

12 Miles to Detroit, OR via Hwy. 22

T11S

R6E

R7E

**LEGEND**

- Paved roads
- Other roads
- Other roads
- Water source
- Disposal area
- Stockpile source

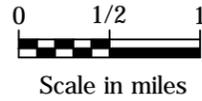
Parkett pit

EOP FS Road 2234-280 MP 2.71

W

Downing pit  
EOP FS Road 2234 MP 16.45  
Junction Hwy 22

BOP FS Road 2234 MP 14.77  
BOP FS Road 2234-280 MP 0.00  
Junction



**KETT BT SPECIFIED ROADS**

**VICINITY MAP**



SHEET NUMBER	TOTAL SHEETS
2	16

- All culvert installations/replacements with flowing water are considered stream channels. Replace culverts when stream channels are dry or during instream work window between June 1st through August 31st.
- Salvage and stockpile existing aggregate during culvert installation and use as bedding and initial backfill material.
- All new HDPE culvert installations require partial bevel cut to the inlet end (indirect cost to corresponding culvert installation).
- Designated disposal site(s) are identified on the plans. The Contracting Officer will flag the disposal areas prior to placement of material. Smooth, shape and compact material to drain with construction equipment.
- Spread weed free mulch over disturbed soil at all culvert installations, fill repairs, disposal areas and other disturbed soil sites as directed by the Contracting Officer. All disturbed/constructed slopes flatter than 1V:1H shall be covered with mulch. Reconditioned ditches do not require mulch. Mulch shall be applied minimum 1" thick so that no gaps exist between disturbed soil and matrix.
- Construction tolerance class D for all roads.
- The submitted traffic control plan shall include methods for accommodating public traffic during temporary and daily closures.
- FS road 2234: Bridge located at MP 16.43 – Use of Roads by commercial users with loads exceeding Oregon state legal loading for an STP (Single Trip Permit) and that will cross bridges under Forest Service jurisdiction shall apply for a Bridge Overload Use Permit (FSM 7736.05). A state highway overload permit (issued by ODOT, WSDOT) is not a valid permit for crossing Forest Service bridges.
- Do not undercut cutslopes when cleaning or reconstructing roadway ditch.
- Obtain a mineral permit from the Detroit Ranger Station prior to hauling of government stockpiled aggregate.

Abbreviations

- HDPE: High Density Polyethylene
- CMP: Corrugated Metal Pipe
- BOP: Beginning Of Project
- EOP: End Of Project.
- FS: Forest Service.

**KETT BT SPECIFIED ROADS**

**GENERAL NOTES**



SHEET NUMBER	TOTAL SHEETS
3	16

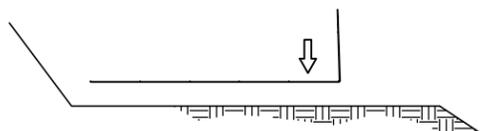




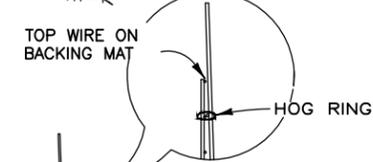
MILE POST	ITEM NUMBER	QUANTITY	UNIT	RECONSTRUCTION SUMMARY
14.77				Beginning of project at junction with FS Road 2234-280 right.
	23051	1.68	Mile	Begin brushing.
14.93				Water source, Bugaboo Creek.
15.14				Construct MSE wall.
				Replace existing culvert.
	25550	221.3	Square Foot*	Construct 2 layers of mechanically stabilized earth wall.
	20357	1190	Square Foot*	Saw cut and remove existing asphalt as marked.
	20358A	1	Each	Remove existing culvert. Includes existing downpipe.
	60278	30	Foot	Install 24-inch HDPE pipe 12 inches below MSE wall base mat as directed by Contracting Officer.
	32232	45	Cubic Yard*	Place crushed aggregate.
	40401	29.72	Ton	Place hot asphalt concrete mixture.
	60602	8	Foot	Install drop inlet 36-inch pipe. Cut inlet pipe to accept culvert, and cut 4-inch by 10-inch slots in drop inlet after installation as directed by Contracting Officer.
	60654	20	Foot	Install 24-inch downpipe.
15.19	32232	28	Cubic Yard*	Place crushed aggregate for shoulder as directed by Contracting Officer.
15.43				Switchback right.
15.63				Switchback left.
15.64	43007	1.80	Ton	Place hot asphalt concrete mixture for skin patch.
16.04				Switchback right. FS Road 2234-195 left.
16.18				FS Road 2234-290 right.
16.24				FS Road 2234-299 right.
16.29				Replace existing culvert.
	15755	1	Each	Dewater culvert.
	20357	720	Square Foot*	Saw cut and remove existing asphalt as marked.
	20358A	1	Each	Remove existing culvert.
	60278	32	Foot	Install 24-inch HDPE pipe at same skew but lower to ground. Move inlet 4 feet upstream as staked.
	32232	16	Cubic Yard*	Place crushed aggregate.
	40401	17.98	Ton	Place hot asphalt concrete mixture.
16.42				Beginning of bridge.
	63306	2	Each	Install 2 type 3 object markers as directed by Contracting Officer.
16.44				End of bridge.
	63306	2	Each	Install 2 type 3 object markers as directed by Contracting Officer.
16.45				End of project. Junction with Highway 22.
				End brushing.
	20253	12	Each	Fall hazard trees as marked by the Contracting Officer.
Various Locations	43007	14.50	Ton	Place hot asphalt concrete mixture for skin patches at locations marked by Contracting Officer



**STEP 1**  
PLACE THE FIRST COURSE OF SOIL REINFORCEMENT MATS ON PREPARED FOUNDATION



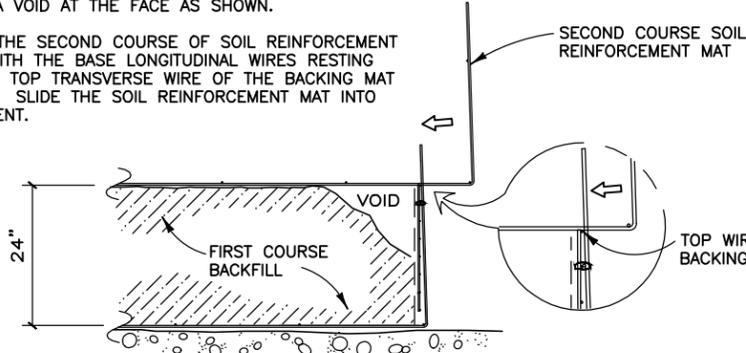
**STEP 2**  
PLACE THE BACKING MAT AGAINST THE INSIDE FACE OF THE SOIL REINFORCEMENT MAT. CLIP THE SECOND-TO-TOP TRANSVERSE WIRE ON THE BACKING MAT TO THE TOP TRANSVERSE WIRE ON THE SOIL REINFORCEMENT MAT.



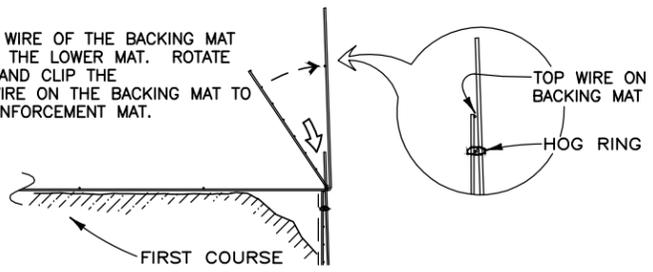
INSTALL FILTER FABRIC OR CONTINUOUS HARDWARE CLOTH, HOG-RING TO THE TOP WIRE ON THE BACKING MAT.

**STEP 3**  
PLACE AND COMPACT THE BACKFILL IN LAYERS AND DENSITIES AS SPECIFIED IN THE PROJECT PLANS. LEAVE A VOID AT THE FACE AS SHOWN.

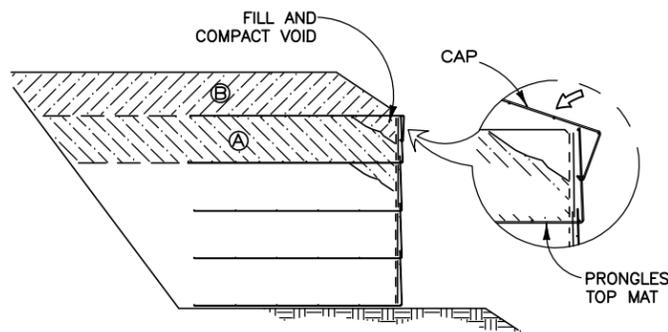
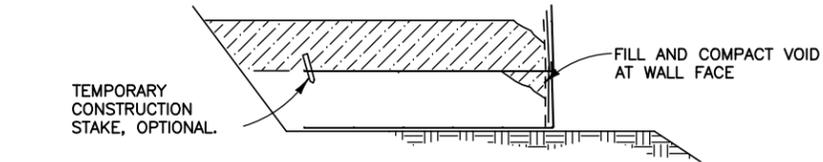
PLACE THE SECOND COURSE OF SOIL REINFORCEMENT MATS WITH THE BASE LONGITUDINAL WIRES RESTING ON THE TOP TRANSVERSE WIRE OF THE BACKING MAT BELOW. SLIDE THE SOIL REINFORCEMENT MAT INTO ALIGNMENT.



**STEP 4**  
HOOK THE BOTTOM TRANSVERSE WIRE OF THE BACKING MAT OVER THE VERTICAL PRONGS ON THE LOWER MAT. ROTATE THE BACKING MAT TO VERTICAL AND CLIP THE SECOND-TO-TOP TRANSVERSE WIRE ON THE BACKING MAT TO THE TOP WIRE ON THE SOIL REINFORCEMENT MAT.

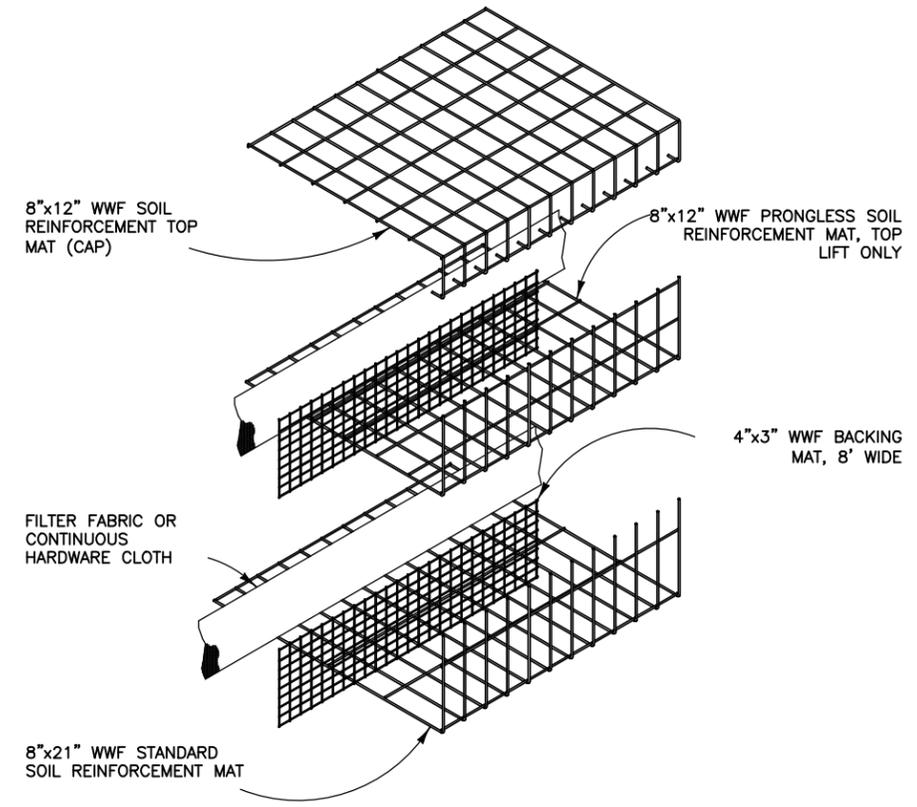


**STEP 5**  
INSTALL THE FILTER FABRIC OR CONTINUOUS HARDWARE CLOTH. PLACE AND COMPACT THE BACKFILL TO THE BASE ELEVATION OF THE NEXT MAT. REPEAT STEPS 3 THROUGH 5 TO THE TOP LIFT.

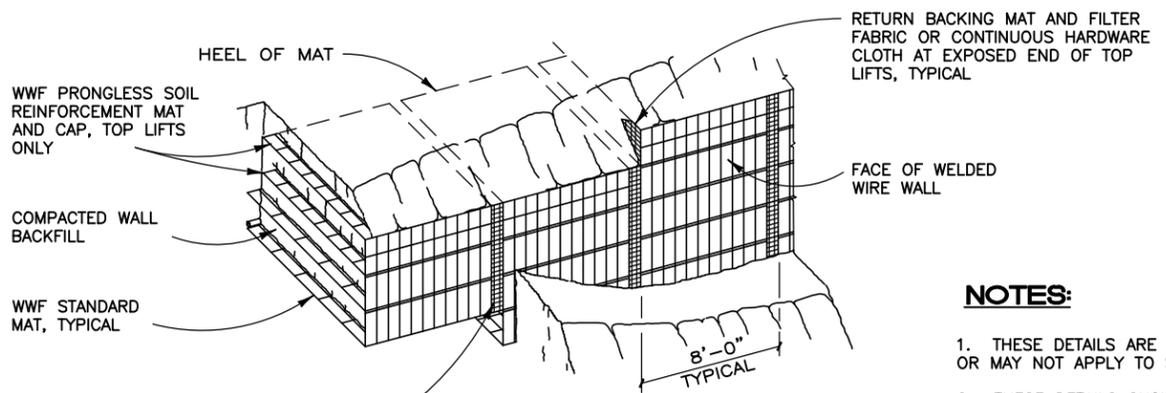


**STEP 6: TOP LIFT**  
PLACE THE TOP LIFT (PRONGLESS MAT), BACKING MAT AND FILTER FABRIC OR CONTINUOUS HARDWARE CLOTH. PLACE AND COMPACT BACKFILL IN AREA "A". HOOK THE CAP OVER THE MIDDLE TRANSVERSE WIRE ON THE PRONGLESS MAT, AND ROTATE INTO PLACE. BACKFILL "B" TO 1'-6" MIN. COVER OVER THE CAP.

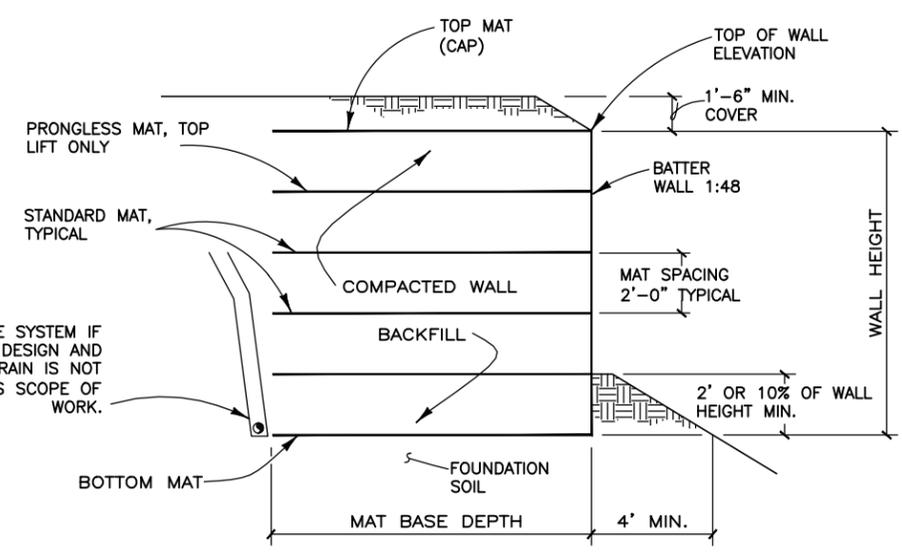
**CONSTRUCTION SEQUENCE**  
NOT TO SCALE



**WALL COMPONENTS**  
NOT TO SCALE



**PICTORIAL ELEVATION**  
NOT TO SCALE



**TYPICAL SECTION**  
NOT TO SCALE

- NOTES:**
1. THESE DETAILS ARE INTENDED FOR INFORMATION ONLY. THEY MAY OR MAY NOT APPLY TO SPECIFIC PROJECTS.
  2. THESE DETAILS SHOW HARDWARE CLOTH USED BEHIND THE BACKING MATS. IN SOME APPLICATIONS, FILTER FABRIC WILL BE REQUIRED INSTEAD OF HARDWARE CLOTH. IN THAT CASE, THESE DETAILS SHOULD BE REVISED ACCORDINGLY.
  3. WWF = WELDED WIRE FABRIC

**KETT BT SPECIFIED ROADS  
MSE WALL DETAILS**

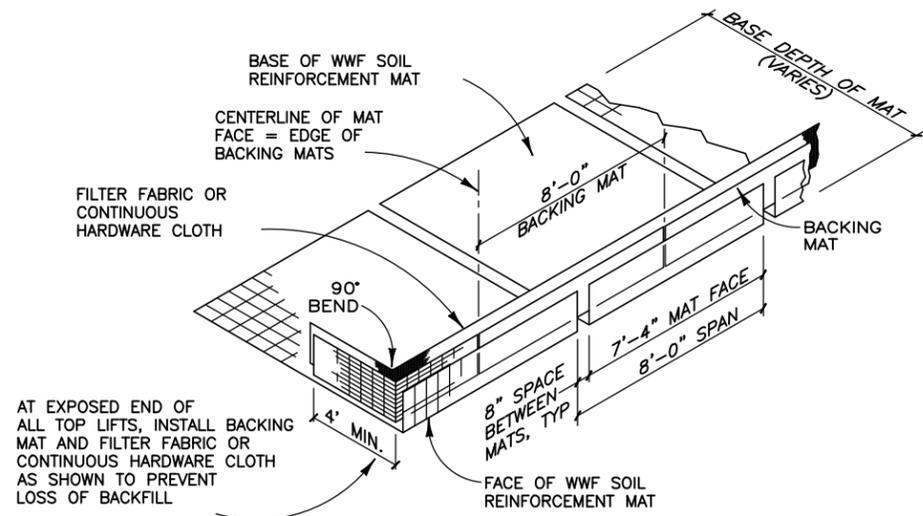


SHEET NUMBER TOTAL SHEETS

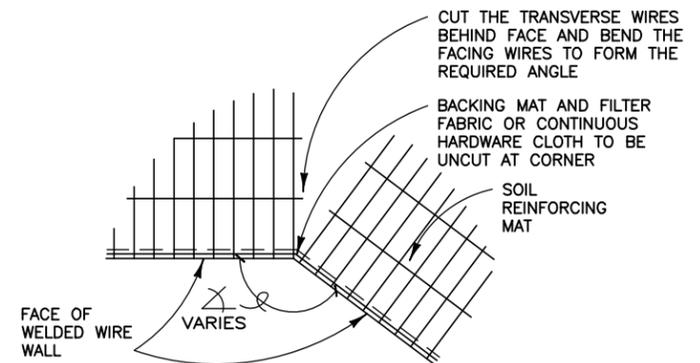
8 16

Drawing obtained from Hilfiker Retaining Walls

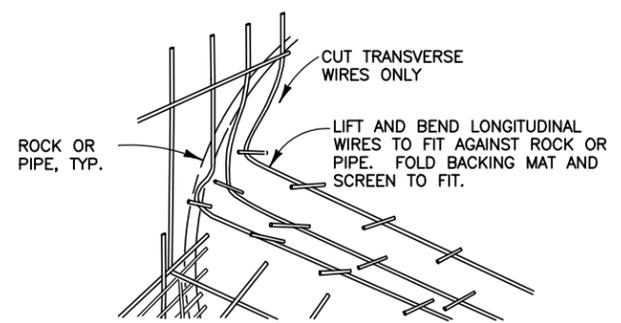
Drawing not to scale



*ISOMETRIC VIEW*  
**WELDED WIRE WALL COMPONENTS WITH RETURN MAT**  
 NOT TO SCALE



*PLAN VIEW*  
**CONCAVE ANGLE DETAIL**  
 NOT TO SCALE



*PICTORIAL*  
**FITTING MATS TO OBSTRUCTION**  
 NOT TO SCALE

Drawing not to scale

Drawing obtained from  
 Hilfiker Retaining Walls

SHEET NUMBER	TOTAL SHEETS
9	16

**KETT BT SPECIFIED ROADS  
 MSE WALL DETAILS**



MILE POST	FILL REPAIR TYPE	AVG. ASPHALT CUT OR SKIN PATCH DIMENSIONS		AVG. EXCAVATION DIMENSIONS			ASPHALT EXCAVATION (SF)	UNCLASSIFIED BORROW (CY*)	MECHANICALLY STABILIZED EARTH WALL				CRUSHED AGGREGATE		HOT A.C. PLANT MIX		REMARKS	
		LENGTH (FT)	AVG. WIDTH (FT)	LENGTH (FT)	{REW} WIDTH (FT)	{ED} DEPTH (FT)			TOTAL FACE AREA (SF)	LENGTH (FT)	MAT BASE DEPTH (FT)	NUMBER OF MATS**	DEPTH (INCHES)	TOTAL (CY*)	DEPTH (INCHES)	TOTAL (TONS)		
15.14	MSE	85	14	85	15	As Needed	1190		221.3	56	15	14	8	45	4	29.72	Provide 2 ft shoulder right side and 1 ft shoulder on left side. Construct 2 Layer MSE wall.	
15.64	Skin	12	12												2	1.80		
16.29	Culvert	60	12				720						8	16	4	17.98	Provide 1 ft shoulder on each side.	
								100 CY to be used when unsuitable material is encountered.										
																14.50	14.50 tons to be placed as skin patches at various locations marked by Contracting Officer.	
<b>TOTALS</b>							<b>1910</b>	<b>100</b>	<b>221.3</b>					<b>NA</b>	<b>61</b>	<b>NA</b>	<b>64.00</b>	

MSE = Mechanically Stabilized Earth wall  
 {REW} = Roadway Excavation Width.  
 {ED} = Excavation Depth.  
 Excavation quantity includes existing shoulder and 1 1/2 H : 1 V enbankment (fill) slope  
 Length and width dimensions are "NOMINAL". Field dimensions may vary  
 \*Denotes contract quantity  
 \*\*Mat size of 2' x 7'-4" welded wire size W 9.5 x W 4.0, Top mat W 7.0 x W 3.5. Galvanize after fabrication according to AASHTO M111.

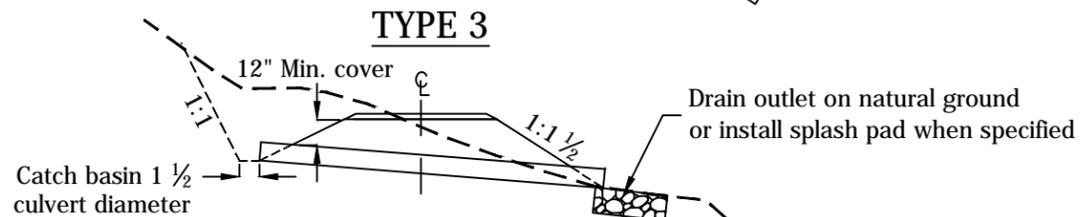
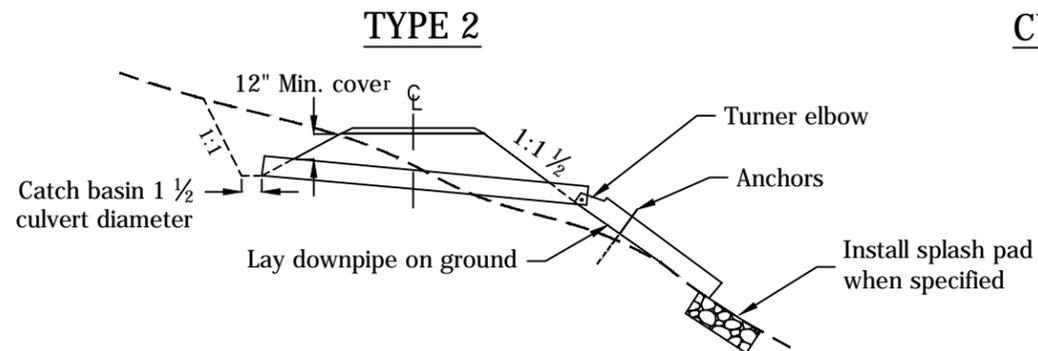
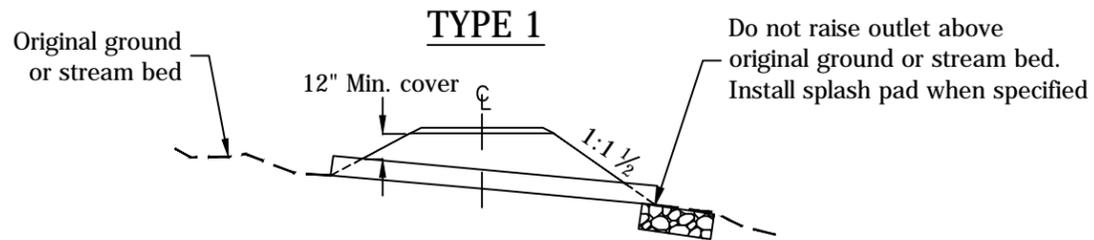
**KETT BT SPECIFIED ROADS**

**ROAD 2234 ASPHALT REPAIR TABLE**



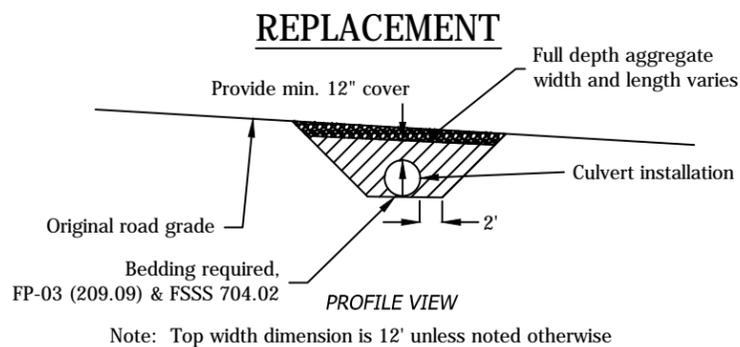


## CULVERT TYPES

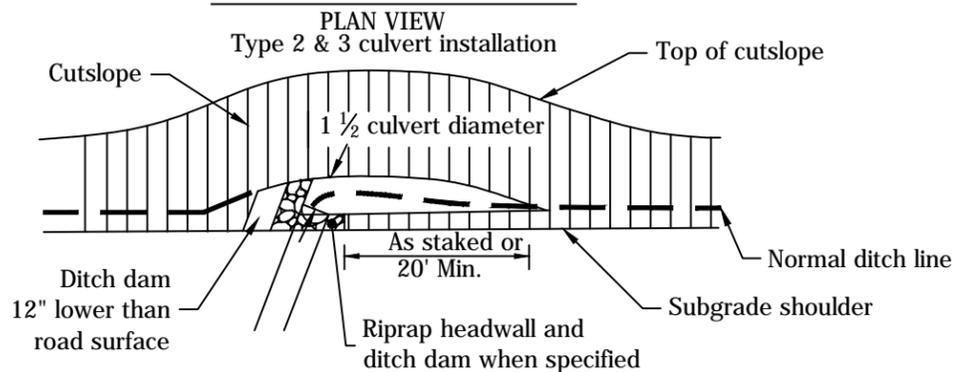


Some installations of culverts may require additional excavation below grade line.

## CULVERT SURFACE ROCK REPLACEMENT

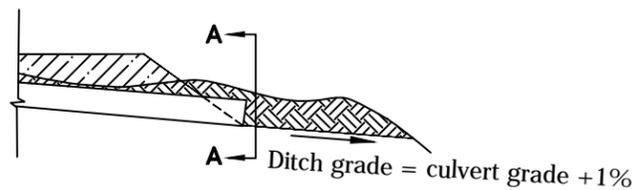


## CATCH BASIN DETAIL

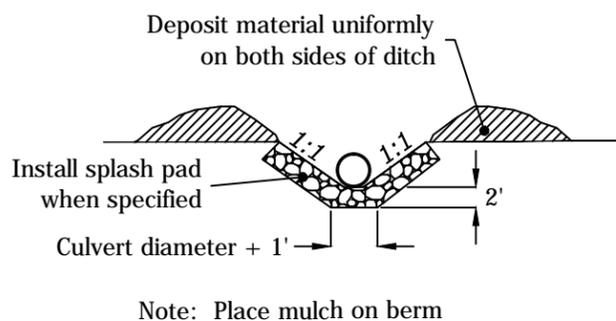


Drawing not to scale

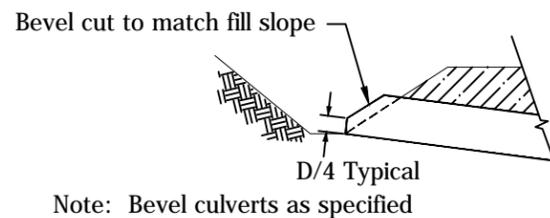
## CULVERT OUTLET DITCH



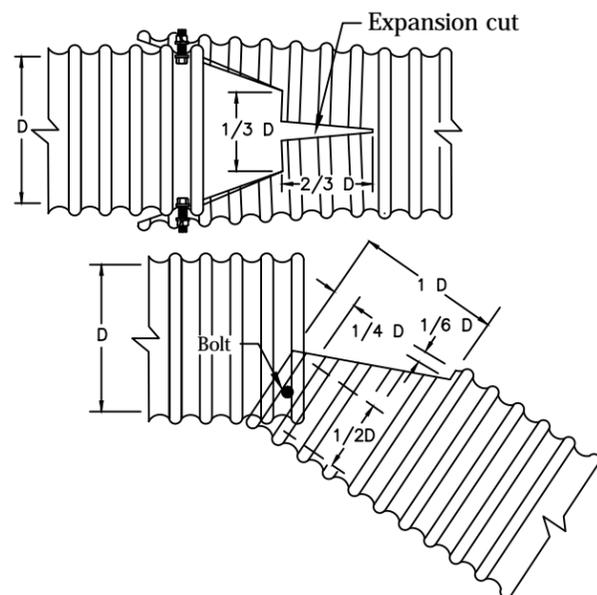
## CULVERT OUTLET DITCH SECTION A-A



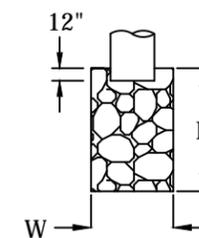
## PARTIAL BEVELED INLET DETAIL



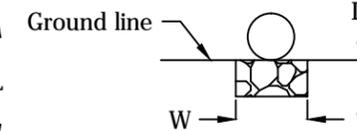
## TURNER ELBOW DETAILS FOR PLASTIC PIPE



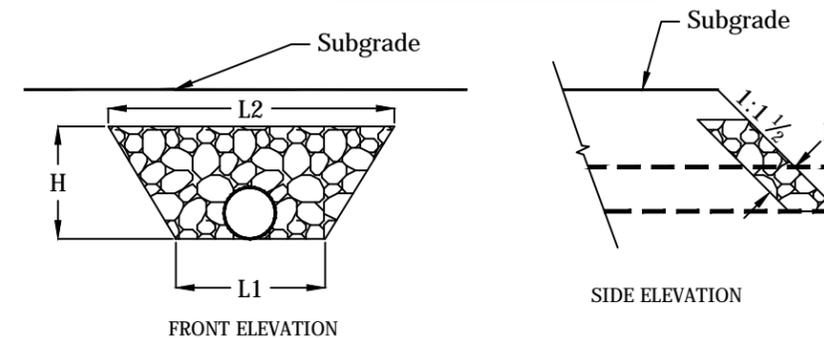
## SPLASH PAD PLAN VIEW



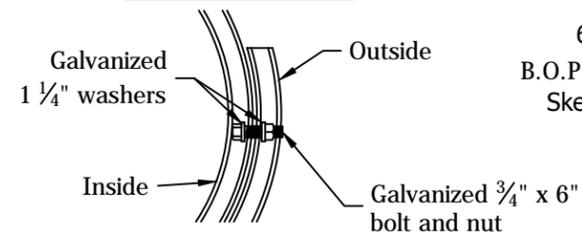
## SPLASH PAD ELEV. VIEW



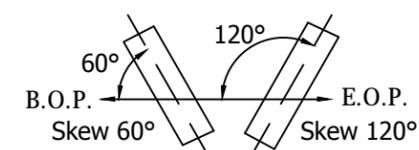
## RIPRAP HEADWALL



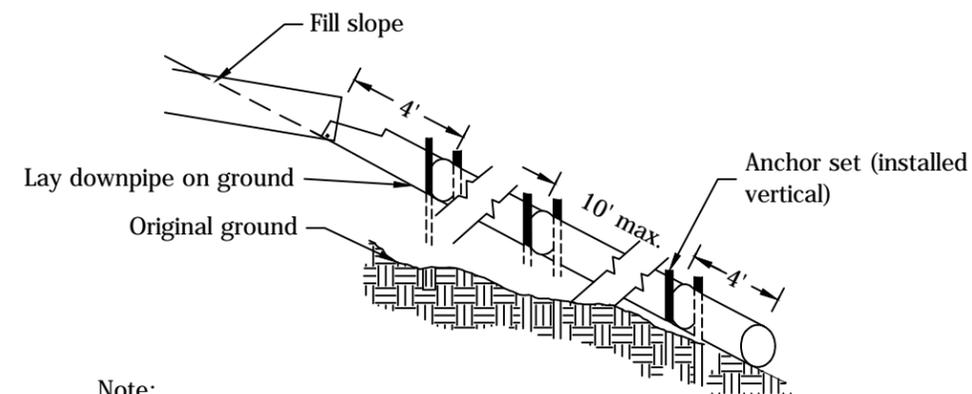
## BOLT DETAIL FOR PLASTIC PIPE



## SKEW DIAGRAM



## ANCHOR DETAILS



Note: Elbows and anchors are indirectly included in the pay item for the corresponding outlet pipe. Anchor sets consist of two steel 6 ft fence posts (AASHTO M 281) and no. 9 galvanized wire. Drive posts a minimum 2 ft into the ground. Provide 3 strands of wire twisted together and encompass the entire circumference of the pipe and fence posts.

KETT BT SPECIFIED ROADS

DRAINAGE CONSTRUCTION TYPICALS

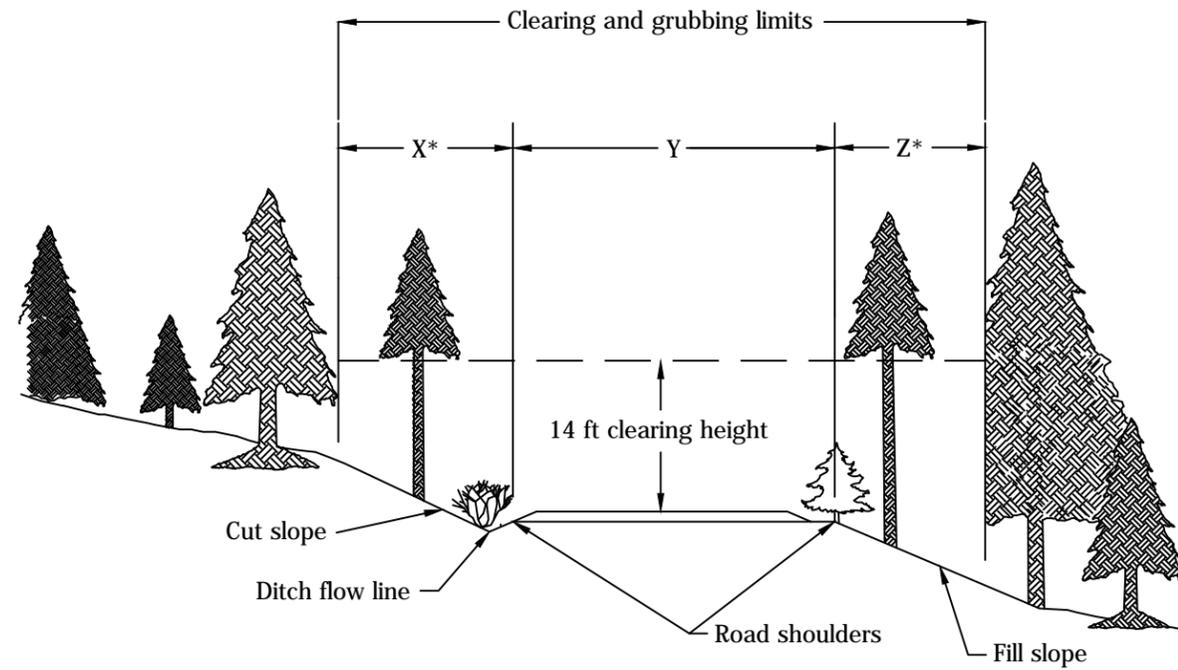
PACIFIC NORTHWEST REGION

U.S.D.A. FOREST SERVICE



SHEET NUMBER TOTAL SHEETS

12 16



ROAD NUMBER	BEGINNING STATION/ MILE POST	ENDING STATION/ MILE POST	* (FT)
2234-280	0.00	2.71	6

**NOTES:**

1. Drawing not to scale.
2. Clear and grub all trees and stumps within "X, Y, and Z". Trees greater than 6 inches at 4.5' above the ground within "Z" can remain.
3. Cut other vegetation to a maximum height of 6" above the ground surfaces within "X, Y, and Z".
4. Limb trees to 14' above the traveled way surface.

**KETT BT SPECIFIED ROADS**

**CLEARING AND GRUBBING TYPICAL**

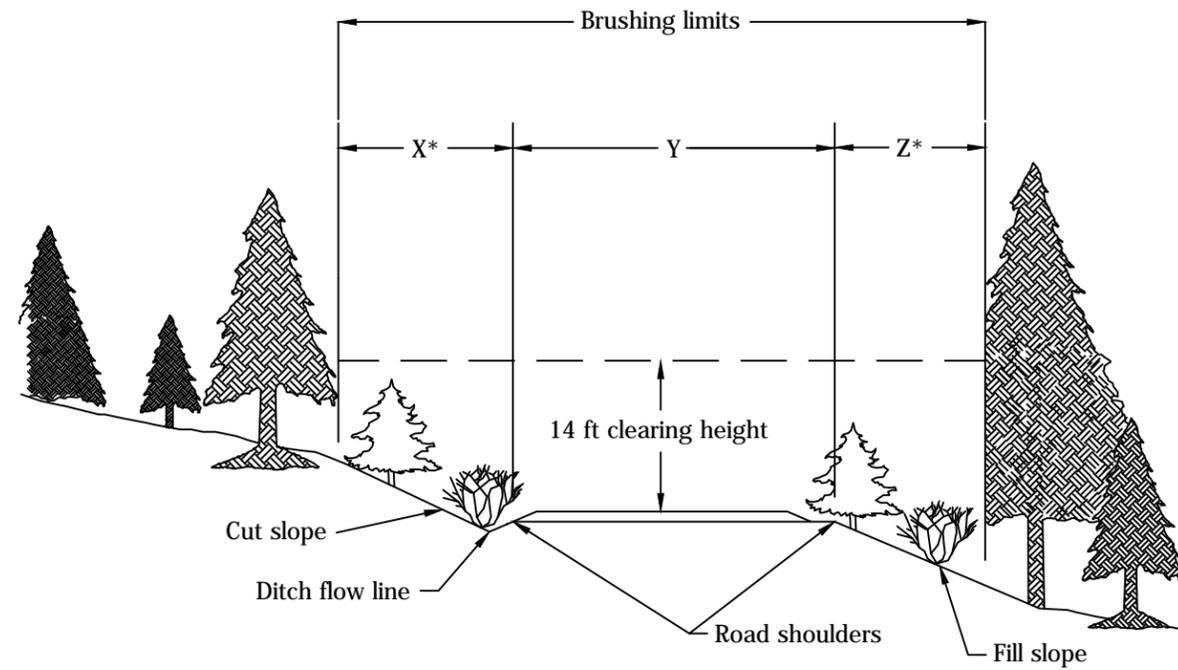
PACIFIC NORTHWEST REGION

U.S.D.A. FOREST SERVICE



SHEET NUMBER TOTAL SHEETS

13 16



ROAD NUMBER	BEGINNING STATION/MILE POST	ENDING STATION/MILE POST	* (FT)
2234	14.77	16.45	6

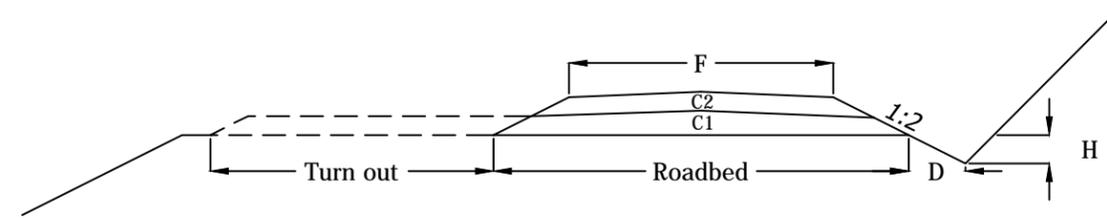
NOTES:

1. Drawing not to scale.
2. Cut all vegetation and small trees (6" diameter or less at point of cut) within the brushing limits no higher than 6" above the ground. Trees at 4.5' above the ground within "Z" can remain but shall be limbed.
3. Limb trees to 14' above the traveled way surface.

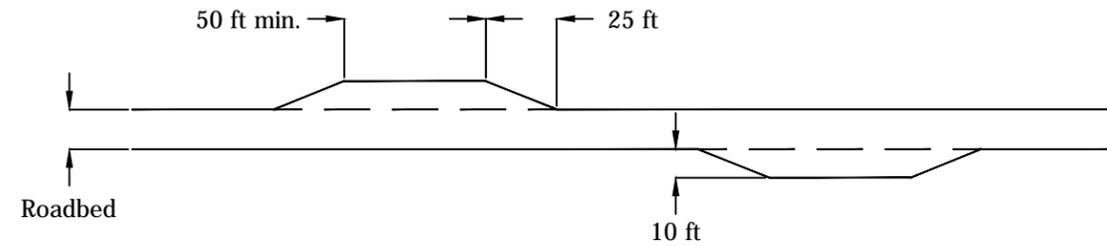
**KETT BT SPECIFIED ROADS  
BRUSHING TYPICAL**



**SURFACE ROCK PLACEMENT - TYPICAL SECTION**



**TURNOUT PLAN VIEW**

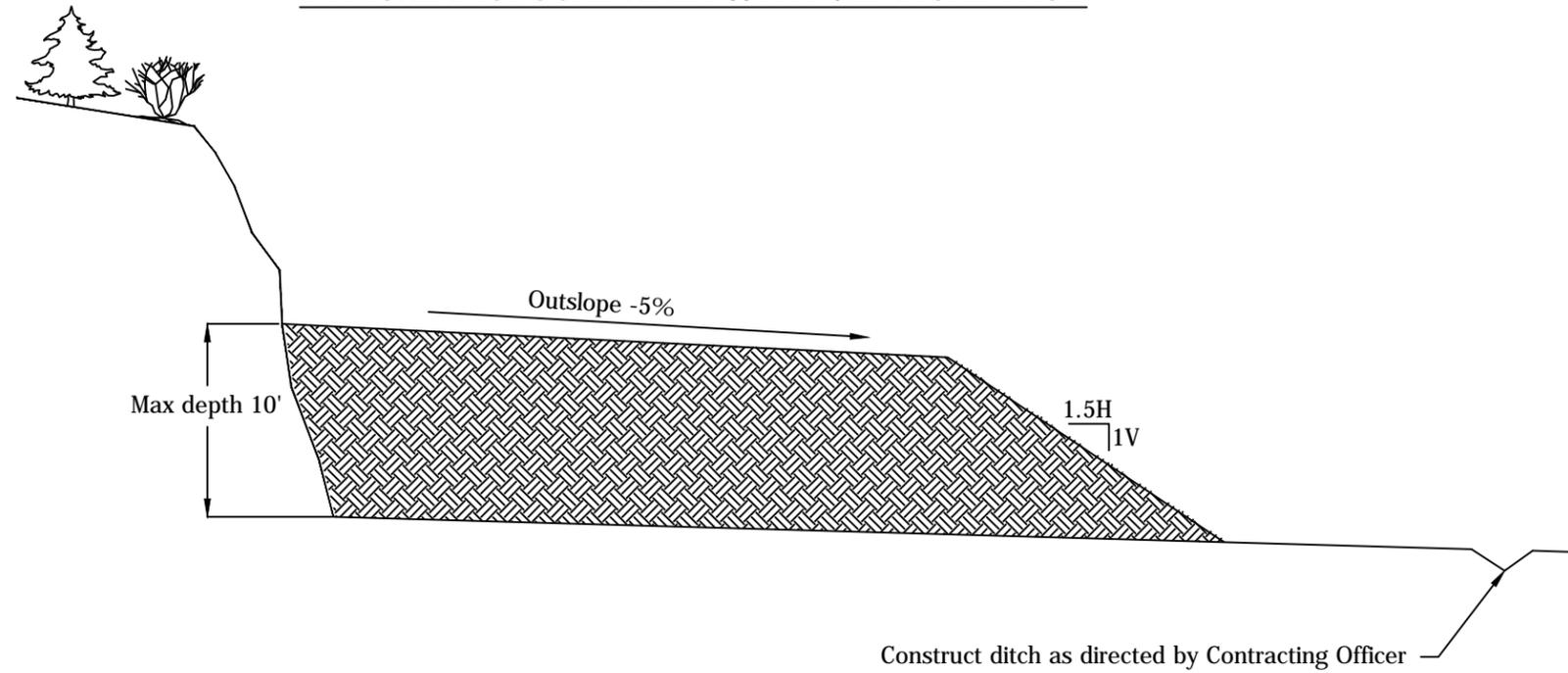


ROAD NUMBER	BEGINNING MILE POST	ENDING MILE POST	CONSTRUCTION TOLERANCE	OUTSLOPED INSLOPED CROWNED	ROADBED WIDTH (FT)	DITCH DIMENSIONS (FT)		PAVEMENT STRUCTURE					REMARKS	
						D	H	TRAVELED WAY WIDTH (FT)	GRADATION		COMPACTED DEPTH (IN)			SLOPE RATIO
									F	C1	C2	C1		C2
2234-280	0.00	2.15	D	3C	13.3	2	1	12	NA	-	NA	-	NA	For roadway reconditioning.
2234-280	2.15	2.59	D	3C	13.3	2	1	12	Gov. Stockpile	-	4	-	1:2	For roadway reconditioning and 4-inch aggregate placement.
2234-280	2.59	2.71	D	3O	12.7	NA	NA	12	Gov. Stockpile	-	4	-	1:2	For roadway reconditioning and 4-inch aggregate placement.

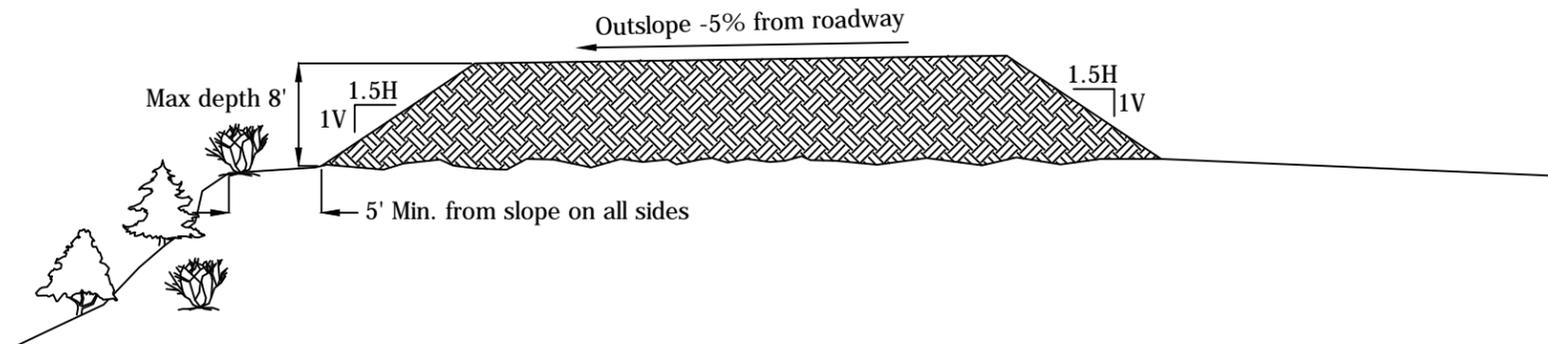
\* Dimensions may be adjusted by the Contracting Officer to fit field conditions.



TYPICAL DISPOSAL AREA WITH VERTICAL FACE



TYPICAL DISPOSAL AREA WITH OPEN AREA



NOTES:

1. Disposal area limits to be staked by the Contracting Officer.
2. Mulch the disposal material.
3. Drawings not to scale.

KETT BT SPECIFIED ROADS  
DISPOSAL TYPICALS



SHEET NUMBER	TOTAL SHEETS
16	16