

CULVERT INSTALLATION NOTES

CULVERTS INSTALLED IN FILLS WILL BE PLACED WITH THE FLOW LINE AT GROUND LEVEL OR LOWER, IF NECESSARY, TO ACHIEVE MINIMUM COVER HEIGHTS.

CULVERTS SHALL BE INSTALLED USING A MINIMUM COVER HEIGHT OF 1' UNLESS SPECIFIED OTHERWISE ON THE PLANS.

PRIOR TO LAYING PIPE WITH A HEIGHT OF FILL AT CENTERLINE GREATER THAN 3 FEET, THE BEDDING SHALL BE CAMBERED A MINIMUM OF 0.5% OF THE LENGTH OF THE PIPE.

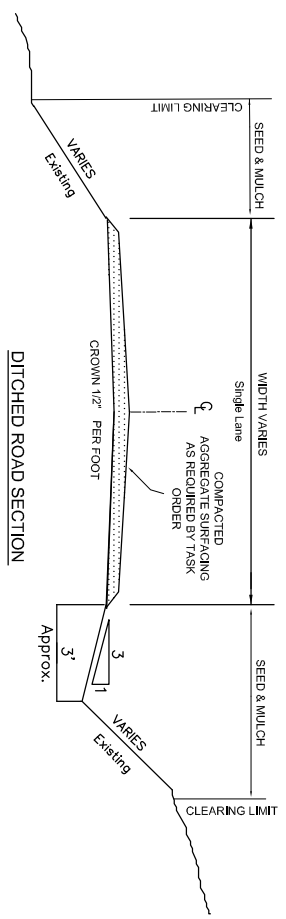
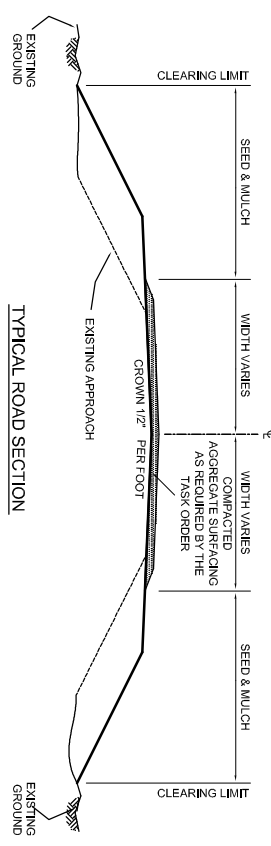
THE MINIMUM LENGTH OF A SINGLE PIPE SECTION FOR ANY INSTALLATION SHALL NOT BE LESS THAN 14 FEET. CULVERT INSTALLATIONS OF 42 LF. AND GREATER SHALL CONSIST OF TWO PIECES.

WORK SHALL INCLUDE SHARPING AND/OR EXCAVATING CHANNEL, ON INLET AND OUTLET END OF CULVERT TO FACILITATE WATER FLOW.

COMPACTION SHALL BE OBTAINED USING MECHANICAL SOIL COMPACTOR DESIGNED FOR THAT SPECIFIC PURPOSE. COMPACTION SHALL OCCUR IN 12' LIFTS.

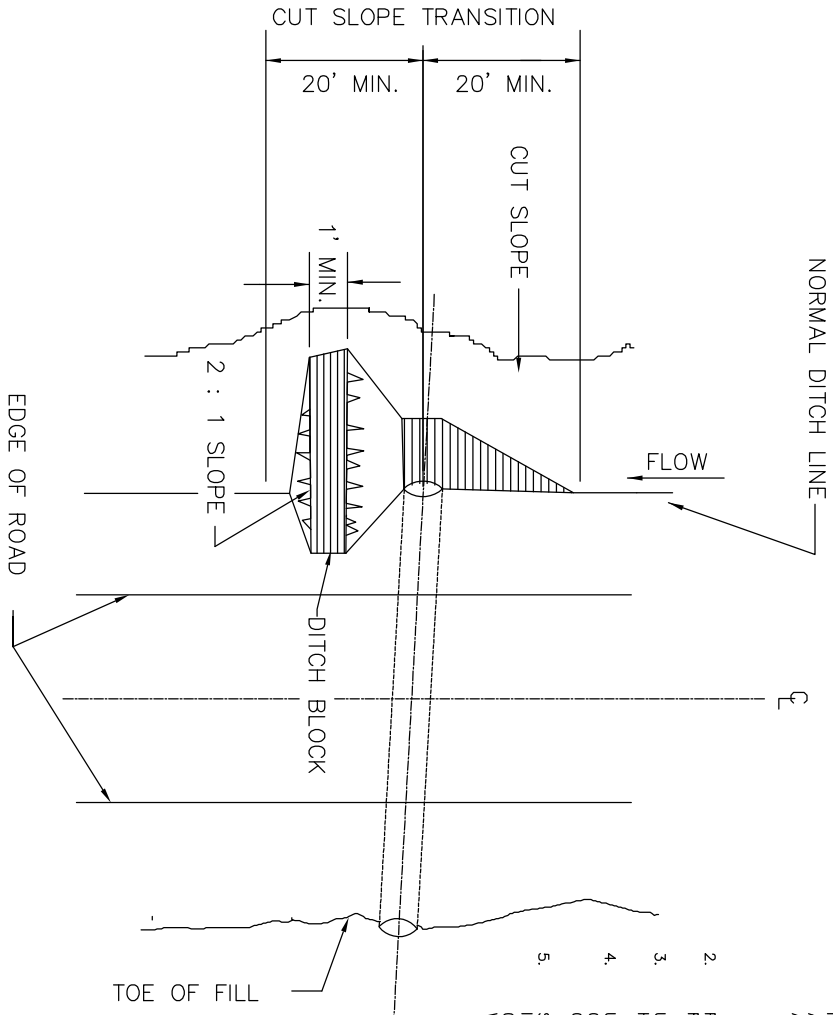
CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING ALL CULVERT SITES PRIOR TO INSTALLATION. DEWATERING METHODS SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. DEWATERING SHALL BE INCIDENTAL TO PAY ITEM 204.

BEDDING SHALL NOT BE PLACED WITHIN 1' OF THE OUTLET OR INLET.



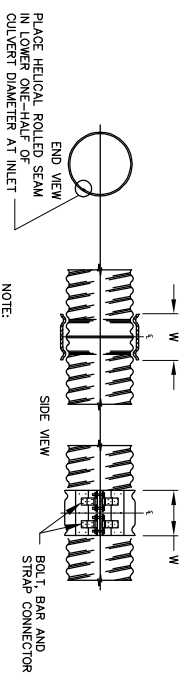
NOTES:

1. FABRICATE ANNULAR, HELICAL AND SEMI-CORRUGATED TYPE COUPLING BANDS FROM THE SAME METAL AS THE CONNECTING PIPE. PROVIDE COUPLING BANDS NOT MORE THAN 2 NOMINAL SHEET THICKNESS THINNER THAN THE THICKNESS OF THE PIPE TO BE CONNECTED, AND NO THINNER THAN 0.052 INCH (18 GAGE) FOR STEEL OR 0.048 INCH (18 GAGE) FOR ALUMINUM. FASTEN COUPLING BANDS WITH THE FOLLOWING SIZE OF BOLT:
 - 3/8-INCH DIAMETER - 18" (21"x15" PIPE ARCH) OR LESS
 - 1/2-INCH DIAMETER - 21" (24"x18" PIPE ARCH) OR MORE
2. FOR HELICALLY CORRUGATED PIPE WITH REROLLED ENDS, THE NOMINAL CORRUGATION SIZE REFERS TO THE DIMENSION OF THE END CORRUGATION IN THE PIPE.
3. USE ANNULAR CORRUGATED BANDS WITH PIPES HAVING ANNULAR CORRUGATIONS OR WITH HELICAL PIPE HAVING REROLLED ENDS TO FORM ANNULAR CORRUGATIONS.
4. USE HELICAL CORRUGATED BAND WITH PIPES HAVING HELICALLY CORRUGATED ENDS, HELICAL CULVERT INSTALLATIONS SHALL HAVE THE ROLLED SEAM AT THE INLET PLACED IN THE LOWER ONE-HALF OF THE PIPE DIAMETER.
5. SMOOTH SLEEVE-TYPE COUPLERS AND FLAT BANDS MAY BE USED FOR PIPE DIAMETERS OF 12 INCHES OR LESS. USE A MATCHING METAL HAVING A NOMINAL THICKNESS OF NOT LESS THAN 0.040 INCH (20 GAGE) FOR STEEL, OR 0.036 INCH (20 GAGE) FOR ALUMINUM, OR A PLASTIC WITH AN EQUIVALENT STRENGTH TO METAL.



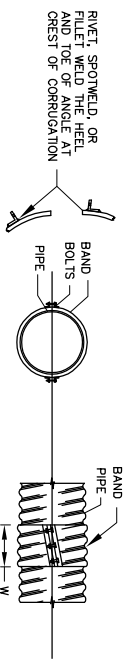
CULVERT & DITCHING PLAN AND BANDING DETAILS
 NOT TO SCALE

1. DITCH BLOCK NOT REQUIRED WHEN PIPE IS IN A SAG.
2. TOP ELEV. OF DITCH BLOCK SHALL BE 4" BELOW SHOULDER ELEV.



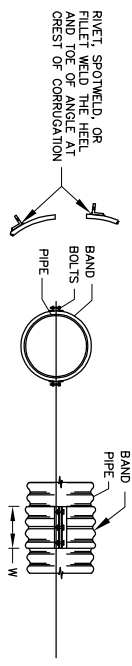
NOTE:
 CONTINUOUS CORRUGATION AROUND THE BAND SHALL MESH WITH SECOND ANNUAL CORRUGATION FROM END OF PIPE END.

SEMI-CORRUGATED BAND



NOTE:
 A BAND WITH 2 ANGLE CONNECTIONS IS OPTIONAL UP TO 42" DIA., REQUIRED FOR DIA. GREATER THAN 42".

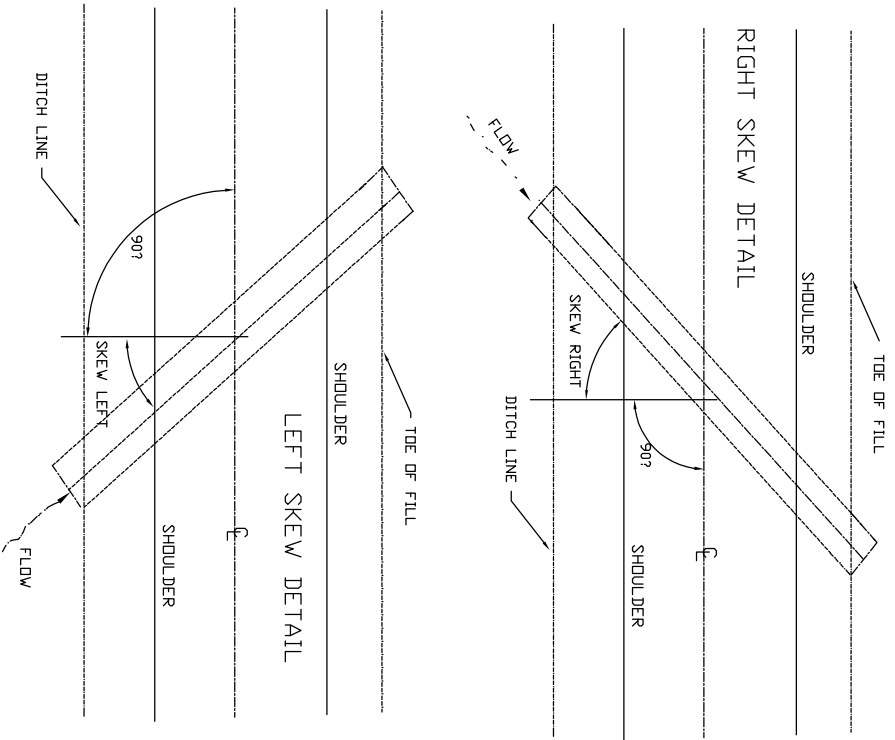
HELICAL BAND



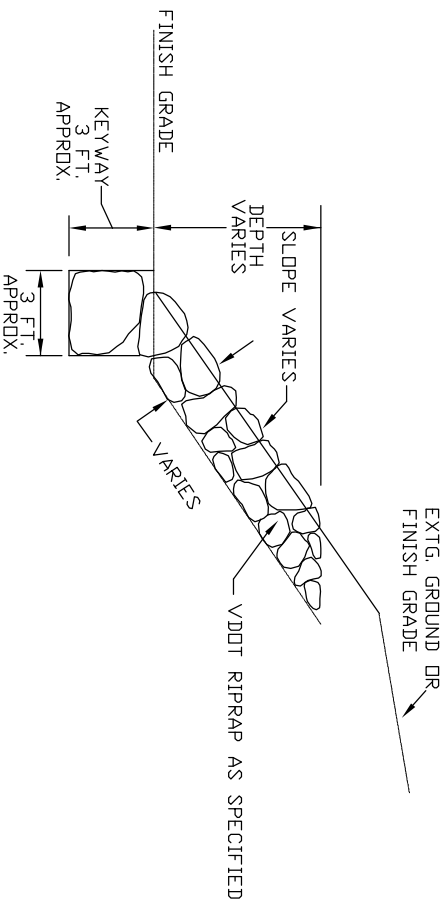
NOTE:
 BAND WITH 2 ANGLE CONNECTIONS IS OPTIONAL UP TO 42" DIA., REQUIRED FOR DIA. GREATER THAN 42".

ANNULAR BAND

DRAWINGS
 NOT TO SCALE



TYPICAL CULVERT SKEW DETAIL

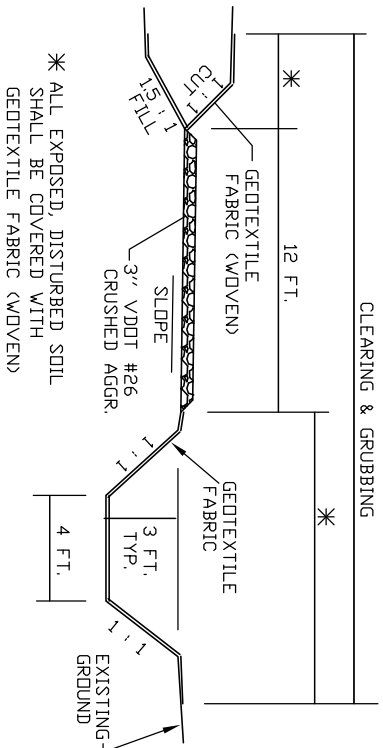


NOTES:

1. PLACE RIPRAP WHERE SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THIS DETAIL AND AS DIRECTED BY THE ENGINEER.
2. SELECTIVELY PLACE THE LARGEST RIPRAP AT THE LOWER ELEVATIONS.
3. WHERE BEDROCK IS ENCOUNTERED, RIPRAP IS REQUIRED ABOVE THE BEDROCK ONLY.

MACHINE PLACED RIPRAP

NO SCALE

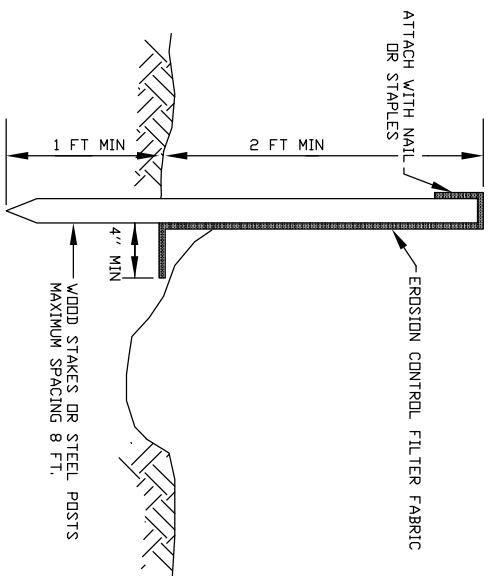


- NOTES:
1. EXCAVATED MATERIAL TO BE USED TO CONSTRUCT THE TEMPORARY FILL ACROSS THE STREAM TO DIVERT FLOW INTO THE DIVERSION CHANNEL.
 2. CLEAR ONLY TREES NECESSARY FOR CONSTRUCTION. REMOVE CLEARED AND GRUBBED SLASH AS DESCRIBED IN THE GENERAL NOTES, SHEET 2.

TYPICAL SECTION

Temporary Bypass Road & Stream Diversion Channel

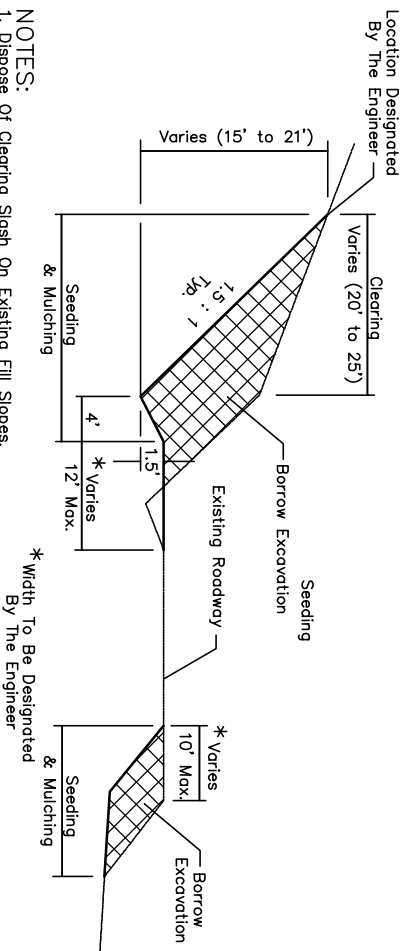
No Scale



- NOTES:
1. SILT FENCING SHALL BE INSTALLED PRIOR TO BEGINNING EXCAVATION UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
 2. SILT FENCE LOCATIONS SHALL BE DESIGNATED BY THE ENGINEER TO MEET FIELD CONDITIONS. RELOCATING FENCING MAY BE REQUIRED AS THE PROJECT PROCEEDS.
 3. THE SILT FENCE SHALL BE MAINTAINED OPERATIONAL BY THE CONTRACTOR UNTIL REMOVED.
 4. THE CONTRACTOR SHALL REMOVE THE FENCE WHEN APPROVED BY THE ENGINEER. WHEN REMOVED ALL TRAPPED SEDIMENT SHALL BE REMOVED AND ALL BARE SOIL SHALL BE SEEDED AND MULCHED.
 5. ALL COSTS FOR SILT FENCING SHALL BE INCLUDED IN PAY ITEM 15702.

SILT FENCE

NO SCALE



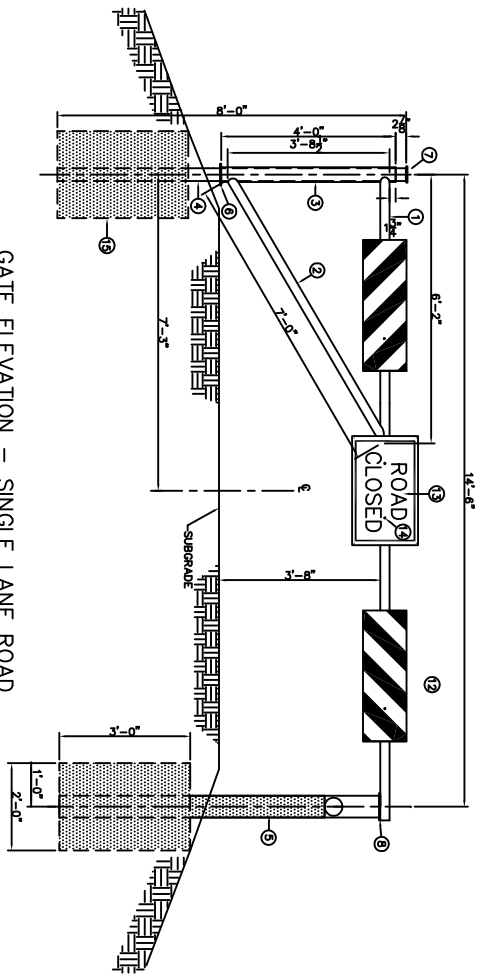
- NOTES:
1. Dispose Of Clearing Slash On Existing Fill Slopes.
 2. Taper Borrow Removal At Beginning And End To Blend Into Existing Cut And Fill Slopes.
 3. Maintain Existing Cross Slope Of Roadbed.
 4. Place 3" Of VDOT #26 Crushed Aggregate On Disturbed Roadbed As Directed By The Engineer. Approx. 300' In Length.

BORROW EXCAVATION DETAIL

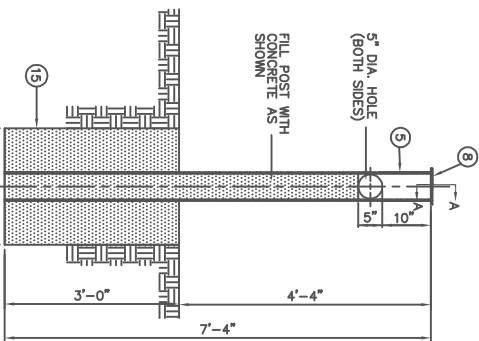
NOT TO SCALE

U.S. FOREST SERVICE GATE DETAILS

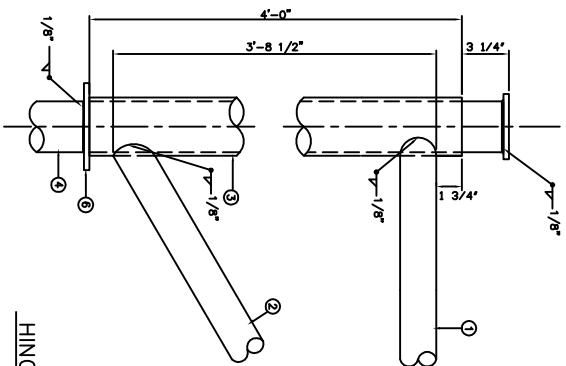
GATE ELEVATION - SINGLE LANE ROAD



END POST DETAIL

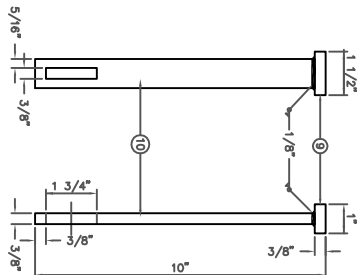


HINGE DETAIL

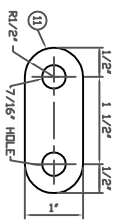


NOTE: INSTALL 2 GREASE FITTINGS ON EACH SIDE ONE 6" FROM THE TOP AND ONE 1'-6" FROM THE BOTTOM.

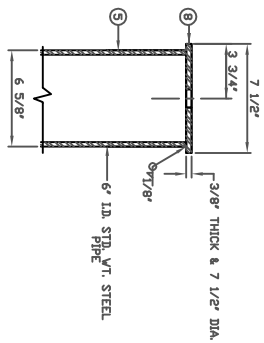
MASTER LOCKING PIN



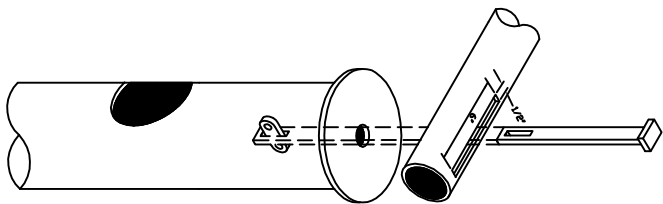
LOCKING BAR



SECTION A-A



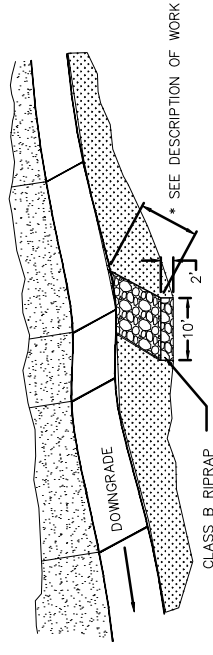
ASSEMBLY DETAIL



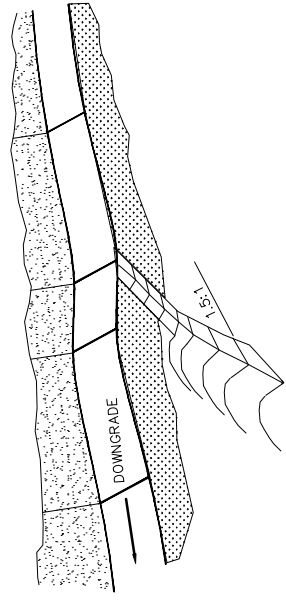
NOTE: ALL STEEL SHALL BE PAINTED WITH TWO COATS OF RED PRIMER AND A COAT OF BLUE PRIMER. ALL CONCRETE SHALL BE STRUCTURAL GRADE, SCHEDULE 40 UNLESS OTHERWISE APPROVED BY THE ENGINEER.

* FURNISHED AND INSTALLED BY THE FOREST SERVICE.
 ** ALL CONCRETE SHALL MEET REQUIREMENTS OF ITSD 602 - METHOD C.
 DENOTES FLEET WELD, WELD ALL AROUND

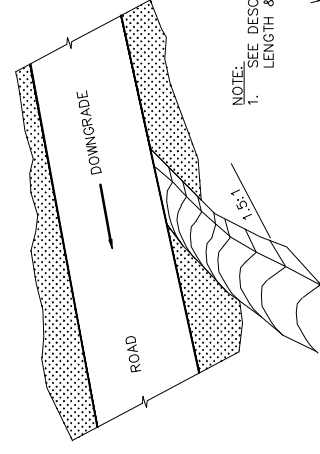
NO.	NAME	DESCRIPTION	QTY.
1	GATE MEMBER	2 1/2" φ x 177' PIPE	1
2	GATE SUPPORT	2 1/2" φ x 88 5/8" PIPE	1
3	HINGE POST	3" φ x 48" PIPE	1
4	LOCKING POST	6" φ x 88" PIPE	1
5	HINGE SUPPORT PLATE	3/8" x 4 1/2" DIA. PLATE	1
6	LOCKING POST CAP	3/8" x 1" 1/2" DIA. PLATE	1
7	MASTER LOCKING PIN TOP	3/8" x 1" x 10" STRAP	1
8	MASTER LOCKING PIN BOLT	3/8" x 1" x 2 1/2" STRAP	1
9	LOCKING BAR	12" x 36"	2
10	OBJECT MARKER TYPE III	18" x 30"	1
11	REGULATORY SIGN	3/8"-16-4" HEX	6
12	HEAD CAP SCREW W/ WASHERS FOR POST	CUBIC YARD	0.8
13	HEAD CAP SCREW W/ WASHERS FOR POST		
14	HEAD CAP SCREW W/ WASHERS FOR POST		
15	HEAD CAP SCREW W/ WASHERS FOR POST		



ROLLING DIP WITH SLOPE PROTECTION

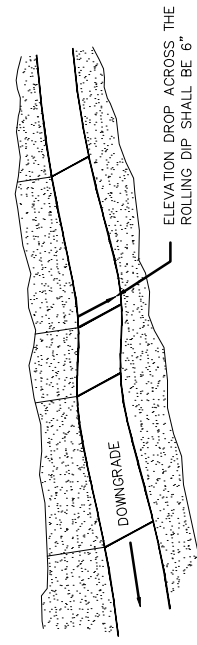


ROLLING DIP WITH OUTLET-DITCH

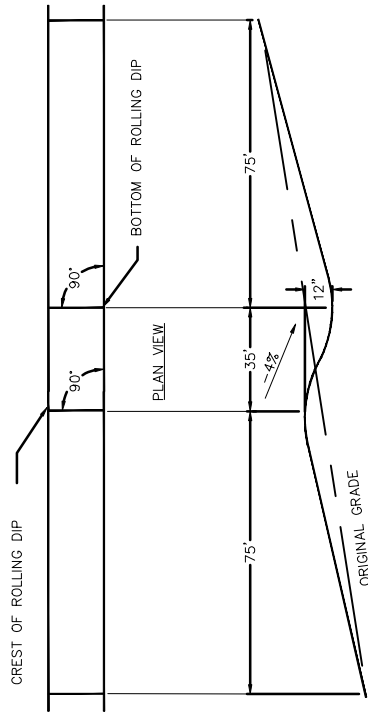


NOTE:
1. SEE DESCRIPTION OF WORK FOR WING DITCH LENGTH & STATION OF WIND DITCH

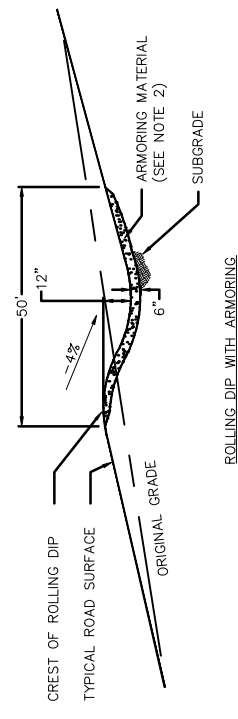
WING DITCH TYPICAL



ROLLING DIP PERSPECTIVE VIEW



ROLLING DIP PROFILE



ROLLING DIP WITH ARMORING

DRAWINGS NOT TO SCALE



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
REGION 8

NATIONAL FORESTS IN NORTH CAROLINA
IDIQ ROAD WORK

ROLLING DIP TYPICALS

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