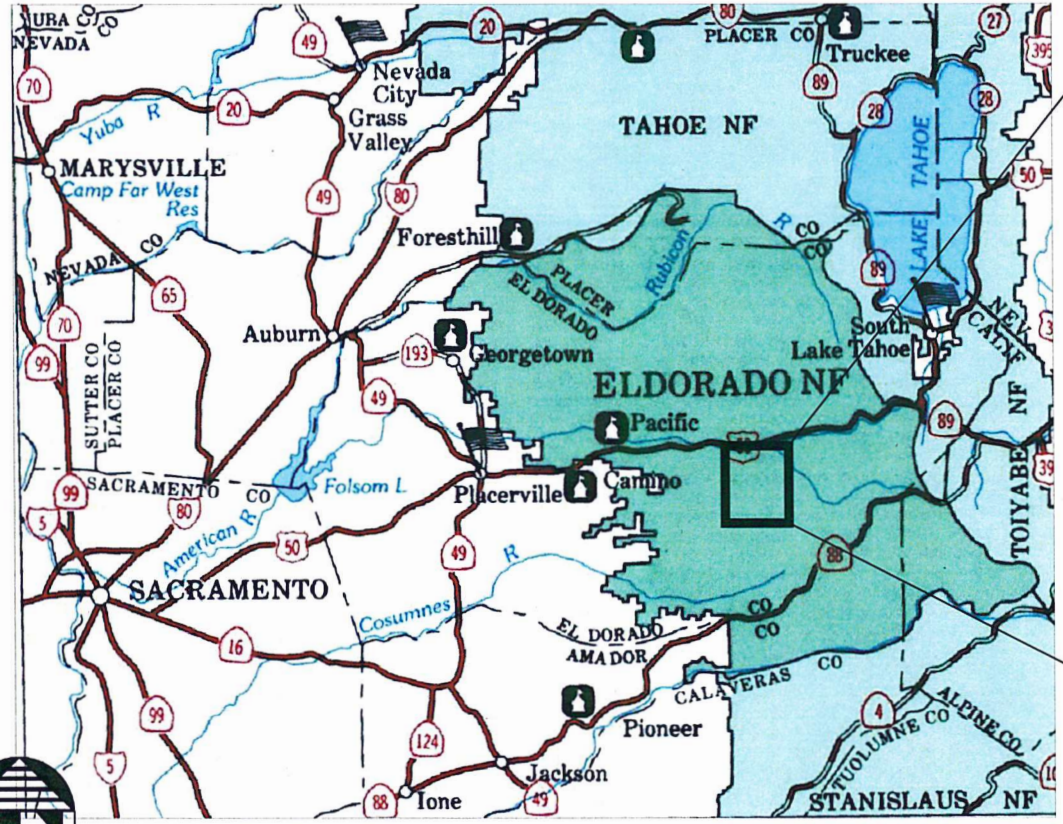
UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
REGION FIVE
ELDORADO NATIONAL FOREST
PLACERVILLE RANGER DISTRICT

# PILLIKEN FOREST HEALTH PROJECT

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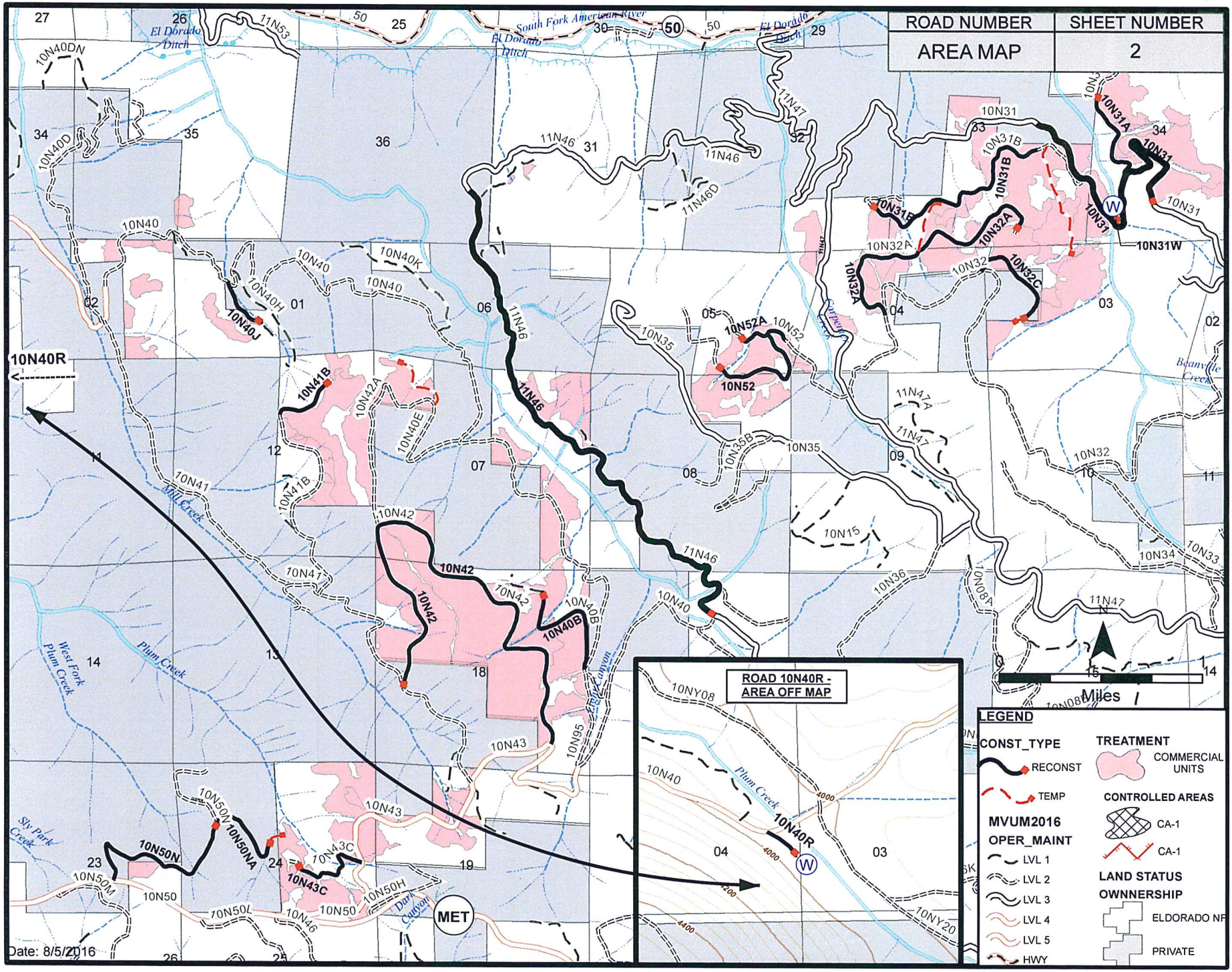
**REVISED**
By Billy Ellis at 11:14 am, 8/16/16

*ELDORADO NATIONAL FOREST VICINITY MAP*

***Rock Source:***
***Teichert Aggregates, Reed and Grahm or other approved site***

| | | | | |
|---|---|---|---|---|
| Billy Ellis DATE | [signature] DATE 8/17/16 | [signature] DATE 8/17/16 | Acting FE [signature] DATE 8/17/16 | [signature] DATE 8/17/16 |
| DESIGNED BY **8/16/201** | APPROVED BY | DISTRICT RANGER | FOREST ENGINEER | FOREST SUPERVISOR |


ROAD NUMBER
AREA MAP
SHEET NUMBER
2
10N40R
10N31A
10N31
10N31W
10N31B
10N32A
10N32C
10N52A
10N52
10N41B
10N42
10N40B
10N50N
10N50NA
10N43C
MET
ROAD 10N40R - AREA OFF MAP
LEGEND
CONST_TYPE
RECONST
TEMP
MVUM2016
OPER_MAINT
LVL 1
LVL 2
LVL 3
LVL 4
LVL 5
HWY
TREATMENT
COMMERCIAL UNITS
CONTROLLED AREAS
CA-1
CA-1
LAND STATUS
OWNNERSHIP
ELDORADO NF
PRIVATE
Miles
Date: 8/5/2016

# NOTES AND LEGEND

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 3 |

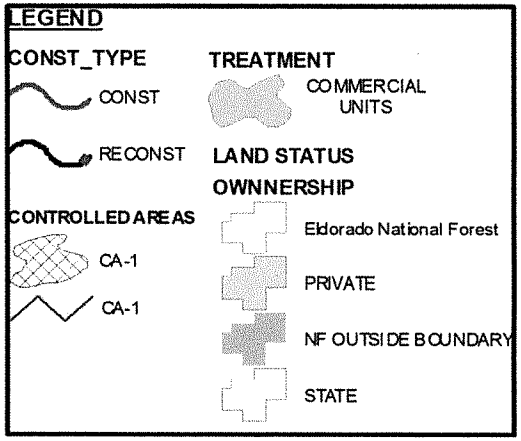
## GENERAL NOTES

* Unless otherwise specified, notes apply to all roads.
* Clearing - Trees larger than 10"D.B.H to be cleared are indicated on the plans (T=Tree or TS=Tree and Stump). When accompanied by a number, indicates number of TS to be removed. The locaton is general and may be within 100 lf of point indicated.
  Trees 10" DBH and smaller and brush of any size will not be SHOWN ON THE DRAWINGS.
** Outslope 3% unless otherwise SHOWN ON THE DRAWINGS.
* Cushion requirement is waived.
* Reconstruction - Widen as necessary to obtain min. specified width and to obtain outslope when specified. The actual width will vary. Cut slopes shall conform to existing. See Typicals.
* Fill slopes are 1 1/2:1, back slopes are 1:1, unless otherwise SHOWN ON THE DRAWINGS.
* Waterbars are to be installed at the end of each operating season and at the close of sale.
* Reconstruction- Suitable material removed from ditches, berms, outsloping operations, roadbed slides and culvert catch basins shall be incorporated into the roadbed.
* Unsuitable material shall be sidecast from the roadbed but not within 100 lf of any drainage.
* At intersections, the roadbed shall be graded to assure blending of two riding surfaces for a distance of 50 linear feet.
* Seed and mulch where specified in the Drawings. Seeding and mulching is incidental to other pay items.

## ABBREVIATIONS

C.M.P. = Corrugated Pipe
C.M.P.A. = Corrugated Metal Pipe Arch
DI = Drop Inlet
IB = Inlet Basin
CB = Catch Basin
AC = Asphalt Concrete
AB = Aggregate road base
C.Y. = Cubic yard
L.F. = Linear Foot
EXIST = Existing feature
EOP = End of Project
CONST = Construct or install feature
RECONST = Reconstruct existing feature
MAINT = Maintain existing feature
WB = Waterbar
MEIOC - Maintain existing inslope/outslope configuration
RR = RIPRAP - Class II
TS = Tree and stump removal
- If preceded by a number - indicates number of trees. Typically within 100 lf of station.
- If only TS displayed , DBH = 11" to 23" DBH tree
- If followed by a 'M' = 24" to 36" DBH tree to be removed
- If followed by a 'L' = Over 36" DBH tree
- If only TS displayed , DBH = 11" to 23" DBH tree

**THE TIMBER SALE AREA MAP TAKES PRECEDENCE OVER ANY FEATURES OR GRAPHICS SHOWN IN THE ROAD DRAWINGS.**



# NOTES AND LEGEND

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 4 |

| ROAD NUMBER | SPECIAL NOTES |
|---|---|
| ALL ROADS | Water Sources are shown on the Sale Area Map.<br><br>New Construction Roads - Pay Item 299 includes all excavation, clearing and grubbing necessary to complete work. All other work paid seperately.<br><br>Rolling dips do not intercept ditches unless otherwise noted. All dips are Type I unless specified otherwise. Reconstruction or Maintenance of Dips is included in price for Reconditioning of Roadbed.<br><br>Locations of work to be done will be staked on the ground by the Forest Service..<br><br>All roads used by Contractor during road construction shall be maintained by Contractor.<br><br>C.M.P. lengths are approximate. Payment for C.M.P. will be for the lengths necessary to complete the job.<br><br>Waterbars drawn or listed on the Drawings are in critical locations. All other waterbars shall be placed according to the typicals.<br><br>Landings are designated as disposal sites when piling of construction slash is required or disposal of unsuitable material..<br><br>Existing culverts that are to be replaced shall be removed from government land at Contractors expense. Unless shown in the Schedule of Items, disposal is incidental to other Pay Items.<br><br>Riprap, Class II, may come from a commercial source or may be collected on site as long as it meets size requirements. Units for riprap are in cubic yards ( CY ) and will be measured in place for payment.<br><br>**Commercial Rock Sources** - *Aggregate shall be obtained from an approved source, certifide weed free and certified to contain no more than 0.25 % asbestos to be in compliance with California Health and Safety Code Sections 93105 and 93106* .<br><br>**Rock source submittals are required.** Weight tickets for materials from commercial sources are required for payment when units are in Tons. Weight tickets shall specify which road rock the products were delivered to. Failure to comply may lead to a delay in payment for rock and associated work.<br><br>Forest Service will designate borrow sites as needed.<br><br>PURCHASER IS RESPONSIBLE FOR PLACING CONSTRUCTION SIGNS ON ROADS WHEN OPERATING EQUIPMENT ON THIS PROJECT. |

# MATERIALS LIST AND QUANTITIES

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 5 |

| SPECIFICATION DATA | | | ROAD DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | RD_NO | 10N31 | 10N31A | 10N31B | 10N31W | 10N32A | 10N32C | 10N40B | |
| | | TYPE | RECONST | RECONST | CONST | RECONST | RECONST | RECONST | RECONST | |
| SPEC. NO. | ITEM DESCRIPTION | UNITS | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | Sub Total |
| 151 | Mobilization - Applies to Project | LS | | | | 1 | | | | 1 |
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LS | 1 | 1 | 1 | | 1 | 1 | 1 | 6 |
| 203-3 | Removal and Disposal of Culverts | Each | | 1 | | | 1 | | 1 | 3 |
| 204-7 | Drainage Excavation, Type Waterbar | Each | | 11 | 4 | | 9 | 16 | 13 | 53 |
| 204-8 | Drainage Excavation, Type Swale | Each | | 2 | | | | 1 | 1 | 4 |
| 204-10 | Drainage Excavation, Type Rolling Dip | Each | 15 | | 14 | | 12 | | | 41 |
| 204-21 | Excavation - Waterhole Cleanout and Maintenance | LS | | | | 1 | | | | 1 |
| 251-1 | Placed Riprap, Class II | CY | | | | 5 | | | | 5 |
| 301-1 | Aggregate Base, Gradation B, Compaction Met | Ton | 24 | | | 24 | | | | 48 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | Mile | 1.71 | 0.54 | 1.16 | | 1.44 | 0.55 | 0.7 | 6.1 |
| 602-2 | 24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary. | LF | | 50 | | | | | | 50 |
| 602-3 | 36-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary. | LF | | | | | 40 | | | 40 |
| 602-4 | 48-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary. | LF | | 50 | | | | | 50 | 100 |
| 602-15 | 2-Inch Black Polyline, 160 psi min. Includes All Labor, Materials and Equipment to install. | LF | | | | 200 | | | | 200 |
| | | | | | | | | | | |
| | | | | | | | | | | |

# MATERIALS LIST AND QUANTITIES

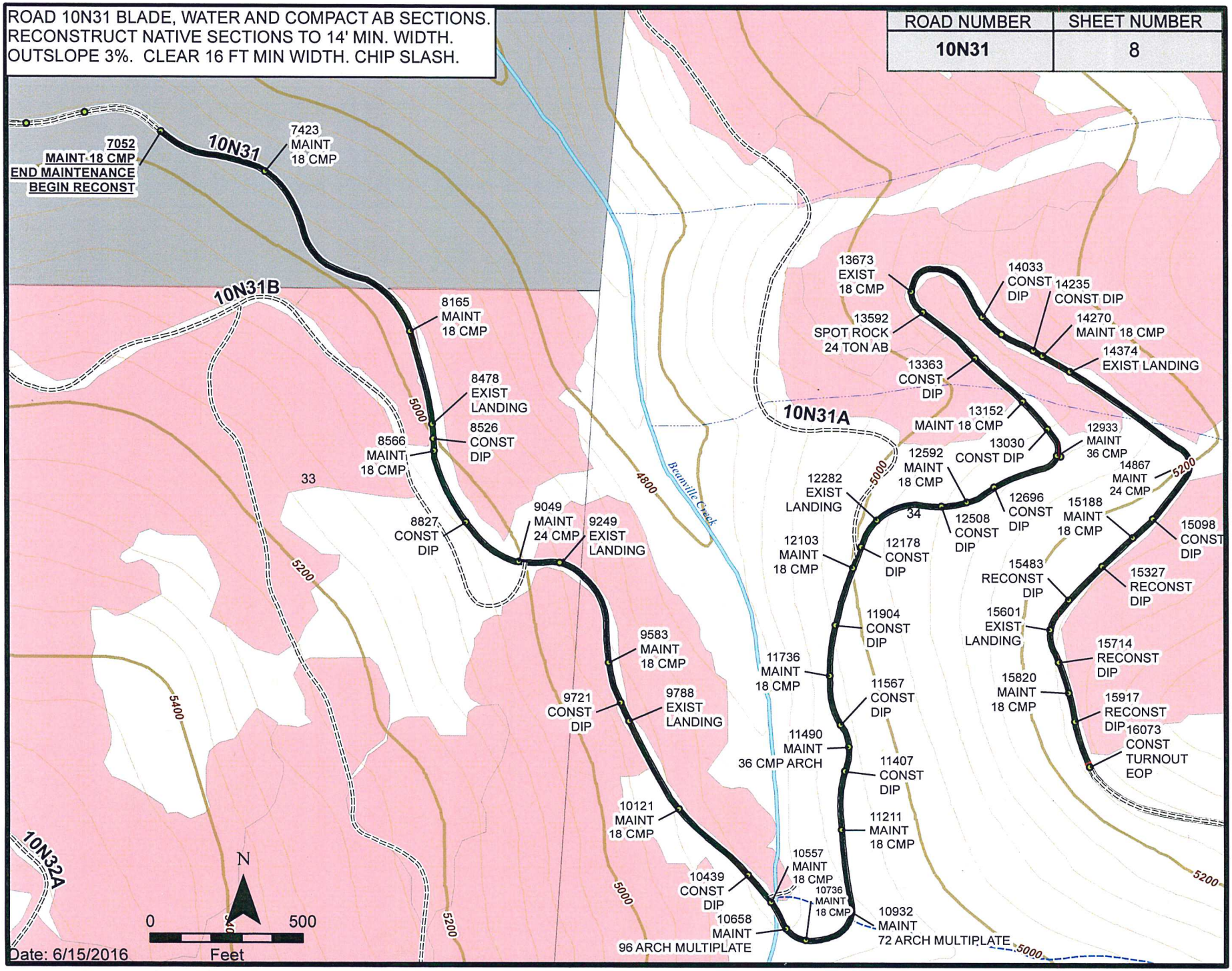
| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 6 |

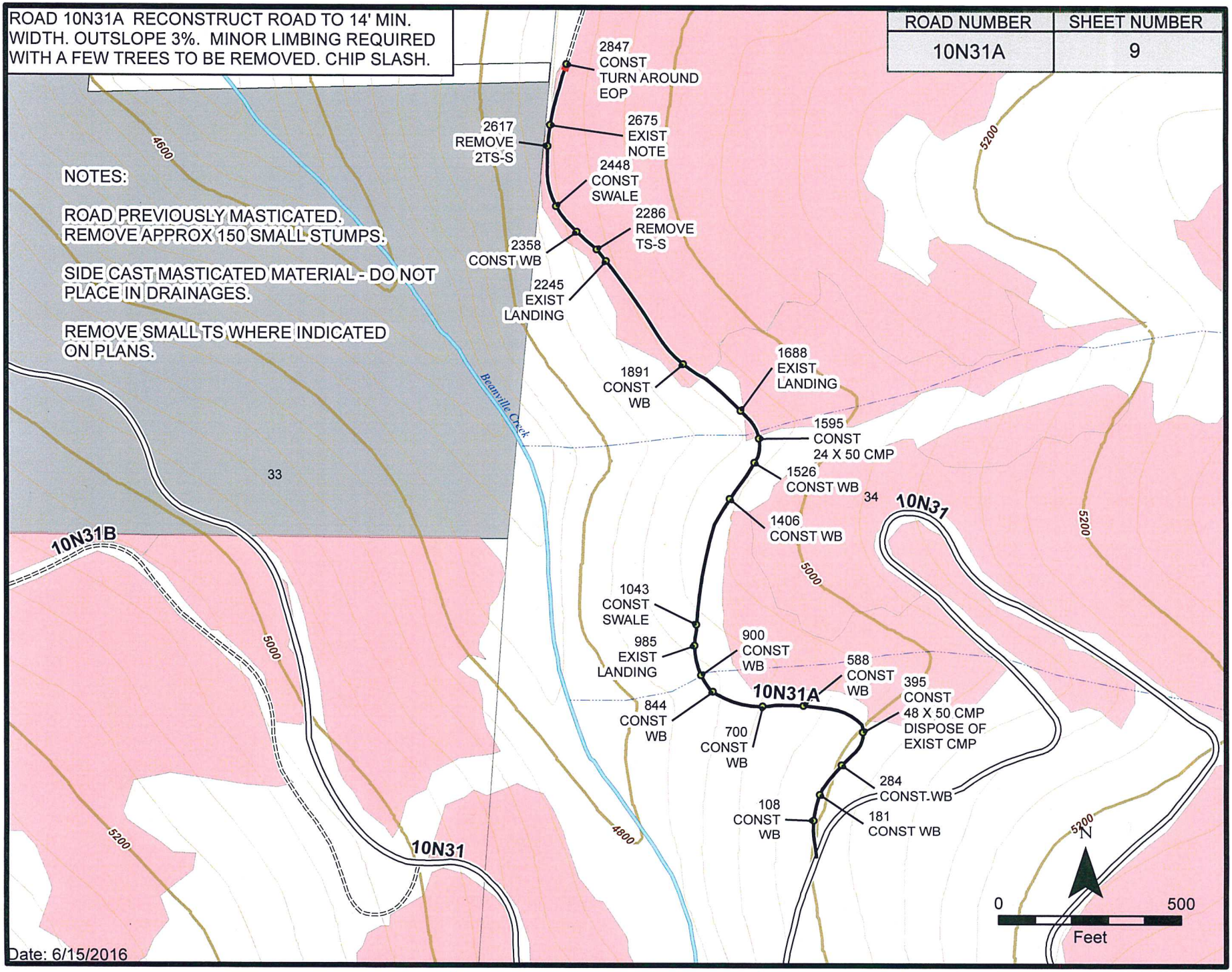
| SPECIFICATION DATA | | | ROAD DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | RD_NO | 10N40J | 10N41B | 10N42 | 10N43C | 10N50N | 10N50NA | 10N52 | |
| | | TYPE | RECONST | RECONST | RECONST | RECONST | RECONST | RECONST | RECONST | |
| SPEC. NO. | ITEM DESCRIPTION | UNITS | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | Sub Total |
| 151 | Mobilization - Applies to Project | LS | | | | 1 | | | | 1 |
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LS | 1 | 1 | | 1 | 1 | 1 | 1 | 6 |
| 201-4 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP OR SCATTER, Logs-DECK, and Stumps-SCATTER. | LS | | | 1 | | | | | 1 |
| 203-3 | Removal and Disposal of Culverts | Each | | | | 1 | | 1 | | 2 |
| 204-7 | Drainage Excavation, Type Waterbar | Each | 7 | 10 | | 7 | 24 | 11 | | 59 |
| 204-10 | Drainage Excavation, Type Rolling Dip | Each | | | 18 | 9 | | | 11 | 38 |
| 251-1 | Placed Riprap, Class II | CY | | | | 8 | | | | 8 |
| 301-1 | Aggregate Base, Gradation B, Compaction Method D | Ton | | | | 24 | | | 24 | 48 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction | Mile | 0.28 | 0.34 | 2.75 | 0.53 | 0.97 | 0.37 | 0.77 | 6.01 |
| 602-2 | 24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary. | LF | | | | 30 | | | | 30 |
| 602-4 | 48-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary. | LF | | | | 50 | | | | 50 |
| 607-1 | Re-install Existing Metal Pipe - Includes Removal, Cleaning, Repairing, Bedding and Installation | Each | | | 1 | | | | | 1 |
| 619-1 | Earth and Log Barricade | Each | | | | | | 1 | | 1 |
| 607-1 | Re-install Existing Metal Pipe - Includes Removal, Cleaning, Repairing, Bedding and Installation | Each | | | | | | 1 | | 1 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

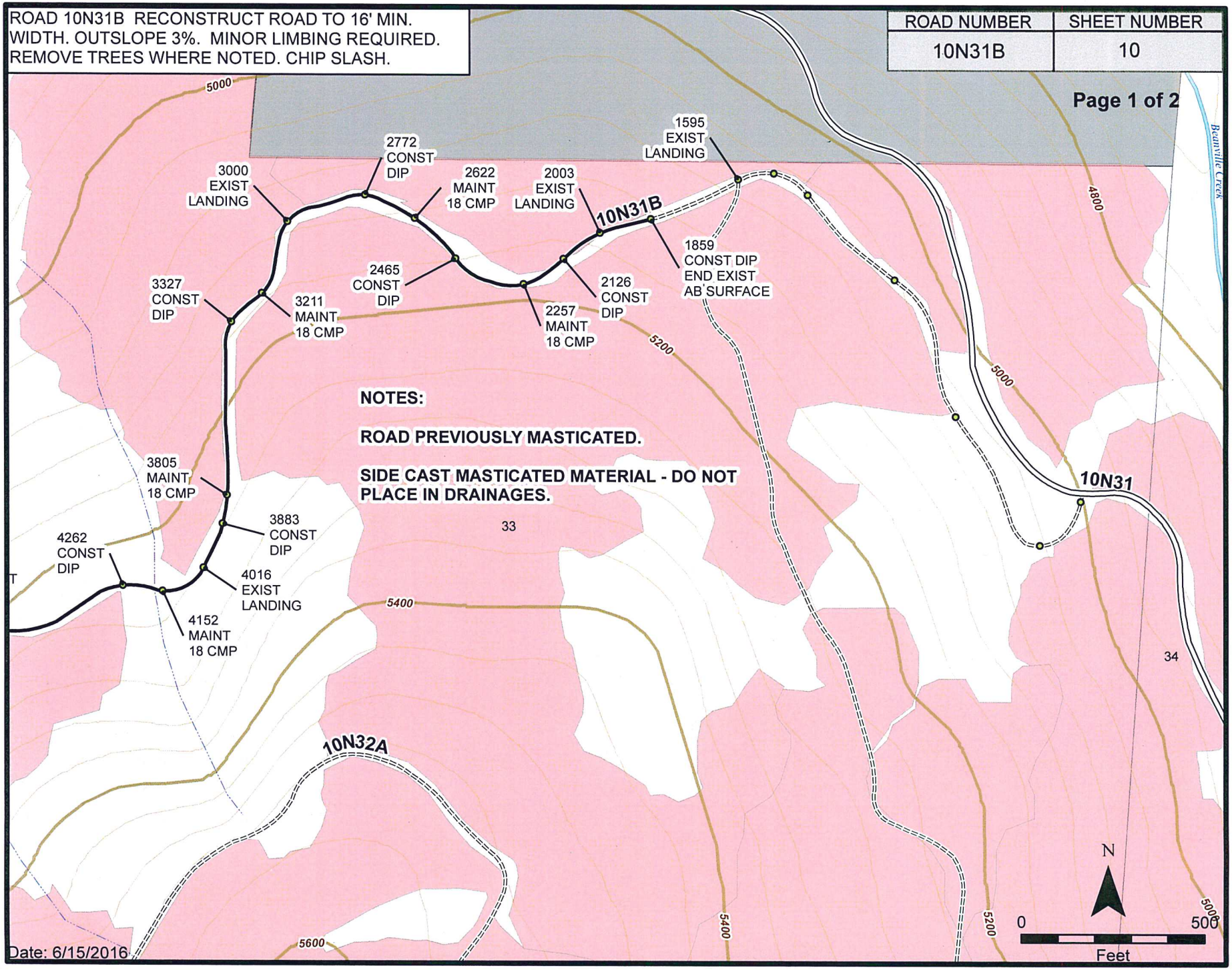
# MATERIALS LIST AND QUANTITIES

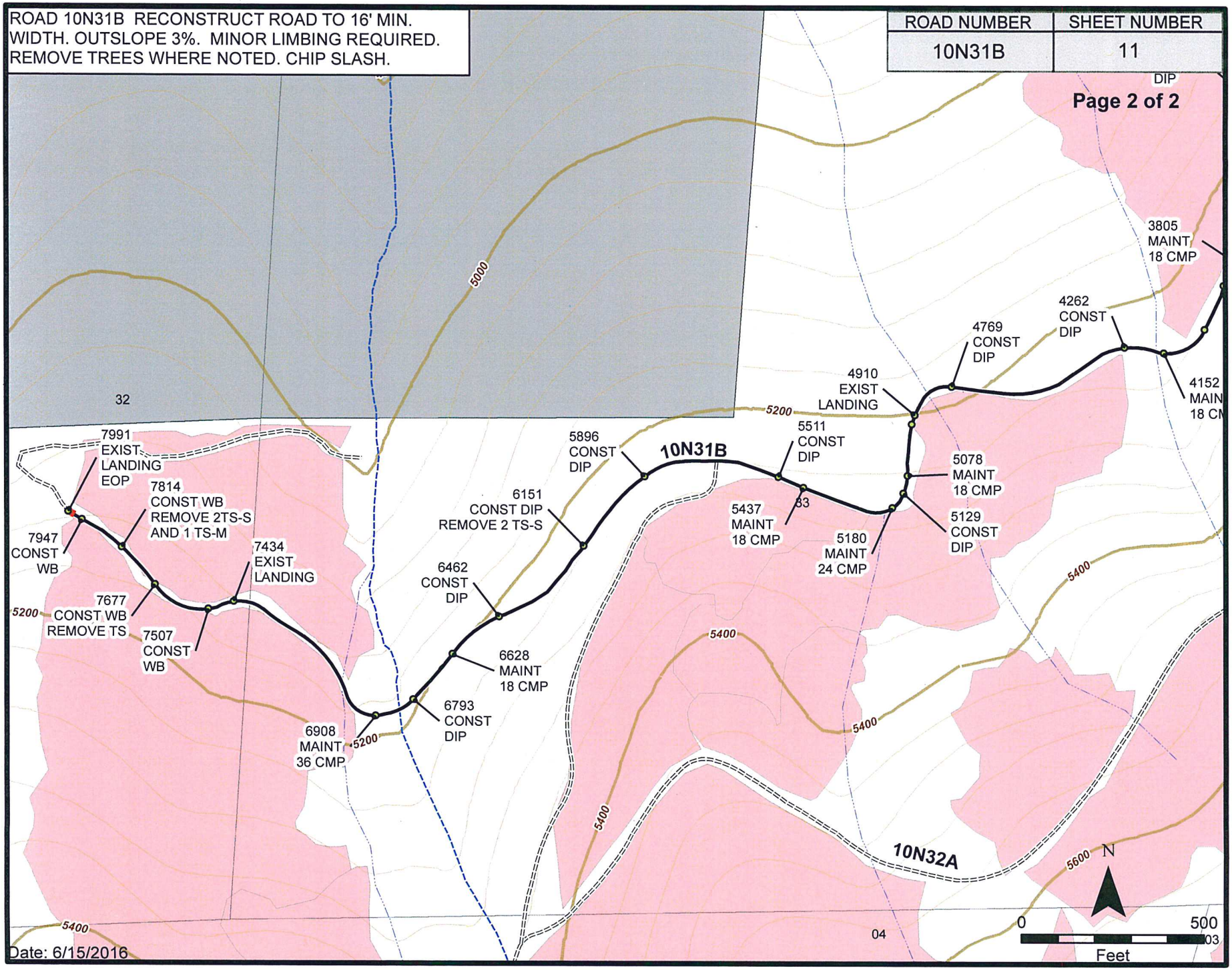
| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 7 |

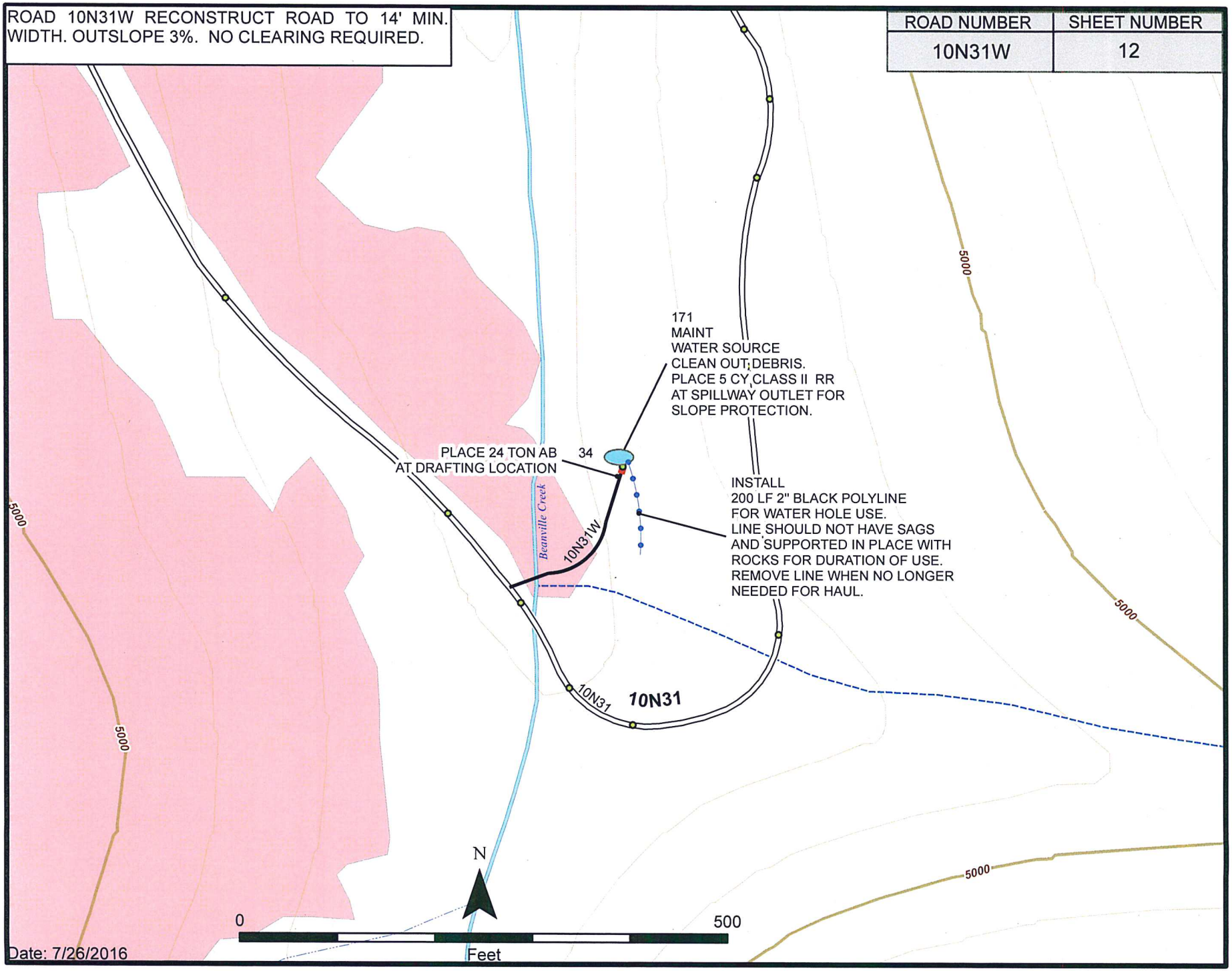
| SPECIFICATION DATA | | | ROAD DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | RD_NO | 10N52A | 11N46 | 10N40R | | | | | |
| | | TYPE | RECONST | RECONST | RECONST | RECONST | RECONST | RECONST | RECONST | |
| SPEC. NO. | ITEM DESCRIPTION | UNITS | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | QUANTITY | Sub Total |
| 151 | Mobilization - Applies to Project | LS | | | | 1 | | | | 1 |
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LS | | 1 | | | | | | 1 |
| 201-4 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP OR SCATTER, Logs-DECK, and Stumps-SCATTER. | LS | 1 | | | | | | | 1 |
| 202-2 | Removal of Individual Trees, (Medium), Disposal of Tops and Limbs F(1), Logs F(1). | Each | | | 1 | | | | | 1 |
| 203-3 | Removal and Disposal of Culverts | Each | | 1 | | | | | | 1 |
| 204-8 | Drainage Excavation, Type Swale | Each | | 3 | | | | | | 3 |
| 204-10 | Drainage Excavation, Type Rolling Dip | Each | 2 | 27 | | | | | | 29 |
| 204-21 | Excavation - Waterhole Cleanout and Maintenance | LS | | | 1 | | | | | 1 |
| 301-1 | Aggregate Base, Gradation B, Compaction Met | Ton | | 288 | | | | | | 288 |
| 301-2 | Screened Crushed Aggregate - 2"- 4"+ Crushed Rock (GRADING N) | Ton | | | 24 | | | | | 24 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | Mile | 0.17 | 2.98 | | | | | | 3.15 |
| 602-2 | 24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary. | LF | | 30 | | | | | | 30 |
| 602-15 | 2-Inch Black Polyline, 160 psi min. Includes All Labor, Materials and Equipment to install. | LF | | | 200 | | | | | 200 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

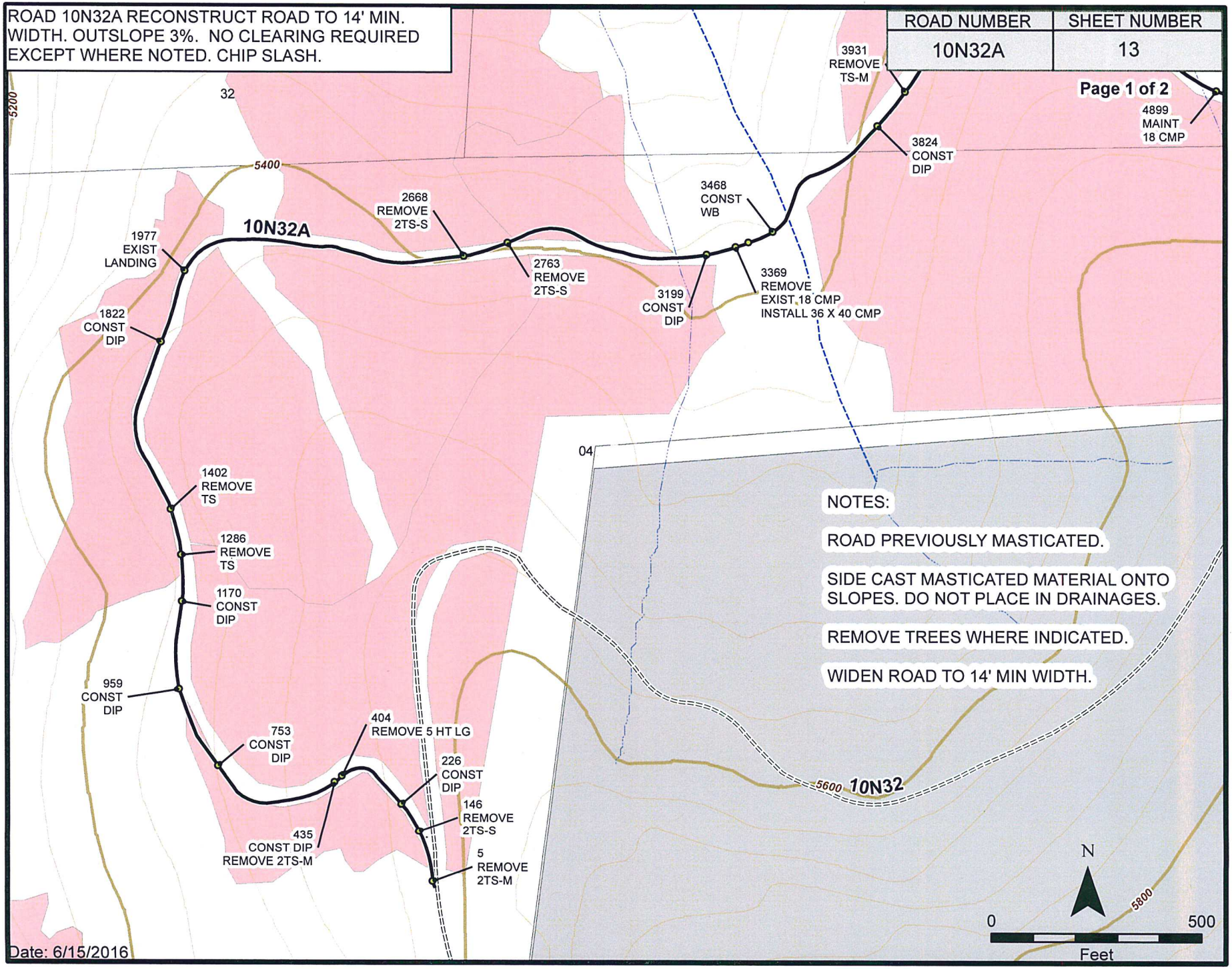

ROAD 10N31 BLADE, WATER AND COMPACT AB SECTIONS.
RECONSTRUCT NATIVE SECTIONS TO 14' MIN. WIDTH.
OUTSLOPE 3%. CLEAR 16 FT MIN WIDTH. CHIP SLASH.
ROAD NUMBER
10N31
SHEET NUMBER
8
7052
MAINT 18 CMP
END MAINTENANCE
BEGIN RECONST
10N31
7423
MAINT
18 CMP
10N31B
8165
MAINT
18 CMP
8478
EXIST
LANDING
8526
CONST
DIP
8566
MAINT
18 CMP
8827
CONST
DIP
9049
MAINT
24 CMP
9249
EXIST
LANDING
9583
MAINT
18 CMP
9721
CONST
DIP
9788
EXIST
LANDING
10121
MAINT
18 CMP
10439
CONST
DIP
10658
MAINT
96 ARCH MULTIPLATE
10557
MAINT
18 CMP
10736
MAINT
18 CMP
10932
MAINT
72 ARCH MULTIPLATE
10N32A
10N31A
13673
EXIST
18 CMP
13592
SPOT ROCK
24 TON AB
13363
CONST
DIP
14033
CONST
DIP
14235
CONST DIP
14270
MAINT 18 CMP
14374
EXIST LANDING
13152
MAINT 18 CMP
13030
CONST DIP
12933
MAINT
36 CMP
12592
MAINT
18 CMP
12696
CONST
DIP
12282
EXIST
LANDING
12508
CONST
DIP
14867
MAINT
24 CMP
15188
MAINT
18 CMP
15098
CONST
DIP
12103
MAINT
18 CMP
12178
CONST
DIP
15483
RECONST
DIP
15327
RECONST
DIP
11904
CONST
DIP
15601
EXIST
LANDING
15714
RECONST
DIP
11736
MAINT
18 CMP
11567
CONST
DIP
15820
MAINT
18 CMP
15917
RECONST
DIP
11490
MAINT
36 CMP ARCH
11407
CONST
DIP
16073
CONST
TURNOUT
EOP
11211
MAINT
18 CMP
Beaniville Creek
33
34
5000
5200
5400
4800
N
0
500
Feet
Date: 6/15/2016


ROAD 10N31A RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. MINOR LIMBING REQUIRED WITH A FEW TREES TO BE REMOVED. CHIP SLASH.
ROAD NUMBER
10N31A
SHEET NUMBER
9
NOTES:
ROAD PREVIOUSLY MASTICATED. REMOVE APPROX 150 SMALL STUMPS.
SIDE CAST MASTICATED MATERIAL - DO NOT PLACE IN DRAINAGES.
REMOVE SMALL TS WHERE INDICATED ON PLANS.
2847 CONST TURN AROUND EOP
2675 EXIST NOTE
2617 REMOVE 2TS-S
2448 CONST SWALE
2286 REMOVE TS-S
2358 CONST WB
2245 EXIST LANDING
1891 CONST WB
1688 EXIST LANDING
1595 CONST 24 X 50 CMP
1526 CONST WB
1406 CONST WB
1043 CONST SWALE
985 EXIST LANDING
900 CONST WB
588 CONST WB
395 CONST 48 X 50 CMP DISPOSE OF EXIST CMP
844 CONST WB
700 CONST WB
284 CONST WB
108 CONST WB
181 CONST WB
10N31
10N31A
10N31B
33
34
Beanville Creek
4600
4800
5000
5200
N
0
500
Feet
Date: 6/15/2016


ROAD 10N31B RECONSTRUCT ROAD TO 16' MIN. WIDTH. OUTSLOPE 3%. MINOR LIMBING REQUIRED. REMOVE TREES WHERE NOTED. CHIP SLASH.
ROAD NUMBER
10N31B
SHEET NUMBER
10
Page 1 of 2
1595 EXIST LANDING
2772 CONST DIP
3000 EXIST LANDING
2622 MAINT 18 CMP
2003 EXIST LANDING
10N31B
1859 CONST DIP END EXIST AB SURFACE
2465 CONST DIP
3327 CONST DIP
3211 MAINT 18 CMP
2126 CONST DIP
2257 MAINT 18 CMP
NOTES:
ROAD PREVIOUSLY MASTICATED.
SIDE CAST MASTICATED MATERIAL - DO NOT PLACE IN DRAINAGES.
3805 MAINT 18 CMP
3883 CONST DIP
4262 CONST DIP
4016 EXIST LANDING
4152 MAINT 18 CMP
10N31
10N32A
Beanville Creek
5000
4800
5200
5400
5600
33
34
N
0
500
Feet
Date: 6/15/2016


ROAD 10N31B RECONSTRUCT ROAD TO 16' MIN. WIDTH. OUTSLOPE 3%. MINOR LIMBING REQUIRED. REMOVE TREES WHERE NOTED. CHIP SLASH.
ROAD NUMBER
10N31B
SHEET NUMBER
11
Page 2 of 2
10N31B
10N32A
7991 EXIST LANDING EOP
7814 CONST WB REMOVE 2TS-S AND 1 TS-M
7947 CONST WB
7434 EXIST LANDING
7677 CONST WB REMOVE TS
7507 CONST WB
6908 MAINT 36 CMP
6793 CONST DIP
6628 MAINT 18 CMP
6462 CONST DIP
6151 CONST DIP REMOVE 2 TS-S
5896 CONST DIP
5511 CONST DIP
5437 MAINT 18 CMP
5180 MAINT 24 CMP
5129 CONST DIP
5078 MAINT 18 CMP
4910 EXIST LANDING
4769 CONST DIP
4262 CONST DIP
3805 MAINT 18 CMP
4152 MAIN 18 CM
DIP
5000
5200
5400
5600
32
04
03
N
0
500
Feet
Date: 6/15/2016

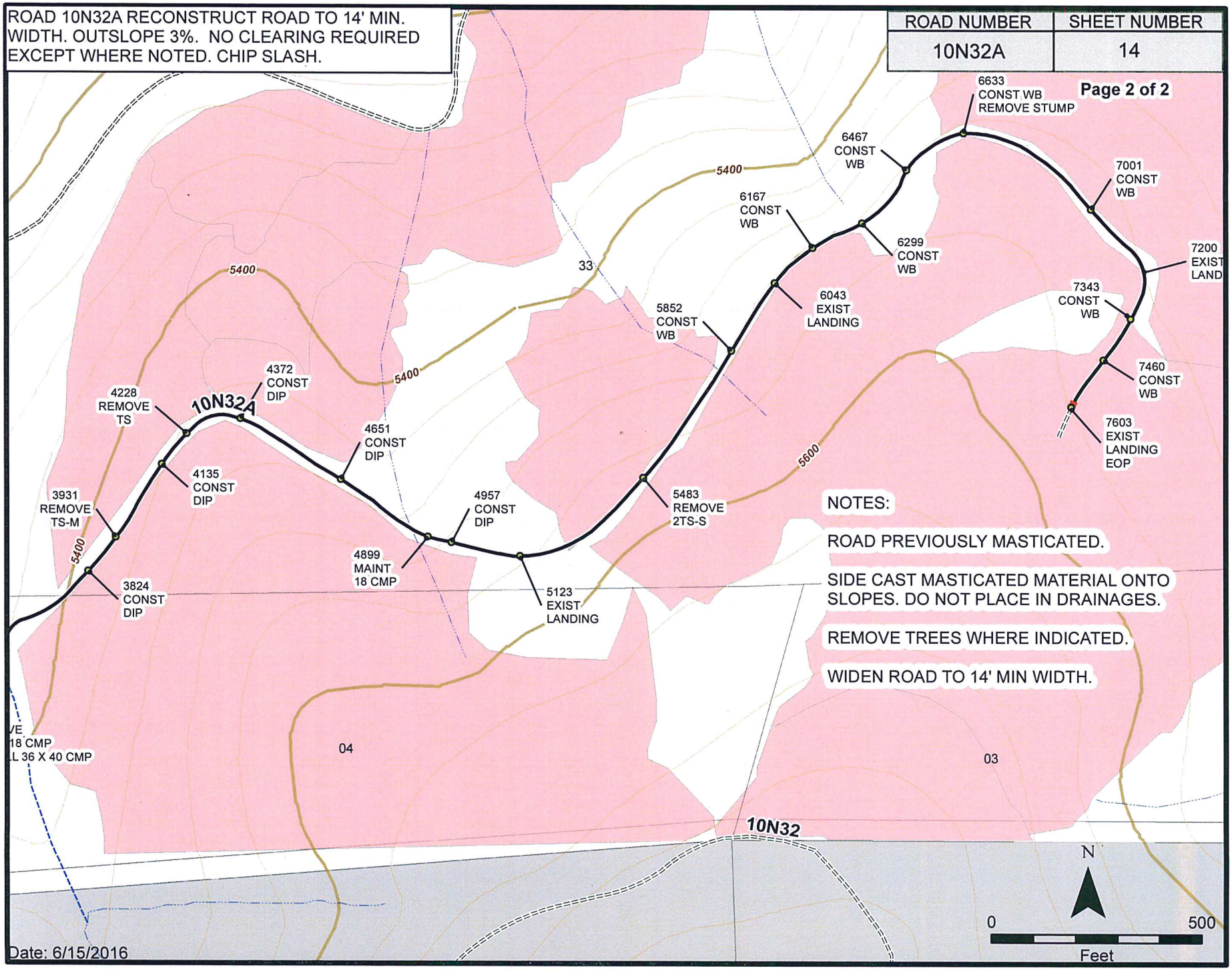

ROAD 10N31W RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. NO CLEARING REQUIRED.
ROAD NUMBER
10N31W
SHEET NUMBER
12
171
MAINT
WATER SOURCE
CLEAN OUT DEBRIS.
PLACE 5 CY CLASS II RR
AT SPILLWAY OUTLET FOR
SLOPE PROTECTION.
PLACE 24 TON AB
AT DRAFTING LOCATION
34
INSTALL
200 LF 2" BLACK POLYLINE
FOR WATER HOLE USE.
LINE SHOULD NOT HAVE SAGS
AND SUPPORTED IN PLACE WITH
ROCKS FOR DURATION OF USE.
REMOVE LINE WHEN NO LONGER
NEEDED FOR HAUL.
Beanville Creek
10N31W
10N31
10N31
5000
5000
5000
5000
N
0
500
Feet
Date: 7/26/2016


ROAD 10N32A RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. NO CLEARING REQUIRED EXCEPT WHERE NOTED. CHIP SLASH.
ROAD NUMBER
10N32A
SHEET NUMBER
13
Page 1 of 2
32
04
5200
5400
5600
5800
10N32A
10N32
1977 EXIST LANDING
1822 CONST DIP
1402 REMOVE TS
1286 REMOVE TS
1170 CONST DIP
959 CONST DIP
753 CONST DIP
404 REMOVE 5 HT LG
435 CONST DIP REMOVE 2TS-M
226 CONST DIP
146 REMOVE 2TS-S
5 REMOVE 2TS-M
2668 REMOVE 2TS-S
2763 REMOVE 2TS-S
3199 CONST DIP
3468 CONST WB
3369 REMOVE EXIST 18 CMP INSTALL 36 X 40 CMP
3824 CONST DIP
3931 REMOVE TS-M
4899 MAINT 18 CMP
NOTES:
ROAD PREVIOUSLY MASTICATED.
SIDE CAST MASTICATED MATERIAL ONTO SLOPES. DO NOT PLACE IN DRAINAGES.
REMOVE TREES WHERE INDICATED.
WIDEN ROAD TO 14' MIN WIDTH.
N
0
500
Feet
Date: 6/15/2016

ROAD 10N32A RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. NO CLEARING REQUIRED EXCEPT WHERE NOTED. CHIP SLASH.

| ROAD NUMBER | SHEET NUMBER |
|---|---|
| 10N32A | 14 |






NOTES:

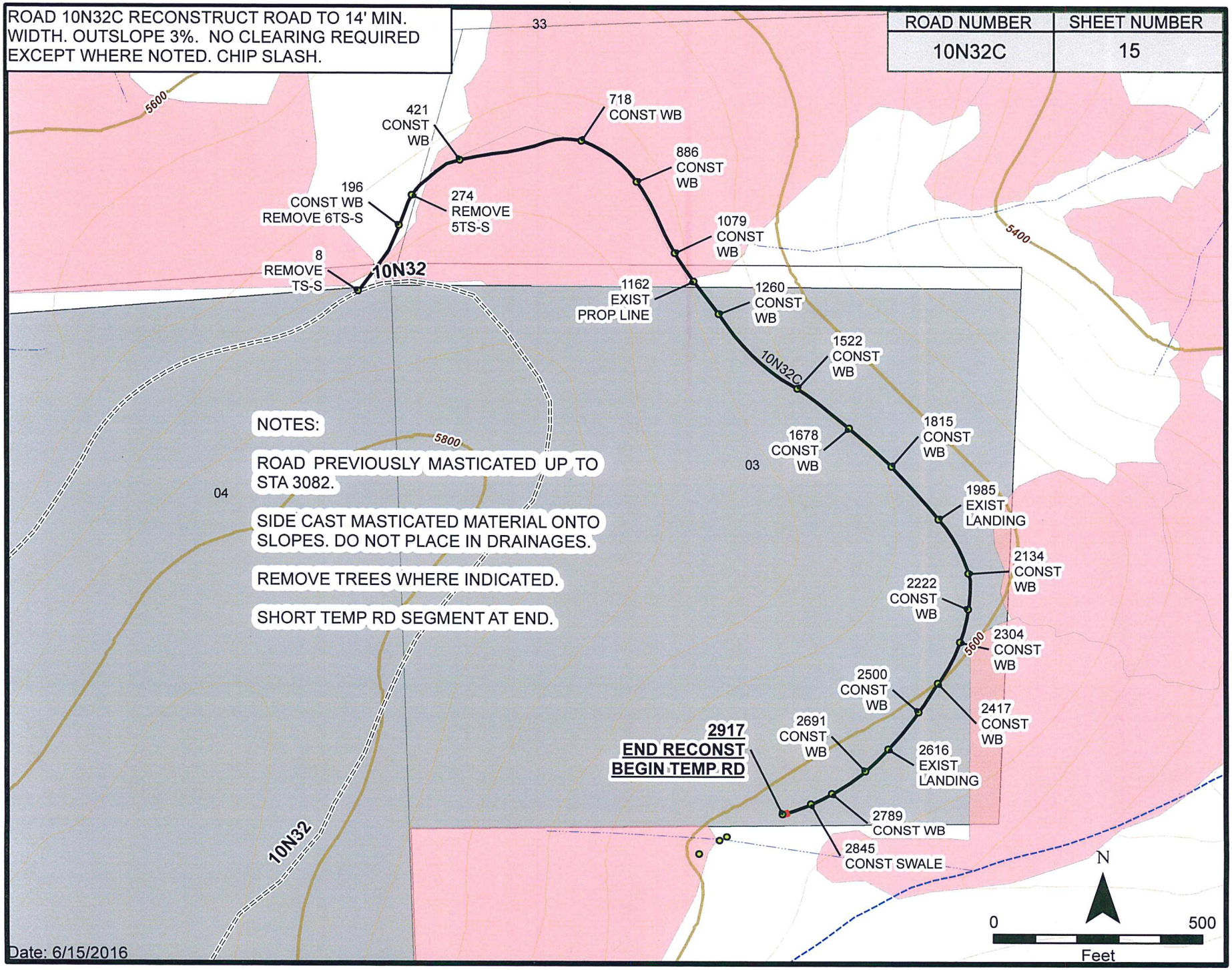
ROAD PREVIOUSLY MASTICATED.

SIDE CAST MASTICATED MATERIAL ONTO SLOPES. DO NOT PLACE IN DRAINAGES.

REMOVE TREES WHERE INDICATED.

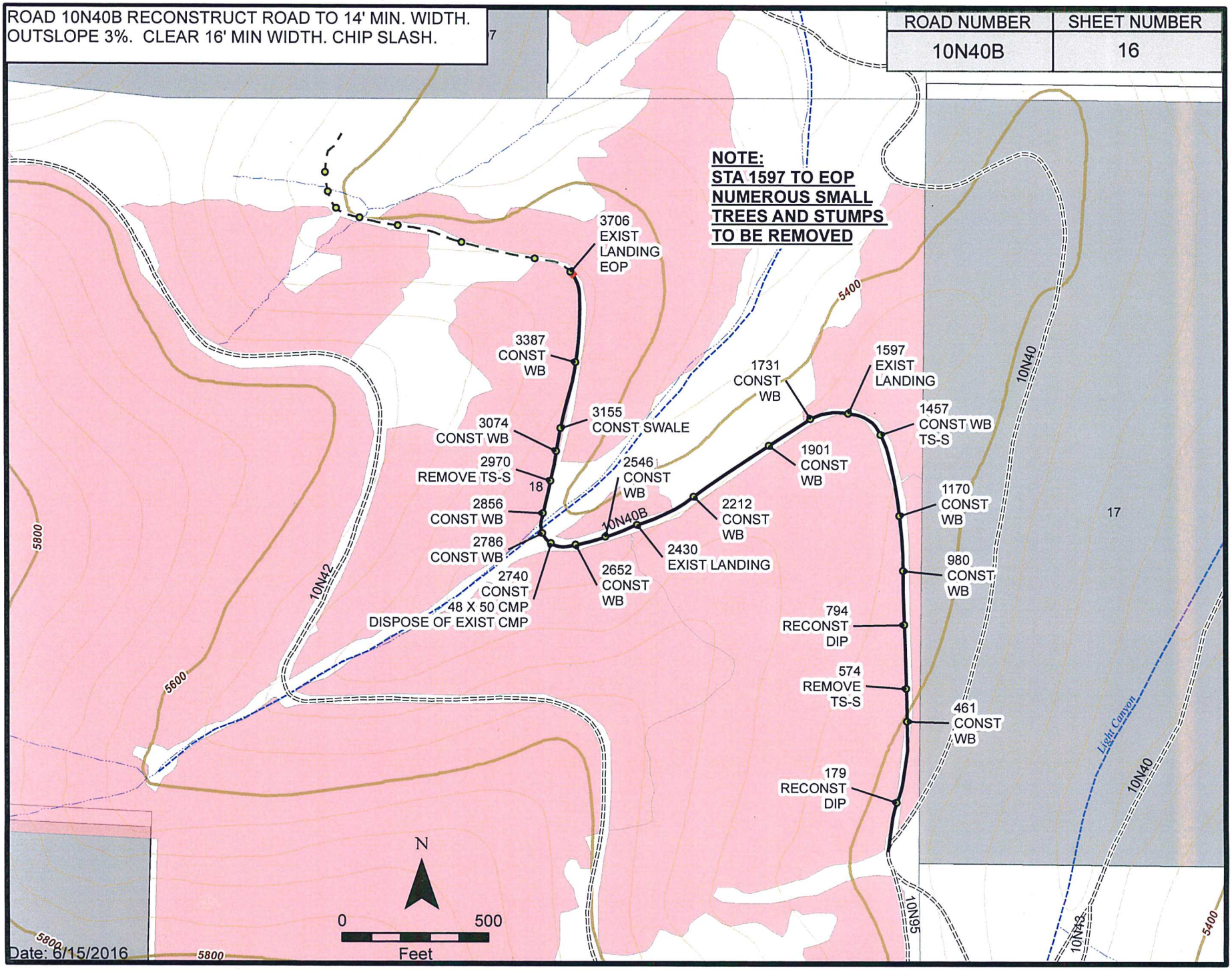
WIDEN ROAD TO 14' MIN WIDTH.

Date: 6/15/2016

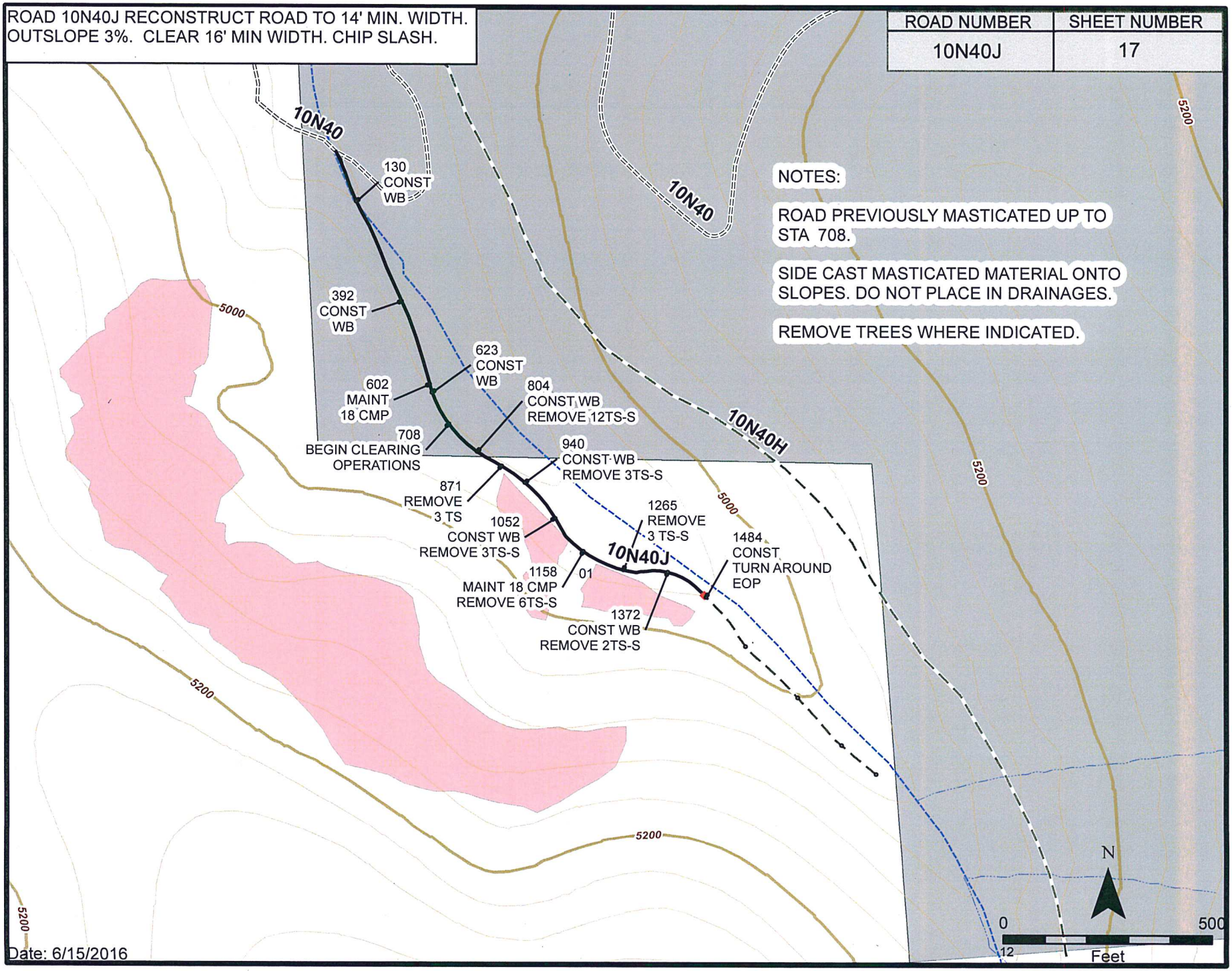

ROAD 10N32C RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. NO CLEARING REQUIRED EXCEPT WHERE NOTED. CHIP SLASH.
ROAD NUMBER
10N32C
SHEET NUMBER
15
33
5600
421 CONST WB
718 CONST WB
886 CONST WB
196 CONST WB REMOVE 6TS-S
274 REMOVE 5TS-S
1079 CONST WB
5400
8 REMOVE TS-S
10N32
1162 EXIST PROP LINE
1260 CONST WB
1522 CONST WB
10N32C
NOTES:
ROAD PREVIOUSLY MASTICATED UP TO STA 3082.
SIDE CAST MASTICATED MATERIAL ONTO SLOPES. DO NOT PLACE IN DRAINAGES.
REMOVE TREES WHERE INDICATED.
SHORT TEMP RD SEGMENT AT END.
5800
04
03
1678 CONST WB
1815 CONST WB
1985 EXIST LANDING
2134 CONST WB
2222 CONST WB
5600
2304 CONST WB
2500 CONST WB
2417 CONST WB
2691 CONST WB
2917 END RECONST BEGIN TEMP RD
2616 EXIST LANDING
2789 CONST WB
2845 CONST SWALE
10N32
N
0
500
Feet
Date: 6/15/2016

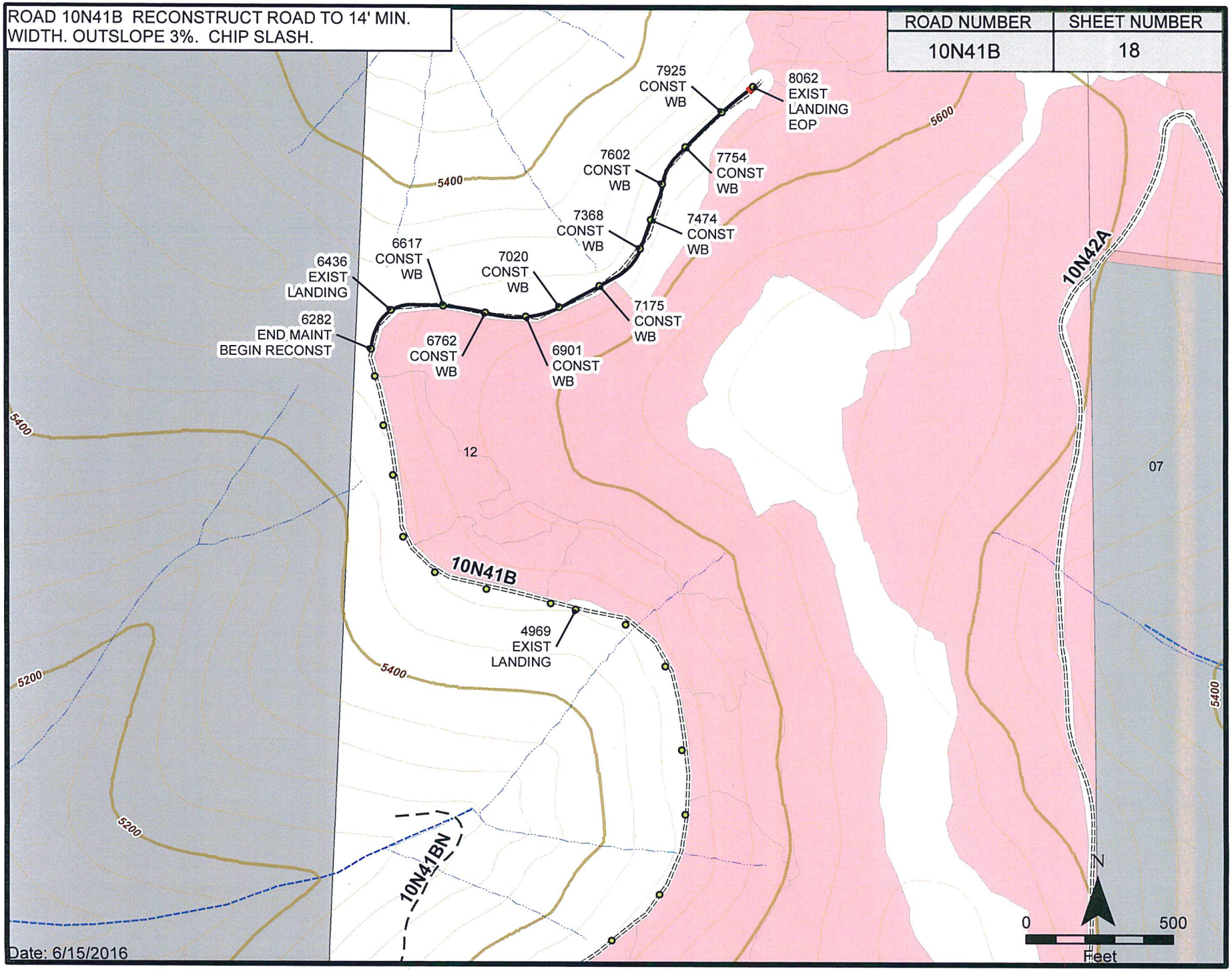
ROAD 10N40B RECONSTRUCT ROAD TO 14' MIN. WIDTH.
OUTSLOPE 3%. CLEAR 16' MIN WIDTH. CHIP SLASH.

| ROAD NUMBER | SHEET NUMBER |
|---|---|
| 10N40B | 16 |



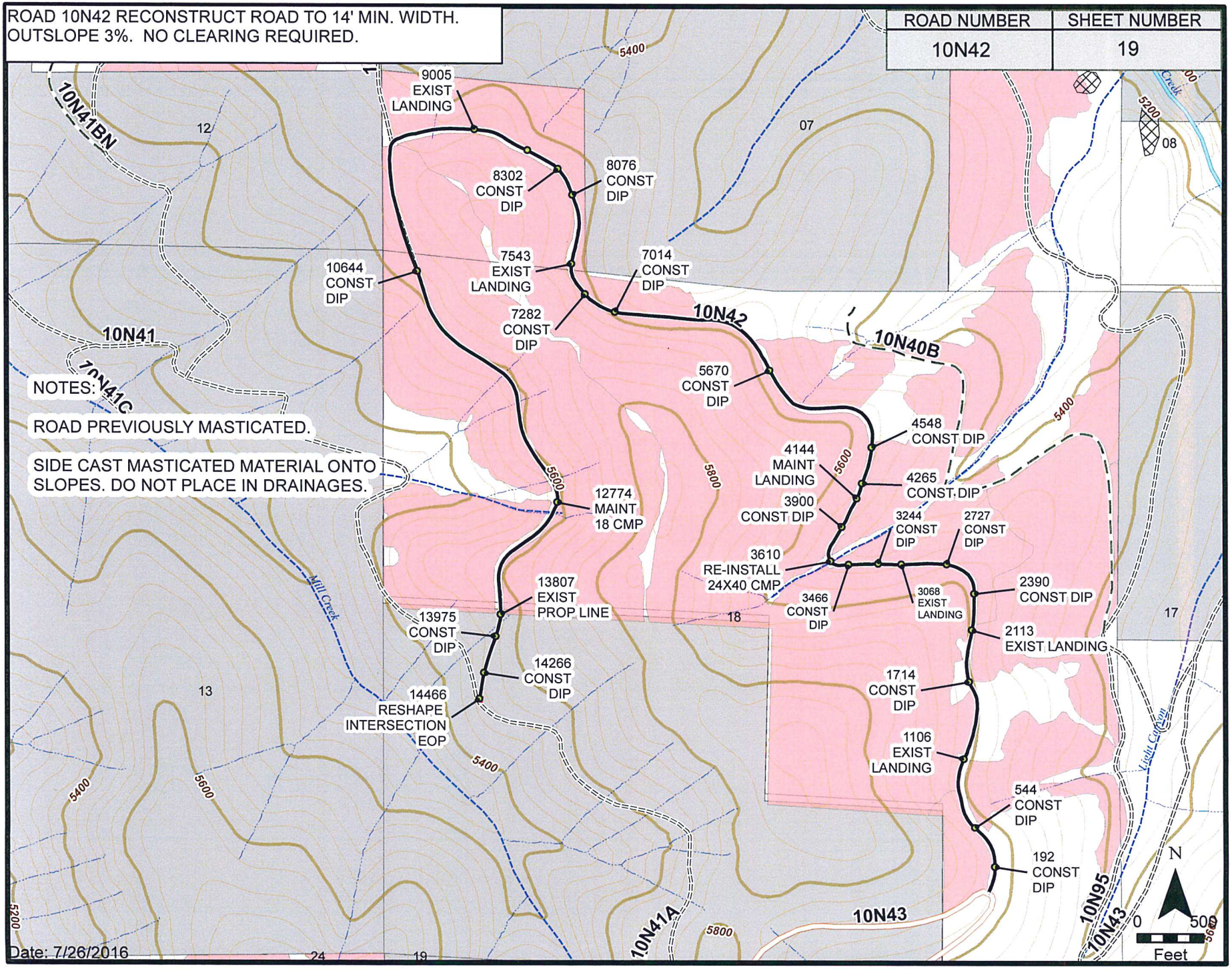

Date: 6/15/2016


ROAD 10N40J RECONSTRUCT ROAD TO 14' MIN. WIDTH.
OUTSLOPE 3%. CLEAR 16' MIN WIDTH. CHIP SLASH.
ROAD NUMBER
10N40J
SHEET NUMBER
17
NOTES:
ROAD PREVIOUSLY MASTICATED UP TO STA 708.
SIDE CAST MASTICATED MATERIAL ONTO SLOPES. DO NOT PLACE IN DRAINAGES.
REMOVE TREES WHERE INDICATED.
10N40
10N40
10N40H
10N40J
130 CONST WB
392 CONST WB
623 CONST WB
602 MAINT 18 CMP
804 CONST WB REMOVE 12TS-S
708 BEGIN CLEARING OPERATIONS
940 CONST WB REMOVE 3TS-S
871 REMOVE 3 TS
1052 CONST WB REMOVE 3TS-S
1265 REMOVE 3 TS-S
1484 CONST TURN AROUND EOP
1158 MAINT 18 CMP REMOVE 6TS-S
01
1372 CONST WB REMOVE 2TS-S
5000
5200
N
0
500
12
Feet
Date: 6/15/2016


ROAD 10N41B RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. CHIP SLASH.
ROAD NUMBER
10N41B
SHEET NUMBER
18
7925 CONST WB
8062 EXIST LANDING EOP
7602 CONST WB
7754 CONST WB
7368 CONST WB
7474 CONST WB
6617 CONST WB
6436 EXIST LANDING
7020 CONST WB
7175 CONST WB
6282 END MAINT BEGIN RECONST
6762 CONST WB
6901 CONST WB
4969 EXIST LANDING
10N42A
10N41B
10N41BN
12
07
5600
5400
5200
N
0
500
Feet
Date: 6/15/2016

ROAD 10N42 RECONSTRUCT ROAD TO 14' MIN. WIDTH.
OUTSLOPE 3%. NO CLEARING REQUIRED.

| ROAD NUMBER | SHEET NUMBER |
|---|---|
| 10N42 | 19 |

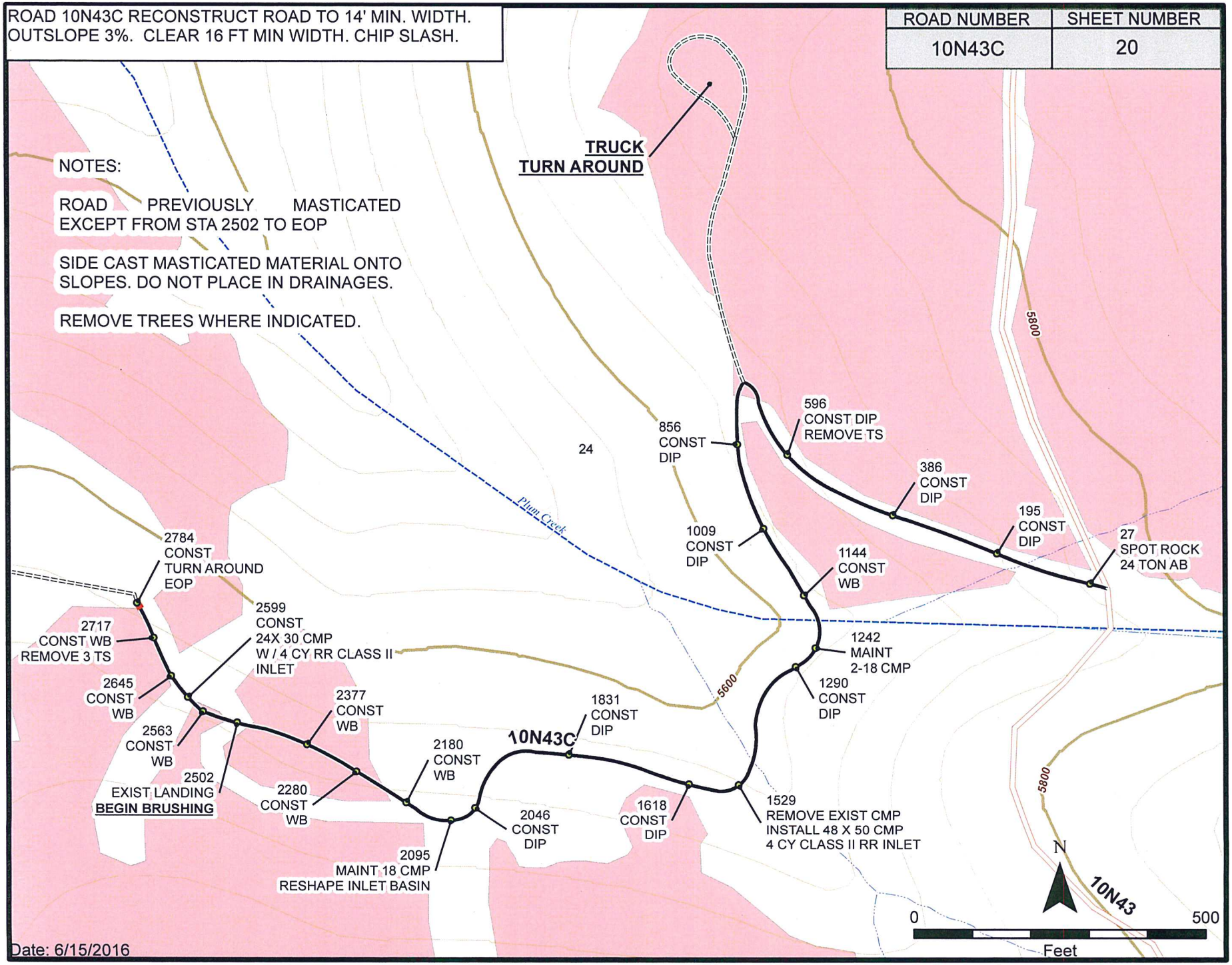


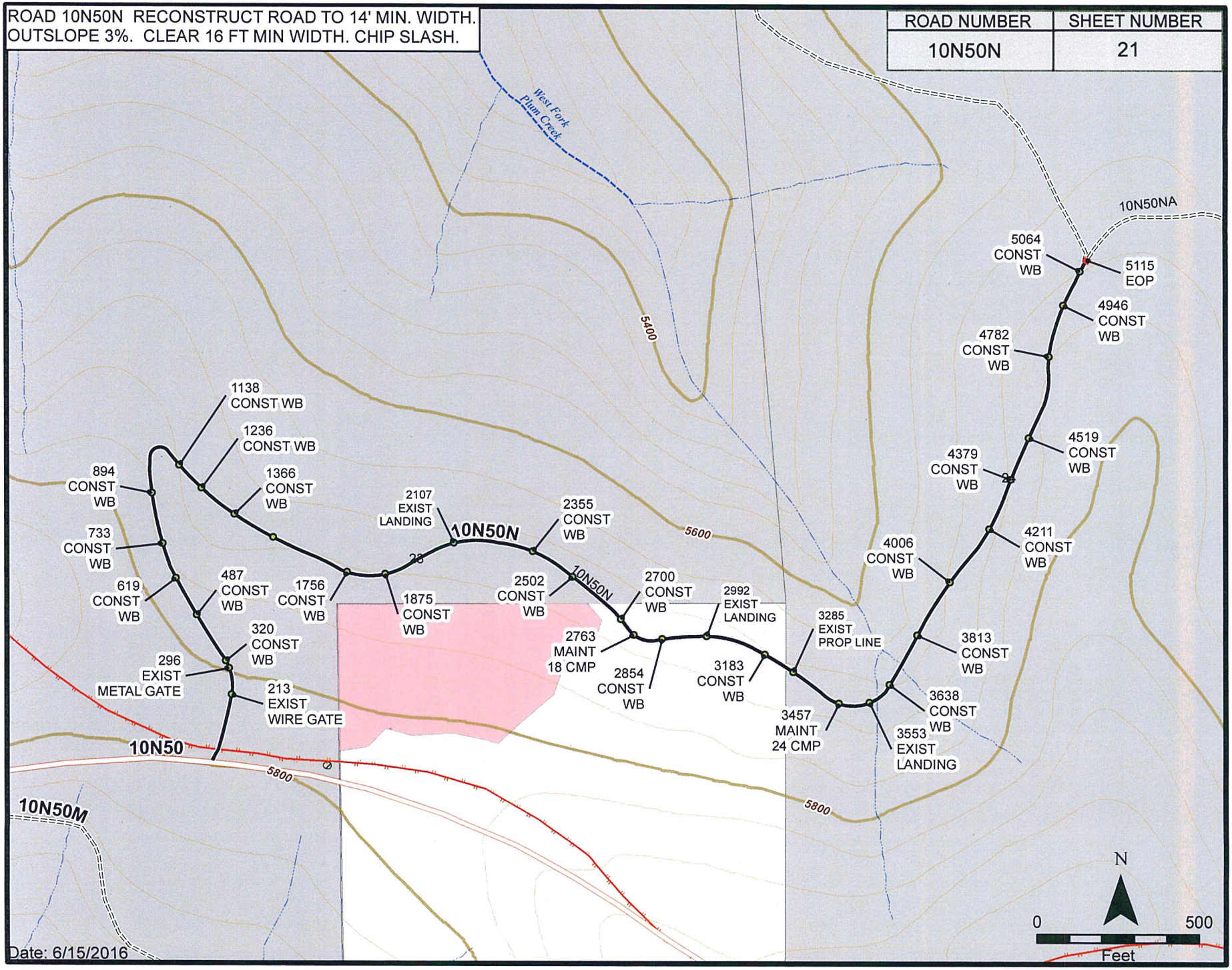

NOTES:

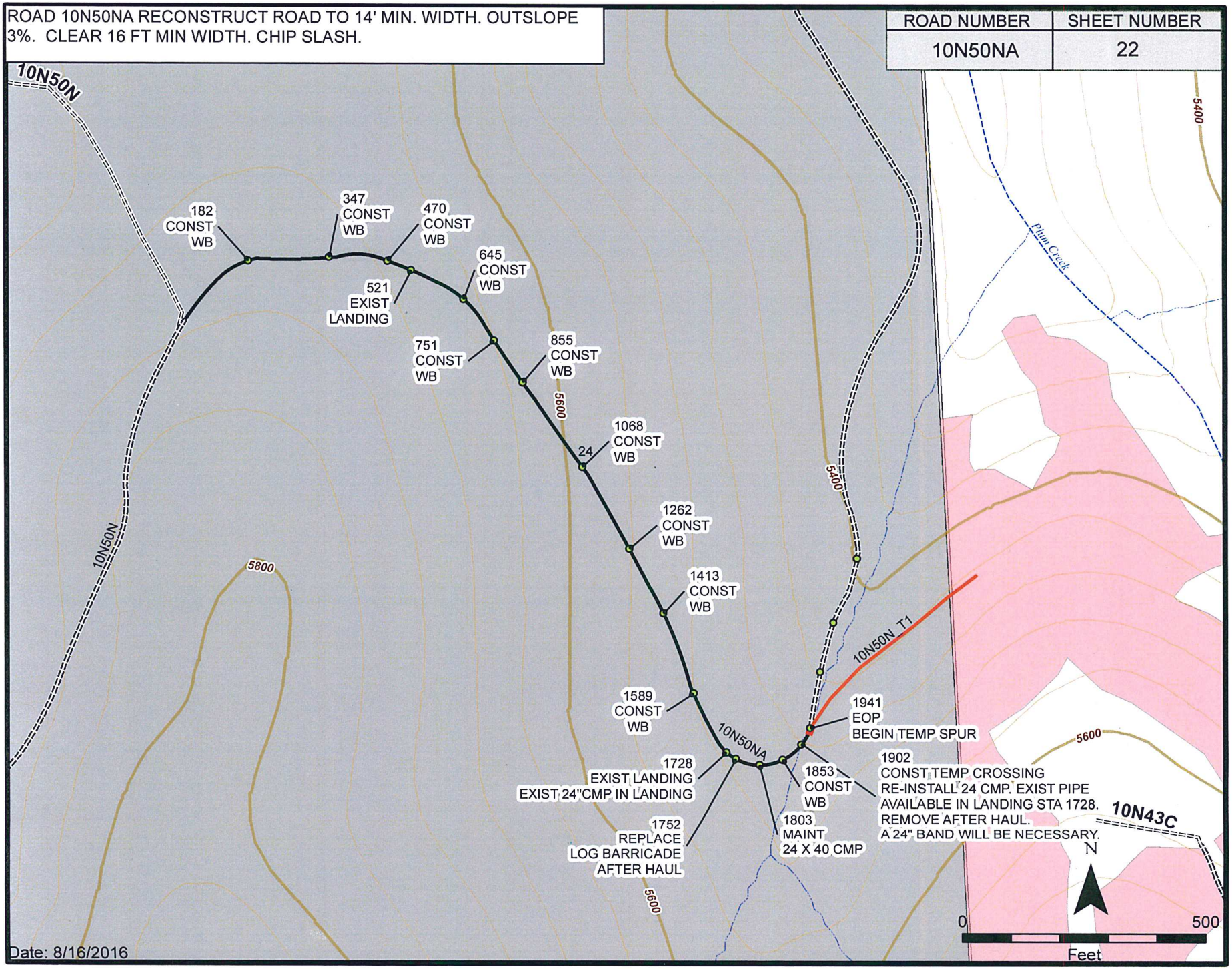
ROAD PREVIOUSLY MASTICATED.

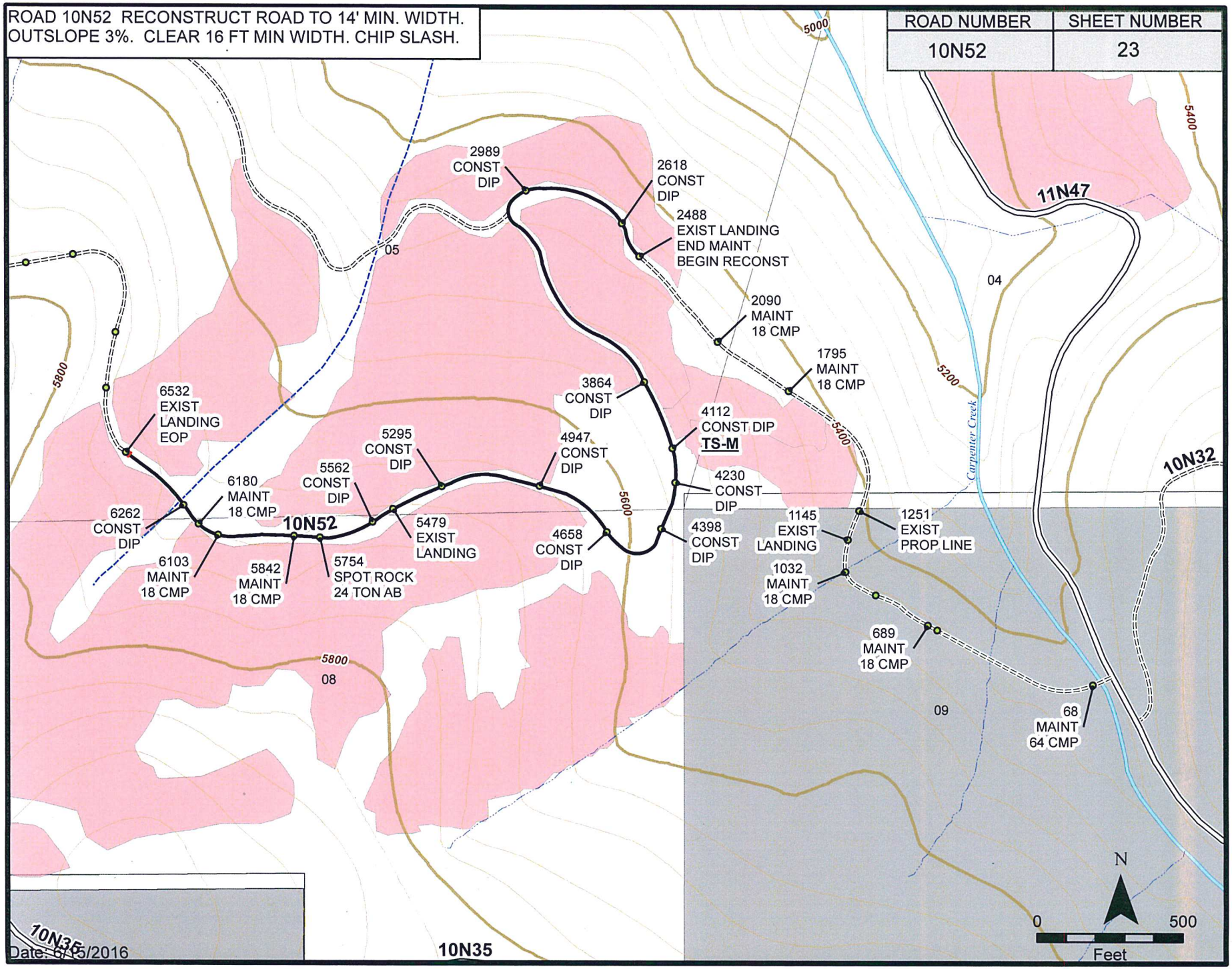
SIDE CAST MASTICATED MATERIAL ONTO SLOPES. DO NOT PLACE IN DRAINAGES.

Date: 7/26/2016


ROAD 10N43C RECONSTRUCT ROAD TO 14' MIN. WIDTH.
OUTSLOPE 3%. CLEAR 16 FT MIN WIDTH. CHIP SLASH.
ROAD NUMBER
10N43C
SHEET NUMBER
20
NOTES:
ROAD PREVIOUSLY MASTICATED
EXCEPT FROM STA 2502 TO EOP
SIDE CAST MASTICATED MATERIAL ONTO
SLOPES. DO NOT PLACE IN DRAINAGES.
REMOVE TREES WHERE INDICATED.
TRUCK
TURN AROUND
24
Plum Creek
5800
5600
596
CONST DIP
REMOVE TS
856
CONST
DIP
386
CONST
DIP
195
CONST
DIP
27
SPOT ROCK
24 TON AB
1009
CONST
DIP
1144
CONST
WB
1242
MAINT
2-18 CMP
1290
CONST
DIP
1831
CONST
DIP
10N43C
1529
REMOVE EXIST CMP
INSTALL 48 X 50 CMP
4 CY CLASS II RR INLET
1618
CONST
DIP
2046
CONST
DIP
2180
CONST
WB
2377
CONST
WB
2599
CONST
24X 30 CMP
W / 4 CY RR CLASS II
INLET
2784
CONST
TURN AROUND
EOP
2717
CONST WB
REMOVE 3 TS
2645
CONST
WB
2563
CONST
WB
2502
EXIST LANDING
BEGIN BRUSHING
2280
CONST
WB
2095
MAINT 18 CMP
RESHAPE INLET BASIN
N
10N43
0
500
Feet
Date: 6/15/2016

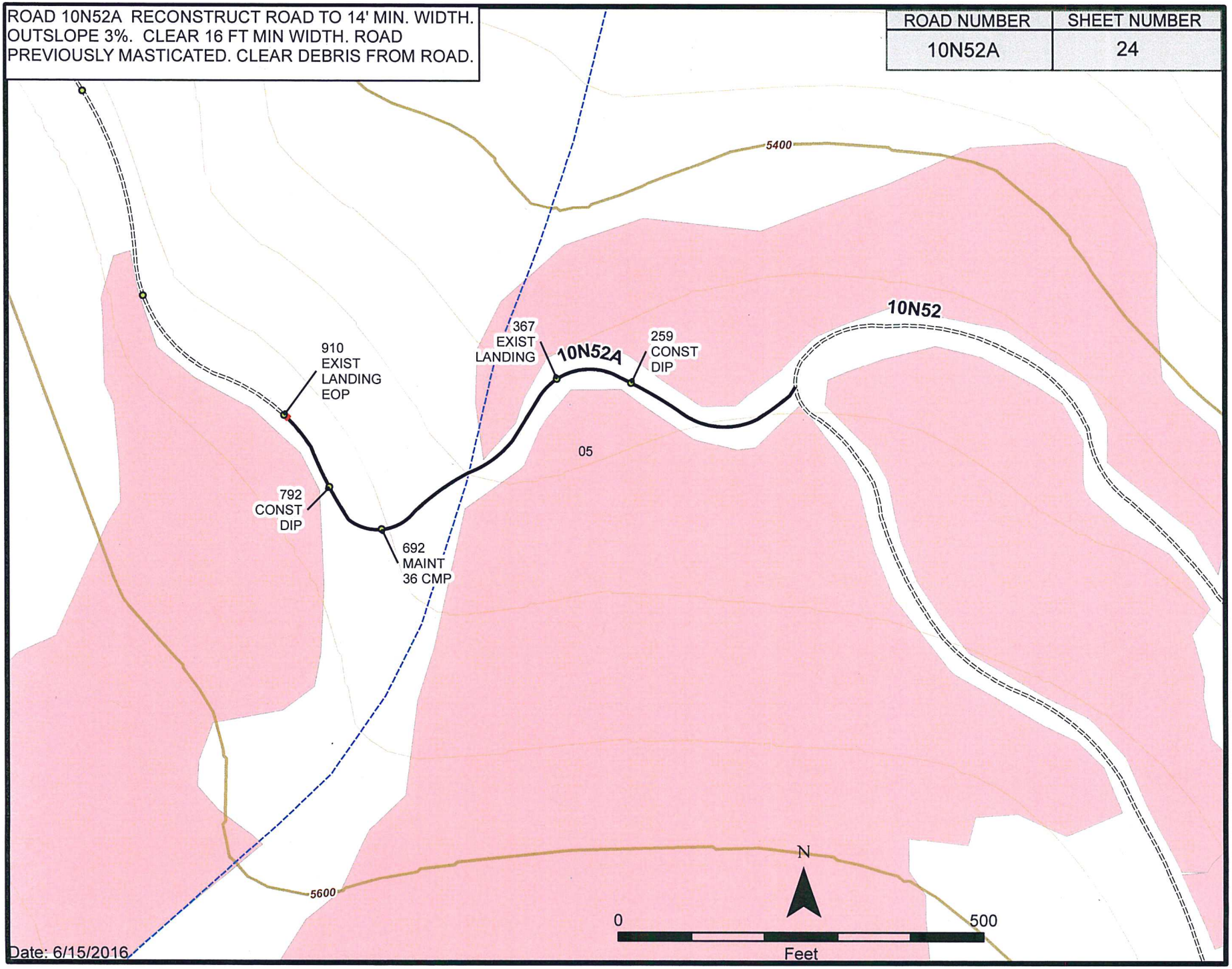

ROAD 10N50N RECONSTRUCT ROAD TO 14' MIN. WIDTH.
OUTSLOPE 3%. CLEAR 16 FT MIN WIDTH. CHIP SLASH.
ROAD NUMBER
10N50N
SHEET NUMBER
21
West Fork Plum Creek
10N50NA
5064 CONST WB
5115 EOP
4946 CONST WB
4782 CONST WB
4519 CONST WB
4379 CONST WB
4211 CONST WB
4006 CONST WB
3813 CONST WB
3638 CONST WB
3553 EXIST LANDING
3457 MAINT 24 CMP
3285 EXIST PROP LINE
3183 CONST WB
2992 EXIST LANDING
2854 CONST WB
2763 MAINT 18 CMP
2700 CONST WB
2502 CONST WB
2355 CONST WB
2107 EXIST LANDING
1875 CONST WB
1756 CONST WB
1366 CONST WB
1236 CONST WB
1138 CONST WB
894 CONST WB
733 CONST WB
619 CONST WB
487 CONST WB
320 CONST WB
296 EXIST METAL GATE
213 EXIST WIRE GATE
10N50N
10N50
10N50M
5400
5600
5800
5800
N
0
500
Feet
Date: 6/15/2016


ROAD 10N50NA RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. CLEAR 16 FT MIN WIDTH. CHIP SLASH.
ROAD NUMBER
10N50NA
SHEET NUMBER
22
10N50N
182 CONST WB
347 CONST WB
470 CONST WB
645 CONST WB
521 EXIST LANDING
751 CONST WB
855 CONST WB
1068 CONST WB
24
1262 CONST WB
1413 CONST WB
1589 CONST WB
1728 EXIST LANDING
EXIST 24"CMP IN LANDING
1752 REPLACE LOG BARRICADE AFTER HAUL
1803 MAINT 24 X 40 CMP
1853 CONST WB
1902 CONST TEMP CROSSING RE-INSTALL 24 CMP. EXIST PIPE AVAILABLE IN LANDING STA 1728. REMOVE AFTER HAUL. A 24" BAND WILL BE NECESSARY.
1941 EOP BEGIN TEMP SPUR
10N50N_T1
10N50NA
10N43C
Plum Creek
5400
5600
5800
N
0
500
Feet
Date: 8/16/2016


ROAD 10N52 RECONSTRUCT ROAD TO 14' MIN. WIDTH.
OUTSLOPE 3%. CLEAR 16 FT MIN WIDTH. CHIP SLASH.
ROAD NUMBER
10N52
SHEET NUMBER
23
2989
CONST
DIP
2618
CONST
DIP
2488
EXIST LANDING
END MAINT
BEGIN RECONST
2090
MAINT
18 CMP
1795
MAINT
18 CMP
3864
CONST
DIP
4112
CONST DIP
TS-M
4947
CONST
DIP
5295
CONST
DIP
5562
CONST
DIP
6532
EXIST
LANDING
EOP
6180
MAINT
18 CMP
6262
CONST
DIP
6103
MAINT
18 CMP
5842
MAINT
18 CMP
5754
SPOT ROCK
24 TON AB
5479
EXIST
LANDING
4658
CONST
DIP
4398
CONST
DIP
4230
CONST
DIP
1145
EXIST
LANDING
1251
EXIST
PROP LINE
1032
MAINT
18 CMP
689
MAINT
18 CMP
68
MAINT
64 CMP
10N52
11N47
10N32
10N35
Carpenter Creek
5000
5200
5400
5600
5800
04
05
08
09
N
0
500
Feet
Date: 6/15/2016

ROAD 10N52A RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. CLEAR 16 FT MIN WIDTH. ROAD PREVIOUSLY MASTICATED. CLEAR DEBRIS FROM ROAD.

| ROAD NUMBER | SHEET NUMBER |
|---|---|
| 10N52A | 24 |

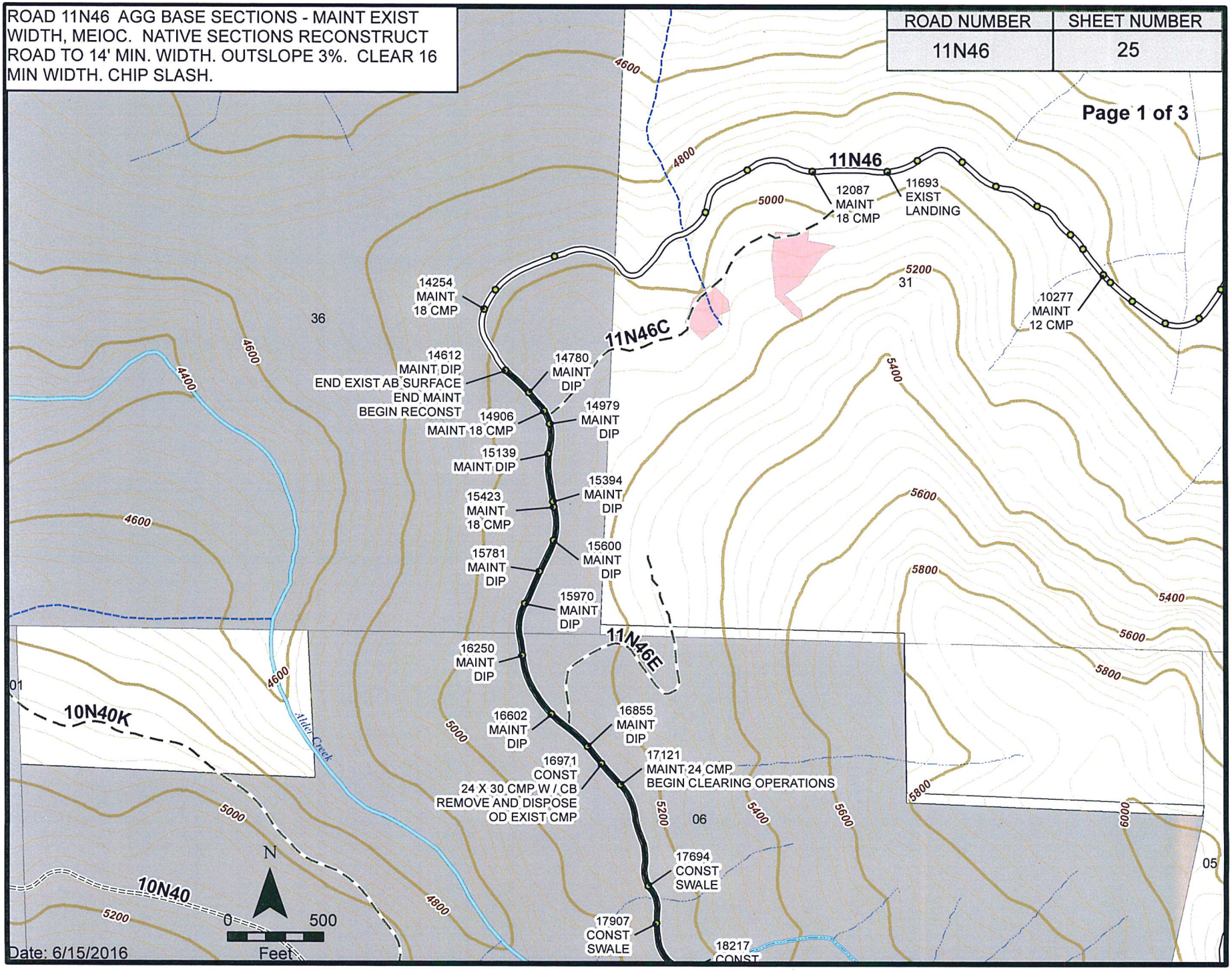


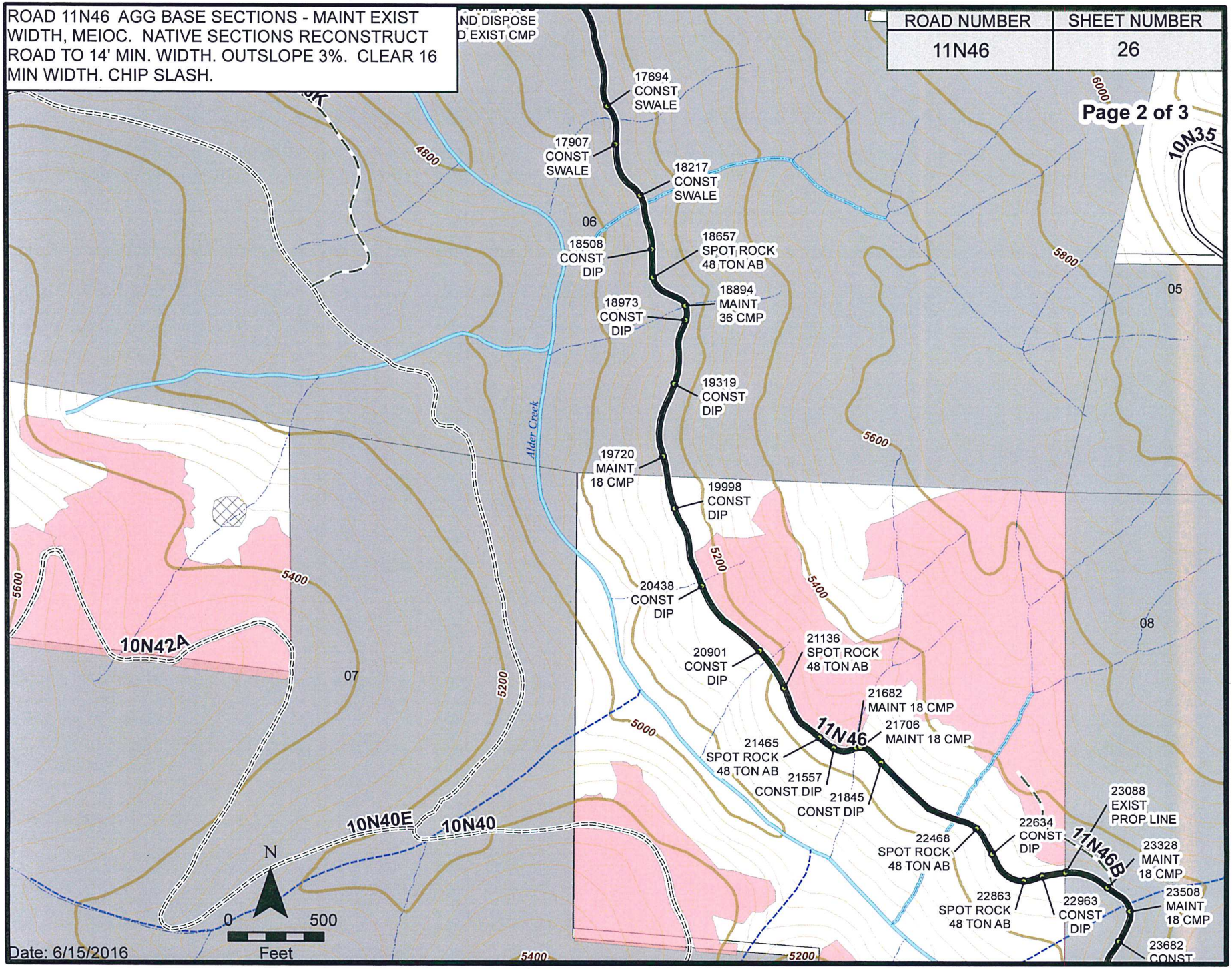

Date: 6/15/2016

ROAD 11N46 AGG BASE SECTIONS - MAINT EXIST WIDTH, MEIOC. NATIVE SECTIONS RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. CLEAR 16 MIN WIDTH. CHIP SLASH.

| ROAD NUMBER | SHEET NUMBER |
|---|---|
| 11N46 | 25 |



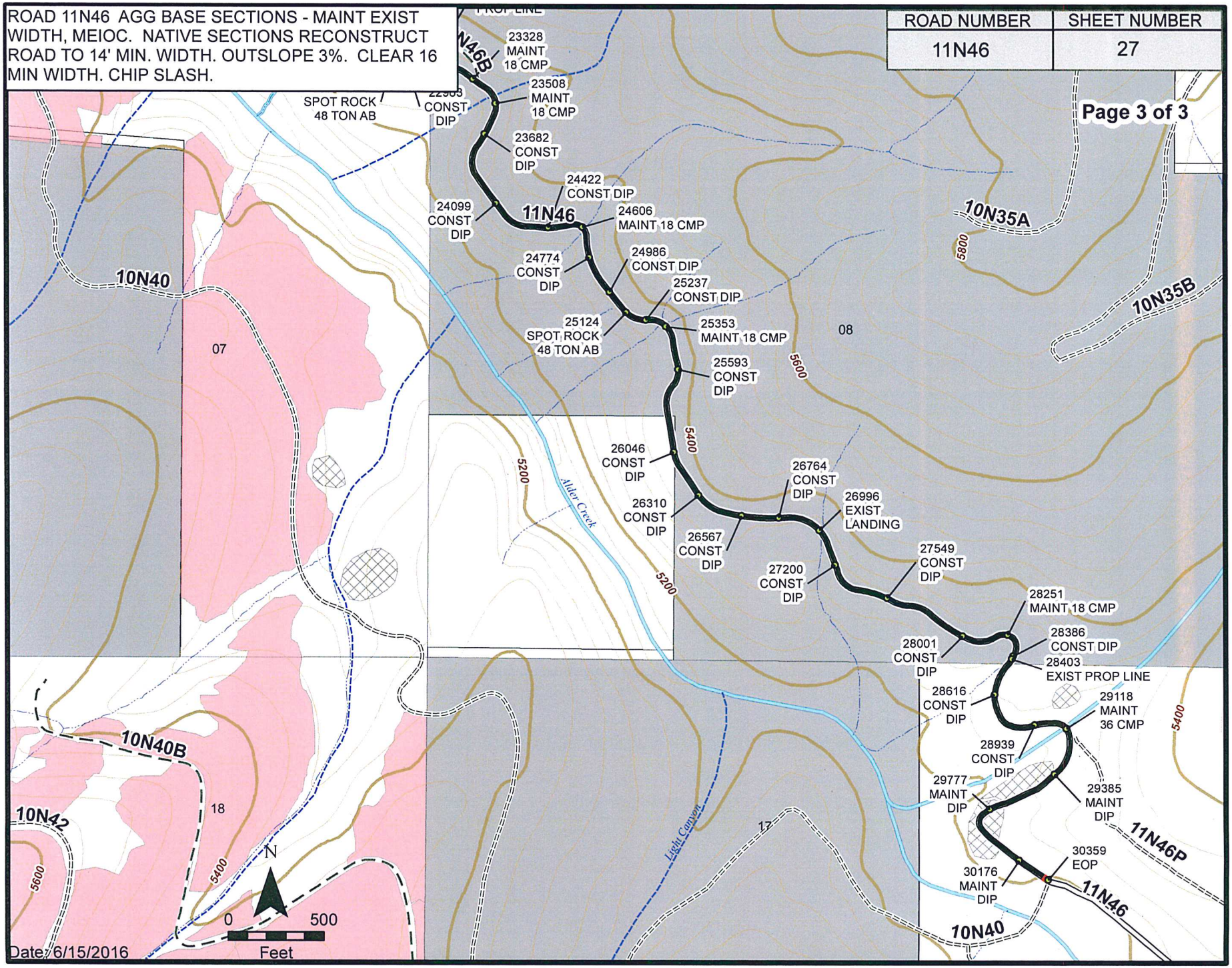



ROAD 11N46 AGG BASE SECTIONS - MAINT EXIST WIDTH, MEIOC. NATIVE SECTIONS RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. CLEAR 16 MIN WIDTH. CHIP SLASH.
ROAD NUMBER
11N46
SHEET NUMBER
26
Page 2 of 3
17694 CONST SWALE
17907 CONST SWALE
18217 CONST SWALE
18508 CONST DIP
18657 SPOT ROCK 48 TON AB
18894 MAINT 36 CMP
18973 CONST DIP
19319 CONST DIP
19720 MAINT 18 CMP
19998 CONST DIP
20438 CONST DIP
20901 CONST DIP
21136 SPOT ROCK 48 TON AB
21682 MAINT 18 CMP
21706 MAINT 18 CMP
21465 SPOT ROCK 48 TON AB
21557 CONST DIP
21845 CONST DIP
22468 SPOT ROCK 48 TON AB
22634 CONST DIP
22863 SPOT ROCK 48 TON AB
22963 CONST DIP
23088 EXIST PROP LINE
23328 MAINT 18 CMP
23508 MAINT 18 CMP
23682 CONST
11N46
11N46B
10N42A
10N40E
10N40
10N3.5
Alder Creek
06
05
08
07
4800
5000
5200
5400
5600
5800
6000
N
0
500
Feet
Date: 6/15/2016

ROAD 11N46 AGG BASE SECTIONS - MAINT EXIST WIDTH, MEIOC. NATIVE SECTIONS RECONSTRUCT ROAD TO 14' MIN. WIDTH. OUTSLOPE 3%. CLEAR 16 MIN WIDTH. CHIP SLASH.

| ROAD NUMBER | SHEET NUMBER |
|---|---|
| 11N46 | 27 |

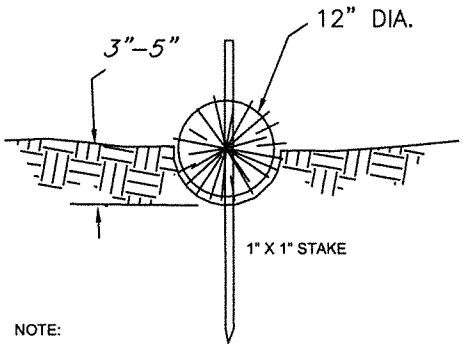




| PROJECT | SHEET NUMBER |
|---|---|
| 10N40R | 28 |

# ROAD 10N40R WATER HOLE

NOT TO SCALE




NOTE:

1. STRAW ROLL TYP - INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"-5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.

PLUM CREEK BRIDGE

10N40

PLUM CREEK

10N40R

MINOR BLADING REQUIRED INCIDENTAL TO OTHER WORK

PLACE 50 LF OF 12" COIR LOGS (STRAW WADDLE) EROSION CONTROL SEE TYP.

REMOVE HAZARD TREE

PLACE 24 TON CRUSHED SCREENED AGGREGATE 4" ROCK (GRADING N)

PLACE THREE BARRIER ROCKS (AVAILABLE ON SITE)

WATER HOLE RIM

EXCAVATE 2.5 FEET OF MATERIAL (~70CY) FROM WATER HOLE. HAUL EXCAVATED MATERIAL TO DESIGNATED SITE FOR DISPOSAL.

WATER HOLE OUTLET

200 LF 4" BLACK POLYLINE (IF NEEDED)

NOTES:

EXCAVATED MATERIAL SHALL BE HAULED TO A DESIGNATED DISPOSAL SITE. SITE WILL BE WITHIN 1/4 MILE OF BRIDGE AND AWAT FROM ANY DRAINAGES. NO EXCAVATED MATERIAL SHALL REMAIN ONSITE.

BARRIER ROCKS ARE ON SITE.

WATER HOLE SHALL BE EXCAVATED DOWN 2.5 LF FROM PRESENT GROUND ELEVATION. IF WATER IS ENCOUNTERED, CONTINUE EXCAVATING UNTIL 2.5 FEET IS ACHIEVED AND NO INPUT LINE IS REQUIRED.

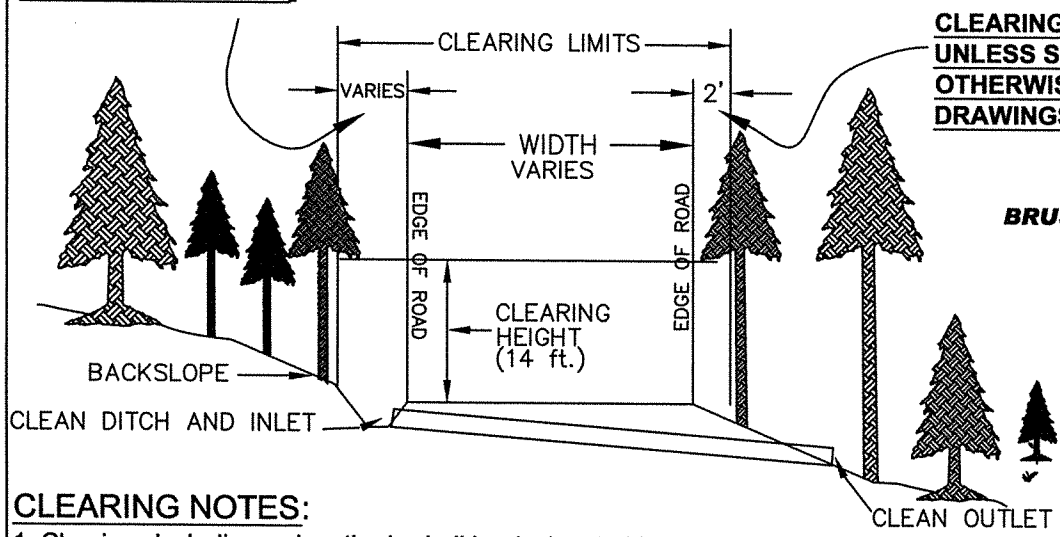
IF WATER IS NOT ENCOUNTERED, COMPLETE EXCAVATION AND INSTALL 200 LF OF 4" POLYLINE. PLACE INLET OF WATER LINE INTAKE AT AN ELEVATION OF 1 FT LESS THAN THE TOP OF WATER HOLE RIM. ADJUST ELEVATION OF WATERLINE INLET TO CONTROL WATER HOLE DEPTH.

CONCEPTUAL
NO SCALE

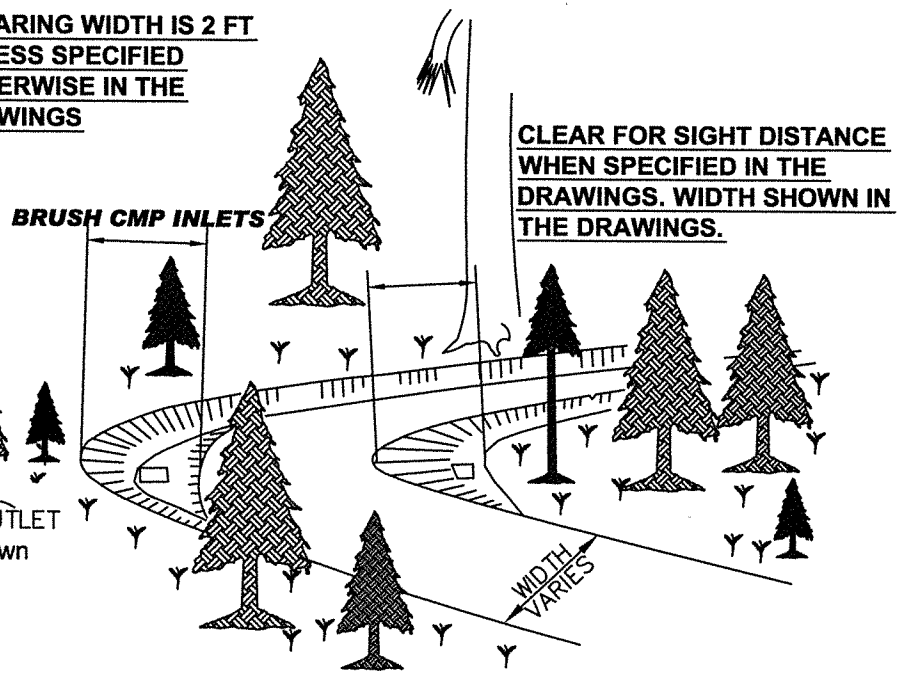
# ROAD RECONSTRUCTION DETAILS

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 29 |

**WIDTH IS 6' (LEVEL) OR TOP OF BANK - WHICH EVER IS LESS.**




**CLEARING WIDTH IS 2 FT UNLESS SPECIFIED OTHERWISE IN THE DRAWINGS**




**CLEAR FOR SIGHT DISTANCE WHEN SPECIFIED IN THE DRAWINGS. WIDTH SHOWN IN THE DRAWINGS.**

## CLEARING NOTES:

1. Clearing slash disposal methods shall be designated in the Schedule of Items or Shown On The Drawings.
2. Hazard tree removal, **if required**, will be marked by Forest Service prior to falling operations. Treatment of logs and limbs shall be treated as specified in the Specifications.
3. Clearing slash disposal sites shall be designated on the plans or the ground by the Forest Service.
4. Clear small trees (10"dbh and less)) and brush from all existing ditches, catch basins and inlet basins.
5. Clear all small trees (10"dbh and less) and brush above all CMP inlets for a distance of 10 linear feet either side of CMP.
6. Unless noted otherwise, mastication may be substituted for chipping of road side slash. When mastication is used, side cast all masticated material onto fill slopes. Remove masticated material from all drainagee, inlets and ditches. Masticated material shall be no loner than 36" length. Concentrations of chip material shall be scattered as directed by the FS. Flush cut stobs greater than 2 ".
7. Where 'TREAT WITHIN UNITS" or "SCATTER IN UNITS" is specified, scatter slash within adjacent units. Slash needs to be outside of road prism and in units where equipment has access to it.
8. On all roads the actual clearing may be greater than specified in the above typical. Since road width varies widely on any given road segment the typical tries to convey the intent of clearing requirements. On the road sheets a minimum distance is specified. The actual clearing width will be based on whether a ditch, cutslope, culvert, turnout or fill slope is present. In the absense of all these, the minimum clearing would be that specified on the road sheets.

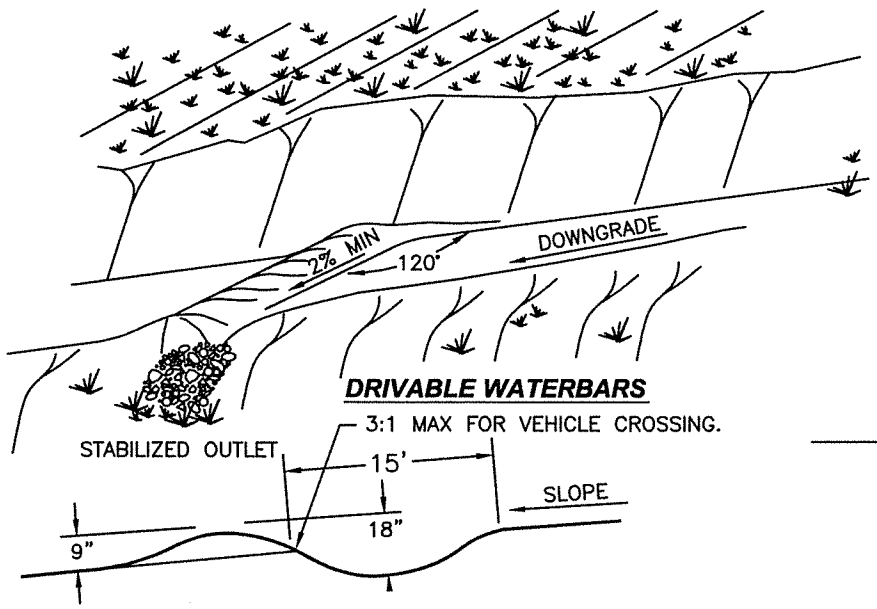
## RECONDITIONING OF ROADBED:

1. Outslope road bed 3% whenever possible. Remove all outside berms. When this is impractical **due to trees greater than 10"dbh or existing berms greater than 4' wide and greater than 18"in height, then** relieve berm every 50 linear feet.
2. Clean inlets and outlets of all existing metal pipes **of dirt, rock and vegetation**.
3. Clean and reshape all existing road ditches, leadoff ditches, dips, and waterbars to the lines specified in the typicals. **If clearing is not specified in the Schedule of Items then clearing of ditches, leadoff ditches and culverts prior to cleaning/reshaping shall be considered incidental to Reconditioning of Roadbed.**
4. When 'Maintain Inslope/Outslope Configuration' is specified, reshape road bed to the existing width and inslope/outslope configuration (MEIOC).
5. Drain all low points, ponds, swales.
6. Construction of lead-off ditches are incidental to road work or other pay items.

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 30 |

# WATERBAR

## FOR HIGH CLEARANCE VEHICLES



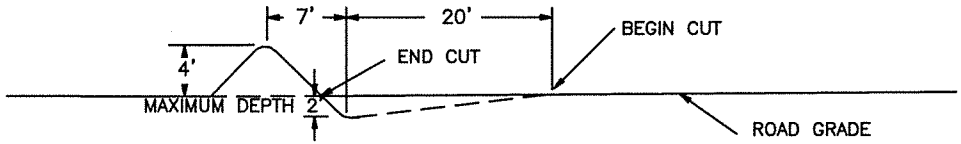

## NOTES: WATERBARS

1. ALL WATER BARS SHALL BEGIN AT THE INTERSECTION OF THE ROAD BED WITH THE BACK SLOPE AND RUN ACROSS THE ENTIRE WIDTH OF THE ROAD BED.

2. ALL WATER BARS SHALL HAVE FREE FLOWING OUTLETS. CONSTRUCTION OF LEAD–OFF DITCHES ARE INCIDENTAL TO WATER BAR CONSTRUCTION

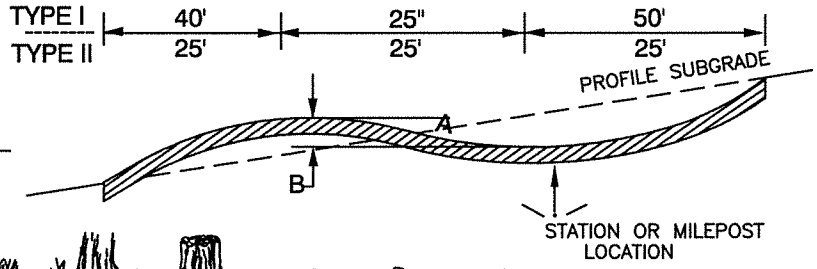
3. WHEEL ROLL AND COMPACT ALL DRIVABLE WATERBARS. REMOVE ROCKS AND OTHER OBSTRUCTIONS FROM FINISHED WATERBARS.

***NON - DRIVABLE WATERBARS***




# ROLLING DIP DETAIL

## TYPE I & II

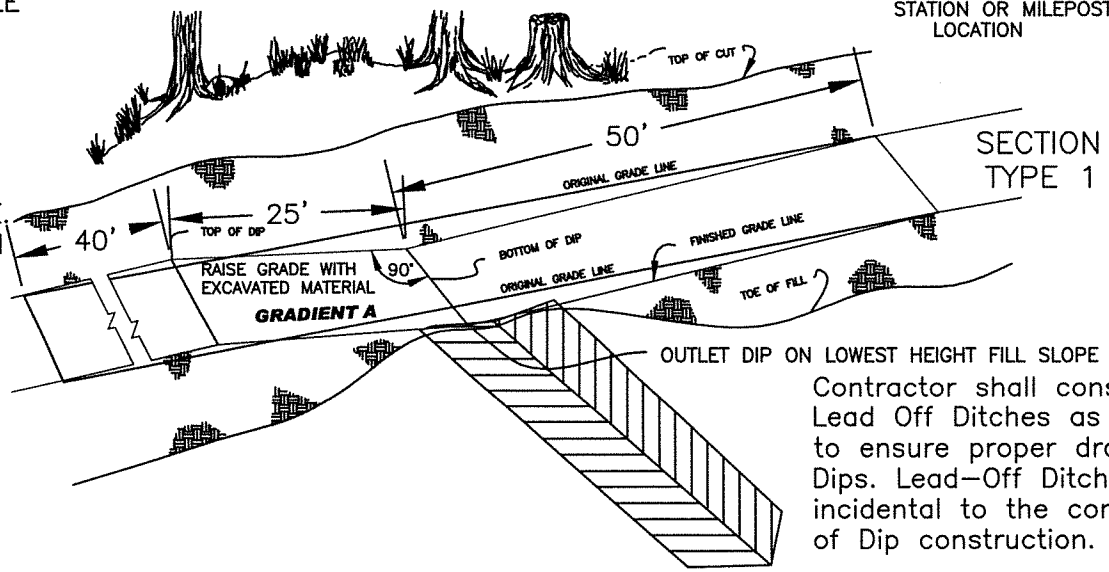



## NOTES:

1. THE DESIGN VEHICLE OR CRITICAL VEHICLE FOR THIS DIP DESIGN IS A MODEL 62 FIRE ENGINE.

2. ENTIRE LENGTH OF DIP SHALL BE OUTSLOPED 3% TO 5%.

3. ROLLING DIP STATIONS ARE APPROXIMATE. LOCATIONS OF THE DIPS WILL BE STAKED ON THE GROUND BY THE FOREST SERVICE BEFORE CONSTRUCTION.



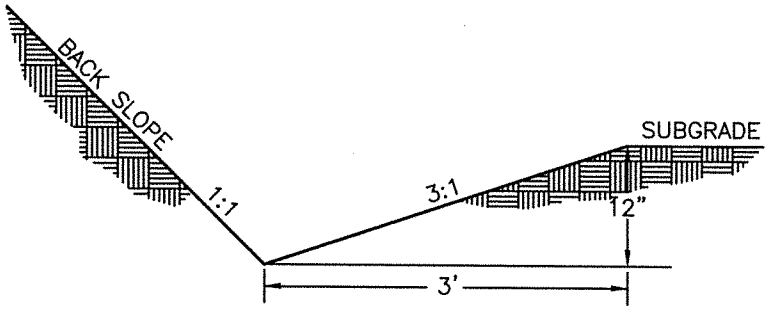

| ORIGINAL ROAD GRADIENT | GRADIENT A |
|---|---|
| 0 %–8 % | +3–5 % |
| 9 %–12 % | +2–3 % |

Contractor shall construct Lead Off Ditches as needed to ensure proper drainage of Dips. Lead–Off Ditches are incidental to the construction of Dip construction.

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 31 |

ROADWAY DITCH

TYP 3' DITCH

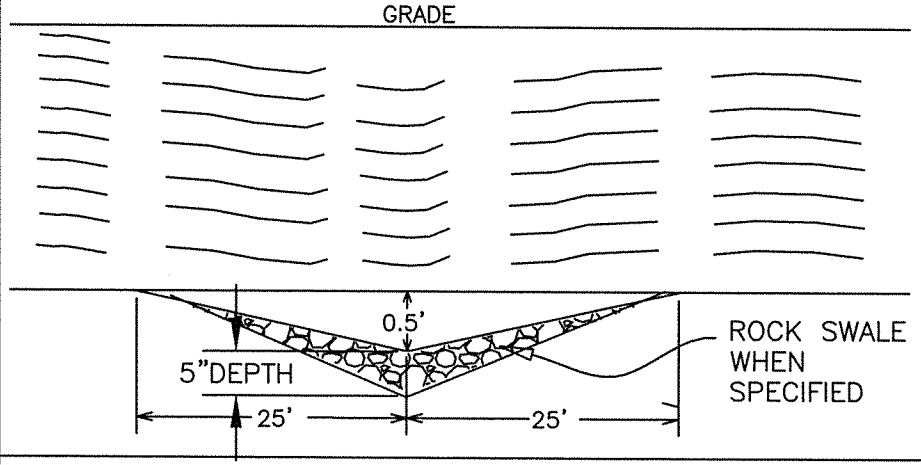



GENERAL NOTES:

1. WHEN POSSIBLE, UTILIZE SUITABLE EXCAVATED MATERIAL IN ROADBED.

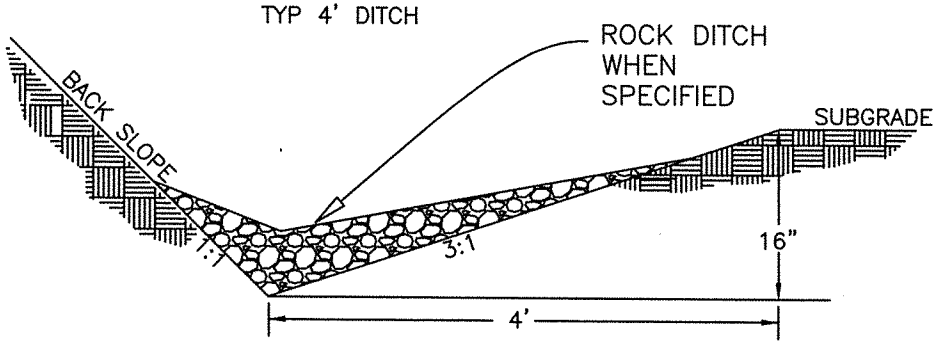
***Contractor shall construct Lead Off Ditches as need to ensure proper drainage of Swale. Lead-Off Ditches are incidental to the construction of Swale construction.***

GRADED SWALE




ROADWAY DITCH

TYP 4' DITCH

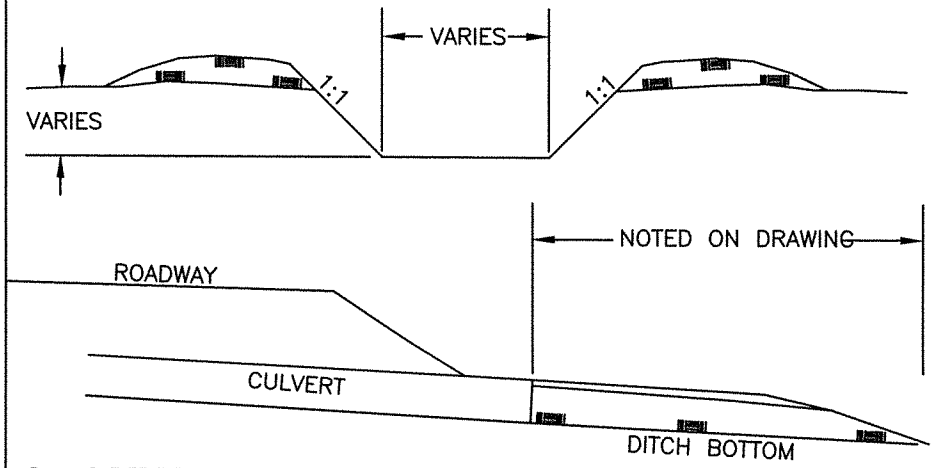



GENERAL NOTES:

1. WHEN POSSIBLE, UTILIZE SUITABLE EXCAVATED MATERIAL IN ROADBED.

LEAD OFF DITCH

1. LEAD OFF DITCH BOTTOM SHALL BE SLOPED TO PROVIDE PROPER DRAINAGE.

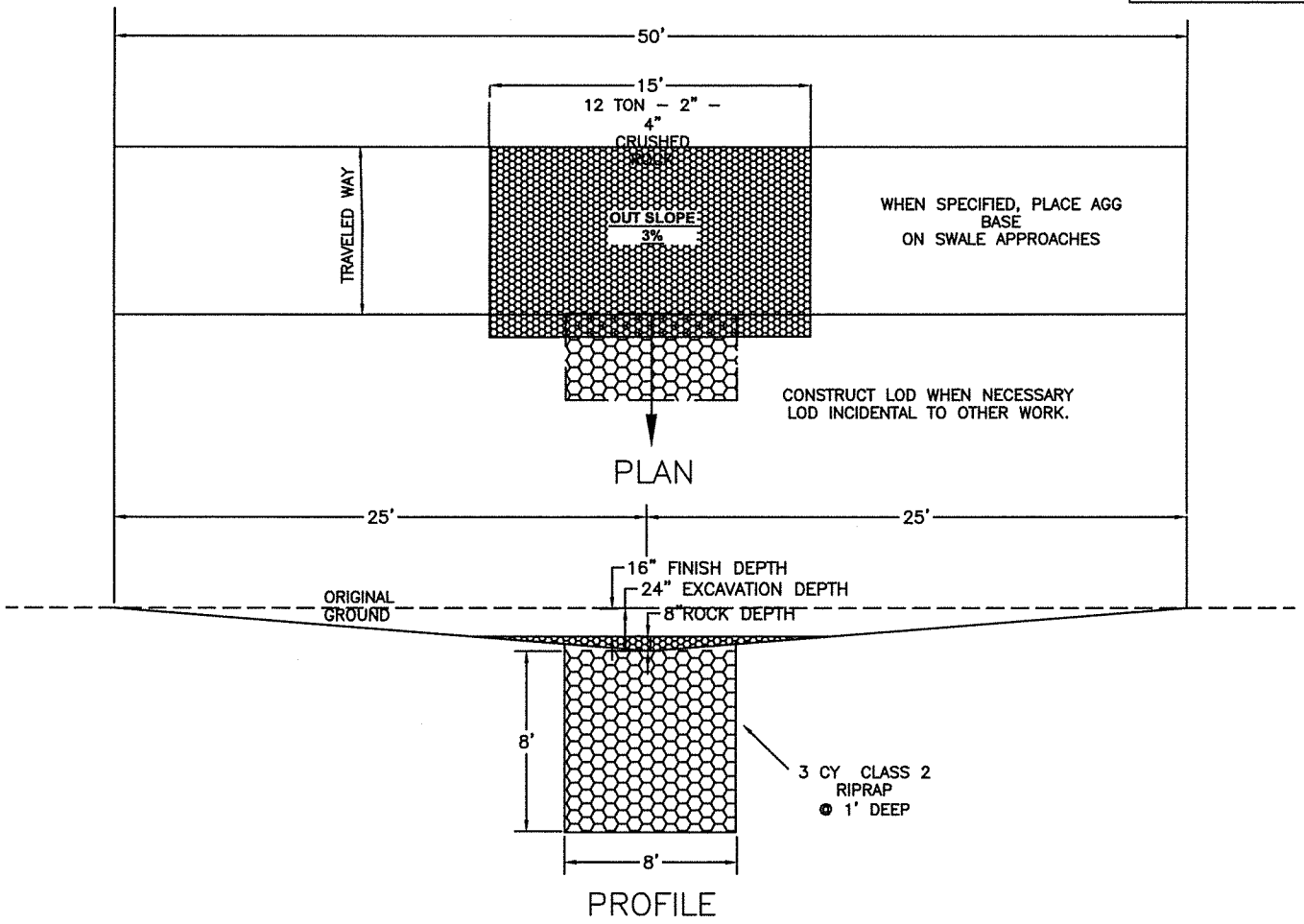



***Lead-Off Ditches are considered incidental to other Pay Items and will not be measured of paid for seperately.***

# ROCKED SWALE

NOT TO SCALE

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 32 |




NOTE: CONSTRUCTION OF A ROCKED SWALE INCLUDES:

THE PLACEMENT OF 12 TON CRUSHED ROCK AND 3 CY CLASS II RIP RAP.

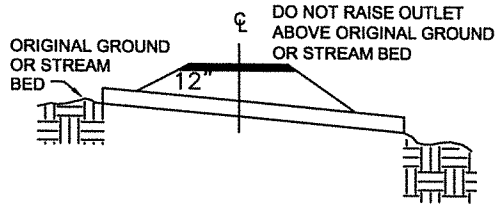
CRUSHED ROCK IS A COMMERCIAL SOURCE.
CLASS II RIPRAP MAY BE COMMERCIAL OR LOCAL SOURCE.

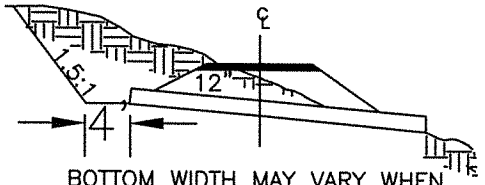
ADDITIONAL ROCK OR AGG BASE, IF REQUIRED, SHALL BE PAID SEPARATELY.

CONSTRUCT LEAD OFF DITCH ( LOD ) IF NECESSARY TO FOR DRAINAGE. LOD CONSTRUCTION IS INCIDENTAL TO WORK.

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 33 |

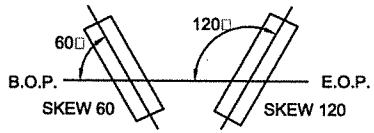
# DRAINAGE CONSTRUCTION DETAILS




BOTTOM WIDTH MAY VARY WHEN CATCH BASIN IS CONSTRUCTED IN NATURAL DRAINAGE.

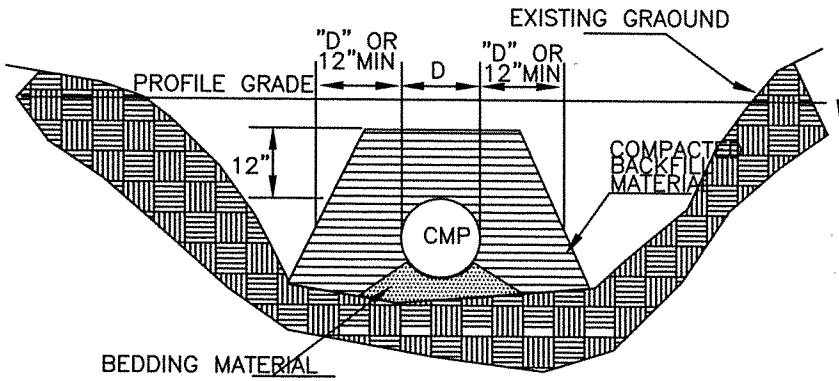
## SKEW DIAGRAM



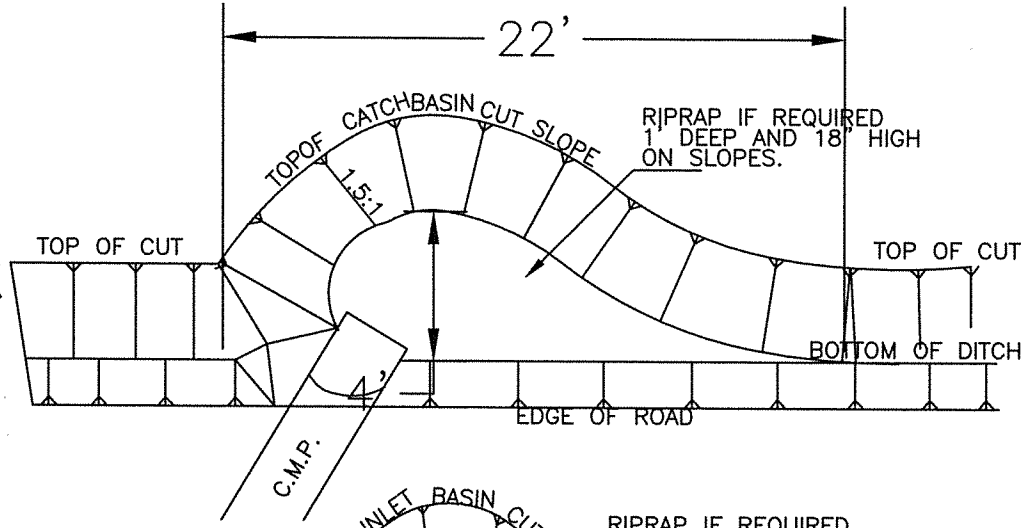

NOTE: SKEW ANGLE WILL BE SHOWN ON THE PLANS.

NOTE: MINIMUM COVER OVER CULVERT AT SHOULDER SHALL BE 12 INCHES BELOW SUBGRADE FOR SURFACED AND 18 INCHES BELOW SUBGRADE FOR UNSURFACED.

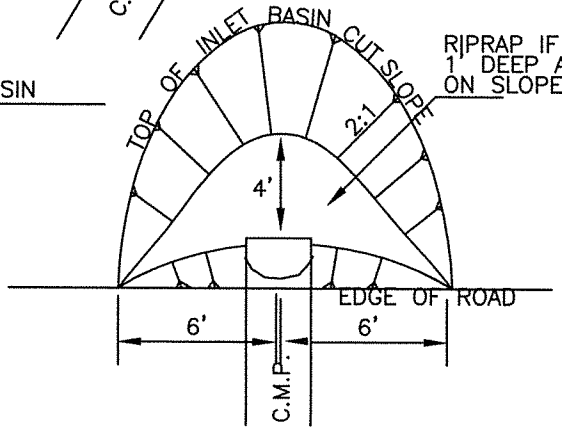
## METHOD OF BACKFILLING PIPE



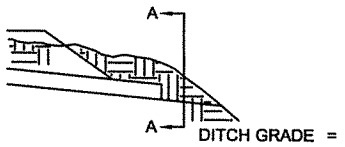

## CATCH BASIN



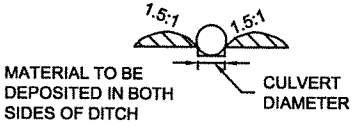

## INLET BASIN




## OUTLET DITCH




### SECTION A-A



# FILL HEIGHT & INCH (mm) SHEET THICKNESS TABLES

THE METRIC CONVERSIONS ARE PROVIDED IN PARENTHESIS FOLLOWING THE ENGLISH UNITS.

H–20 LIVE LOAD

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 34 |

## ROUND PIPES

### 2 2/3" x 1/2" (68 mm x 13 mm) CORRUGATIONS

| PIPE DIA. | MIN. COVER | STEEL | | | | | ALUMINUM | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE IN FEET (meter) | | | | | | | | | | | |
| | | METAL THICKNESS IN INCHES (mm) | | | | | | | | | | | |
| | | RIVETED, HELICAL OR SPOT WELDED | | | | | RIVETED OR HELICAL FABRICATION | | | | | SPOT WELDED FAB. | |
| INCHES (mm) | | .064 (1.6) | .079 (2.00) | .109 (2.8) | .138 (3.5) | .168 (4.26) | .060 (1.5) | .075 (1.9) | .105 (2.67) | .135 (3.4) | .164 (4.0) | .060 (1.5) | .075 (1.9) |
| 12 (305) | 12 (305) | 84 (25.6) | 91 (27.7) | | | | 45 (13.7) | 45 (13.7) | 78 (23.8) | 81 (25.6) | 84 (25.4) | 26 (7.9) | 33 (10.0) |
| 15 (381) | 12 (305) | 67 (20.4) | 73 (22.2) | | | | | | | | | | |
| 18 (457) | 12 (305) | 56 (17.0) | 61 (18.6) | | | | 30 (9.1) | 30 (9.1) | 52 (15.8) | 54 (16.5) | 56 (17.0) | 18 (5.5) | 22 (6.7) |
| 24 (610) | 12 (305) | 42 (12.8) | 46 (14.0) | 59 (18) | | | 22 (6.7) | 22 (6.7) | 39 (11.9) | 41 (12.5) | 42 (12.8) | 14 (4.3) | 16 (4.9) |
| 30 (762) | 12 (305) | 34 (10.4) | 36 (11.0) | 47 (14) | | | 18 (5.5) | 18 (5.5) | 31 (9.4) | 32 (9.8) | 34 (10.4) | 11 (3.4) | 13 (4.0) |
| 36 (914) | 12 (305) | 28 (8.5) | 30 (9.1) | 39 (11.9) | 41 (12.5) | | 15 (4.6) | 15 (4.6) | 26 (7.9) | 27 (8.2) | 28 (8.5) | 9 (2.7) | 11 (3.3) |
| 42 (1067) | 12 (305) | 31 (9.4) | 43 (13.1) | 46[67] (14.0) | 48[70] (14.6) | 50[73] (15.2) | | 26 (7.9) | 43 (13.1) | 43 (13.1) | 44 (13.4) | | |
| 48 (1219) | 12 (305) | 27 (8.2) | 37 (11.3) | 45[58] (13.7) | 46[61] (14.0) | 47[64] (14.3) | | | 40 (12.2) | 41 (12.5) | 43 (13.1) | | |
| 54 (1372) | 12 (305) | | 33 (10.0) | 43[52] (13.1) | 44[54] (13.4) | 45[57] (13.7) | | | 35 (10.7) | 37 (11.3) | 38 (11.6) | | |
| 60 (1524) | 12 (305) | | | 43[47] (13.1) | 43[49] (13.1) | 44[51] (13.4) | | | | 33 (10.0) | 34 (10.4) | | |
| 66 (1676) | 12 (305) | | | 42 (12.8) | 43 (13.1) | 43[47] (13.1) | | | | 30 (9.1) | 31 (9.4) | | |
| 72 (1829) | 12 (305) | | | | 41 (12.8) | 43 (13.1) | | | | | 29 (8.8) | | |
| 78 (1981) | 12 (305) | | | | | 39 (11.9) | | | | | | | |
| 84 (2134) | 12 (305) | | | | | 35 (10.7) | | | | | | | |

### 3" X 1" (76 mm x 25 mm) CORRUGATIONS

| PIPE DIAMETER | MINIMUM COVER | STEEL | | | | |
|---|---|---|---|---|---|---|
| | | MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE IN FEET (meter) | | | | |
| | | METAL THICKNESS IN INCHES (mm) | | | | |
| INCHES (mm) | | .064 (1.6) | .079 (2.00) | .109 (2.76) | .138 (3.5) | .168 (4.26) |
| 36 (914) | 12 (305) | 48 (14.6) | 60 (18.3) | 78[88] (23.8) | 89[106] (27) | 101[118] (30.8) |
| 42 (1067) | 12 (305) | 41 (12.5) | 51 (15.6) | 64[76] (19.5) | 71[91] (21.6) | 79[101] (24.0) |
| 48 (1219) | 12 (305) | 36 (11.0) | 45 (13.7) | 57[66] (17.4) | 61[80] (18.6) | 66[88] (20.1) |
| 54 (1372) | 12 (305) | 32 (9.75) | 40 (12.2) | 52[59] (15.8) | 55[71] (16.7) | 59[79] (18.0) |
| 60 (1524) | 12 (305) | 29 (8.8) | 36 (11.0) | 49[53] (14.9) | 51[64] (15.9) | 54[71] (16.4) |
| 66 (1676) | 12 (305) | 26 (7.9) | 33 (10.0) | 47 (14.3) | 49[58] (14.9) | 51[64] (15.5) |
| 72 (1829) | 12 (305) | 24 (7.3) | 30 (9.1) | 44 (13.4) | 47[53] (14.3) | 49[59] (14.9) |
| 78 (1981) | 12 (305) | 22 (6.7) | 28 (8.5) | 41 (12.5) | 46[49] (14.0) | 47[54] (14.3) |
| 84 (2134) | 12 (305) | 21 (6.4) | 26 (7.9) | 38 (11.6) | 45 (13.7) | 46[51] (14.0) |
| 90 (2286) | 12 (305) | 19 (5.8) | 24 (7.3) | 35 (10.7) | 43 (13.1) | 45 (13.7) |
| 96 (2438) | 12 (305) | 18 (5.5) | 22 (6.7) | 33 (10.0) | 40 (12.2) | 44 (13.4) |
| 102 (2591) | 24 (610) | 17 (5.2) | 21 (6.4) | 31 (9.4) | 38 (11.6) | 42 (12.8) |
| 108 (2743) | 24 (610) | | 20 (6.0) | 30 (9.1) | 35 (10.7) | 39 (11.9) |
| 114 (2896) | 24 (610) | | 19 (5.8) | 28 (8.5) | 34 (10.4) | 37 (11.3) |
| 120 (3048) | 24 (610) | | | 27 (8.2) | 32 (9.7) | 36 (11.0) |

### 6" X 1" (152 mm x 25 mm) CORRUGATIONS

| PIPE DIAMETER | MINIMUM COVER | ALUMINUM | | | | |
|---|---|---|---|---|---|---|
| | | MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE IN FEET (meter) | | | | |
| | | METAL THICKNESS IN INCHES (mm) | | | | |
| INCHES (mm) | | .060 (1.5) | .075 (1.9) | .105(2.67) | .135 (3.4) | .165 (4.0) |
| 30 (762) | 15 (381) | 29 (8.8) | 37 (11.3) | 56 (17.0) | 58 (17.7) | 59 (18.0) |
| 36 (914) | 15 (381) | 24 (7.3) | 31 (9.4) | 47 (14.3) | 48 (14.6) | 49 (14.9) |
| 42 (1067) | 15 (381) | 21 (6.4) | 27 (8.2) | 40 (12.2) | 41 (12.5) | 42 (12.8) |
| 48 (1219) | 15 (381) | 24 (7.3) | 28 (8.5) | 37 (11.3) | 44 (13.4) | 49 (14.9) |
| 54 (1371) | 24 (610) | 22 (6.7) | 25 (7.6) | 33 (10.1) | 39 (11.9) | 46 (14.0) |
| 60 (1524) | 24 (610) | 19 (5.8) | 22 (6.7) | 30 (9.1) | 35 (10.7) | 42 (12.8) |
| 66 (1676) | 24 (610) | 18 (5.5) | 20 (6.0) | 27 (8.2) | 32 (9.7) | 38 (11.6) |
| 72 (1829) | 36 (914) | | 18 (6.4) | 25 (7.6) | 29 (8.8) | 35 (10.7) |
| 78 (1981) | 36 (914) | | | 23 (7.0) | 27 (8.2) | 32 (9.7) |
| 84 (2133) | 36 (914) | | | 21 (6.4) | 25 (7.6) | 30 (9.1) |
| 90 (2286) | 36 (914) | | | | 24 (7.3) | 28 (8.5) |
| 96 (2438) | 36 (914) | | | | 22 (6.7) | 26 (7.9) |

[88] NUMBERS IN BRACKETS ARE MAXIMUM FILL HEIGHTS IN FEET

### EQUIVALENT THICKNESS

| GAUGE NUMBER | THICKNESS –INCHES (mm) | |
|---|---|---|
| | STEEL | ALUMINUM |
| 16 | 0.064 (1.6) | 0.060 (1.5) |
| 14 | 0.079 (2.0) | 0.075 (1.9) |
| 12 | 0.109 (2.8) | 0.105 (2.7) |
| 10 | 0.138 (3.5) | 0.135 (3.4) |
| 8 | 0.168 (4.3) | 0.165 (4.2) |

## STANDARD COUPLER BANDS

### CORRUGATED

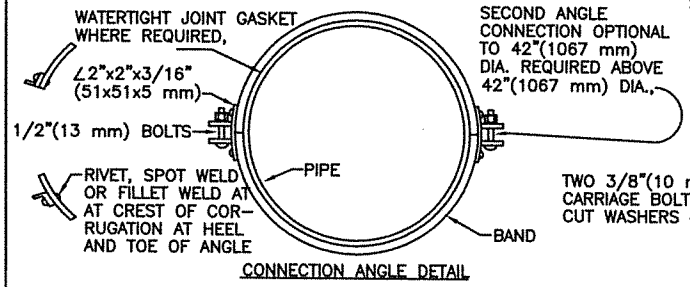
### Ⓐ FLAT–DIMPLED

| CULVERT SIZE INCHES (mm) | STANDARD ANNULAR | | HELICAL | | 3" X 1" (76 x 25 mm) | | 6" X 1" (152 x 25 mm) | | Ⓐ FLAT–DIMPLED | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | WIDTH INCHES (mm) | NO. OF BOLTS | WIDTH INCHES (mm) | NO. OF BOLTS | WIDTH INCHES (mm) | NO. OF BOLTS | WIDTH INCHES (mm) | NO. OF BOLTS | WIDTH INCHES (mm) | NO. OF ROWS OF DIMPLES | NO. OF BOLTS Ⓑ | NO. OF BOLTS Ⓒ |
| UNDER 18" (457) | 7" (178) | 2 | 7" (178) | 2 | | | | | 10 1/2" (267) | 2 | 2 | 2 |
| 18" TO 54" (457–1372) | 12" (305) | 3 | 12" (305) | 3 | 14" (355) | 3 | 18" (457) | 3 | 10 1/2" (267) | 2 | 3 | 2 |
| OVER 54" (1372) | 24" (610) | 5 | 24" (610) | 5 | 24" (610) | 5 | 24" (610) | 4 | 16 1/4" (413) | 4 | 5 | 4 |

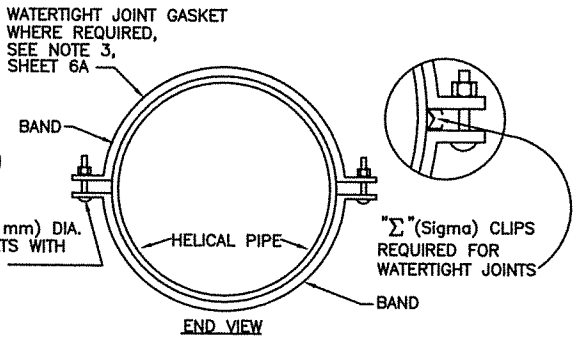
(A)–PERMITTED ONLY FOR CONNECTING ANNULAR CORRUGATED TO HELICAL CORRUGATED PIPE, (B)–FOR CONNECTING METAL END SECTIONS. (C)–FOR BANDS WITH ANGLES. FOR BANDS WITH TENSION TYPE CONNECTIONS.

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 35 |

## TYPE A



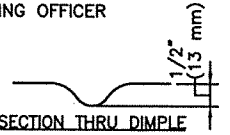

CONNECTION ANGLE DETAIL



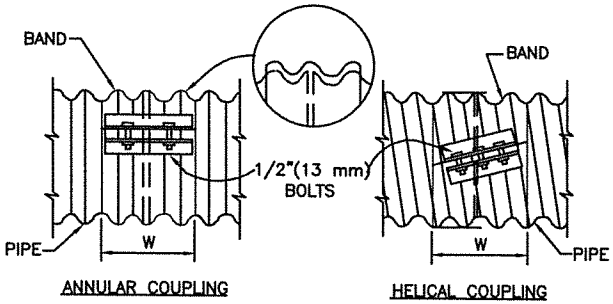

END VIEW

## TYPE D

NOTE:
DIMPLED BANDS MAY ONLY BE USED ON PIPES LESS THAN 30" DIA, ON GRADES LESS THAN 10% AND WHEN APPROVED BY THE CONTRACTING OFFICER



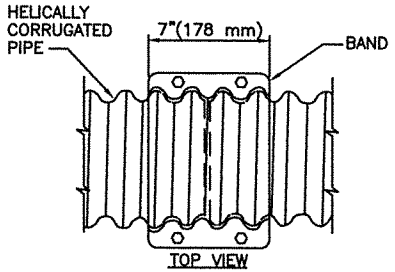

SECTION THRU DIMPLE



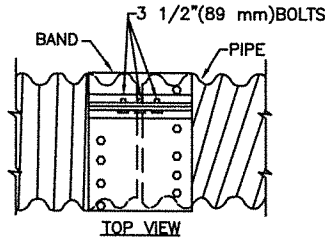

ANNULAR COUPLING HELICAL COUPLING

## TYPE B

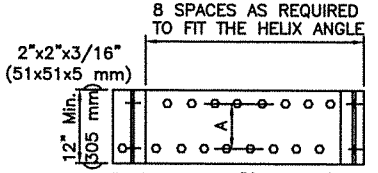
FOR 6"–10" (152–254 mm) DIA. PIPES




TOP VIEW




TOP VIEW



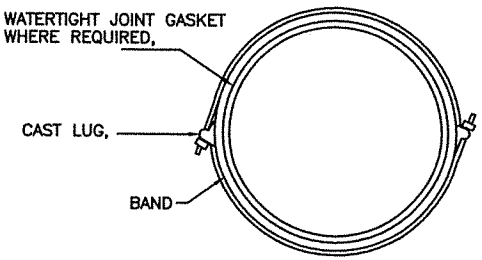

DIMENSION A 7"(178 mm) MIN. BETWEEN DIMPLES AS REQUIRED TO FIT THE HELIX ANGLE

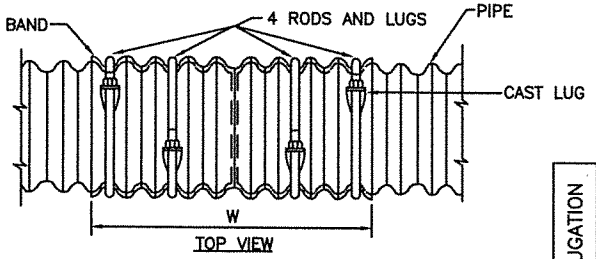
| 2 2/3"x1/2"(68x13 mm)CORRUGATIONS | | | | | | | 3" x 1"(76X25 mm) CORRUGATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIPE DIAMETER | | W | | | | # of 1/2" (13 mm) BOLTS | PIPE DIAMETER | | W | | | | # of 1/2" (13 mm) BOLTS |
| | | ANN. | | HEL. | | | | | ANN. | | HEL. | | |
| inches | mm | inch. | mm | inch. | mm | | inches | mm | inch. | mm | inch. | mm | |
| 6–10 | 152–254 | 7 | 178 | 7 | 178 | 2 | 36–84* | 914–2134 | 14 | 356 | 14 | 356 | 3 |
| 12–15 | 305–381 | 7 | 178 | 12 | 305 | 2–3 | 36–120 | 914–3048 | 26 | 660 | 26 | 660 | 5 |
| 18–84* | 457–2134 | 12 | 305 | 12 | 305 | 3 | | | | | | | |
| 24–84 | 610–2134 | 24 | 610 | 24 | 610 | 5 | | | | | | | |

* = SEE THE SPECIFICATIONS

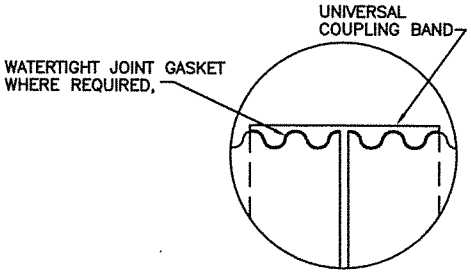
## TYPE C

END VIEW




TOP VIEW

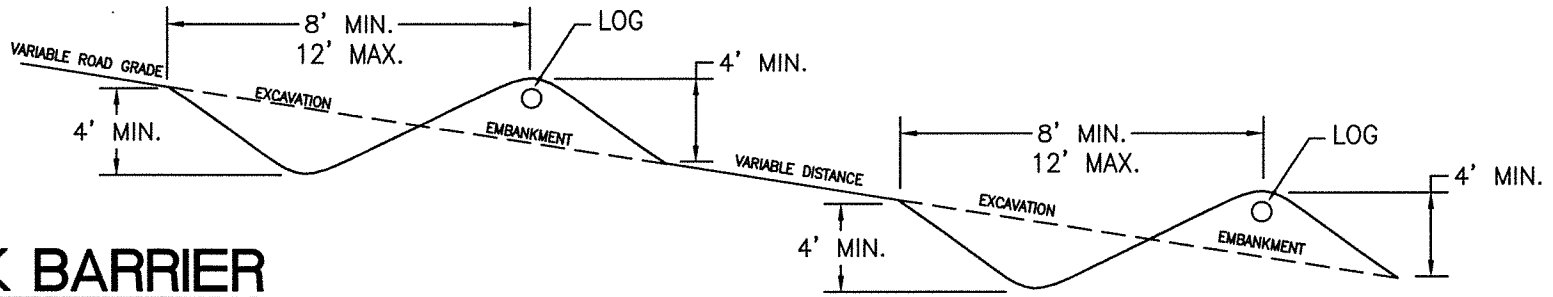



| | | PIPE DIAMETER | | ROD DIA. | | NARROW BAND | | | WIDE BAND | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | W | | # of | W | | # of |
| | | (inch.) | (mm) | (inch.) | (mm) | (inch.) | (mm) | ROD | (inch.) | (mm) | ROD |
| CORRUGATION | 2 2/3" X1/2" (68x13mm) | 12–21 | 305–533 | 3/8 | 10 | 12 | 305 | 2 | | | |
| | | 24–54* | 610–1372 | 1/2 | 13 | 12 | 305 | 2 | 24 | 610 | 4 |
| | | 60–84* | 1524–2134 | 5/8 | 16 | 12 | 305 | 2 | 24 | 610 | 4 |
| | 3"X1" (76x 25mm) | 36–54* | 914–1372 | 1/2 | 10 | 14 | 356 | 2 | 26 | 660 | 4 |
| | | 60–84* | 1524–2134 | 3/8 | 13 | 14 | 356 | 2 | 26 | 660 | 4 |
| | | 84–120 | 2134–3048 | 5/8 | 16 | | | | 26 | 660 | 4 |

* = SEE THE SPECIFICATIONS

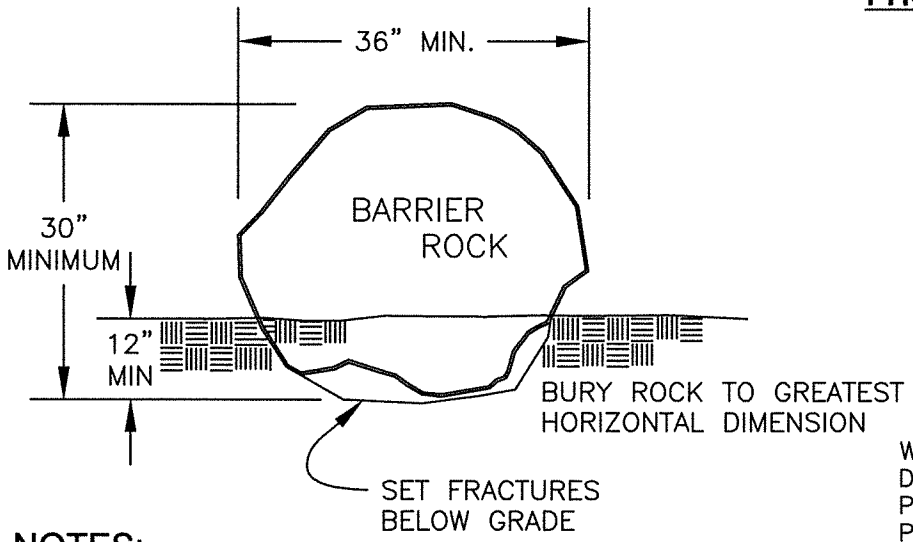
| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 36 |

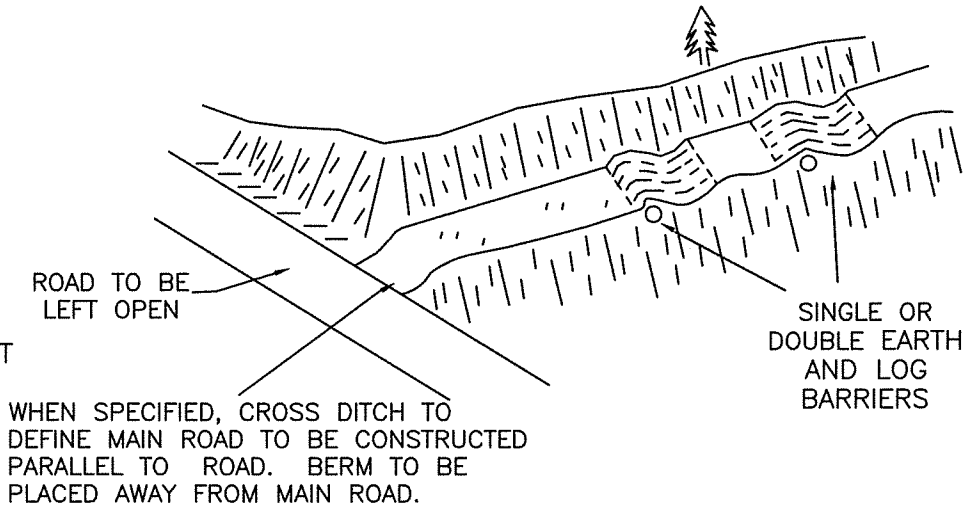
# EARTH AND LOG BARRICADE DETAIL




# ROCK BARRIER

## PROFILE VIEW




## NOTES:

(1) BARRIER ROCKS SHALL BE A MINIMUM SIZE OF 30" X 36".

(2) DISTURBED EARTH BECAUSE OF INSTALLATION OF ROCK BARRIER SHALL BE BLENDED INTO THE SURROUNDING GROUND.

(3) WHEN LOCATION STAKES ARE USED, THEY DESIGNATE THE CENTER OF ROCK BARRIER.

(4) UNLESS SHOWN OTHERWISE, BARRIER ROCKS ARE TO BE PURCHASED COMMERCIALLY.

## NOTES:

(1) PLACE 20" X 12' LOG IN EMBANKMENT AND COVER WITH AT LEAST ONE FOOT OF EMBANKMENT MATERIAL. BOULDERS MAY BE USED IN LIEU OF LOGS WITH WRITTEN APPROVAL BY THE ENGINEER.

(2) ROAD BARRICADES SHALL BE CONSTRUCTED AT LOCATIONS STAKED BY THE ENGINEER.

(3) DRAWINGS NOT TO SCALE.

**ELDORADO NATIONAL FOREST**
**LOW TO MID ELEVATION SITES (3,000 TO 5,500 FT)**

***Apply the following seed / mulch application at all soil disturbance within 50 lf of drainages and when specified in the Drawings.***

***This work is incidental to other work in the Contract.***

## Seed Mixes

Seed shall be state-certified seed of the latest season's crop and shall be delivered in original, sealed packages bearing the producer's guaranteed analysis for percentages of mixtures, purity, germination, weed-seed content, and inert material. Labels shall conform with USDA Federal Seed Act, California Agricultural Code and other applicable seed laws, and shall be acceptable to the County Agricultural Commissioner. Wet, moldy, or otherwise damaged seed will be rejected.

| | |
| --- | --- |
| Vulpia microstachys, ssp. "Sierra" north of Fresno) | 6.0 pounds per acre (Ok source is from Sierra National Forest |
| Lotus purshianus, var "Sierra" | 4.0 pounds per acre (Northern California source only). |
| Bromus carinatus, var. carinatus (Eldorado or Mokelumne Brome) | 9.0 pounds per acre (OK either source) |
| Elymus Glaucus, ssp. "El Dorado" | 8.0 pounds per acre (OK either item) |
| Festuca rubra, ssp. "Mokelumne Fescue" *Mokelumne* | 5.0 pounds per acre (*We call this seed F Occidentalis -* |
| TOTAL | 32.0 pounds per acre |

## Fertilizer

Fertilizer shall be slow-release, organic product, commercial grade, granular free flowing, uniform in composition, delivered in fully-labeled sealed containers, and shall conform to applicable state and federal regulations. Fertilizer shall have the manufacture's guaranteed statement of analysis.

The U.S. Forest Service-approved fertilizer product is BIOSOL Mix 7-2-3.
For Seed Mix A, BIOSOL Mix 7-2-3 will be applied. BIOSOL Mix 7-2-3 will be applied with and application rate of 1000 lbs/ac, reflecting a Nitrogen application rate of 70 lbs/ac and a Phosphorus application rate of 20 lbs/ac.

## Timing

Seeding is to be completed between September 15 and October 15, and prior to the onset of the rainy season.

## Seeding

Seed should be applied as soon after seedbed preparation and fertilizing as possible, when the soil is loose and moist.

Always apply seed or inocculant before mulch.

Apply seed or inoculant/seed mixture using hand broadcasting, calibrated spreaders, cyclone seeders, mechanical drills, or hydro seeders (only for seed) so the seed is applied uniformly on the site.

## Mulching

Straw mulch, erosion control blankets or mulch and tackifiers/soil binders should be applied over the seeded areas.

Straw will be weed-free rice straw, applied at 4,000 lbs/AC. .

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 38 |

## PART 1 GENERAL

### 1.01 SCOPE

**A. This specification shall be included in all contracts that allow drafting of water from a live stream . Approval from the CONTRACTING OFFICER shall be in writing prior to any drafting from a live stream. This work shall include any stream preperation , installation of a screen box as shown on the drawings and other work as required by the CONTRACTING OFFICER .**

### 1.02 MEASUREMENT AND PAYMENT

**A. No separate measurement or payment will be made for work defined in this section. Work defined under this section shall be considered as part of the work, and contract price and payment is included in other sections.**

## PART 2 PRODUCTS AND MATERIALS

### 2.01 WIRE MESH

**A. Wire mesh shall be 2mm openings.**
**B. The screen box frame shall be constructed of 1-1/2" angle iron , that will support the wire mesh in a secure manner with no joints or holes over 2mm in greatest dimension.**

### 2.02 SCREEN BOX METAL FRAME

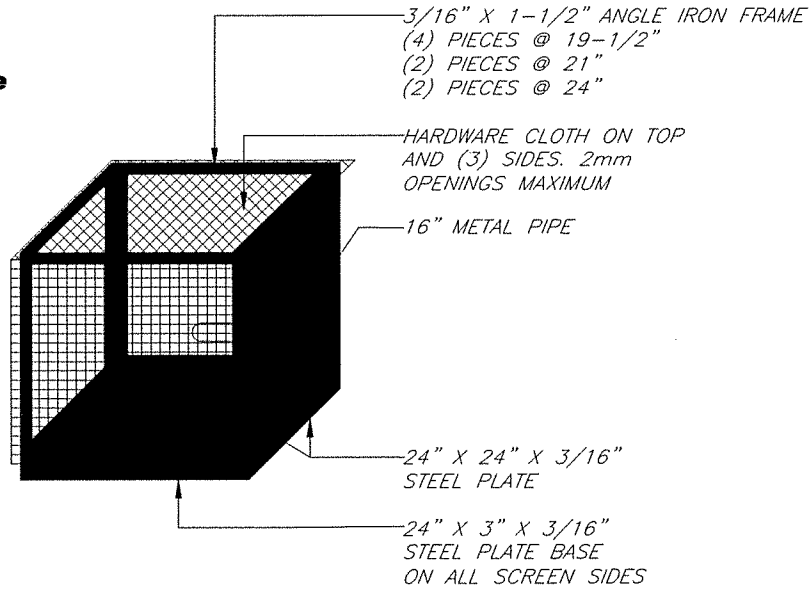
**A. The metal frame shall have a solid bottom and one solid side of 3/16" metal. The bottom shall be welded a minimum of three (3) inches from the bottom of the screen box. The solid side shall be securely welded to the side frame metal and to the metal bottom.**

## PART 3 EXECUTION

### 3.01 SCREEN BOX CONSTRUCTION

**A. A 16" long metal pipe for the drafting hose to be used shall be fixed to the metal side plate a minimum of four inches (4") from the bottom of the screen box. The bottom of the metal pipe and the inlet end of the pipe would be fixed so it is at the center of the screen box as shown on the DRAWING. The outlet end of the pipe may be attached to the drafting hose by any method that will ensure a secure, tight connection.**

**B. The metal screen shall be securely attached to the outside of the screen box frame with metal screws , bolts , clamps or other method that will securely hold the screen material in place. The three open sides and the top shall be covered with screen . The top of the box should be constructed so that it may be opened to service the inlet pipe and to clean the screen.**




COVERED WATER DRAFTING BOX

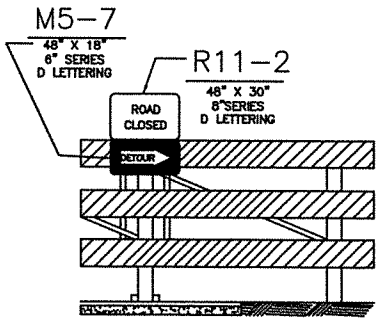
NO SCALE

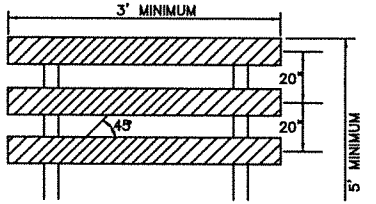
| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 39 |

# TRAFFIC CONTROL DEVICES

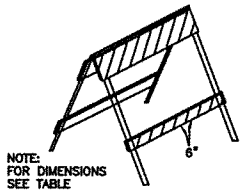
## GENERAL NOTES

1. DESIGNS FOR SIGNS AND BARRICADES SHOWN ABOVE ARE IN ACCORDANCE WITH MINIMUM STANDARDS IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" LATEST EDITION.
2. SIGNS SHALL BE MADE FROM SUITABLE MATERIALS WHICH ARE IN ACCORDANCE WITH ALL STATE AND FEDERAL SPEC.
3. SIGNS MAY BE MADE OF WOOD OR METAL WOOD -5/8" PLYWOOD MANUFACTURED WITH ALL SPECIAL WATERPROOF GLUE. METAL SIGNS-16 GAUGE SHEET STOCK WITH EMBOSSED OR VITRIFIED FINISH. WHEN EMBOSSED THE DETAILS OF THE DESIGN ARE RAISED FROM THE BACKGROUND OF THE DESIGN NOT LESS THAN .100" NOR MORE THAN .125". A CARDBOARD SIGN MAY BE USED IF APPROVED BY THE ENGINEER.
4. REGULATORY SIGNS SHALL BE RECTANGULAR IN SHAPE WITH THE LARGER DIMENSION VERTICAL AND HAVE BLACK AND WHITE LEGEND OR BACKGROUND. ALL REGULATORY SIGNS UNLESS DEFINITELY EXCEPTED IN THE SPECIFICATIONS, SHALL BE REFLECTORIZED OR ILLUMINATED.
5. ALL SIGNS, UNLESS DEFINITELY EXCEPTED IN THE SPECIFICATIONS, SHALL BE DIAMOND SHAPED (SQUARE WITH ON DIAGONAL VERTICAL) AND SHALL HAVE A HIGHWAY ORANGE BACKGROUND WITH A BLACK LEGEND. ALL WARNING SIGNS HAVING SIGNIFICANCE DURING THE HOURS OF DARK SHALL BE REFLECTORIZED OR ILLUMINATED.
6. SIGNS SHALL BE LOCATED WHERE THEY WILL BE CONSPICUOSLY VISIBLE DAY AND NIGHT ON THE RIGHT HAND SIDE OF APPROACHING TRAFFIC. THEY SHALL BE FACING TRAFFIC AND LOCATED WHERE THEY CAN BE SEEN AT ALL TIMES BY APPROACHING DRIVERS WITH A MINIMUM OF EFFORT.
7. WHEN A SIGN IS REQUIRED FOR AN EXTENDED PERIOD, IT SHALL BE FASTENED TO 4 X 4 POSTS WITH 2, 3/8" CARRIAGE BOLTS. PORTABLE SUPPORTS ARE PERMITTED FOR SHORT PERIODS PROVIDED THE CONSTRUCTION IS SUCH THAT WIND OR OTHER AGENTS CANNOT READILY UPSET THE SIGN.
8. SIGN M4-10R SHALL BE ERRECTED AT THE BEGINNING OF DETOURS, ALONG DETOURS AT 1/4 MILE INTERVALS AND AT ROAD JUNCTIONS ALONG DETOURS IN A GREATLY ENLARGED SIZE IN THIS SIGN IS PRESCRIBED FOR USE ON BARRICADES IN THE ROADWAY WHERE A ROAD IS CLOSED FOR CONSTRUCTION OR MAJOR MAINTENANCE OPERATIONS.
9. SIGN W20-1 SHALL BE ERRECTED 1500' FROM EACH END OF CONSTRUCTION OPERATIONS.
10. SIGN W21-3 AND W11-1 SHALL BE ERRECTED AT EACH END OF AREAS WHERE HEAVY EQUIPMENT IS IN OPERATION AND SHALL BE REPEATED EVERY 1/2 MILE, IF THE OPERATION EXTENDS OVER ONE MILE.
11. OTHER SIGNS SHOWN ABOVE SHALL BE USED AS INDICATED BY THEIR DESIGN.
12. IF OTHER SIGNS NOT SHOWN ARE REQUIRED THEY SHALL ALSO CONFORM IN DESIGN TO THOSE SHOWN IN THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
13. SELECTION AND PLACEMENT OF ALL SIGNS SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
14. LIGHTING DEVICES SUCH AS FLASHERS, TORCHES, LANTERNS, AND ELECTRIC LIGHTS SHALL BE PLACED AND MAINTAINED FROM SUNSET TO SUNRISE AT ALL POINTS OF HAZARD AND AT ALL SIGNS INDICATING CAUTION.
15. SIGNS TO BE INSTALLED ON ALL HAUL ROADS AND CONSTRUCTION SITES TO PROVIDE ADEQUATE WARNING TO ALL USERS.

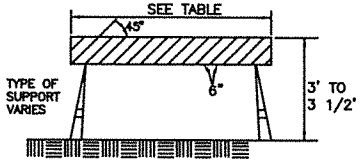



TYPE 111 BARRICADE




TYPE 11 BARRICADE

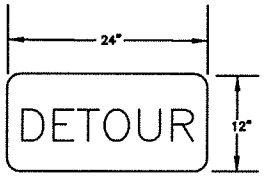



TYPE 1 BARRICADE

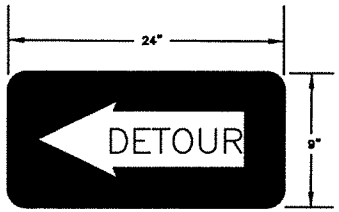
| TYPE | 1 | 11 | 111 |
|---|---|---|---|
| WIDTH OF RAIL | 8" MIN-12" MAX. | 8" MIN-12" MAX. | 8" MIN-12" MAX. |
| LENGTH OF RAIL | 6'-8' | 3' MIN.-4' MAX. | 3' MIN.-VARIABLE MAX. |
| WIDTH OF STRIPES | 6 IN. | 6 IN. | 6 IN. |
| HEIGHT | 3 FT. MIN. | 3' MIN.-3 1/2' MAX. | 5 FT. MIN. |
| TYPE OF FRAME | DEMOUNTABLE OR HEAVY "A" FRAME | LIGHT "A" FRAME | POST OR SKIDS |
| FLEXIBILITY | ESSENTIALLY MOVABLE | PORTABLE | ESSENTIALLY PERMANENT |

| PROJECT | SHEET NUMBER |
|---|---|
| PILLIKEN | 40 |

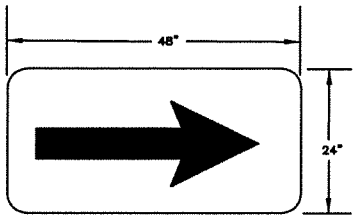
# TRAFFIC CONTROL DEVICES



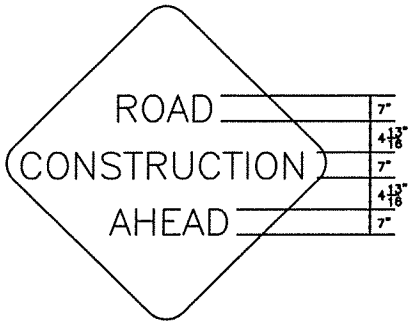

M4-B
24" X 12"
5" SERIES B LETTERING



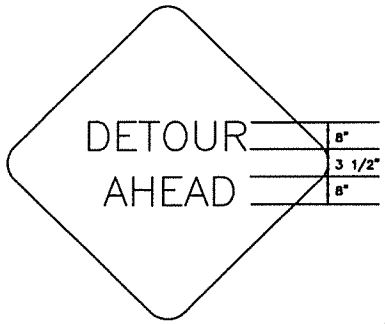

M4-10R
24" X 9"
RIGHT OR LEFT
3" SERIES D LETTERING



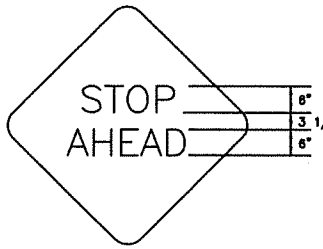

W1-6
48" X 24"
BLACK ARROW RIGHT OR LEFT.



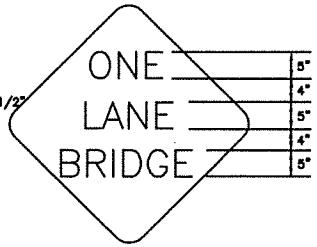

W20-1
48" X 48"
7" SERIES C LETTERING



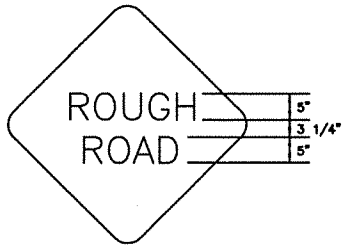

W20-2d
48" X 48"
8" SERIES C LETTERING



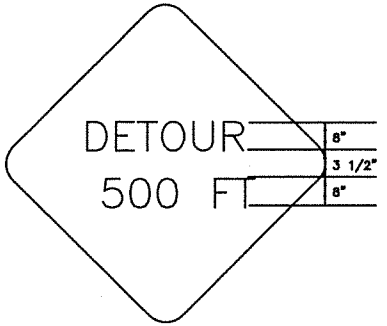

W3-1
30" X 30"
6" SERIES D LETTERING



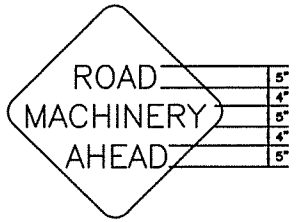

W5-2
36" X 36"
5" SERIES D LETTERING



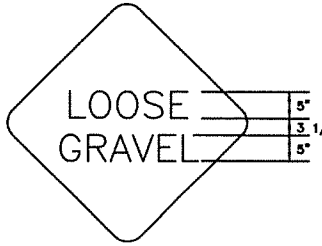

W8-6
30" X 30"
5" SERIES D LETTERING



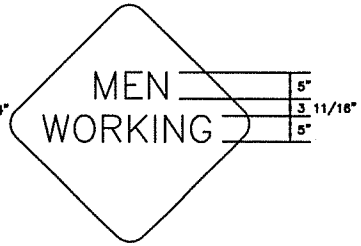

W20-2c
48" X 48"
8" SERIES C LETTERING



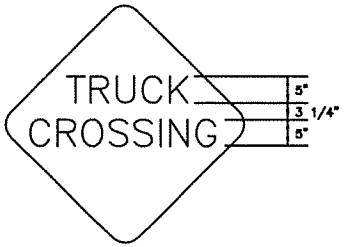

W21-3
36" X 36"
5" SERIES D LETTERING



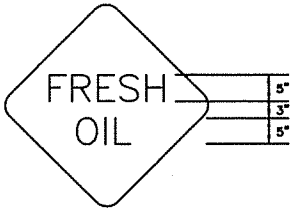

W8-7
30" X 30"
5" SERIES D LETTERING




W21-1
30" X 30"
5" SERIES C LETTERING

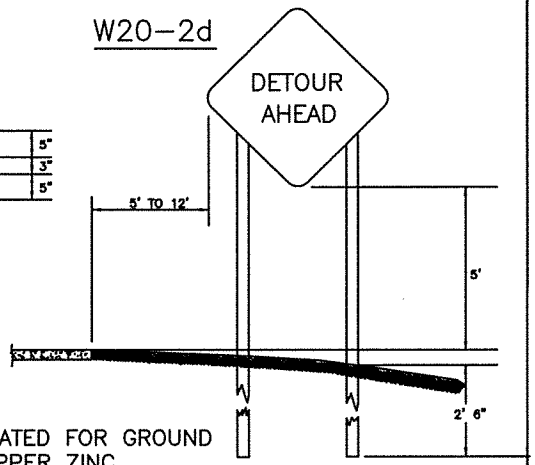



W11-1
30" X 30"
5" SERIES D LETTERING




W21-2
24" X 24"
5" SERIES C LETTERING

W20-2d




POST SHALL BE DOUGLAS FIR, TREATED FOR GROUND CONTACT, .40PCF, AMMONIACAL COPPER ZINC ARSENATE (ACZA)

A7- SPECIFIED ROADS, APPLICABLE TO B5.2-0 (PURCHASER CONSTRUCTION)

**DATE:** 8/16/2016 **PROJECT:** **PILLIKEN FOREST HEALTH PROJECT**

| ROAD NO | NAME | TYPE OF WORK | DESIGN CLASS | APPROX LENGTH (MILES) | SHEET NO. | APPROVAL DATE | SURVEY | DESIGN | STAKING | ROAD COSTS | ROAD COSTS (PW) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10N31 | MIDDLE BEANVILLE CREEK | R | S10-14 | 1.71 | 8 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $15,042.01 | $20,306.71 |
| 10N31A | BEANVILLE CR | R | S5-14 | 0.54 | 9 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $14,565.32 | $19,663.18 |
| 10N31B | MIDDLE BEAN | R | S5-14 | 1.16 | 10-11 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $10,078.32 | $13,605.73 |
| 10N31W | BEAN WATER | R | S5-14 | 0.04 | 12 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $5,659.00 | $7,639.65 |
| 10N32A | LITTLE BEAN | R | S5-14 | 1.44 | 13-14 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $15,579.24 | $21,031.97 |
| 10N32C | 32C | R | S5-14 | 0.55 | 15 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $3,700.45 | $4,995.61 |
| 10N40B | UPPER BULL CREEK | R | S5-14 | 0.70 | 16 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $13,915.60 | $18,786.06 |
| 10N40J | SCREECH OWL WEST | R | S5-14 | 0.28 | 17 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $3,883.04 | $5,242.10 |
| 10N41B | MILL SCREECH | R | S5-14 | 0.34 | 18 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $2,800.46 | $3,780.62 |
| 10N42 | MILL CREEK | R | S5-14 | 2.75 | 19 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $15,145.50 | $20,446.43 |
| 10N43C | PLUM LIGHT | R | S5-14 | 0.53 | 20 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $17,500.46 | $23,625.62 |
| 10N50N | DARLINGTON SPUR | R | S5-14 | 0.97 | 21 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $3,529.67 | $4,765.05 |
| 10N50NA | 50NA | R | S5-14 | 0.37 | 22 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $5,092.06 | $6,874.28 |
| 10N52 | LOOKOUT TIE | R | S5-14 | 0.77 | 23 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $9,120.21 | $12,312.28 |
| 10N52A | LOOKOUT SPUR NORTH | R | S5-14 | 0.17 | 24 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $1,472.01 | $1,987.21 |
| 11N46 | ALDER CREEK | R | S10-14 | 2.98 | 25-27 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $47,458.78 | $64,069.35 |
| 10N40R | WATER #1 | R | S5-14 | 0.01 | 28 | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $6,040.00 | $8,154.00 |
| NA | MOBILIZATION | | | NA | | 6/30/2016 | F.S. | F.S. | F.S.(B.C.) | $7,000.00 | $9,450.00 |
| | | | | | | | | | | | $266,737.23 |

R=RECONSTRUCTION, C=CONSTRUCTION, D=DECOMMISSION, M=MAINTENANCE

* DENOTES PRICE INCLUDED IN RECONSTRUCTION COSTS

**Summary of Specified Road Costs (TOTAL 15.30 MILES)**

| | |
|---|---|
| **Specified Roads** | **$197,582.13** |
| **Roads Reconstruction** | |
| **Engineering Deposits** | **$15,300.31** |
| **TOTAL** | **$212,882.44** |

# SCHEDULE OF ITEMS

TIMBER SALE

ELDORADO NATIONAL FOREST

**REVISED**
*By Billy Ellis at 11:07 am, 8/16/16*

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | IIDDLE BEANVILLE CREE |
| RD # | 10N31 | LENGTH (MILES) | 1.71 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTIT | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 2,971.00 | $ 2,971.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 15. | $ 290.00 | $ 4,350.00 |
| 301-1 | Aggregate Base, Gradation B, Compaction Method D | CQ | Ton | 24. | $ 63.00 | $ 1,512.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | 1.71 | $ 3,631.00 | $ 6,209.01 |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | TOTAL | $ | 15,042.01 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | BEANVILLE CR |
| RD # | 10N31A | LENGTH (MILES) | 0.54 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 2,501.00 | $ 2,501.00 |
| 203-3 | Removal and Disposal of Culverts | CQ | Each | 1. | $ 563.00 | $ 563.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 11. | $ 54.00 | $ 594.00 |
| 204-8 | Drainage Excavation, Type Swale | CQ | Each | 2. | $ 151.00 | $ 302.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .54 | $ 3,158.00 | $ 1,705.32 |
| 602-2 | 24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary. | CQ | LF | 50. | $ 48.00 | $ 2,400.00 |
| 602-4 | 48-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary. | CQ | LF | 50. | $ 130.00 | $ 6,500.00 |
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| | | | | | TOTAL | $ 14,565.32 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

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|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | MIDDLE BEAN |
| RD # | 10N31B | LENGTH (MILES) | 1.16 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 2,117.00 | $ 2,117.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 4. | $ 54.00 | $ 216.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 14. | $ 290.00 | $ 4,060.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | 1.16 | $ 3,177.00 | $ 3,685.32 |
| | | | | | $ - | $ - |
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| | | | | TOTAL | | $ 10,078.32 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | BEAN WATER |
| RD # | 10N31W | LENGTH (MILES) | 0.04 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 204-21 | Excavation - Waterhole Cleanout and Maintenance | CQ | LS | 1. | $ 1,932.00 | $ 1,932.00 |
| 251-1 | Placed Riprap, Class II | CQ | CY | 5. | $ 83.00 | $ 415.00 |
| 301-1 | Aggregate Base, Gradation B, Compaction Method D | CQ | Ton | 24. | $ 63.00 | $ 1,512.00 |
| 602-15 | 2-Inch Black Polyline, 160 psi min. Includes All Labor, Materials and Equipment to install. | CQ | LF | 200. | $ 9.00 | $ 1,800.00 |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
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| | | | | TOTAL | | $ 5,659.00 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | LITTLE BEAN |
| RD # | 10N32A | LENGTH (MILES) | 1.44 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 3,136.00 | $ 3,136.00 |
| 203-3 | Removal and Disposal of Culverts | CQ | Each | 1. | $ 563.00 | $ 563.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 9. | $ 54.00 | $ 486.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 12. | $ 290.00 | $ 3,480.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | 1.44 | $ 3,496.00 | $ 5,034.24 |
| 602-3 | 36-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary. | CQ | LF | 40. | $ 72.00 | $ 2,880.00 |
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| | | | | | TOTAL | $ 15,579.24 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | 32C |
| RD # | 10N32C | LENGTH (MILES) | 0.55 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 794.00 | $ 794.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 16. | $ 54.00 | $ 864.00 |
| 204-8 | Drainage Excavation, Type Swale | CQ | Each | 1. | $ 151.00 | $ 151.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .55 | $ 3,439.00 | $ 1,891.45 |
| | | | | | $ - | $ - |
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| | | | | | TOTAL | $ 3,700.45 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | UPPER BULL CREEK |
| RD # | 10N40B | LENGTH (MILES) | 0.70 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 3,390.00 | $ 3,390.00 |
| 203-3 | Removal and Disposal of Culverts | CQ | Each | 1. | $ 563.00 | $ 563.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 13. | $ 54.00 | $ 702.00 |
| 204-8 | Drainage Excavation, Type Swale | CQ | Each | 1. | $ 151.00 | $ 151.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .7 | $ 3,728.00 | $ 2,609.60 |
| 602-4 | 48-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary. | CQ | LF | 50. | $ 130.00 | $ 6,500.00 |
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| | | | | | TOTAL | $ 13,915.60 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | SCREECH OWL WEST |
| RD # | 10N40J | LENGTH (MILES) | 0.28 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 1,792.00 | $ 1,792.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 7. | $ 54.00 | $ 378.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .28 | $ 6,118.00 | $ 1,713.04 |
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| | | | | | TOTAL | $ 3,883.04 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | MILL SCREECH |
| RD # | 10N41B | LENGTH (MILES) | 0.34 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 1,149.00 | $ 1,149.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 10. | $ 54.00 | $ 540.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .34 | $ 3,269.00 | $ 1,111.46 |
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| | | | | TOTAL | | $ 2,800.46 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

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|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | MILL CREEK |
| RD # | 10N42 | LENGTH (MILES) | 2.75 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-4 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP OR SCATTER, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 1,114.00 | $ 1,114.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 18. | $ 290.00 | $ 5,220.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | 2.75 | $ 2,834.00 | $ 7,793.50 |
| 607-1 | Re-install Existing Metal Pipe - Includes Removal, Cleaning, Repairing, Bedding and Installation | CQ | Each | 1. | $ 1,018.00 | $ 1,018.00 |
| | | | | | $ - | $ - |
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| | | | | | TOTAL | $ 15,145.50 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

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|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | PLUM LIGHT |
| RD # | 10N43C | LENGTH (MILES) | 0.53 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 1,055.00 | $ 1,055.00 |
| 203-3 | Removal and Disposal of Culverts | CQ | Each | 1. | $ 563.00 | $ 563.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 7. | $ 54.00 | $ 378.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 9. | $ 290.00 | $ 2,610.00 |
| 251-1 | Placed Riprap, Class II | CQ | CY | 8. | $ 83.00 | $ 664.00 |
| 301-1 | Aggregate Base, Gradation B, Compaction Method D | CQ | Ton | 24. | $ 63.00 | $ 1,512.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .53 | $ 4,582.00 | $ 2,428.46 |
| 602-2 | 24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary. | CQ | LF | 30. | $ 48.00 | $ 1,440.00 |
| 602-4 | 48-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary. | CQ | LF | 50. | $ 137.00 | $ 6,850.00 |
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| | | | | TOTAL | | $ 17,500.46 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | DARLINGTON SPUR |
| RD # | 10N50N | LENGTH (MILES) | 0.97 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 865.00 | $ 865.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 24. | $ 54.00 | $ 1,296.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .97 | $ 1,411.00 | $ 1,368.67 |
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| | | | | | TOTAL | $ 3,529.67 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | 50NA |
| RD # | 10N50NA | LENGTH (MILES) | 0.37 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 1,054.00 | $ 1,054.00 |
| 204-7 | Drainage Excavation, Type Waterbar | CQ | Each | 11. | $ 54.00 | $ 594.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .37 | $ 3,738.00 | $ 1,383.06 |
| 607-1 | Re-install Existing Metal Pipe - Includes Removal, Cleaning, Repairing, Bedding and Installation | CQ | Each | 1. | $ 1,200.00 | $ 1,200.00 |
| 619-1 | Earth and Log Barricade | CQ | Each | 1. | $ 411.00 | $ 411.00 |
| 203-3 | Removal and Disposal of Culverts | CQ | Each | 1. | $ 450.00 | $ 450.00 |
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| | | | | | TOTAL | $ 5,092.06 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | LOOKOUT TIE |
| RD # | 10N52 | LENGTH (MILES) | 0.77 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 1,821.00 | $ 1,821.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 11. | $ 290.00 | $ 3,190.00 |
| 301-1 | Aggregate Base, Gradation B, Compaction Method D | CQ | Ton | 24. | $ 63.00 | $ 1,512.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .77 | $ 3,373.00 | $ 2,597.21 |
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| | | | | | $ - | $ - |
| | | | | | TOTAL | $ 9,120.21 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | LOOKOUT SPUR NORTH |
| RD # | 10N52A | LENGTH (MILES) | 0.17 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-4 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP OR SCATTER, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 288.00 | $ 288.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 2. | $ 290.00 | $ 580.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | .17 | $ 3,553.00 | $ 604.01 |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
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| | | | | | $ - | $ - |
| | | | | | TOTAL | $ 1,472.01 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | ALDER CREEK |
| RD # | 11N46 | LENGTH (MILES) | 2.98 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| 201-2 | Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER. | LSQ | LS | 1. | $ 7,523.00 | $ 7,523.00 |
| 203-3 | Removal and Disposal of Culverts | CQ | Each | 1. | $ 563.00 | $ 563.00 |
| 204-8 | Drainage Excavation, Type Swale | CQ | Each | 3. | $ 151.00 | $ 453.00 |
| 204-10 | Drainage Excavation, Type Rolling Dip | CQ | Each | 27. | $ 290.00 | $ 7,830.00 |
| 301-1 | Aggregate Base, Gradation B, Compaction Method D | CQ | Ton | 288. | $ 63.00 | $ 18,144.00 |
| 303-1 | Reconditioning of Roadbed, Roller Compaction - Method B | CQ | Mile | 2.98 | $ 3,861.00 | $ 11,505.78 |
| 602-2 | 24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary. | CQ | LF | 30. | $ 48.00 | $ 1,440.00 |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
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| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
| | | | | | TOTAL | $ 47,458.78 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | WATER #1 |
| RD # | 10N40R | LENGTH (MILES) | 0.01 |
| DISTRICT | PLACERVILLE | CONST TYPE | R |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| | | | | | $ - | $ - |
| 202-2 | Removal of Individual Trees, (Medium), Disposal of Tops and Limbs F(1), Logs F(1). | CQ | Each | 1. | $ 300.00 | $ 300.00 |
| 204-21 | Excavation - Waterhole Cleanout and Maintenance | CQ | LS | 1. | $ 2,500.00 | $ 2,500.00 |
| 301-2 | Screened Crushed Aggregate - 2"- 4"+ Crushed Rock (GRADING N) | CQ | Ton | 24. | $ 60.00 | $ 1,440.00 |
| 602-15 | 2-Inch Black Polyline, 160 psi min. Includes All Labor, Materials and Equipment to install. | CQ | LF | 200. | $ 9.00 | $ 1,800.00 |
| | | | | | $ - | $ - |
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| | | | | | TOTAL | $ 6,040.00 |

NOTES:

# SCHEDULE OF ITEMS

## TIMBER SALE

## ELDORADO NATIONAL FOREST

| | | | |
|---|---|---|---|
| PROJECT | PILLIKEN FOREST HEALTH PROJECT | ROAD NAME | MOBILIZATION |
| RD # | NA | LENGTH (MILES) | NA |
| DISTRICT | PLACERVILLE | CONST TYPE | |

| ITEM NO. | DESCRIPTION | METHOD OF MEASURE | UNIT | QUANTITY | S.R.C UNIT PRICE | S.R.C TOTAL PRICE |
|---|---|---|---|---|---|---|
| | | | | | $ - | $ - |
| 151 | Mobilization - Applies to Project | LSQ | LS | 1. | $ 7,000.00 | $ 7,000.00 |
| | | | | | $ - | $ - |
| | | | | | $ - | $ - |
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| | | | | | $ - | $ - |
| | | | | | TOTAL | $ 7,000.00 |

NOTES:

| | |
|---|---|
| ***TOTAL ALL ROADS*** | $ 197,582.13 |

**STANDARD SPECIFICATIONS FOR CONSTRUCTION**
**OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS -2003**

DATE: 8/14/2015

THE FOLLOWING SPECIFICATIONS AND SPECIAL PROJECT SPECIFICATIONS APPLY TO ALL ROADS UNLESS SHOWN OTHERWISE ON DRAWINGS

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# Preface



Delete all but the first paragraph and add the following:

The Forest Service, US Department of Agriculture has adopted FP-03 for construction of National Forest System Roads.

# 101 - Terms, Format, and Definitions

101.00_nat_us_07_25_2005

101.01_nat_us_02_17_2005

**101.01 Meaning of Terms.**

Add the following:

Delete all references in FP-03 to Transportation Acquisition Regulations (TAR).

101.03_nat_us_02_17_2005

**101.03 Abbreviations.**

Add the following to (a) Acronyms:

| | |
|---|---|
| AFPA | American Forest and Paper Association |
| MSHA | Mine Safety and Health Administration |
| NIST | National Institute of Standards and Technology |
| NESC | National Electrical Safety Code |
| WCLIB | West Coast Lumber Inspection Bureau |

.

Add the following to (b) SI Symbols:

| | |
|---|---|
| mp | Milepost |
| ppm | Part Per Million |

101.04_nat_us_02_22_2005

**101.04 Definitions.**

Delete the following definitions and substitute the following:

**Bid Schedule**--The Schedule of Items.

**Bridge**--No definition.

**Contractor**--The individual or legal entity contracting with the Government for performance of prescribed work. In a timber sale contract, the contractor is the "purchaser".

**Culvert**--No definition.

**Right-of-Way**--A general term denoting (1) the privilege to pass over land in some particular line (including easement, lease, permit, or license to occupy, use, or traverse public or private lands), or (2) Real property necessary for the project, including roadway, buffer areas, access, and drainage areas.

Add the following:

**Adjustment in Contract Price**--"Equitable adjustment," as used in the Federal Acquisition Regulations, or "construction cost adjustment," as used in the Timber Sale Contract, as applicable.

**Change**--"Change" means "change order" as used in the Federal Acquisition Regulations, or "design change" as used in the Timber Sale Contract.

**Design Quantity**-- "Design quantity" is a Forest Service method of measurement from the FS-96 *Forest Service Specifications for the Construction of Roads and Bridges.* Under these FP specifications this term is replaced by the term "Contract Quantities".

**Forest Service**--The United States of America, acting through the Forest Service, U.S. Department of Agriculture.

**Neat Line**--A line defining the proposed or specified limits of an excavation or structure.

**Pioneer Road**--Temporary construction access built along the route of the project.

**Purchaser**--The individual, partnership, joint venture, or corporation contracting with the Government under the terms of a Timber Sale Contract and acting independently or through agents, employees, or subcontractors.

**Protected Streamcourse**--A drainage shown on the plans or timber sale area map that requires designated mitigation measures.

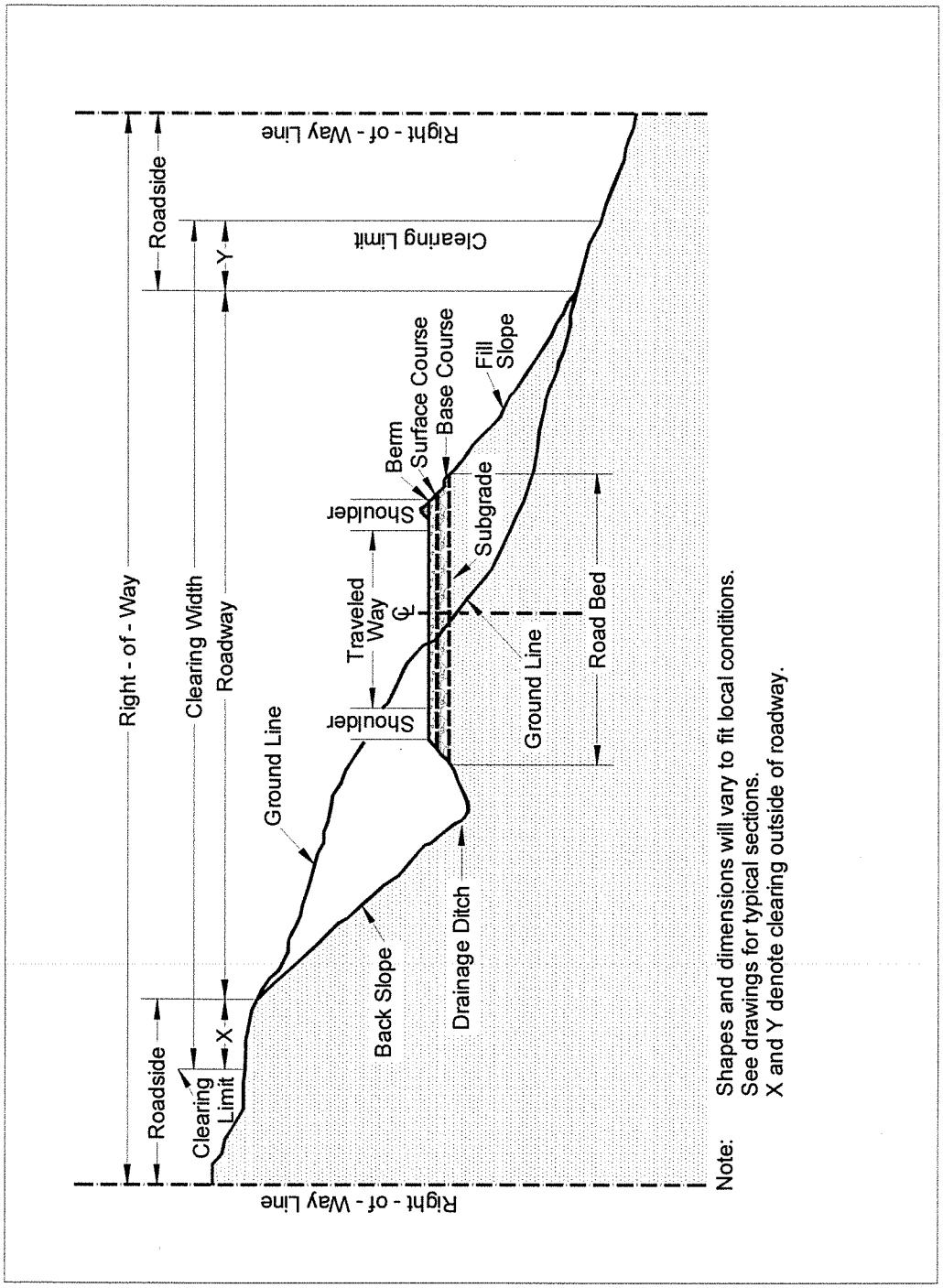
**Road Order**--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

**Schedule of Items**--A schedule in the contract that contains a listing and description of construction items, quantities, units of measure, unit price, and amount.

**Utilization Standards**--The minimum size and percent soundness of trees described in the specifications to determine merchantable timber.

Add Figure 101-1—Illustration of road structure terms:

Figure 101-1—Illustration of road structure terms.



**102 Bid, Award, and Execution of Contract**

Delete Section 102 in its entirety.

**Deletions**

Delete all but subsection 103.01 Intent of Contract.

# 104 - Control of Work

104.00_nat_us_02_17_2005

**Deletions**

Delete sections 104.01, 104.02, and 104.04.

104.06_nat_us_02_17_2005

Add the following subsection:

**104.06 Use of Roads by Contractor**

The Contractor is authorized to use roads under the jurisdiction of the Forest Service for all activities necessary to complete this contract, subject to the limitations and authorizations designated in the Road Order(s) or described in the contract, when such use will not damage the roads or national forest resources, and when traffic can be accommodated safely.

# 105 - Control of Material

105.02_nat_us_05_11_2004

**105.02 Material Sources.**

**105.02(a) Government Provided Sources.**

Add the following:

Comply with the requirements of 30 CFR 56, subparts B and H. Use all suitable material for aggregate regardless of size unless otherwise designated. When required, re-establish vegetation in disturbed areas according to section 625.

105.05_nat_us_05_12_2004

**105.05 Use of Material Found in the Work.**

Delete 105.05 (a) and (b) and the last sentence of the second paragraph and substitute the following:

Materials produced or processed from Government lands in excess of the quantities required for performance of this contract are the property of the Government. The Government is not obligated to make reimbursement for the cost of producing these materials.

# 106 - Acceptance of Work

106.01_nat_us_03_29_2005

**106.01 Conformity with Contract Requirements.**

Delete Subsection 106.01 and substitute the following:

Follow the requirements of FAR Clause 52.246-12 Inspection of Construction.

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids.

Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Incorporate manufactured materials into the work according to the manufacturer's recommendations or to these specifications, whichever is more strict.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

The Government may inspect, sample, or test all work at any time before final acceptance of the project. When the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site. If Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Do not rely on the availability of Government test results for process control.

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to 106.05 inclusive. The primary method of acceptance is specified in each Section of work. However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted, at no cost to the Government.

(a) Disputing Government test results. **If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:**

(1) Sampling method;
(2) Number of samples;
(3) Sample transport;
(4) Test procedures;
(5) Testing laboratories;
(6) Reporting;
(7) Estimated time and costs; and
(8) Validation process.

If the evaluation requires additional sampling or testing be performed, mutually agree with the Government on witnessing procedures and on sampling and testing by a third party laboratory. Use a third party laboratory accredited by the AASHTO accreditation program. Provide proof of the laboratory's accreditation for the test procedures to be used. Do not use the same laboratory that produced the disputed Government test results or that produced the test results used as a basis for the dispute.
The CO will review the proposed resolution protocol and may modify it before final approval and execution.

The Government will use the approved resolution protocol test results to determine the validity of the disputed testing. If the Government test results are validated, the Contractor will be responsible for all costs associated with developing and performing the resolution protocol. If the Government test results are not validated, the Government will be responsible for all costs associated with developing and performing the resolution protocol. If the validity of the Government test results cannot be determined, the Contractor and Government will equally share all costs associated with developing and carrying out the resolution protocol.

**(b) Alternatives to removing and replacing non-conforming work.** As an alternative to removal and replacement, the Contractor may submit a written request to:

(1) Have the work accepted at a reduced price; or

(2) Be given permission to perform corrective measures to bring the work into conformity.

The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

106.07_nat_us_05_11_2004

**106.07 Delete**

Delete subsection 106.07.

# 107 - Legal Relations and Responsibility to the Public

107.05_nat_us_05_11_2004

**107.05 Responsibility for Damage Claims.**

Delete the entire subsection.

107.06_nat_us_04_27_2005

**107.06 Contractor's Responsibility for Work.**

Delete the following:
"except as provided in Subsection 106.07".

107.09_nat_us_05_11_2004

**107.09 Legal Relationship of the Parties.**

Delete the entire subsection:

107.10_nat_us_02_23_2005

**107.10 Environmental Protection.**

Add the following:

Design and locate equipment repair shops, stationary refueling sites, or other facilities to minimize the potential and impacts of hazardous material spills on Government land.

Before beginning any work, submit a Hazardous Spill Plan. List actions to be taken in the event of a spill. Incorporate preventive measures to be taken, such as the location of mobile refueling facilities, storage and handling of hazardous materials, and similar information. Immediately notify the CO of all hazardous material spills. Provide a written narrative report form no later than 24 hours after the initial report and include the following:

- Description of the item spilled (including identity, quantity, manifest number, and other identifying information).
- Whether amount spilled is EPA or state reportable, and if so whether it was reported, and to whom.
- Exact time and location of spill including a description of the area involved.
- Containment procedures.
- Summary of any communications contractor had with news media, Federal, state and local regulatory agencies and officials, or Forest Service officials.
- Description of clean-up procedures employed or to be employed at the site including final disposition and disposal location of spill residue.

When available provide copies of all spill related clean up and closure documentation and correspondence from regulatory agencies.

The Contractor is solely responsible for all spills or leaks that occur during the performance of this contract. Clean up spills or leaks to the satisfaction of the CO and in a manner that complies with Federal, state, and local laws and regulations.

## 107.02 Protection and Restoration of Property and Landscape

Add the following:
Meet the requirements chapters 10, 11, and 12.2 in their entirety of "Water Quality Management for National Forest System Lands in California Best Management Practices" dated September 2000

# 108 - Prosecution and Progress



**108 Delete.**

Delete Section 108 in its entirety.

# 109 - Measurement and Payment

109.00_nat_us_02_17_2005

**109 Deletions**

Delete the following entire subsections:

**109.06 Pricing of Adjustments.**
**109.07 Eliminated Work.**
**109.08 Progress Payments.**
**109.09 Final Payment.**

109.02_nat_us_02_23_2005

**109.02 Measurement Terms and Definitions.**

**(b) Contract quantity.**

Add the following:

Contract quantities will be adjusted only when there are errors in the original design of 15% or more.

Change the following:

**"(b) Cubic yard"** to **"(c) Cubic yard".**

**109.02 Measurement Terms and Definitions.**

Add the following definition:

**(p) Thousand Board Feet (Mbf).** 1,000 board feet based on nominal widths, thickness, and extreme usable length of each piece of lumber or timber actually incorporated in the job. For glued laminated timber, 1,000 board feet based on actual width, thickness, and length of each piece actually incorporated in the job.

# 151 - Mobilization

151.01_0105_us_02_23_2005

## 151.01 Description

Add the following at the end of the last sentence:

"Work also includes cleaning of all equipment used at the project site. Clean all construction equipment prior to entry on the project site. Remove all dirt, plant parts and material that may carry noxious weed seeds into the area. Only construction equipment inspected by the Forest Service will be allowed to operate within the project area. Treat subsequent move-ins of equipment the same as the initial move-in. Clean truck beds and dump boxes hauling to the project site prior to entering the work area."

151.03_0116_us_03_30_2005

## 151.03

Add the following to the first paragraph:

Include all costs associated with the cleaning of equipment in the unit bid price for Mobilization:

Add the following to the beginning of paragraph (a).

If applicable,

# 152 - Construction Survey And Drafting

07_30_2014

**152 Delete.**

Delete Section 152 in its entirety and substitute the following:

See Contract Drawings for Construction Staking Details.

# 155 - Schedules for Construction Contracts



**155 Delete.**

Delete Section 155 in its entirety.

# 201 - Clearing and Grubbing

201.01_nat_us_02_18_2005

**201.01 Description**

Replace with the following

This work consists of clearing and grubbing within clearing limits and other designated areas.

See Drawings for additional information.

201.04_nat_us_02_18_2005

**201.04 Clearing.**

Add the following:

When marked in advance, remove dead trees over 6 inches in diameter measured at 12 inches above the ground that lean toward the road and are tall enough to reach the roadbed.

201.04_nat_us_02_22_2005

**201.04 Clearing. (c)**

Delete paragraph (c) and replace with the following:

(c) In areas outside the excavation, embankment, and slope rounding limits, cut stumps to within 12 inches or one-third of the stump diameter of the ground, whichever is higher, measured on the side adjacent to the highest ground. For timber sales, stump heights will meet the requirements of the Timber Sale contract.

**201.04 Clearing.**

Add the following:

(e) Trim branches of remaining trees or shrubs to give a clear height of 16 feet above the roadbed unless otherwise indicated. Trim tree limbs as near flush with the trunk as practicable.

(f) Remove brush from log decks. Deck logs so that logs are piled parallel to one another; can be removed by standard log loading equipment; will not damage standing trees; will not interfere with drainage, and will not roll. Keep logs in log decks free of brush and soil.

201.06_Eldorado 07_2011

**201.06 Disposal.**

Delete the first sentence of this subsection and substitute the following:

Dispose of merchantable timber designated for removal according to the provisions of the timber sale contract.

Add the following disposal methods:

**(e) Windrowing Construction Slash**. Place construction slash outside the roadway in neat, compacted windrows approximately parallel to and along the toe line of embankment slopes. Do not permit the top of the windrows to extend above sub grade. Use construction equipment to matt down all material in a windrow to form a compact and uniform pile. Construct breaks of at least 15 feet at least every 200 feet in a windrow. Do not place windrows against trees. Obtain approval for pioneer roads. A pioneer road may be constructed to provide an area for placement of windrows, provided the excavated material is kept within the clearing limits and does not adversely affect the road construction.

**(f) Scattering.** Scatter construction slash with in Timber Sale unit boundaries without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are not on top of one another. Limb and scatter other construction slash to reduce slash concentrations. Treat slash with logging unit.

**(g) Chip, Grind or Masticate.** Use an approved chipping machine to grind slash and stumps greater than 3 inches in diameter and longer than 2 feet. Deposit chips or ground woody material on embankment slopes or outside the roadway to a loose depth less than 6 inches. Minor amounts of chips or ground woody material may be permitted within the roadway if they are thoroughly mixed with soil and do not form a layer.

Equipment used to masticate roadway prism shall meet the requirements specified in the Timber Sale.

See Drawings for additional information.

**(h) Debris Mat.** Use tree limbs, tops, cull logs, split stumps, wood chunks, and other debris to form a mat upon which construction equipment is operated. Place stumps upside down and blend stumps into the mat.

**(i) Decking.** Remove brush from decks. Limb and deck logs that do not meet Utilization Standards according to Subsection 201.04 as directed by the CO. Cut logs to lengths less than 30 feet. Ensure that logs stacks are stable and free of brush and soil.

**(j) Removal to designated locations.** Remove construction slash to designated locations.

**(k) Pile and Burn.** Pile construction slash in designated areas. Place and construct piles so that when the piles are burned, the burning will not damage remaining trees. Keep piles free of dirt from stumps. Cut unmerchantable logs into lengths of less than 20 feet. Construct 16 foot wide fire line around piles and remove trees and limbs that are with 30 feet of edge of pile.

**(l) Placing Slash on Embankment Slopes**. Place construction slash on completed embankment slopes to reduce soil erosion. Place construction slash as flat as practicable on the completed slope. Do not place slash closer than 2 feet below sub grade. Priority for use of available slash is for: (1) through fills; (2) insides of curves; and (3) ditch relief outlets.

# 202 - Additional Clearing and Grubbing

202.04_1005_us_05_16_2005

**202.04 Selective Clearing.**

Add the following:

Dead trees over 6 inches in diameter measured at 12 inches above the ground that lean toward the road and are tall enough to reach the roadbed are designated for cutting.

When marked in advance, remove hazard trees or unstable live trees over 6 inches in diameter measured at 12 inches above the ground that lean toward the road and are tall enough to reach the roadbed.

202.09_0503_us_02_22_2005

**202.09 Measurement.**

Delete the second paragraph of this subsection and substitute the following:

Individual removal of trees is the number of trees of the various size designations removed. Measure tree diameters at a height of 12 inches above ground. Do not count trees less than 6 inches in diameter. Size designations are shown in Table 202-1.

Table 202-1. - Size designations for trees removed.

| | **Size of Least Diameter at Height of 12 inches** | |
|---|---|---|
| **Pay Item Designation** | **Greater Than** | **Less Than** |
| Small | 6 inches | 24 inches |
| Medium | 24 inches | 40 inches |
| Large | 40 inches | - |

# 203 - Removal of Structures and Obstructions

203.01_nat_us_02_25_2005

**203.01 Description.**

Delete and replace with the following:

This work consists of disposing of construction slash and debris, salvaging, removing, and disposing of buildings, fences, structures, pavements, culverts, utilities, curbs, sidewalks, and other obstructions.

203.01_eldo_07_17_06

**203.01 Description**

Add the following:

Work also includes the removal of dirt and debris and reconstruction of existing catch basins, inlet basins and other drainage features when specified in the Schedule of Items. This work includes. but not limited to, cleaning out metal pipe inlets/outlets in conjunction with the reconstruction of inlets, or, where Shown On The drawings. This work is typically included in Section 303 – Road Reconditioning, otherwise, work is paid separately under this Pay Item.

203.04_nat_us_02_18_2005

**203.04 Removing Material.**

Replace the fourth and fifth paragraphs with the following:

Where part of an existing culvert is removed, remove the entire culvert upstream from the removal. The remaining downstream culvert may be left in place if no portion of the culvert is within 12 inches of the subgrade, embankment slope, or new culvert or structure; and the culvert ends are sealed with concrete.

Remove structures and obstructions in the roadbed to 12 inches below sub grade elevation. Remove structures and obstructions outside the roadbed to 12 inches below finished ground or to the natural stream bottom.

203.05_nat_us_02_18_2005

**203.05 Disposing of Material.**

Add the following:

Disposal of construction slash will be compensated under the designated pay item in Section 201.

# 204 - Excavation and Embankment

204.00_nat_us_02_26_2007

**Replace Section 204 in its entirety with the following:**

**Description**

**204.01** This work consists of excavating material and constructing embankments. This includes furnishing, hauling, stockpiling, placing, disposing, sloping, shaping, compacting, and finishing earthen and rocky material.

**204.02 Definitions.**

**(a) Excavation.** Excavation consists of the following:

**(1) Roadway excavation.** All material excavated from within the right-of-way or easement areas, except sub excavation covered in (2) below and structure excavation covered in Sections 208 and 209. Roadway excavation includes all material encountered regardless of its nature or characteristics.

**(2) Sub excavation.** Material excavated from below sub grade elevation in cut sections or from below the original ground line in embankment sections. Sub excavation does not include the work required by Subsections 204.05, 204.06(b), and 204.06(c).

**(3) Borrow excavation.** Material used for embankment construction that is obtained from outside the roadway prism. Borrow excavation includes unclassified borrow, select borrow, and select topping.

**(b) Embankment construction.** Embankment construction consists of placing and compacting roadway or borrow excavation. This work includes:

**(1)** Preparing foundation for embankment;
**(2)** Constructing roadway embankments;
**(3)** Benching for side-hill embankments;
**(4)** Constructing dikes, ramps, mounds, and berms; and
**(5)** Backfilling sub excavated areas, holes, pits, and other depressions.

**(c) Conserved topsoil.** Excavated material conserved from the roadway excavation and embankment foundation areas that is suitable for growth of grass, cover crops, or native vegetation.

**(d) Waste.** Excess and unsuitable roadway excavation and sub excavation that cannot be used.

## Material

**204.03** Conform to the following Subsections:

| | |
|---|---|
| Backfill material | 704.03 |
| Select borrow | 704.07 |
| Select topping | 704.08 |
| Topping | 704.05 |
| Unclassified borrow | 704.06 |
| Water | 725.01 |

## Construction Requirements

**204.04 Preparation for Roadway Excavation and Embankment Construction.** Clear the area of vegetation and obstructions according to Sections 201 and 203.

**204.05 Reserved.**

**204.06 Roadway Excavation.** Excavate as follows:

**(a) General.** Do not disturb material and vegetation outside the construction limits.
Incorporate only suitable material into embankments. Replace any shortage of suitable material caused by premature disposal of roadway excavation. Dispose of unsuitable or excess excavation material according to Subsection 204.14.

At the end of each day's operations, shape to drain and compact the work area to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

Retrieve material deposited outside of the clearing limits as directed by the CO. Place unsuitable material in designated areas.

**(b) Rock cuts.** Blast rock according to Section 205. Excavate rock cuts to 6 inches below sub grade within the roadbed limits. Backfill to sub grade with topping or with other suitable material. Compact the material according to Subsection 204.11 When blasting rock, use blasting methods according to Subsection 205.08.

**(c) Earth cuts.** Scarify earth cuts to 6 inches below sub grade within the roadbed limits. Compact the scarified material according to Subsection 204.11.

**(d) Pioneer Roads.** Road pioneering, slash disposal, and grubbing of stumps may proceed concurrently with excavation. Conduct excavation and placement operations so material to be treated under Section 201 will not be incorporated into the roadway unless specified in the slash treatment method. Maintain drainage during pioneering operations.

Remove snow and ice in advance of the work and deposit beyond the roadway limits in a manner that will not waste material or generate sediment. Do not incorporate snow and ice into embankments. Place snow or ice in a manner to prevent resource damage.

**204.07 Sub excavation.** Excavate material to the limits designated by the CO. Take cross-sections according to Section 152. Prevent unsuitable material from becoming mixed with the backfill. Dispose of

unsuitable material according to Subsection 204.14. Backfill the sub excavation with topping, or other suitable material. Compact the material according to Subsection 204.11.

**204.08 Borrow Excavation.** Use all suitable roadway excavation in embankment construction. Do not use borrow excavation when it results in excess roadway excavation. Deduct excess borrow excavation from the appropriate borrow excavation quantity.

Obtain borrow source acceptance according to Subsection 105.02. Develop and restore borrow sources according to Subsection 105.03. Do not excavate beyond the established limits. When applicable, shape the borrow source to permit accurate measurements when excavation is complete.

**204.09 Preparing Foundation for Embankment Construction.** Prepare foundation for embankment construction as follows:

**(a) Embankment less than 4 feet high over natural ground.** When designated, remove topsoil and break up the ground surface to a minimum depth of 6 inches by plowing or scarifying. Compact the ground surface according to Subsection 204.11.

**(b) Embankments over an existing asphalt, concrete, or gravel road surface.** Scarify gravel roads to a minimum depth of 6 inches. Scarify or pulverize asphalt and concrete roads to 6 inches below the pavement. Reduce all particles to a maximum size of 6 inches and produce a uniform material. Compact the surface according to Subsection 204.11.

**(c) Embankment across ground not capable of supporting equipment.** Dump successive loads of embankment material in a uniformly distributed layer to construct the lower portion of the embankment. Limit the layer thickness to the minimum depth necessary to support the equipment.

**(d) Embankment on an existing slope steeper than 1V:3H.** Cut horizontal benches in the existing slope to a sufficient width to accommodate placement and compaction operations and equipment. Bench the slope as the embankment is placed and compacted in layers. Begin each bench at the intersection of the original ground and the vertical cut of the previous bench.

**204.10 Embankment Construction.** Incorporate only suitable roadway excavation material into the embankment. When the supply of suitable roadway excavation is exhausted, furnish unclassified borrow to complete the embankment. Obtain written approval before beginning construction of embankments over 6 feet high at sub grade centerline. Construct embankments as follows:

**(a) General.** At the end of each day's operations, shape to drain and compact the embankment surface to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

During all stages of construction, route and distribute hauling and leveling equipment over the width and length of each layer of material.

Compact embankment side slopes flatter than 1V:1.75H with a tamping type roller or by walking with a dozer. For slopes 1V:1.75H or steeper, compact the slopes as construction of the embankment progresses.

Where placing embankment on one side of abutments, wing walls, piers, or culvert headwalls, compact the material using methods that prevent excessive pressure against the structure.

Where placing embankment material on both sides of a concrete wall or box structure, conduct operations so compacted embankment material is at the same elevation on both sides of the structure.

Where structural pilings are placed in embankment locations, limit the maximum particle size to 4 inches.

**(b) Embankment within the roadway prism.** Place embankment material in horizontal layers not exceeding 12 inches in compacted thickness. Incorporate oversize boulders or rock fragments into the 12-inch layers by reducing them in size or placing them individually as required by (c) below. Compact each layer according to Subsection 204.11 before placing the next layer.

Material composed predominately of boulders or rock fragments too large for 12-inch layers may be placed in layers up to 24 inches thick. Incorporate oversize boulders or rock fragments into the 24-inch layer by reducing them in size or placing them individually according to (c) below. Place sufficient earth and smaller rocks to fill the voids. Compact each layer according to Subsection 204.11 before placing the next layer.

**(c) Individual rock fragments and boulders.** Place individual rock fragments and boulders greater than 24 inches in diameter as follows:

**(1)** Reduce rock to less than 48 inches in the largest dimension.
**(2)** Distribute rock within the embankment to prevent nesting.
**(3)** Place layers of embankment material around each rock to a depth not greater than that permitted by (b) above. Fill all the voids between rocks.
**(4)** Compact each layer according to Subsection 204.11 before placing the next layer.

**(d) Embankment outside of roadway prism.** Where placing embankment outside the staked roadway prism, place material in horizontal layers not exceeding 24 inches in compacted thickness. Compact each layer according to Subsection 204.11.

**204.11 Compaction.**

Place material by end dumping to the minimum depth needed for operation of spreading equipment. Adjust the moisture content of the material to obtain a mass that will not visibly deflect under the load of the hauling and spreading equipment. Operate compaction equipment over the full width of each layer until there is no visible evidence of further consolidation. Finish according to Subsection 204.13.

**204.12 Ditches.** Slope, grade, and shape ditches. Remove all projecting roots, stumps, rock, or similar matter. Maintain all ditches in an open condition and free from leaves, sticks, and other debris.

Form furrow ditches by plowing or using other acceptable methods to produce a continuous furrow. Place all excavated material on the downhill side so the bottom of the ditch is approximately 18 inches below the crest of the loose material. Clean the ditch using a hand shovel, ditcher, or other suitable method. Shape to provide drainage without overflow.

**204.13 Sloping, Shaping, and Finishing.** Complete slopes, ditches, culverts, riprap, and other underground minor structures before placing aggregate courses. Slope, shape, and finish as follows:

**(a) Sloping.** Leave all earth slopes with uniform roughened surfaces, except as described in (b) below, with no noticeable break as viewed from the road. Except in solid rock, round tops and bottoms of all

slopes including the slopes of drainage ditches. Round material overlaying solid rock to the extent practical. Scale all rock slopes. Slope rounding is not required on tolerance class D though M roads.

If a slide or slipout occurs on a cut or embankment slope, remove or replace the material, and repair or restore all damage to the work. Bench or key the slope to stabilize the slide. Reshape the cut or embankment slope to an acceptable condition.

**(b) Stepped slopes.** Where required by the contract, construct steps on slopes of 1⅓V:1H to 1V:2H. Construct the steps approximately 18 inches high. Blend the steps into natural ground at the end of the cut. If the slope contains nonrippable rock outcrops, blend steps into the rock. Remove loose material found in transitional area. Except for removing large rocks that may fall, scaling stepped slopes is not required.

**(c) Shaping.** Shape the sub grade to a smooth surface and to the cross-section required. Shape slopes to gradually transition into slope adjustments without noticeable breaks. At the ends of cuts and at intersections of cuts and embankments, adjust slopes in the horizontal and vertical planes to blend into each other or into the natural ground.

**(d) Finishing.** Finish the roadbed to be smooth and uniform, and shaped to conform to the typical sections. Remove unsuitable material from the roadbed and replace it with suitable material. Finish roadbeds to the tolerance class shown in table 204-2.Ensure that the subgrade is visibly moist during shaping and dressing. Scarify to 6 inches below the bottom of low sections, holes, cracks, or depressions and bring back to grade with suitable material. Maintain proper ditch drainage.

For surfaced roads, remove all material larger than 6 inches from the top 6 inches of the roadbed.

For unsurfaced roads, use a vibratory roller or approved equal with a minimum weight of 10 tons. Roll at least 5 full-width passes or until there is no visible evidence of further consolidation.

**204.14 Disposal of Unsuitable or Excess Material.** Dispose of unsuitable or excess material at designated sites or legally off of the project.

When there is a pay item for waste, shape and compact the waste material in its final location. Do not mix clearing or other material not subject to payment with the waste material.

**204.15 Acceptance.**

Material for embankment and conserved topsoil will be evaluated under Subsections 106.02 and 106.04.

Excavation and embankment construction will be evaluated under Subsections 106.02 and 106.04.

Clearing and removal of obstructions will be evaluated under Sections 201 and 203.

**Measurement**

**204.16** Measure the Section 204 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

**(a) Roadway excavation.** Measure roadway excavation in its original position as follows:

(1) Include the following volumes in roadway excavation:

*(a)* Roadway prism excavation;

*(b)* Rock material excavated and removed from below subgrade in cut sections;

*(c)* Unsuitable material below sub grade and unsuitable material beneath embankment areas when a pay item for sub excavation is not shown in the bid schedule;

*(d)* Ditches, except furrow ditches measured under a separate bid item;

*(e)* Topsoil;

*(f)* Borrow material used in the work when a pay item for borrow is not shown in the bid schedule;

*(g)* Loose scattered rocks removed and placed as required within the roadway;

*(h)* Conserved material taken from stockpiles and used in Section 204 work; and

*(i)* Slide and slip out material not attributable to the Contractor's method of operation.

(2) Do not include the following in roadway excavation:

*(a)* Overburden and other spoil material from borrow sources;

*(b)* Over breakage from the back slope in rock excavation;

*(c)* Water or other liquid material;

*(d)* Material used for purposes other than required;

*(e)* Roadbed material scarified in place and not removed;

*(f)* Material excavated when stepping cut slopes;

*(g)* Material excavated when rounding cut slopes;

*(h)* Preparing foundations for embankment construction;

*(i)* Material excavated when benching for embankments;

*(j)* Slide or slip out material attributable to the Contractor's method of operation;

*(k)* Conserved material taken from stockpiles constructed at the option of the Contractor; and

*(l)* Material excavated outside the established slope limits.

(3) When both roadway excavation and embankment construction pay items are shown in the bid schedule, measure the following as roadway excavation only:

*(a)* Unsuitable material below sub grade in cuts and unsuitable material beneath embankment areas when a pay item for sub excavation is not shown in the bid schedule;

*(b)* Slide and slip out material not attributable to the Contractor's method of operations; and

*(c)* Drainage ditches, channel changes, and diversion ditches.

**(b) Unclassified borrow, select borrow, and select topping.** When measuring by the cubic yard measure in its original position. If borrow excavation is measured by the cubic yard in place, take initial cross-sections of the ground surface after stripping overburden. Upon completion of excavation and after the borrow source waste material is returned to the source, retake cross-sections before replacing the overburden.

Do not measure borrow excavation used in place of excess roadway excavation.

**(c) Embankment construction.** Measure embankment construction in its final position. Do not make deductions from the embankment construction quantity for the volume of minor structures.

(1) Include the following volumes in embankment construction:

*(a)* Roadway embankments;

*(b)* Material used to backfill sub excavated areas, holes, pits, and other depressions;

*(c)* Material used to restore obliterated roadbeds to original contours; and

*(d)* Material used for dikes, ramps, mounds, and berms.

(2) Do not include the following in embankment construction:

*(a)* Preparing foundations for embankment construction;

*(b)* Adjustments for subsidence or settlement of the embankment or of the foundation on which the embankment is placed; and

*(c)* Material used to round fill slopes.

**(d) Rounding cut slopes.** Measure rounding cut slopes horizontally along the centerline of the roadway if a pay item for slope rounding is included in the bid schedule. If a pay item for slope rounding is not included in the bid schedule slope rounding will be considered subsidiary to excavation.

**(e) Waste.** Measure waste by the cubic yard in its final position. Take initial cross-sections of the ground surface after stripping over burden. Upon completion of the waste placement, retake cross-sections before replacing overburden.

**(f) Slope scaling.** Measure slope scaling by the cubic yard in the hauling vehicle.

## Payment

**204.17** The accepted quantities will be paid at the contract price per unit of measurement for the Section 204 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

**Table 204-2**
**Construction Tolerances**

| | Tolerance Class [a] | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** | **L** | **M** |
| Roadbed width (ft) | +0.5 | +0.5 | +1.0 | +1.0 | +1.0 | +1.0 | +1.5 | +1.0 | +2.0 | +2.0 | +2.0 | +2.0 | +2.0 |
| Subgrade elevation (ft) | ±0.1 | ±0.2 | ±0.2 | ±0.5 | ±0.5 | ±1.0 | ±1.0 | ±1.5 | ±2.0 | ±3.0 | ±2.0 | ±3.0 | (c) |
| Centerline alignment (ft) | ±0.2 | ±0.2 | ±0.5 | ±0.5 | ±1.0 | ±1.0 | ±1.5 | ±1.5 | ±2.0 | ±3.0 | ±3.0 | ±5.0 | (c) |
| Slopes, excavation, and embankment (% slope[b]) | ±3 | ±5 | ±5 | ±5 | ±5 | ±5 | ±10 | ±10 | ±10 | ±10 | ±20 | ±20 | ±20 |

(a) Maximum allowable deviation from construction stakes and drawings.
(b) Maximum allowable deviation from staked slope measured from slope stakes or hinge points.
(c) Unless otherwise shown the centerline alignment and subgrade elevation, as built, have no horizontal curves with a radius of less than 80 feet, and no vertical curves with a curve length of less than 80 feet when the algebraic difference in the grade change is less than 10 percent, or a curve length of less than 100 feet when the algebraic difference of

209.10_nat_us_03_30_2005

**209.10 Backfill.**

**(a) General.**

Add the following:

Replace any pipe that is distorted by more than 5 percent of nominal dimensions, or that is ruptured or broken.

Do not place or backfill pipe that meets any of the following conditions until the excavation and foundation have been approved in writing by the CO:

- Embankment height greater than 6 feet at sub grade centerline.
- Installation in a protected stream course.
- Round pipe with a diameter of 48 inches or greater.
- Pipe arches with a span of 50 inches or greater.
- Any box culvert of structure other than pipe culverts.

**(b) Pipe culverts.**

**(1) Pipe culverts with compacted backfill.**

Add the following:

On each side of the pipe, excavate an area at least as wide as the diameter of the pipe. Backfill without damaging or displacing the pipe. Complete backfilling of the trench with suitable material.

209.11_nat_us_02_24_2005

**209.11 Compacting.**

Delete the subsection and add the following:

Compact backfill using designated compaction method A, B, or C:

**Method A.** Ensure that backfill density exceeds the density of the surrounding embankment.

**Method B.** Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact each layer using appropriate compaction equipment until visual displacement ceases. For compaction under sections 252, 254, 255, 257, 258 and 262 compact with a vibratory steel wheeled roller with a mass of at least 8 tons.

**Method C.** Determine optimum moisture content and maximum density according to AASHTO T 99 method C. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact material placed in all layers to at least 95 percent of the maximum density. Determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

# 211 ROAD OBLITERATION (6/2012)

Delete this section and substitute the following:

## 1. DESCRIPTION

When required this work shall consist of closing designated roads to use by all motorized vehicles and returning the roadway to resource production using one or a combination of the following items as specified in the Schedule of Items and as shown in the Drawings: removing drainage structures, seeding, fertilizing, scarification, ripping with wing rippers, outsloping roadbed, earth barricade, rock barricade, waterbars, slashing, and camouflaging road junction.

## 2. MAINTENANCE REQUIREMENTS

a. Removal of Drainage Structures.

1. All designated drainage structures such as culverts, metal or wooden open top water diverters, and rubber water diverters shall be removed. Dips and waterbars shall not be removed.

2. Culverts 8 inches or less in diameter shall be smashed and buried (covered with a minimum of one foot of compacted native material) in the roadbed, unless disposal sites for specific culverts are designated on an attached map. If disposal sites have been designated the culverts shall be hauled to the designated site or other agreed to location.

3. Dewatering for culvert removal – Contractor shall supply dewatering plan to Contracting Officer for approval 48 hours prior to culvert removal.

4. Culverts over 8 inches in diameter shall be hauled to designated site if Shown in the Drawings, otherwise culverts shall be disposed of off Public lands.

5. Wooden open top water diverters, metal open top water diverters, and rubber water diverters shall be treated the same as culverts 8 inches or less in diameter.

6. Stream channel width after drainage structures have been removed shall be no less than that of existing channel in the vicinity of the inlet and outlet. Stream banks shall be sloped to 3:1 or flatter unless agreed to otherwise. This work is incidental to structure removal. Riprap, when shown in the Drawings, shall be placed to the length and dimension shown in the Drawings.

b. Seeding

1. This work consists of furnishing and placing required seed mix on all areas disturbed under this contract and on any other areas specified. Seeding may not be done until all other ground disturbing work on the road has been completed and accepted. Unless a specific seeding season is listed below, seeding shall be done as soon as other ground disturbing work is accepted.

Seeding season:_____ to _____.

2. The seed shall be applied in the following amounts and mixtures:

See Typicals.

3. Hand operated seeding devices, or other devices approved by the Government, shall be used to apply seed.

c. Fertilizing

See Typicals.

d. Scarification

1. This work shall consist of seedbed preparation on an existing roadbed by scarification.

2. Scarification shall be accomplished by rippers spaced not more than 6 inches apart and/or with heavy duty gang discs.

3. Scarification depth shall not be less the 3 inches or deeper than 12 inches unless otherwise agreed.

e. Ripping With Wing Rippers - ( Sub Soiling )

1. This work shall consist of subsoiling an existing roadbed by ripping with a winged ripper as shown in the Drawings or an approved equivalent tool approved by the Contracting Officer.

2. The distance between ripper shanks shall not exceed 36 inches. Each shank shall be equipped with a shoe and wings which have a total width of at least 18 inches.

The design of the shank and wing will be such that the treated soils are slightly lifted and well fractured rather than plowed, mixed or displaced.

3. Ripping shall be accomplished to a minimum depth of 18 inches. The Government may agree to a lesser depth when excessive rock is encountered.

f. Outsloping Roadbed

1. Designated roads or segments of roads shall be outsloped by pulling the fill shoulder towards the cut bank. Excavated material shall be spread over the roadbed forming a minimum outslope equal to the existing road grade percent. The Government may agree to a lesser outslope percent if soil conditions warrant.

2. Any existing ditches at the toe of the cut shall be filled with the material excavated during outsloping.

g. Earth, Log and Rock Barricades

1. Earth barricades shall be constructed in locations specified in accordance with the attached drawings.

2. Multiple log barricades at one site may be specified. Logs shall be a minimum dimension shown in the Drawings.

3. Rock barricades shall be of the minimum size and dimension shown in the Drawings and placed so that motorized vehicles greater than 36 inches cannot pass.

h. Slashing

1. This work shall consist of placing woody material over the roadbed to discourage vehicle traffic.

2. Woody material shall be dead timber and slash removed from an area within thirty five (35) feet of the road shoulders in the vicinity of the areas where it is to be placed. When there is inadequate material to slash road and when directed by the Contracting Officer, Contractor shall fell marked trees adjacent to road. Trees shall be felled diagonally across road.

3. Material shall be placed randomly over the roadbed to give a similar appearance of the surrounding area and may include rocks and other material.

i. Camouflaging Road Junction

1. This work shall consist of manipulating the cut and fill slopes of the designated road so the road template is not obvious. Slashing is included in this section and is incidental to work in this section. One or more of the following methods will be specified:

A. When the designated roadway section is a cut-fill section, excavate the fill slope section and place material against the cut section so the designated road is not obvious. The height of the replaced material shall be equal to the existing cut or a maximum of six (6) feet.

B. When the designated roadway section is a fill section, remove the road fill and place the material as a berm along the road junctioned, creating what appears to be a cut section.

j. Recontouring Cut and Fill Slopes

1. Cut and fill slopes shall be reshaped as nearly as practical to the surrounding hill slope topography. Reshaping of cut and fill slopes shall be prescribed on a site specific basis by the hydrologist where unstable slopes create geologic hazards or excessive erosion.

k. Waterbars

1. Waterbars shall be installed at locations shown in the Drawings or staked on the ground. Unless specified otherwise in the Drawings all waterbars are to be the non-drivable type. See typicals.

l. Transplanting Native Trees

1. This work shall consist of transplanting native trees designated by the Government from areas adjacent to the road to areas designated by the Government on the roadbed. Transplanting will be limited to trees less than 4 inches in diameter. Transplanting must be done with a tree spade or other equipment specifically designed for transplanting trees with minimal damage to the root system. No damage to the tree stem will be permitted. No more than 20 percent of the limbs may be damaged during the transplanting operation. The north side of trees to be transplanted shall be marked before the trees are removed. When the trees are transplanted they shall be oriented with the north side facing north. Transplanting shall be limited to the period from October 15 to May 31 annually. Transplanted trees shall be watered liberally immediately after transplanting.

m. Road Closure

1. This work shall consist of minor grading and shaping of road to ensure drainage. Work also includes to construction of swales, waterbars and barricades where shown in the Drawings or staked on the ground.

n. Swales

1. Swales shall be installed at locations shown in the Drawings or staked on the ground. See typicals.

o. Riprap

1. This work consists of placing riprap at locations specified in the Drawings. Riprap shall conform to requirements in section 251. Sand mass specified in the Table 705-2.

## 3. MEASUREMENT

Measurement under this Section will be Lump Sum Quantity and includes all work described in the Drawings and listed in the Schedule of Items completed and accepted.

## 4. PAYMENT

a. The accepted quantity will be paid for at the contract unit price. This payment will be full compensation for all labor, equipment, tools, and incidentals necessary to complete the work.

# 251 - Riprap

251.00_01_us_03_18_2008

**251.01 Description**

Delete the first sentence and add the following:

This work consists of furnishing, hauling and placing of riprap for bank protection, slope protection, drainage structures, erosion control, stream simulation, and other locations shown on the plans.

**251.02 Material.**

Add the following:
When shown on the plans stone from the project site may be utilized.

**251.07 Acceptance**

Delete sampling and testing requirements of Table 251-1 and certification requirements of Subsection 106.03.

**251.09 Payment.**

Add the following:

The cost of excavation, embankment, haul required for placement of riprap and supply and installation of geotextile cloth is incidental to pay items listed in the bid schedule.

# Section 299 - Low Volume Road Construction - Temp Rd (8/15/2015)

## Description

**249.01 Work.** Perform clearing and grubbing, excavation and embankment, and erosion control. During clearing and grubbing, treat merchantable timber and construction slash, including all trees designated for removal. During excavation and embankment, excavate and use borrow material; excavate drainage; shape the roadway, including approaches, turnarounds, ditches, and drainage dips; and place all excavated material, regardless of nature. Perform erosion control by furnishing and placing seed, fertilizer, mulch, and tackifier when SHOWN ON THE DRAWINGS. Construct the roadway in conformance with the dimensions SHOWN ON THE DRAWINGS or designated on the ground.

## Materials

**249.02 Requirement.** Ensure that materials are as SHOWN ON THE DRAWINGS, and that they meet requirements specified in the following section and subsection:

Seeding & Mulching ..... 625
Stabilizing Emulsion Tackifiers ..... 713.12

## Construction

**249.03 Clearing & Disposal.** Protect construction stakes and construction control markers. Remove or treat all trees, snags, downed timber, brush, and stumps within the clearing limits according to the following specifications:

***(a) Merchantable Timber.*** Deck or remove timber meeting Utilization Standards as SHOWN ON THE DRAWINGS.

***(b) Unmerchantable Timber.*** Treat unmerchantable timber as SHOWN ON THE DRAWINGS.

***(c) Large Construction Slash.*** Treat construction slash larger than 3 inches in diameter and longer than 3 feet by one or more of the following methods, as SHOWN ON THE DRAWINGS:

*(1) Method A.* Incorporate construction slash in the embankment.

*(2) Method B.* Windrow construction slash inside the clearing limits. When slash is windrowed, place it approximately parallel to the roadway outside the toe of the fill slope.

*(3) Method C.* Scatter construction slash outside the roadway prism without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will remain in place and are not on top of one another. When Scatter In Units is specified, haul material to closest unit and scatter within unit and outside of road prism.

*(4) Method D.* Construct piles that are free of soil, with smaller slash well mixed with larger slash. Buck unmerchantable logs into lengths less than 20 feet prior to placement in piles.

*(5) Method E.* Sidecast construction slash into the area below the roadway. Slash may be sidecast beyond the lower clearing limit for a distance not to exceed 10 feet.

*(6) Method F.* Bury construction slash within the roadway limits. Construct mats in layers and cover the mats with at least 18 inches of rock and soil.

*(7) Method G.* Construct piles of construction slash in the areas SHOWN ON THE DRAWINGS or designated on the ground. Construct the piles so that burning does not damage standing trees. Burn the piles until all the material remaining in the pile is charred or ash.

*(8) Method H.* Bury the construction slash outside the roadway at the locations SHOWN ON THE DRAWINGS or designated on the ground. Construct mats in layers, and cover the mats with at least 18 inches of rock and soil. Slope the final surface to drain.

*(9) Method J.* Construct a debris mat of construction slash under the road subgrade. Use tree limbs, tops, cull logs, split stumps, wood chunks, and other debris to form a mat. Place stumps upside down and blended into the mat as SHOWN ON THE DRAWINGS.

***(d) Small Construction Slash.*** Construction slash less than 3 inches in diameter and less than 3 feet may be incorporated into embankments so long as the material is distributed so that it does not result in concentrations or matting.

Immediately remove slash deposited in stream courses.

Fell all dead trees outside the clearing limits that lean toward the road and are sufficiently tall to reach the roadbed. Fell hazard or unstable live trees designated on the ground outside the clearing limits before felling timber in the immediate clearing vicinity.

Leave stump heights less than 12 inches or one-third of the stump diameter, whichever is greater, measured on the side adjacent to the highest ground. Leave felled trees outside the clearing limits in place, and treat them no further unless otherwise SHOWN ON THE DRAWINGS.

**249.04 Pioneering.** Do not undercut the final back slope during pioneering operations. Deposit material inside the roadway limits. Do not restrict drainage.

**249.05 Grubbing.** Grub within the limits as SHOWN ON THE DRAWINGS. Stumps outside the grubbing limits may remain if cut no higher than 12 inches or one third of the stump diameter, whichever is greater, above the original ground, measured on the uphill side, unless otherwise SHOWN ON THE DRAWINGS. Grub stumps that will protrude through the subgrade or have less than 6 inches of cover.

**249.06 Excavation & Embankment.** Construct the roadway to conform to the typical sections SHOWN ON THE DRAWINGS. Protect backslopes from being undercut. Embankment may be placed by side casting and end dumping.

Locate and use borrow material, and remove and treat unsuitable or excess material, as SHOWN ON THE DRAWINGS.

Place rocks that are too large to be incorporated in the embankment outside the traveled way on the downhill side such that they will not roll, obstruct drainage, or hinder roadbed use and maintenance.

Leave slopes that are to be seeded in a roughened condition.

Shape and finish the roadbed to the condition ordinarily accomplished by a crawler tractor with dozer blade to provide drainage of surface water, unless otherwise SHOWN ON THE DRAWINGS. Do not permit individual rocks to protrude more than 4 inches above the subgrade of the roadbed. A motor grader finish is not required.

Unless otherwise SHOWN ON THE DRAWINGS, observe a width tolerance for the traveled way of (+) 2.5 feet.

**249.07 Erosion Control.** Perform erosion control measures, including seeding, as SHOWN ON THE DRAWINGS. Use methods and rates of application, and types of seed, fertilizer, mulch, and tackifier, as specified in Section 625 and SHOWN ON THE DRAWINGS. Apply materials uniformly to the areas to be treated.

**Measurement**

**249.08 Method.** Use the method of measurement that is DESIGNATED IN THE SCHEDULE OF ITEMS.

**Payment**

**249.09 Basis.** The accepted quantities will be paid for at the contract unit price for each PAY ITEM DESIGNATED IN THE SCHEDULE OF ITEMS.

Payment will be made under:

| Pay Item | | Pay Unit |
|---|---|---|
| 299(01) | Composite road construction ..... | Lump Sum |

# 301 - Untreated Aggregate Courses

**301 Title Change.**

Change the title to: **Section 301 Aggregate Courses**

**Delete this Section in its entirety and substitute the following:**

**Description**

**301.01** This work consists of constructing one or more courses of aggregate on a prepared surface. Work includes producing aggregate by grid rolling, pit-run, screening, or crushing methods, or placing commercially produced aggregate meeting Caltrans specification.

Surface aggregate grading is designated as shown in Table 703-3.

Sub base and base aggregate grading is designated as shown in Table 703-2.

Screened aggregate grading is designated as shown in Table 703-16.

**Material**

**301.02** Conform to the following Subsections:

| | |
|---|---|
| Aggregate | 703.05 |
| Water | 725.01 |

**Construction Requirements**

**301.03 General.** Prepare the surface on which the aggregate course is placed according to Section 204 or 303 as applicable.

Request approval of the roadbed in writing before placing aggregate.

Submit target values within the gradation ranges shown in Table 703-2 or 703-3 for the required grading. After reviewing the Contractor's proposed target values the CO will determine the final values for the gradation and notify the Contractor in writing.

For screened, pit run, or grid-rolled material, furnish material smaller than the maximum size. No gradation other than maximum size will be required for pit run and grid-rolled material. For grid rolling, use all suitable material that can be reduced to maximum size.

After processing on the road, remove all oversize material from the road and dispose of it as directed by the CO.

If the aggregate is produced and stockpiled before placement, handle and stockpiled according to Section 320. Establish stockpile sites at approved locations.

**301.04 Mixing and Spreading.** Mix the aggregate and adjust the moisture content to obtain a uniform mixture with a moisture content suitable for the specified compaction method. Spread and shape the mixture on the prepared surface in a uniform layer with no segregation of size, and to a loose depth that will provide the required compacted thickness.

Do not place the mixture in a layer exceeding 6 inches in compacted thickness or twice the maximum particle size, whichever is less. When more than one layer is necessary, compact each layer according to Subsection 302.05 before placing the next layer. Route hauling and leveling equipment uniformly over the full width.

When placing aggregate over geotextile, place aggregate in a single lift to the full depth specified.

**301.05 Compacting.** Compact each layer full width. Roll from the sides to the center, parallel to the centerline of the road. Along curbs, headers, walls, and all places not accessible to the roller, compact the material with approved tampers or compactors.

Compact the aggregate using one of the following methods as specified:

> **Compaction D.** Moisten or dry the aggregate to a uniform moisture content between 5 and 7 percent based on total dry weight of the mixture. Operate rollers and compact as specified in Subsection 204.11.

For all compaction methods, blade the surface of each layer during the compaction operations to remove irregularities and produce a smooth, even surface.

**301.06 Construction Tolerance.** If grade finishing stakes are required, finish the surface to within ±0.05 feet from staked line and grade elevation.

If grade finishing stakes are not required, shape the surface to the required template and check the surface with a 10-foot straightedge. Defective areas are surface deviations in excess of 1/2 inch in 10 feet between any two contacts of the straightedge with the surface.

Correct all defective areas by loosening the material, adding or removing material, reshaping, and compacting.

Ensure that the compacted thickness is not consistently above or below the specified thickness. The maximum variation from the compacted specified thickness is ½ inch.

Ensure that the compacted width is not consistently above the specified width. The maximum variation from the specified width will not exceed +12 inches at any point.

**301.07 Maintenance.** Maintain the aggregate course to the correct line, grade, and cross-section by blading, watering, rolling, or any combination thereof until placement of the next course. Correct all defects according to Subsection 302.06.

**301.08 Acceptance.**

Aggregate gradation and surface course plasticity index will be evaluated under Subsection 106.04. If the aggregate is obtained from a Government stockpile then the above characteristics will be evaluated under Subsection 106.02. Other aggregate quality properties will be evaluated under Subsections 106.02 and 106.04. Construction of aggregate courses will be evaluated under Subsections 106.02 and 106.04.

The allowable upper and lower aggregate gradation limits are equal to the Target Value plus or minus the allowable deviations shown in Tables 703-2 and 703-3.

The allowable upper and lower Plasticity index limits for surface courses are stated in 703.05(b).

Preparation of the surface on which the aggregate course is placed will be evaluated under Section 204 or 303 as applicable.

## Measurement

**301.09** Measure the Section 301 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Measurement shall be by the ton. Contractor shall provide Engineer proof of quantity delivered and placed by supplying weight tickets.

## Payment

**302.10** The accepted quantities will be paid at the contract price per unit of measurement for the Section 301 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

# 303 - Road Reconditioning

Delete Section 303 in its entirety and replace with the following.

303.01_0503_eldo_01_10_2007

## Description

**303.01 Work.**

This work consists of reconditioning ditches, shoulders, roadbeds, cattle guards, culvert inlets/outlets, asphalt surfaces, approach road intersections, and aggregate surfaces. Construct out slopes, clean and maintain all roadbed drainage structures when shown on the plans. Work also includes the repair of minor slumps and slides, berm removal and curve widening when it only involves using the existing travel way and shoulders..

## Material

**303.02** Conform to the following Subsection:

Water 725.01

## Construction Requirements

**303.03 Ditch Reconditioning.** Remove all slide material, sediment, vegetation, and other debris from the existing ditches and culvert inlets and outlets. Reshape ditches and culvert inlets and outlets to achieve positive drainage and a uniform ditch width, depth, and grade. Dispose of waste as shown on the plans.

**303.04 Shoulder Reconditioning ( Curve Widening ).** Repair soft and unstable areas according to Subsection 204.07. Remove all slide material, vegetation, and other debris from existing shoulders including shoulders of parking areas, turnouts, berms and other widened areas. Dispose of waste as shown on the plans.

**303.05 Roadbed Reconditioning** Repair soft and unstable areas according to Subsection 204.07. Remove all organic, deleterious material larger than 6 inches from the top 6 inches of subgrade. Dispose of waste as shown on the plans. Scarify, rip and shape the traveled way and shoulders at locations and to the depth and width designated on the plans. Remove surface irregularities and shape to provide a uniform surface.

Dispose of rock larger than 4 inches brought to the surface during scarification in areas designated on the plans.

For portions of roads not requiring scarification, the roadbed may contain rocks larger than 4 inches provided they do not extend above the finished roadbed surface. Reduce in place or remove rock extending above the finished roadbed surface. Dispose of removed rock in areas designated on the plans.

Compact using the following method as specified:

(a) Compaction A. Operate equipment over the full width.

(b) Compaction B. Operate rollers over the full width of each layer until visual displacement ceases, but not fewer than three complete passes. Use rollers that meet the following requirements:

(1) Steel wheeled rollers, other than vibratory, capable of exerting a force of not less than 250 pounds per inch of width of the compression roll or rolls.

(2) Vibratory steel wheeled rollers equipped with amplitude and frequency controls with a minimum weight of 6 tons, specifically designed to compact the material on which it is used.

(3) Pneumatic-tired rollers with smooth tread tires of equal size that will provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 psi.

**303.06 Aggregate Surface Reconditioning**. Repair soft and unstable areas to the full depth of the aggregate surface and according to Subsection 204.07. Scarify to the depth of the aggregate surface or to a depth of 6 inches, whichever is less, and remove surface irregularities. Reshape, finish, and compact the entire aggregate surface according to Subsection 301.05, Subsection 321.05, or Subsection 322.05 as applicable.

**303.07 Roadway Reconditioning.** Perform all the applicable work described in Subsections 303.03 through 303.06.

Maintain the existing cross slope or crown unless otherwise shown on the plans. Establish a blading pattern that will retain the surfacing on the roadbed and provide a through mixing of the materials within the completed surface width.

Blade and shape the sub grade for both surfaced and unsurfaced roads when moisture content is suitable for compaction.

**303.08 Pulverizing.** Scarify the surface to the designated depth and width. Pulverize all material to a size one and one half times the maximum sized aggregate or to 1½ inches, whichever is greater. Mix, spread, compact, and finish the material according to Section 301.

**303.09 Cattle guards.** Remove cattle guard decks. Clean the deck and the area beneath the cattle guard of soil and other material to the bottom of the original foundation over the entire width of the installation. Reinstall the cattle guard deck.

**303.10 Acceptance.** See Table 303-1 for sampling and testing requirements. Road reconditioning work will be evaluated under Subsections 106.02 and 106.04.

**303.11 Measurement**. Measure road reconditioning, aggregate surface reconditioning, roadway reconditioning, and pulverizing by the mile, station, foot, or square yard. Measure horizontally along centerline of roadway. Measure the square yard area on horizontal plane. Do not measure isolated areas less than 20 square yards.

There shall be no separate measurement for ditch reconditioning, lead off ditches, culvert cleaning, inlet/outlet cleaning, minor slump or slide repair, and shoulder reconditioning. This work shall be considered incidental to Road Reconditioning unless specified otherwise in the Schedule of Items.

**Delete Table 303-1 and replace with the following:**

303.07_nat_us_03_02_2005

303.10_10_us_05_23_2005

**Table 303-1**
**Sampling and Testing Requirements**

| Material or Product | Type of Acceptance (Subsection) | Characteristic | Category | Test Methods Specifications | Sampling Frequency | Point of Sampling | Split Sample | Reporting Time |
|---|---|---|---|---|---|---|---|---|
| Existing Roadway | Measured and tested for conformance (106.04) | Moisture-density Method D | — | AASHTO T 99 (1) | 1 per each mixture or change in material | Processed material before incorporating in work | Yes, when requested | Before using in work |
| | | Moisture-density Method E | — | R-1 Marshall | " | " | " | " |
| | | Moisture-density Method F | — | AASHTO T 180(1) | " | " | " | " |
| | | Moisture-density Method G | — | R-1 Marshall | " | " | " | " |
| | | In-place density & moisture content | — | AASHTO T 310 or other approved procedures | 1 per 3000 $yd^2$ | In-place | — | Before placing next layer |

(1) Minimum of 5 points per proctor.

# 406 - Asphalt Pavement Patching

**Description - Add the following:**

**406.01 Work.** Perform deep patching, skin patching of asphalt surfaces, and patching of asphalt berms. Prepare the area to be patched, and furnish and place all necessary materials.

**Materials**

**406.02 Requirements.** Ensure that asphalt materials are of the type and grade SHOWN ON THE DRAWINGS, and that they meet the requirements specified in the following subsections:

| | |
|---|---|
| Asphalt Cement | 702.01 |
| Cutback Asphalt | 702.02 |
| Emulsified Asphalt | 702.03 |

Ensure that mixing temperatures meet the requirements specified in Subsection 702.04; that aggregates meet the requirements specified in Subsection 703.07, except for gradation; and that fabric meets the requirements specified in Subsection 714.01.

**406.03 Job-Mix Formula.** Prior to producing asphalt concrete mixtures, submit in writing a proposed job-mix formula and supporting documentation for each mixture to the CO for use in setting the job-mix formula to be used with the proposed materials.

After reviewing the proposed job-mix formula, the CO will determine the final values for the job-mix formula to be used and notify the Contractor in writing.

**Construction**

**406.04 Deep Patching.** Remove surface course and base course materials above the subgrade to a minimum depth of 2 inches, or as necessary to reach firm support. If firm support for a patch is unavailable, notify the CO prior to placing any material.

Trim or mill the edges of the prepared hole to form a vertical face in unfractured asphalt surfacing. Make the prepared hole rectangular in shape, and clean it of all loose material. When the hole is dry, spray the bottom and faces with an emulsified asphalt.

Immediately patch or barricade prepared sites.

Place the asphalt concrete mixture in layers not exceeding 4 inches. Thoroughly compact each layer with hand or mechanical tampers or rollers.

Compact the finished surface with a steel-wheel roller or vibratory plate compactor. For hot asphalt concrete mixtures, compact the mix while it is above 230 °F. Ensure that the compacted patch, upon completion, is approximately 1/8 to ¼ inch above the level of the adjacent pavement. Seal the edges of the completed patch with emulsified asphalt, and blot with fine sand.

When SHOWN ON THE DRAWINGS and DESIGNATED IN THE SCHEDULE OF ITEMS, use a geotextile saturated with rubberized asphalt to strengthen the pothole area. Ensure that the geotextile has a minimum grab strength of 20 pounds. Prepare the surface on which the fabric is placed by digging out and patching as described above, or by cleaning the surface, removing vegetation, and filling all cracks more than ¼ inch wide with an approved crack-filling material. Remove excess crack-filling material.

Place the fabric membrane over the repaired area. Extend the fabric a minimum of 6 inches beyond the repaired or patched area onto sound adjoining pavement. Use a minimum of 2 inches overlap where adjacent fabric panels are needed to cover the repaired area.

**406.05 Skin Patches.** Prior to skin patching, patch all potholes.

Treat minor depressions, light raveling, or surface checking at scattered locations SHOWN ON THE DRAWINGS or marked on the ground by applying a skin patch.

Prior to skin patching, clean the surface of loose and deleterious material, and spray it with emulsified asphalt at the rate ordered by the CO. Do not place mixture until authorized by the CO.

Uniformly distribute asphalt concrete mixture in layers not to exceed 2 inches compacted depth. Feather the edges of skin patches. When multiple layers are necessary, offset all joints at least 6 inches between layers.

Compact each layer with a 8 to 10-ton steel roller. For hot asphalt concrete mixtures, compact the mix while it is above 230 °F.

Ensure that the completed patch does not have abrupt transitions that could adversely affect the steering of a passenger car traveling across the area. Provide transition tapers for skin patches that are 4 inches per 1/32-inch thickness of patch in the direction on travel.

**406.06 Asphalt Berm.** Remove damaged segments of berm and bevel exposed ends at approximately 45° from vertical. Clean and patch the berm foundation as necessary. Coat the foundation and joining surfaces with emulsified asphalt. Place and compact asphalt mix to conform with the shape of the undamaged segment.

**406.07 Waste Material.** Dispose of all materials removed from potholes, patches, and berms in accordance with Subsection 203.05(a).

**Measurement**

**406.08 Method.** Use the method of measurement that is DESIGNATED IN THE SCHEDULE OF ITEMS.

**Payment**

**416.09 Basis.** The accepted quantities will be paid for at the contract unit price DESIGNATED IN THE SCHEDULE OF ITEMS.

602.03_nat_us_04_14_2005

**602.03 General.**

Add the following:

Ensure that the final installed alignment of all pipe allows no reverse grades, and does not permit horizontal and vertical alignments to vary from a straight line drawn from center of inlet to center of outlet by more than 2 percent of pipe center length or 1.0 feet, whichever is less.

602.05_1005_us_01_18_2005

Delete the second paragraph and replace with the following.

Join pipe sections together with coupling bands according to AASHTO M 36 or M 196. Limit the use of bell and spigot joints to slopes of 10% or less. Limit the use of bands with projections (dimpled) to slopes of 15% or less.

# 703 - Aggregate

703.05_nat_us_05_17_2005

**Delete 703.05 and replace with the following:**

## 703.05 Sub base, Base, Surface Course, and Screened Aggregate.

**(a) Sub base or base aggregate.** Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

| | |
|---|---|
| **(1)** Gradation | Table 703-2 |
| **(2)** Liquid limit, AASHTO T 89 | 25 max. |
| **(3)** Plastic limit, AASHTO T 90 | No plastic |
| **(4)** Los Angeles abrasion, AASHTO T 96 | 40% max. |
| **(5)** Sodium sulfate soundness loss (5 cycles), AASHTO T 104 | 12% max. |
| **(6)** Durability index (coarse), AASHTO T 210 | 35 min. |
| **(7)** Durability index (fine), AASHTO T 210 | 35 min. |
| **(8)** Fractured faces, ASTM D 5821 | 50% min. |
| **(9)** Free from organic matter and lumps or balls of clay | |
| **(10)** Aggregate shall be obtained from an approved source, and certified to contain no more than 0.25 % asbestos to be in compliance with California Health and Safety Code Sections 93105 and 93106. | |

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

**(b) Surface course aggregate.** Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

| | |
|---|---|
| **(1)** Gradation | Table 703-3 |
| **(2)** Liquid limit, AASHTO T 89 | 35 max. |
| **(3)** Plastic Index, AASHTO T 90 | |
| a) If the percent passing the No. 200 sieve is less than 12% | 2 to 9 |
| b) If the percent passing the No. 200 sieve is greater than 12% | Less than 2 |
| **(4)** Los Angeles abrasion, AASHTO T 96 | 40% max. |
| **(5)** Sodium sulfate soundness loss (5 cycles), AASHTO T 104 | 12% max. |
| **(6)** Durability index (coarse), AASHTO T 210 | 35 min. |
| **(7)** Durability index (fine), AASHTO T 210 | 35 min. |
| **(8)** Fractured faces, ASTM D 5821 | 75% min. |
| **(9)** Free from organic matter and lumps or balls of clay | |
| **(10)** Aggregate shall be obtained from an approved source, and certified to contain no more than 0.25 % asbestos to be in compliance with California Health and Safety Code Sections 93105 and 93106. | |

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Do not furnish material that contains asbestos fibers.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

**(c) Screened aggregate** – Furnish hard, durable particles or fragments of stone, slag, or gravel conforming the following:

| | |
|---|---|
| **(1)** Gradation | Table 703-16 |
| **(2)** Plastic Index, AASHTO T 90 | Less than 9 |
| **(3)** Los Angeles abrasion, AASHTO T 96 | 55% max. |

**(4)** Free from organic matter and lumps or balls of clay.

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary.

**Delete Table 703-2 and replace with the following:**

**Table 703-2**
**Target Value Ranges for Subbase and Base Gradation**

| Sieve Size | Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11) | | | | |
|---|---|---|---|---|---|
| | Grading Designation | | | | |
| | A (Subbase) | B (Subbase) | C (Base) | D (Base) | E (Base) |
| 2½ inch | 100 | | | | |
| 2 inch | 97 – 100 | 100 | 100 | | |
| 1½ inch | | 97 – 100 | | | |
| 1 inch | 65 – 79 (6) | | 80 – 100 (6) | 100 | |
| 3/4 inch | | | 64 – 94 (6) | 86 – 100 (6) | 100 |
| 1/2 inch | 45 – 59 (7) | | | | |
| 3/8 inch | | | 40 – 69 (6) | 51 – 82 (6) | 62 – 90 (6) |
| No. 4 | 28 – 42 (6) | 40 – 60 (8) | 31 – 54 (6) | 36 – 64 (6) | 36 – 74 (6) |
| No. 40 | 9 – 17 (4) | | | 12 – 26 (4) | 12 – 26 (4) |
| No. 200 | 4.0 – 8.0 (3) | 4.0 – 12.0 (4) | 4.0 –7.0 (3) | 4.0 – 7.0 (3) | 4.0 – 7.0 (3) |

( ) The value in the parentheses is the allowable deviation (±) from the target values..

**Delete Table 703-3 and replace with the following:**

**Table 703-3**
**Target Value Ranges for Surface Gradation**

| Sieve Size | Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11) | | | | | |
|---|---|---|---|---|---|---|
| | Grading Designation | | | | | |
| | F | G | H | S | T | U |
| 1 1/2 inch | 100( | | | 100 | | |
| 1 inch | 97-100 | 100 | | 72 – 92 (6) | 100 | |
| 3/4 inch | 76-89 (6) | 97 - 100 | 97 - 100 | | | 100 |
| 1/2 inch | | | | | 71 – 91 (6) | |
| 3/8 inch | 56-68 (6) | 70 – 80 (6) | 80 – 92 (6) | 51 – 71 (6) | | 71 – 90 (6) |
| No. 4 | 43-53 (7) | 51 – 63 (7) | 58 – 70 (7) | 36 – 53 (7) | 43 – 60 (7) | 50 – 68 (7) |
| No. 8 | | | | 26 – 40 (6) | 30 – 46 (6) | 34 – 51 (6) |
| No. 16 | 23-32 (6) | 28 – 39 (6) | 28 – 40 (6) | | | |
| No. 30 | 15-23 (5) | 19 – 27 (5) | 16 – 26 (5) | | | |
| No. 40 | | | | 14 – 25 (5) | 16 – 28 (5) | 19 – 30 (5) |
| No. 200 | 10.0-16.0 (4) | 10.0 – 16.0 (4) | 9.0 – 14.0 (4) | 8.0 – 15.0 (4) | 8.0 – 15.0 (4) | 8.0 – 15.0 (4) |

( ) The value in the parentheses is the allowable deviation (±) from the target values.
If the plasticity index (PI) is greater than 0, the TV range for the No. 200 sieve size is 8-12 (4).

**Add Table 703-16:**

**Table 703-16**

**Gradation Requirements for Screened Aggregate**

| Sieve Size | Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Grading Designation | | | | | | |
| | L | M | N | O | P | Q | R |
| 6 inch | 100 | 100 | | | | | |
| 4 inch | | | 100 | 100 | | | |
| 3 inch | | | | | 100 | 100 | |
| 2 inch | | | | | | | 100 |
| No. 4 | | 15-45 | | 15-45 | | 15-45 | |

**Aggregate shall be obtained from an approved source, and certified to contain no more than 0.25 % asbestos to be in compliance with California Health and Safety Code Sections 93105 and 93106.**

703.06_nat_us_03_02_2005

**703.10(e) Flakiness Index.**

Delete and replace with the following:

Flakiness Index, FLH T 508 30% max.

**703.10(i) Adherent Coating.**

Add the following:

Adherent coating on the aggregate, FLH T 512 0.5% max.

703.07_nat_us_03_02_2005

**Table 703-2 Correction**

Include the following substitution

In Table 703-2, delete the "436 – 74 (6)" percent by mass passing for grading E (base) No. 4 sieve size and substitute "36 – 74 (6)."

**Table 703-2 Correction**

Include the following substitution

In Table 703-2, delete the "436 – 74 (6)" percent by mass passing for grading E (base) No. 4 sieve size and substitute "36 – 74 (6)."

703.10_nat_us_03_02_2005

Delete Table 703-7 and substitute the following:

**Table 703-7 Target Value Ranges**

**Table 703-7**
**Target Value Ranges for**
**Single and Multiple Course Surface Treatment Aggregate Gradation**

| Sieve Size | Percent by Mass Passing Designated Sieve (AASHTO T 27 & T 11) | | | | | |
|---|---|---|---|---|---|---|
| | Grading Designation | | | | | |
| | A | B | C | D | E | F |
| 1½ inch | 100(1) | | | | | |
| 1 inch | 90-100(3) | 100(1) | | | | |
| ¾ inch | 0-35(5) | 90-100(3) | 100(1) | | | |
| ½ inch | 0-8(3) | 0-35(5) | 90-100(3) | 100(1) | | |
| ⅜ inch | — | 0-12(3) | 0-35(5) | 85-100(3) | 100(1) | 100(1) |
| No. 4 | — | — | 0-12(3) | 0-35(5) | 85-100(3) | 85-100(1) |
| No. 8 | — | — | — | 0-8(3) | 0-23(4) | — |
| No. 200 | 0-1(1) | 0-1(1) | 0-1(1) | 0-1(1) | 0-1(1) | 0-10(1) |

(1) Statistical procedures do not apply.
( ) The value in the parentheses is the allowable deviation (±) from the target values.

**705.02 Riprap Rock.**

Delete Table 705-1 and replace it with the following:

**Gradation Requirements for Riprap**

| Class | Percent of Rock by Mass | Mass (pounds) | Approximate Min. Dimension [b,c] (inches) |
|---|---|---|---|
| 1 | 20 | 22 to 33 | 6 to 8 |
| | 30 | 11 to 22 | 5 to 6 |
| | 40 | 1.1 to 11 | 2 to 5 |
| | 10[a] | 0 to 1.1 | 0 to 2 |
| 2 | 20 | 55 to 110 | 8 to 10 |
| | 30 | 22 to 55 | 6 to 8 |
| | 40 | 2.2 to 22 | 3 to 6 |
| | 10[a] | 0 to 2.2 | 0 to 3 |
| 3 | 20 | 220 to 330 | 14 to 16 |
| | 30 | 110 to 220 | 10 to 14 |
| | 40 | 11 to 110 | 5 to10 |
| | 10[a] | 0 to11 | 0 to 5 |
| 4 | 20 | 550 to 770 | 18 to 20 |
| | 30 | 220 to 570 | 14 to 18 |
| | 40 | 22 to 220 | 6 to 14 |
| | 10[a] | 0 to 22 | 0 to 6 |
| 4a | 20 | 770 to1353 | 20 to 24 |
| | 30 | 330 to 770 | 16 to 20 |
| | 40 | 33 to 330 | 7 to16 |
| | 10[a] | 0 to 33 | 0 to 7 |
| 5 | 20 | 1540 to 2200 | 26 to 28 |
| | 30 | 770 to 1540 | 20 to 26 |
| | 40 | 55 to 1100 | 8 to 20 |
| | 10[a] | 0 to 55 | 0 to 8 |
| 6 | 20 | 1870 to 3520 | 28 to 34 |
| | 30 | 1100 to 1870 | 22 to 28 |
| | 40 | 110 to 1100 | 10 to 22 |
| | 10[a] | 0 to 110 | 0 to 10 |
| 7 | 20 | 4400 to 5940 | 35 to 39 |
| | 30 | 2200 to 4400 | 28 to 35 |
| | 40 | 220 to 2200 | 14 to 28 |
| | 10[a] | 0 to 220 | 0 to 14 |
| 8 | 20 | 7000 to 10000 | 42 to 47 |
| | 30 | 4000 to 7000 | 35 to 42 |
| | 40 | 400 to 4000 | 16 to 35 |
| | 10[a] | 0 to 400 | 0 to 16 |

a) Furnish spall and rock fragments graded to provide a stable dense mass.

b) The volume of a rock with these cubic dimensions has a mass approximately equal to the specified rock mass.

c) Furnish rock with breadth and thickness at least one-third its length.