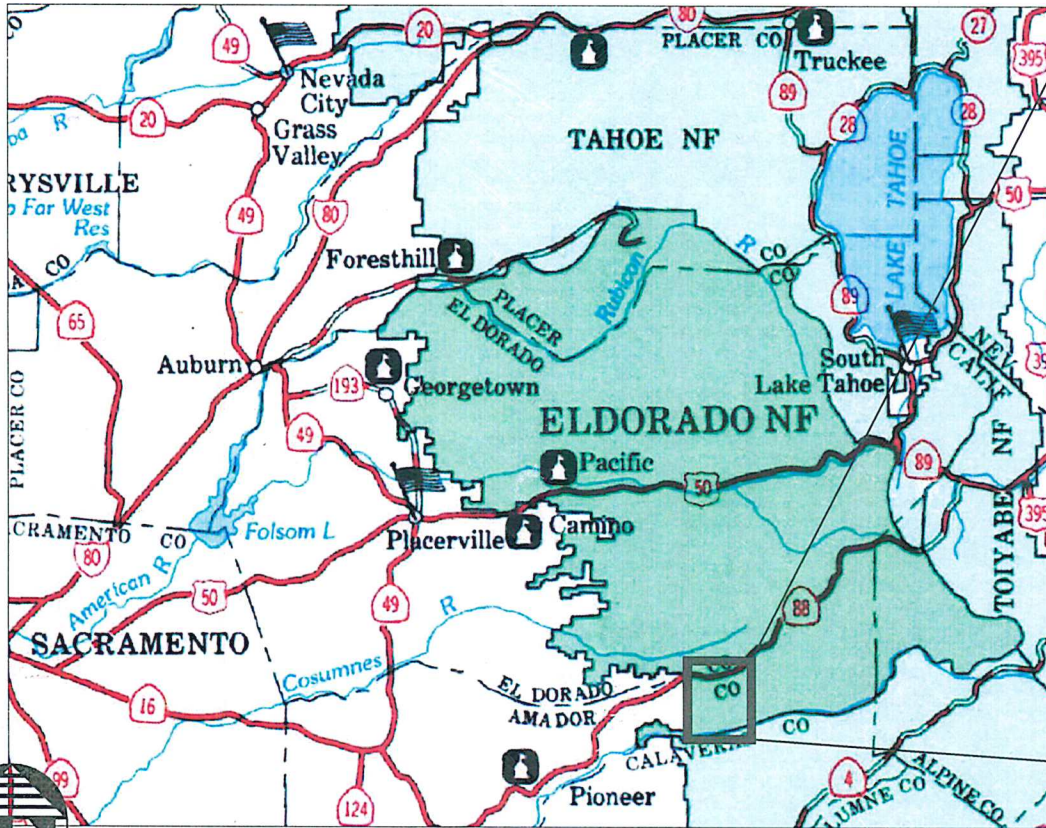




UPPER MOKELUMNE RIVER
WATERSHED AUTHORITY
ELDORADO NATIONAL FOREST
AMADOR RANGER DISTRICT
AMADOR COUNTY



POWER FIRE CULVERT
IMPROVEMENT AND EROSION
CONTROL PROJECT -
BEAR RIVER
SUB-WATERSHED



ELDORADO NATIONAL FOREST
VICINITY MAP

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

TABLE OF CONTENTS				
ROAD NO/ SITE NO	NAME	TYPE OF WORK	LENGTH (MILES)	SHEET NO.
	TITLE SHEET			1
	LOCATION MAPS			2-3
	NOTES & LEGENDS			4-6
	MATERIAL & QUANTITIES			7-10
08N03 / # 93	BEAR RIVER 4WD	REQUIRED	0.10	11
08N03D / # 65	COLE CROSSING	REQUIRED	0.10	12
08N08 / # 17,59	COLE MUD	REQUIRED	0.20	13
08N11 / # 14	LOWER COLE CREEK TIE	REQUIRED	0.10	14
08N14 / # 60	TANGLEFOOT CANYON	REQUIRED	0.10	15
08N16 / # 45	LOWER BEAR RIVER	REQUIRED	0.10	16
08N19 / # 57	LITTLE BEAR	REQUIRED	0.10	17
08N20J / # 10,37	RADICAL ROUTE	REQUIRED	0.20	18
08N20J / # 102,103	RADICAL ROUTE	REQUIRED	0.20	18
08N20J / # 11,12	RADICAL ROUTE	REQUIRED	0.20	18
08N21 / # 21,22	SUGAR PINE TIE	REQUIRED	0.20	19
08N21 / # 92	SUGAR PINE TIE	REQUIRED	0.10	19
NSR0814 / # 08	NSR0814	REQUIRED	0.10	20
	OPTIONAL AREA MAP			21
08N03D / # 5, 6	COLE CROSSING	OPTIONAL	0.10	22
08N10 / # 19	BEAR RIVER GA STA	OPTIONAL	0.20	23
08N14 / # 9	TANGLEFOOT CANYON	OPTIONAL	0.10	24
08N14 / # 18	TANGLEFOOT CANYON	OPTIONAL	0.10	25
08N15 / # 3	PENSTOCK COLE	OPTIONAL	0.10	26
08N18B / # 61	SWIMMING HOLE	OPTIONAL	0.10	27
08N20C / 27	LITTLE BEAR CAMPGROUND	OPTIONAL	0.10	28
08N20J / # 66	RADICAL ROUTE	OPTIONAL	0.20	29
08N21 / # 20	SUGAR PINE TIE	OPTIONAL	0.20	30
08N30 / # 01, 104	BEAR RIDGE	OPTIONAL	0.00	31
	GENERAL TYPICALS			32-47



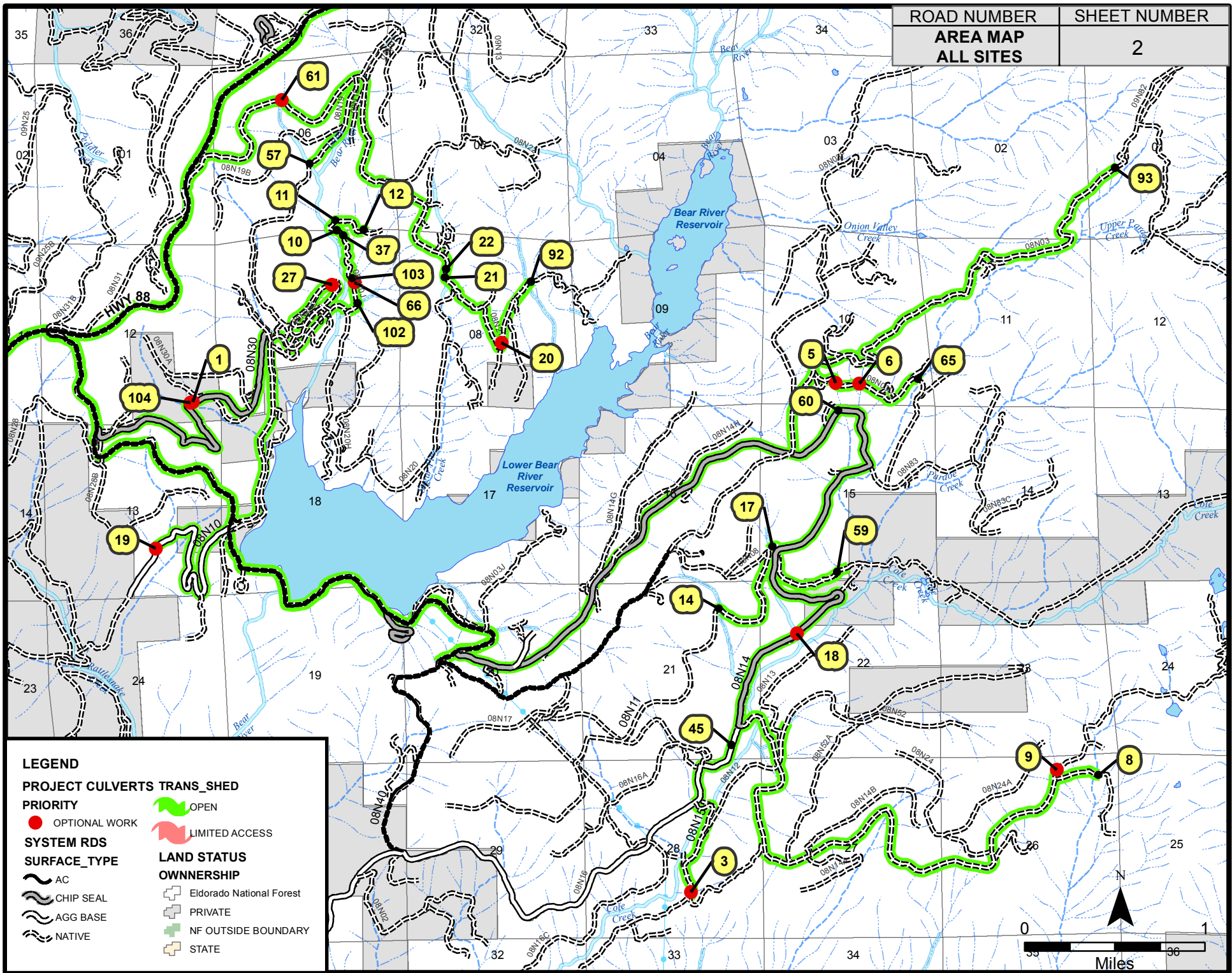
DESIGNED BY 02/27/2020

Reviewed by: *Rain Spang* DATE: 2/27/2020

Forest Engineer: *Natalie L. Montgomery* DATE: 2/27/2020

District Ranger: *Paul Decker for Rich Hagan* DATE: 2/28/20

Approved by: *Ving P* DATE: 3/2/20



LEGEND

PROJECT CULVERTS TRANS_SHED

- OPEN
- LIMITED ACCESS

PRIORITY

- OPTIONAL WORK

SYSTEM RDS

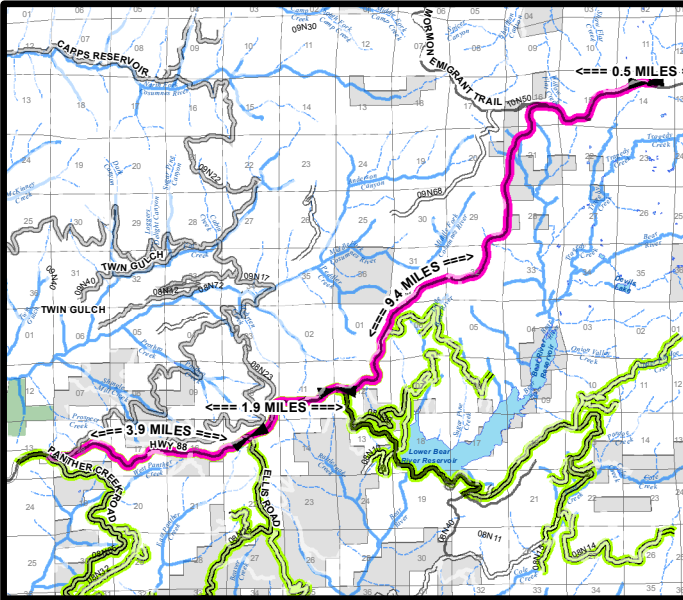
SURFACE_TYPE

- AC
- CHIP SEAL
- AGG BASE
- NATIVE

LAND STATUS OWNERSHIP

- Eldorado National Forest
- PRIVATE
- NF OUTSIDE BOUNDARY
- STATE

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.

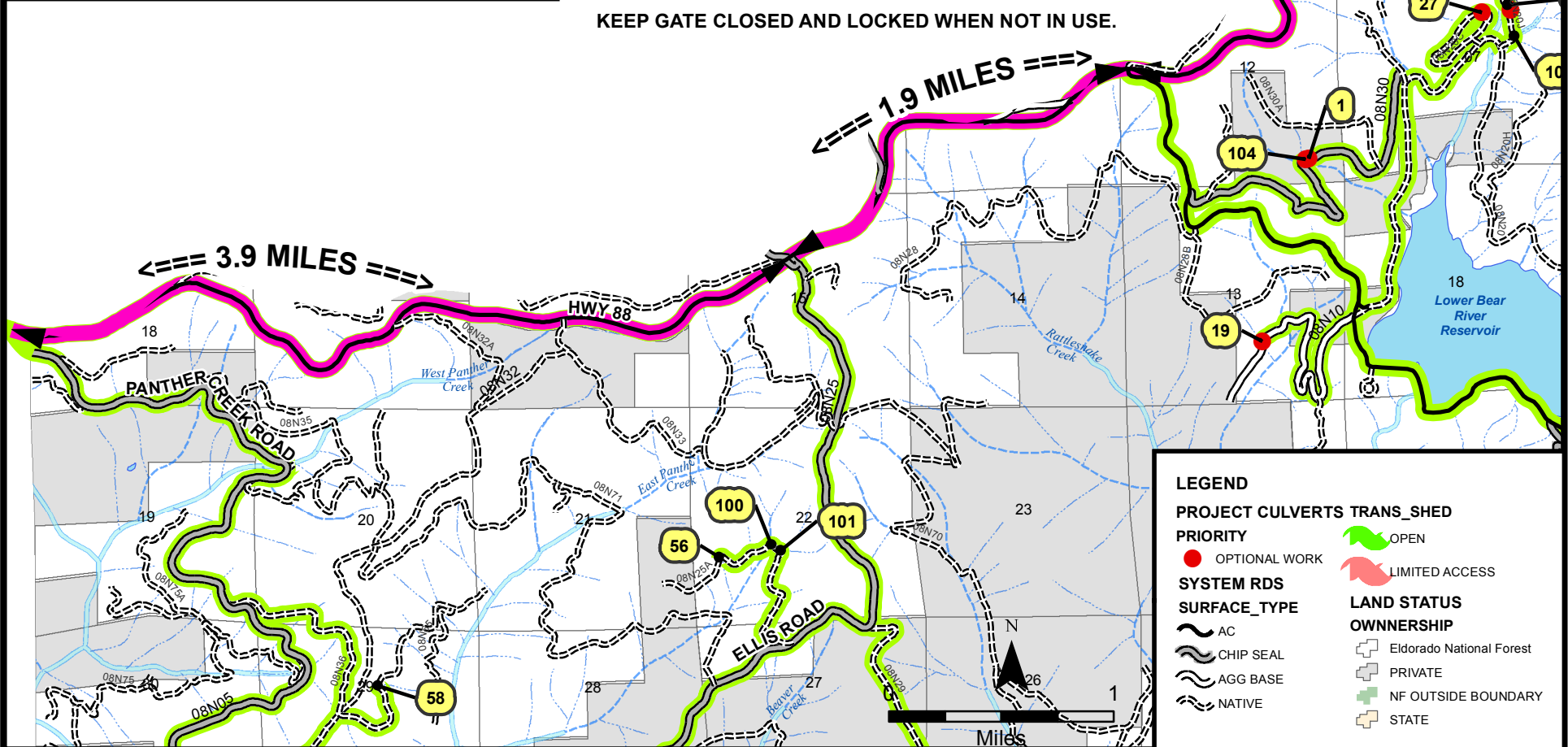
ALL EQUIPMENT SHALL BE THOROUGHLY WASHED AND CLEANED OF ALL LOOSE DIRT THAT MAY CARRY NOXIOUS SEED PRIOR TO ENETRING PIT.

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.



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 Typical.
- * 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, outslowing 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.

NOTES AND LEGEND

PROJECT SHEET NUMBER

BEAR

4

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

LEGEND

SYSTEM RDS

SURFACE_TYPE



AC



CHIP SEAL



AGG BASE



NATIVE

ACCESS ROUTES



OPEN ACCESS



LIMITED ACCESS

LAND STATUS

OWNERSHIP



Eldorado National Forest



PRIVATE



NF OUTSIDE BOUNDARY



STATE

NOTES AND LEGEND

PROJECT

SHEET NUMBER

BEAR

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 typical 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. Road 08N21 accesses a number of private residences and a summer home tract as well as several popular trailheads and other recreational sites.

NOTES AND LEGEND

PROJECT

SHEET NUMBER

BEAR

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 of sighting immediately.

**SITES:
8,14,17
18,92
104**

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:
57, 61,
65**

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 be not 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 Typical.

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 Typical.

Cultural and Archeological Site Requirements-

**SITES:
102,103,
104**

Notify Forest Service i 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:
22, 65**

Sites have know sensitive plants associated with them. Sites will be flagged prior to construction. Sites shall be protected and avoided.

**SITES:
102,103,
104**

Notify Forest Service i week prior to any site work to schedule a Botonist survey. Sites need to be surveyed and flagged. Avoid flagged areas.

Limited Operating Period Site Requirements-

**SITES:
14, 27,
45**

No work on site until after August 15

MATERIALS LIST AND QUANTITIES

PROJECT

SHEET NUMBER

BEAR

8

SPECIFICATION DATA		Road No.	08N14 / # 9,18	08N14 / # 60	08N15 / # 3	08N16 / # 45	08N18B / # 61	08N19 / # 57	SUB TOTAL	
		Type:	OPTIONAL	REQUIRED	OPTIONAL	REQUIRED	OPTIONAL	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	30	50	30	50			160	
20101	Clearing & Grubbing, Disposal of Tops and Limbs-CHIP, Logs-DECK, and Stumps-SCATTER or As Specified in The Drawings..	LS	1	1	1		1	1	5	
20303	Removal and Disposal of Culverts	Each	2	1	1	1	1	1	7	
20304	Surface Saw Cut, Remove and Dispose AC Surface	SY	133	48		20			201	
20403	Drainage Excavation, Type Catch Basin	Each				1			1	
20404	Drainage Excavation, Type Inlet Basin	Each			1		1		2	
20406	Drainage Excavation, Type Rocked Swale - Includes Riprap(Class II) and Screened Aggregate (Grade N).	Each	1						1	
20409	Drainage Excavation, Type Rolling Dip	Each						2	2	
25101	Placed Riprap, Class III (Tragedy Pit / Commercial Source)	CY	70	26				100	196	
30101	Aggregate Base, Gradation B, Compaction Method D	Ton	24	10	24	5	24	120	207	
30301	Reconditioning of Roadbed, Roller Compaction - Method B	LS	2	1	1	1	1	1	7	
40401	Hot Bituminous Patching- 1/2" Caltrans Spec. Includes All Materials and Labor To Complete Work. AC Cut and Removal Paid Separately.	SY	133	48		20			201	
60201	24-Inch Corrugated Metal Pipe, 0.064-Inch thk FE, Method B. Includes De-Watering If Necessary.	LF			30				30	
60202	28" x 20" Arch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF				40	25		65	
60203	36-Inch Corrugated Metal Pipe, 0.064-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF		50					50	
60207	60-Inch Corrugated Metal Pipe, 0.109-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF	70						70	
60210	83" x 57" Arch Corrugated Metal Pipe, 0.138-Inch Thk FE, Method B. Includes De-Watering If Necessary.	LF						50		
60212	28" x 20" Arch Metal End section	Each				1				
60217	60" Metal End section	Each	1							
60220	83" x 57" Arch Metal End section	Each						1		
60501	Culvert Underdrains - Includes All Geotextile Fabric, Rock and Labor To complete Work	CY	13	3						
60702	Channel Excavation and Repair (50 LF)	Each						1		
61901	Install Metal Gate, Size 16 feet	Each					1			
61903	Rock Boulder Barricade	Each						4		

ROAD 08N03 - NATIVE SURFACE ROAD. NO CLEARING REQUIRED.

SITE NUMBER

SHEET NUMBER

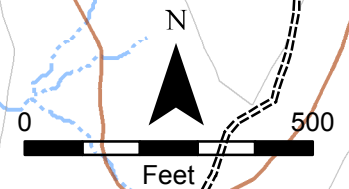
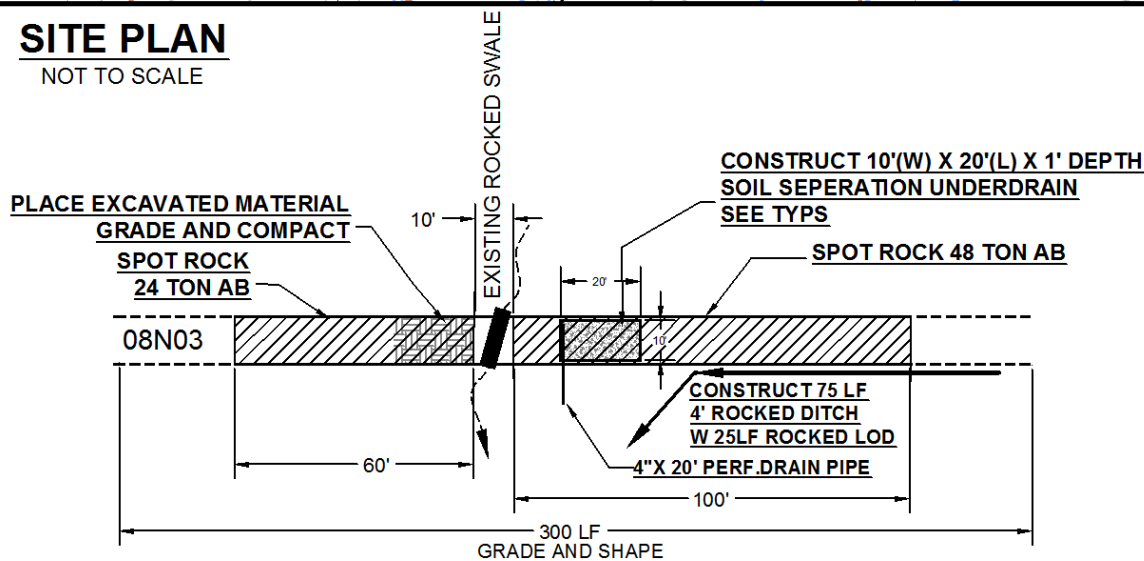
SITE - 93

11

SITE -93
REPAIR EXISTING ROCKED SWALE
ADD 24 TON CRUSHED 1" ROCK WITH
FABRIC SOIL SEPERATION - SEE SITE PLAN

SITE PLAN

NOT TO SCALE

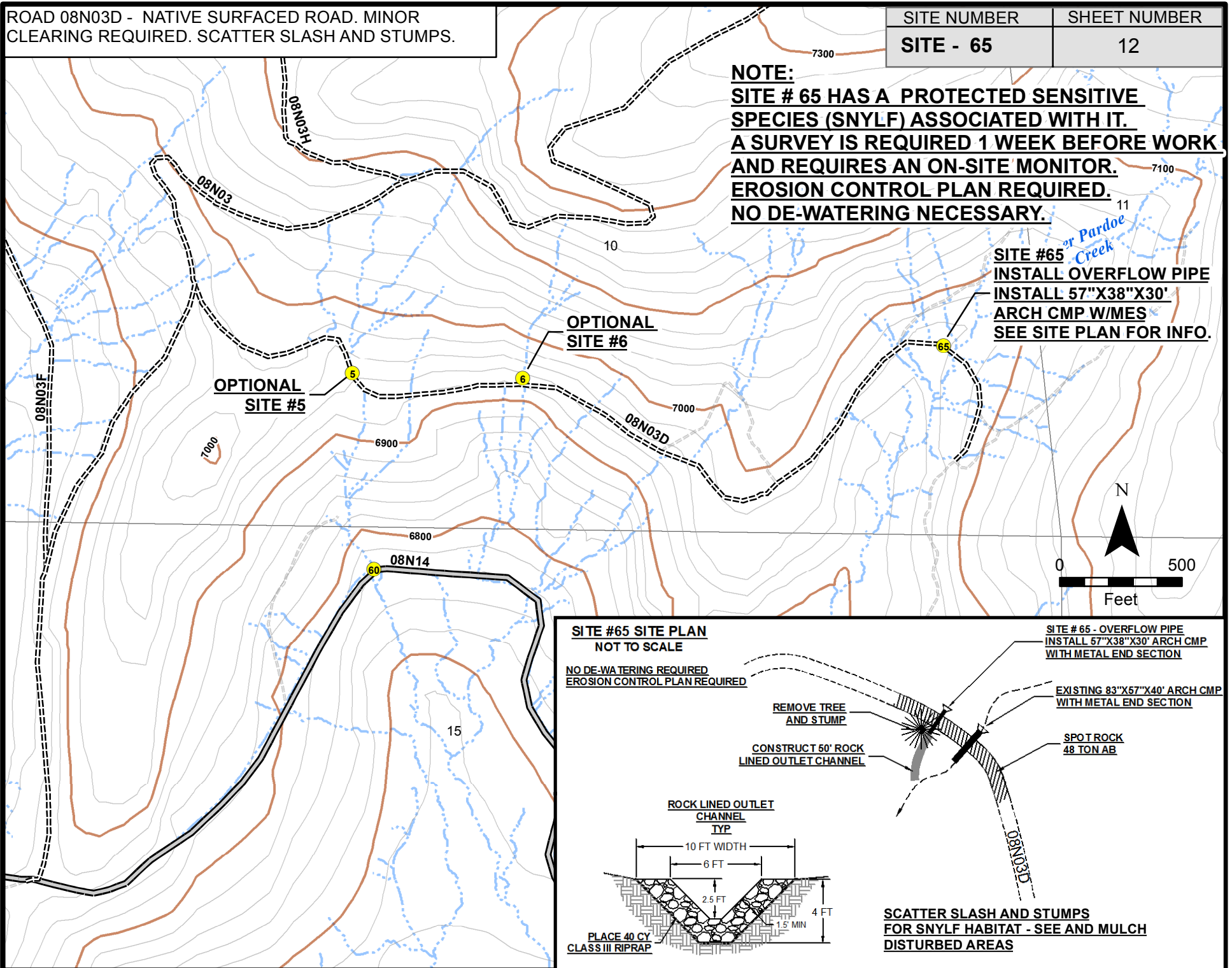


ROAD 08N03D - NATIVE SURFACED ROAD. MINOR CLEARING REQUIRED. SCATTER SLASH AND STUMPS.

SITE NUMBER	SHEET NUMBER
SITE - 65	12

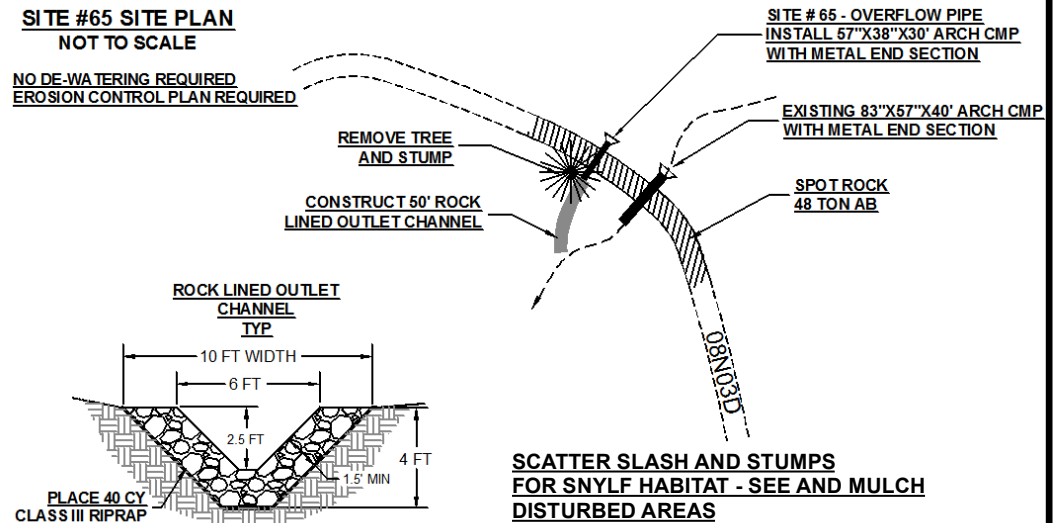
NOTE:
SITE # 65 HAS A PROTECTED SENSITIVE SPECIES (SNYLF) ASSOCIATED WITH IT.
A SURVEY IS REQUIRED 1 WEEK BEFORE WORK AND REQUIRES AN ON-SITE MONITOR.
EROSION CONTROL PLAN REQUIRED.
NO DE-WATERING NECESSARY.

SITE #65
INSTALL OVERFLOW PIPE
INSTALL 57"X38"X30'
ARCH CMP W/MES
SEE SITE PLAN FOR INFO.



SITE #65 SITE PLAN
NOT TO SCALE

NO DE-WATERING REQUIRED
EROSION CONTROL PLAN REQUIRED



ROAD 08N08 - NATIVE SURFACED ROAD. NO CLEARING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE - 17_59	13

NOTE:
SITE #17 - SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK. EROSION CONTROL PLAN REQUIRED. NO DEWATERING REQUIRED WHEN DRY.

SITE -17
REMOVE EXISTING 18" CMP
INSTALL 48" X 30' CMP W/MES
SPOT ROCK 24 TON AB
6 CY CLASS III RIRRAP
INLET/OUTLET SLOPE
SEE SITE PLAN FOR ADDITIONAL INFO.

SITE -59
REMOVE EXISTING 18" CMP
INSTALL 42" X 29" X 30 ARCH CMP W/CB
SPOT ROCK 24 TON AB
4 CY CLASS III RIRRAP
OUTLET SLOPE

17 SITE PLAN

NOT TO SCALE

EROSION CONTROL PLAN REQUIRED

PLACE 6 CY CLASS III RIRRAP

SPOT ROCK 24 TONS AB

SITE 17
REMOVE EXIST 18 CMP
INSTALL 48" X 30' CMP W/MES
SPOT ROCK 24 TON AB

EXIST 18 CMP

PLACE 6 CY CLASS III RIRRAP

ROAD 08N11 - NATIVE SURFACED ROAD.
CLEARING REQUIRED. SCATTER STUMPS. CHIP
SLASH.

SITE NUMBER	SHEET NUMBER
SITE - 14	14

NOTE:

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

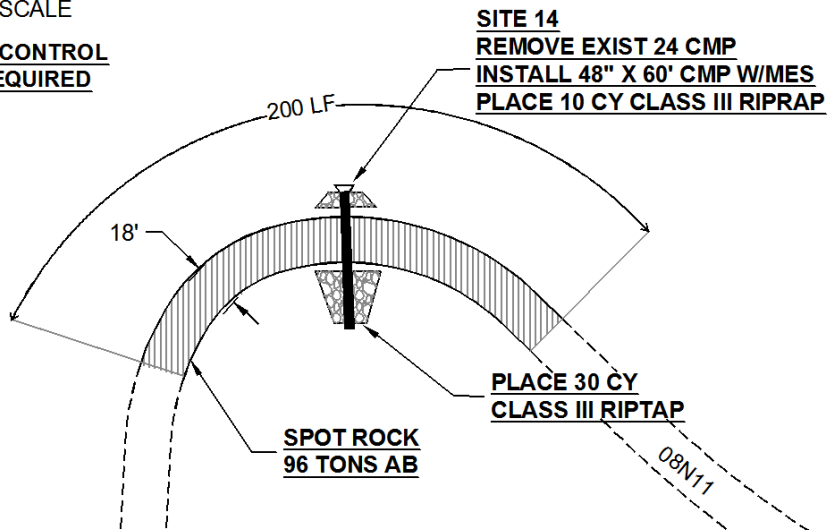
SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK. EROSION CONTROL PLAN REQUIRED. NO DEWATERING REQUIRED WHEN DRY.

SITE -14
REMOVE EXISTING 24" CMP
INSTALL 48 X 60 CMP W / MES
SPOT ROCK 96 TON AB
40 CY CLASS III RIRRAP OUTLET

14 SITE PLAN

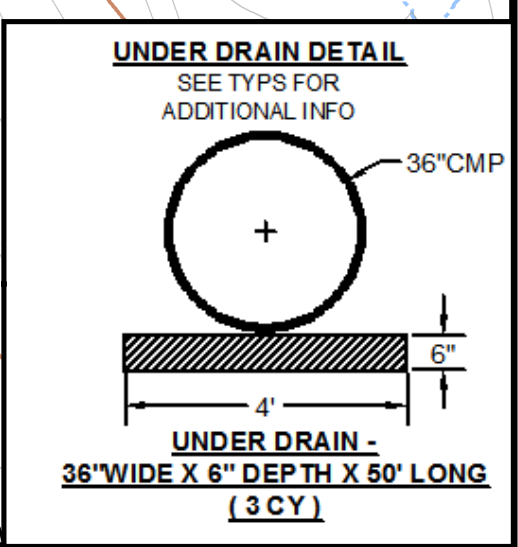
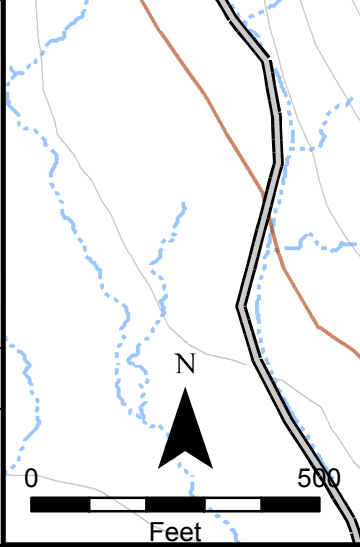
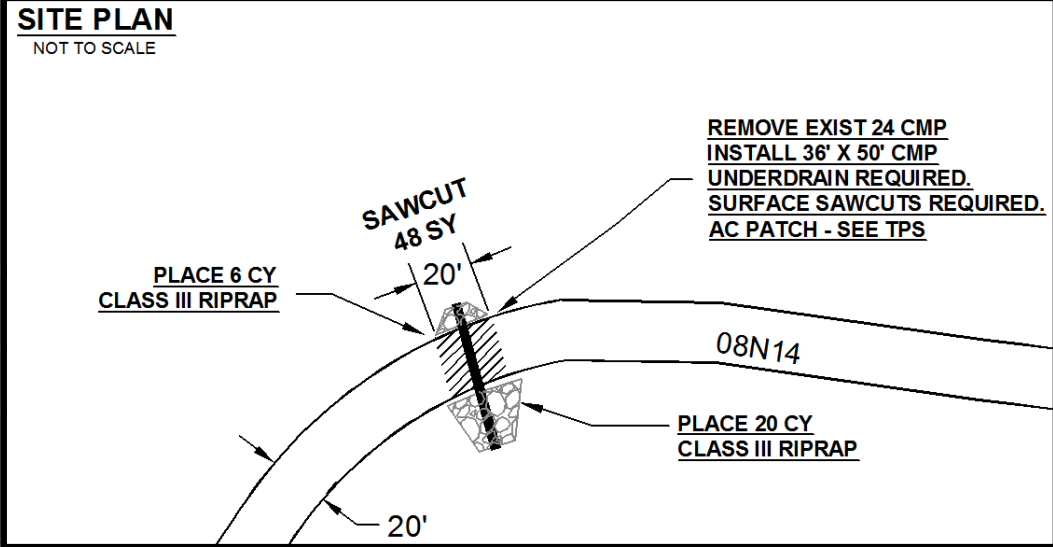
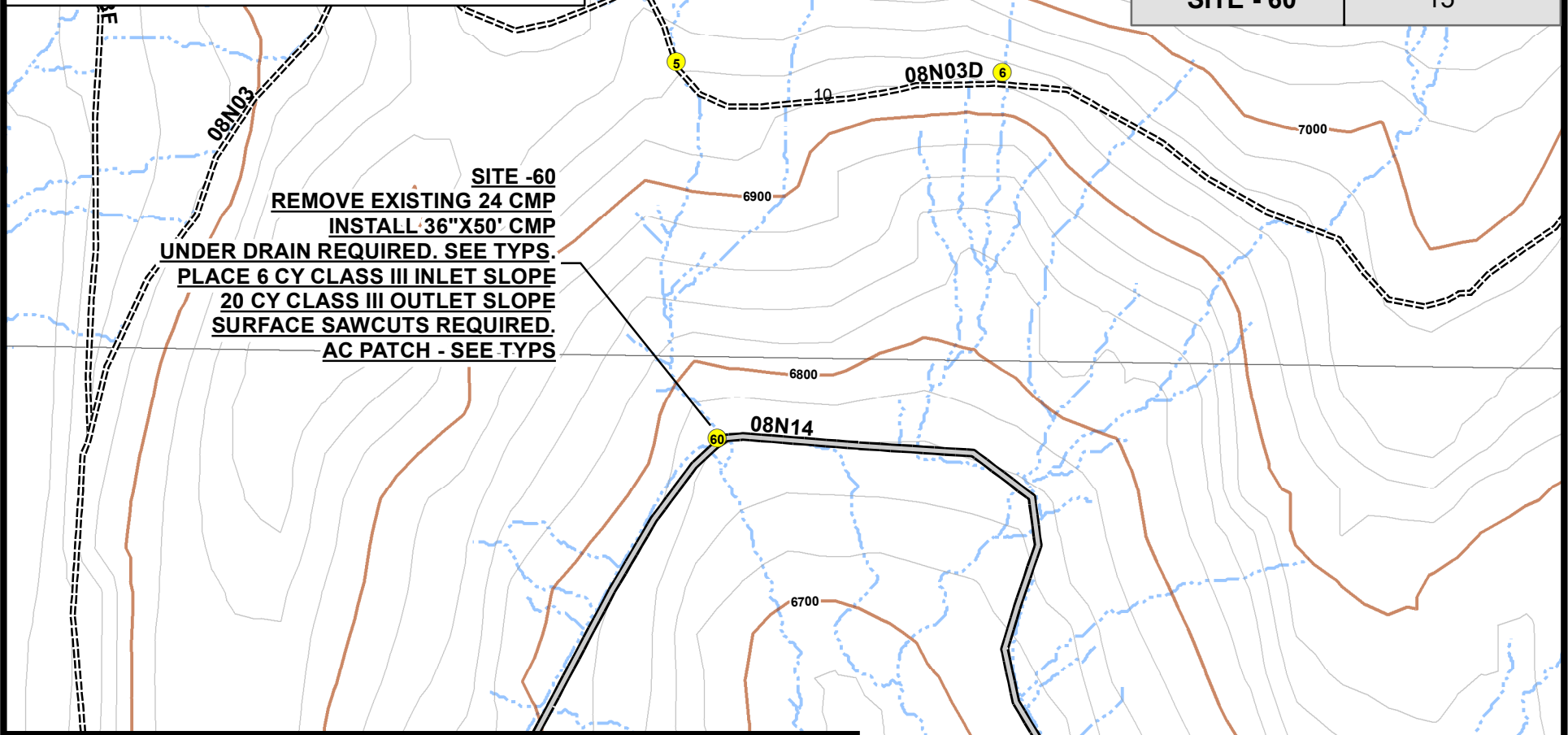
NOT TO SCALE

EROSION CONTROL PLAN REQUIRED



ROAD 08N14 -CHIP SEAL SURFACE ROAD. CLEARING
REQUIRED. CHIP SLASH. DE-WATERING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE - 60	15

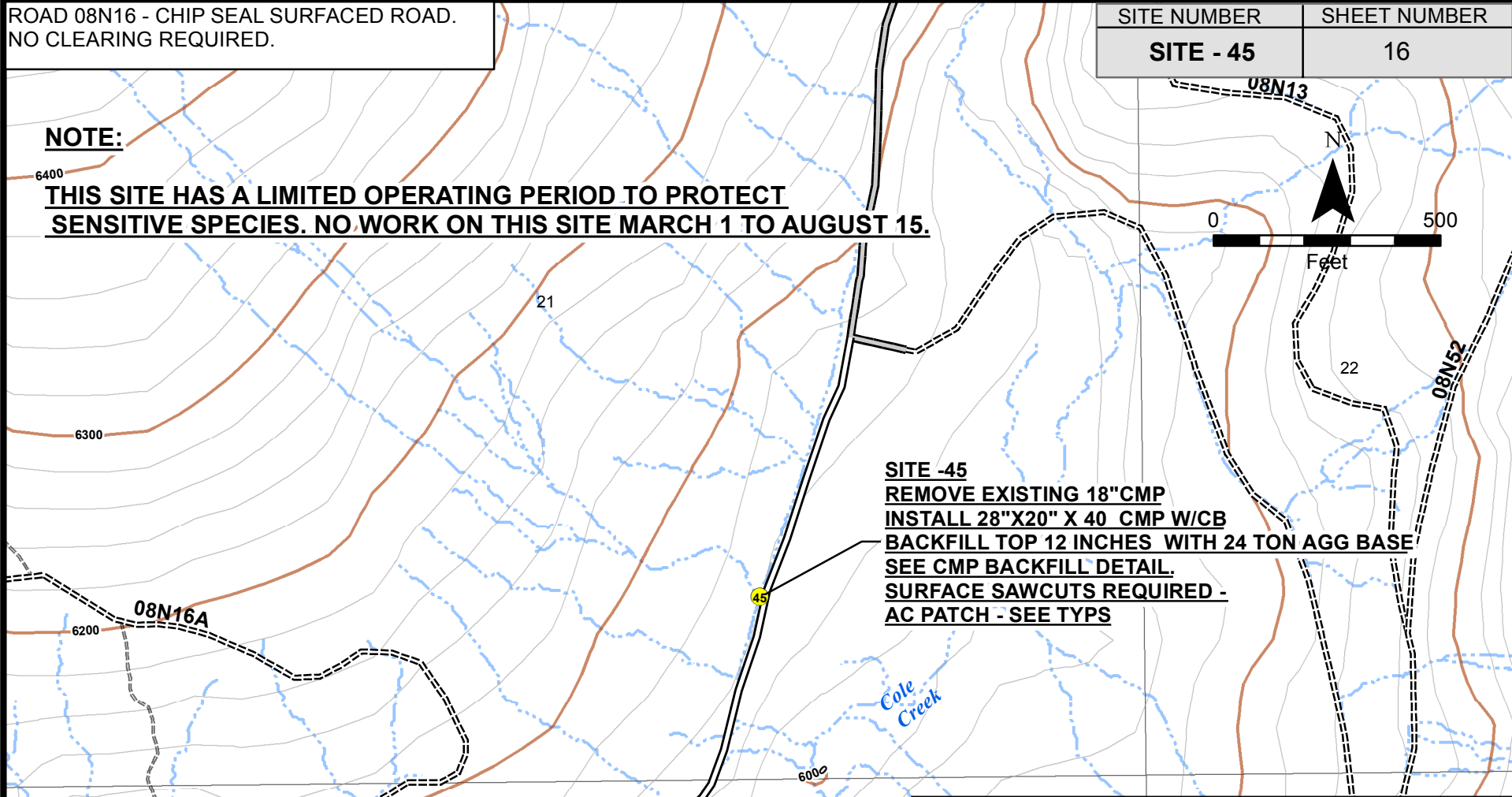


ROAD 08N16 - CHIP SEAL SURFACED ROAD.
NO CLEARING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE - 45	16

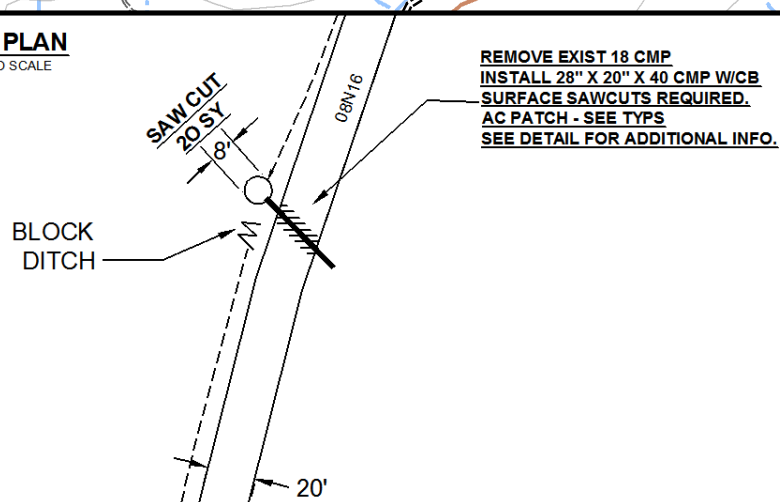
NOTE:

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



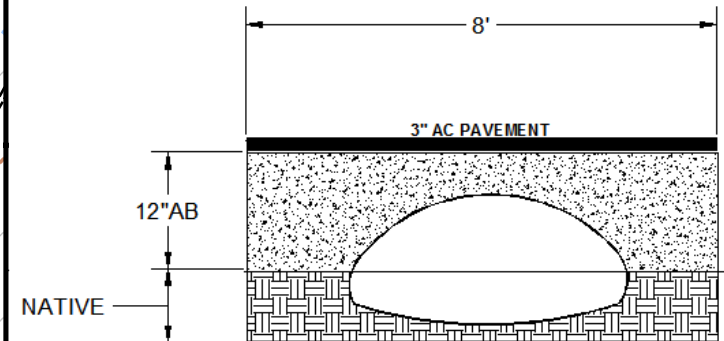
SITE -45
REMOVE EXISTING 18" CMP
INSTALL 28" X 20" X 40 CMP W/CB
BACKFILL TOP 12 INCHES WITH 24 TON AGG BASE
SEE CMP BACKFILL DETAIL.
SURFACE SAWCUTS REQUIRED -
AC PATCH - SEE TYPES

SITE PLAN
NOT TO SCALE



CMP BACKFILL DETAIL

SEE TYPES FOR ADDITIONAL INFO



NOT TO SCALE

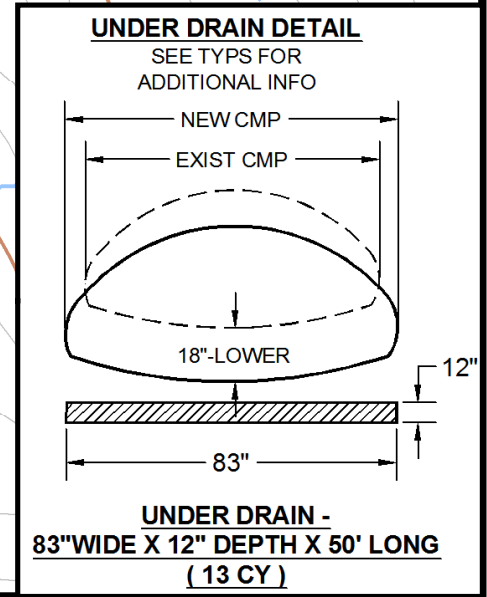
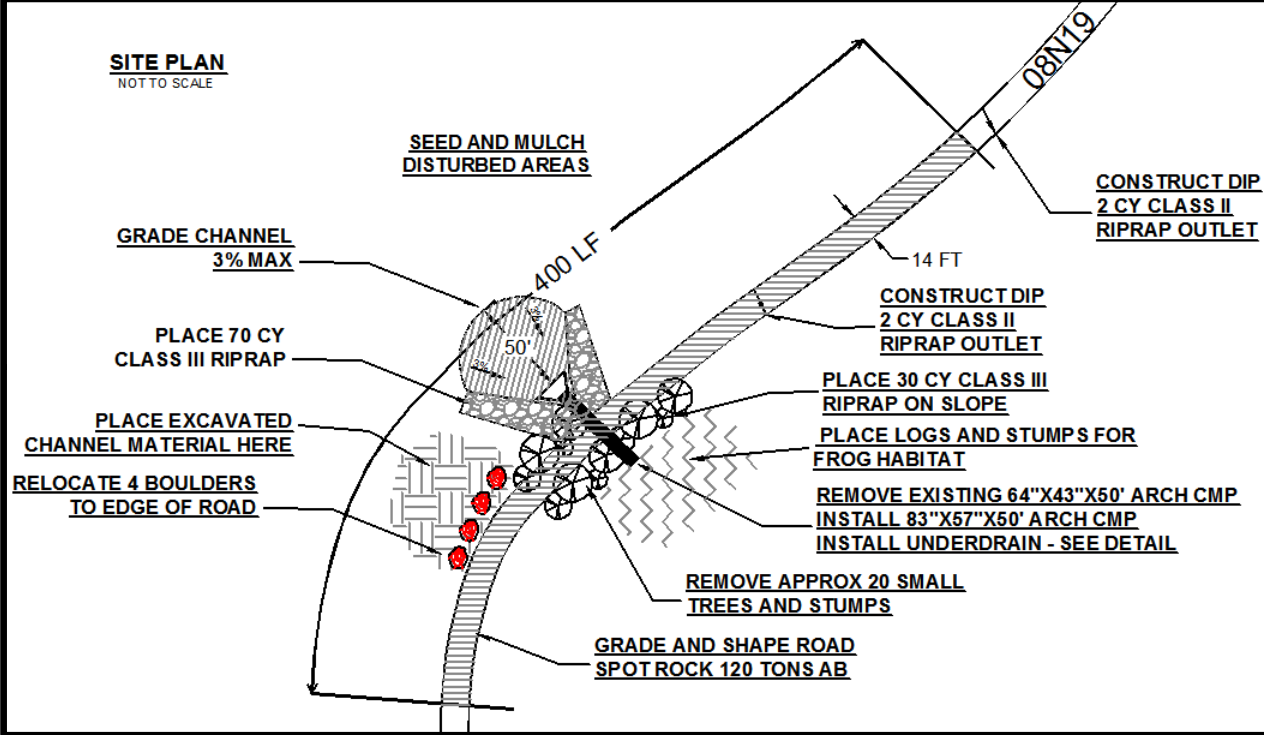
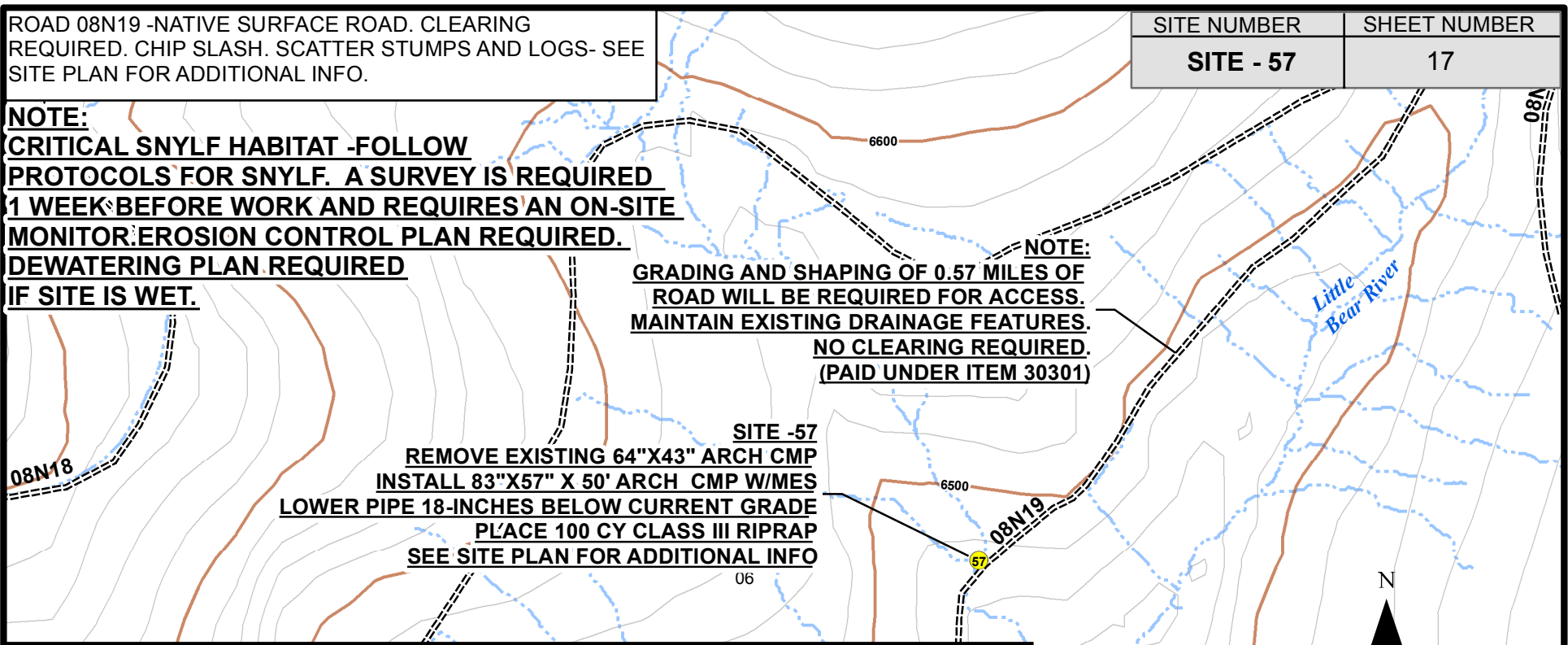
ROAD 08N19 -NATIVE SURFACE ROAD. CLEARING REQUIRED. CHIP SLASH. SCATTER STUMPS AND LOGS- SEE SITE PLAN FOR ADDITIONAL INFO.

SITE NUMBER	SHEET NUMBER
SITE - 57	17

NOTE:
CRITICAL SNYLF HABITAT -FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK AND REQUIRES AN ON-SITE MONITOR. EROSION CONTROL PLAN REQUIRED. DEWATERING PLAN REQUIRED IF SITE IS WET.

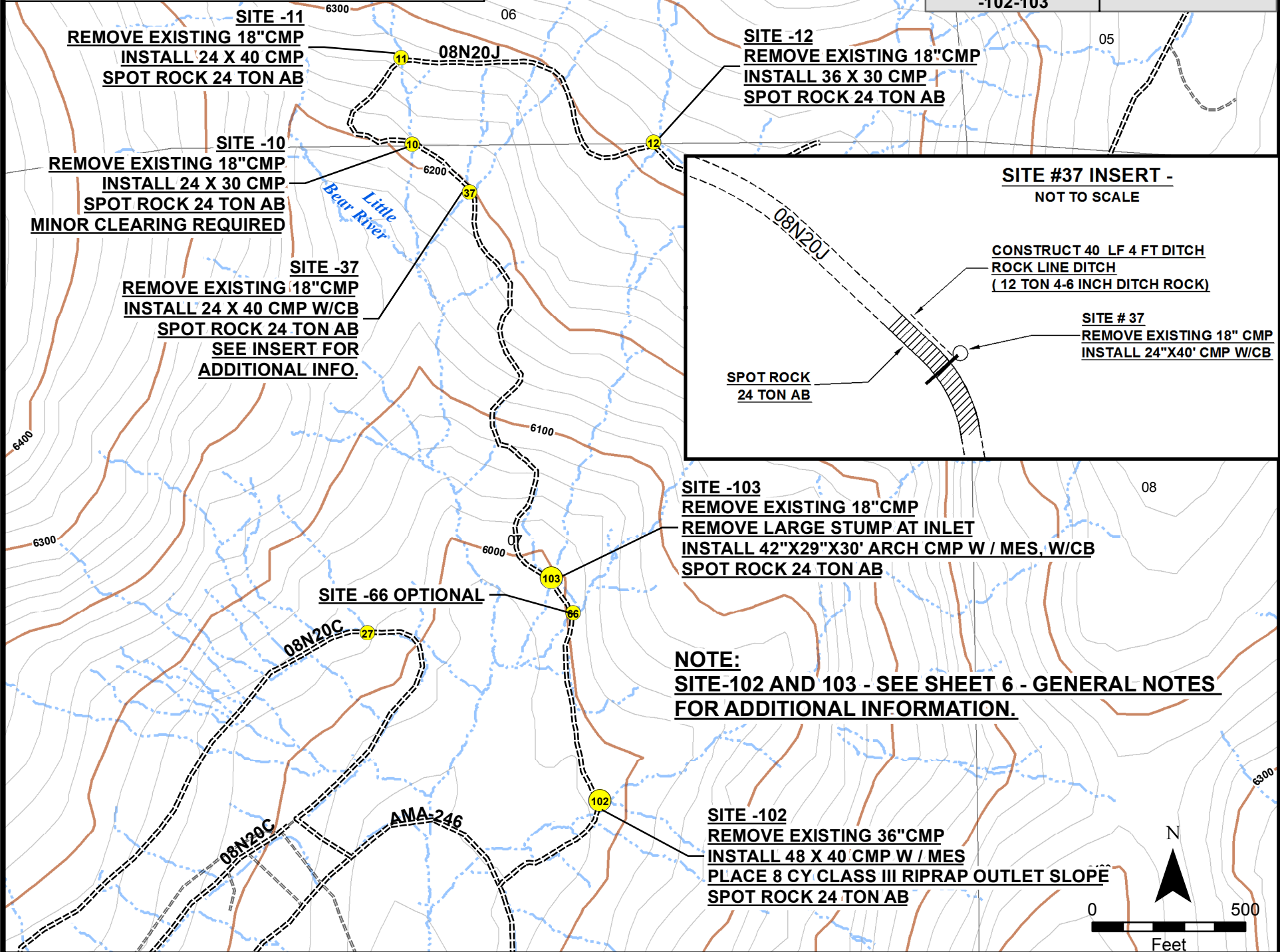
NOTE:
GRADING AND SHAPING OF 0.57 MILES OF ROAD WILL BE REQUIRED FOR ACCESS. MAINTAIN EXISTING DRAINAGE FEATURES. NO CLEARING REQUIRED. (PAID UNDER ITEM 30301)

SITE -57
REMOVE EXISTING 64"X43" ARCH CMP
INSTALL 83"X57" X 50' ARCH CMP W/MES
LOWER PIPE 18-INCHES BELOW CURRENT GRADE
PLACE 100 CY CLASS III RIPRAP
SEE SITE PLAN FOR ADDITIONAL INFO



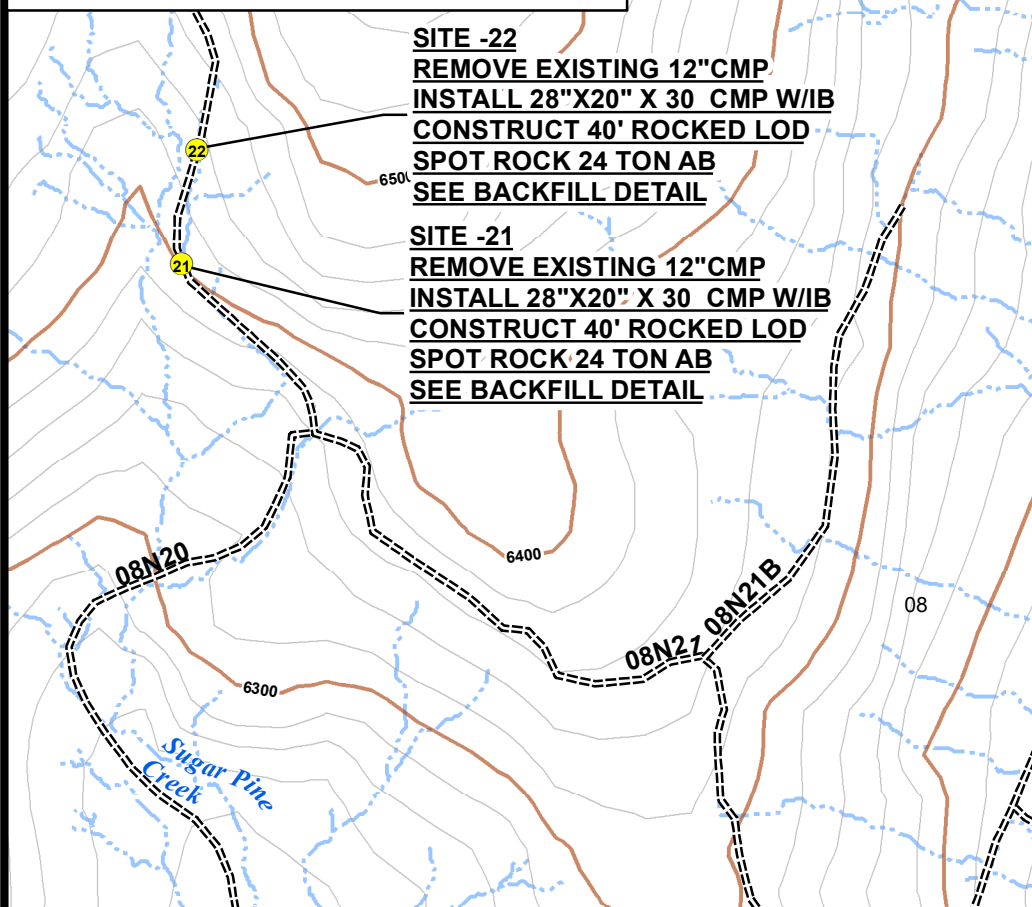
ROAD 08N20J - NATIVE SURFACED ROAD. MINOR CLEARING REQUIRED. SCATTER SLASH AND STUMPS.

SITE NUMBER	SHEET NUMBER
SITE-10-11-12-37 -102-103	18



ROAD 08N21 - NATIVE SURFACED ROAD.
MINOR CLEARING REQUIRED. SCATTER
SLASH.

SITE NUMBER	SHEET NUMBER
SITE-21_22 92	19

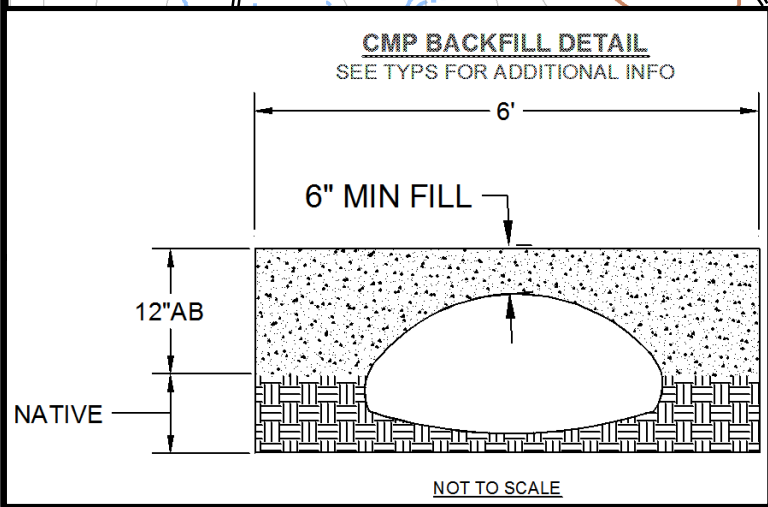
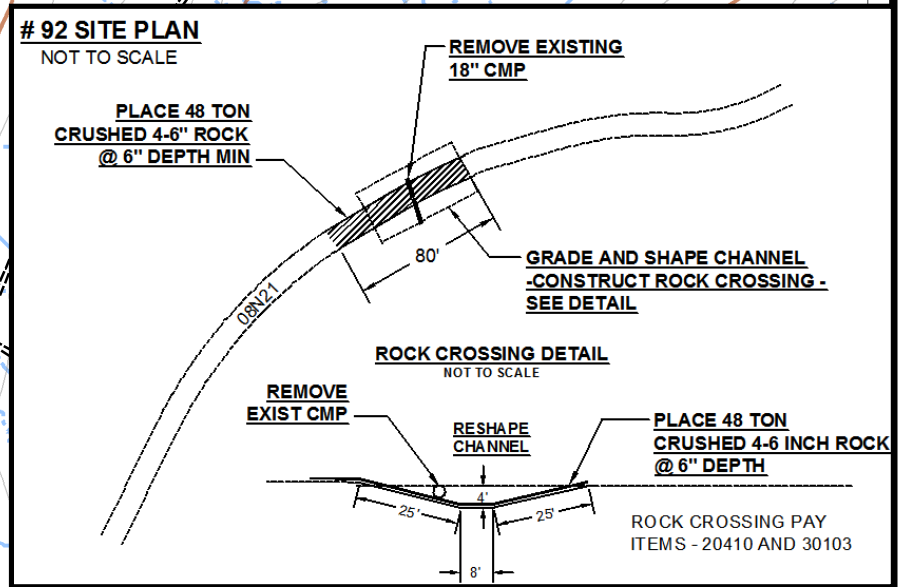


SITE -22
REMOVE EXISTING 12" CMP
INSTALL 28"X20" X 30 CMP W/IB
CONSTRUCT 40' ROCKED LOD
SPOT ROCK 24 TON AB
SEE BACKFILL DETAIL

SITE -21
REMOVE EXISTING 12" CMP
INSTALL 28"X20" X 30 CMP W/IB
CONSTRUCT 40' ROCKED LOD
SPOT ROCK 24 TON AB
SEE BACKFILL DETAIL

NOTE:
SITE # 92 SNYLF HABITAT
FOLLOW PROTOCOLS FOR SNYLF.
A SURVEY IS REQUIRED 1 WEEK BEFORE WORK.
EROSION CONTROL PLAN REQUIRED.
NO DEWATERING REQUIRED IF SITE IS DRY.

SITE -92
REMOVE EXISTING 18" CMP
CONSTRUCT ROCK CROSSING
SEE SITE PLAN.

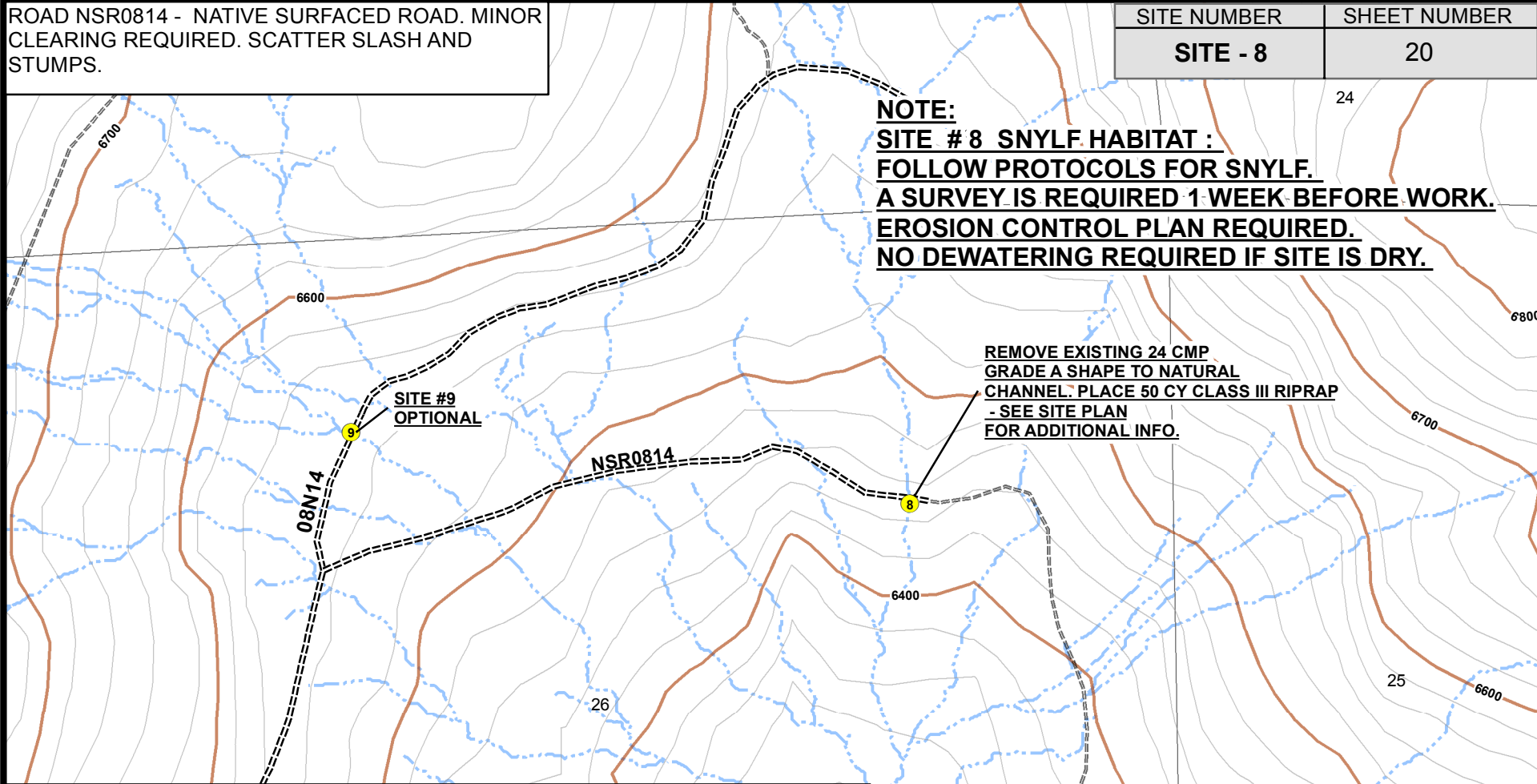


**OPTIONAL
SITE -20**

ROAD NSR0814 - NATIVE SURFACED ROAD. MINOR CLEARING REQUIRED. SCATTER SLASH AND STUMPS.

SITE NUMBER	SHEET NUMBER
SITE - 8	20

NOTE:
SITE # 8 SNYLF HABITAT :
FOLLOW PROTOCOLS FOR SNYLF.
A SURVEY IS REQUIRED 1 WEEK BEFORE WORK.
EROSION CONTROL PLAN REQUIRED.
NO DEWATERING REQUIRED IF SITE IS DRY.



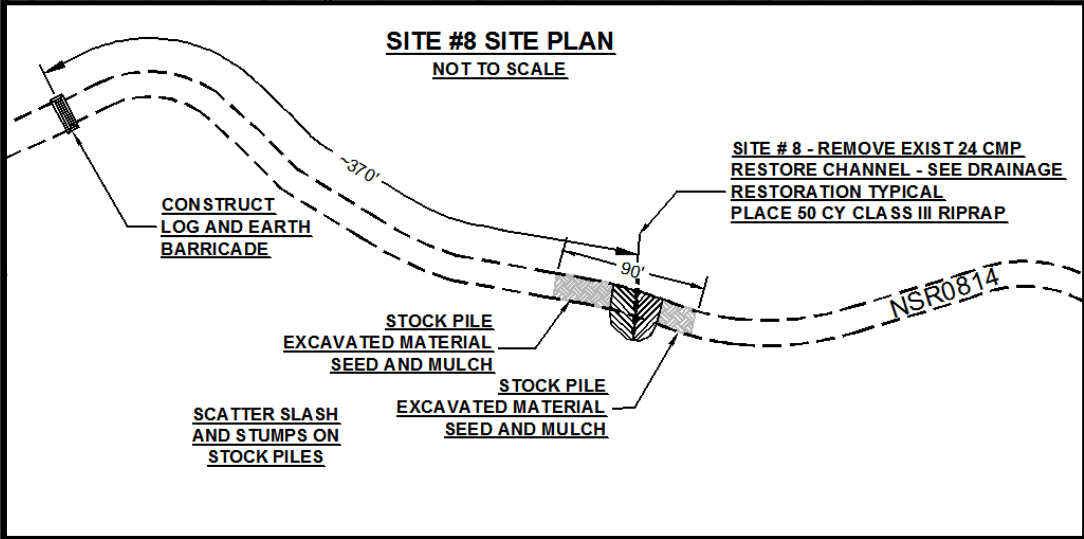
REMOVE EXISTING 24 CMP
GRADE A SHAPE TO NATURAL
CHANNEL. PLACE 50 CY CLASS III RIPRAP
- SEE SITE PLAN
FOR ADDITIONAL INFO.

SITE #9
OPTIONAL

08N14

NSR0814

SITE #8 SITE PLAN
NOT TO SCALE



SITE # 8 - REMOVE EXIST 24 CMP
RESTORE CHANNEL - SEE DRAINAGE
RESTORATION TYPICAL
PLACE 50 CY CLASS III RIPRAP

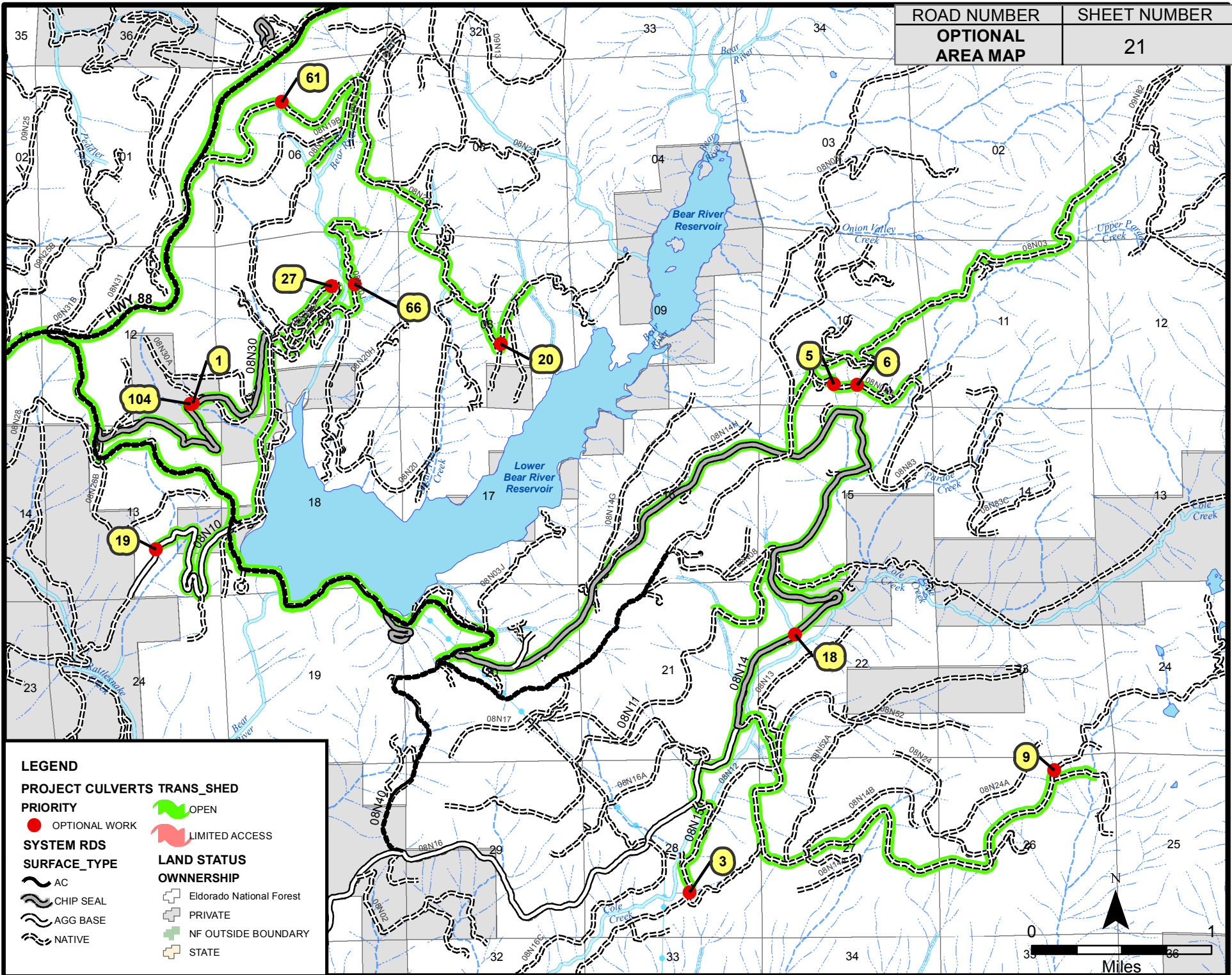
CONSTRUCT
LOG AND EARTH
BARRICADE

STOCK PILE
EXCAVATED MATERIAL
SEED AND MULCH

SCATTER SLASH
AND STUMPS ON
STOCK PILES

STOCK PILE
EXCAVATED MATERIAL
SEED AND MULCH

NSR0814



LEGEND

- | | |
|-------------------------|--------------------------|
| PROJECT CULVERTS | OPEN |
| TRANS_HED | LIMITED ACCESS |
| PRIORITY | OPTIONAL WORK |
| SYSTEM RDS | |
| SURFACE_TYPE | LAND STATUS |
| AC | Eldorado National Forest |
| CHIP SEAL | PRIVATE |
| AGG BASE | NF OUTSIDE BOUNDARY |
| NATIVE | STATE |

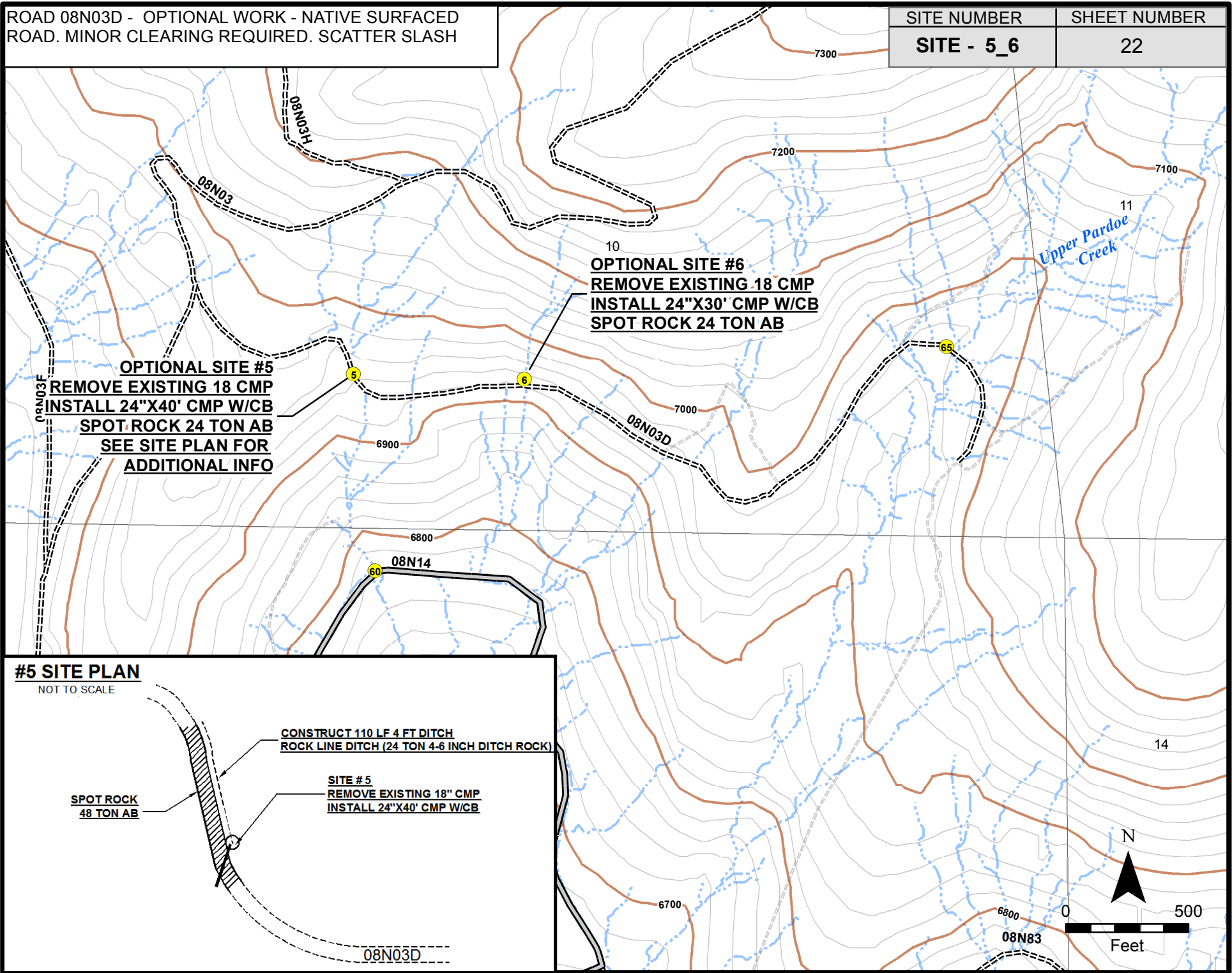
ROAD 08N03D - OPTIONAL WORK - NATIVE SURFACED ROAD. MINOR CLEARING REQUIRED. SCATTER SLASH

SITE NUMBER

SHEET NUMBER

SITE - 5_6

22

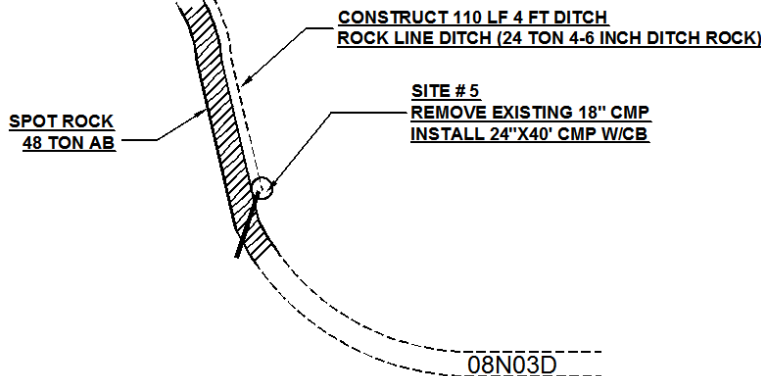


OPTIONAL SITE #5
REMOVE EXISTING 18" CMP
INSTALL 24"X40' CMP W/CB
SPOT ROCK 24 TON AB
SEE SITE PLAN FOR
ADDITIONAL INFO

OPTIONAL SITE #6
REMOVE EXISTING 18" CMP
INSTALL 24"X30' CMP W/CB
SPOT ROCK 24 TON AB

#5 SITE PLAN

NOT TO SCALE

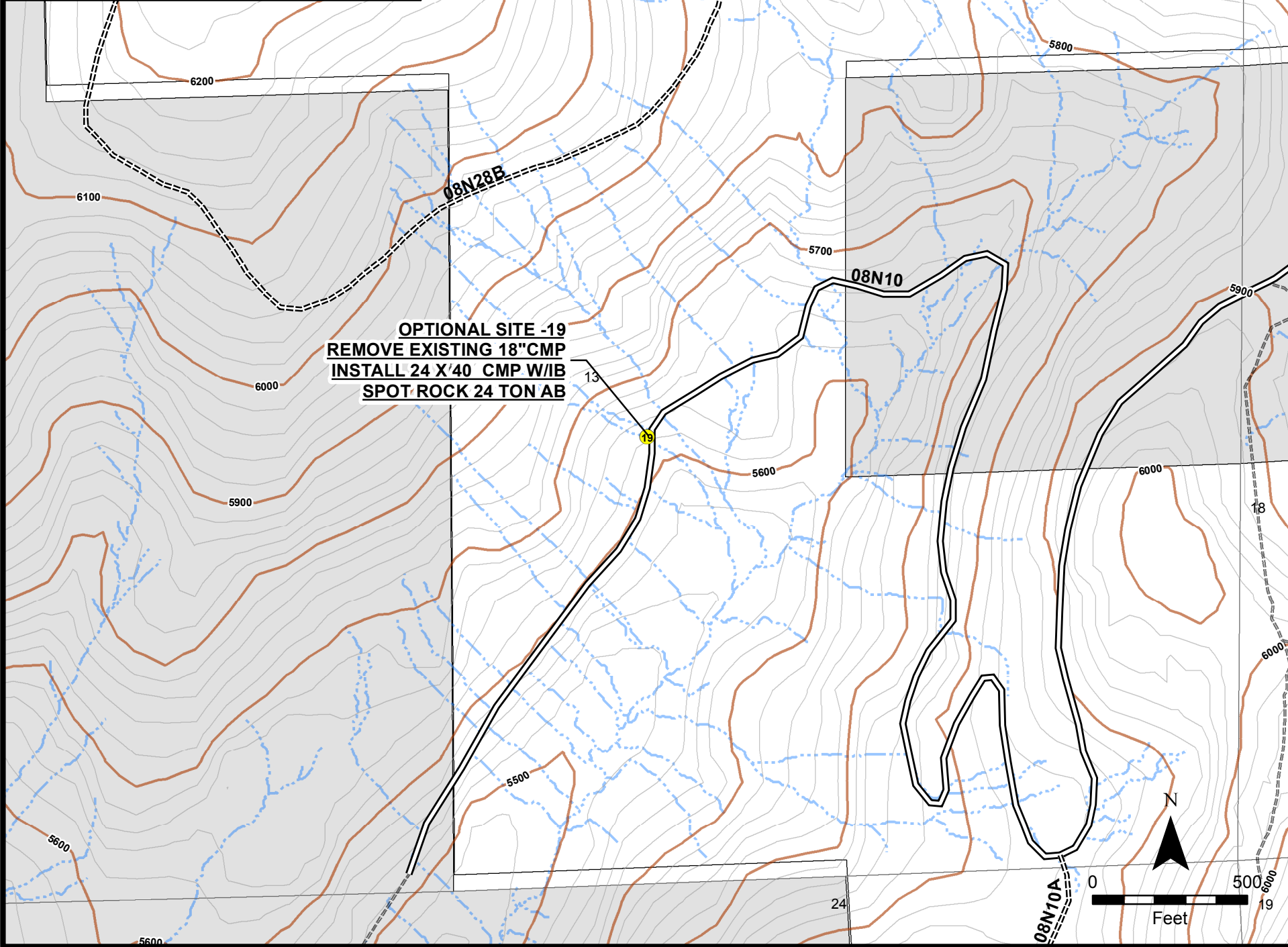


TE-5_6

ROAD 08N10 - OPTIONAL WORK - NATIVE SURFACED ROAD. MINOR CLEARING REQUIRED. SCATTER SLASH.

SITE NUMBER
SITE - 19

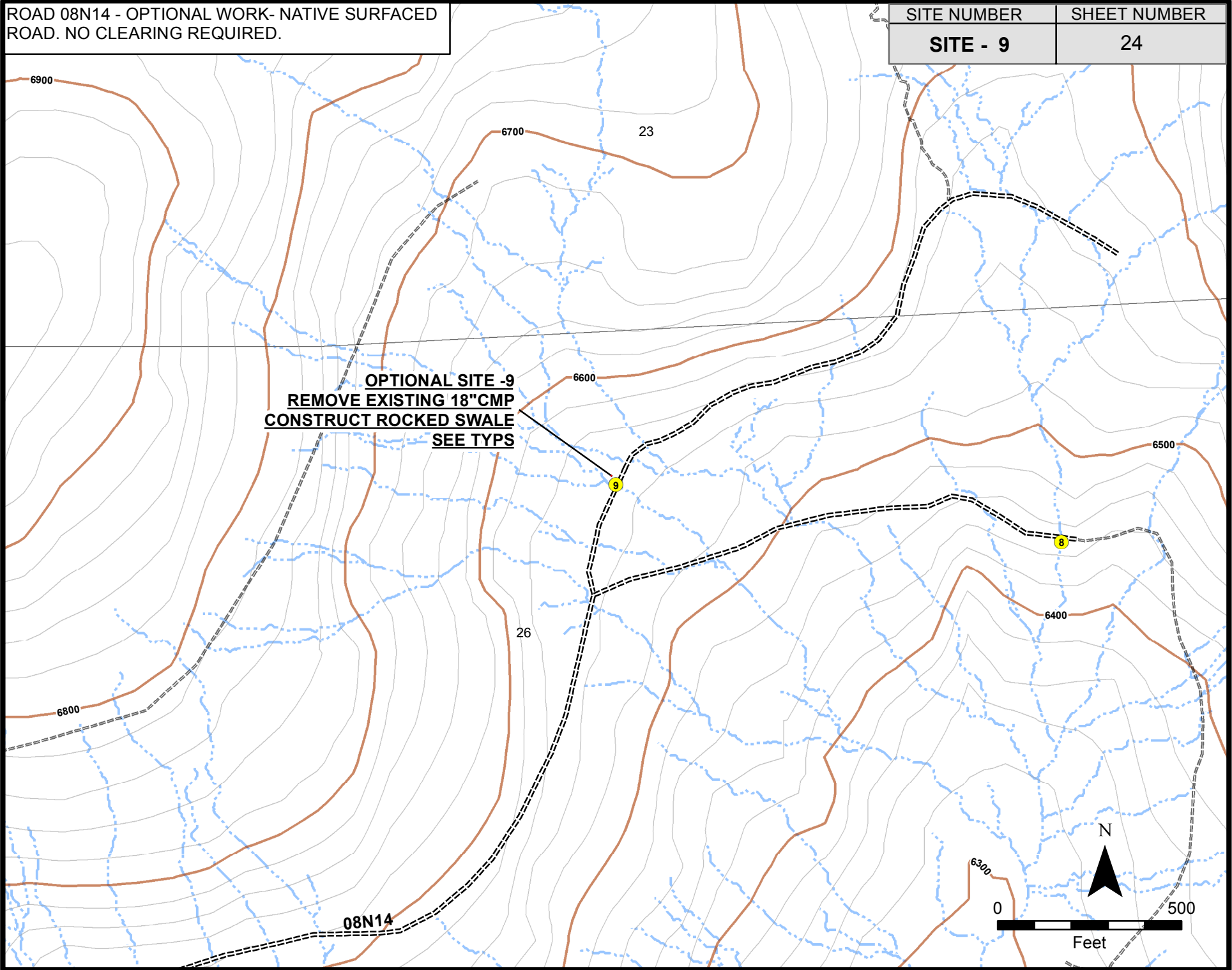
SHEET NUMBER
23



E-19

ROAD 08N14 - OPTIONAL WORK- NATIVE SURFACED ROAD. NO CLEARING REQUIRED.

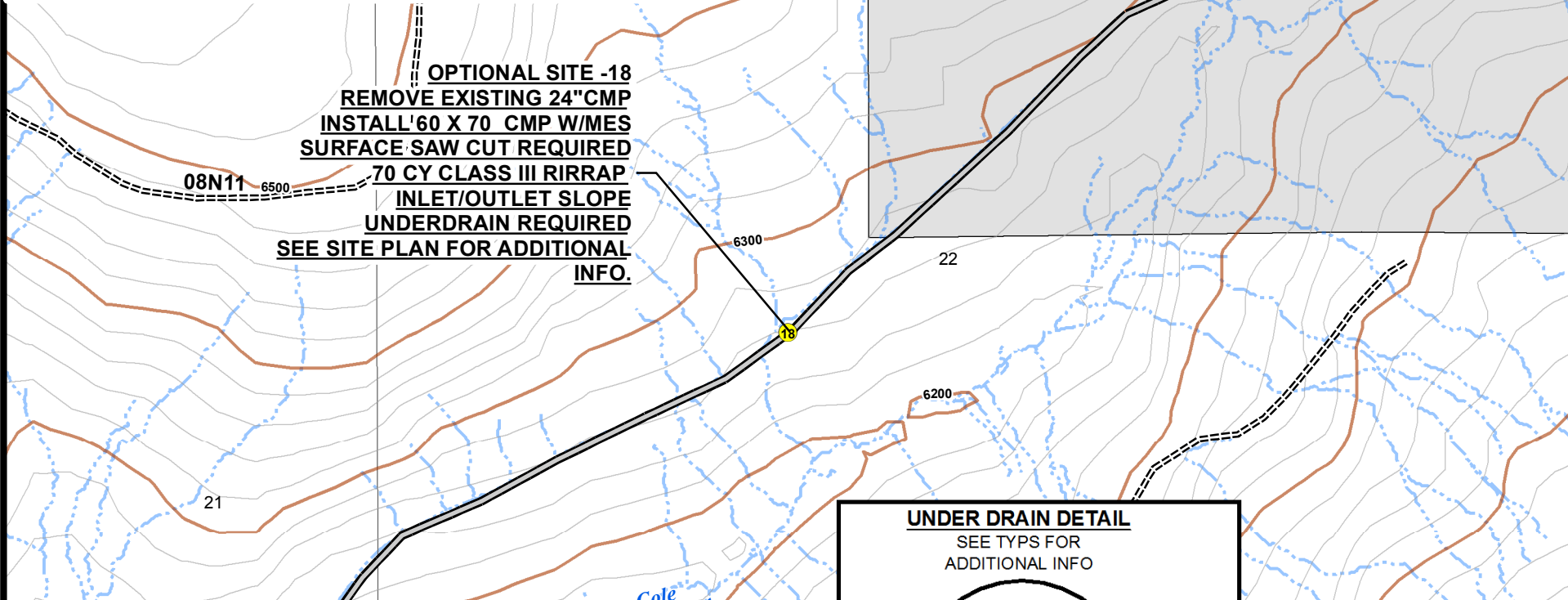
SITE NUMBER	SHEET NUMBER
SITE - 9	24



ROAD 08N14 - OPTIONAL WORK - CHIP SEAL SURFACED ROAD. MINOR CLEARING REQUIRED. SCATTER SLASH.

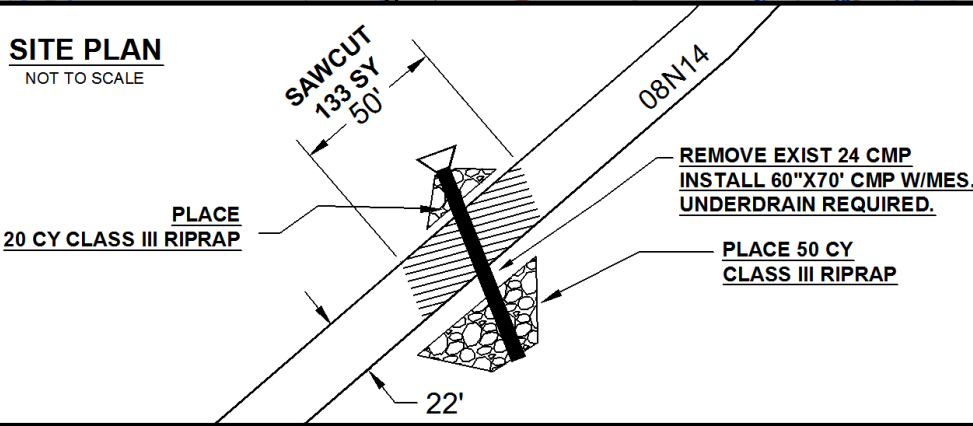
SITE NUMBER	SHEET NUMBER
SITE - 18	25

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

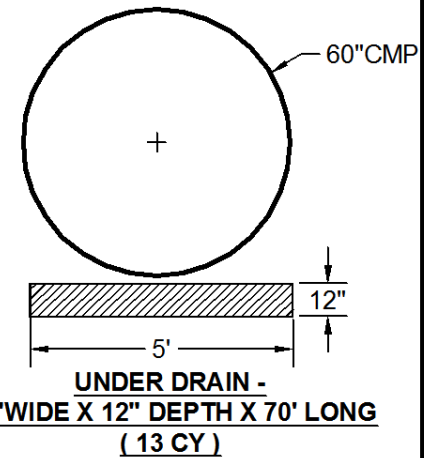


OPTIONAL SITE -18
REMOVE EXISTING 24" CMP
INSTALL 60 X 70 CMP W/MES
SURFACE SAW CUT REQUIRED
70 CY CLASS III RIRRAP
INLET/OUTLET SLOPE
UNDERDRAIN REQUIRED
SEE SITE PLAN FOR ADDITIONAL
INFO.

SITE PLAN
NOT TO SCALE

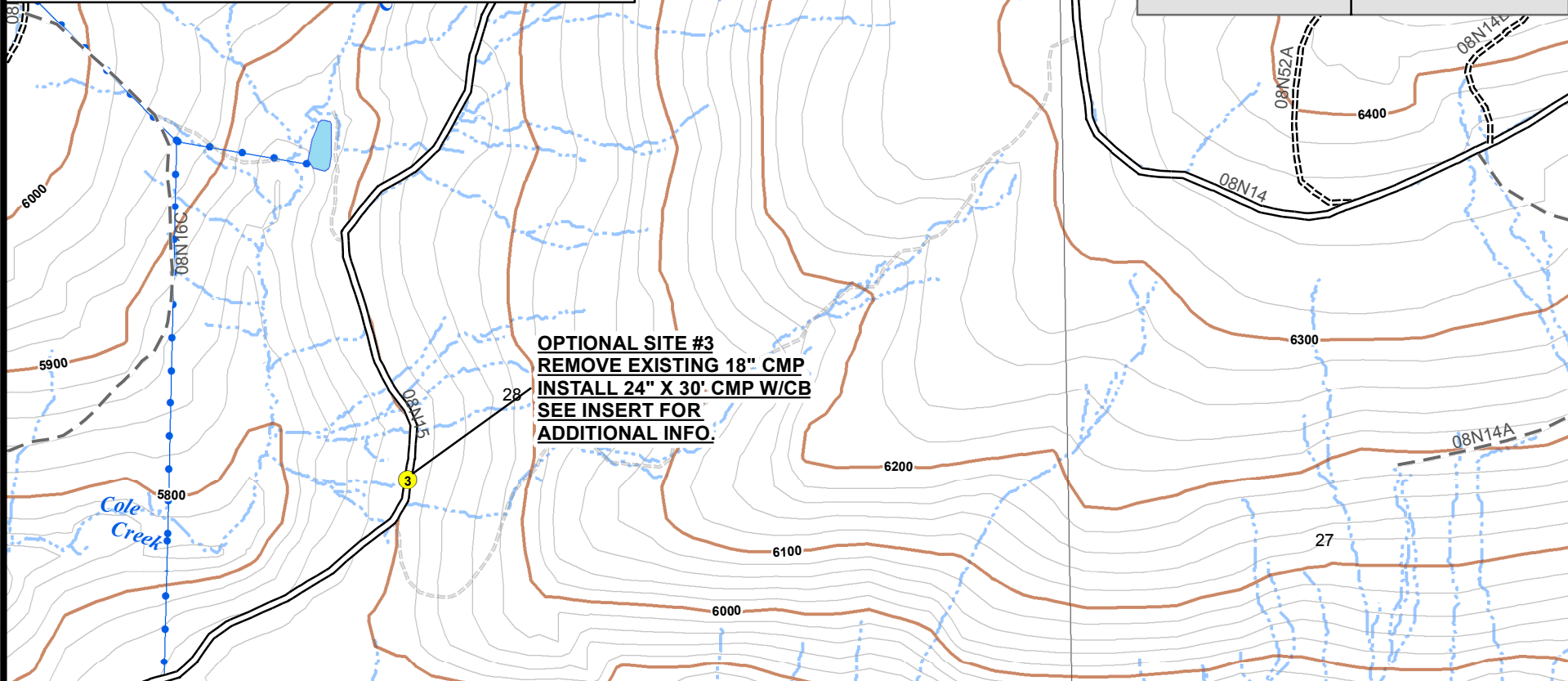


UNDER DRAIN DETAIL
SEE TYPES FOR
ADDITIONAL INFO

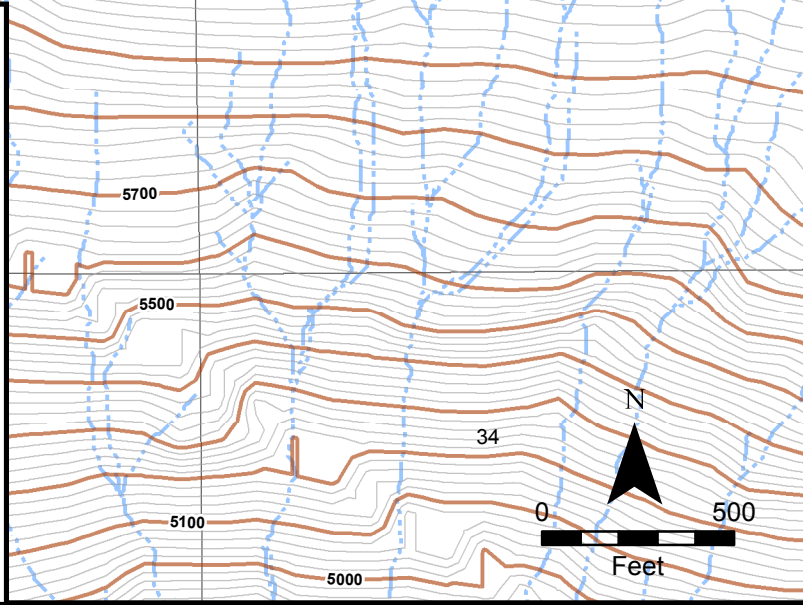
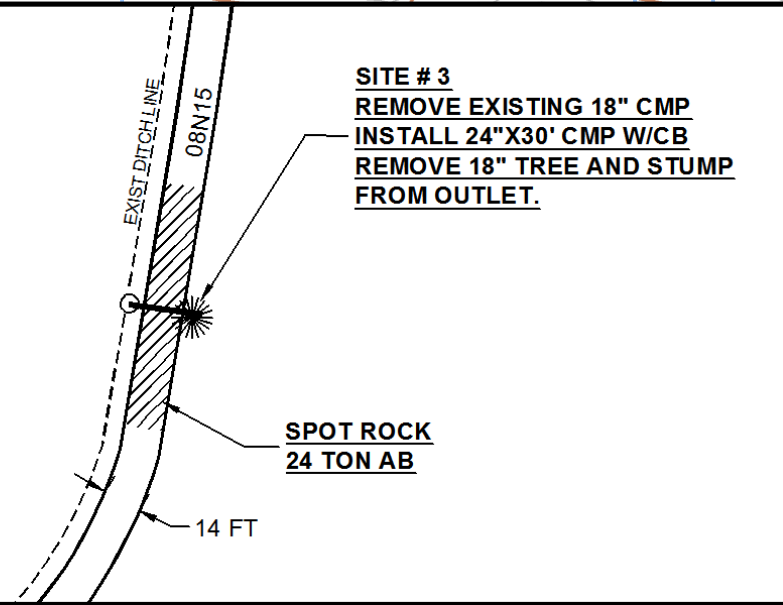


ROAD 08N15 - OPTIONAL WORK- AB SURFACED ROAD.
MINOR CLEARING REQUIRED. CHIP SLASH. SCATTER

SITE NUMBER	SHEET NUMBER
SITE - 3	26



**INSERT -
NOT TO SCALE**



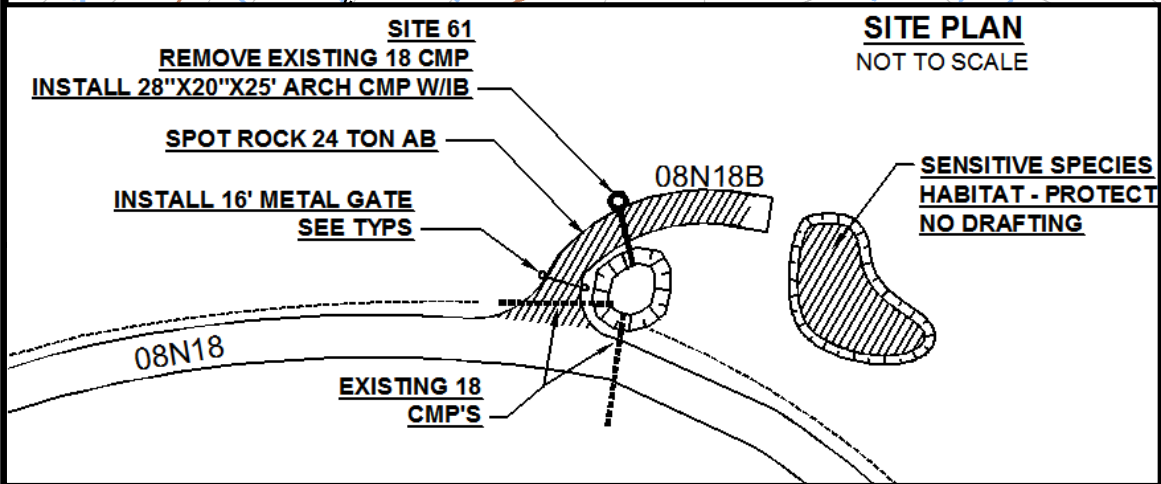
ROAD 08N18B - OPTIONAL WORK - NATIVE SURFACE ROAD. MINOR CLEARING REQUIRED.

SITE NUMBER
SITE - 61

SHEET NUMBER
27

NOTE:
CRITICAL SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK AND REQUIRES AN ON-SITE MONITOR. EROSION CONTROL PLAN REQUIRED. NO DEWATERING REQUIRED WHEN DRY.

OPTIONAL SITE -61
REMOVE EXISTING 18 CMP
INSTALL 28"X20"X25' ARCH CMP W/IB
SPOT ROCK 24 TONS AB
INSTALL METAL GATE
SEE SITE PLAN FOR
ADDITIONAL INFO.



ROAD 08N20C - OPTIONAL WORK -NATIVE SURFACED ROAD. NO CLEARING REQUIRED.

SITE NUMBER

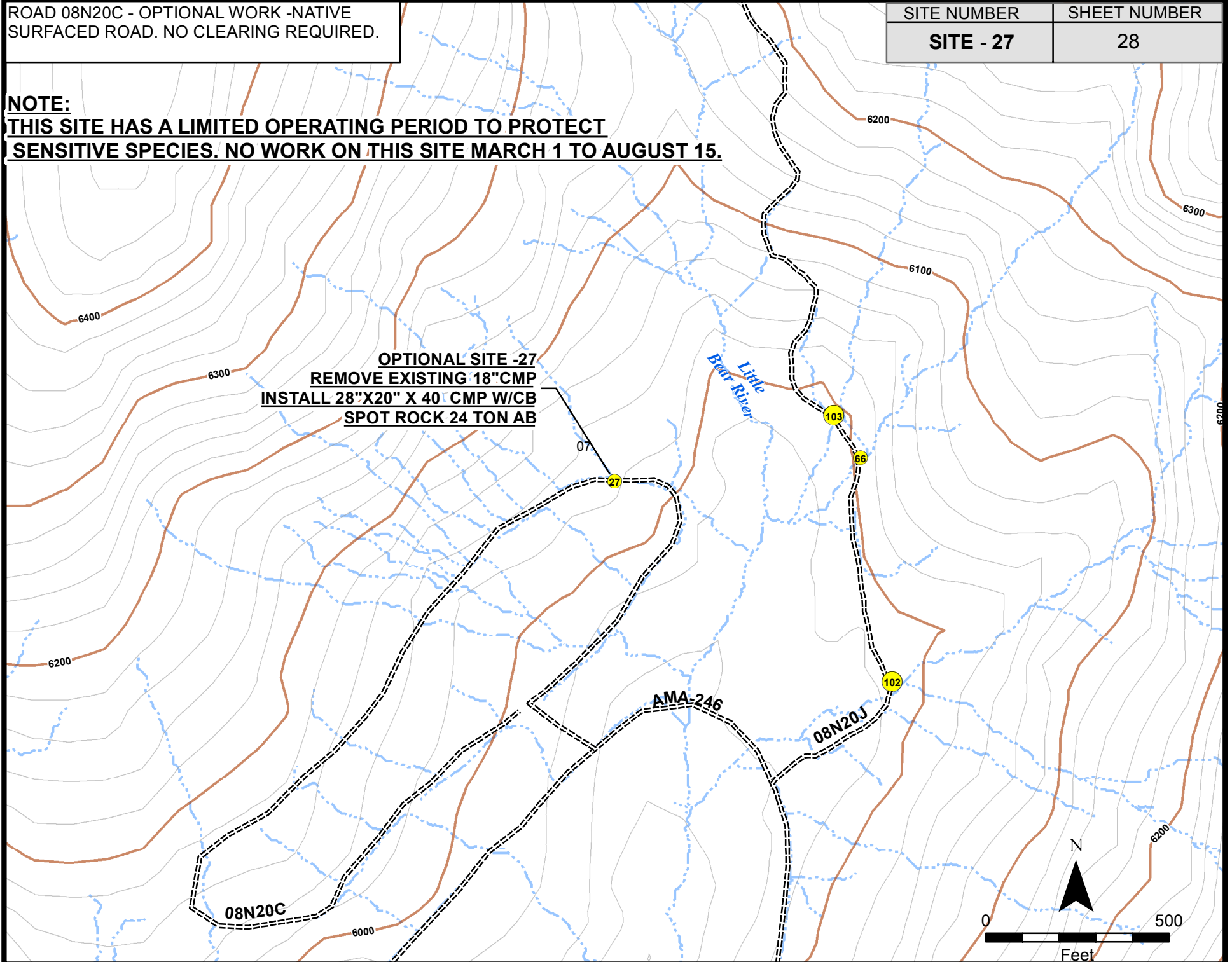
SHEET NUMBER

SITE - 27

28

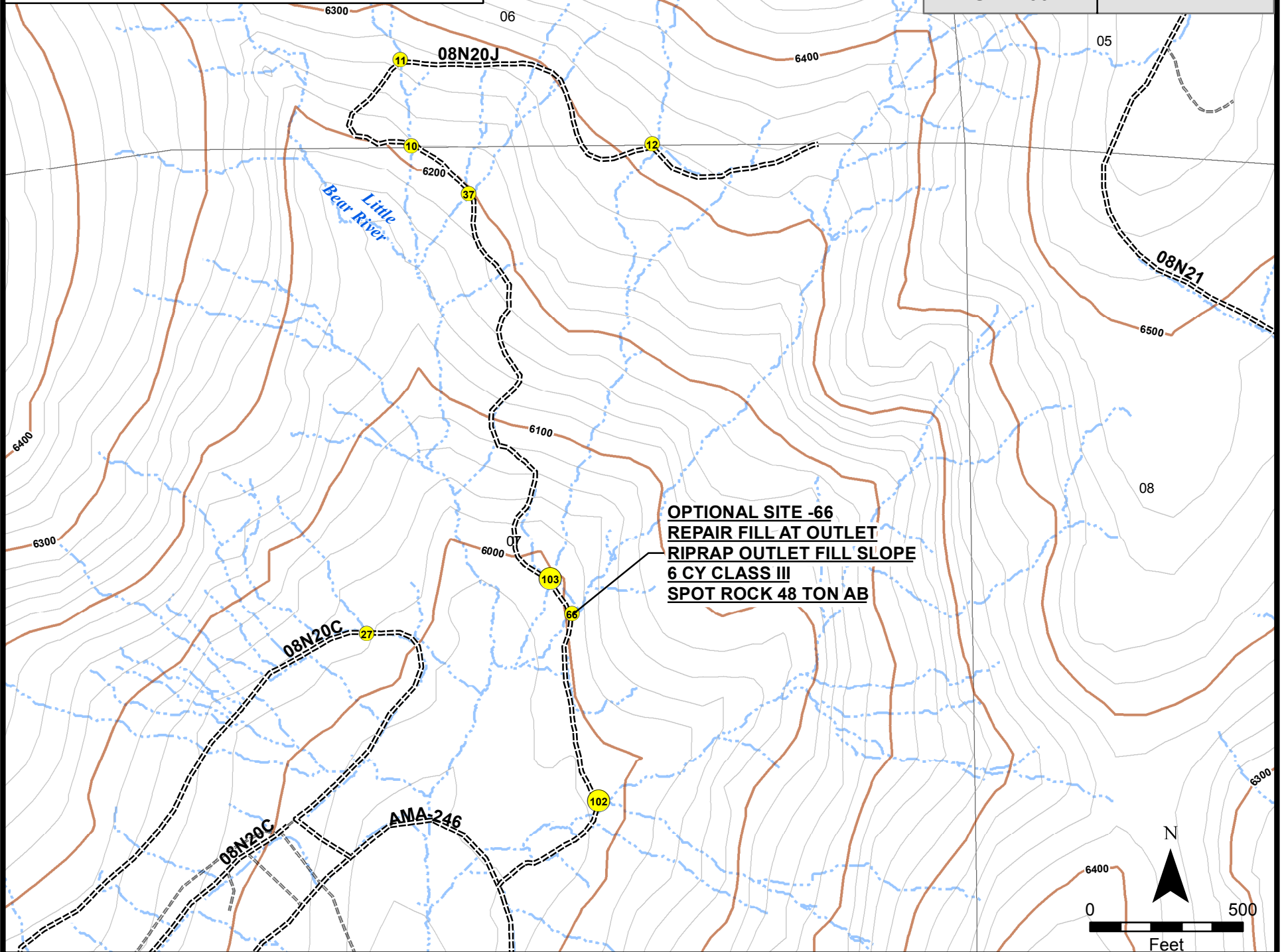
NOTE:

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



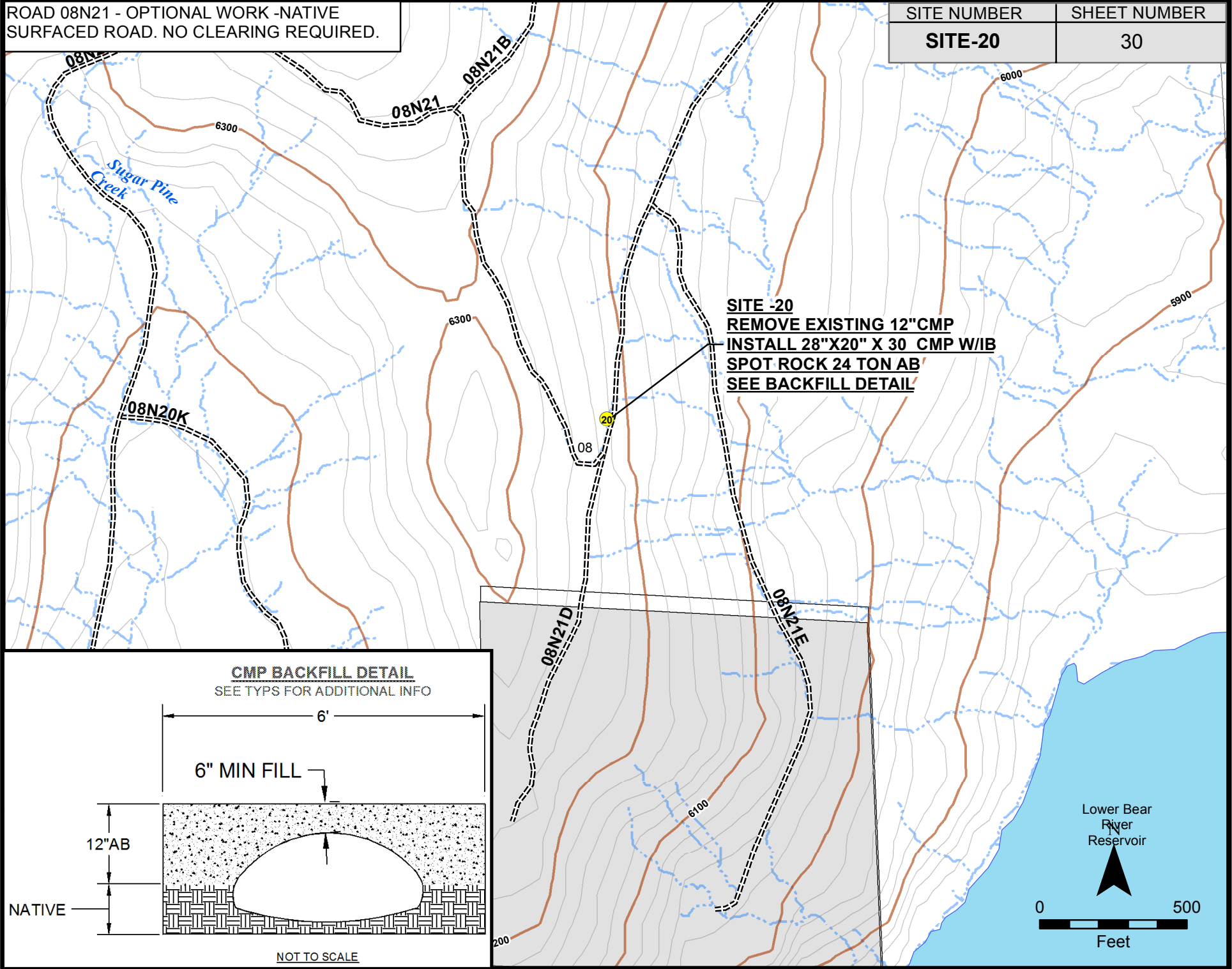
ROAD 08N20J - OPTIONAL WORK - NATIVE SURFACED ROAD. NO CLEARING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE-66	29



ROAD 08N21 - OPTIONAL WORK -NATIVE SURFACED ROAD. NO CLEARING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE-20	30

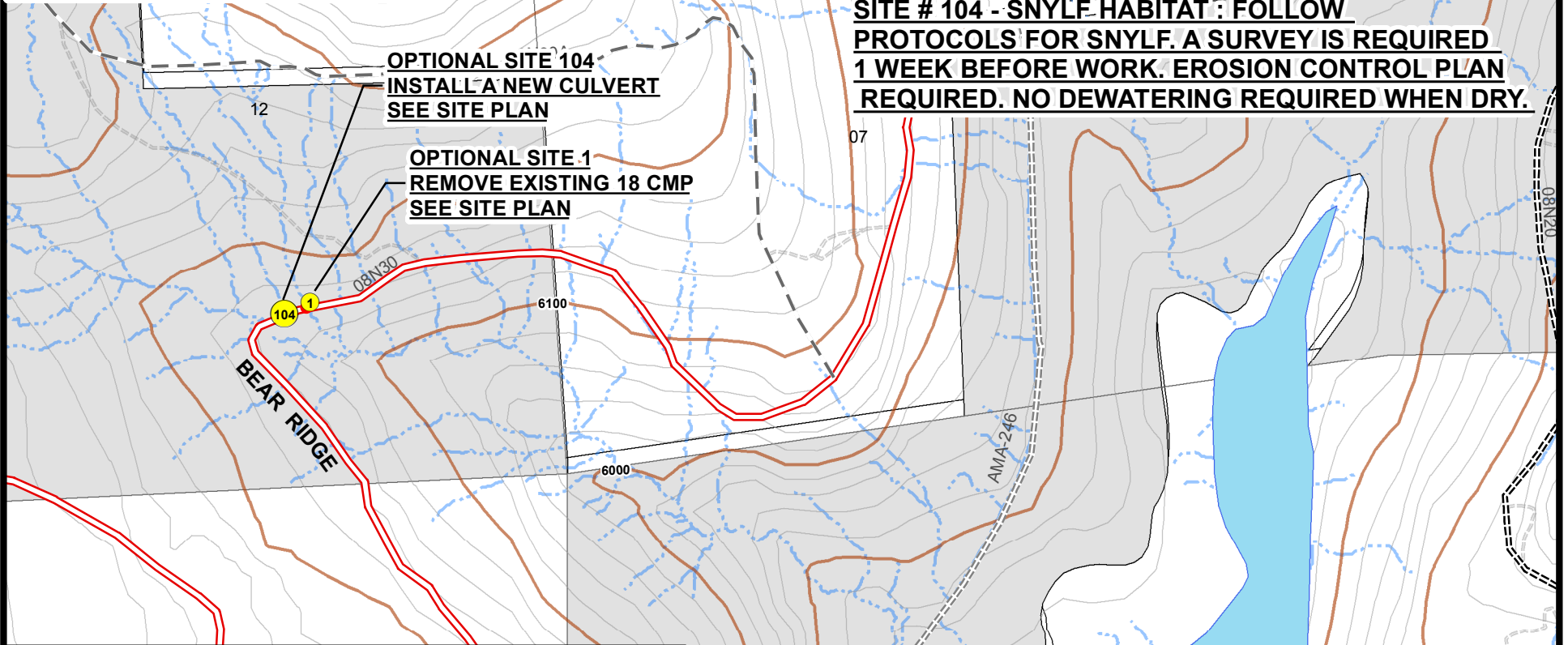


ROAD 08N30 - OPTIONAL WORK - AB SURFACED ROAD. NO CLEARING REQUIRED.

SITE NUMBER	SHEET NUMBER
SITE 1_104	31

NOTE:
SITE-104 - SEE SHEET 6 - GENERAL NOTES FOR ADDITIONAL INFORMATION.

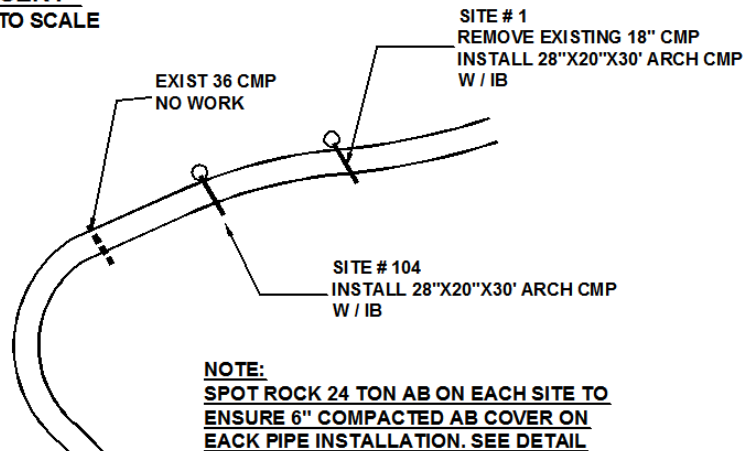
NOTE:
SITE # 104 - SNYLF HABITAT : FOLLOW PROTOCOLS FOR SNYLF. A SURVEY IS REQUIRED 1 WEEK BEFORE WORK. EROSION CONTROL PLAN REQUIRED. NO DEWATERING REQUIRED WHEN DRY.



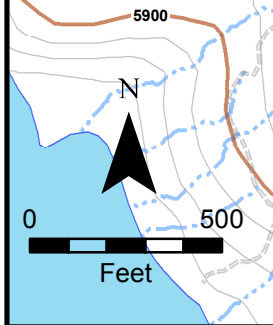
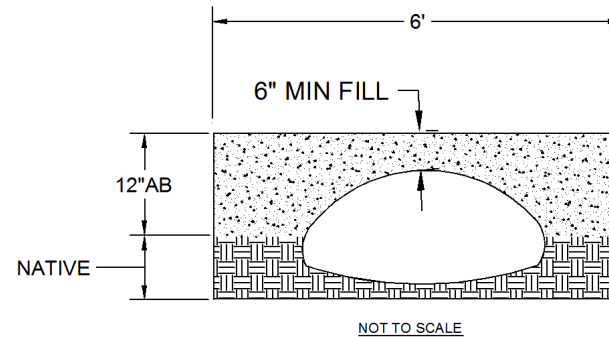
OPTIONAL SITE 104
INSTALL A NEW CULVERT
SEE SITE PLAN

OPTIONAL SITE 1
REMOVE EXISTING 18" CMP
SEE SITE PLAN

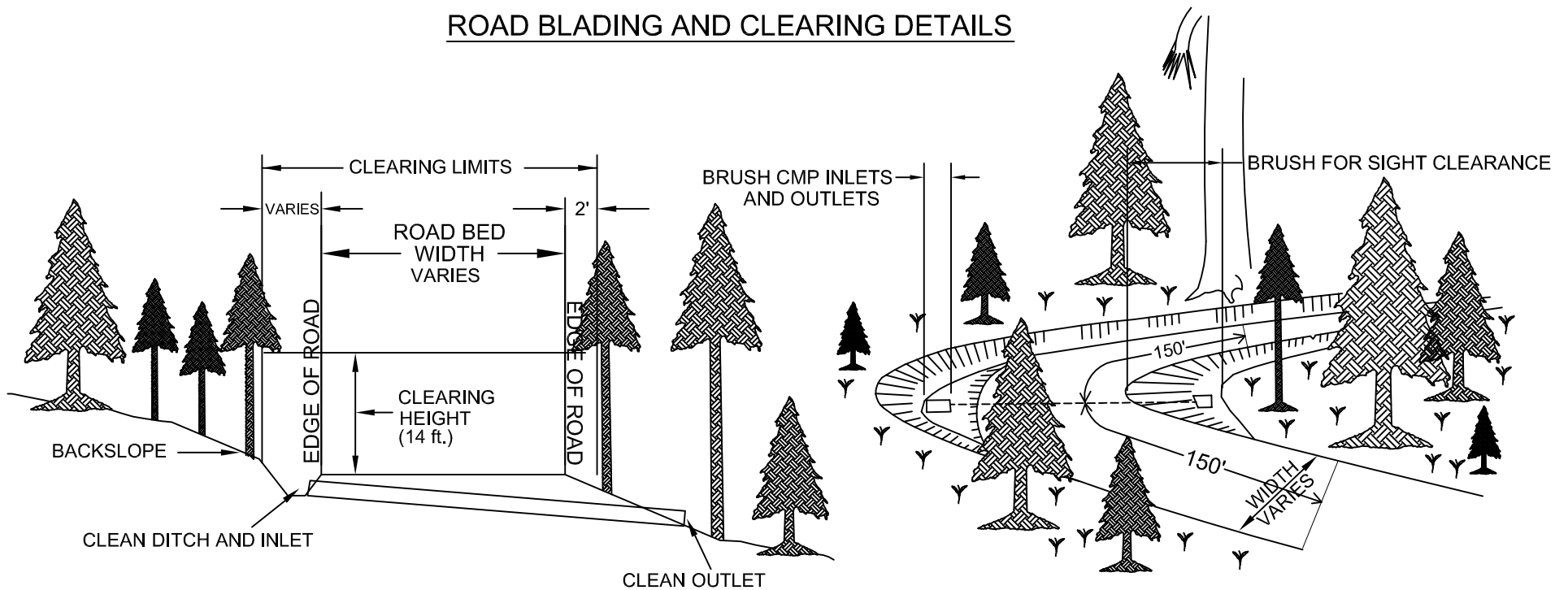
INSERT -
NOT TO SCALE



CMP BACKFILL DETAIL
 SEE TYPES FOR ADDITIONAL INFO



ROAD BLADING 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.

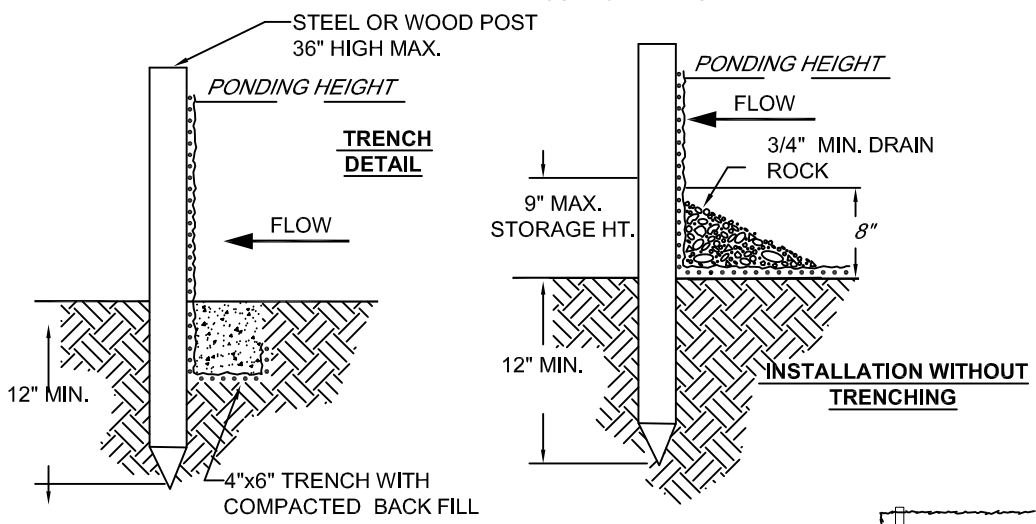
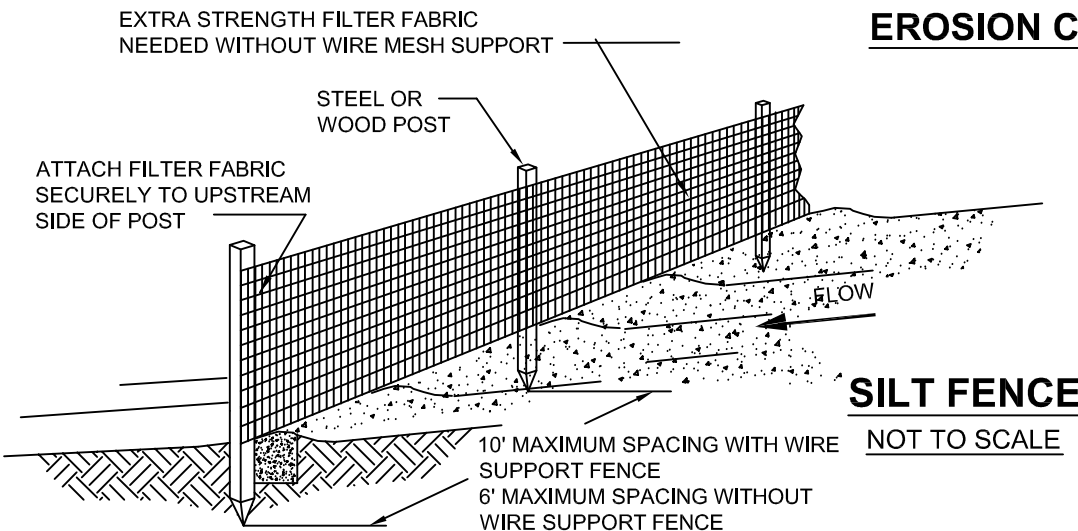
RECONDITIONING OF ROADWAY:

1. Typical road segment per site, unless shown otherwise in the Drawings, is 300 lf, or, 150 lf either side of the numbered site.
2. Work includes all work necessary to prepare site before and after culverts are installed, and prior to surface placements.
3. Outslope road bed 3% whenever possible. Remove all outside berms. When this is impractical relieve berm every 50 linear feet.
4. Clean and reshape all existing road ditches, leadoff ditches, dips associated with each site.
5. Drain all low points, ponds, swales.
6. Treat the full existing width of the road.

EROSION CONTROL TYP

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.

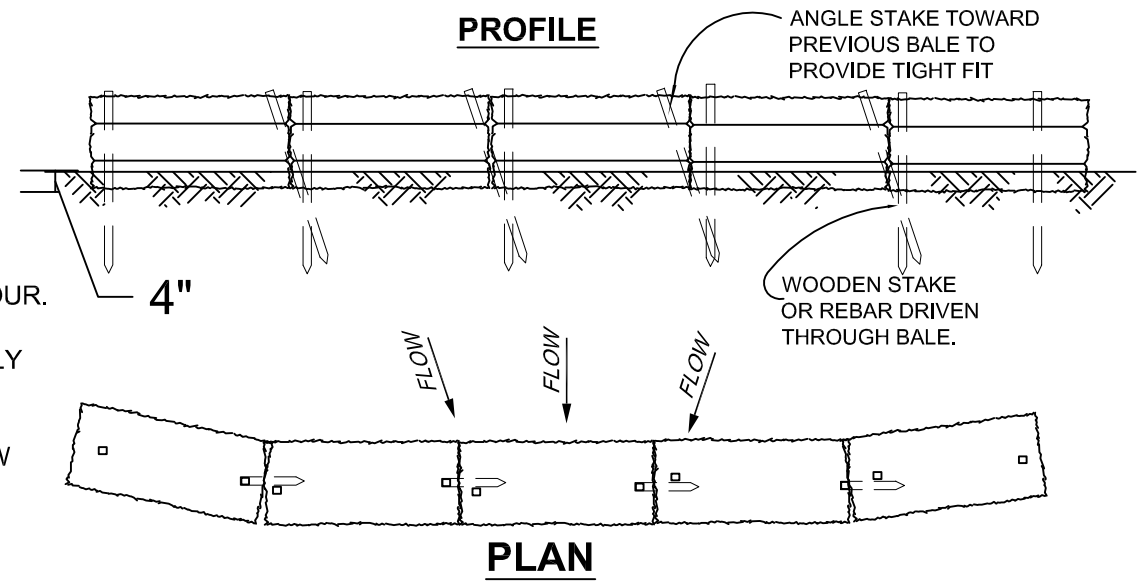


STRAW BALE BARRIER

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.

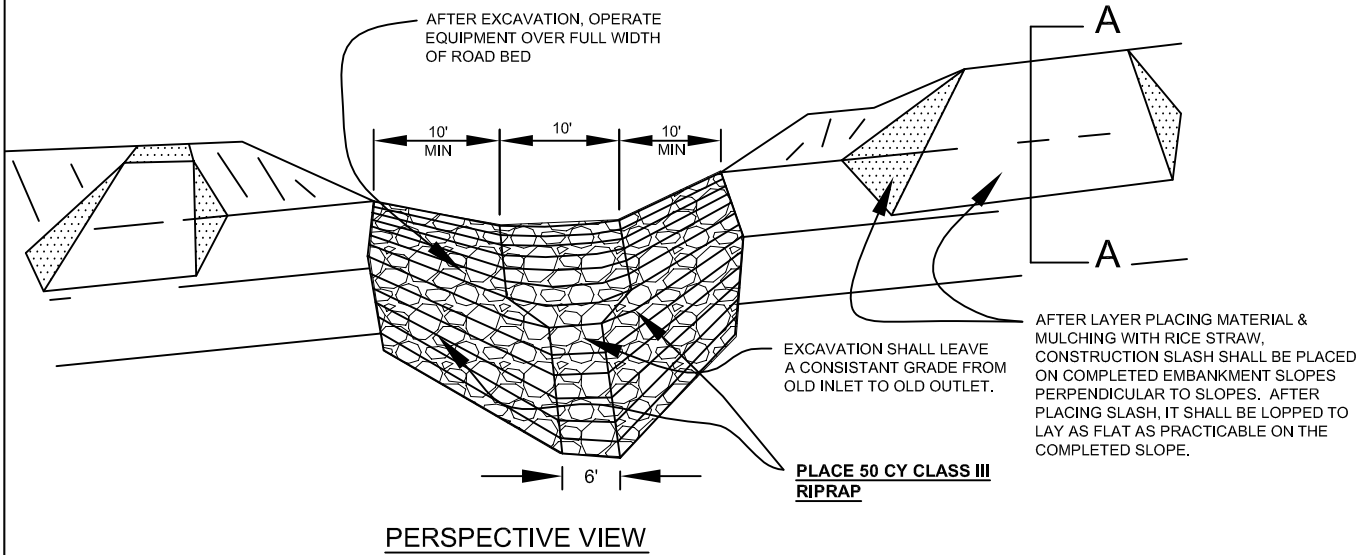


PLAN

DRAINAGE RESTORATION

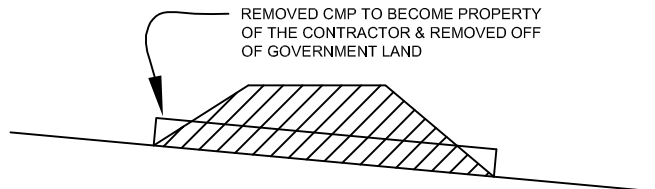
NO SCALE

PROJECT	SHEET NUMBER
BEAR	34

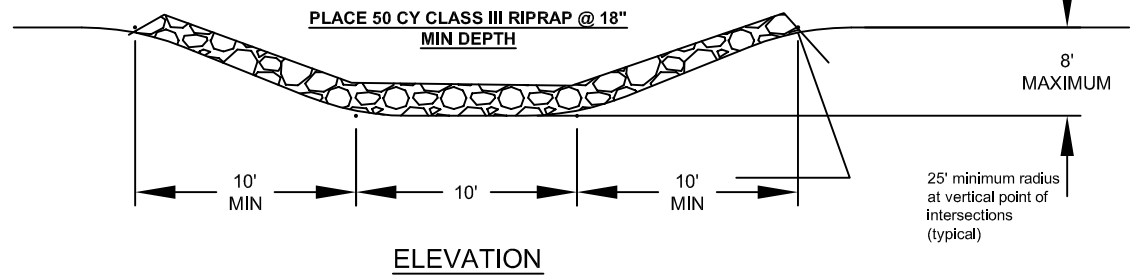


GENERAL NOTES:

1. THE INTENT OF CULVERT REMOVAL IS TO RESTORE NATURAL DRAINAGE FUNCTION.
2. CROSSING SITE TO BE BLOCKED AND BARRICADED TO PREVENT FURTHER ACCESS.
3. AFTER THE CMP IS REMOVED THE CROSSING WILL BE A MINIMUM OF 12' WIDE, OUTSLOPED 5% TO 7% AT THE UPPER END OF THE CHANNEL.
4. THE CHANNEL DOWNSLOPE OF THE NEW CROSSING WILL BE 6' WIDE WITH SIDE SLOPES TO BLEND INTO SLOPES FOR THE CROSSING. OUTSLOPE WILL BE TO MATCH THE EXISTING CHANNEL.
5. NO SIDE CASTING OF MATERIAL IS PERMITTED.
6. NO OVER EXCAVATION IS PERMITTED.
7. THE LOCATION FOR THE EXCAVATED MATERIAL WILL BE LAYER PLACED IN A LOCATION AS SHOWN ON THE DRAWINGS. WATER MAY BE NEEDED.
8. ALL EXCAVATED SLOPES AND PLACED EMBANKMENT WILL BE MULCHED WITH RICE STRAW AND CONSTRUCTION SLASH. CONSTRUCTION SLASH SHALL BE PLACED TO REDUCE SOIL EROSION.
9. CONSTRUCTION ACTIVITIES SHALL BE CONFINED TO THE EXISTING ROAD BED, CMP LOCATION & DESIGNATED WASTE SITES, OR AT AREAS AS APPROVED BY THE ENGINEER.
10. PAYMENT INCLUDES ALL WORK NECESSARY TO EXCAVATE AND SHAPE NEW CHANNEL., cULVERT REMOVAL / DISPOSAL AND RIPRAP PAID SEPARATELY.

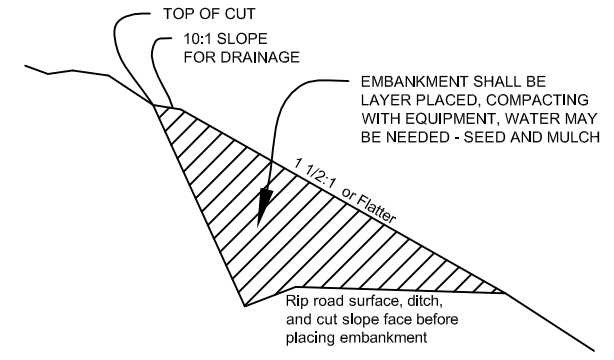


CROSS SECTION OF EXCAVATION



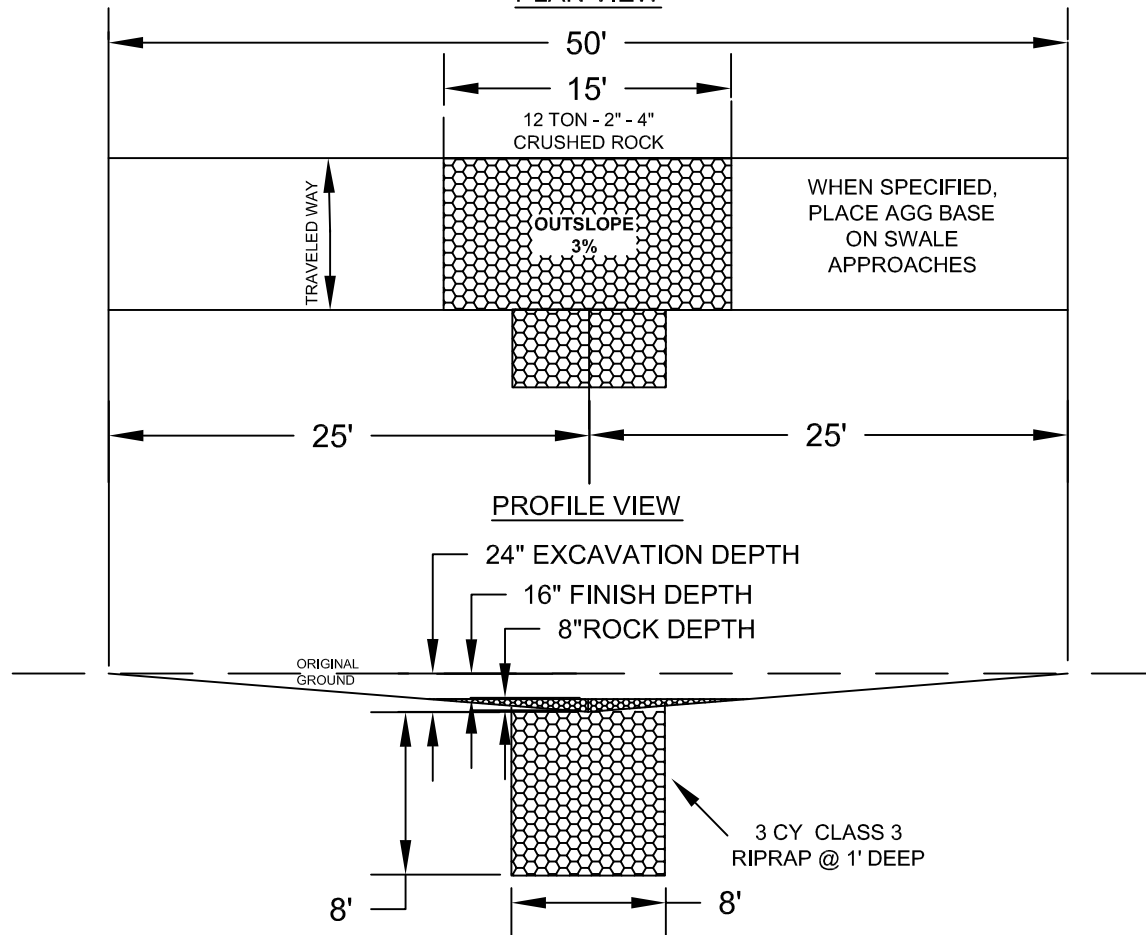
EMBANKMENT CROSS SECTION

'A' - 'A'



ROCKED SWALE TYP

NOT TO SCALE

PLAN VIEWNOTE: 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.

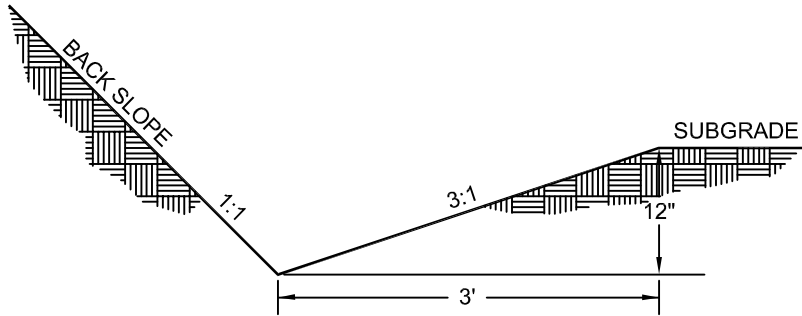
CRUSHED ROCK IS A COMMERCIAL SOURCE.

CLASS III RIPRAP MAY BE COMMERCIAL OR LOCAL SOURCE.

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

PROJECT	SHEET NUMBER
BEAR	36

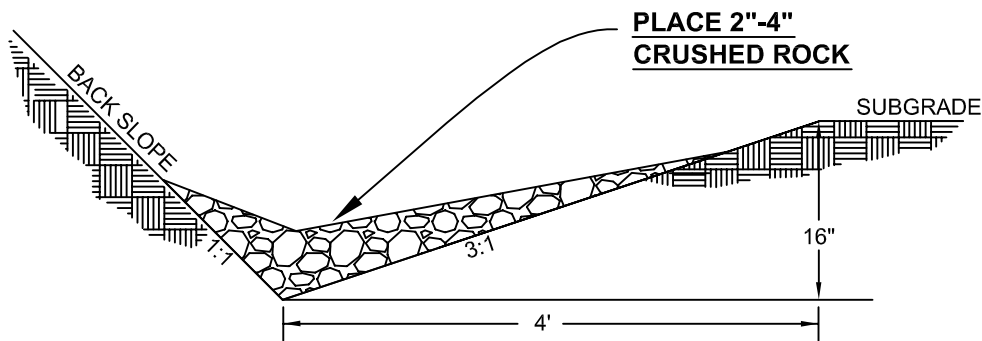
ROADWAY DITCH TYP 3'
DITCH



GENERAL NOTES:

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

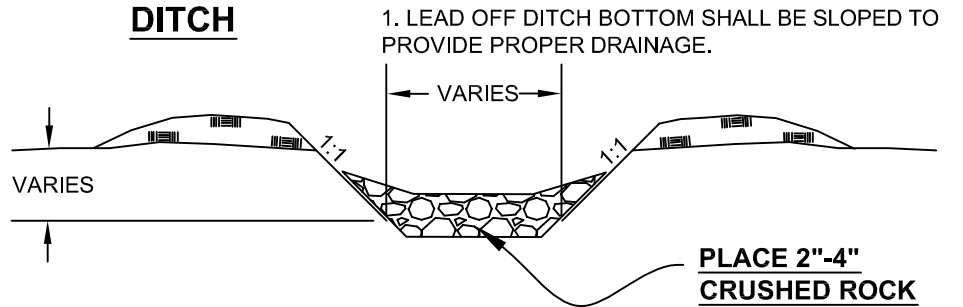
ROCKED ROADWAY DITCH
TYP 4' DITCH



GENERAL NOTES:

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

ROCKED LEAD OFF
DITCH



ROADWAY

CULVERT

LENGTH NOTED ON DRAWING

DITCH BOTTOM

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

WATERBAR

FOR HIGH CLEARANCE VEHICLES

NOTES: WATERBARS

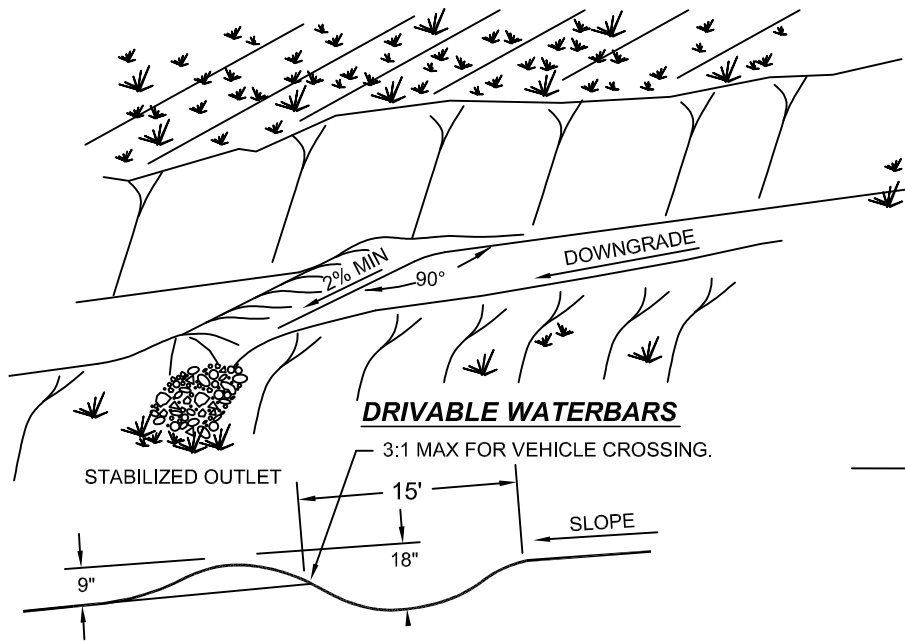
PROJECT

SHEET NUMBER

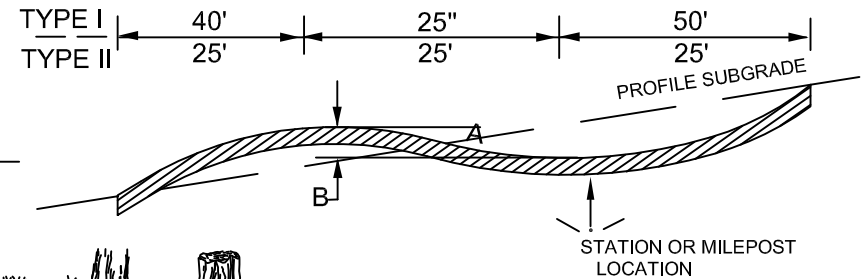
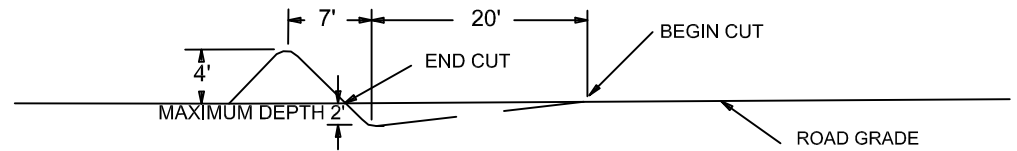
BEAR

37

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.



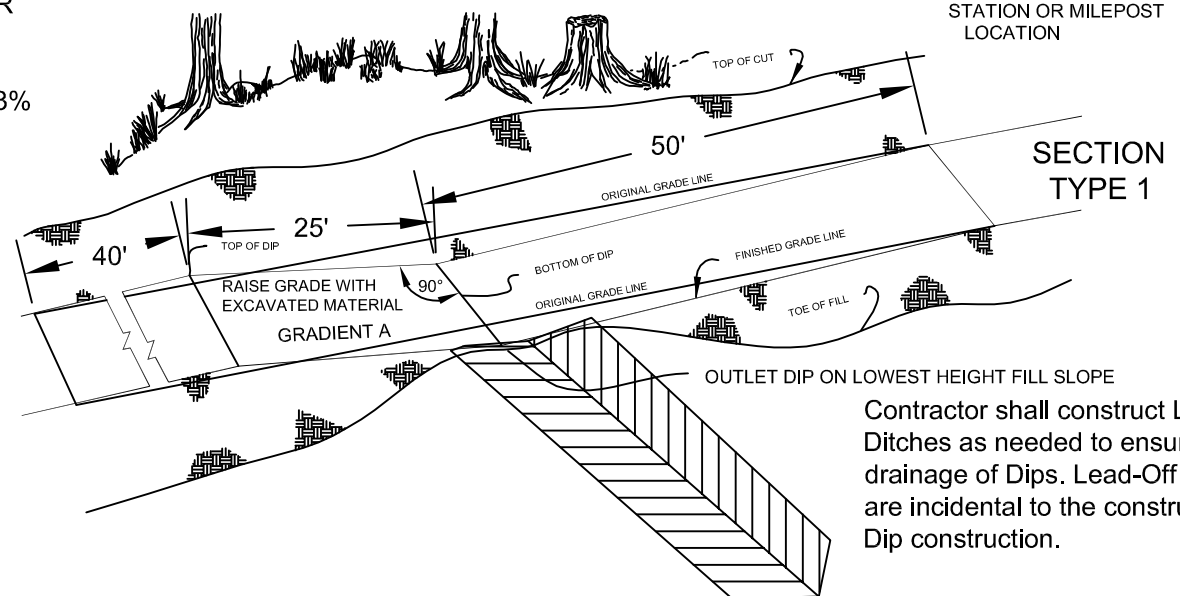
NON - DRIVABLE WATERBARS



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.



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

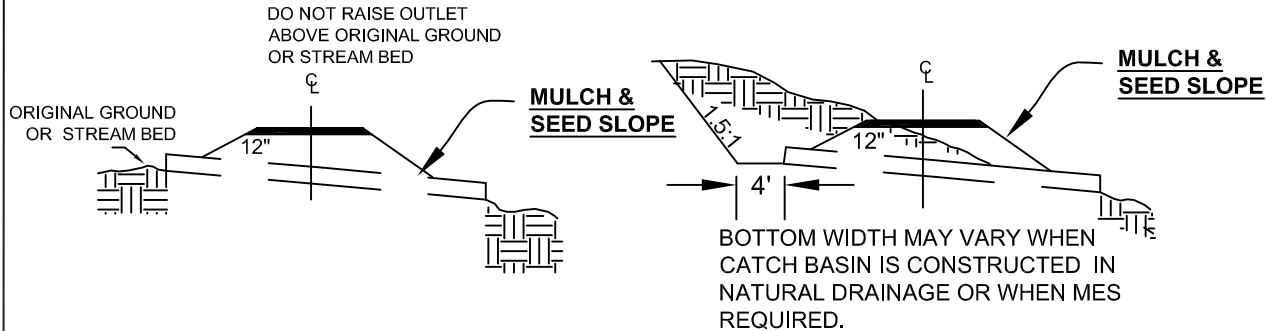
Contractor shall construct Lead Off Ditches as needed to ensure proper drainage of Dips. Lead-Off Ditches are incidental to the construction of Dip construction.

DRAINAGE CONSTRUCTION DETAILS

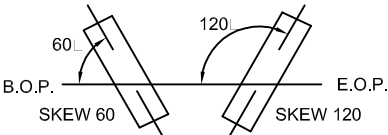
PROJECT	SHEET NUMBER
BEAR	38

NOTE:

SEED AND MULCH INCIDENTAL TO CULVERT INSTALLATION.



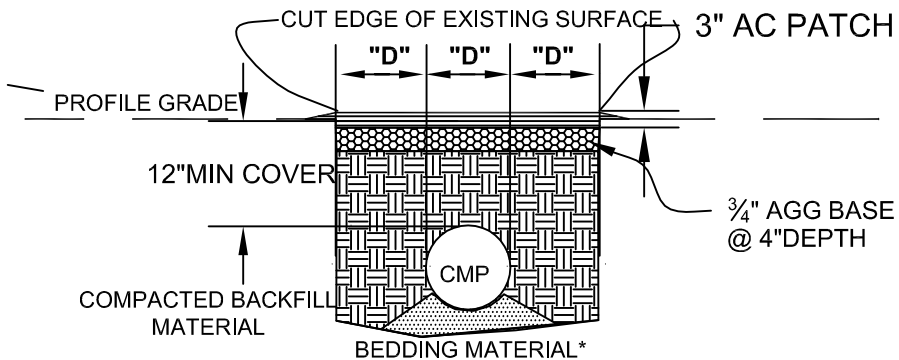
SKEW DIAGRAM



NOTE: SKEW ANGLE WILL BE SHOWN ON THE PLANS.

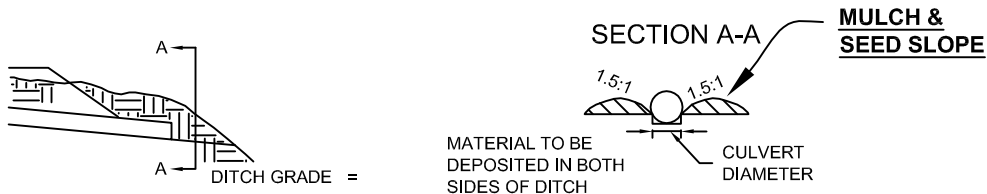
METHOD OF BACKFILLING PIPE ON AC / CHIP SEAL SURFACE TYP.

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.

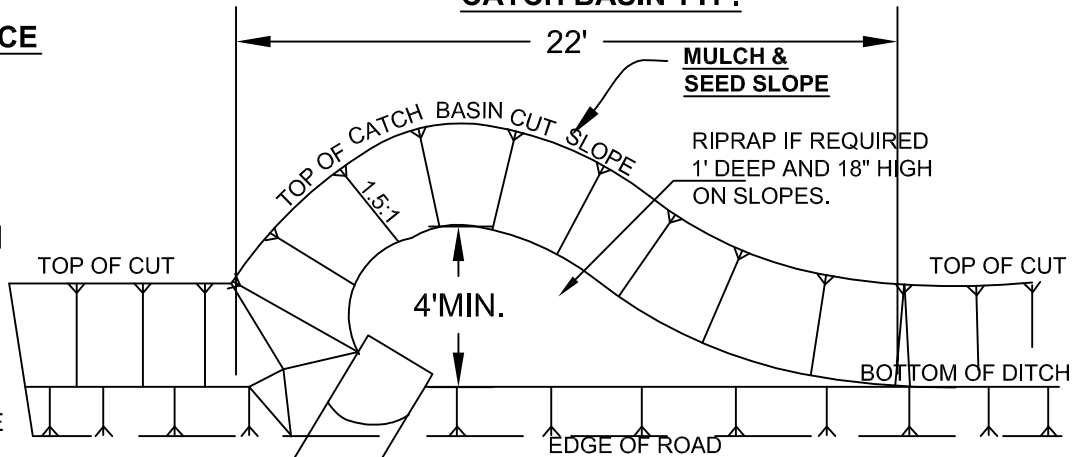


*-SEE SITE DESIGNS FOR ADDITIONAL INFO WHEN UNDERDRAIN IS REQUIRED

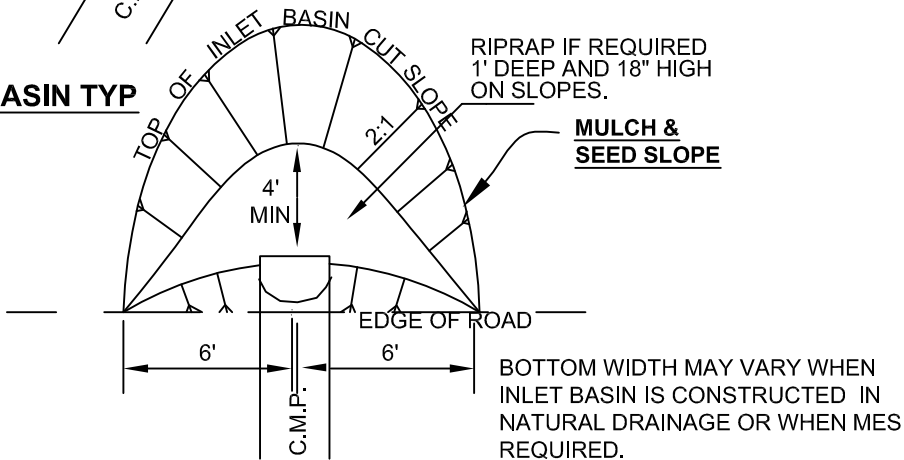
OUTLET DITCH TYP



CATCH BASIN TYP.



INLET BASIN TYP



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

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
BEAR	39

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)							

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)

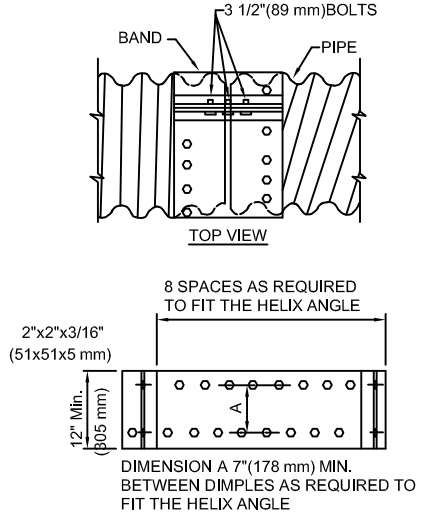
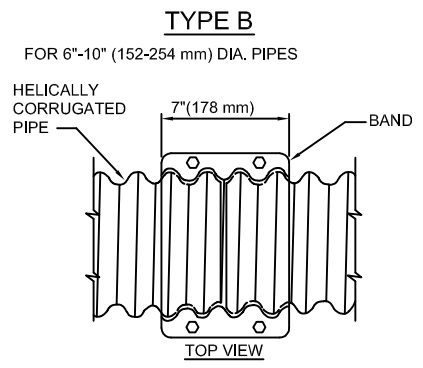
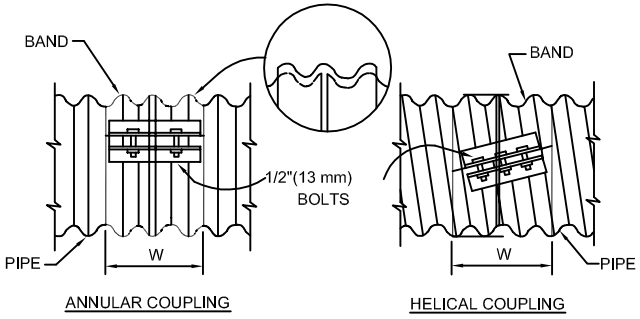
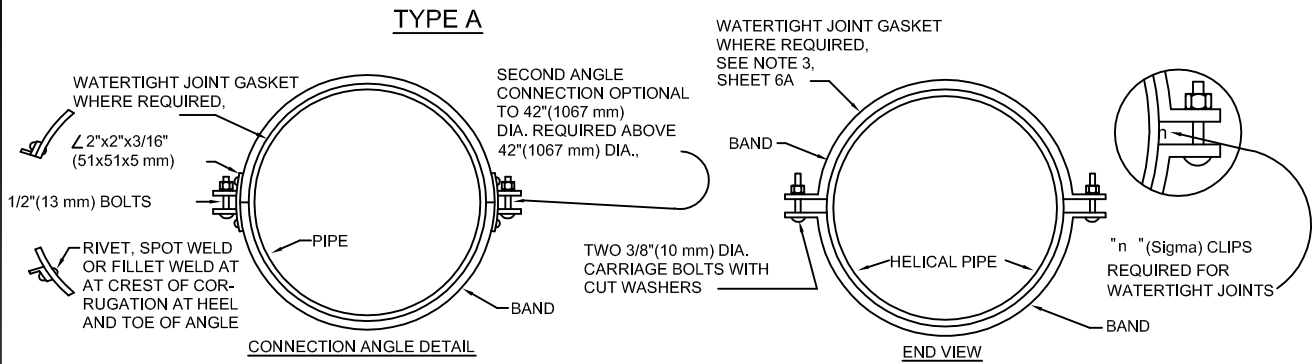
3" X 1" (76 mm x 25 mm) CORRUGATIONS							6" X 1" (152 mm x 25 mm) CORRUGATIONS						
PIPE DIA.	MINIMUM COVER	STEEL					PIPE DIA.	MINIMUM COVER	ALUMINUM				
		MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE IN FEET (meter)											
METAL THICKNESS IN INCHES (mm)													
INCHES (mm)		.064 (1.6)	.079 (2.00)	.109 (2.76)	.138 (3.5)	.168 (4.26)	INCHES (mm)		.060 (1.5)	.075 (1.9)	.105 (2.67)	.135 (3.4)	.165 (4.0)
36 (914)	12 (305)	48 (14.6)	60 (18.3)	78[88] (23.8)	89[106] (27)	101[118] (30.8)	30 (762)	15 (381)	29 (8.8)	37 (11.3)	56 (17.0)	58 (17.7)	59 (18.0)
42 (1067)	12 (305)	41 (12.5)	51 (15.6)	64[76] (19.5)	71[91] (21.6)	79[101] (24.0)	36 (914)	15 (381)	24 (7.3)	31 (9.4)	47 (14.3)	48 (14.6)	49 (14.9)
48 (1219)	12 (305)	36 (11.0)	45 (13.7)	57[66] (17.4)	61[80] (18.6)	66[88] (20.1)	42 (1067)	15 (381)	21 (6.4)	27 (8.2)	40 (12.2)	41 (12.5)	42 (12.8)
54 (1372)	12 (305)	32 (9.75)	40 (12.2)	52[59] (15.8)	55[71] (16.7)	59[79] (18.0)	48 (1219)	15 (381)	24 (7.3)	28 (8.5)	37 (11.3)	44 (13.4)	49 (14.9)
60 (1524)	12 (305)	29 (8.8)	36 (11.0)	49[53] (14.9)	51[64] (15.9)	54[71] (16.4)	54 (1371)	24 (610)	22 (6.7)	25 (7.6)	33 (10.1)	39 (11.9)	46 (14.0)
66 (1676)	12 (305)	26 (7.9)	33 (10.0)	47 (14.3)	49[58] (14.9)	51[64] (15.5)	60 (1524)	24 (610)	19 (5.8)	22 (6.7)	30 (9.1)	35 (10.7)	42 (12.8)
72 (1829)	12 (305)	24 (7.3)	30 (9.1)	44 (13.4)	47[53] (14.3)	49[59] (14.9)	66 (1676)	24 (610)	18 (5.5)	20 (6.0)	27 (8.2)	32 (9.7)	38 (11.6)
78 (1981)	12 (305)	22 (6.7)	28 (8.5)	41 (12.5)	46[49] (14.0)	47[54] (14.3)	72 (1829)	36 (914)		18 (6.4)	25 (7.6)	29 (8.8)	35 (10.7)
84 (2134)	12 (305)	21 (6.4)	26 (7.9)	38 (11.6)	45 (13.7)	46[51] (14.0)	78 (1981)	36 (914)			23 (7.0)	27 (8.2)	32 (9.7)
90 (2286)	12 (305)	19 (5.8)	24 (7.3)	35 (10.7)	43 (13.1)	45 (13.7)	84 (2133)	36 (914)			21 (6.4)	25 (7.6)	30 (9.1)
96 (2438)	12 (305)	18 (5.5)	22 (6.7)	33 (10.0)	40 (12.2)	44 (13.4)	90 (2286)	36 (914)				24 (7.3)	28 (8.5)
102 (2591)	24 (610)	17 (5.2)	21 (6.4)	31 (9.4)	38 (11.6)	42 (12.8)	96 (2438)	36 (914)				22 (6.7)	26 (7.9)
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)							

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

STANDARD COUPLER BANDS												
CORRUGATED								(A) FLAT-DIMPLED				
CULVERT SIZE INCHES (mm)	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			(B)	(C)
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

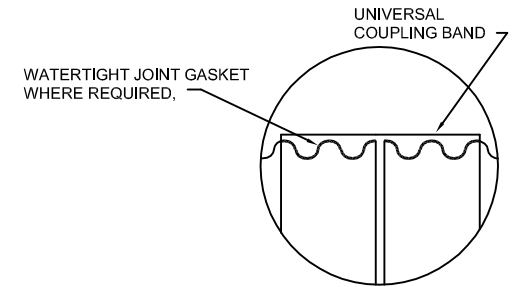
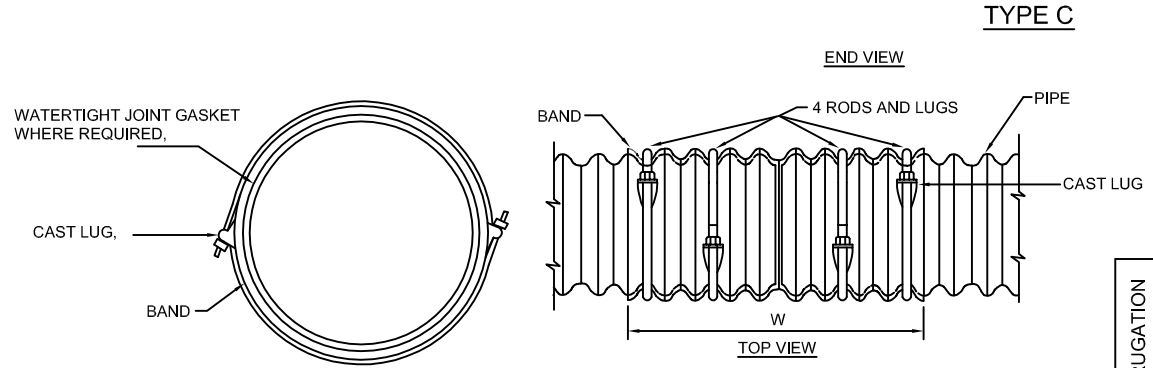
(A)-PERMITTED ONLY FOR CONNECTING ANNULAR CORRUGATED TO HELICAL CORRUGATED PIPE, (B)-FOR CONNECTING METAL END SECTIONS.
(C)-FOR BANDS WITH ANGLES. FOR BANDS WITH TENSION TYPE CONNECTIONS.

Size	Round Equivalent, Inches	Span x Rise, Inches	Minimum Structural Thickness, Inches	Minimum Cover, Inches	Maximum ⁽⁷⁾ Cover, Feet	2 Tons/Ft. ² Corner Bearing Pressure
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		



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				
inches	mm	ANN. inch.	HEL. mm		ANN. inch.	HEL. mm	ANN. inch.	HEL. 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

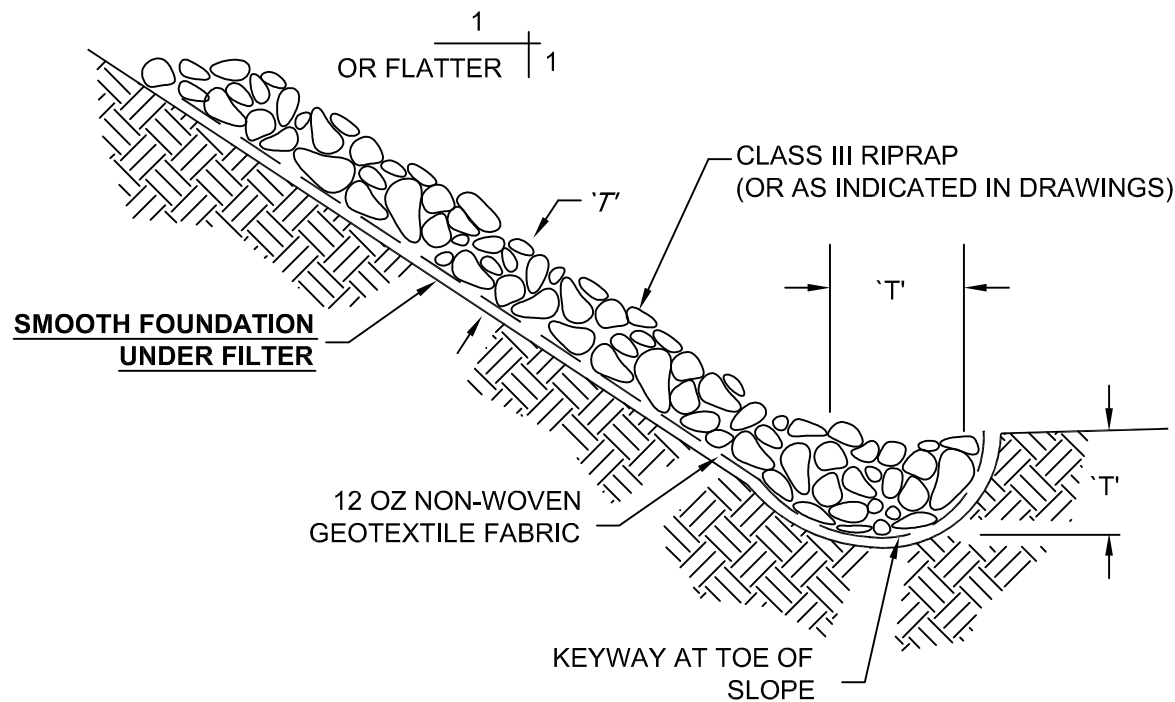


CORRUGATION	PIPE DIAMETER		ROD DIA.		NARROW BAND		WIDE BAND	
	(inch.)	(mm)	(inch.)	(mm)	W (inch.)	# of ROD	W (inch.)	# of ROD
					(mm)		(mm)	
2 2/3" X 1/2" (68x13mm)	12-21	305-533	3/8	10	12	305	2	
	24-54 *	610-1372	1/2	13	12	305	2	24 610 4
	60-84 *	1524-2134	5/8	16	12	305	2	24 610 4
3" X 1" (76x 25mm)	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

RIPRAP SLOPE PROTECTION TYP

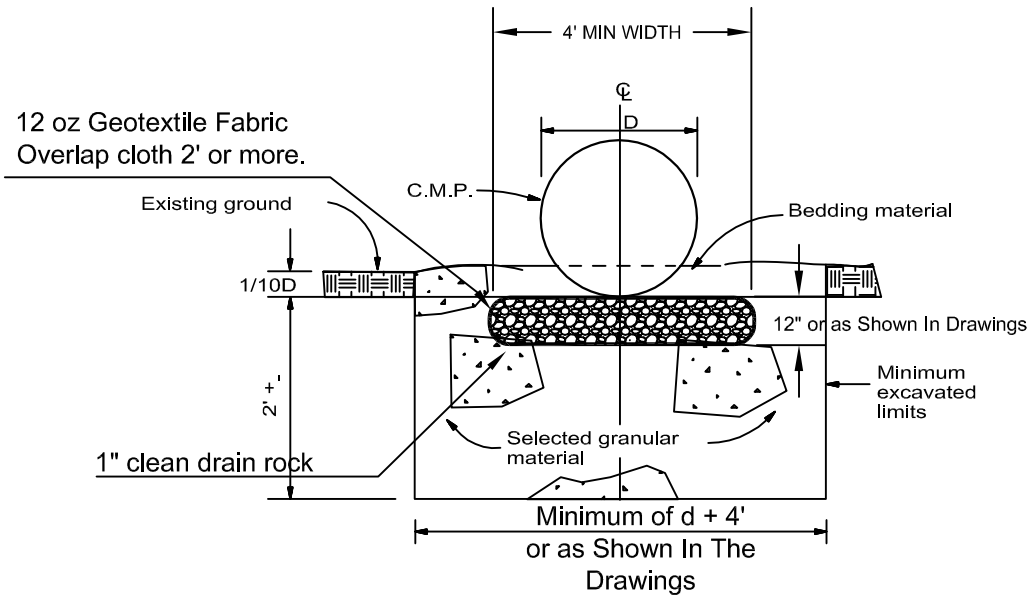
NOT TO SCALE



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".

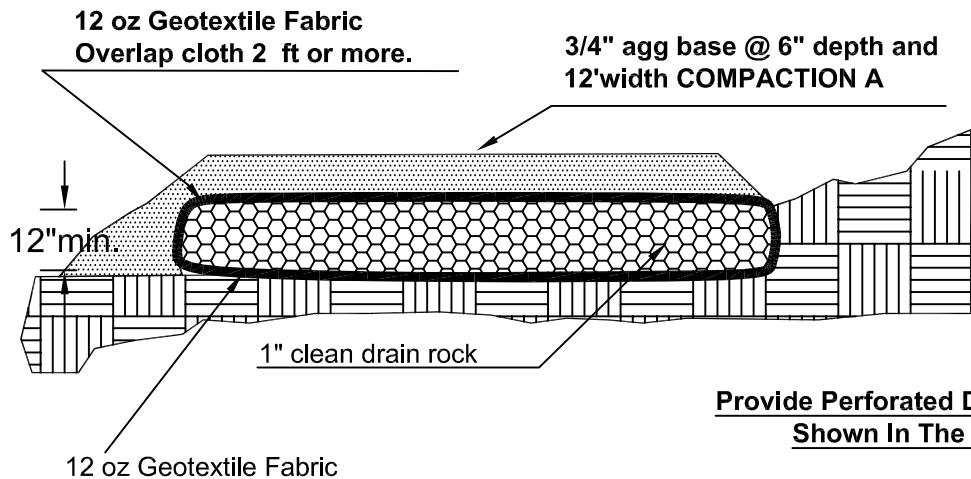
GEOTEXTILE CULVERT UNDERDRAIN TYP.



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.



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

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" <i>Mokelumne</i>	5.0 pounds per acre (<i>We call this seed F Occidentalis -</i>
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 inoculant 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 Certified rice straw, applied at 4,000 lbs/AC.

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.

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 preparation , 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

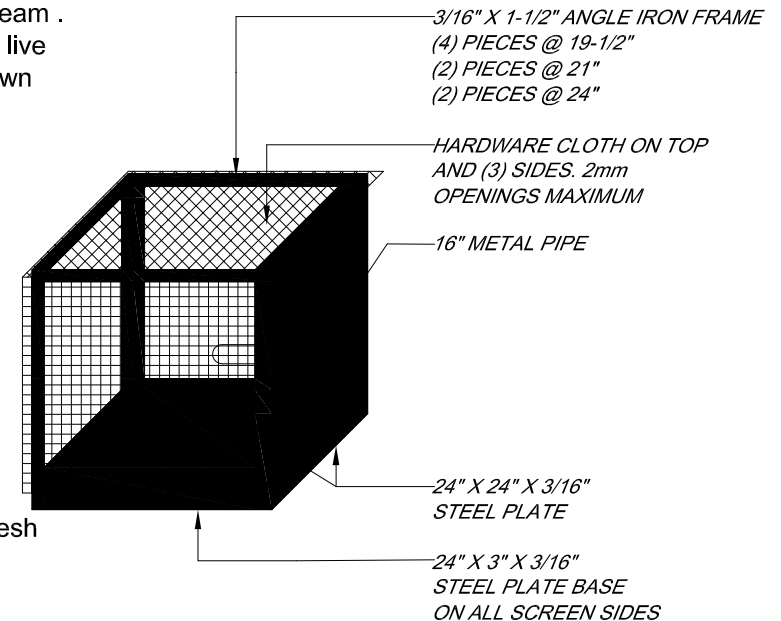
A. The metal frame shall have a solid bottom and one solid side of 3/16" metal. The bottom shall be welded a minimum of three (3) inches from the bottom of the screen box. The solid side shall be securely welded to the side frame metal and to the metal bottom.

PART 3 EXECUTION

3.01 SCREEN BOX CONSTRUCTION

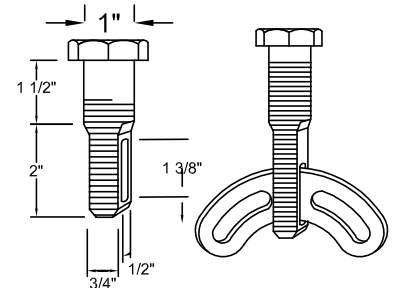
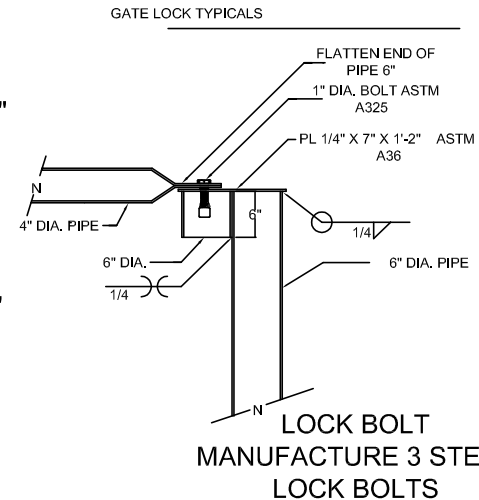
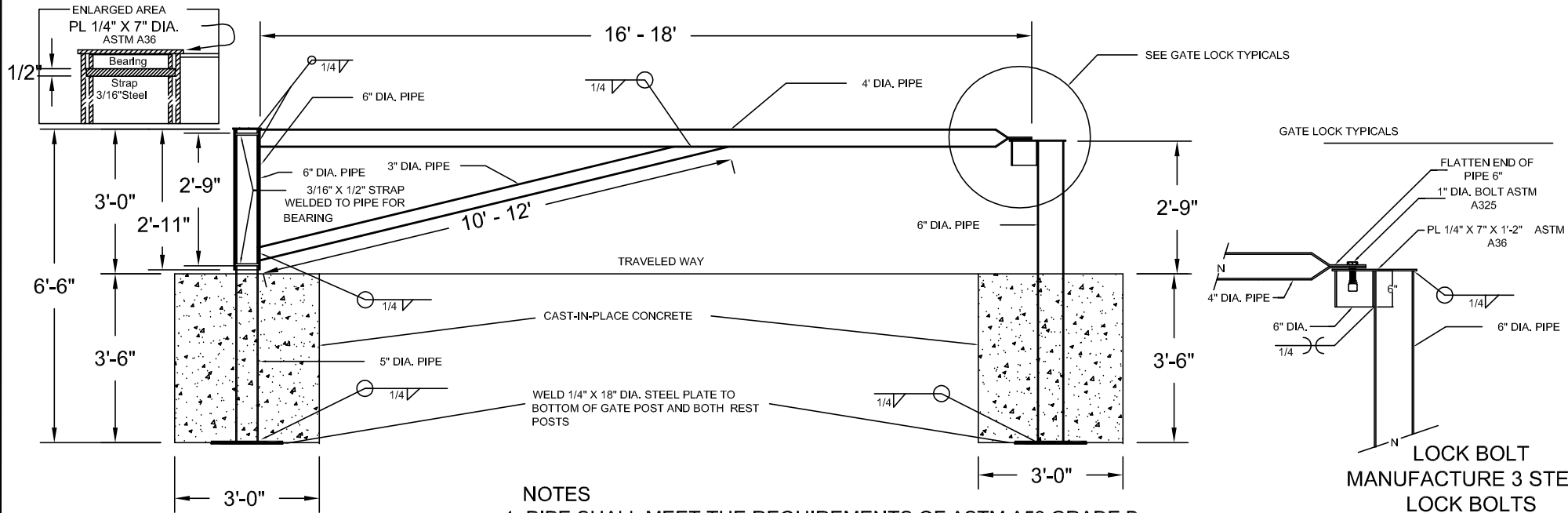
A. A 16" long metal pipe for the drafting hose to be used shall be fixed to the metal side plate a minimum of four inches (4") from the bottom of the screen box. The bottom of the metal pipe and the inlet end of the pipe would be fixed so it is at the center of the screen box as shown on the DRAWING.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

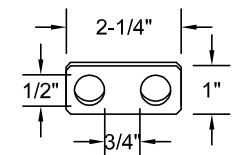


STEEL SINGLE LANE ROAD CLOSURE GATE TYP

PROJECT	SHEET NUMBER
BEAR	45

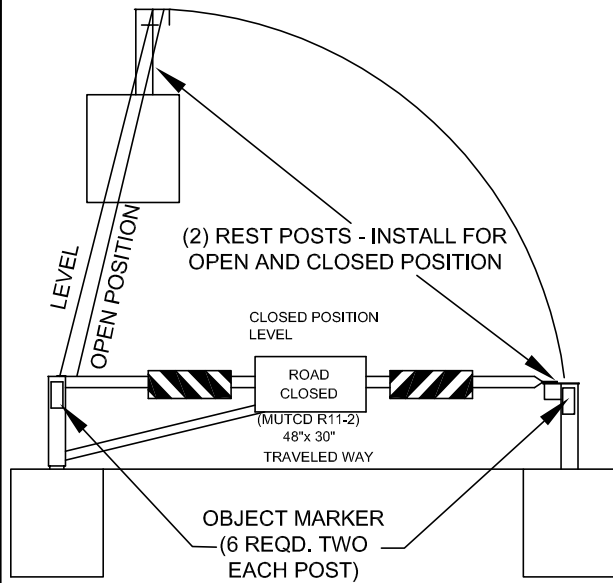


LOCK BAR SET
MANUFACTURE 3 CURVED LOCKBARS AND 2 STRAIGHT LOCKBARS FROM 1/4" STEEL.



NOTES

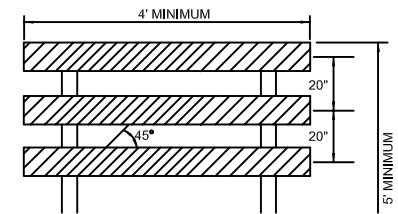
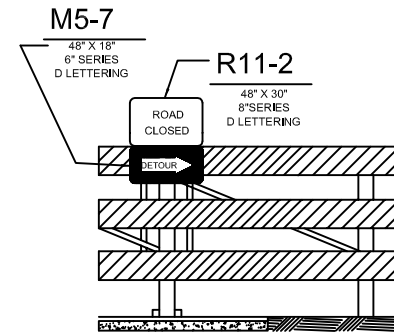
1. PIPE SHALL MEET THE REQUIREMENTS OF ASTM A53 GRADE B.
2. PIPE SIZES SHOWN ARE FOR STANDARD WEIGHT BLACK IRON PIPE (SCH.40).
3. GATES SHALL RECEIVE ONE COAT OF ZINC-RICH PRIMER, ORGANIC VEHICLE TYPE AND ONE COAT OF VINYL GREEN (91-2.15). SURFACE PREPARATION AND PRIMING SHALL BE AS RECOMMENDED BY THE 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.)



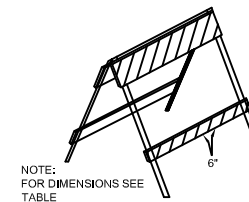
TRAFFIC CONTROL DEVICES

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 ONE 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 CONSPICUOUSLY 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.

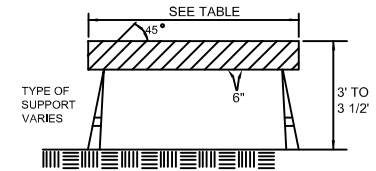


TYPE 111 BARRICADE



NOTE:
FOR DIMENSIONS SEE
TABLE

TYPE 11 BARRICADE

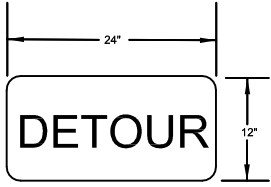


TYPE 1 BARRICADE

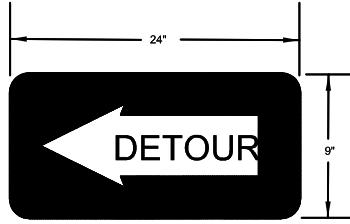
TYPE	1	11	111
WIDTH OF RAIL	8" MIN-12" MAX.	8" MIN-12" MAX.	8" MIN-12" MAX.
LENGTH OF RAIL	6'-8'	3' MIN.-4' MAX.	3' MIN.-VARIABLE MAX.
WIDTH OF STRIPES	6 IN.	6 IN.	6 IN.
HEIGHT	3 FT. MIN.	3' MIN.-3 1/2' MAX.	5 FT. MIN.
TYPE OF FRAME	DEMOUNTABLE OR HEAVY "A" FRAME	LIGHT "A" FRAME	POST OR SKIDS
FLEXIBILITY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

PROJECT	SHEET NUMBER
BEAR	47

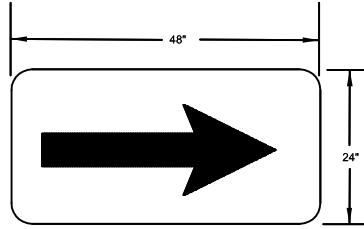
TRAFFIC CONTROL DEVICES



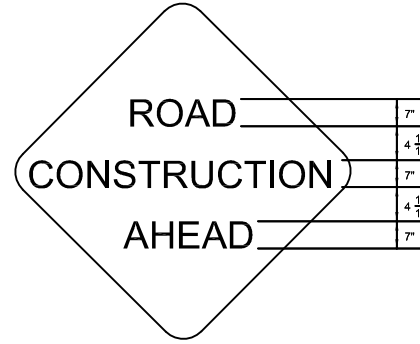
M4-B
24" X 12"
5" SERIES B LETTERING



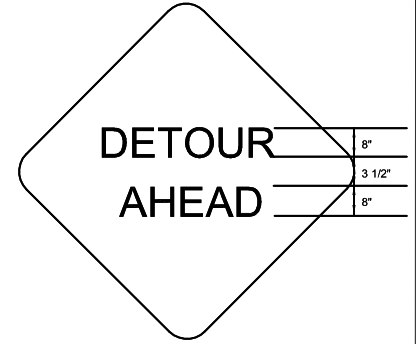
M4-10R
24" X 9"
RIGHT OR LEFT
3" SERIES D LETTERING



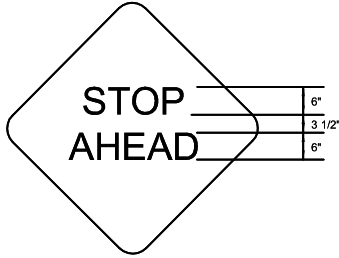
W1-6
48" X 24"
BLACK ARROW RIGHT OR LEFT.



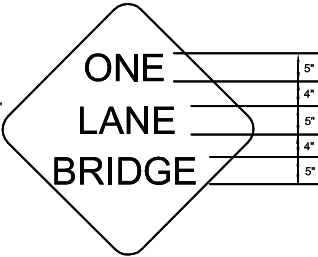
W20-1
48" X 48"
7" SERIES C LETTERING



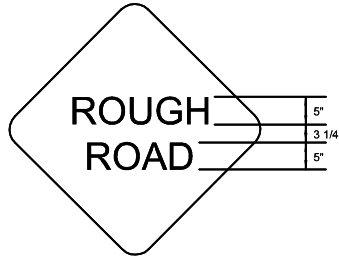
W20-2d
48" X 48"
8" SERIES C LETTERING



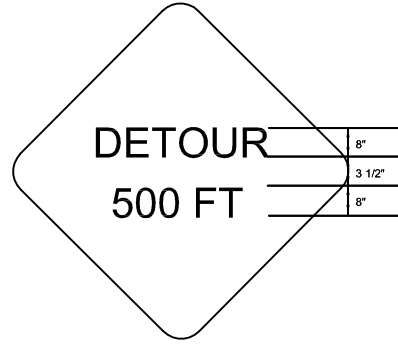
W3-1
30" X 30"
6" SERIES D LETTERING



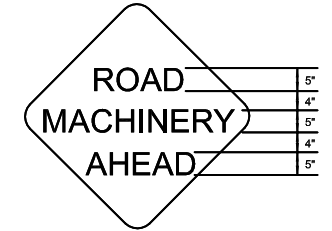
W5-2
36" X 36"
5" SERIES D LETTERING



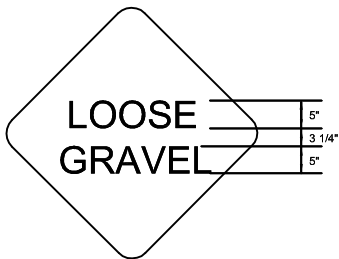
W8-6
30" X 30"
5" SERIES D LETTERING



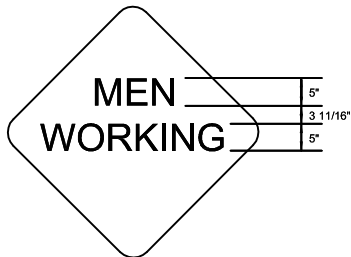
W20-2c
48" X 48"
8" SERIES C LETTERING



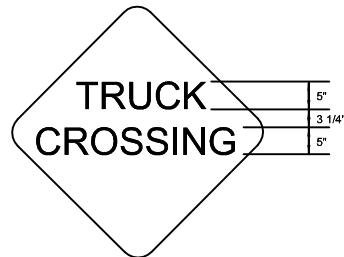
W21-3
36" X 36"
5" SERIES D LETTERING



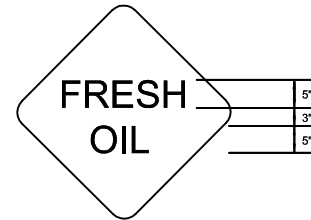
W8-7
30" X 30"
5" SERIES D LETTERING



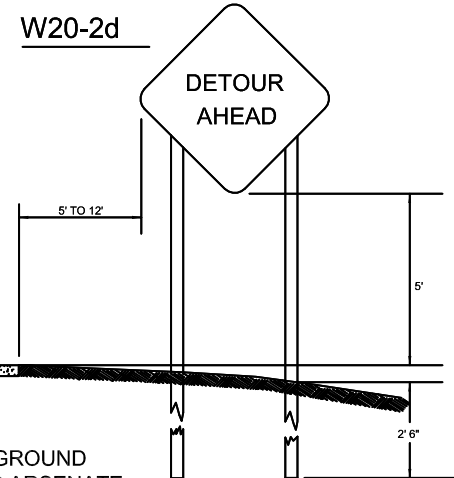
W21-1
30" X 30"
5" SERIES C LETTERING



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



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



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