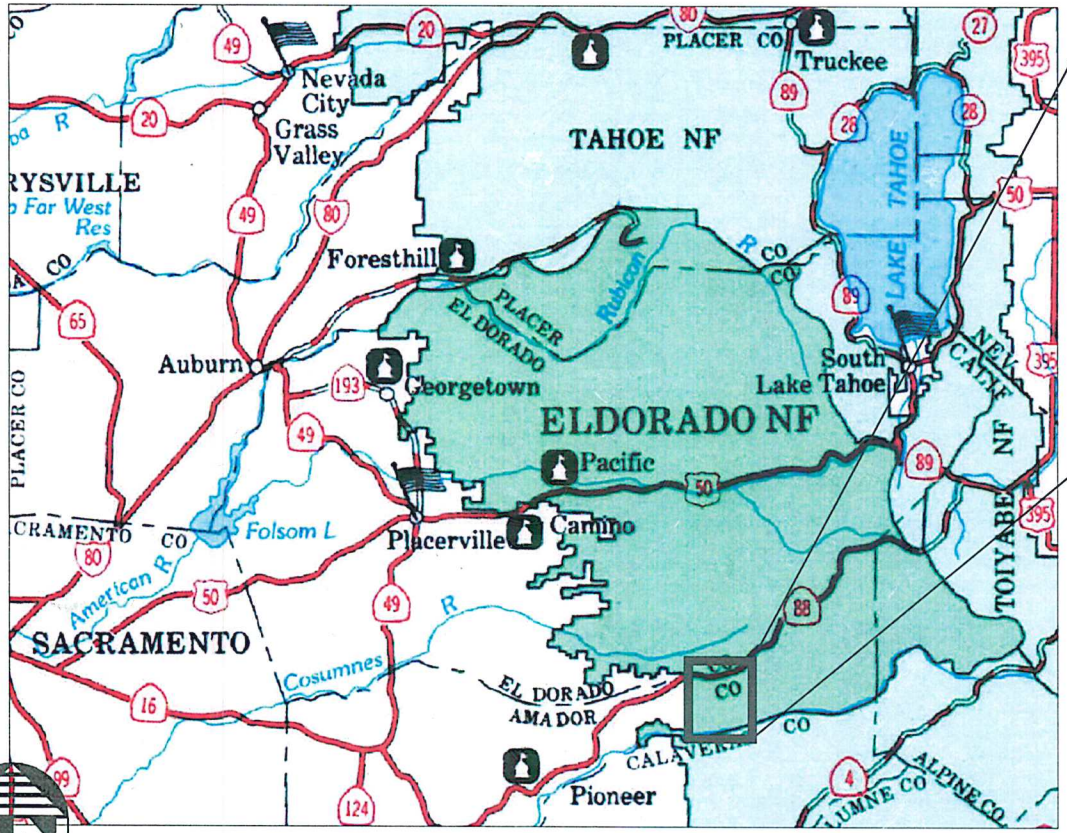
Upper Mokelumne River Watershed Authority

UPPER MOKELUMNE RIVER WATERSHED AUTHORITY
ELDORADO NATIONAL FOREST
AMADOR RANGER DISTRICT
AMADOR COUNTY

FOREST SERVICE U S DEPARTMENT OF AGRICULTURE

POWER FIRE CULVERT IMPROVEMENT AND EROSION CONTROL PROJECT - PANTHER CREEK SUB-WATERSHED



ELDORADO NATIONAL FOREST
VICINITY MAP

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

TABLE OF CONTENTS

ROAD / SITE NO	NAME	TYPE OF WORK	LENGTH (MILES)	SHEET NO.
	TITLE SHEET			1
	LOCATION MAP			2-3
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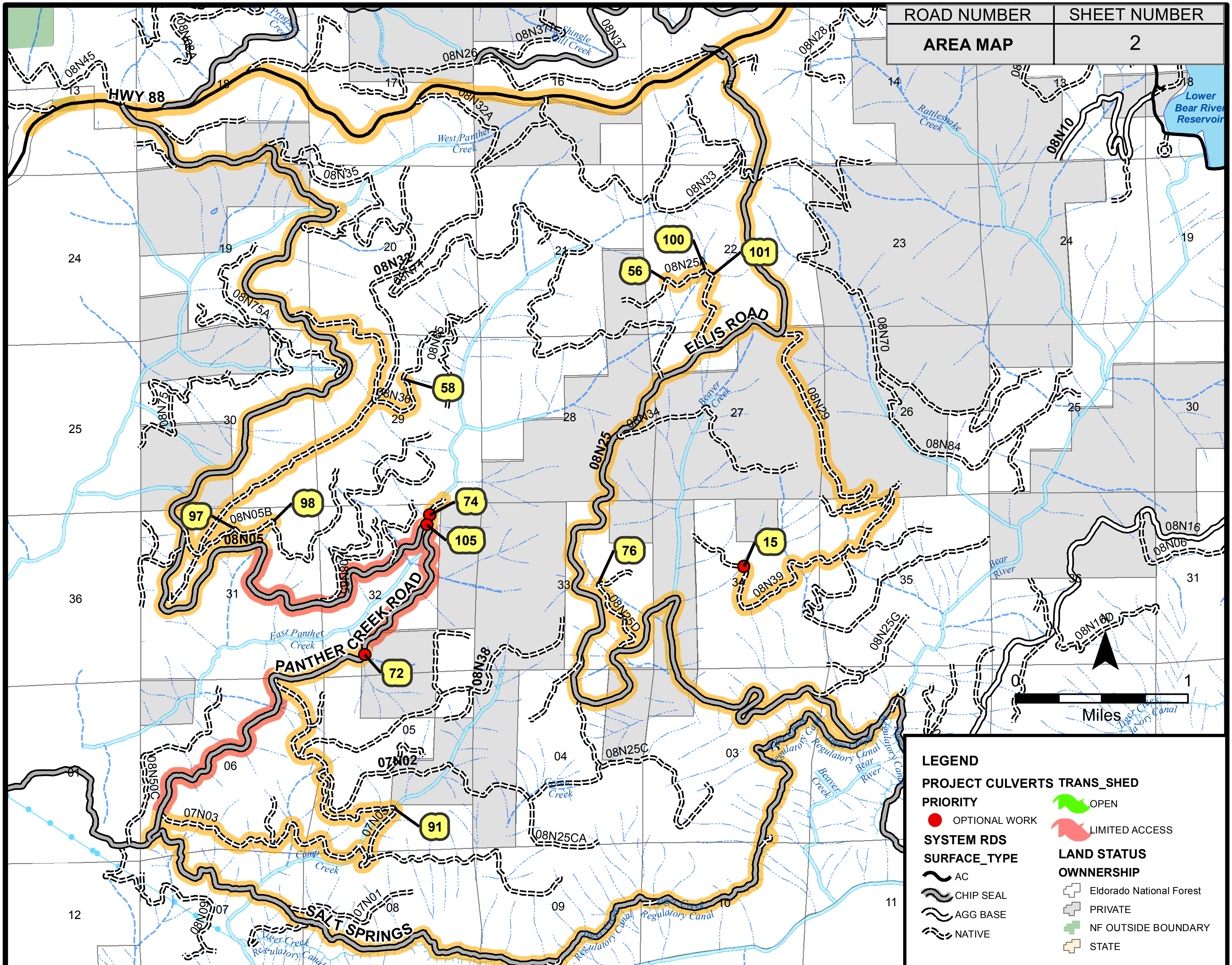
07N05 / #91	CAMP TIE	REQUIRED	0.10	9
08N05 / #72	PANTHER CREEK	OPTIONAL	0.10	10
08N05B / #97_98	EAST PANTHER	REQUIRED	0.20	11
08N05G / #74_105	EAST PANTHER 36	OPTIONAL	0.20	12
08N25A / #56	BRUSHY POINT	REQUIRED	0.10	13
08N25A / #100_101	BRUSHY POINT	REQUIRED	0.20	13
08N25D / #76	ELLIS SPLIT SPUR	REQUIRED	0.10	14
08N36 / #58	INTERMEDIATE	REQUIRED	0.10	15
08N39 / #15	EAST BEAVER CREEK	OPTIONAL	0.10	16
	GENERAL TYPICALS			17-31

LANDMARK ENVIRONMENTAL — Supporting clients through environmental compliance and planning.				
DATE	Rosi Sepinoza 2/27/2020 DATE	Michael P. Montgomery 2/27/2020 DATE	Paul Leuch acting for Rick Hopson 2/28/2020 DATE	DATE 3/2/20
DESIGNED BY 02/27/2020	REVIEWED BY:	FOREST ENGINEER	DISTRICT RANGER	APPROVED BY: FOREST SUPERVISOR


ROAD NUMBER
SHEET NUMBER
AREA MAP
2
LEGEND
PROJECT CULVERTS PRIORITY
OPTIONAL WORK
SYSTEM RDS
SURFACE_TYPE
AC
CHIP SEAL
AGG BASE
NATIVE
TRANS_SHED
OPEN
LIMITED ACCESS
LAND STATUS
OWNNERSHIP
Eldorado National Forest
PRIVATE
NF OUTSIDE BOUNDARY
STATE
0
1
Miles
HWY 88
ELLIS ROAD
PANTHER CREEK ROAD
SALT SPRINGS
08N25
08N38
08N05
08N05B
08N32
08N35
08N26
08N33
08N34
08N29
08N70
08N84
08N39
08N10
08N16
07N02
07N03
08N25C
08N25CA
08N50C
Lower Bear River Reservoir
West Panther Creek
East Panther Creek
Rattlesnake Creek
Beaver Creek
Bear River
Camp Creek
Tiger Creek Regulatory Canal
100
101
56
58
97
98
74
105
76
15
72
91

Date: 1/2/2020

ROAD NUMBER	SHEET NUMBER
AREA MAP TRAGEDY	3

PIT DEVELOPEMENT AND USE:

THIS PIT MAY BE USED AS AN ALTERNATIVE TO COMMERCIAL SOURCES OF COMMON BORROW AND RIPRAP. THERE IS NO GUARANTEE AS TO THE AMOUNT AND ABILITY TO SUPPLY ALL REQUIRED MATERIAL.

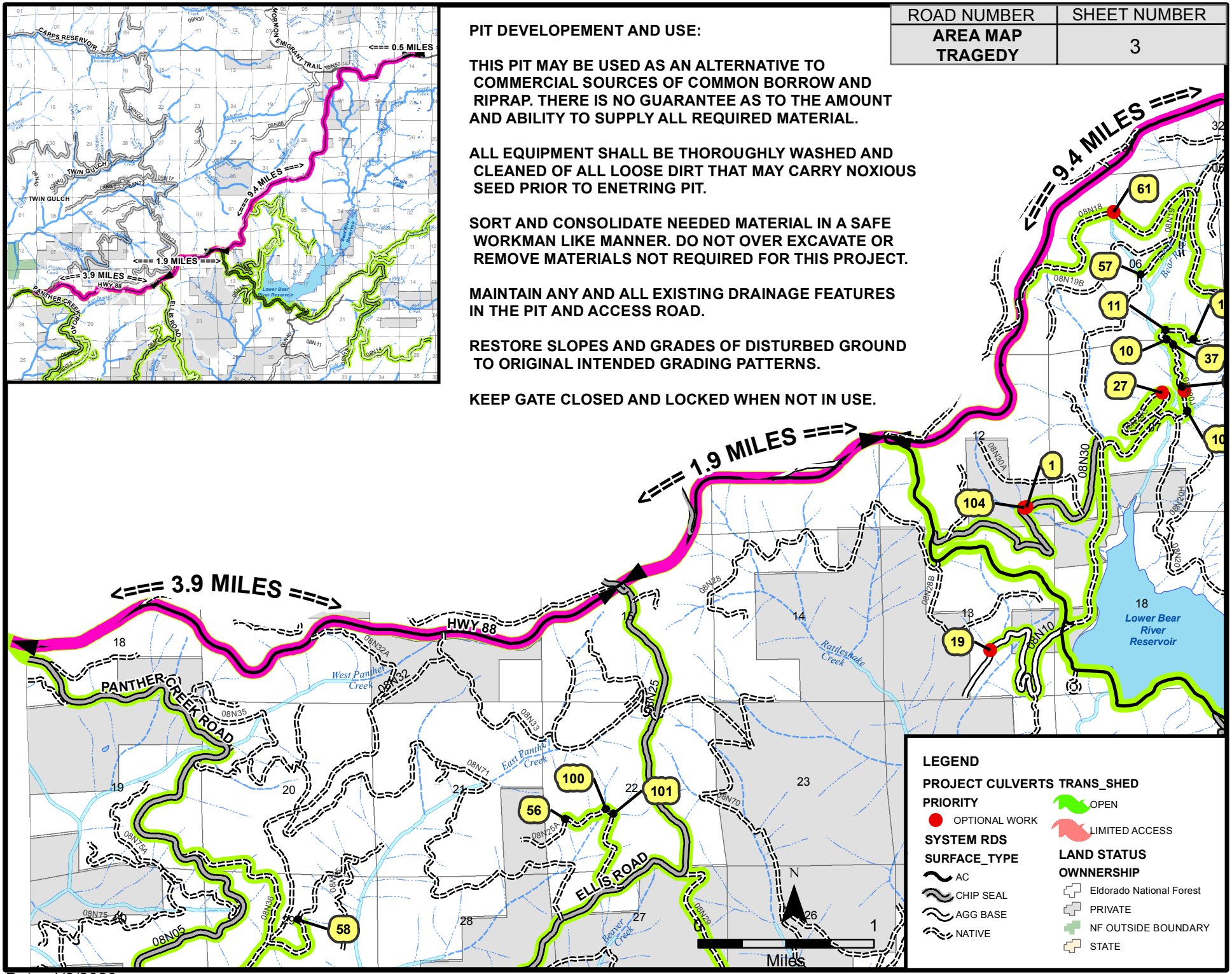
ALL EQUIPMENT SHALL BE THOROUGHLY WASHED AND CLEANED OF ALL LOOSE DIRT THAT MAY CARRY NOXIOUS SEED PRIOR TO ENETRING PIT.

SORT AND CONSOLIDATE NEEDED MATERIAL IN A SAFE WORKMAN LIKE MANNER. DO NOT OVER EXCAVATE OR REMOVE MATERIALS NOT REQUIRED FOR THIS PROJECT.

MAINTAIN ANY AND ALL EXISTING DRAINAGE FEATURES IN THE PIT AND ACCESS ROAD.

RESTORE SLOPES AND GRADES OF DISTURBED GROUND TO ORIGINAL INTENDED GRADING PATTERNS.

KEEP GATE CLOSED AND LOCKED WHEN NOT IN USE.



Date: 1/3/2020

PROJECT	SHEET NUMBER
PANTHER	4

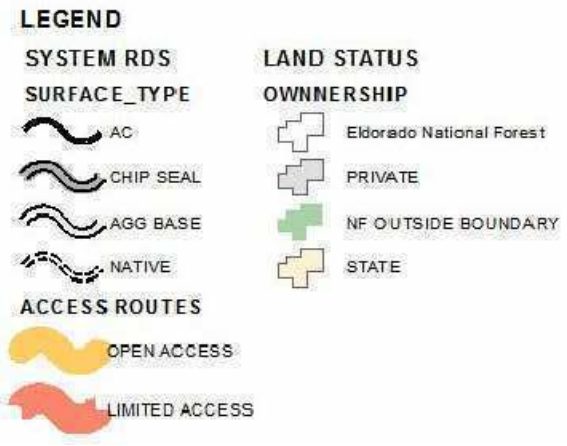
NOTES AND LEGEND

GENERAL NOTES

* Unless otherwise specified, notes apply to all roads.
** 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.
* 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
MES = Metal End Section
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_Class III
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



NOTES AND LEGEND

PROJECT	SHEET NUMBER
PANTHER	5

ROAD NUMBER	SPECIAL NOTES
ALL ROADS	Erosion control measures are required at all Staging Areas and when excavation occurs in or near wet drainages. Staging Area Erosion Control is incidental to other paid work. Contractor to select the type of erosion control necessary for work. See typicals for approved methods of erosion control. All work by Contractor at the Tragedy Springs Pit is incidental to other paid work items, including but not limited to; Grading and shaping, Erosion Control if required, sorting and grading rock, and any clean up that may be necessary to bring site back to pre-entry conditions. Locations of work to be done will be staked on the ground by the Contracting Officers Representative. Reconditioning of Roadbed consist of all grading and shaping required to complete work at each site. The construction limits for each site, unless shown otherwise in the Drawings, is 150 linear feet either side of site or 300 linear feet total. All roads used by Contractor during road construction shall be maintained by Contractor. C.M.P. lengths are approximate. Payment for C.M.P. will be for the lengths necessary to complete the job. 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. 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. Riprap, Class III, may come from a commercial source or may be generated and collected at the Tragedy Springs Pit site as long as it meets size requirements. Units for riprap are in cubic yards (CY) and will be measured in place for payment. **Commercial Rock Sources** - *Aggregate shall be obtained from an approved source, Certified 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 .* **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. Forest Service will designate borrow sites as needed. Contractor shall submit a **Traffic Control Plan** for extended road closures prior to work.

NOTES AND LEGEND

PROJECT	SHEET NUMBER
PANTHER	6

ROAD NUMBER	SPECIAL NOTES
	Siera Nevada Yellow-legged Frog (SNYLF) Site Requirements-
ALL ROADS	If SNYLF is sited within any site, operations will cease in the sighting area and a Forest Service aquatic biologists shall be informed pf sighting immediately.
	When Shown In The Drawings, surveys shall be conducted prior to implementation of the project where heavy equipment will enter suitable SNYLF habitat and where water drafting or diversion work occurs in suitable SNYLF habitat.
SITES: 76,91, 98,100	In critical habitat areas or when Shown In The Drawings, A Forest service biologist or an approved biological monitor will be present during culvert reconstruction and/or dewatering sites that fall within utilized SNYLF habitat.
ALL ROADS	Within suitable SNYLF habitat sites; 1) tightly woven fiber netting or similar material shall not be used for erosion control or other purposes to prevent SNYLF being trapped, injured or killed, and 2) plastic mono-filament netting or similar material shall not be used since SNYLF may become entangled or trapped in it. Use Certified weed free bales. See Typicals.
	Existing waterholes and other aquatic sites including ponds, lakes and streams used for water drafting or diverting would be surveyed for Aquatic Threaten and Endangered Species (TES). In the event TES species are found to occur at drafting sites; sites will not be used.
	The use of low velocity water pumps and screening devices for pumps will be utilized during drafting or dewatering for culvert reconstruction to minimize risk to SNYLF. A drafting box measuring 2 feet on all sides covered in a maximum of 0.25 inch screening is required. Drafting would be from the deepest water source, near the bottom. See Typicals.
SITES: 91,97, 98,100. 101,105	**Cultural and Archeological Site Requirements-**
	Notify Forest Service 1 week prior to any site work to schedule an archeological monitor. Archeologists may be present as on-site monitors during the project implementation at locations identified to have cultural resources. Avoid flagged areas.
	Botanical Site Requirements-
SITES: 72, 91, 97,98	Sites have know invasive plants associated with them. Sites will be flagged prior to construction. Sites shall be protected and avoided.
SITES: 97, 98, 100,101, 105	Notify Forest Service 1 week prior to any site work to schedule a Botanist survey. Sites need to be surveyed and flagged. Avoid flagged areas.
	Limited Operating Period Site Requirements-
SITES: 74, 76. 105	No work on site until after August 15

MATERIALS LIST AND QUANTITIES

PROJECT	SHEET NUMBER
PANTHER	7

SPECIFICATION DATA		Road No.	07N05 / #91	08N05 / #72	08N05B / #97_98	08N05G / #74_105	08N25A / #56	08N25A / #100_101	SUB TOTAL
		Type:	REQUIRED	OPTIONAL	REQUIRED	OPTIONAL	REQUIRED	REQUIRED	
Spec No.	Item Description	Units	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	
15101	Mobilization - Applies to Project	LS	ONE TIME COST						
15701	Erosion Control - SNYLF Barrier / Silt Fence	LS	1		1			1	3
15702	Erosion Control - Silt Fence	LF			100	250	50	100	500
20101	Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER or As Specified In The Drawings..	LS	1	1	2	1		2	7
20301	Removal and Dispose of Metal Barricade	Each				1			1
20303	Removal and Disposal of Culverts	Each	1		2	2	1	2	8
20403	Drainage Excavation, Type Catch Basin	Each			1	1			2
25101	Placed Riprap, Class II (Local Rock)	CY							
25101	Placed Riprap, Class III (Tragedy Pit / Commercial Source)	CY	50	6	20	14	14	34	138
30101	Aggregate Base, Gradation B, Compaction Method D	Ton	48		72	72	48	96	336
30301	Reconditioning of Roadbed, Roller Compaction - Method B	LS	1		2	2	1	2	8
60201	24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary.	LF			50				50
60203	36-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF			40	40	50	50	180
60205	48-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF						70	70
60206	57" x 38" Arch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF				30			30
60210	83" x 57" Arch Corrugated Metal Pipe, 0.138-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF	40						40
60211	24" Metal End section	Each			1				1
60213	36" Metal End section	Each			1		1	1	3
60215	48" Metal End section	Each						1	1
60216	57" x 38" Arch Metal End section	Each				1			1
60220	83" x 57" Arch Metal End section	Each	1						1
60501	Culvert Underdrains - Includes All Geotextile Fabric, Rock and Labor To complete Work	CY	10		3				13
60701	Clean, Recondition and Repair Existing Culverts	Each		1					1
60702	Channel Excavation and Repair (40 LF)	Each		1					1
61901	Install Metal Gate, Size 16 feet	Each				1			1

MATERIALS LIST AND QUANTITIES

PROJECT	SHEET NUMBER
PANTHER	8

SPECIFICATION DATA									
		Road No.	08N25D / #76	08N36 / #58	08N39 / #15				SUB TOTAL
		Type:	REQUIRED	REQUIRED	OPTIONAL				
Spec No.	Item Description	Units	Quantity	Quantity	Quantity	Quantity	Quantity	Quantity	
15101	Mobilization - Applies to Project	LS	ONE TIME COST						
15701	Erosion Control - SNYLF Barrier / Silt Fence	LS	1						1
15702	Erosion Control - Silt Fence	LF		50	80				130
20101	Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER or As Specified In The Drawings..	LS	1	1					2
20303	Removal and Disposal of Culverts	Each	1	1	1				3
20404	Drainage Excavation, Type Inlet Basin	Each		1					1
20410	Borrow and Placement - Placement Method 5	CY	500						500
25101	Placed Riprap, Class III (Tragedy Pit / Commercial Source)	CY	55	6	12				73
30101	Aggregate Base, Gradation B, Compaction Method D	Ton	144	24	24				192
30301	Reconditioning of Roadbed, Roller Compaction - Method B	LS	1	1	1				3
60203	36-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF		40	40				80
60207	60-Inch Corrugated Metal Pipe, 0.109-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF	50						50
60213	36" Metal End section	Each		1	1				2
60217	60" Metal End section	Each	1						1
60501	Culvert Underdrains - Includes All Geotextile Fabric, Rock and Labor To complete Work	CY	11		3				14

ROAD 07N05 - NATIVE SURFACE ROAD. CLEARING REQUIRED - CHIP SLASH . DE-WATERING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE - 91	9

SITE -91
REMOVE EXISTING 36 CMP
INSTALL 83"X57"X40' ARCH CMP W/MES
UNDERDRAIN REQUIRED
SPOT ROCK 48TON AB
50 CY CLASS III RIPRAP INLET/OUTLET SLOPE
SEE SITE PLAN FOR ADDITIONAL INFO.

NOTE:
SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK. EROSION CONTROL PLAN REQUIRED. NO DEWATERING REQUIRED WHEN DRY.

SITE-91 IS ALSO LOCATED WITHIN A HISTORICAL SITE. NOTIFY FOREST SERVICE IN ADVANCE TO ENSURE MONITOR AVAILABILITY. AN ARCHEOLOGIFCAL MONITOR SHALL BE PRESENT DURING SITE IMPROVEMENTS.

07N05

05

08

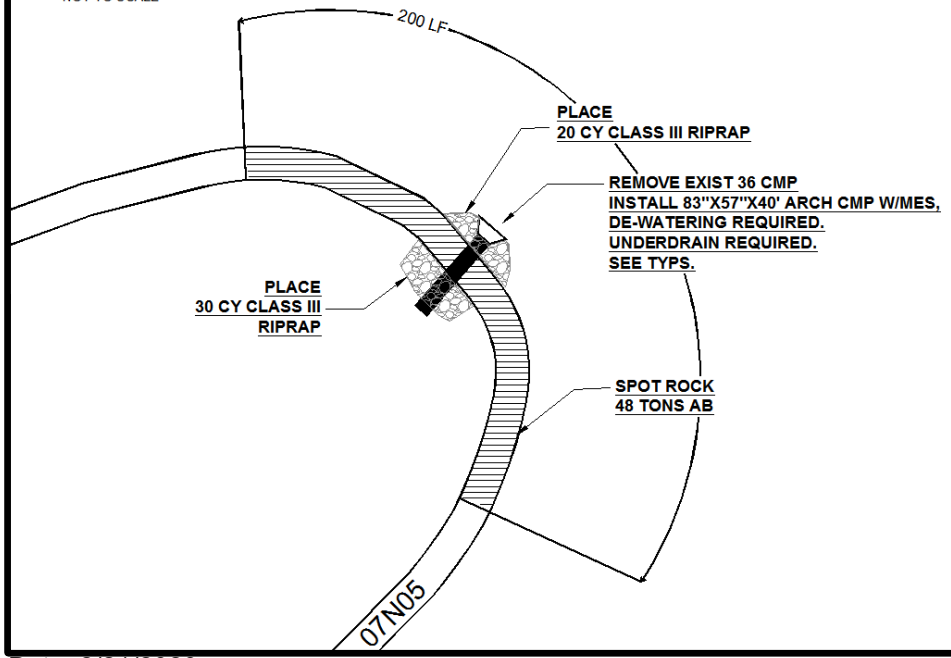
5000

4700

4600

91

SITE PLAN
NOT TO SCALE

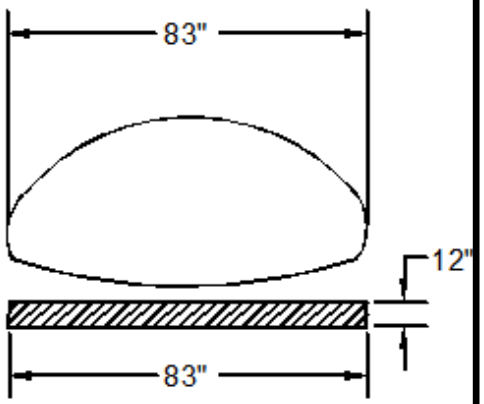


N

0 500

Feet

UNDER DRAIN DETAIL
SEE TYPS FOR ADDITIONAL INFO

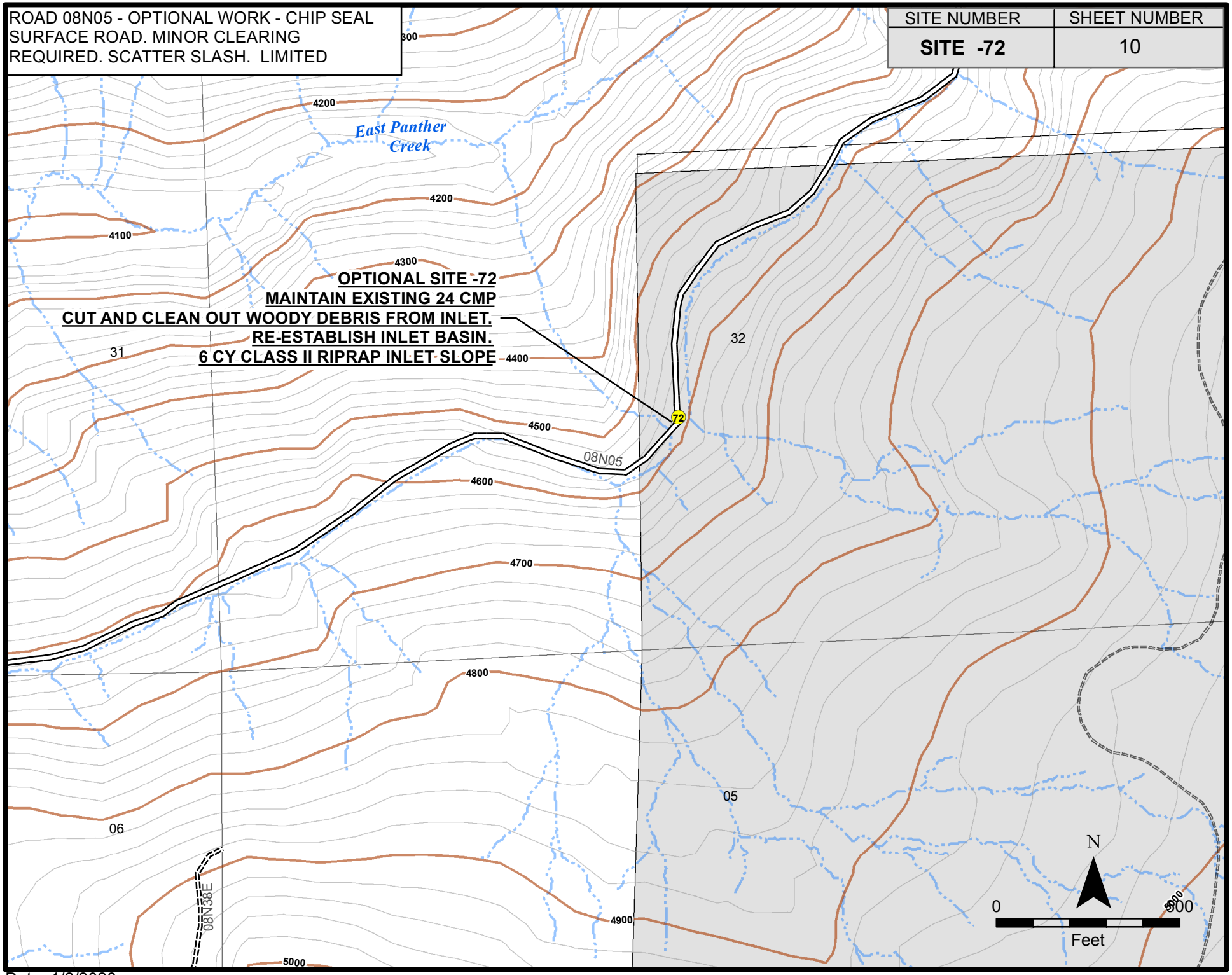


UNDER DRAIN -
83"WIDE X 12" DEPTH X 40' LONG
(10 CY)

Date: 2/21/2020

ROAD 08N05 - OPTIONAL WORK - CHIP SEAL SURFACE ROAD. MINOR CLEARING REQUIRED. SCATTER SLASH. LIMITED

SITE NUMBER	SHEET NUMBER
SITE -72	10



E-72

Date: 1/2/2020

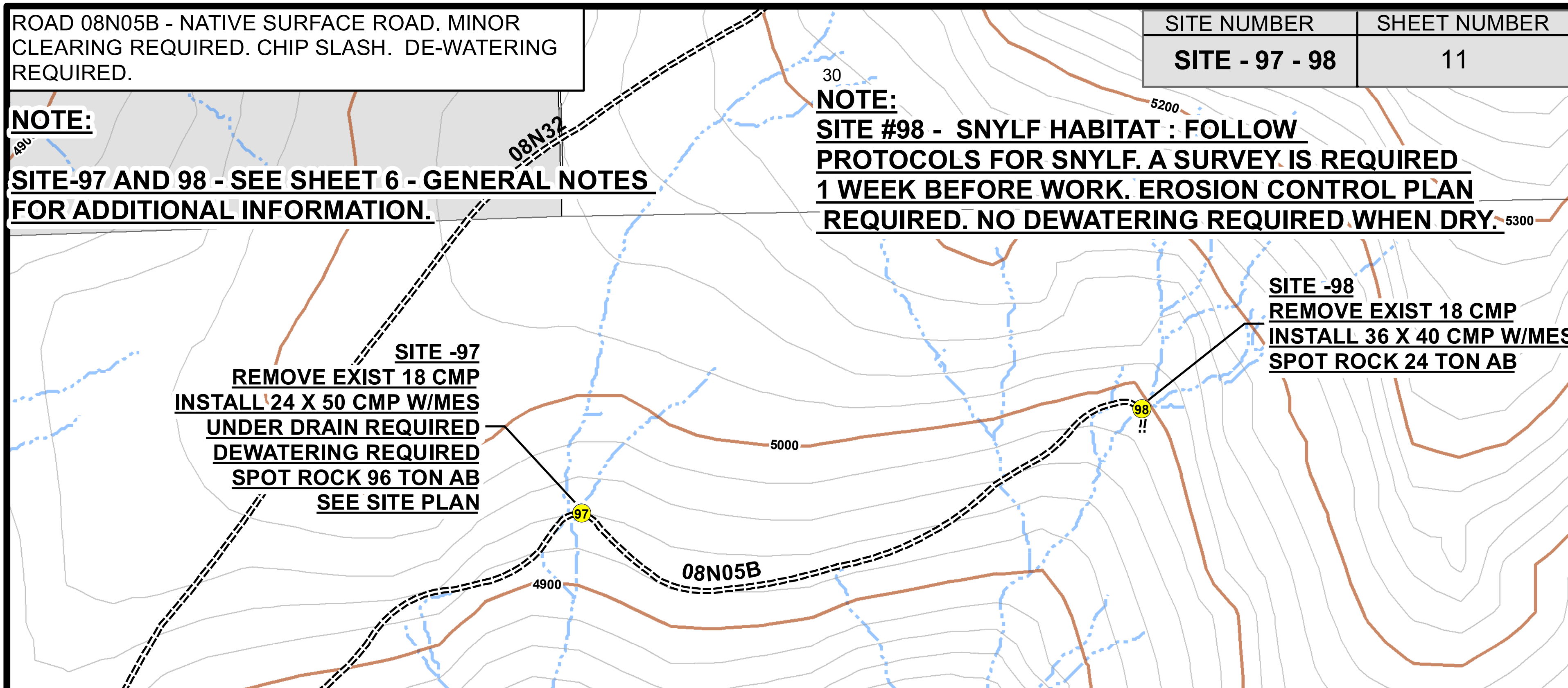
ROAD 08N05B - NATIVE SURFACE ROAD. MINOR CLEARING REQUIRED. CHIP SLASH. DE-WATERING REQUIRED.

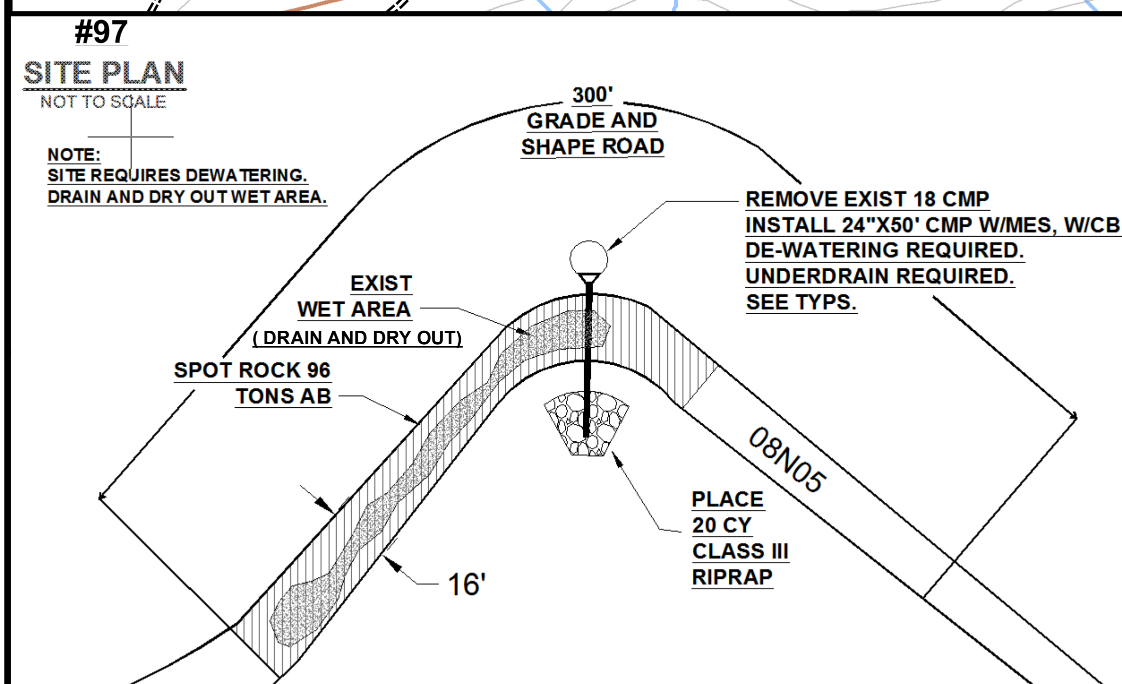
SITE NUMBER	SHEET NUMBER
SITE - 97 - 98	11

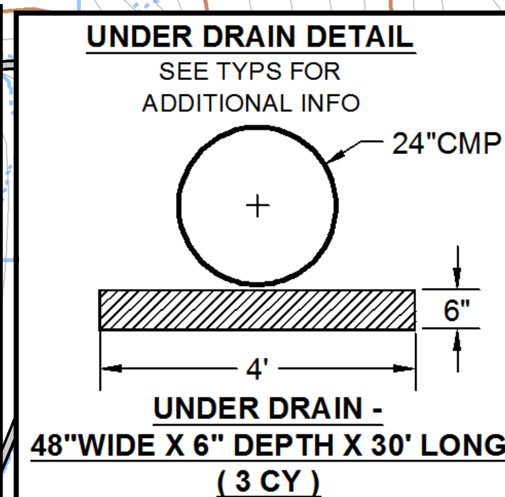
NOTE:

SITE-97 AND 98 - SEE SHEET 6 - GENERAL NOTES FOR ADDITIONAL INFORMATION.

NOTE:
SITE #98 - SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK. EROSION CONTROL PLAN REQUIRED. NO DEWATERING REQUIRED WHEN DRY.







Date: 2/21/2020

ROAD 08N05G - OPTIONAL WORK - NATIVE SURFACE ROAD. CLEARING REQUIRED. CHIP SLASH. LIMITED ACCESS TO SITES.

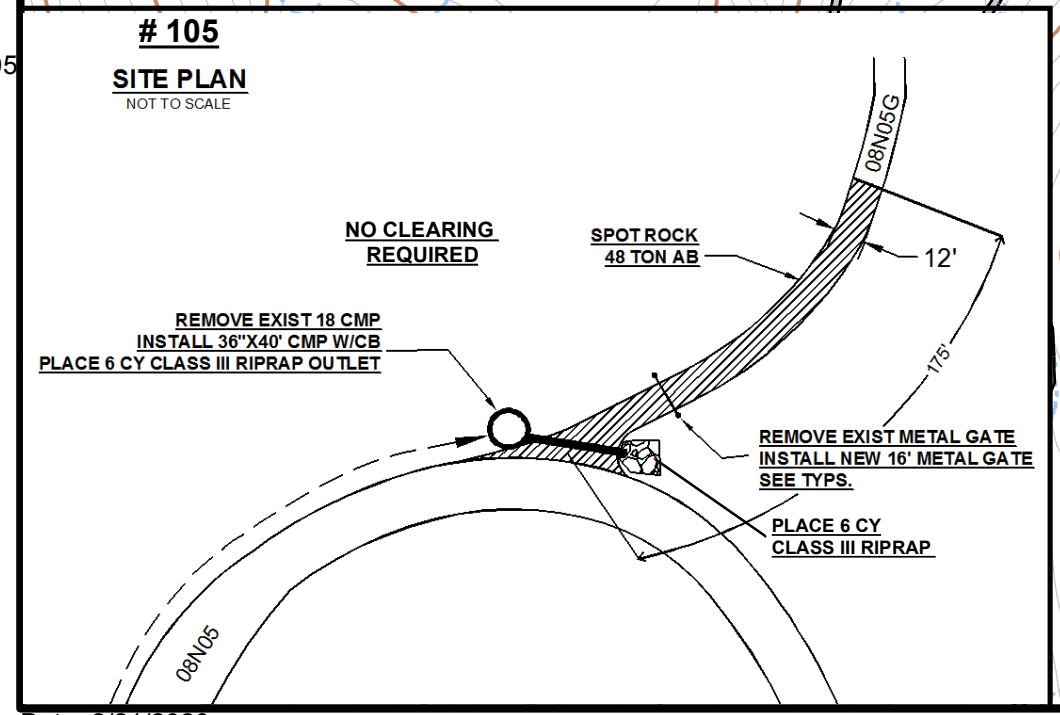
SITE NUMBER	SHEET NUMBER
SITE - 74_105	12

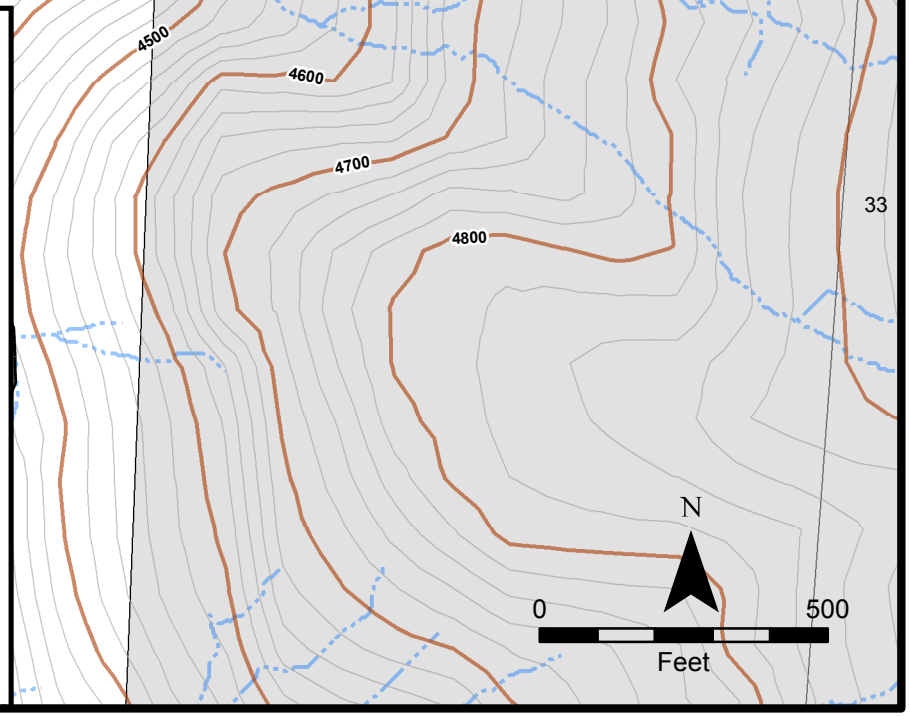
NOTE:
THESE SITES HAVE A LIMITED OPERATING PERIOD TO PROTECT SENSITIVE SPECIES. NO WORK ON THIS SITE MARCH 1 TO AUGUST 15TH.

SITE-105 - SEE SHEET 6 - GENERAL NOTES FOR ADDITIONAL INFORMATION.

OPTIONAL SITE -74
REMOVE EXISTING 18 CMP
INSTALL 57"X38"X 30' ARCH CMP W/MES
SPOT ROCK 24 TON AB
8 CY CLASS III RIPRAP OUTLET

OPTIONAL SITE -105
REMOVE EXISTING 18 CMP
REMOVE EXISTING METAL GATE
INSTALL 36" X 40' CMP W/CB
SPOT ROCK 48 TON AB
6 CY CLASS III RIPRAP OUTLET
INSTALL 16' METAL GATE
SEE SITE PLAN FOR ADDITIONAL INFO.





TE-74_105

Date: 2/21/2020

ROAD 08N25A -NATIVEL SURFACE ROAD.
CLEARING REQUIRED. CHIP SLASH.

SITE NUMBER	SHEET NUMBER
SITE 56_100_101	13

NOTE:

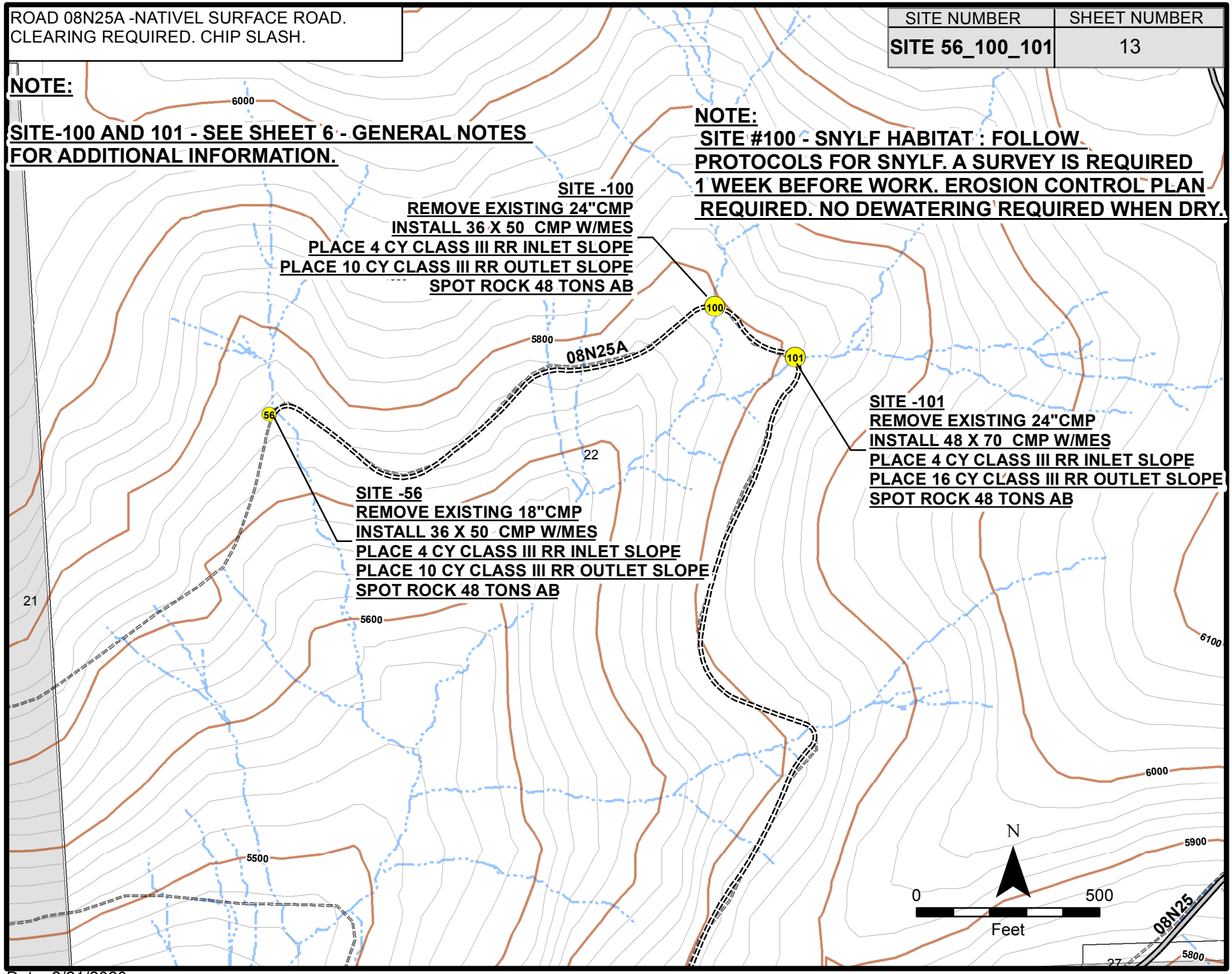
SITE-100 AND 101 - SEE SHEET 6 - GENERAL NOTES FOR ADDITIONAL INFORMATION.

NOTE:
SITE #100 - SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK. EROSION CONTROL PLAN REQUIRED. NO DEWATERING REQUIRED WHEN DRY.

SITE -100
REMOVE EXISTING 24"CMP
INSTALL 36 X 50 CMP W/MES
PLACE 4 CY CLASS III RR INLET SLOPE
PLACE 10 CY CLASS III RR OUTLET SLOPE
SPOT ROCK 48 TONS AB

SITE -56
REMOVE EXISTING 18"CMP
INSTALL 36 X 50 CMP W/MES
PLACE 4 CY CLASS III RR INLET SLOPE
PLACE 10 CY CLASS III RR OUTLET SLOPE
SPOT ROCK 48 TONS AB

SITE -101
REMOVE EXISTING 24"CMP
INSTALL 48 X 70 CMP W/MES
PLACE 4 CY CLASS III RR INLET SLOPE
PLACE 16 CY CLASS III RR OUTLET SLOPE
SPOT ROCK 48 TONS AB



101

Date: 2/21/2020

ROAD 08N25D - NATIVE SURFACE ROAD. CLEARING REQUIRED. CHIP SLASH. DE-WATERING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE - 76	14

NOTE:
THIS SITE HAS A LIMITED OPERATING PERIOD TO PROTECT SENSITIVE SPECIES. NO WORK ON THIS SITE MARCH 1 TO AUGUST 15.

SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK.
EROSION CONTROL PLAN REQUIRED.
NO DEWATERING REQUIRED WHEN DRY.

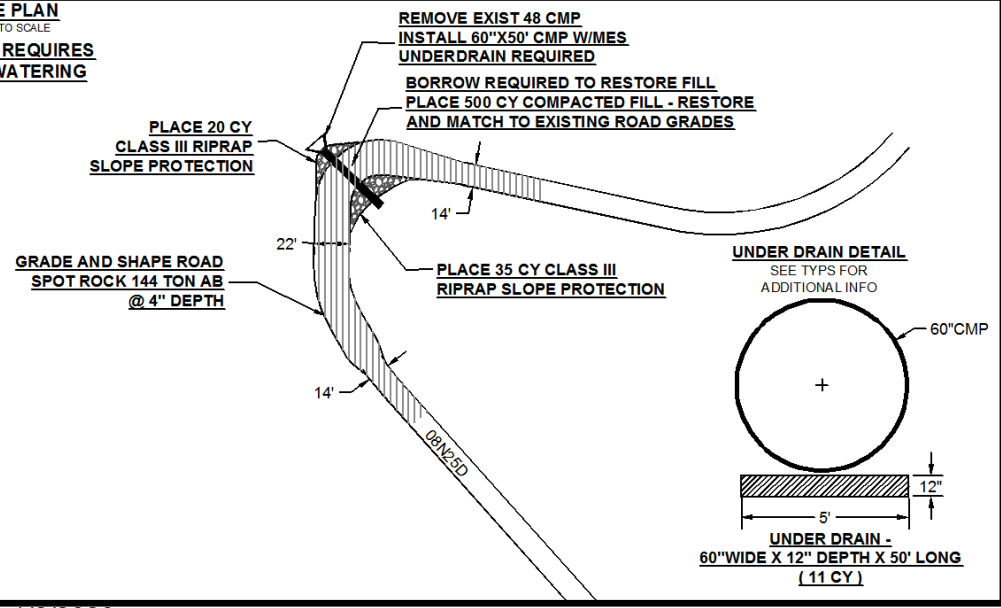
NEED BORROW ~500 CY
(COMMERCIAL / TRAGEDY PIT)

SITE -76
REMOVE EXISTING 48 CMP
INSTALL 60" X 50" CMP W/MES
UNDERDRAIN REQUIRED
SPOT ROCK 144 TON AB
55 CY CLASS III RIPRAP INLET/OUTLET SLOPE
SEE SITE PLAN FOR ADDITIONAL INFO.

5100
5000
4900
4800
4700
4600
34
33
76
08N25
08N25D

SITE PLAN
NOT TO SCALE

SITE REQUIRES DEWATERING



UNDER DRAIN DETAIL
SEE TYPS FOR ADDITIONAL INFO

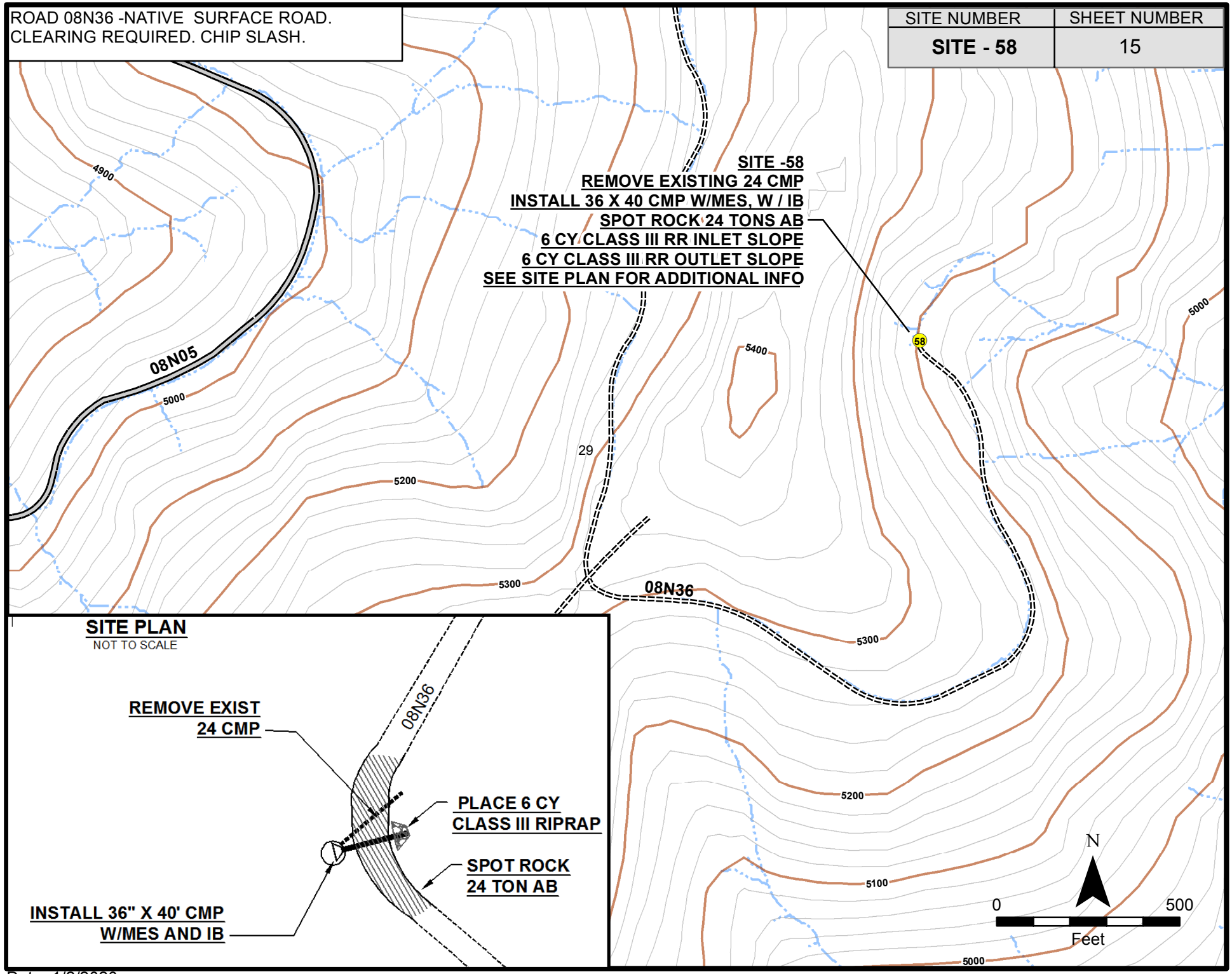
UNDER DRAIN -
60"WIDE X 12" DEPTH X 50' LONG
(11 CY)

N
0
500
Feet

Date: 1/2/2020

ROAD 08N36 -NATIVE SURFACE ROAD.
CLEARING REQUIRED. CHIP SLASH.

SITE NUMBER	SHEET NUMBER
SITE - 58	15

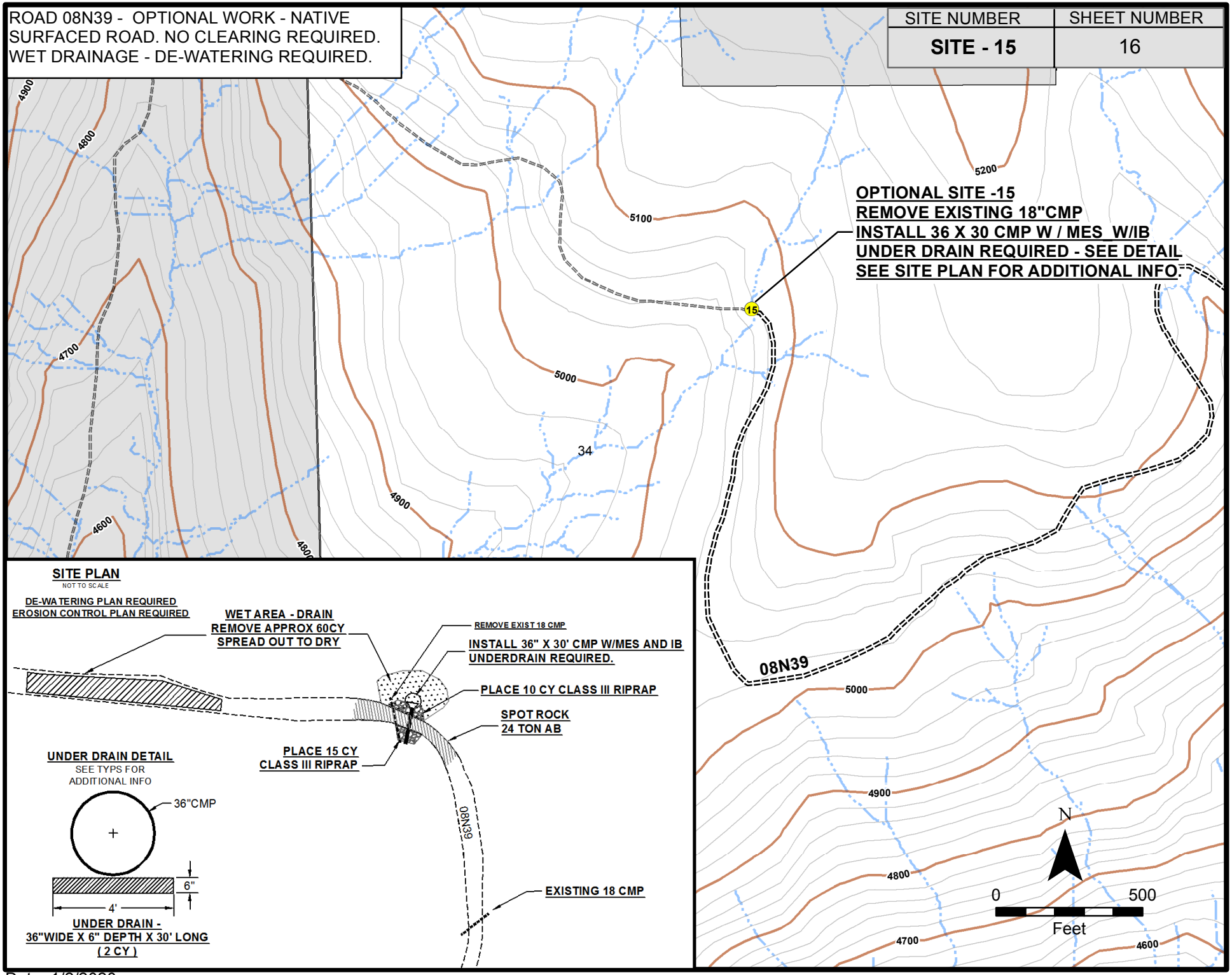


SITE PLAN
NOT TO SCALE

Date: 1/2/2020

ROAD 08N39 - OPTIONAL WORK - NATIVE SURFACED ROAD. NO CLEARING REQUIRED. WET DRAINAGE - DE-WATERING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE - 15	16



SITE PLAN
NOT TO SCALE

UNDER DRAIN DETAIL
SEE TYPS FOR
ADDITIONAL INFO

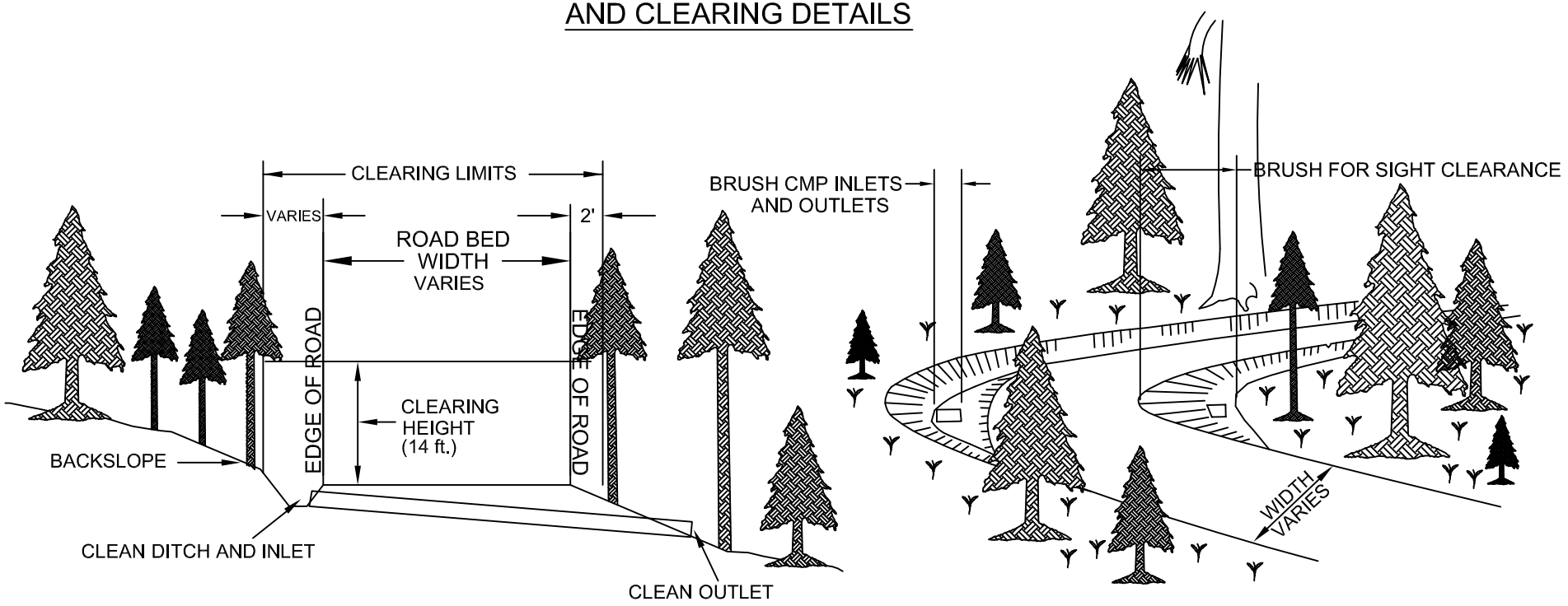
UNDER DRAIN -
36"WIDE X 6" DEPTH X 30' LONG
(2 CY)

E-15

Date: 1/2/2020

PROJECT	SHEET NUMBER
PANTHER	17

RECONDITIONING OF ROADBED AND CLEARING DETAILS



CLEARING NOTES:

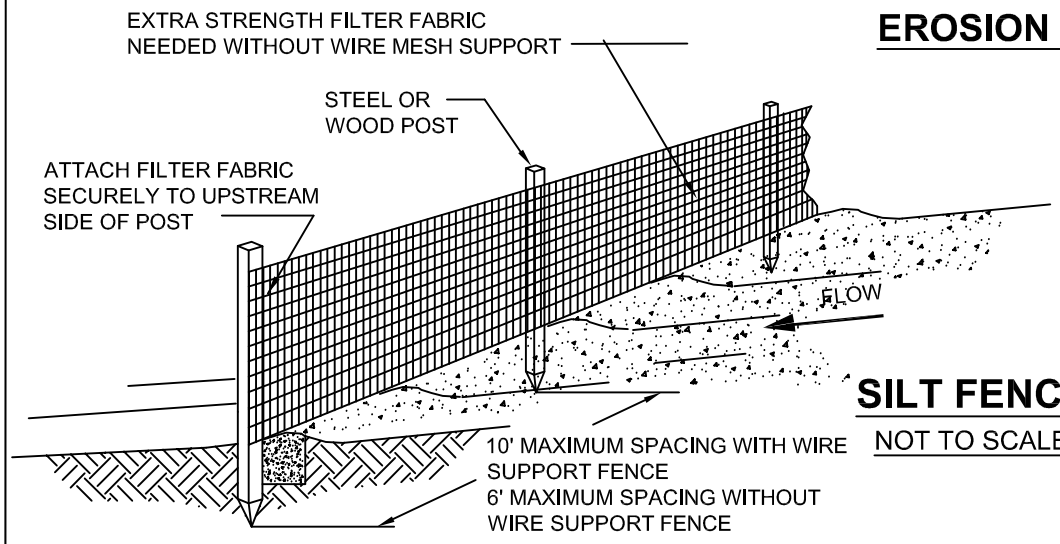
1. Clearing slash disposal methods shall be designated in the Schedule of Items or Shown On The Drawings.
2. Clear small trees (<10"dbh) and brush from all existing ditches, catch basins and inlet basins at each site
3. Clear small trees (<10"dbh) and brush above all CMP inlets for a distance of 10 linear feet either side of CMP. .
4. Side cast all chipped material onto fill slopes. Remove chipped material from all drainage inlets and ditches.

RECONDITIONING OF ROADWAY:

1. Outslope road bed 3% whenever possible. Remove all outside berms. When this is impractical relieve berm every 50 linear feet.
2. Clean and reshape all existing road ditches, leadoff ditches, dips associated with each site.
3. Drain all low points, ponds, swales.
4. Treat the full existing width of the road.

PROJECT	SHEET NUMBER
PANTHER	18

EROSION CONTROL TYP



SILT FENCE

NOT TO SCALE

NOTES:

1. TEMPORARY EROSION CONTROL SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

2. INSPECT AND REPAIR TEMPORARY EROSION CONTROL AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" MAXIMUM RECOMMENDED STORAGE HEIGHT.

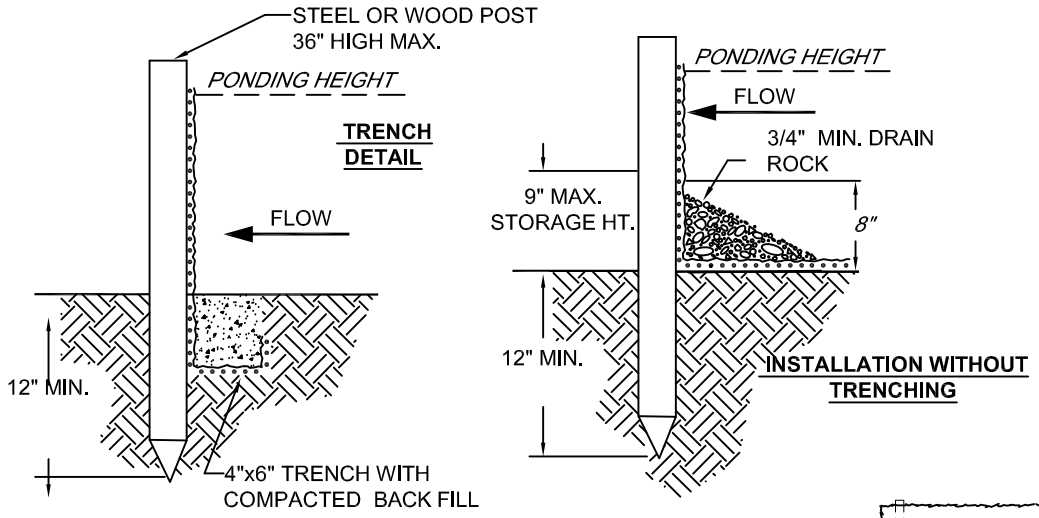
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

4. NO WORK SHALL BEGIN ON THIS CONTRACT UNTIL ALL NECESSARY POLLUTION CONTROL EQUIPMENT AND MATERIALS ARE ON SITE, AND IN PLACE.

5. COIR LOGS **MAY NOT** BE SUBSTITUTED FOR EROSION SILT FENCING

6. STRAW BALE BARRIER REQUIRED FOR ALL SITES AFFECTING SIERRA NEVADA YELLOW LEGGED FROG ,"SNYLF", HABITAT.

7. UPON COMPLETION OF THE PROJECT, ALL TEMPORARY POLLUTION CONTROL MEASURES SHALL BE REMOVED AND THE SITE RESTORED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.



STRAW BALE BARRIER

NOT TO SCALE

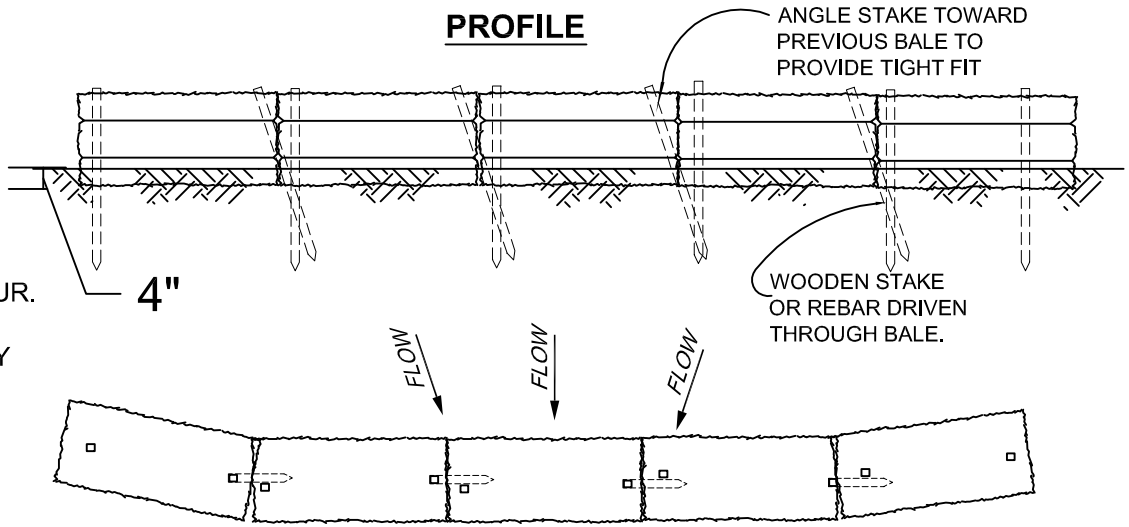
NOTES:

1. THE STRAW BALES SHALL BE PLACED ON SLOPE CONTOUR.

2. BALES TO BE PLACED IN A ROW WITH THE ENDS TIGHTLY ABUTTING.

3. KEY IN BALES 4-INCHES TO PREVENT EROSION OR FLOW UNDER BALES.

4. USE CERTIFIED WEED FREE STRAW ONLY.

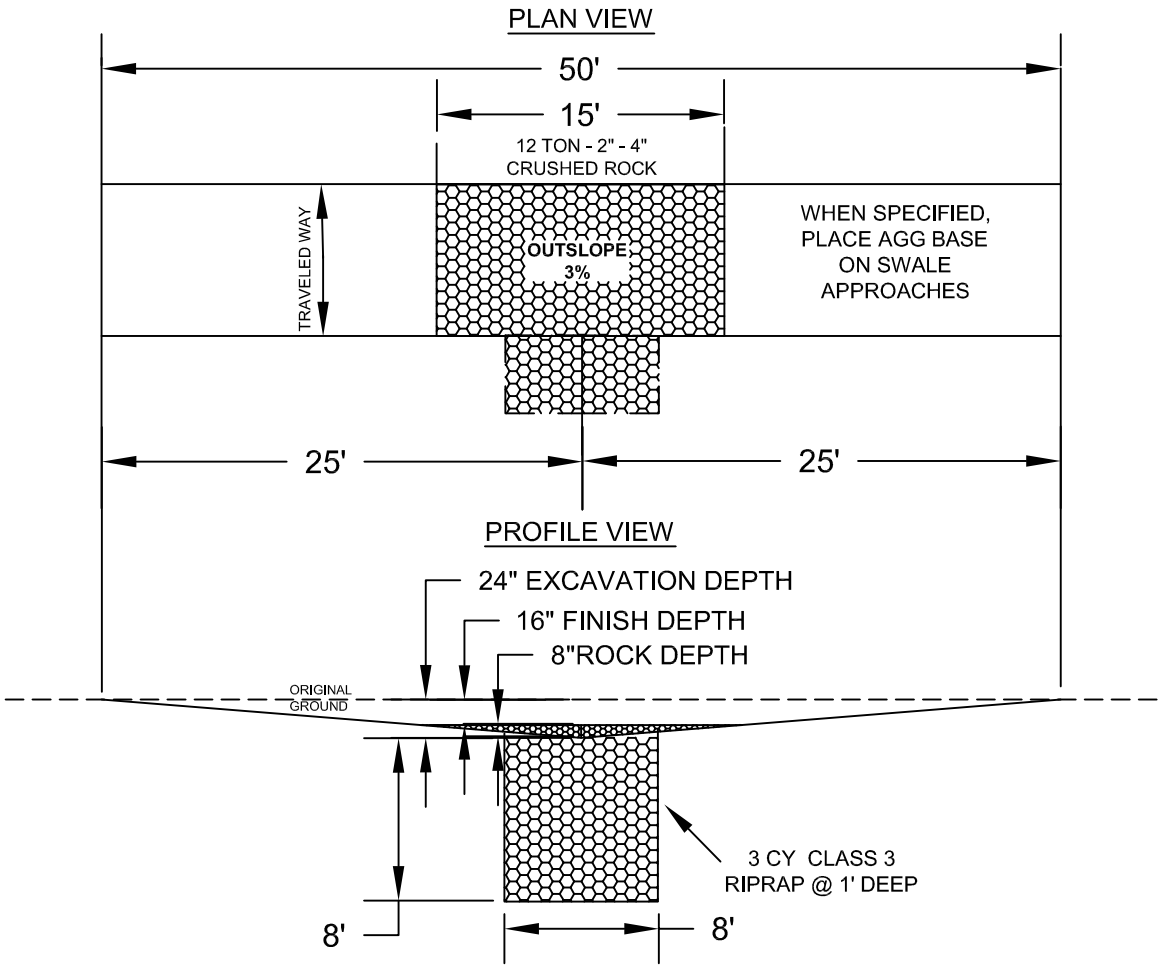


PLAN

PROJECT	SHEET NUMBER
PANTHER	19

ROCKED SWALE TYP

NOT TO SCALE



NOTE: CONSTRUCTION OF A ROCKED SWALE INCLUDES:

ALL LABOR AND EQUIPMENT NECESSARY TO GRADE AND SHAPE SWALE.

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

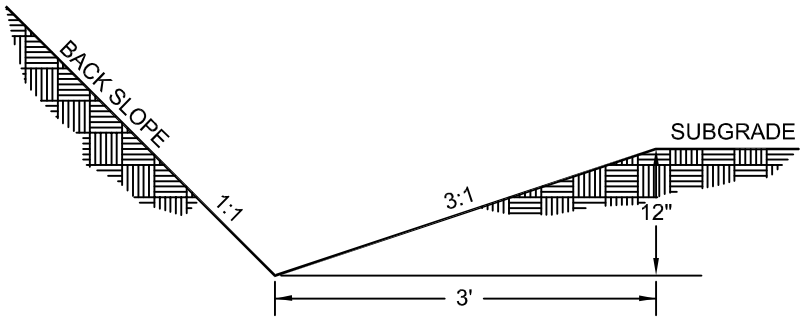
CRUSHED ROCK IS A COMMERCIAL SOURCE.

CLASS III RIPRAP MAY BE COMMERCIAL OR LOCAL SOURCE.

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

PROJECT	SHEET NUMBER
PANTHER	20

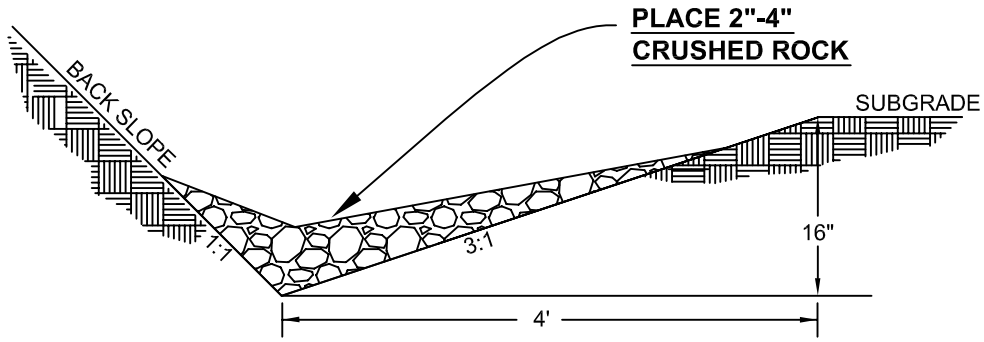
ROADWAY DITCH TYP 3' DITCH



GENERAL NOTES:

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

ROCKED ROADWAY DITCH TYP 4' DITCH

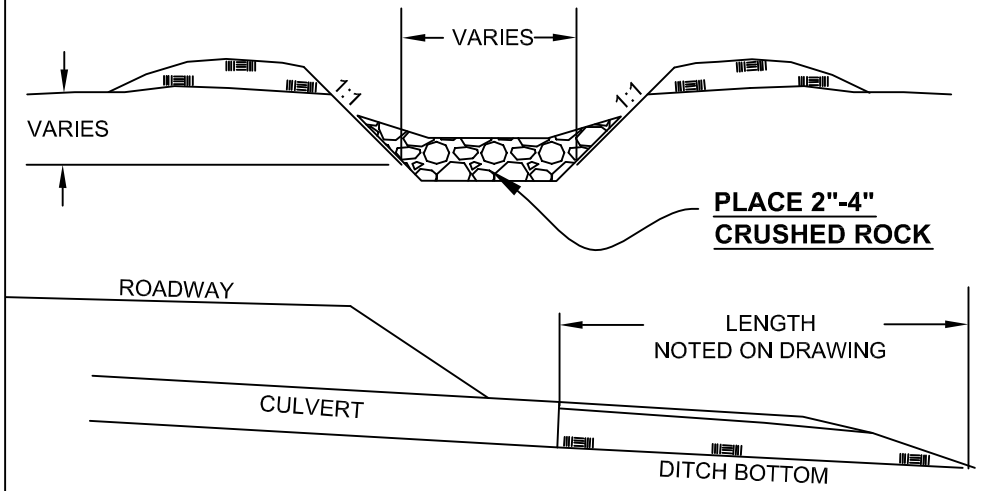


GENERAL NOTES:

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

ROCKED LEAD OFF DITCH

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

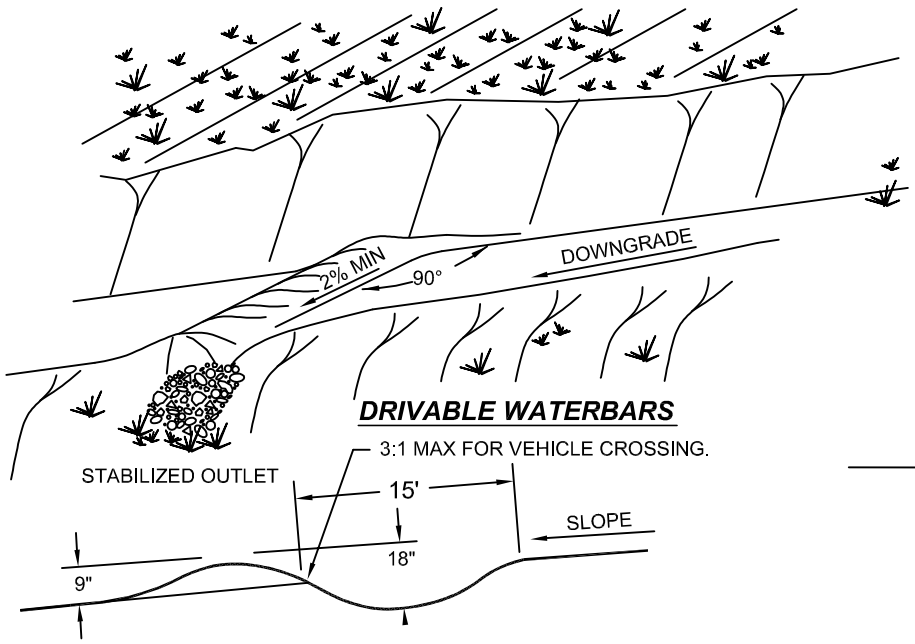


Lead-Off Ditches are considered incidental to other Pay Items and will not be measured of paid for seperately.

PROJECT	SHEET NUMBER
PANTHER	21

WATERBAR

FOR HIGH CLEARANCE VEHICLES



DRIVABLE WATERBARS

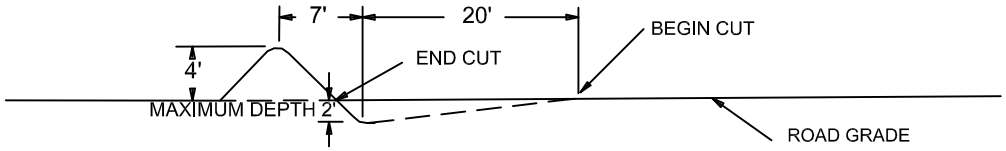
NOTES: WATERBARS

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.

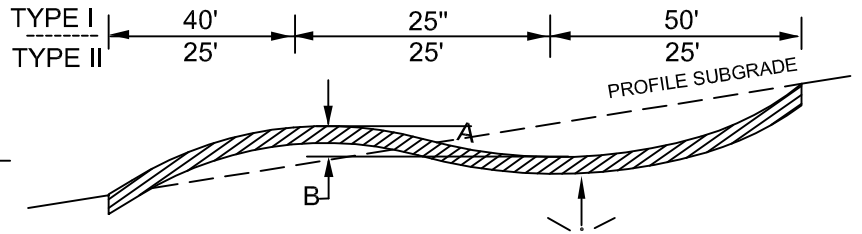
2. ALL WATER BARS SHALL HAVE FREE FLOWING OUTLETS. CONSTRUCTION OF LEAD-OFF DITCHES ARE INCIDENTAL TO WATER BAR CONSTRUCTION

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

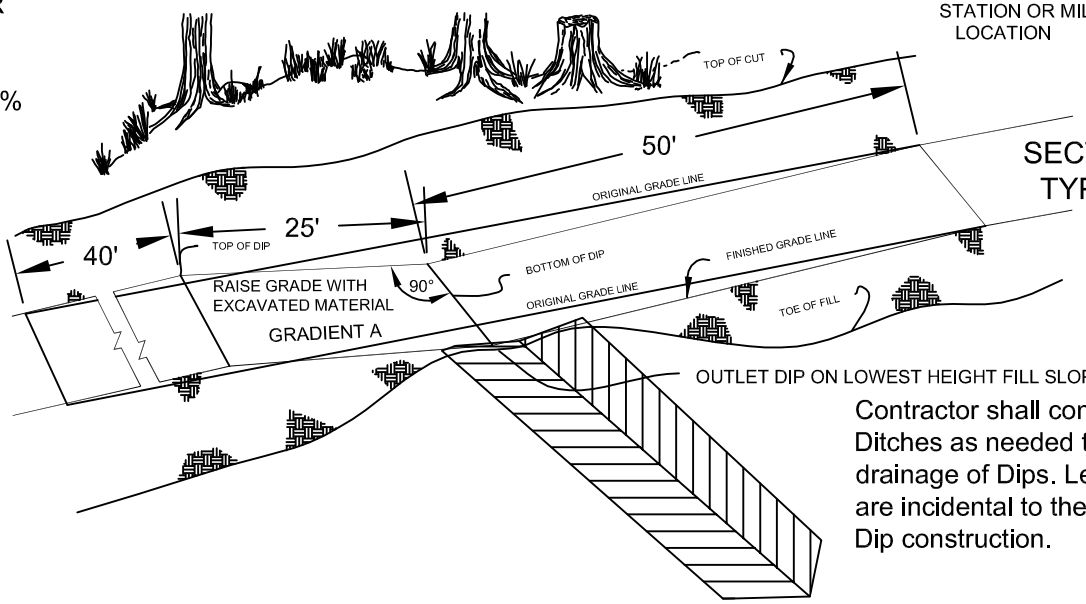


NOTES:

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 SHALL BE STAKED ON THE GROUND BEFORE CONSTRUCTION.



SECTION TYPE 1

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

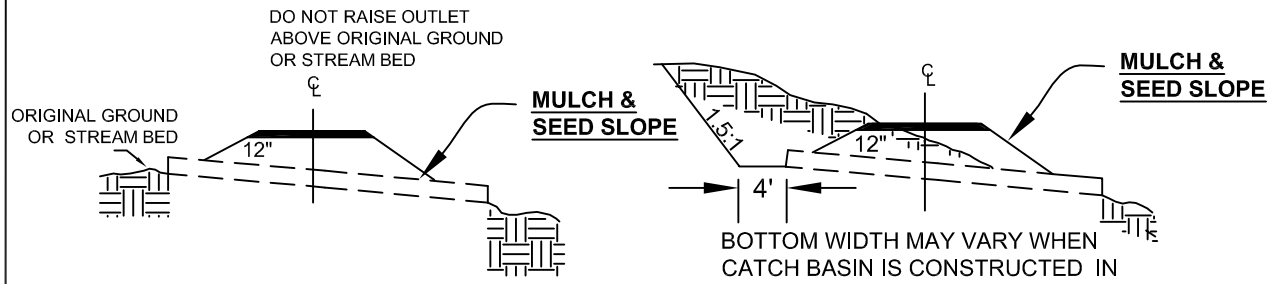
Contractor shall construct Lead Off Ditches as needed to ensure proper drainage of Dips. Lead-Off Ditches are incidental to the construction of Dip construction.

PROJECT	SHEET NUMBER
PANTHER	22

DRAINAGE CONSTRUCTION DETAILS

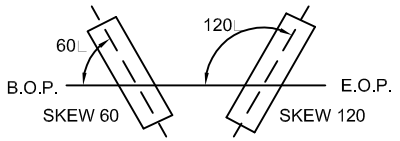
NOTE:

SEED AND MULCH INCIDENTAL TO CULVERT INSTALLATION.



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

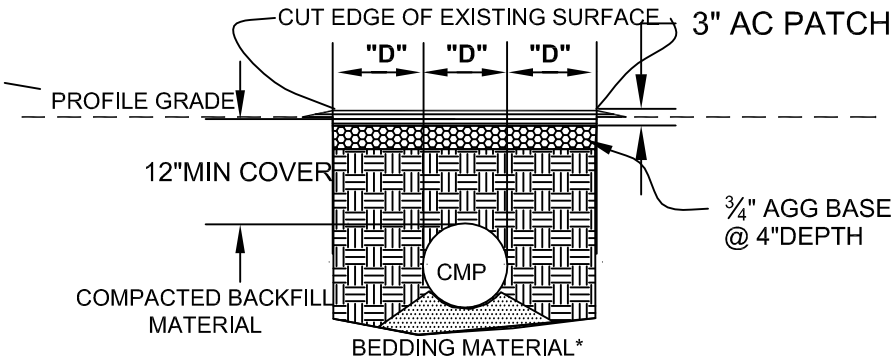
SKEW DIAGRAM



NOTE: SKEW ANGLE WILL BE SHOWN ON THE PLANS.

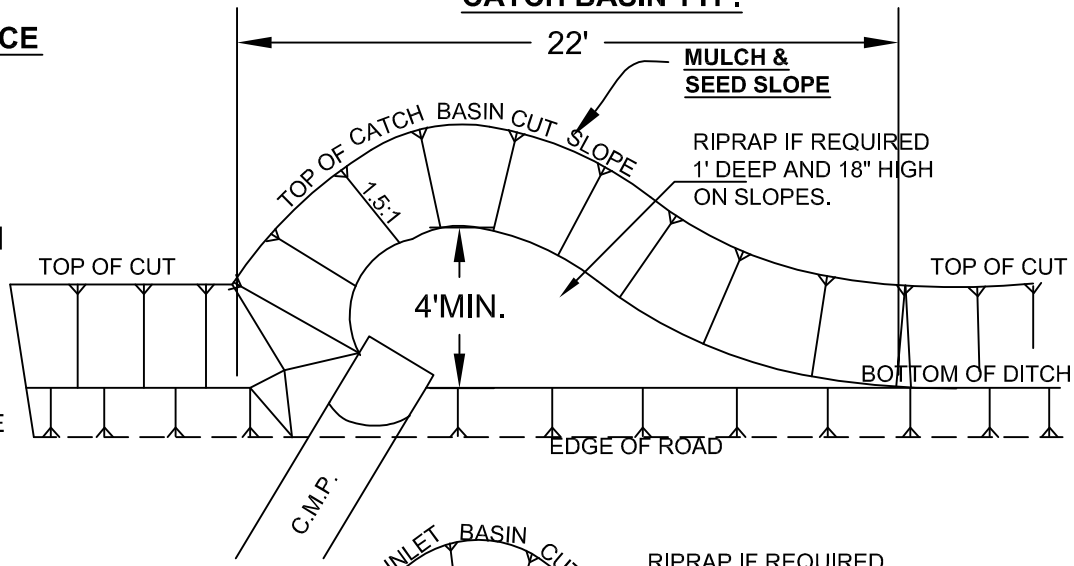
METHOD OF BACKFILLING PIPE ON AC / CHIP SEAL SURFACE TYP.

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

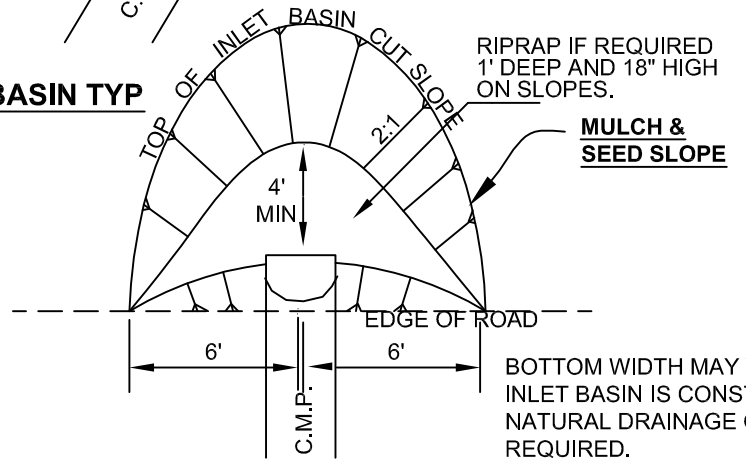


***-SEE SITE DESIGNS FOR ADDITIONAL INFO WHEN UNDERDRAIN IS REQUIRED**

CATCH BASIN TYP.

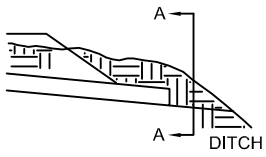


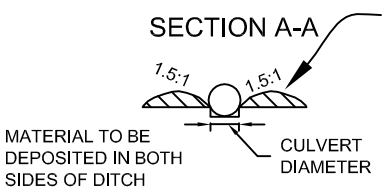
INLET BASIN TYP



BOTTOM WIDTH MAY VARY WHEN INLET BASIN IS CONSTRUCTED IN NATURAL DRAINAGE OR WHEN MES REQUIRED.

OUTLET DITCH TYP





FILL HEIGHT & INCH (mm) SHEET THICKNESS TABLES

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

PROJECT	SHEET NUMBER
PANTHER	23

H-20 LIVE LOAD

ROUND PIPES

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

MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE IN FEET (meter)

PIPE DIA.	MIN. COVER	STEEL					ALUMINUM						
		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

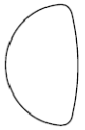
STANDARD COUPLER BANDS

CULVERT SIZE INCHES (mm)	CORRUGATED								Ⓐ FLAT-DIMPLED			
	STANDARD ANNULAR		HELICAL		3" X 1" (76 x 25 mm)		6" X 1" (152 x 25 mm)		WIDTH INCHES (mm)	NO. OF ROWS OF DIMPLES	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 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.

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)

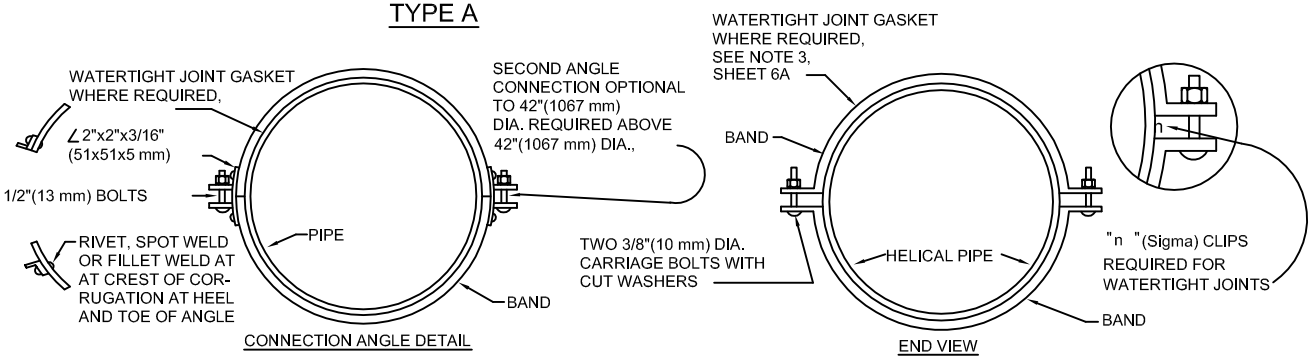


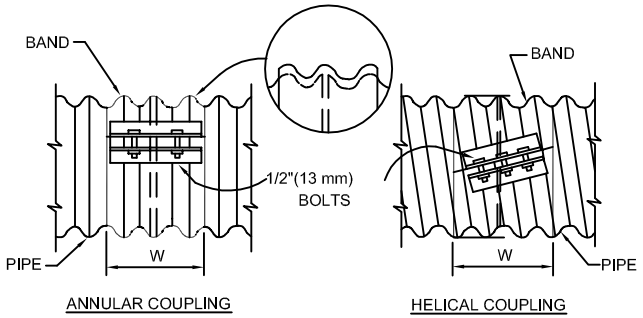
H 20 and H 25 Live Loads, Pipe-Arch

Size		Minimum Structural Thickness, Inches	Minimum Cover, Inches	Maximum[7] Cover, Feet
Round Equivalent, Inches	Span x Rise, Inches			2 Tons/Ft.[2] Corner Bearing Pressure
15	17 x 13	0.064	12	16
18	21 x 15	0.064	12	15
21	24 x 18	0.064	12	15
24	28 x 20	0.064	12	15
30	35 x 24	0.064	12	15
36	42 x 29	0.064	12	15
42	49 x 33	0.064*	12	15
48	57 x 38	0.064*	12	15
54	64 x 43	0.079*	12	15
60	71 x 47	0.109*	12	15
66	77 x 52	0.109*	12	15
72	83 x 57	0.138*	12	15

PROJECT	SHEET NUMBER
PANTHER	24

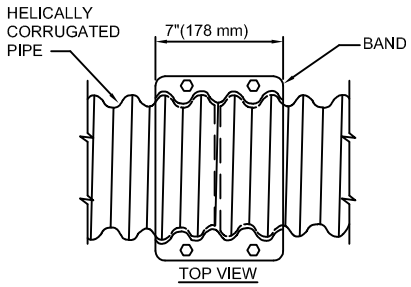
TYPE A





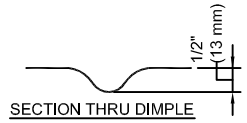
TYPE B

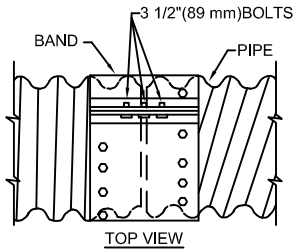
FOR 6"-10" (152-254 mm) DIA. PIPES

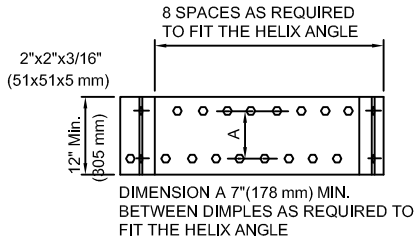


TYPE D

NOTE:
DIMPLED BANDS MAY ONLY BE USED ON PIPES LESS THAN 18" DIA, ON GRADES LESS THAN 10% AND WHEN APPROVED BY THE CONTRACTING OFFICER

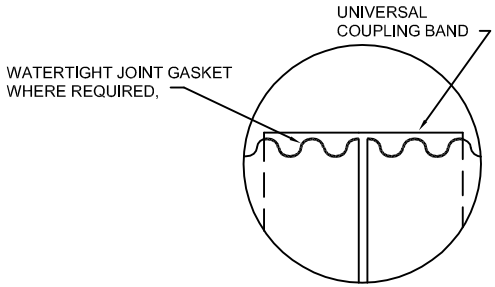




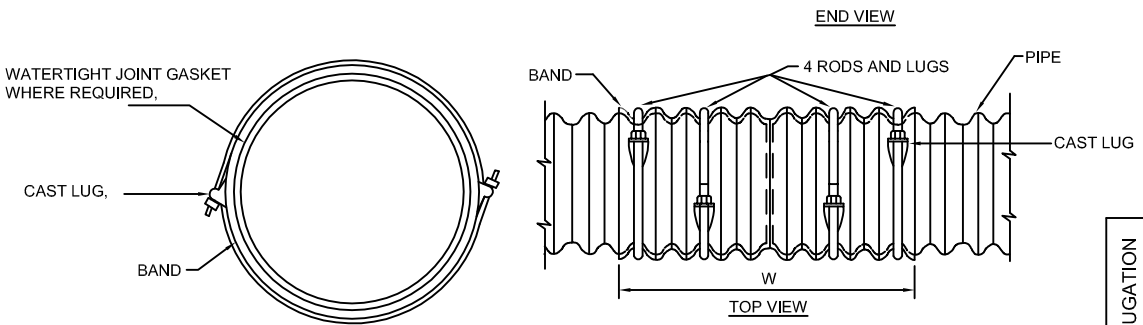


2 2/3"x1/2"(68x13 mm)CORRUGATIONS							3" x 1"(76X25 mm) CORRUGATIONS							
PIPE DIAMETER		W				# of 1/2" (13 mm) BOLTS	PIPE DIAMETER		W				# of 1/2" (13 mm) BOLTS
		ANN.		HEL.					ANN.		HEL.		
inches	mm	inch.	mm	inch.	mm		inches	mm	inch.	mm	inch.	mm	
6-10	152-254	7	178	7	178	2	36-84 *	914-2134	14	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



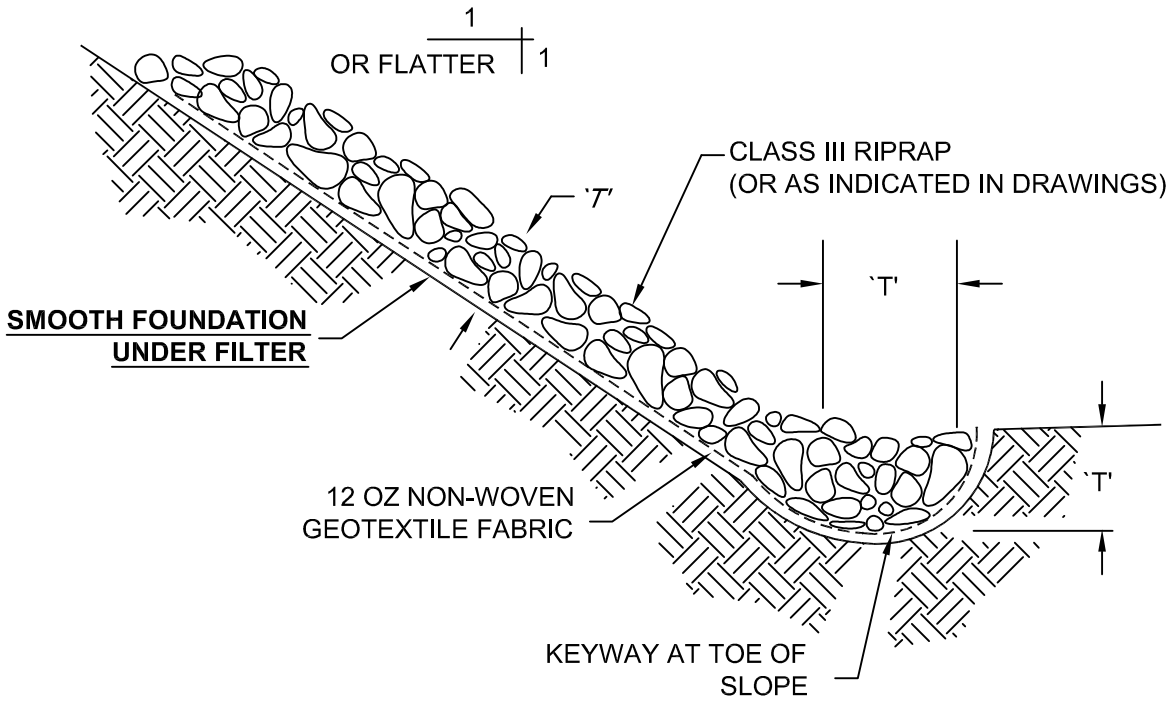
CORRUGATION		PIPE DIAMETER (inch.)	PIPE DIAMETER (mm)	ROD DIA. (inch.)	ROD DIA. (mm)	NARROW BAND W (inch.)	NARROW BAND W (mm)	NARROW BAND # of ROD	WIDE BAND W (inch.)	WIDE BAND W (mm)	WIDE BAND # of ROD
2 2/3" X1/2" (68x13mm)		12-21	305-533	3/8	10	12	305	2			
		24-54 *	610-1372	1/2	13	12	305	2	24	610	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
PANTHER	25

RIPRAP SLOPE PROTECTION TYP

NOT TO SCALE

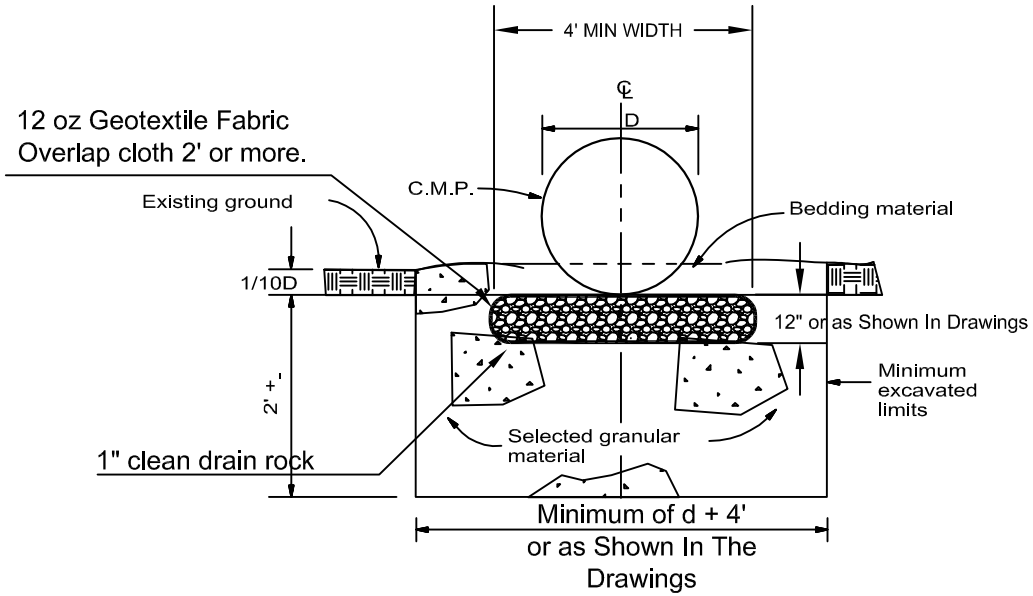


TYPICAL SECTION

NOTE: `T' = THICKNESS: THICKNESS SHALL BE DETERMINED BY THE ENGINEER. MINIMUM THICKNESS SHALL BE 1.5x THE MAXIMUM STONE DIAMETER, NEVER LESS THAN 18".

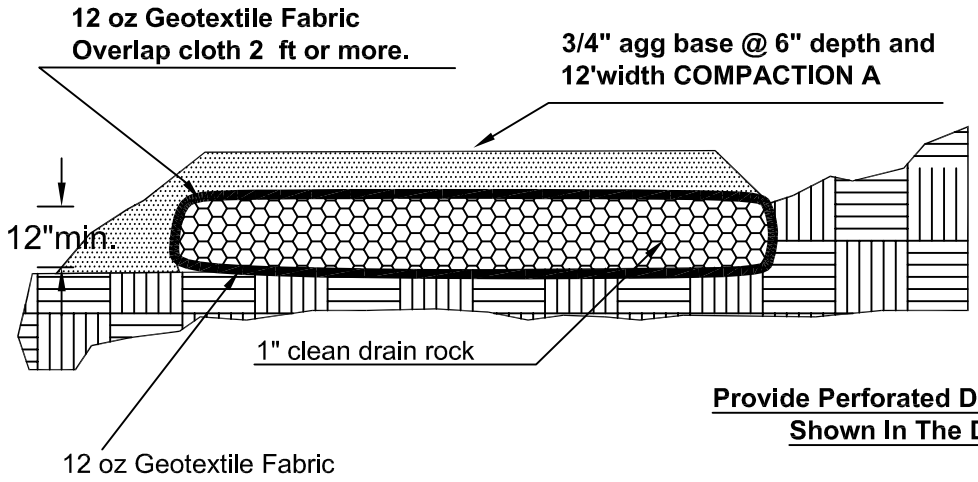
PROJECT	SHEET NUMBER
PANTHER	26

GEOTEXTILE CULVERT UNDERDRAIN TYP.



NOTE:
1. Unless shown otherwise, geotextile fabric shall be 12 oz non-woven.
2. Drain rock shall be crushed clean aggregate.
3. Fabric tears shall be repaired by patching with fabric and overlapping 2' min.
4. Excess material shall be either cut and removed or folded and incorporated into overlap material.
5. Provide 4-inch Perforated Drain Pipe when Shown In The Drawings.
6. Dimensions of Underdrains are Shown In The Drawings.

SOIL SEPARATION UNDER DRAIN TYP.



Provide Perforated Drain Pipe when Shown In The Drawings

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 OR when specified in the Drawings.

This work is incidental to other work in the Contract.

Free seed suitable for this project is available from the Forest Service upon request.

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"	6.0 pounds per acre (Ok source is from Sierra National Forest north of Fresno)
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"	5.0 pounds per acre (*We call this seed F Occidentalis - Mokelumne*
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 should be applied over the seeded areas. **Do Not Use Straw Mulch When Cows Are Present. Hand Rake In Seed.**

Straw will be Weed-Free Certifide rice straw, applied at 4,000 lbs/AC.

PROJECT	SHEET NUMBER
PANTHER	28

COVERED WATER DRAFTING BOX

NO SCALE

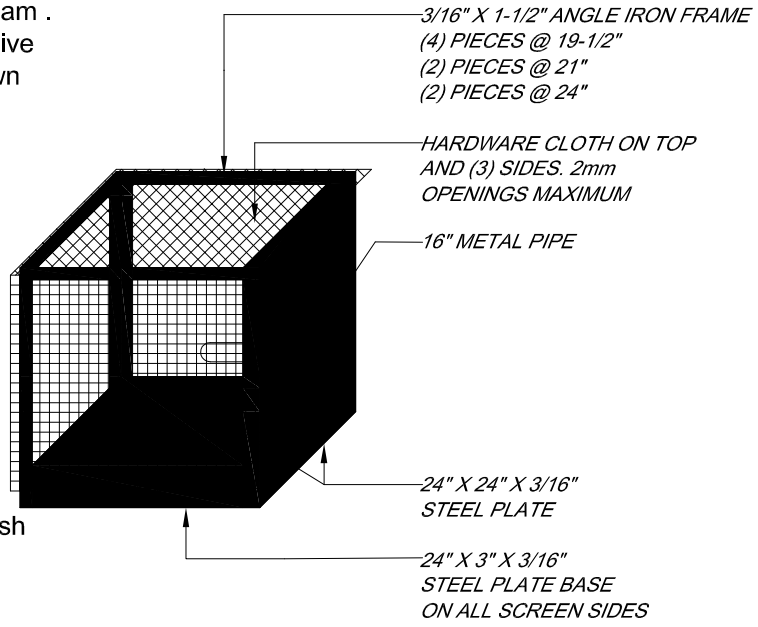
PART 1 GENERAL

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

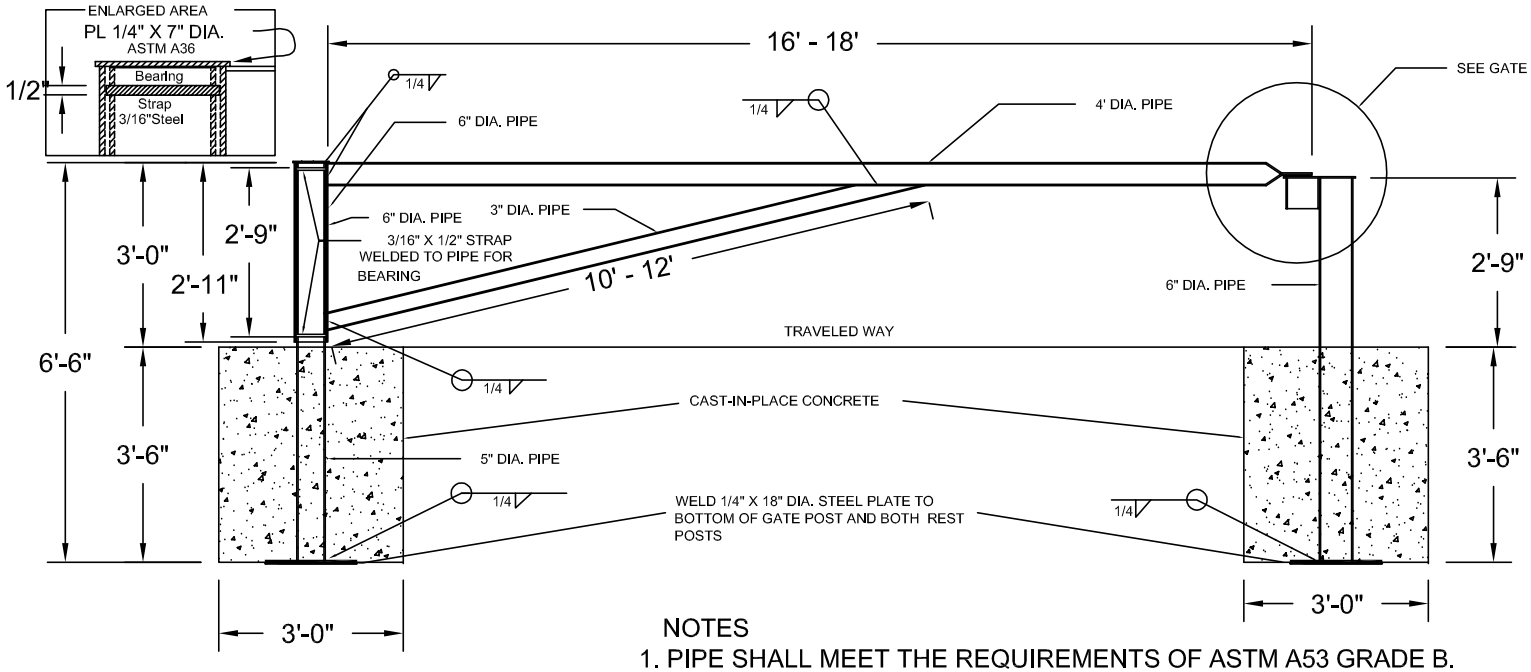
3.01 SCREEN BOX CONSTRUCTION

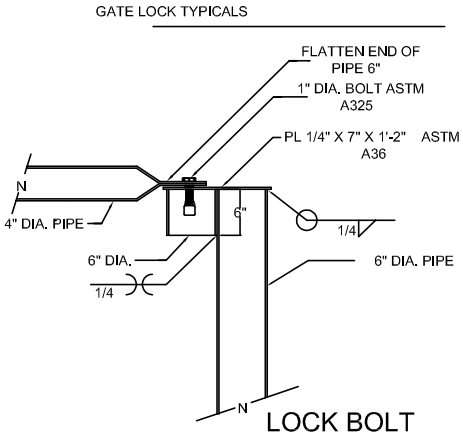
A. A 16" long metal pipe for the drafting hose to be used shall be fixed to the metal side plate a minimum of four inches (4") from the bottom of the screen box. The bottom of the metal pipe and the inlet end of the pipe would be fixed so it is at the center of the screen box as shown on the DRAWING. 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.

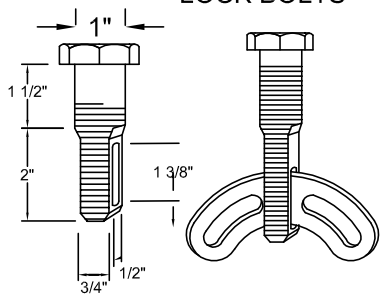
STEEL SINGLE LANE ROAD CLOSURE GATE TYP

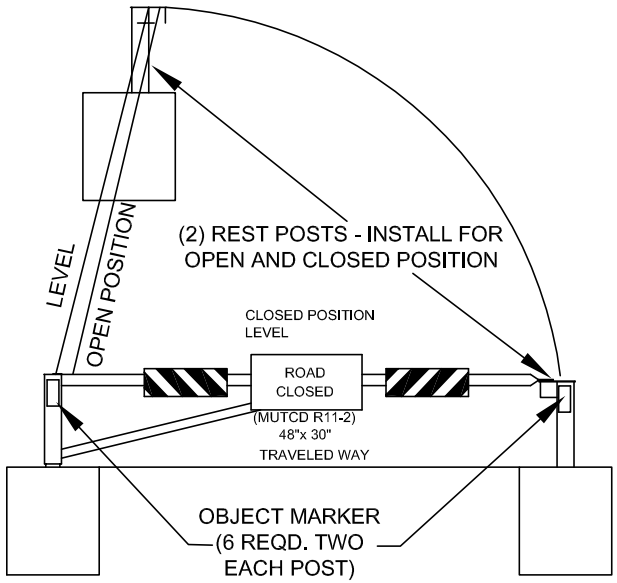
PROJECT	SHEET NUMBER
PANTHER	29





LOCK BOLT
MANUFACTURE 3 STE
LOCK BOLTS

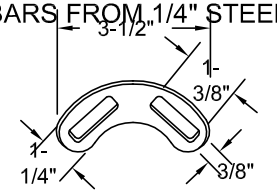


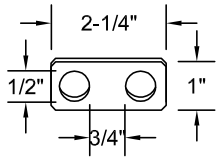


NOTES

1. PIPE SHALL MEET THE REQUIREMENTS OF ASTM A53 GRADE B.
2. PIPE SIZES SHOWN ARE FOR STANDARD WEIGHT BLACK IRON PIPE (SCH.40).
3. GATES SHALL RECEIVE ONE COAT OF ZINC-RICH PRIMER, ORGANIC VEHICLE TYPE AND ONE COAT OF VINYL GREEN (91-2.15). SURFACE PREPARATION AND PRIMING SHALL BE AS RECOMMENDED BY THE PAINT MANUFACTURE.
4. CONCRETE SHALL BE IN ACCORDANCE WITH SPECIFICATION 602 - METHOD C.
5. OVER EXCAVATED POST HOLES SHALL BE FILLED WITH CONCRETE.
6. ROAD CLOSURE SIGN AND REFLECTIVE MARKERS SHALL BE INSTALLED BY CONTRACTOR.
7. CONTRACTOR SHALL FURNISH TO THE FOREST SERVICE ONE COMPLETE LOCK BAR SET AND TWO LOCK BOLTS FOR EACH GATE INSTALLATION.
8. GATE AND LOCKING MECHANISM SHALL BE INSPECTED BY THE FOREST SERVICE PRIOR TO GATE INSTALLATION.
9. LOCATION OF GATES WILL BE LOCATED ON THE GROUND BY THE FOREST SERVICE. LAYOUT OF THE GATE POSTS SHALL BE THE CONTRACTORS RESPONSIBILITY.
10. ROAD CLOSED SIGN SHALL MEET MUTCD REQUIREMENTS FOR TYPE R11-2. (1 REQUIRED.)
11. BARRICADE MARKERS SHALL MEET MUTCD REQUIREMENTS FOR TYPE 1. COLOR - BLACK & WHITE. (2 REQUIRED.)
12. OBJECT MARKERS SHALL MEET MUTCD REQUIREMENTS FOR TYPE 2. (6 REQUIRED.)

LOCK BAR SET
MANUFACTURE 3 CURVED
LOCKBARS AND 2 STRAIGHT
LOCKBARS FROM 1/4" STEEL.



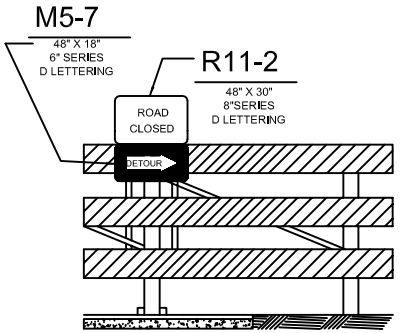


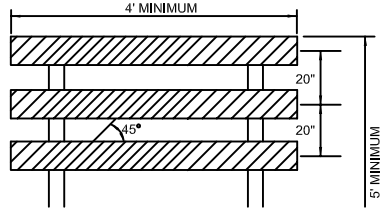
PROJECT	SHEET NUMBER
PANTHER	30

TRAFFIC CONTROL DEVICES

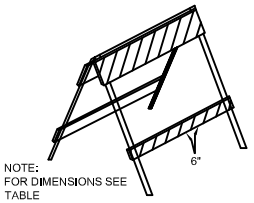
GENERAL NOTES

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".
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.



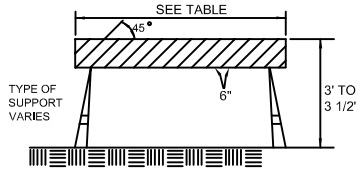


TYPE 111 BARRICADE



NOTE:
FOR DIMENSIONS SEE
TABLE

TYPE 11 BARRICADE

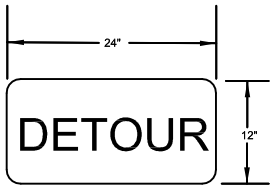


TYPE 1 BARRICADE

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
PANTHER	31

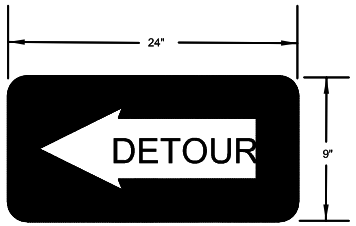
TRAFFIC CONTROL DEVICES



M4-B

24" X 12"

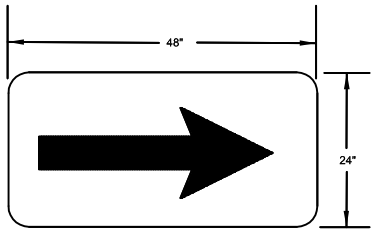
5" SERIES B LETTERING



M4-10R

24" X 9"

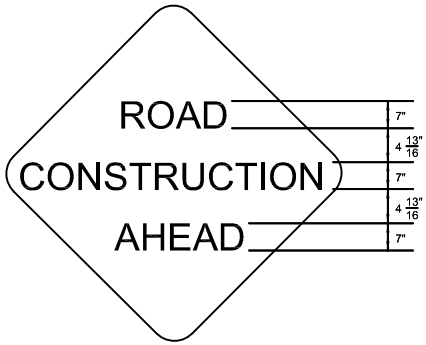
RIGHT OR LEFT
3" SERIES D LETTERING



W1-6

48" X 24"

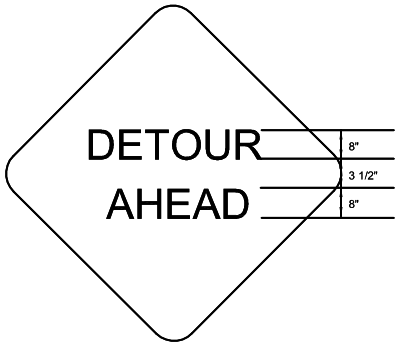
BLACK ARROW RIGHT OR LEFT.



W20-1

48" X 48"

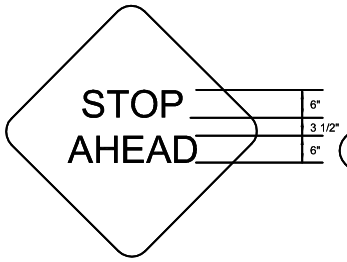
7" SERIES C LETTERING



W20-2d

48" X 48"

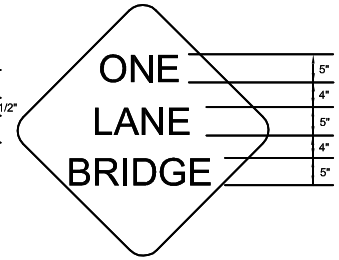
8" SERIES C LETTERING



W3-1

30" X 30"

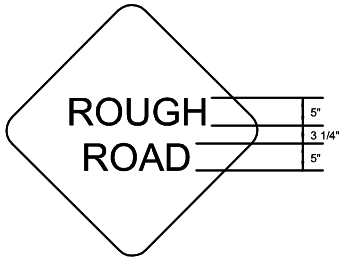
6" SERIES D LETTERING



W5-2

36" X 36"

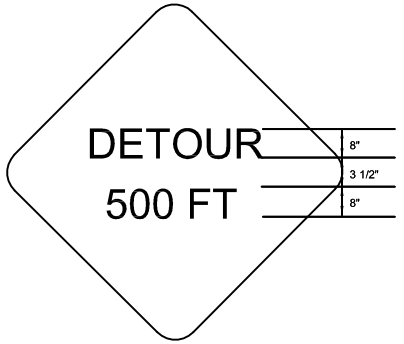
5" SERIES D LETTERING



W8-6

30" X 30"

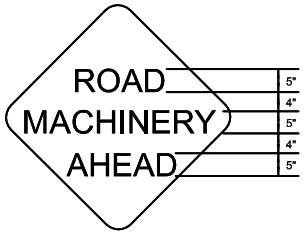
5" SERIES D LETTERING



W20-2c

48" X 48"

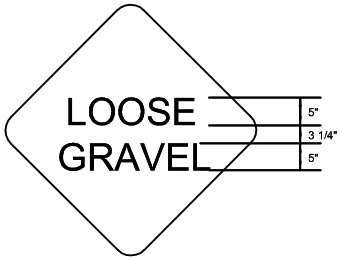
8" SERIES C LETTERING



W21-3

36" X 36"

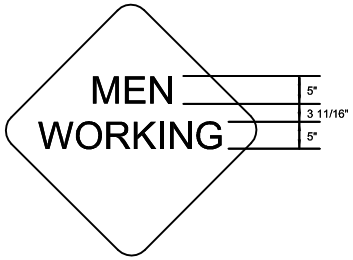
5" SERIES D LETTERING



W8-7

30" X 30"

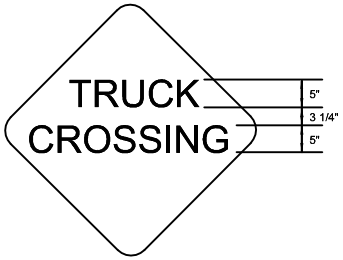
5" SERIES D LETTERING



W21-1

30" X 30"

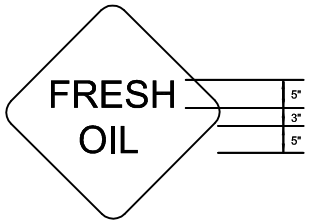
5" SERIES C LETTERING



W11-1

30" X 30"

5" SERIES D LETTERING

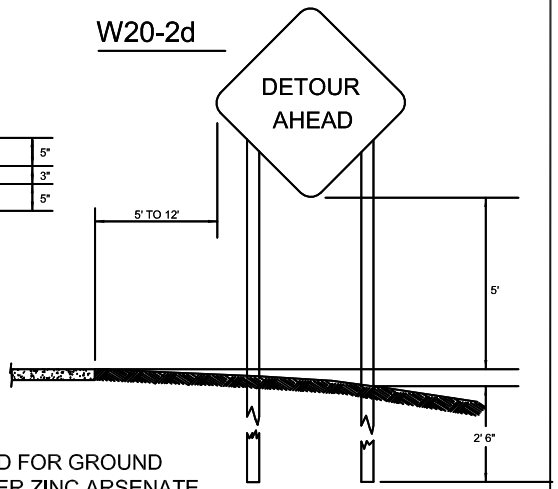


W21-2

24" X 24"

5" SERIES C LETTERING

W20-2d



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