OR AS MARKED.

SEE NOTE 8




RIPRAP OUTFALL

FILL SLOPE: 1.33:1, OR AS MARKED.




PERSPECTIVE VIEW

NON-DITCH SECTION

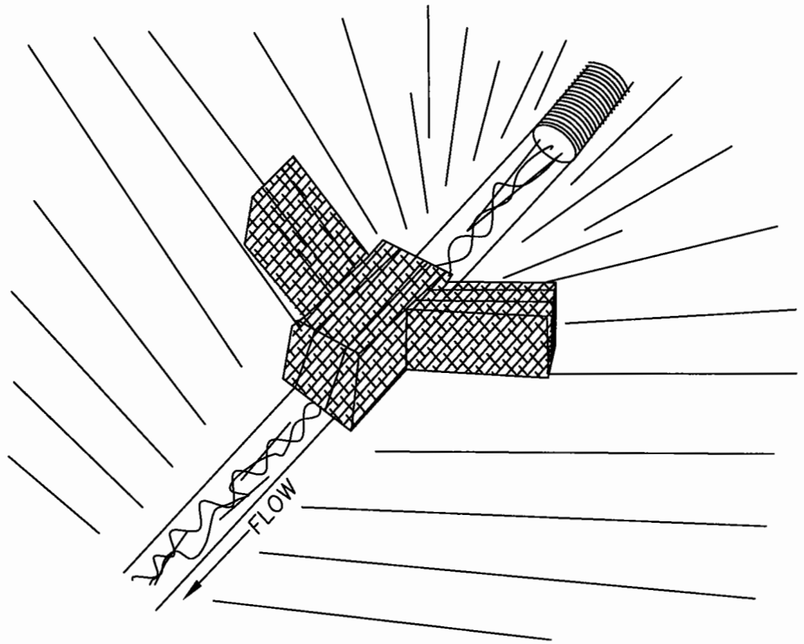
## Grade Dip Details

INCLUDED IN ITEM 21201

-No scale-

## GRADE DIP NOTES:

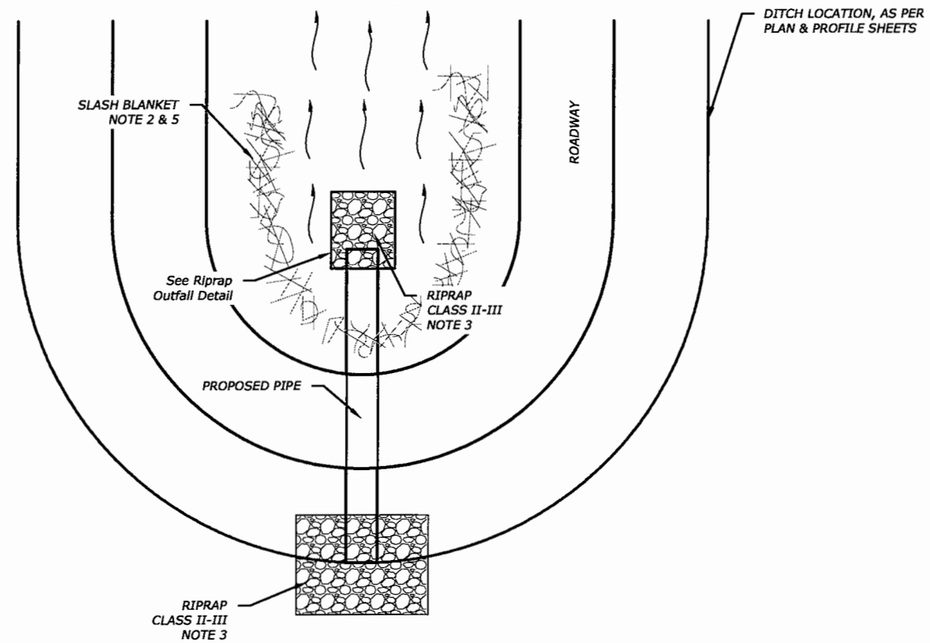
1. GRADE DIP SHALL DISCHARGE ONTO RIPRAP OUTFALL ENERGY DISIPATOR
2. INSLOPE/OUTSLOPE OF DRAINAGE DIP WILL BE 3-5%.
3. SKEW LINE B-E TO FIT LOW POINT IN DRAW, IF LOCATED IN NATURAL DRAIN, OR AS MARKED.
4. EXCAVATION BELOW THE EXISTING GRADE LINE WILL BE USED AS EMBANKMENT ABOVE THE EXISTING GRADE LINE ON THE DOWN SIDE OF THE DRAINAGE DIP.
5. THE MAXIMUM DEPTH OF EXCAVATION AND EMBANKMENT WILL VARY WITH THE PERCENT OF GRADE.
6. COARSE ROCK FOR OUTFALLS SHALL CONFORM TO AND BE THE CLASS AS NOTED IN THE SCHEDULE OF ITEMS.
7. EXCAVATE 0.5' DEEPER THAN SHOWN IF ROCK IS SPECIFIED.
8. IN DITCH SECTIONS, DIP INSLOPE WILL START AT ORIGINAL ROAD GRADE AT FILL SHOULDER AND SLOPE DOWN GRADE INTO BOTTOM OF DITCH, OR AS MARKED.
9. FINAL LOCATION TO BE APPROVED BY THE ENGINEER.




SEDIMENT TRAP – Item 15710

Notes: 1. Grass, hay or straw shall be of approved Herbaceous mowings, certified free of noxious weeds and other objectionable material.
2. Sediment traps shall be constructed below CMP outlets prior to construction activity in the area.
3. The Barrier length shall extend across the stream so that the bottom of each end bale is at least 1/2' higher than the top of the lowest center bale and above the water's edge.
4. Bales shall be staked or weighted in place using native materials. Loose straw or hay shall be wedged under and between the bales.
5. Sediment traps shall be regularly maintained during construction and repaired as necessary. Damaged or washed out bales shall be replaced.

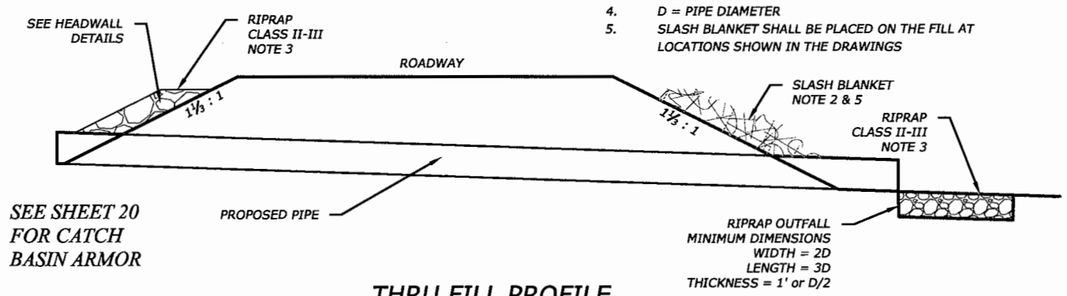
## DRAW DETAIL




PLAN

NOTES:

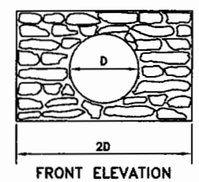
1. PLACE LARGE ROOT WADS AT TOE OF FILL.
2. INCIDENTAL TO ITEM 20104, METHOD 12
3. ITEM 25101, AS SPECIFIED ON THE PLAN & PROFILE OR IN THE PROJECT WORK DESRIPTION
4. D = PIPE DIAMETER
5. SLASH BLANKET SHALL BE PLACED ON THE FILL AT LOCATIONS SHOWN IN THE DRAWINGS




SEE SHEET 20 FOR CATCH BASIN ARMOR

SEE SHEET 21 FOR PIPE BEDDING DETAIL

THRU FILL PROFILE

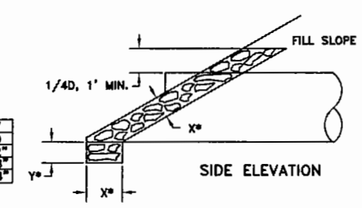



FRONT ELEVATION

NOTE: IN NARROW CHANNELS ADJUST RIPRAP TO STREAM

*VARIES W/ PIPE D

| D | X | Y |
|---|---|---|
| 18" – 24" | 12" | 0 |
| 30" – 60" | 12" | 12" |
| 60" – 96" | 18" | 18" |
| MORE THAN 96" | 24" | 24" |




SIDE ELEVATION

PLACED RIPRAP HEADWALLS

U.S. DEPARTMENT OF AGRICULTURE
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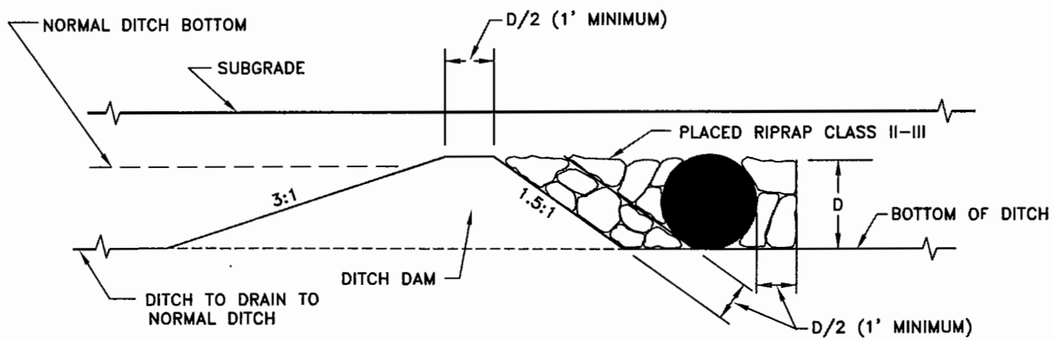
|---|---|---|---|
| Revised | JTNelson | Date | 05/16/11 |
| Revised | JTNelson | Date | 05/18/11 |
| Revised | * | Date | * |
| Revised | * | Date | * |

Drawn JTNelson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

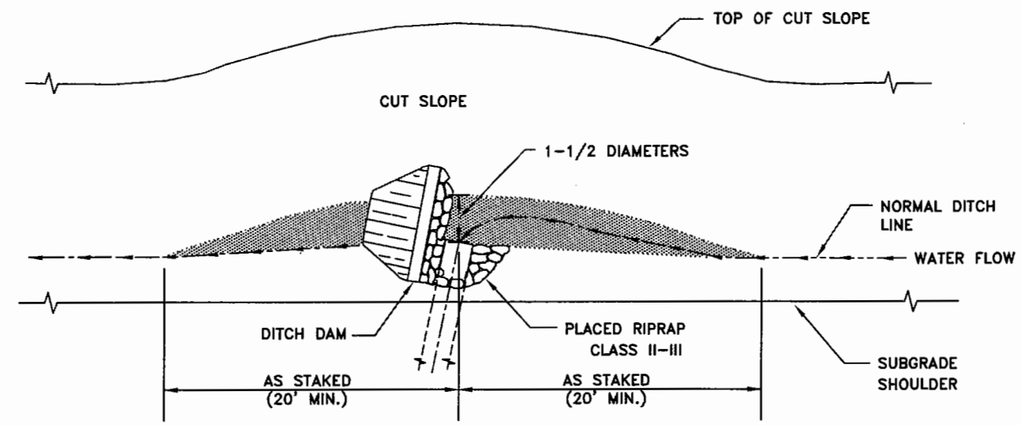
Forest: Idaho Panhandle National Forests
Project Name: East Fork Stew

Sheet Title: Detail Sheets
Sheet 19 of 25
Date: 4/28/2012



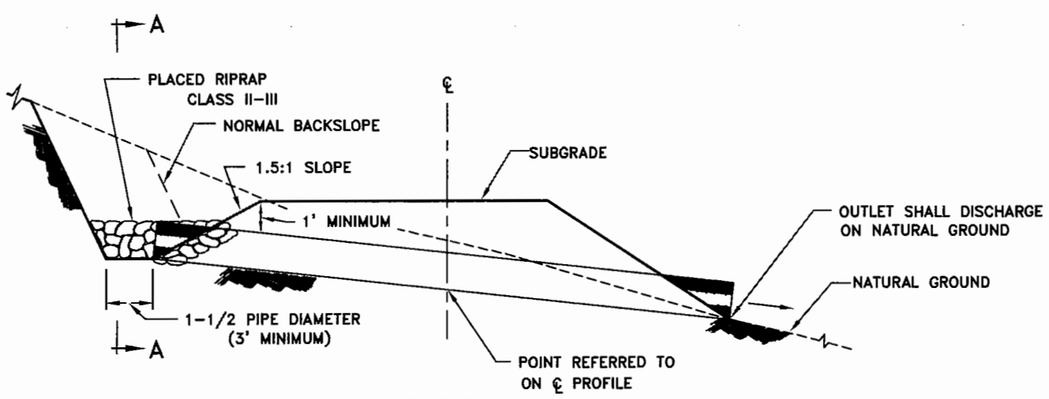

## SECTION A–A

CATCH BASIN DETAIL
TYPE 2 & 3 CULVERT INSTALLATIONS



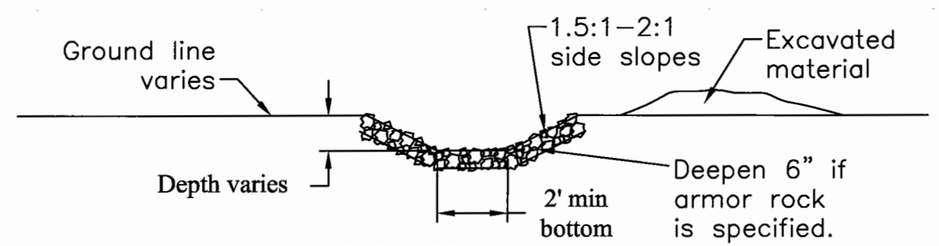

## PLAN VIEW

CATCH BASIN DETAIL
TYPE 2 & 3 CULVERT INSTALLATIONS




## TYPE 3

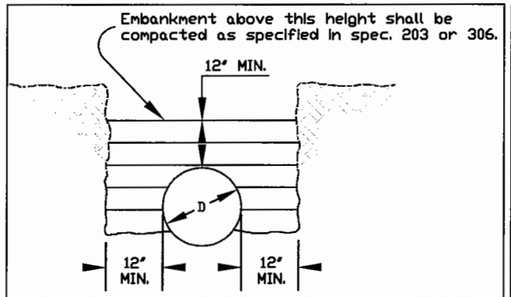
## OUTLET DITCH DETAIL, ITEM 20419.OD




NOT TO SCALE

### CONSTRUCTION NOTES

1. Ditch centerline at outlet will be marked.
2. Ditch depth varies to allow free drainage and to daylight at the outlet.
3. Clearing is incidental. Slash shall be as per General note 3.
4. Place excavated material away from ditch. Smooth & shape pile to allow free drainage.




Maximum 6-inch compacted layers to density called for in the specifications. Bedding shall be suitable material uniformly compacted and shaped to fit the bottom of the pipe.

| METAL THICKNESS AND GAGE TABLES | | | |
|---|---|---|---|
| Steel | | Aluminum | Approx. Gage |
| Zinc Coated | Un-Coated | | |
| Metal Thickness in Inches | | | |
| 0.064 | 0.0598 | 0.060 | 16 |
| 0.079 | 0.0747 | 0.075 | 14 |
| 0.109 | 0.1046 | 0.105 | 12 |
| 0.138 | 0.1345 | 0.135 | 10 |
| 0.168 | 0.1644 | 0.164 | 8 |
| 0.188 | 0.1838 | | 7 |
| 0.218 | 0.2145 | | 5 |
| 0.249 | 0.2451 | | 3 |
| 0.280 | 0.2758 | | 1 |

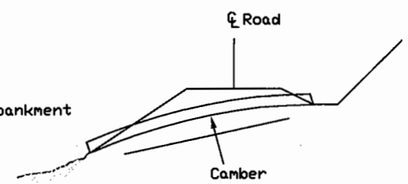
GENERAL NOTES:

TREATMENT OF DAMAGED SPELTER: The damaged or corroded ends of metal pipe to be extended shall be removed. If the damaged end is flame cut, the burned spelter on the galvanized pipe shall be wire brushed to clean metal and the area shall be painted with two coats of paint, high in zinc content, for repair of the galvanized surfaces.

SETTLEMENT AND CAMBER: Pipes shall be cambered as necessary to compensate for any anticipated settlement in the foundation or bed. Camber shall be on a parabolic curve with no point along the invert being higher than the invert at the inlet.

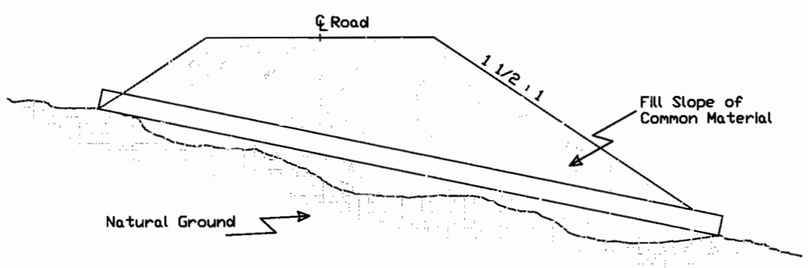
EMBANKMENT AND FOUNDATION SOIL CONDITION
Existing Fills, Regardless of Foundation Soils

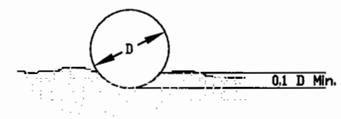
CAMBER
1% of pipe length, not to exceed 3/4 of pipe span.



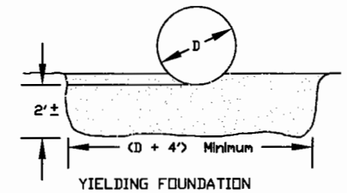

1% of pipe length, not to exceed 3/4 of pipe span or as determined by the engineer.

TYPICAL INSTALLATION IN EMBANKMENT

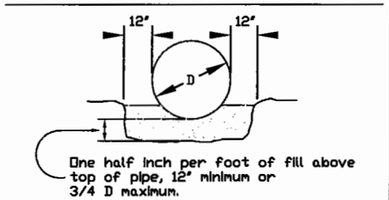



TYPICAL BEDDING MATERIAL

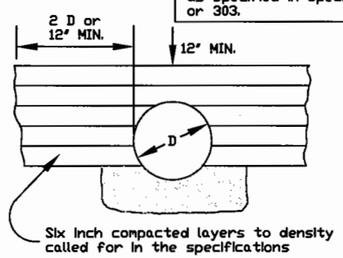



YIELDING FOUNDATION



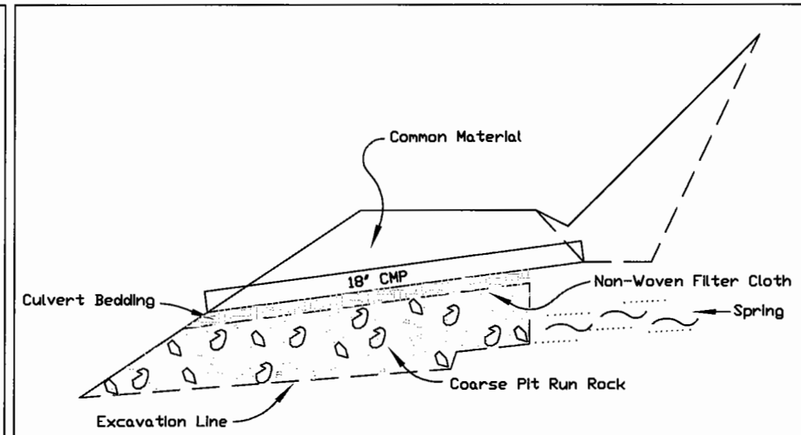

ROCK FOUNDATION

Embankment above this height shall be compacted as specified in Spec. 204 or 303.

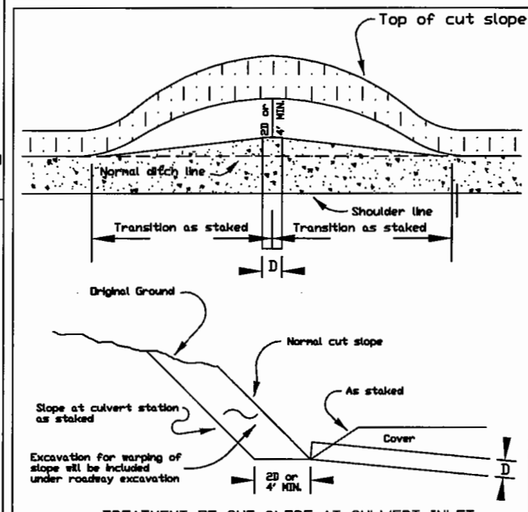



TYPICAL BACKFILL DETAIL

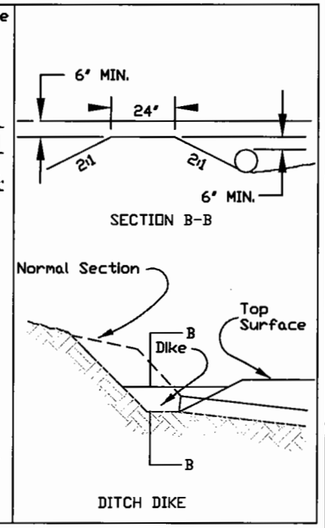
Bedding shall be suitable material uniformly compacted and shaped to fit the bottom of the pipe




UNDERDRAIN TYPICAL SECTION

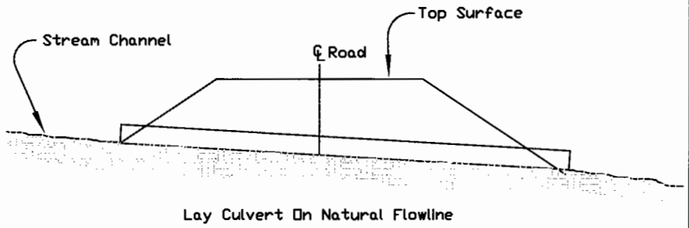



TREATMENT OF CUT SLOPE AT CULVERT INLET



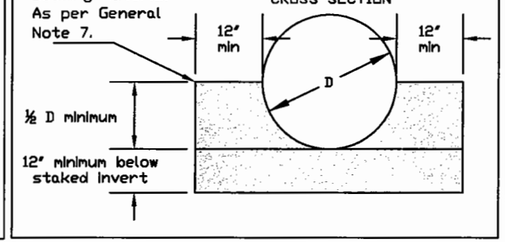

SECTION B-B

DITCH DIKE




TYPICAL INSTALLATION IN STREAM CHANNEL

PIPE BEDDING DETAIL
CROSS SECTION




U.S. DEPARTMENT OF AGRICULTURE
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NORTHERN REGION

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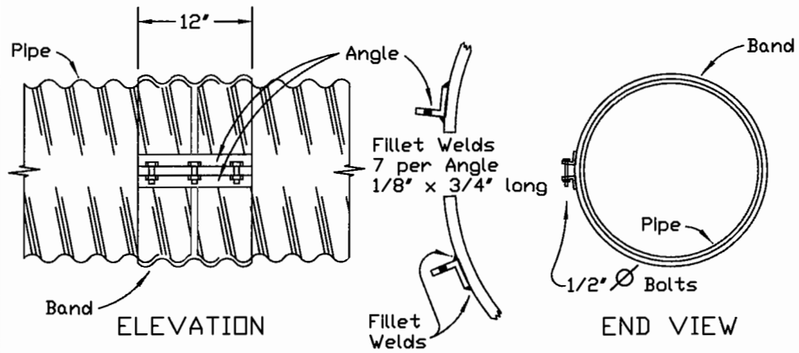
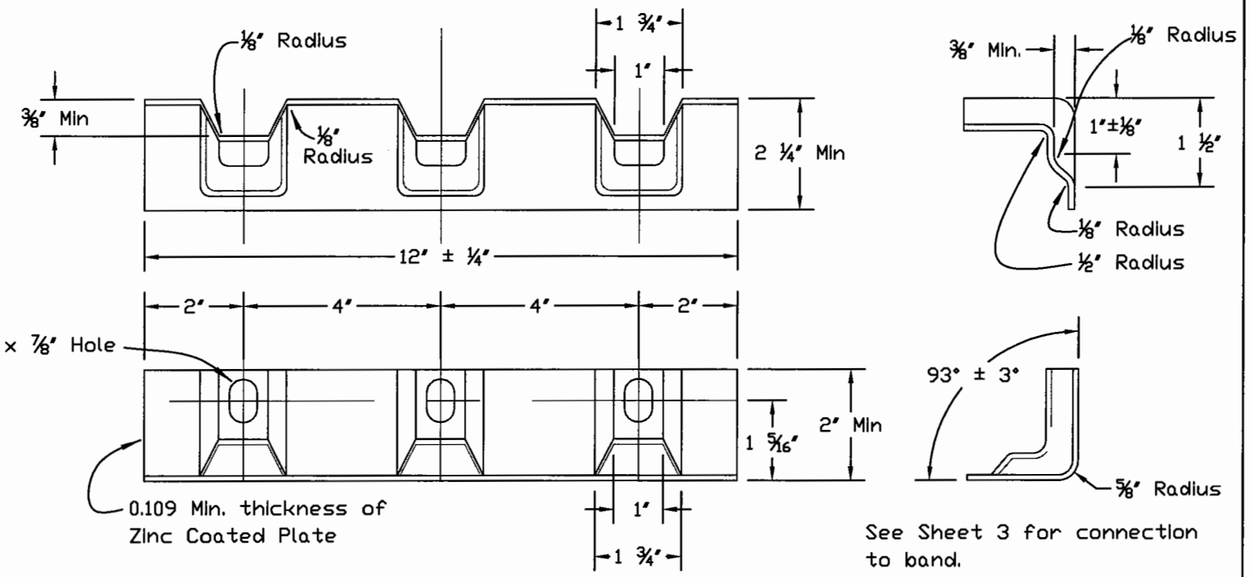
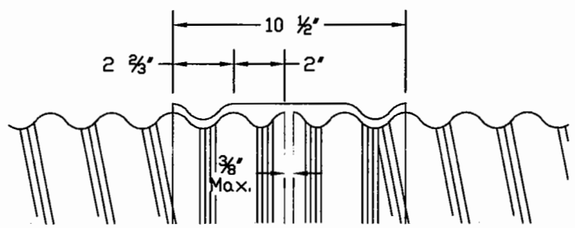
|---|---|---|---|
| Revised JTNelson | Date 05/16/11 | Drawn JTNelson | Forest Idaho Panhandle National Forests |
| Revised * | Date * | Design DLJackson | Project Name East Fork Stew |
| Revised * | Date * | Checked Rick Driggs | Sheet Title Culvert Installation Details |
| Revised * | Date * | Reviewed Brent Briggs | Sheet 21 of 25 Date: 4/27/2012 |



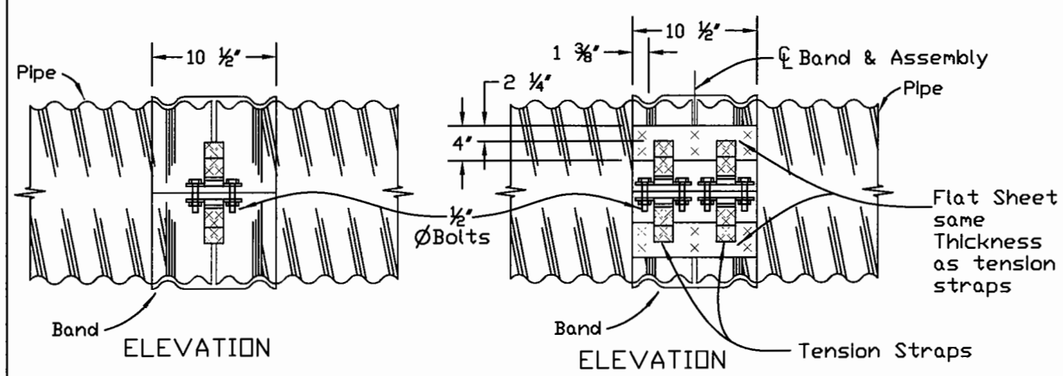

## AMERICAN CULVERT BAND
FOR HELICALLY CORRUGATED STEEL PIPE



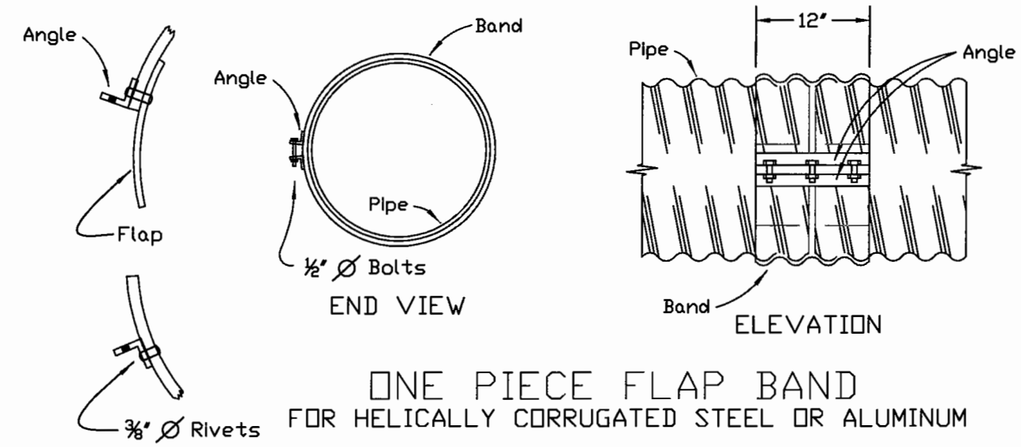

## NORTHWEST CULVERT ANGLE ALTERNATIVE
FOR STEEL PIPE




SECTION




## HUGGER COUPLING BAND
FOR REFORMED END HELICALLY CORRUGATED
WELDED SEAM STEEL PIPE

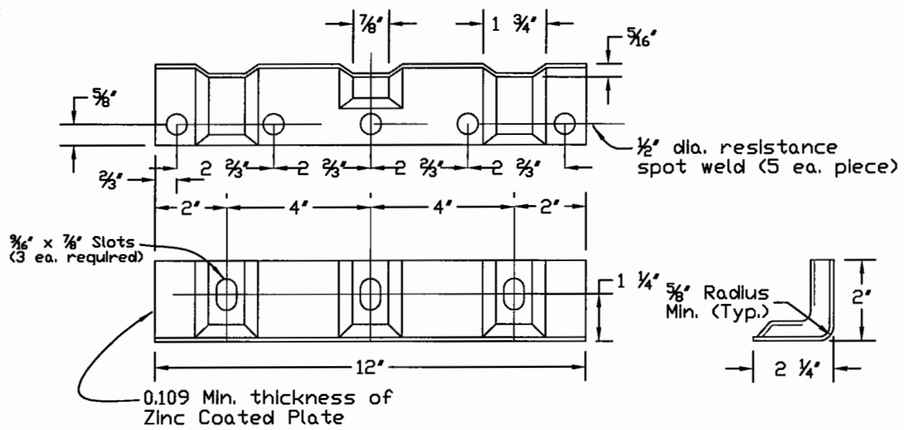



## ONE PIECE FLAP BAND
FOR HELICALLY CORRUGATED STEEL OR ALUMINUM

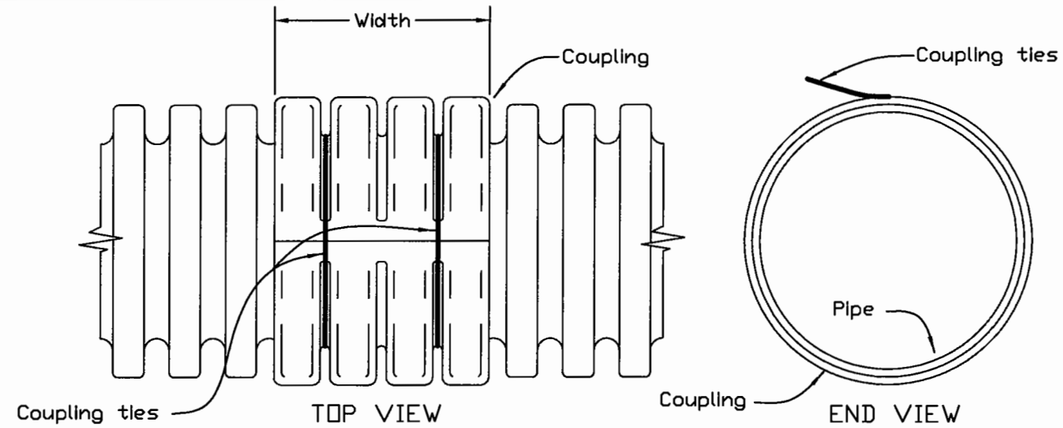
COUPLING BAND DETAILS
FOR
CORRUGATED PIPE AND PIPE ARCH

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-1
NORTHERN REGION

| | | | |
|---|---|---|---|
| Revised JTNelson | Date 05/16/11 | Drawn JTNelson | Forest Idaho Panhandle National Forests |
| Revised * | Date * | Design DLJackson | Project Name East Fork Stew |
| Revised * | Date * | Checked Rick Driggs | Sheet Title Culvert Band Details |
| Revised * | Date * | Reviewed Brent Briggs | Sheet 22 of 25 Date: 4/27/2012 |

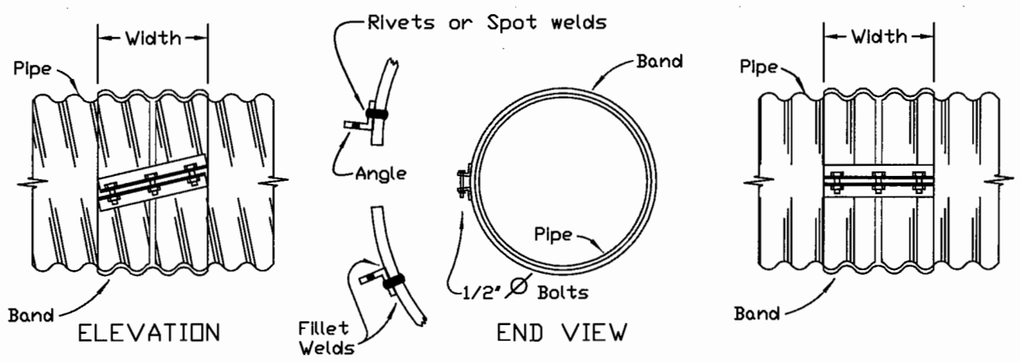



## ALTERNATE FOR 2X2X3/16 ANGLE
FOR STEEL PIPE



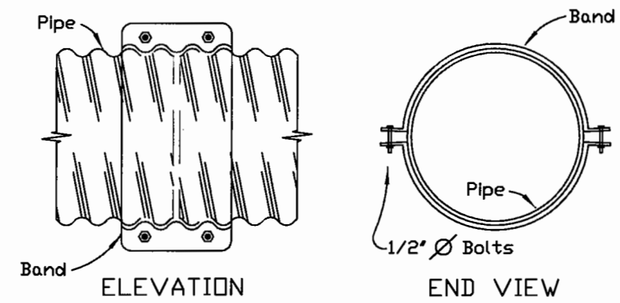

## SPLIT COLLAR COUPLING
FOR ANNULAR CORRUGATED POLYETHYLENE PIPE

Notes:
1. Minimum width 4 corrugations, 2 on each culvert segment.
2. The opening of the coupling shall be within 15° of the top of the culvert.




## HELICAL COUPLING BAND
FOR HELICALLY CORRUGATED STEEL OR ALUMINUM PIPE

## ANNULAR COUPLING BAND
FOR ANNULAR OR REFORMED END HELICALLY CORRUGATED STEEL OR ALUMINUM PIPE




## TWO PIECE INTEGRAL FLANGE
FOR HELICALLY CORRUGATED STEEL OR ALUMINUM PIPE

Notes:
1 Use 2x12x0.150 thickness 5052-H141 aluminum plate washer under bolt head & nut on aluminum pipe flange.
2. Use 2x12x0.125 thickness galvanized steel plate washer under bolt head & nut on steel pipe flange.

## COUPLING BAND DETAILS FOR CORRUGATED PIPE AND PIPE ARCH

U.S. DEPARTMENT OF AGRICULTURE
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| | | | |
|---|---|---|---|
| Revised JTNelson | Date 05/16/11 | Drawn JTNelson | Forest Idaho Panhandle National Forests |
| Revised * | Date * | Design DLJackson | Project Name East Fork Stew |
| Revised * | Date * | Checked Rick Driggs | Sheet Title Culvert Band Details |
| Revised * | Date * | Reviewed Brent Briggs | Sheet 23 of 25 Date: 4/27/2012 |

| COUPLING TYPE | CORRUGATION Inches | PIPE DIAMETER Inches | WIDTH Inches | SPECIFIED THICKNESS See Note 1-C Pipe Wall | SPECIFIED THICKNESS See Note 1-C Band | ANGLE - See Note 1-H DIMENSION | ANGLE - See Note 1-H BOLTS NO / DIAMETER | ANGLE TO BAND RIVETS | ANGLE TO BAND SPOT WELDS |
|---|---|---|---|---|---|---|---|---|---|
| *Metal Pipe* Annular and Helical | 2-2/3x1/2 (Steel or Aluminum) | Thru 36 | 12 | 0.064-0.138 | 0.064-0.079 | 2x2x3/16 | 3-1/2 | 3-3/8 | 5-1/2 |
| | | 42-60 | 12 | 0.064-0.079 | 0.064 | 2x2x3/16 | 3-1/2 | 3-3/8 | 5-1/2 |
| | | 42-60 | 12 | 0.064-0.168 | 0.064-0.109 | 2x2x5/16 | 3-1/2 | 5-3/8 | |
| | | 66-84 | 24 | 0.109-0.168 | 0.064-0.109 | 2x2x5/16 | 5-1/2 | 7-3/8 | |
| | 3x1 and 5x1 (Steel Only) | 36-60 | 14 | 0.064-0.079 | 0.064 | 2x2x3/16 | 3-1/2 | 3-3/8 | 5-1/2 |
| | | 42-60 | 14 | 0.109 | 0.064 | 2x2x5/16 | 3-1/2 | 5-3/8 | |
| | | 66-120 | 25 | 0.064-0.109 | 0.064 | 2x2x5/16 | 5-1/2 | 9-3/8 | |
| One Piece Flap Band & Two Piece Integral Flange | 2-2/3x1/2 (Steel or Aluminum) see Note 1-I | 18-24 | 12 | 0.064-0.079 | 0.064 | | 3-1/2 | 4-3/8* | * Flap Band Only |
| | | | | | | | | WELDS ANGLE TO BAND | |
| American Culvert Band | 2-2/3x1/2 (Steel Only) | Thru 24 | 12 | 0.064-0.109 | 0.064-0.079 | 2x2x0.183 | 3-1/2 | 7-1/8x3/4 Long Fillet | |
| | | 30-36 | 12 | 0.064-0.109 | 0.064 | 2x2x0.183 | 3-1/2 | | |
| | | 42-48 | 12 | 0.064-0.079 | 0.064 | 2x2x0.183 | 3-1/2 | | |
| Northwest Culvert Alternative | 2-2/3x1/2 (Steel Only) | Thru 84 | 12 | 0.064-0.079 | 0.064-0.109 | | | 5-3/16x3/4 Long Fillet | |
| | | Thru 54 | 12 | 0.109 | 0.064-0.109 | | | | |
| | | Thru 42 | 12 | 0.138 | 0.064-0.109 | | | | |
| | | Thru 84 | 12 | 0.064-0.168 | 0.064-0.109 | | | 5-1/2 Spot | |

| | | | | | | BAR AND STRAP NUMBER/ THICKNESS | BAR AND STRAP BOLT DIAMETER | BAR AND STRAP BAR DIAMETER | BAR AND STRAP BAR YIELD STRENGTH P.S.I. |
|---|---|---|---|---|---|---|---|---|---|
| Hugger | 2-2/3x1/2 (Steel Only) | Thru 48 | 10-1/2 | 0.064-0.109 | 0.064-0.109 | One 0.079 | 1/2 | 7/8 | 32,000 |
| | | 36-48 | 10-1/2 | 0.138-0.168 | 0.079-0.109 | One 0.109 | 1/2 | 7/8 | 45,000 |
| | | 54-60 | 10-1/2 | 0.079-0.168 | 0.064-0.109 | Two 0.079 | 1/2 | 7/8 | 32,000 |
| | | 66-84 | 10-1/2 | 0.109-0.168 | 0.109 | Two 0.109 | 1/2 | 7/8 | 45,000 |
| | 3x1 (Steel Only) | 36-66 | 10-1/2 | 0.064-0.109 | 0.064 | Two 0.079 | 1/2 | 7/8 | 32,000 |
| | | 72-84 | 10-1/2 | 0.109 | 0.079 | Two 0.079 | 1/2 | 7/8 | 32,000 |
| | | 61-120 | 10-1/2 | 0.109 | 0.109 | Two 0.109 | 1/2 | 7/8 | 45,000 |
| *PE Pipe* Split Collar | | Thru 24 | See Drawing | per AASHTO M-294 | per AASHTO M-294 | | | | |

## GENERAL NOTES

1. Metal Coupling Bands
   - A. These coupling bands meet the strength requirements for special Joint Types under Non-erodible Soil Conditions, Table 2.23.3 of AASHTO's "Standard Specifications for Highway Bridges".
   - B. For pipe walls and bands, the Specified Thickness for steel is given. For aluminum, the Specified Thickness is that for steel less the allowance for the zinc coating which is 0.003 to 0.004 of an inch per AASHTO M-36, M-196 and M-197.
   - C. The minimum specified Thickness for bands is two Specified Thicknesses less than that for the pipe, but in no case thinner than 0.064 inches, (0.060 for aluminum).
   - D. For pipe arches, use the same width band as for round pipe of equal periphery.
   - E. A two-piece band is required for pipe greater than 42 inches in diameter.
   - F. Tension straps may be connected to bands of plates with either spot or fillet welds that develop minimum required strength of strap.
   - G. For helically corrugated coupling bands, the connection angles may be oriented parallel to the pipe axis, provided connecting holes are slotted lengthwise sufficiently to allow adjustment for the helix angle.
   - H. Use 1 1/4 inch center to center gauge line dimension on attached angle leg for rivets and spot welds.
   - I. The Two Piece Integral Flange coupling band shall not be used on pipe arches.
   - J. Culvert bands shall be made of the same metal as the culverts being joined.
2. Polyethylene (PE) Couplings

   Testing standards for Corrugated Polyethylene (PE) Pipe couplings have not been established nor have couplings been tested for shear or bending moment. Therefore, until further information is available, PE couplings shall be used only where bending moment and shear requirements are minimal. Typical situations are:
   - A. Where the slope of the culvert will not be more than 5%.
   - B. Where the fill below the culvert is less than 2 feet.
   - C. In areas of firm soils. This excludes marshes unless the bedding is specially designed and approved by the engineer.
3. Other

   Couplings other than those shown on this drawing may be used upon submission of testing data (see 1-A above) and approval by the Engineer.

# COUPLING BAND DETAILS FOR CORRUGATED PIPE AND PIPE ARCH

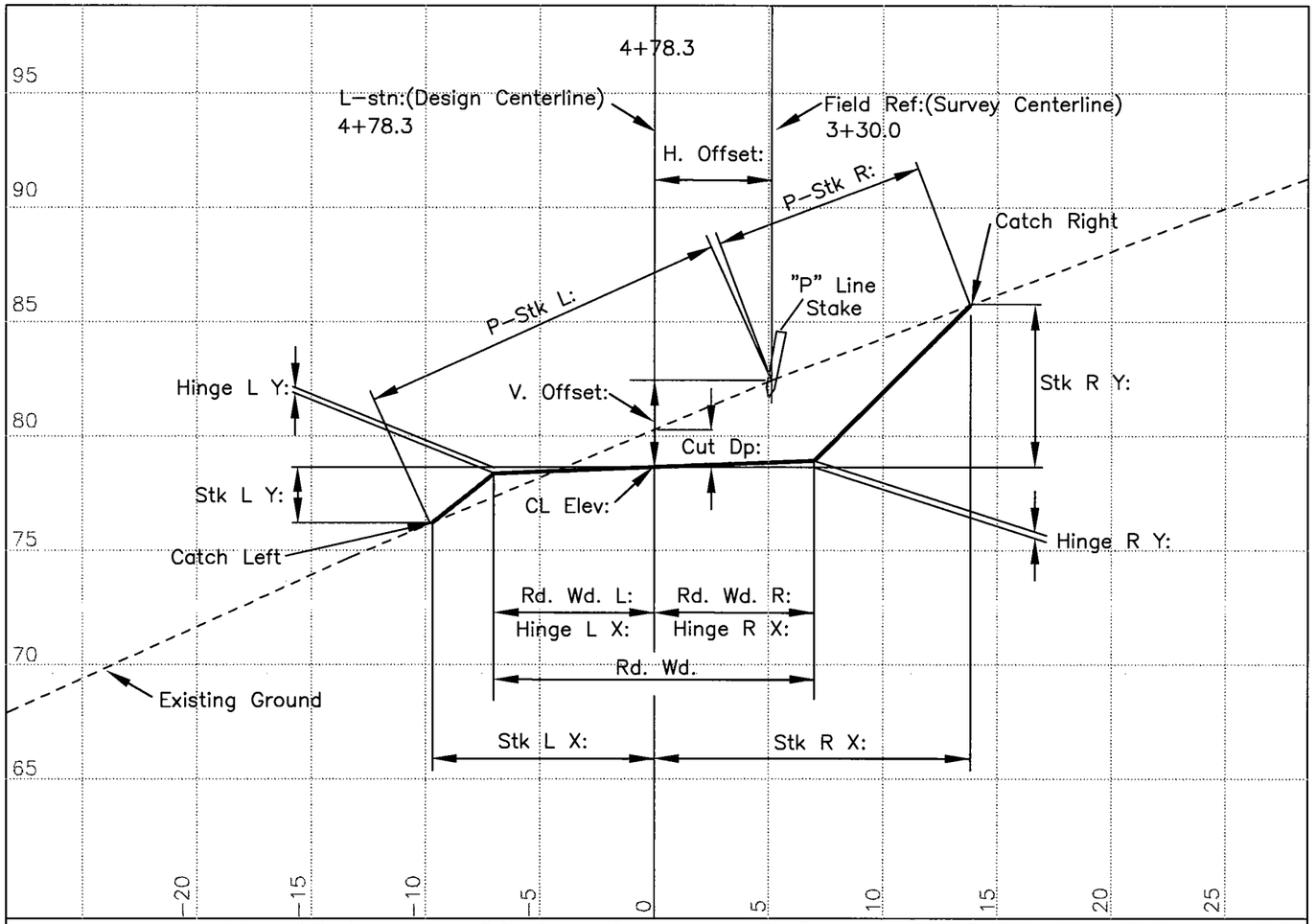
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
R-1
NORTHERN REGION

Revised JTNelson Date 05/16/11
Revised * Date *
Revised * Date *
Revised * Date *

Drawn JTNelson
Design DLJackson
Checked Rick Driggs
Reviewed Brent Briggs

Forest: Idaho Panhandle National Forests
Project Name: East Fork Stew

Sheet Title: Culvert Band Details
Sheet 24 of 25 Date: 4/27/2012




| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Index: | 14 | V.Offset: | -3.8 | Stk L X: | -9.7 | Rd. Wd. R: | 7.0 | Hinge R Y: | 0.3 |
| L-stn: | 4+78.3 | Cut Dp: | 1.6 | Stk L Y: | -2.4 | F Slope R: | 80 | P-Stk R: | 9.3 |
| Field Ref: | 3+30.0 | Rd. Wd.: | 14.0 | Hinge L X: | -7.0 | Stk R X: | 13.8 | | |
| CL Elev: | 78.7 | Rd. Wd. L: | 7.0 | Hinge L Y: | -0.3 | Stk R Y: | 7.1 | | |
| H. Offset: | -5.1 | F Slope L: | -75 | P-Stk L: | 16.1 | Hinge R X: | 7.0 | | |

Index: Section Number
L-stn: Design Alignment Station
Field Ref: Survey Alignment Station ("P" Line)
CL Elev: Elevation at Design Alignment Centerline
H. Offset: Offset distance from Survey to Design Alignment
V.Offset: Vertical Difference from Survey to Design
Cut Dp: Vertical Difference from L-Centerline to Existing Ground
Rd. Wd.: Road Width Shoulder to Shoulder
Rd. Wd. L: Distance from L-Centerline to Shoulder Left
F Slope L: Percent Slope of Cut/Fill Left (*see below)
Stk L X: Horizontal Distance from L-Centerline to Catch Left
Stk L Y: Vertical Difference from L-Centerline to Catch Left
Hinge L X: Horizontal Distance from L-Centerline to Hinge Left
Hinge L Y: Vertical Difference from L-Centerline to Hinge Left
P-Stk L: Slope Distance from Survey Centerline to Catch Left
Rd. Wd. R: Distance from L-Centerline to Shoulder Right
F Slope R: Percent Slope of Cut/Fill Right (*see below)
Stk R X: Horizontal Distance from L-Centerline to Catch Right
Stk R Y: Vertical Difference from L-Centerline to Catch Right
Hinge R X: Horizontal Distance from L-Centerline to Hinge Right
Hinge R Y: Vertical Difference from L-Centerline to Hinge Right
P-Stk R: Slope Distance from Survey Centerline to Catch Right

*F Percent Slope L & R as a ratio:
33 = 3:1
50 = 2:1
67 = 1.5:1
75 = 1.33:1
80 = 1.25:1
100 = 1:1
133 = ¾:1
200 = ½:1

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Revised DLJ Date 3/27/12
Revised * Date *
Revised * Date *
Revised * Date *

Drawn KBE
Design DLJ
Checked Rick Driggs
Reviewed Brent Briggs

Forest
Idaho Panhandle National Forests
Project Name
East Fork Stew

Sheet Title
Staking Notes Reference Drawing
Sheet 25 of 25 Date: 4/28/2012