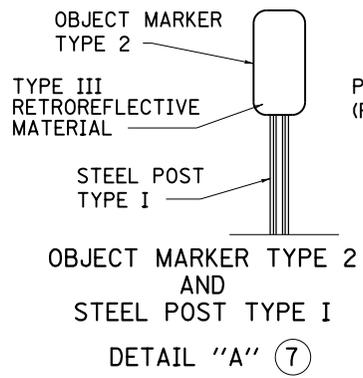
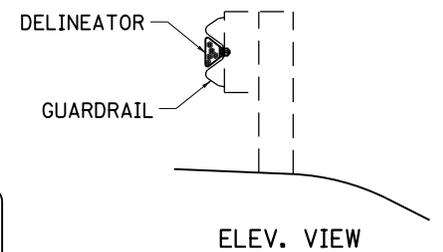


NOTES:

- DELINEATOR SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR ONE COMPLETE INSTALLATION.
- | | | | |
|----------------------------------|------|----------------------------------|----------|
| DELINEATORS ON CONCRETE BARRIERS | | | |
| 2. | CODE | PAY ITEM | PAY UNIT |
| | 1984 | DELINEATOR FOR BARRIER - WHITE | EACH |
| | 1985 | DELINEATOR FOR BARRIER - YELLOW | EACH |
| DELINEATORS ON GUARDRAIL | | | |
| | 1982 | DELINEATOR FOR GUARDRAIL - WHITE | EACH |
| | 1983 | DELINEATOR FOR GUARDRL - YELLOW | EACH |
- THE DELINEATORS SHALL BE YELLOW IN COLOR WHEN THE BARRIER IS PLACED IN THE MEDIAN AND/OR ON THE LEFT SIDE OF THE DRIVING LANE. THE DELINEATORS SHALL BE WHITE IN COLOR WHEN THE BARRIER IS PLACED ON THE RIGHT SIDE OF THE DRIVING LANE.
- DELINEATORS SHALL BE APPLIED 300 FEET IN ADVANCE OF AND THROUGHOUT THE LENGTH OF ALL BRIDGES THAT DO NOT HAVE FULL WIDTH SHOULDERS. SPACING ON BRIDGES AND 300 FEET IN ADVANCE OF BRIDGES SHALL BE 50 FEET ON CENTERS. THE FIRST DELINEATOR ON THE GUARDRAIL SHALL BE PLACED 50 FEET FROM THE DELINEATOR AT THE END OF THE BRIDGE. DELINEATORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- WHEN CONCRETE BARRIERS EXTEND ACROSS NARROW SHOULDER WIDTH STRUCTURES IN LIEU OF STEEL BEAM GUARDRAIL, DELINEATORS SHALL BE INSTALLED AT SAME VERTICAL ALIGNMENT AS ON THE GUARDRAIL AND DELINEATORS SHALL COMPLY WITH CURRENT STD. DWG. **RBM-020**.
- GUARDRAIL DELINEATORS MAY BE AKT CORPORATIONS MODEL NO. 567 MONO-DIRECTIONAL OR APPROVED EQUAL.
- SEE SECTION 718 OF THE CURRENT STANDARD SPECIFICATIONS FOR "OBJECT MARKER TYPE 2".



PRIMARY USE:
(PAVEMENT REHABILITATION PROJECTS)

**KENTUCKY
DEPARTMENT OF HIGHWAYS**

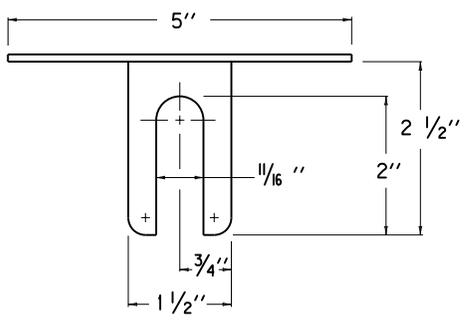
**DELINEATORS AT
NARROW SHOULDER
BRIDGES**

SUBMITTED  **10-28-04**
DATE

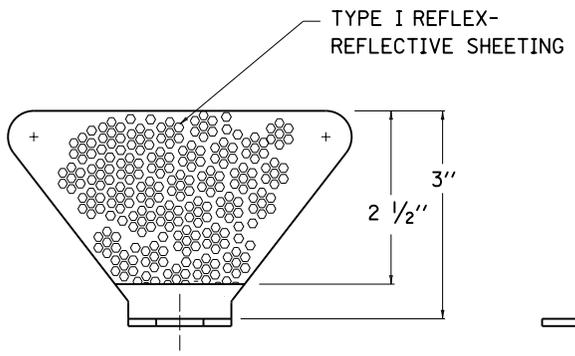
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NOTES

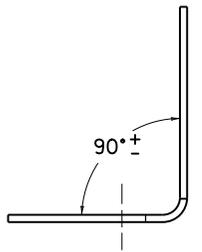
- DELINEATOR SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE EACH, AND SHALL INCLUDE ALL MATERIALS AND LABOR NECESSARY FOR ONE COMPLETE INSTALLATION.
- | CODE | PAY ITEM | PAY UNIT |
|------|----------------------------------|----------|
| 1982 | DELINEATOR FOR GUARDRAIL - WHITE | EACH |
| 1983 | DELINEATOR FOR GUARDRL - YELLOW | EACH |
- GUARDRAIL DELINEATORS SHALL BE REQUIRED ON ALL ROADWAYS WITH SHOULDERS 6'-0" IN WIDTH OR LESS AND AT OTHER LOCATIONS WHERE THE GUARDRAIL LEADS INTO HORIZONTAL CURVES OF LESS THAN 950 FEET RADIUS.
- DELINEATORS SHALL BE MANUFACTURED FROM 12 GA. GALVANIZED STEEL.
- DIMENSIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MANUFACTURES TOLERANCES.
- WHEN CONCRETE BARRIERS EXTEND ACROSS BRIDGE STRUCTURES IN LIEU OF STEEL BEAM GUARDRAIL, DELINEATORS SHALL BE INSTALLED AT SAME VERTICAL ALIGNMENT AS ON THE GUARDRAIL AND DELINEATORS SHALL COMPLY WITH CURRENT STD. DWG. RBM-020.



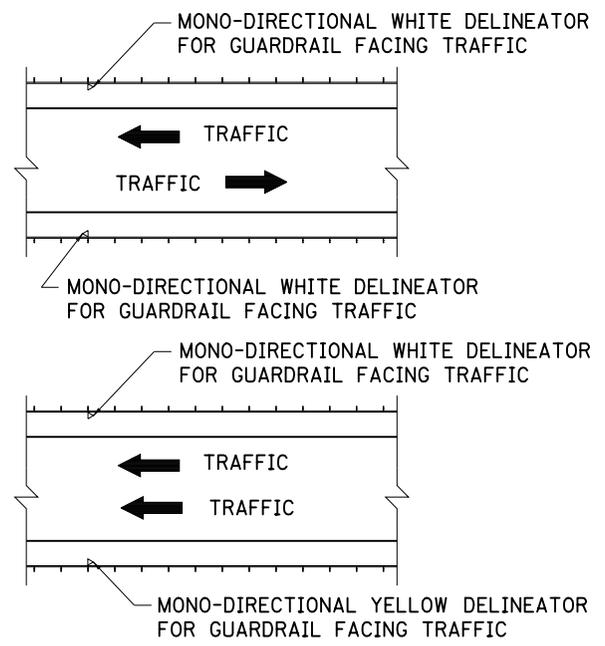
PLAN VIEW



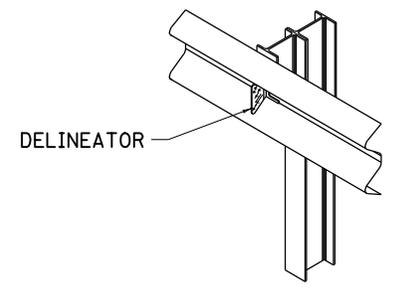
FRONT VIEW



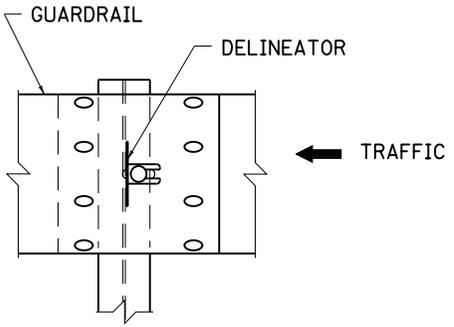
SIDE VIEW



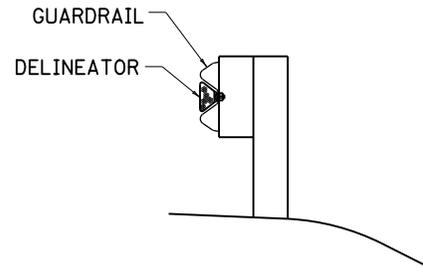
PLACEMENT OF DELINEATORS FOR GUARDRAIL



ISOMETRIC VIEW



FRONT VIEW



SIDE VIEW

DELINEATOR SPACINGS ON HORIZONTAL CURVES	
DEGREE OF CURVE	SPACING ON CURVES
$\leq 2^\circ$	100'
$> 2^\circ \leq 4^\circ$	75'
$> 4^\circ$	50'

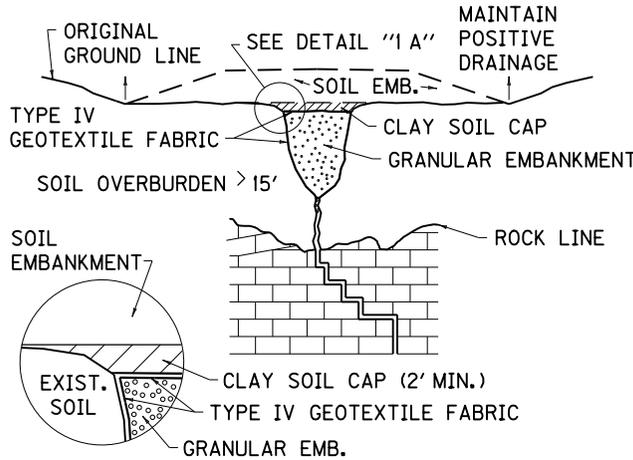
SPACING ON TANGENTS = 100' INTERVALS

KENTUCKY
DEPARTMENT OF HIGHWAYS

DELINEATORS
FOR GUARDRAIL

SUBMITTED *William S. Hall* 12-1-99
ASS'T. DIRECTOR DIVISION OF DESIGN DATE

CONDITION NO. 1: SOIL EMBANKMENT OVER DEEP OVERBURDEN WITH OPEN SINKHOLES

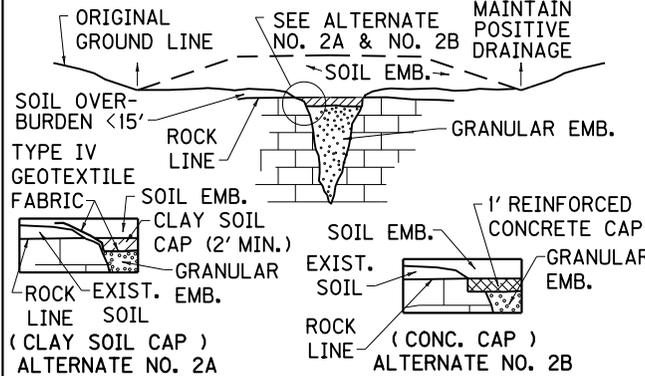


DETAIL "1 A"

PROCEDURE:

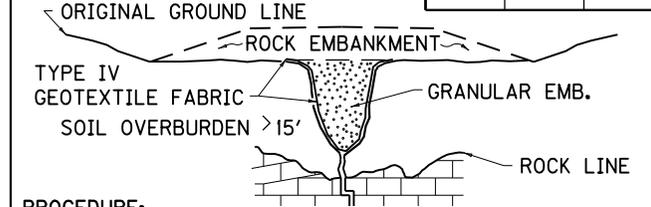
- REMOVE DEBRIS. DO NOT EXCAVATE SOIL OVERBURDEN.
- LINE OPENING WITH TYPE IV GEOTEXTILE FABRIC.
- REFILL WITH GRANULAR EMBANKMENT.
- PLACE TYPE IV GEOTEXTILE FABRIC ON TOP OF GRANULAR EMBANKMENT.
- REFILL WITH (2' MINIMUM) CLAY SOIL CAP.

CONDITION NO. 2: SOIL EMBANKMENT OVER SHALLOW OVERBURDEN WITH SINKHOLE OPENING IN ROCK



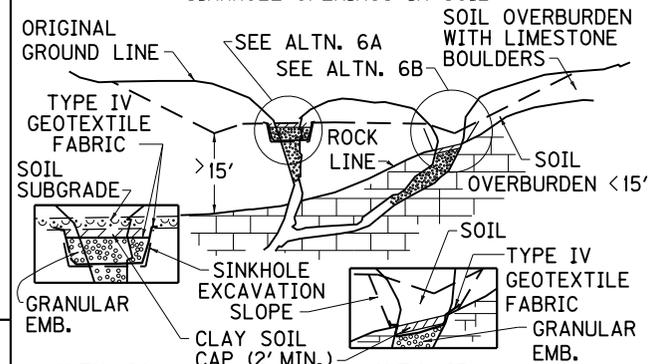
- PROCEDURE FOR ALTERNATE NO. 2A**
- REMOVE DEBRIS AND SOIL OVERBURDEN.
 - REFILL OPENING WITH GRANULAR EMBANKMENT TO 2' MIN. BELOW ROCK LINE.
 - PLACE TYPE IV GEOTEXTILE FABRIC ON TOP OF GRANULAR EMB. OVERLAPPING ORIG. GROUND LINE.
 - REFILL WITH (2' MIN.) CLAY SOIL CAP.
- PROCEDURE FOR ALTERNATE NO. 2B**
- REMOVE DEBRIS AND SOIL OVERBURDEN.
 - REFILL OPENING WITH GRANULAR EMBANKMENT TO 1' MIN. BELOW ROCK LINE.
 - CONST. 1' REINFORCED CONC. CAP. CAP SHOULD BE INTERLOCKED WITH ROCK FOR SUPPORT.

CONDITION NO. 3: ROCK EMB. OVER DEEP OVERBURDEN WITH OPEN SINKHOLES



- PROCEDURE:**
- REMOVE DEBRIS. DO NOT EXCAVATE SOIL OVERBURDEN.
 - LINE OPENING WITH TYPE IV GEOTEXTILE FABRIC.
 - REFILL OPENING WITH GRANULAR EMBANKMENT TO TOP OF DEPRESSION.

CONDITION NO. 6: CUT SECTIONS WITH SINKHOLE OPENINGS IN SOIL



- ALTN. 6A**
- ALTERNATE NO. 6A SOIL OVERBURDEN GREATER THAN 15'**
- REMOVE DEBRIS. DO NOT EXCAVATE SOIL OVERBURDEN.
 - LINE OPENING WITH TYPE IV GEOTEXTILE FABRIC.
 - REFILL WITH GRANULAR EMB.
 - PLACE TYPE IV GEOTEXTILE FABRIC OVER GRANULAR EMBANKMENT OVERLAPPING ORIG. GROUND LINE.
 - REFILL WITH (2' MIN.) CLAY SOIL CAP. IF ROCK SUBGRADE IS USED OMIT SOIL CAP AND FABRIC UNDERLYING SOIL CAP.

- ALTERNATE NO. 6B SOIL OVERBURDEN LESS THAN 15'**
- REMOVE DEBRIS AND SOIL OVERBURDEN.
 - REFILL OPENING WITH GRANULAR EMBANKMENT TO 2' MIN. BELOW ROCK LINE.
 - PLACE TYPE IV GEOTEXTILE FABRIC OVER GRANULAR EMB. OVERLAPPING ORIG. GROUND LINE.
 - REFILL WITH (2' MIN.) CLAY SOIL CAP. IF CONCRETE CAP IS USED THE FABRIC SHALL BE OMITTED AND CAP SHALL BE INTERLOCKED WITH THE BEDROCK FOR SUPPORT AS DETAILED IN COND. NO. 2 ALTERNATE NO. 2B.

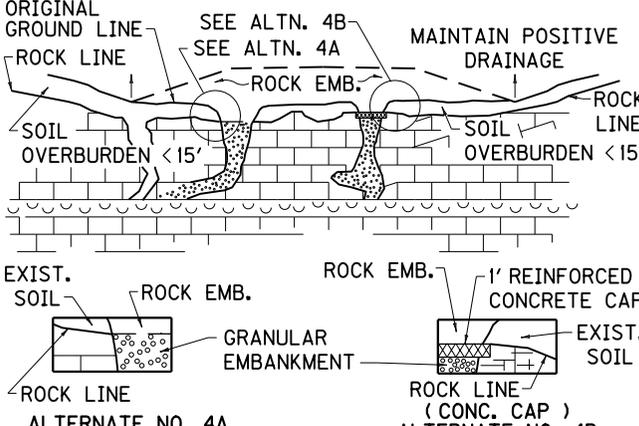
**KENTUCKY
DEPARTMENT OF HIGHWAYS**

**TREATMENT
OF
OPEN SINKHOLES**

THE CONC. CAP SHALL BE CLASS "B" CONC. AND CONTAIN NO. 8 REINFORCING BARS PLACED AT 12" CTRS. IN BOTH DIRECTIONS AND LOCATED 3" FROM THE BOTTOM SURFACE OF THE CAP.

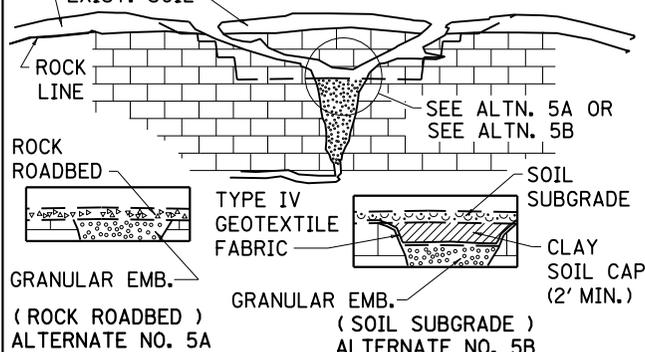
SUBMITTED *William S. Hall* 12-1-99
TECH DIVISION OF DESIGN DATE

CONDITION NO. 4: ROCK EMBANKMENT OVER SHALLOW OVERBURDEN WITH SINKHOLE OPENINGS IN ROCK

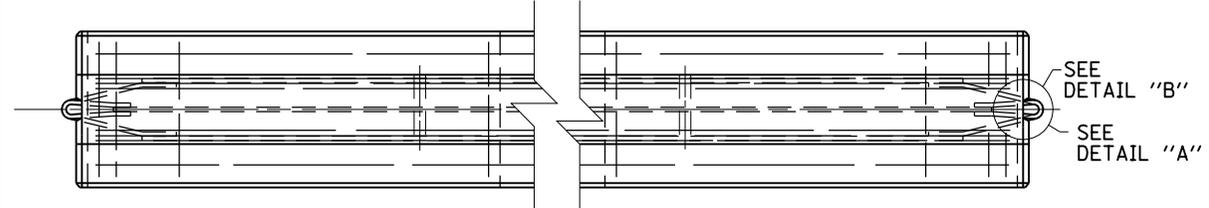


- PROCEDURE FOR ALTERNATE NO. 4A**
- REMOVE DEBRIS AND SOIL OVERBURDEN.
 - REFILL OPENING TO ROCK LINE WITH GRANULAR EMBANKMENT.
- PROCEDURE FOR ALTERNATE NO. 4B**
- REMOVE DEBRIS AND SOIL OVERBURDEN.
 - REFILL OPENING WITH GRANULAR EMBANKMENT TO 1' MIN. BELOW ROCK LINE.
 - CONST. 1' REINFORCED CONC. CAP. CAP SHOULD BE INTERLOCKED WITH ROCK FOR SUPPORT.

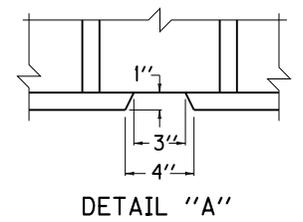
CONDITION NO. 5: CUT SECTIONS WITH SINKHOLE OPENINGS IN ROCK



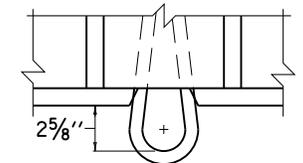
- PROCEDURE FOR ALTERNATE NO. 5A**
- REFILL OPENING WITH GRANULAR EMBANKMENT. IF CONCRETE CAP IS USED IT SHALL BE INTERLOCKED WITH THE BEDROCK FOR SUPPORT AS DETAILED IN CONDITION NO. 2 ALTERNATE NO. 2B.
- PROCEDURE FOR ALTERNATE NO. 5B**
- REFILL OPENING WITH GRANULAR EMBANKMENT TO 2' MINIMUM BELOW SOIL SUBGRADE.
 - PLACE TYPE IV GEOTEXTILE FABRIC OVER GRANULAR EMBANKMENT.
 - REFILL WITH (2' MIN.) CLAY SOIL CAP. IF CONCRETE CAP IS USED THE FABRIC SHALL BE OMITTED AND CAP SHALL BE INTERLOCKED WITH THE BEDROCK FOR SUPPORT AS DETAILED IN COND. NO. 2 ALTERNATE NO. 2B.



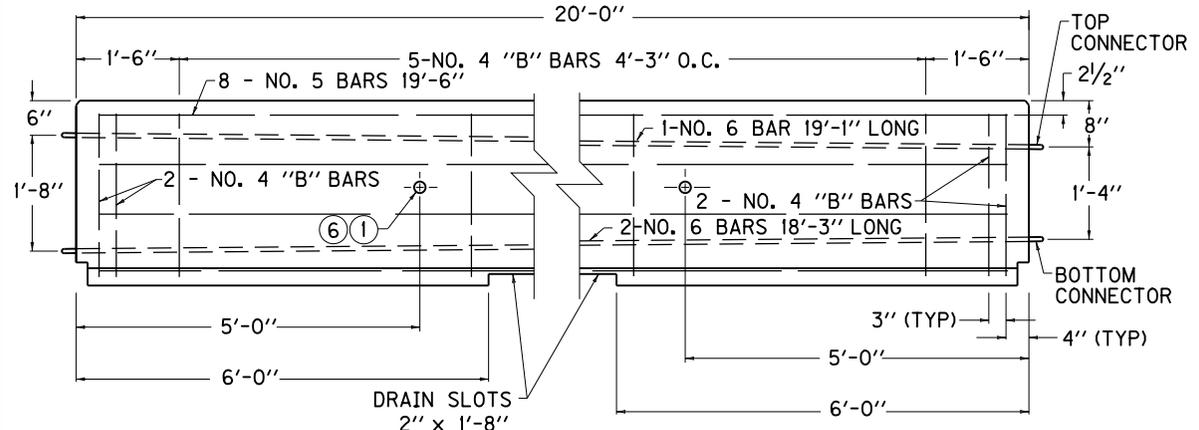
PLAN VIEW
20'-0"



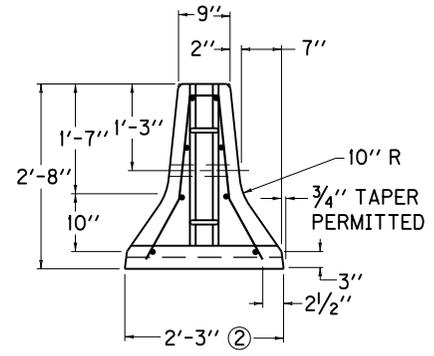
DETAIL "A"



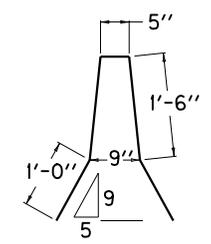
DETAIL "B"



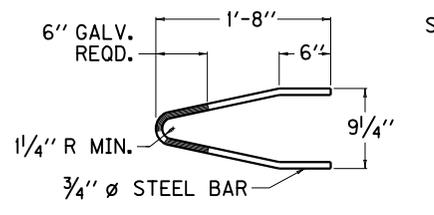
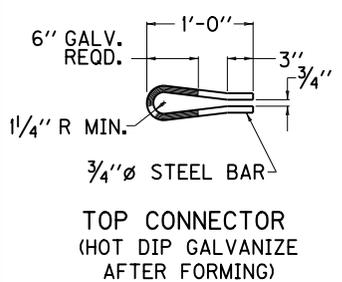
ELEVATION VIEW



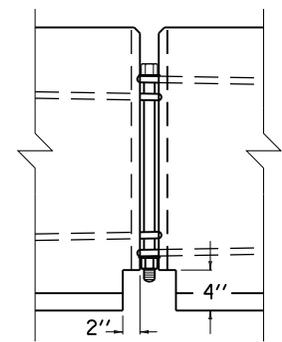
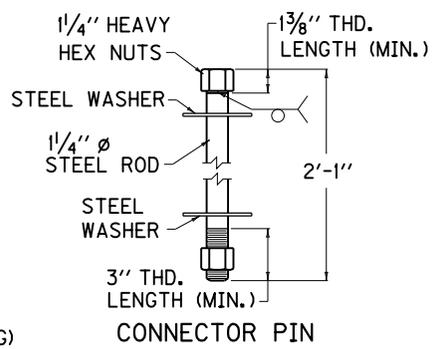
RIGHT ELEVATION VIEW



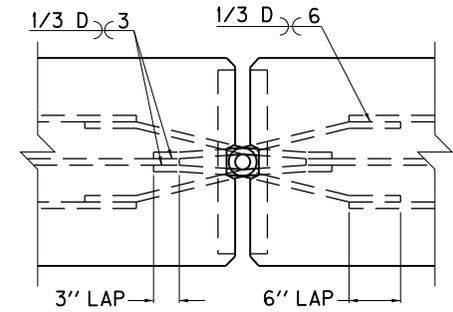
DETAIL OF "B" BAR



BOTTOM CONNECTOR
(HOT DIP GALVANIZE AFTER FORMING)



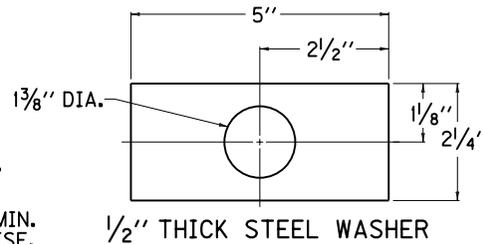
ELEVATION OF CONNECTION DETAIL



PLAN OF CONNECTION DETAIL

~ NOTES ~

- BID ITEM AND UNIT TO BID:
CONC. BARRIER WALL TYPE 9T - LIN. FT.
- 2" DIA. LIFTING HOLE - 2 REQUIRED EACH SECTION. FORMED WITH 2" P.V.C. PIPE OR EQUAL.
 - TAPER NOT INCLUDED IN BASE WIDTH.
 - SHOP DRAWINGS SHALL BE APPROVED PRIOR TO MANUFACTURE.
 - BASED ON 150 LBS./CU. FT.
 - PLACE ALL STEEL REINFORCEMENT A CLEAR DISTANCE OF 2" MIN. FROM OUTSIDE FACE OF WALL, EXCEPT WHERE SHOWN OTHERWISE.
 - LIFTING BARS SHALL BE REQUIRED TO PREVENT SPALLING OF CONCRETE AROUND HOLES.
 - PREVIOUS WALL MANUFACTURED ACCORDING TO STANDARD DRAWING RBM-115-07 MAY STILL BE USED. ANY NEW BARRIER WALL TYPE 9T MANUFACTURED SHALL COMPLY TO THIS STANDARD DRAWING.
 - A PERMISSIBLE ALTERNATE FOR THE PIN AND LOOP CONNECTOR IS JJ HOOK MANUFACTURED BY EASI-SET INDUSTRIES OUT OF MIDLAND, VA. SEE MANUFACTURER'S SHOP DRAWINGS FOR DETAILS ON JJ HOOK CONNECTOR AND RECOMMENDED REINFORCEMENT. THE BARRIER WALL'S SHAPE, LENGTH, DRAIN SLOT DIMENSIONS AND LOCATIONS SHALL MATCH THIS DRAWINGS CURRENT DIMENSIONS. ①⑥



1/2" THICK STEEL WASHER

APPROXIMATE QUANTITIES

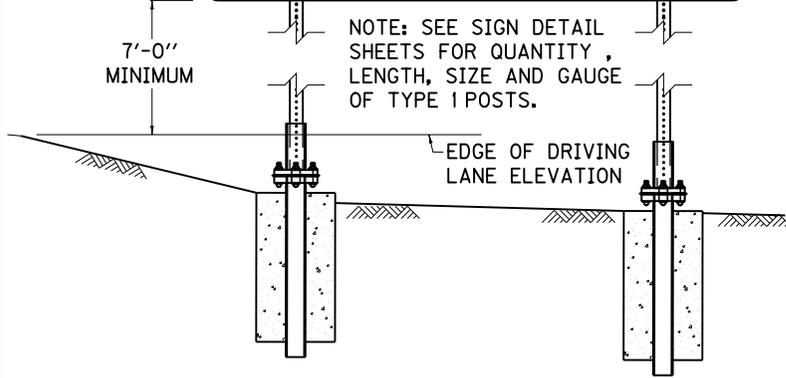
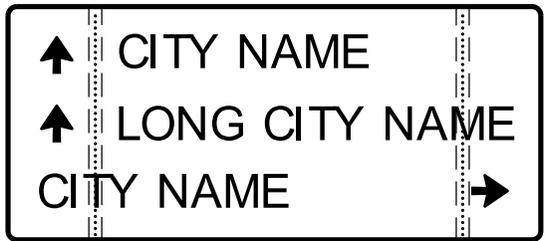
20'		
REINF.	CONC.	WEIGHT ④
LBS.	CU. YD./FT.	TONS
195	0.12	5.0

FOR TEMPORARY USE ONLY

KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE BARRIER
WALL TYPE 9T
(TEMPORARY)

APPROVED: *[Signature]* 04-15-08
DATE

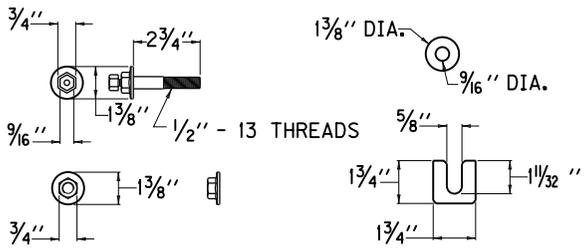
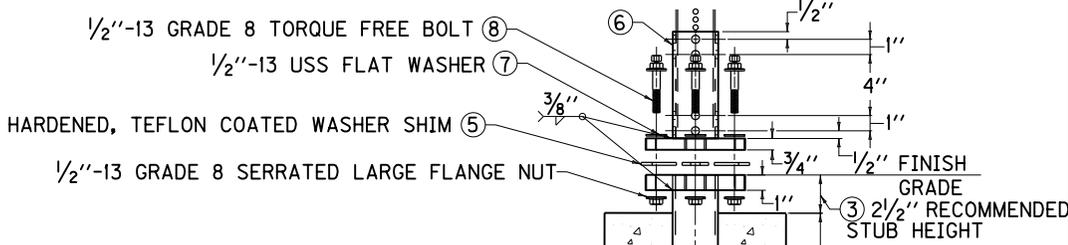


TYPICAL SHEETING SIGN BREAKAWAY SUPPORT INSTALLATION

NOTE: SEE SIGN DETAIL SHEETS FOR QUANTITY, LENGTH, SIZE AND GAUGE OF TYPE I POSTS.

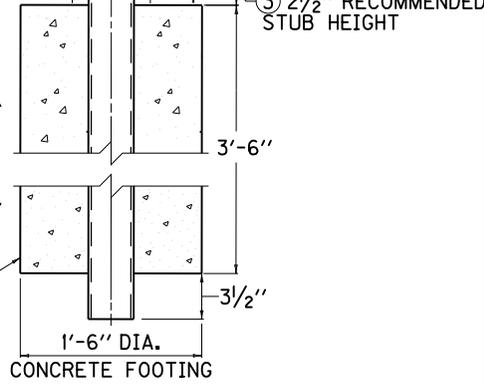
NOTES

1. AUGER AN 18" DIA. HOLE BY 42" DEEP AT THE PREDETERMINED LOCATION.
- ② TAP THE BOTTOM OF THE 48" BASE STUB INTO THE SOIL IN THE BOTTOM OF THE HOLE WITH THE BASE PLUMB AND SQUARED UP WITH THE ROADWAY, MAKING SURE THE POINT OF THE PLATE IS FACING ONCOMING TRAFFIC. (THIS SERVES TO STABILIZE THE BASE WHILE POURING THE CONCRETE AS WELL AS TO ALLOW FOR WATER DRAINAGE BELOW THE CONCRETE FOOTING.)
- ③ DEPTH OF IMBEDMENT TO LEAVE 2 1/2" FROM THE GRADE TO THE TOP OF THE BASE.
- ④ ALLOW CONCRETE TO CURE AT LEAST 5 DAYS BEFORE ERECTING SIGN.
- ⑤ PLACE 1 EACH TEFLON COATED WASHER SHIM ON EACH OF THE 3 NOTCHED POINTS, WITH THE OPEN SIDE FACING TOWARDS THE CENTER OF THE TRIANGLE.
- ⑥ PLACE TOP POST RECIEVER SO THAT THE SIGN POST IS IN CORRECT POSITION FOR SIGN VISIBILITY, ON TO THE BASE AND WASHER SHIMS.
- ⑦ PLACE 1 EACH 1/2" WASHER ONTO TORQUE FREE BOLT AND PLACE IN EACH NOTCHED POINT OF THE TRIANGLE. PUSH EACH TEFLON COATED WASHER SHIM AGAINST THE SHANK OF EACH BOLT AND FINGER TIGHTEN 1/2" FLANGED LOCK NUT.
- ⑧ FULLY TIGHTEN, THEN LOOSEN, ALL THREE TORQUE FREE BOLTS USING THE LARGER 3/4" HEX HEAD. COMPLETE BY TIGHTENING EACH BOLT USING THE SMALLER 9/16" HEX HEAD UNTIL IT TWIST OFF.
NOTE : SECONDARY HEAD WILL TWIST OFF AT DESIRED TORQUE LEVEL TO MEET FEDERAL COMPLIANCE.
- ⑨ INSERT SIGN SUPPORT INTO THE TUBULAR PORTION OF THE TOP POST RECIEVER AND SECURE WITH 3 EACH 3/8"- 16 x 3/2" GRADE 8 FLANGED SHOULDER BOLTS AND FLANGED NUTS.
NOTE: WHERE HIGHER WINDLOAD IS DESIRED, INSERT THE NEXT SIZE SMALLER SQUARE POST INSIDE BOTTOM OF MAIN UPRIGHT POST.
NOTE: ON MULTI-LEG INSTALLATIONS, BE SURE THAT ALL ANCHORS ARE SQUARED AND LINED UP WITH EACH OTHER.
10. TYPE D BREAKAWAY SIGN SUPPORT SYSTEMS FOR THE TYPE I POSTS SHALL BE SELECTED FROM THE KENTUCKY DEPARTMENT OF HIGHWAYS APPROVED MATERIALS LIST. OR AN APPROVED EQUAL. ACCEPTABLE ALTERNATES SHALL BE APPROVED BY THE DIVISION OF HIGHWAY DESIGN AND FHWA, PRIOR TO INSTALLATION.

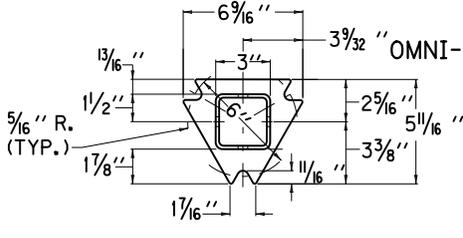


TORQUE FREE MATCH PLATE HARDWARE

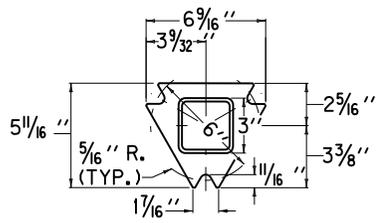
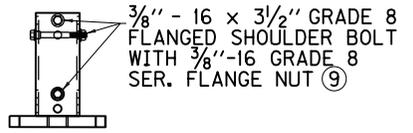
TRAFFIC ↑↓



TYPE "D" SUPPORT
OMNI-DIRECTIONAL BREAK-A-WAY FOR TYPE I POSTS

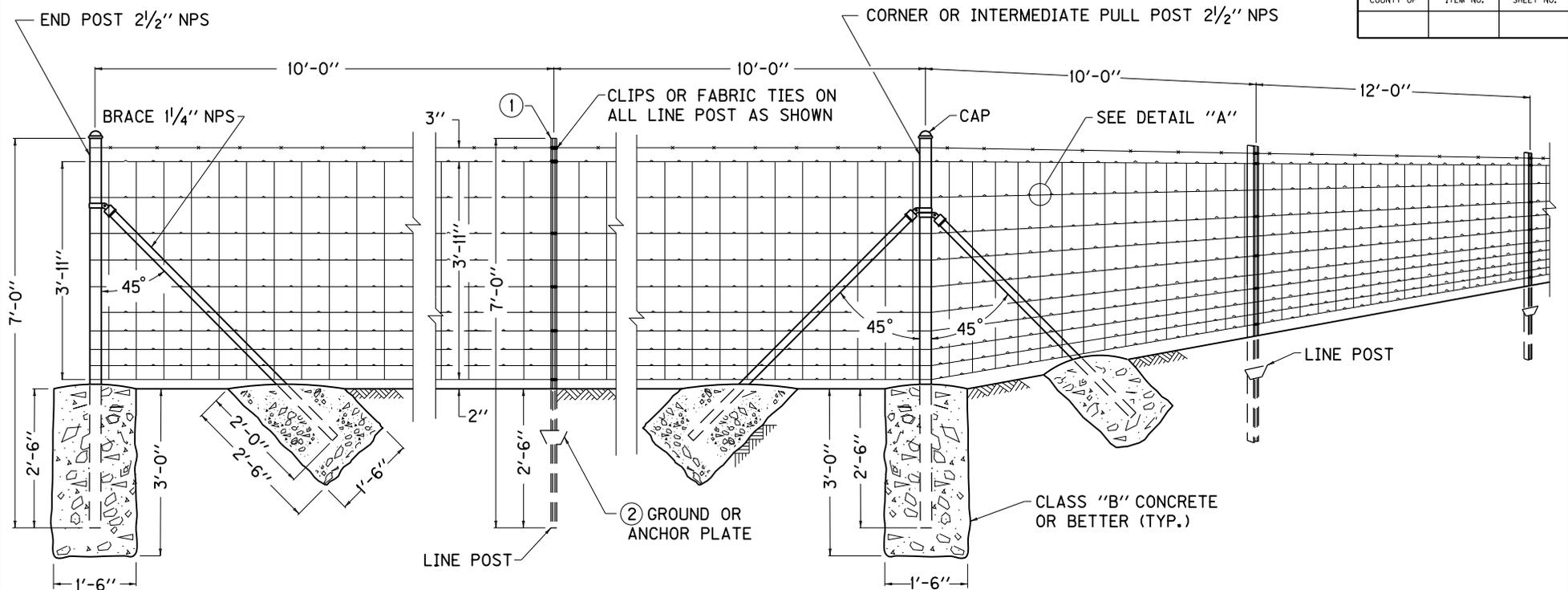


MATERIALS: TUBE RECEIVER - 3" x 3" x 7 GA. ASTM A500
ASTM A500 GRADE B TUBE PLATE - ASTM A572 GRADE 50
TOP POST RECEIVER / FOR 2 1/2"
SQUARE POST
2 1/4" x 12 GA. MAYBE INSERTED INTO
2 1/2" x 12 GA. FOR ADDITIONAL WINDLOAD



BOTTOM BASE CONCRETE STUB ②
MATERIALS : TUBE - 3" X 3" X 7 GA. ASTM A500
GRADE B TUBE PLATE - ASTM A572 GRADE 50

KENTUCKY DEPARTMENT OF HIGHWAYS	
TYPE D BREAKAWAY SIGN SUPPORT	
APPROVED	04-15-08 DATE
 <small>TECHNICAL DESIGN</small>	
005	



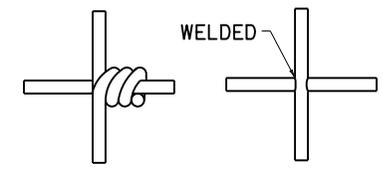
NOTES

RIGHT-OF-WAY FENCE

MATERIALS:

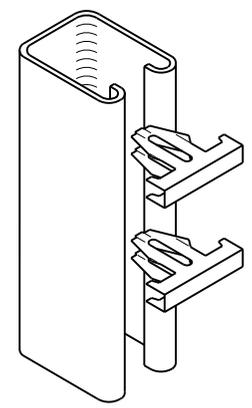
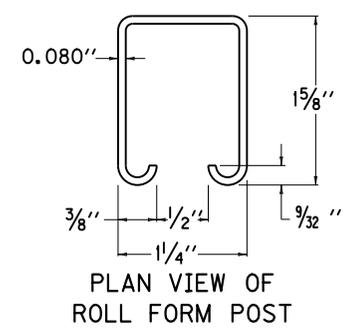
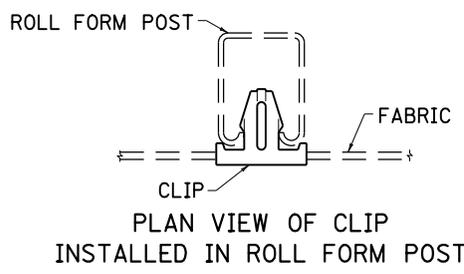
WOVEN-WIRE FABRIC SHALL BE EITHER ALUMINUM-COATED STEEL NO. 1047-6-9 OR ZINC-COATED STEEL NO. 1047-6-9.
 ALL FENCE FITTINGS SHALL COMPLY WITH ASTM F 626.
 NPS = NOMINAL PIPE SIZE - ASTM F1083 AND F1043 (HEAVY INDUSTRIAL FENCE) SHALL GOVERN.

- ① **STUDDED "T" POST SHALL COMPLY WITH ASTM A 702 AT 1.33 LBS. PER FOOT - OR -**
- ROLL FORM POST AT 1.40 LBS. PER FOOT (SEE DETAIL)
- ② NOT REQUIRED FOR ROLL FORM POST.



ALTERNATE METHODS OF SECURING VERTICAL STAY WIRE TO THE HORIZONTAL WIRE OF THE FABRIC.

DETAIL "A"



CLIPS SHALL BE SPRING STEEL ALUMINUM - FINISHED

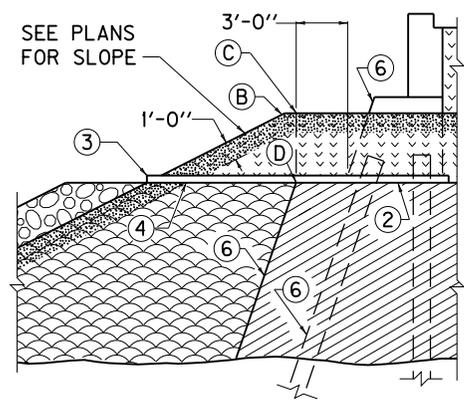
KENTUCKY DEPARTMENT OF HIGHWAYS

WOVEN WIRE FENCE TYPE 1

APPROVED: *[Signature]* 04-15-08 DATE

TECHNICAL DESIGN

006



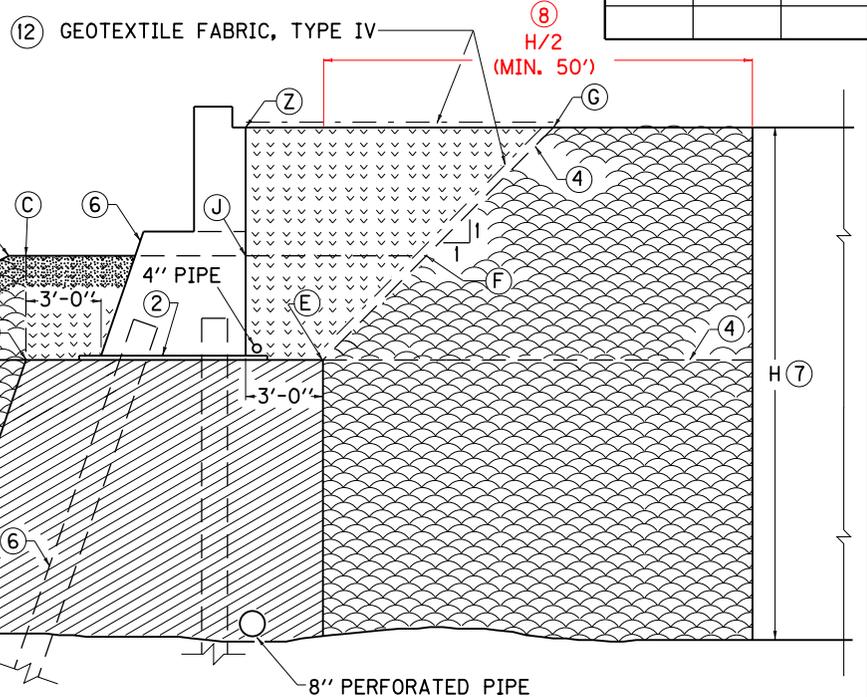
SECTION C-C

SLOPE PROTECTION AS SPECIFIED

SEE PLANS FOR SLOPE



SECTION B-B



CONSTRUCTION SEQUENCE "A"

1. CONSTRUCT EMBANKMENT TO SLOPES A, B, F, AND G SUCH THAT NO UNCOMPACTED OR LOOSE MATERIAL SHALL REMAIN.
2. EXCAVATE FOR END-BENT TO C, D, E, AND F.
3. INSTALL PILES (OR OTHER FOUNDATION).
4. PLACE 2" MORTAR BED OR ANY CLASS CONCRETE.
5. CONSTRUCT CONCRETE END-BENT.
6. INSTALL 4" PERFORATED UNDERDRAIN PIPE AND BACKFILL.
7. BACKFILL TO C, D, E, F, G, Z, AND J.

① CONSTRUCTION SEQUENCE "B"

1. CONSTRUCT EMBANKMENT TO TEMPORARY SLOPE ④.
2. INSTALL PILES (OR OTHER FOUNDATION).
3. PLACE 2" MORTAR BED OR ANY CLASS CONCRETE.
4. CONSTRUCT CONCRETE END-BENT.
5. INSTALL 4" PERFORATED UNDERDRAIN PIPE AND BACKFILL.
6. BACKFILL TO FINISHED GRADE.

NOTES

- ① CONSTRUCTION SEQUENCE "B" IS A PERMITTED ALTERNATE ONLY WHEN GRANULAR OR ROCK EMBANKMENT IS REQUIRED.
- ② 2" MORTAR BED OR ANY CLASS CONCRETE.
- ③ 4" PERFORATED UNDERDRAIN PIPE WRAPPED WITH GEOTEXTILE FABRIC FOR DRAINING THE EXCAVATED TRENCH AND STRUCTURE GRANULAR BACKFILL.
- ④ ACCEPTABLE ALTERNATE FOR TEMPORARY SLOPE (CONSTRUCTION SEQUENCE "B").
5. SHADED PORTIONS [diagonal lines] AND [stippled] REPRESENT LIMITS OF NON-ERODIBLE GRANULAR EMBANKMENT.
- ⑥ SLOPES ARE EQUAL.
- ⑦ H = EMBANKMENT HEIGHT MEASURED FROM SUBGRADE ELEVATION AT POINT Z TO THE LOWEST ELEVATION AT THE TOE OF THE SLOPE.
- ⑧ LIMITS OF EMBANKMENT CONSTRUCTION (H/2 OR 50' MIN.) REQUIRING 2' MAX LIFT THICKNESS.
9. SEE CURRENT SPECIAL PROVISION NO. 69 FOR CONSTRUCTION AND MATERIAL REQUIREMENTS, METHOD OF MEASUREMENT AND BASIS OF PAYMENT.
10. STRUCTURE GRANULAR BACKFILL PLACED AS A COMPLETE SEPARATE OPERATION AFTER CONSTRUCTION OF ALL OTHER EMBANKMENT.
11. NO INDIVIDUAL FRAGMENTS LARGER THAN 4 INCHES IN ANY DIMENSION PERMITTED WITHIN 3'-0" OF THE STRUCTURE.
- ⑫ PLACE GEOTEXTILE FABRIC, TYPE IV PRIOR TO PLACING STRUCTURE GRANULAR BACKFILL (WITH SOIL EMBANKMENT ONLY) AND AGGREGATE BASE COURSE (WITH ALL EMBANKMENT MATERIALS).

LEGEND

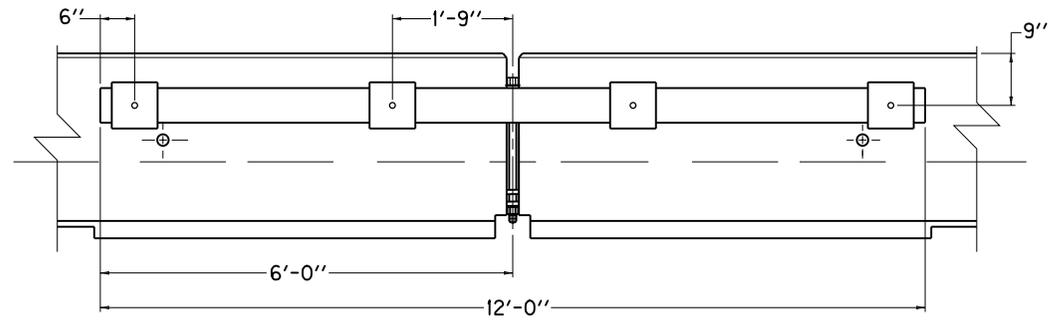
- [stippled] SLOPE PROTECTION (SEE BRIDGE PLANS)
- [diagonal lines] GRANULAR PILE CORE OR COHESIVE PILE CORE
- [wavy lines] STRUCTURE GRANULAR BACKFILL
- [cross-hatched] EMBANKMENT (GRANULAR, ROCK OR SOIL PER PLANS)

USE WITH CUR. STD. DWG. RGX-100

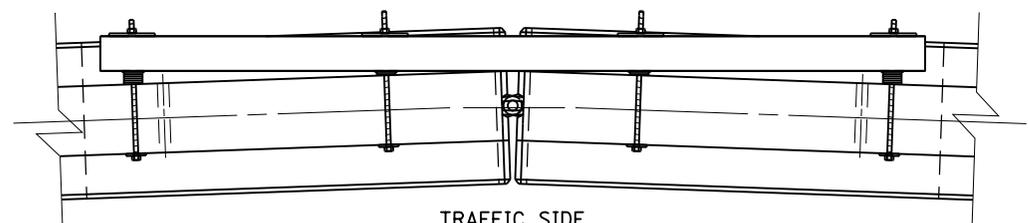
KENTUCKY DEPARTMENT OF HIGHWAYS

TREATMENT OF EMBANKMENTS AT END-BENTS

APPROVED: [Signature] DATE 04-15-08

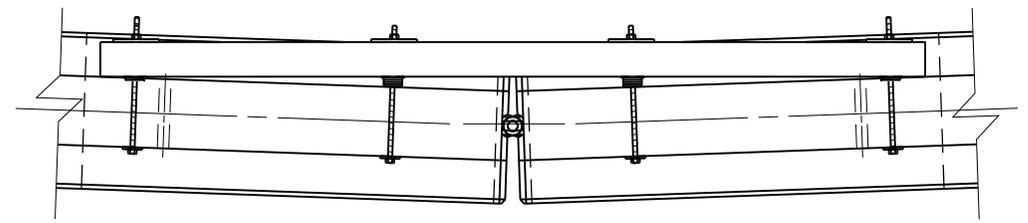


ELEVATION VIEW



TRAFFIC SIDE

PLAN VIEW

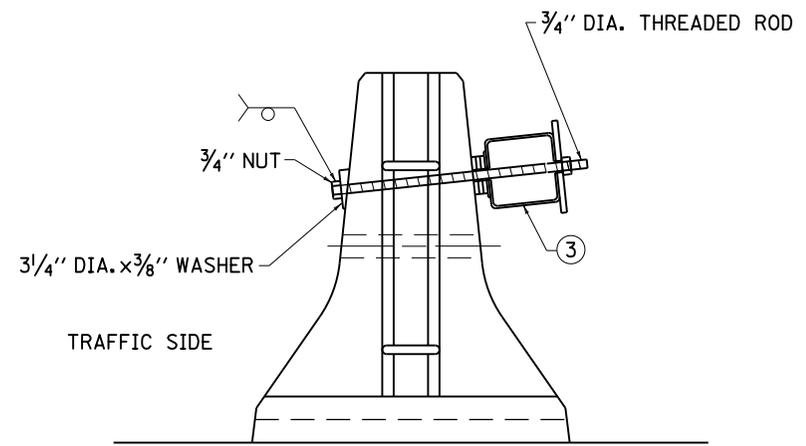


TRAFFIC SIDE

PLAN VIEW

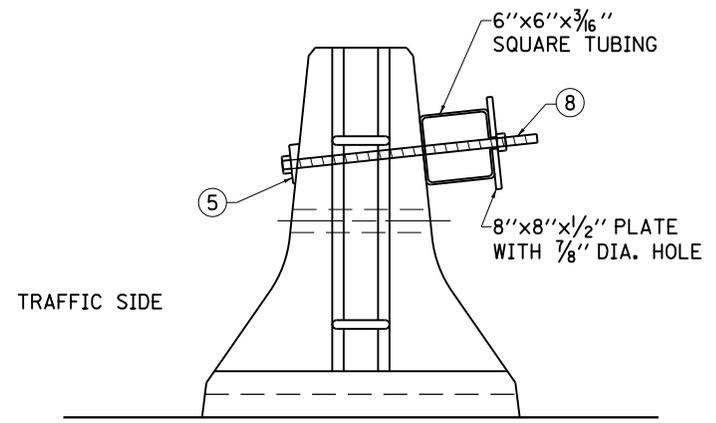
~ NOTES ~

1. STIFFENED BARRIER WALL IS REQUIRED IN WORK ZONES WHEN BARRIER WALL IS LOCATED WITHIN 3'-0" OF BRIDGE DECK EDGE PARALLEL TO THE DIRECTION OF TRAFFIC. MAY ALSO BE USED IN OTHER TEMPORARY SITUATIONS WHERE SUBSTANTIAL DROP OFFS EXIST.
2. STIFFENER SHALL BE INSTALLED WHEN BARRIER IS SET AND BEFORE TRAFFIC IS LET NEAR IT.
- ③ SQUARE TUBING SHALL BE 50 GRADE STRUCTURAL STEEL.
4. WHEN BARRIERS ARE PLACED ON A RADIUS, THE AREA BETWEEN THE SQUARE TUBING AND BARRIER WALL SHALL BE SHIMMED AS SHOWN ABOVE.
- ⑤ BEVEL WASHER TO BE PARALLEL WITH PLANE OF BARRIER AND BOLT HEAD. (TYP.)
6. ALL MATERIALS, LABOR INVOLVED WITH THIS PROCESS TO BE INCIDENTAL TO CONCRETE BARRIER WALL TYPE 9T.
7. SHIM SHALL CONSIST OF ONE SQUARE PLATE (4" NEAR JOINT, 8" NEAR END OF BEAMS) 3/16" THICK WITH AS MANY 3/4" DIA. x 3/8" THICK WASHERS AS NEEDED.
- ⑧ ROD PERPENDICULAR TO BARRIER WALL SURFACE. (TYP.)



TRAFFIC SIDE

TYPICAL CONNECTION
SHOWING SHIMMING



TRAFFIC SIDE

TYPICAL CONNECTION

FOR TEMPORARY USE ONLY.
USE WITH CUR. STD. DWG.
RBM-115

KENTUCKY
DEPARTMENT OF HIGHWAYS

BOX BEAM STIFFENING
OF TEMPORARY
CONCRETE BARRIER

APPROVED: *[Signature]* 04-15-08
DATE

PIPE DIA. (IN)	PIPE TYPE	CIRCULAR PIPE COVER HEIGHTS IN FEET					
		2-5	5-10	10-15	15-20	20-25	25-30
12 & 15	2 2/3" x 1/2" CSPHS (1)	16 GA.					
	2 2/3" x 1/2" CSPLS (1)	16 GA.					
	2 2/3" x 1/2" CAPHS	16 GA.					
	PVC	SMOOTH WALL (SOLID WALL)					
	HDPE						FF
	RCP (11)						
18	2 2/3" x 1/2" CSPHS (1)	16 GA.					
	2 2/3" x 1/2" CSPLS (1)	16 GA.					
	2 2/3" x 1/2" CAPHS	16 GA.					
	SRS (1)	16 GA.					
	SRA	16 GA.					
	PVC	RIBBED (PROFILE WALL)					
HDPE						FF	
RCP (11)							

PIPE DIA. (IN)	PIPE TYPE	CIRCULAR PIPE COVER HEIGHTS IN FEET															
		2-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65			
21	2 2/3" x 1/2" CSPHS (1)	16 GA.															
	2 2/3" x 1/2" CSPLS (1)	16 GA.														10 GA.	
	2 2/3" x 1/2" CAPHS	16 GA.															
	SRS (1)	16 GA.															
	SRA	16 GA.								14 GA.							
	PVC	RIBBED (PROFILE WALL)															
	HDPE															FF	
	RCP (11)																
24	2 2/3" x 1/2" CSPHS (1)	16 GA.												14 GA.			
	2 2/3" x 1/2" CSPLS (1)	16 GA.								10 GA.							
	2 2/3" x 1/2" CAPHS	16 GA.								14 GA.				12 GA.			
	SRS (1)	16 GA.								14 GA.				12 GA.			
	SRA	16 GA.				14 GA.				12 GA.				10 GA.			
	PVC	RIBBED (PROFILE WALL)															
	HDPE															FF	
	RCP (11)																

NOTES

- ① GAGES FOR CORRUGATED STEEL PIPE ITEMS SHOWN ARE BASED ON ALUMINUM-COATED TYPE 2 STEEL AS PER AASHTO M-274. ALUMINUM COATED TYPE 2 STEEL IS ONLY PERMITTED IN Ph RANGES OF 5 TO 9
2. WHEN CORRUGATED STEEL PIPE IS ZINC COATED (GALVANIZED) THE GAGE SHALL BE ONE GAGE HEAVIER THAN SHOWN IN THE TABLES.
3. CSP, CAP, SRS AND SRA ARE SHOWN IN GAGE.
4. MAXIMUM COVER HEIGHT MEASURED FROM TOP OF PIPE TO SUBGRADE ELEVATION SHALL GOVERN GAGE OF PIPE TO BE USED FOR ENTIRE LENGTH OF PIPE INSTALLATION.
5. MINIMUM COVER HEIGHTS FOR PIPE SHALL BE 2 FEET. GAGE OF PIPE FOR COVER HEIGHTS LESS THAN 2 FEET SHALL BE THAT SHOWN FOR COVER HEIGHTS OF 30 FEET (SEE STD. SPECIFICATIONS FOR BACKFILL). HDPE AND PVC SHALL NOT BE PERMITTED FOR COVER HEIGHTS LESS THAN 2 FEET.
- ⑥ 24" DIA. PIPE IS MINIMUM SIZE FOR COVER HEIGHTS FROM 30 FEET TO 65 FEET.
7. MINIMUM COVER HEIGHT FOR ENTRANCE PIPE SHALL BE 0.5 FEET.
8. GAGE OF ENTRANCE PIPE FOR COVER HEIGHTS LESS THAN 2 FEET SHALL MEET THE FOLLOWING REQUIREMENTS:
 - a. GAGE OF CSP SHALL BE THAT SHOWN FOR HEIGHTS OF 30 FEET.
 - b. GAGE OF CAP SHALL BE ONE GAGE HEAVIER THAN SHOWN IN THE TABLE.
9. ALL CIRCULAR STRUCTURAL PLATE SHALL BE 5% VERTICALLY ELONGATED.
10. SEE CURRENT STANDARD DRAWING RDI-035 FOR COATINGS, LININGS AND PAVINGS FOR NON-STRUCTURAL PIPE.
- ⑪ SEE DETAIL SHEET "PIPE BEDDING FOR CULVERTS, ENTRANCE, AND STORM SEWER REINFORCED CONC. PIPE" AND DETAIL SHEET "PIPE BEDDING TRENCH CONDITION REINFORCED CONC. PIPE" FOR RCP COVER HEIGHT AND BEDDING REQUIREMENTS.

LEGEND

- CSPHS: CORRUGATED STEEL PIPE WITH HELICAL LOCK SEAM OR HELICAL WELDED SEAM (HELICAL CORR.)
- CSPLS: CORRUGATED STEEL PIPE WITH LONGITUDINAL RIVETED OR SPOT WELDED SEAM (ANNULAR CORR.)
- CAPHS: CORRUGATED ALUMINUM ALLOY PIPE WITH HELICAL LOCK SEAM (HELICAL CORR.)
- HDPE: HIGH DENSITY POLYETHYLENE PIPE
- PVC: POLYVINYL CHLORIDE
- SRS: SPIRAL RIB STEEL
- SRA: SPIRAL RIB ALUMINUM
- RCP: CIRCULAR REINFORCED CONCRETE PIPE
- FF: FLOWABLE FILL REQUIRED

12" PIPE - 24" PIPE

KENTUCKY
DEPARTMENT OF HIGHWAYS

CULVERT, ENTRANCE & STORM SEWER PIPE TYPES & COVER HEIGHTS

APPROVED:  04-25-08
TECHNICAL DESIGN DATE

PIPE DIA. (IN)	PIPE TYPE	CIRCULAR PIPE COVER HEIGHTS IN FEET (3)												
		2-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
27 & 30 (8)	2 7/8" x 1/2" CSPHS (1)	16 GA.						14 GA.			12 GA.			
	2 7/8" x 1/2" CSPLS (1)	16 GA.				12 GA.				/				
	2 7/8" x 1/2" CAPHS	14 GA.						12 GA.			10 GA.			
	SRS (1)	16 GA.				14 GA.			12 GA.					
	SRA	16 GA.		14 GA.		12 GA.		10 GA.						
	PVC	RIBBED (PROFILE WALL)												
	HDPE							FF						
RCP (10)	/													
36	2 7/8" x 1/2" CSPHS (1)	14 GA.						12 GA.			10 GA.			
	2 7/8" x 1/2" CSPLS (1)	14 GA.		12 GA.		10 GA.				/				
	2 7/8" x 1/2" CAPHS	14 GA.						12 GA.			10 GA.			8 GA.
	SRS (1)	14 GA.						12 GA.			10 GA.			
	SRA	14 GA.		12 GA.		10 GA.								
	PVC	RIBBED (PROFILE WALL)												
	HDPE							FF						
RCP (10)	/													
42	2 7/8" x 1/2" CSPHS (1)	14 GA.						12 GA.			10 GA.			
	2 7/8" x 1/2" CSPLS (1)	14 GA.				12 GA.				10 GA.				
	2 7/8" x 1/2" CAPHS	12 GA.						10 GA.			8 GA.			
	SRS (1)	14 GA.						12 GA.			10 GA.			
	SRA	12 GA.				10 GA.								
	PVC	RIBBED (PROFILE WALL)												
	HDPE							FF						
RCP (10)	/													

LEGEND

- CSPHS: CORRUGATED STEEL PIPE WITH HELICAL LOCK SEAM OR HELICAL WELDED SEAM (HELICAL CORR.)
- CSPLS: CORRUGATED STEEL PIPE WITH LONGITUDINAL RIVETED OR SPOT WELDED SEAM (ANNULAR CORR.)
- CAPHS: CORRUGATED ALUMINUM ALLOY PIPE WITH HELICAL LOCK SEAM (HELICAL CORR.)
- HDPE: HIGH DENSITY POLYETHYLENE PIPE
- PVC: POLYVINYL CHLORIDE
- SRS: SPIRAL RIB STEEL
- SRA: SPIRAL RIB ALUMINUM
- RCP: CIRCULAR REINFORCED CONCRETE PIPE
- FF: FLOWABLE FILL REQUIRED

NOTES CONTINUED

(10) SEE DETAIL SHEET "PIPE BEDDING FOR CULVERTS, ENTRANCE, AND STORM SEWER REINFORCED CONC. PIPE" AND DETAIL SHEET "PIPE BEDDING TRENCH CONDITION REINFORCED CONC. PIPE" FOR RCP COVER HEIGHT AND BEDDING REQUIREMENTS.

NOTES

- (1) GAGES FOR CORRUGATED STEEL PIPE ITEMS SHOWN ARE BASED ON ALUMINUM-COATED TYPE 2 STEEL AS PER AASHTO M-274. ALUMINUM COATED TYPE 2 STEEL IS ONLY PERMITTED IN PH RANGES OF 5 TO 9.
2. WHEN CORRUGATED STEEL PIPE IS ZINC COATED (GALVANIZED) THE GAGE SHALL BE ONE GAGE HEAVIER THAN SHOWN IN THE TABLES.
- (3) SEE CURRENT STANDARD DRAWING RDI-001 FOR EXPLANATION OF COVER HEIGHTS LESS THAN 2 FEET.
4. CSP, CAP, SRS AND SRA ARE SHOWN IN GAGE.
5. MAXIMUM COVER HEIGHT MEASURED FROM TOP OF PIPE TO SUB GRADE ELEVATION SHALL GOVERN GAGE OF PIPE TO BE USED FOR ENTIRE LENGTH OF PIPE INSTALLATION.
6. MINIMUM COVER HEIGHT FOR ENTRANCE PIPE SHALL BE 0.5 FEET.
7. ALL CIRCULAR STRUCTURAL PLATE SHALL BE 5% VERTICALLY ELONGATED.
- (8) ENTRANCE PIPE GREATER THAN 30" DIA. SHALL BE CULVERT PIPE.
9. SEE CURRENT STANDARD DRAWING RDI-035 FOR COATINGS, LININGS AND PAVINGS FOR NON-STRUCTURAL PIPE.

27" PIPE - 42" PIPE

**KENTUCKY
DEPARTMENT OF HIGHWAYS**

**CULVERT, ENTRANCE &
STORM SEWER PIPE TYPES
& COVER HEIGHTS**

PIPE DIA. (IN)	PIPE TYPE	CIRCULAR PIPE COVER HEIGHTS IN FEET (3)																								
		2-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-90	90-95	95-100	100-105	105-110	110-115	115-120	
48	2 2/3" x 1/2" CSPHS (1)	14 GA.					12 GA.					10 GA.														
	2 2/3" x 1/2" CSPLS (1)	14 GA.					12 GA.																			
	2 2/3" x 1/2" CAPHS	12 GA.					10 GA.					8 GA.														
	SRS (1)	14 GA.					12 GA.																			
	SRA	12 GA.					10 GA.																			
	PVC	RIBBED (PROFILE WALL)																								
	HDPE																									
RCP (9)																										
54	2 2/3" x 1/2" CSPHS (1)	14 GA.					12 GA.					10 GA.														
	2 2/3" x 1/2" CSPLS (1)	14 GA.					12 GA.																			
	3" x 1" CSPHS (1)	14 GA.					12 GA.					10 GA.														
	3" x 1" CSPLS (1)	14 GA.					12 GA.					10 GA.										8 GA.				
	5" x 1" CSPHS (1)	14 GA.					12 GA.					10 GA.														
	2 2/3" x 1/2" CAPHS	12 GA.					10 GA.					8 GA.														
	3" x 1" CAPHS	14 GA.					12 GA.					10 GA.										8 GA.				
SRS (1)	14 GA.					12 GA.																				
SRA	12 GA.					10 GA.																				
RCP (9)																										

NOTES

- ① GAGES FOR CORRUGATED STEEL PIPE ITEMS SHOWN ARE BASED ON ALUMINUM-COATED TYPE 2 STEEL AS PER AASHTO M-274. ALUMINUM COATED TYPE 2 STEEL IS ONLY PERMITTED IN Ph RANGES OF 5 TO 9.
- 2. WHEN CORRUGATED STEEL PIPE IS ZINC COATED (GALVANIZED) THE GAGE SHALL BE ONE GAGE HEAVIER THAN SHOWN IN THE TABLES.
- ③ SEE CURRENT STANDARD DRAWING RDI-001 FOR EXPLANATION OF COVER HEIGHTS LESS THAN 2 FEET.
- 4. CSP, CAP, SRS AND SRA ARE SHOWN IN GAGE.
- 5. MAXIMUM COVER HEIGHT MEASURED FROM TOP OF PIPE TO SUBGRADE ELEVATION SHALL GOVERN GAGE OF PIPE TO BE USED FOR ENTIRE LENGTH OF PIPE INSTALLATION.
- 6. ALL CIRCULAR STRUCTURAL PLATE SHALL BE 5% VERTICALLY ELONGATED.
- ⑦ 54" DIA. PIPE IS MINIMUM SIZE FOR COVER HEIGHTS GREATER THAN 65 FEET.
- 8. SEE CURRENT STANDARD DRAWING RDI-035 FOR COATINGS, LININGS AND PAVINGS FOR NON-STRUCTURAL PIPE.
- ⑨ SEE DETAIL SHEET "PIPE BEDDING FOR CULVERTS, ENTRANCE, AND STORM SEWER REINFORCED CONC. PIPE" AND DETAIL SHEET "PIPE BEDDING TRENCH CONDITION REINFORCED CONC. PIPE" FOR RCP COVER HEIGHT AND BEDDING REQUIREMENTS.

LEGEND

- CSPHS: CORRUGATED STEEL PIPE WITH HELICAL LOCK SEAM OR HELICAL WELDED SEAM (HELICAL CORR.)
- CSPLS: CORRUGATED STEEL PIPE WITH LONGITUDINAL RIVETED OR SPOT WELDED SEAM (ANNULAR CORR.)
- CAPHS: CORRUGATED ALUMINUM ALLOY PIPE WITH HELICAL LOCK SEAM (HELICAL CORR.)
- HDPE: HIGH DENSITY POLYETHYLENE PIPE
- PVC: POLYVINYL CHLORIDE
- SRS: SPIRAL RIB STEEL
- SRA: SPIRAL RIB ALUMINUM
- RCP: CIRCULAR REINFORCED CONCRETE PIPE

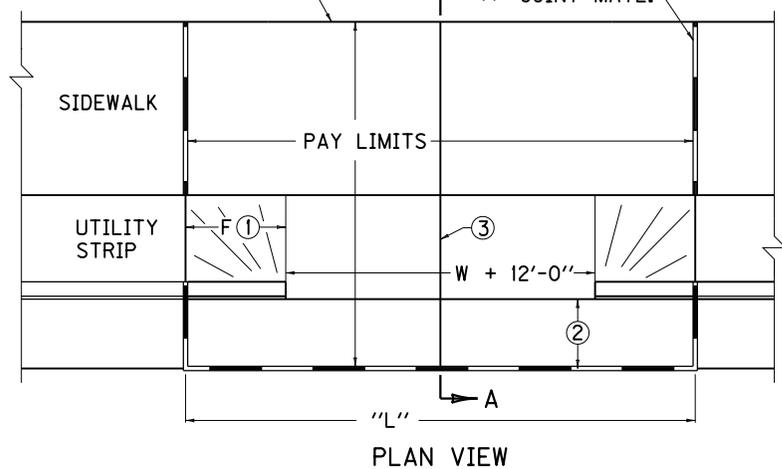
48" PIPE - 54" PIPE

**KENTUCKY
DEPARTMENT OF HIGHWAYS**

**CULVERT &
STORM SEWER PIPE TYPES
& COVER HEIGHTS**

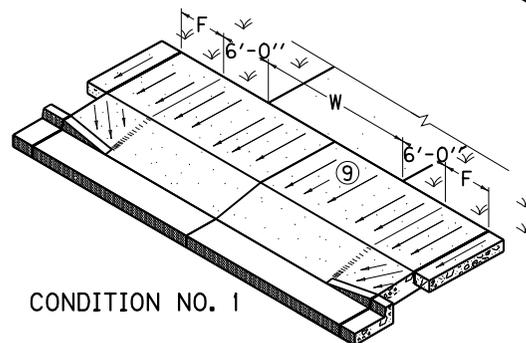
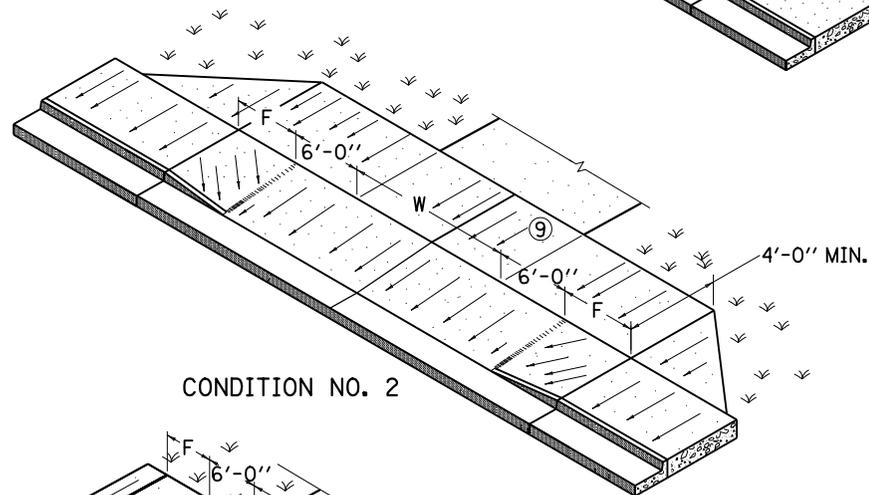
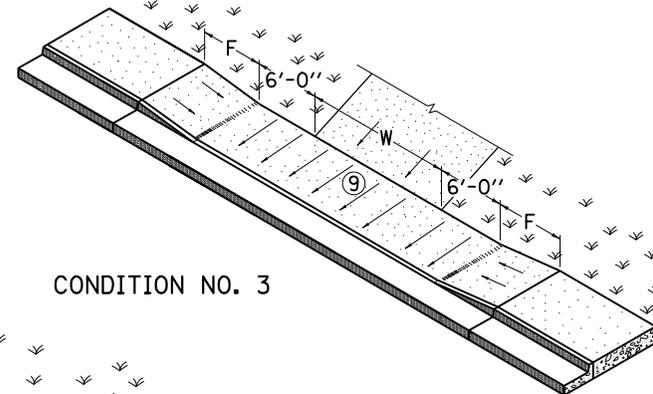
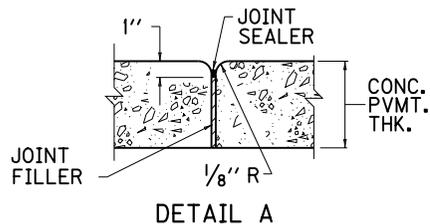
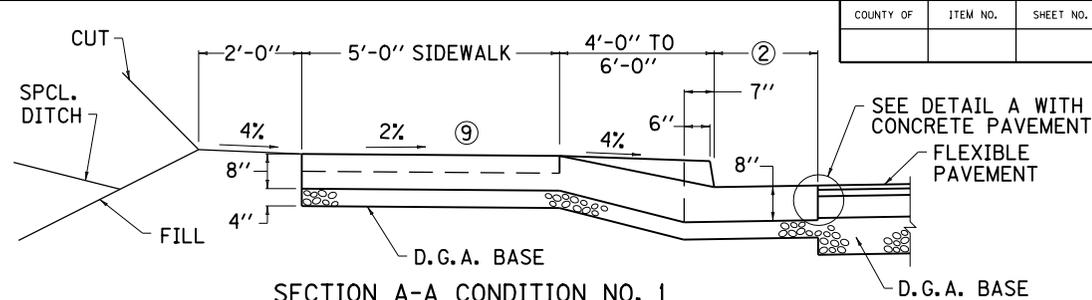
EXP. JOINT REQUIRED WHEN ABUTTING ANOTHER RIGID STRUCTURE

1/2" EXPANSION JOINT MATL.



~ NOTES ~

- ① FOR WIDTH W AND F:
 RESIDENTIAL - MINIMUM W = 12'-0", MAXIMUM W = 24'-0"; MINIMUM F = 2'-6", MAXIMUM F = 10'-0"
 COMMERCIAL - MINIMUM W = 24'-0", MAXIMUM W = 36'-0"; F = 10'-0"
 WHEN MORE THAN 2 LANES ARE REQUIRED, 36'-0" WIDTH MAY BE INCREASED TO RELIEVE INTERFERENCE BETWEEN ENTERING AND EXITING TRAFFIC. AT THE ENGINEER'S DISCRETION RADIAL RETURNS MAY BE USED ON ENTRANCES. SOME APPLICABLE CASES ARE THE FOLLOWING:
 - a. ON ENTRANCES EXPECTED TO CARRY HIGH VOLUMES OF TRAFFIC.
 - b. WHEN ENTRANCE WIDTH IS GREATER THAN 36'.
 - c. WHEN THE HIGHWAY HAS A POSTED OR OPERATING SPEED OVER 40 MPH.
 - d. ON A RURAL SECTION WHERE A FLUSH SHOULDER EXISTS.
 - e. WHERE AN EXCLUSIVE RIGHT TURN LANE IS USED.
- ② 1'-0" OR 2'-0" WITH CONCRETE PAVEMENT, 2'-0" WITH FLEXIBLE PAVEMENT
- ③ WHEN "L" DIMENSION IS GREATER THAN 15'-0" A SAWED AND SEALED JOINT, 1/2" DEEP AND 1/4" WIDE SHALL BE PLACED AT THE CENTER OF THE "L" DIMENSION. WIDE ENTRANCES REQUIRE ADDITIONAL JOINTS, SPACING SHALL NOT EXCEED 15'-0" O.C.
4. CLASS "A" CONCRETE OR JOINTED PLAIN CONCRETE PAVEMENT SHALL BE USED IN THE ENTRANCE PAVEMENT.
5. THE ENTRANCE PAVEMENT SHALL RECEIVE A BROOM FINISH AND SHALL BE CURED THE SAME AS THE MAINLINE PAVEMENT AND/OR SIDEWALK.
6. THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR "CONC. ENT. PAVEMENT-8 INCH (CODE NO. 2101)" SHALL INCLUDE CLASS "A" CONCRETE AND ALL INCIDENTALS NECESSARY TO COMPLETE THE WORK. D.G.A. AND DETECTABLE WARNINGS SHALL BE SEPARATE BID ITEMS.
7. USE CONDITION NO. 2 OR NO. 3 WHEN LITTLE OR NO UTILITY STRIP IS PROVIDED, AND INCORPORATE FEATURES OF OTHER DESIGNS SHOWN WHERE NOT IN CONFLICT.
8. PROVIDED THAT ADA GUIDELINES SHOWN IN NOTES ⑨ AND ⑩ ARE FOLLOWED, THE ENGINEER MAY MODIFY THE DESIGN TO BETTER FIT EXISTING CONDITIONS.
- ⑨ 2% CROSS SLOPE MAXIMUM ON SIDEWALK. IF CONDITIONS WARRANT, SIDEWALK MAY BE SLOPED 2% AWAY FROM ROADWAY.
- ⑩ SIDEWALKS SHOULD BE DESIGNED WITH A MAX. GRADE OF 5% . WHERE A SIDEWALK RUNS ALONG A STEEP ROADWAY, THE SIDEWALK GRADE MAY EXCEED 5% IF IT FOLLOWS THE GRADE OF THE ROADWAY.
11. COMMERCIAL DRIVEWAYS WITH TRAFFIC CONTROL DEVICES REQUIRE ADA SIDEWALK TREATMENTS WITH DETECTABLE WARNINGS.



COUNTY OF	ITEM NO.	SHEET NO.

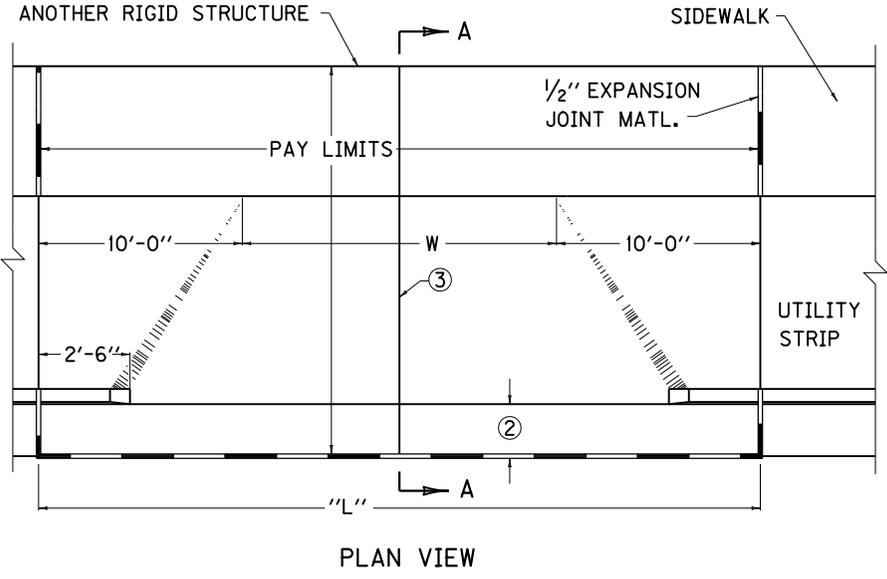
USE WITH CUR. STD. DWG. RCX-040

KENTUCKY DEPARTMENT OF HIGHWAYS

CONCRETE ENTRANCE PAVEMENT AND SIDEWALK

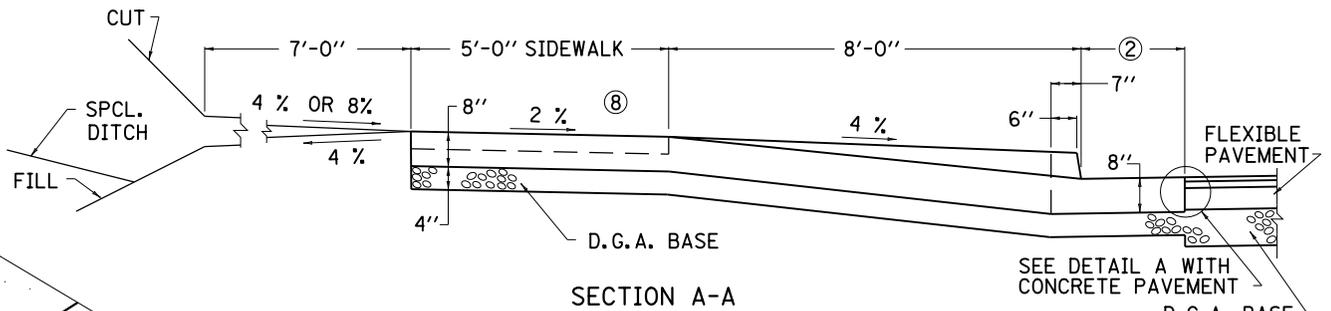
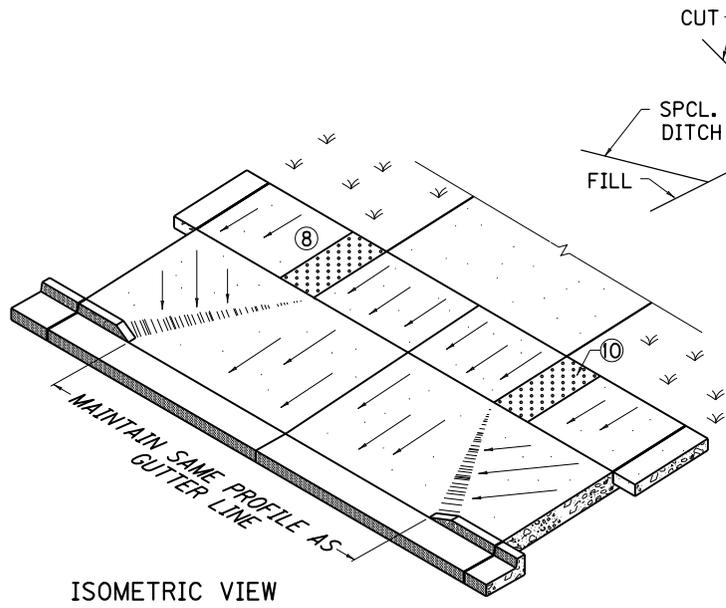
APPROVED: *[Signature]* 03-13-09
KENTUCKY DIVISION OF HIGHWAY DESIGN DATE

EXP. JOINT REQUIRED WHEN ABUTTING ANOTHER RIGID STRUCTURE

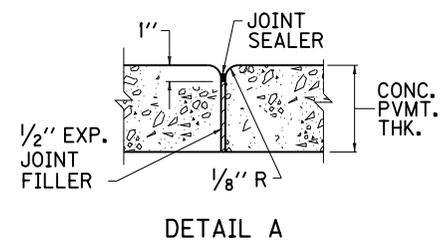


~ NOTES ~

- ① FOR WIDTH W:
COMMERCIAL - MINIMUM W = 24'-0", MAXIMUM W = 36'-0"
WHEN MORE THAN 2 LANES ARE REQUIRED, 36'-0" WIDTH MAY BE INCREASED TO RELIEVE INTERFERENCE BETWEEN ENTERING AND EXITING TRAFFIC. AT THE ENGINEER'S DISCRETION RADIAL RETURNS MAY BE USED ON ENTRANCES. SOME APPLICABLE CASES ARE THE FOLLOWING:
 - a. ON ENTRANCES EXPECTED TO CARRY HIGH VOLUMES OF TRAFFIC.
 - b. WHEN ENTRANCE WIDTH IS GREATER THAN 36'.
 - c. WHEN THE HIGHWAY HAS A POSTED OR OPERATING SPEED OVER 40 MPH.
 - d. ON A RURAL SECTION WHERE A FLUSH SHOULDER EXISTS.
 - e. WHERE AN EXCLUSIVE RIGHT TURN LANE IS USED.
- ② 1'-0" OR 2'-0" WITH CONCRETE PAVEMENT, 2'-0" WITH FLEXIBLE PAVEMENT.
- ③ WHEN "L" DIMENSION IS GREATER THAN 15'-0" A SAWED AND SEALED JOINT, 1/2" DEEP AND 1/4" WIDE SHALL BE PLACED AT THE CENTER OF THE "L" DIMENSION. WIDE ENTRANCES REQUIRE ADDITIONAL JOINTS, SPACING SHALL NOT EXCEED 15'-0" O.C.
4. CLASS "A" CONCRETE OR JOINTED PLAIN CONCRETE PAVEMENT SHALL BE USED IN THE ENTRANCE PAVEMENT.
5. THE ENTRANCE PAVEMENT SHALL RECEIVE A BROOM FINISH AND SHALL BE CURED THE SAME AS THE MAINLINE PAVEMENT AND/OR SIDEWALK.
6. THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR "CONC. ENT. PAVEMENT-8 INCH (CODE NO. 2101)" SHALL INCLUDE CLASS "A" CONCRETE AND ALL INCIDENTALS NECESSARY TO COMPLETE THE WORK. D.G.A. AND DETECTABLE WARNINGS SHALL BE SEPARATE BID ITEMS.
7. PROVIDING THAT ADA GUIDELINES SHOWN IN NOTE ⑧ AND 9 ARE FOLLOWED, THE ENGINEER MAY MODIFY THE DESIGN TO BETTER FIT EXISTING CONDITIONS.
- ⑧ 2% CROSS SLOPE MAXIMUM ON SIDEWALK.
9. SIDEWALKS SHOULD BE DESIGNED WITH A MAX. GRADE OF FIVE PERCENT. WHERE A SIDEWALK RUNS ALONG A STEEP ROADWAY, THE SIDEWALK GRADE MAY EXCEED FIVE PERCENT IF IT FOLLOWS THE GRADE OF THE ROADWAY.
- ⑩ COMMERCIAL DRIVEWAYS WITH TRAFFIC CONTROL DEVICES REQUIRE ADA SIDEWALK TREATMENTS WITH DETECTABLE WARNINGS.



SEE DETAIL A WITH CONCRETE PAVEMENT
D.G.A. BASE
USE WITH CUR. STD. DWG. RGX-040

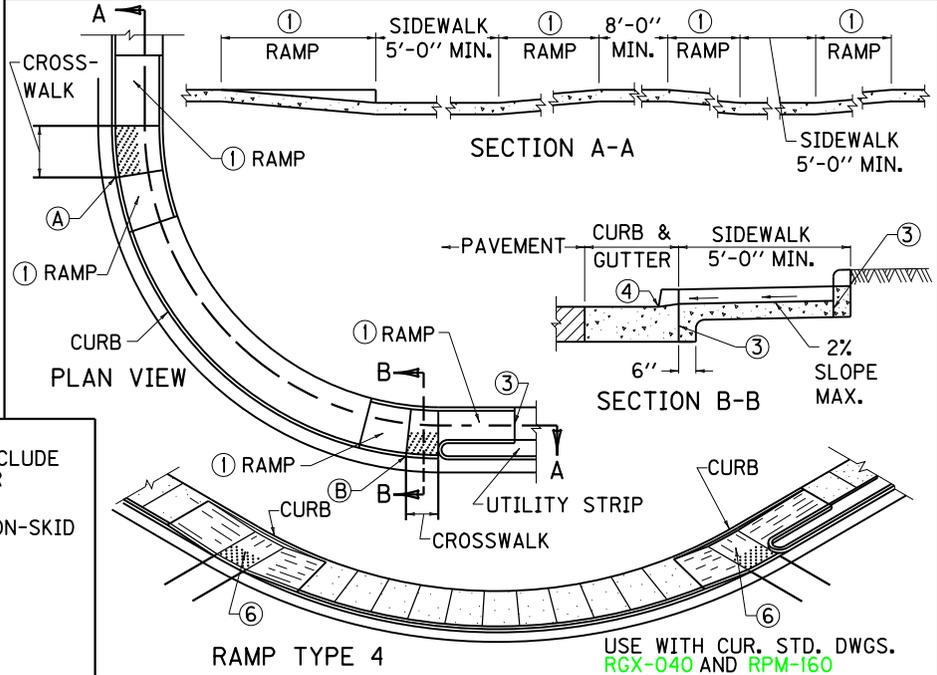
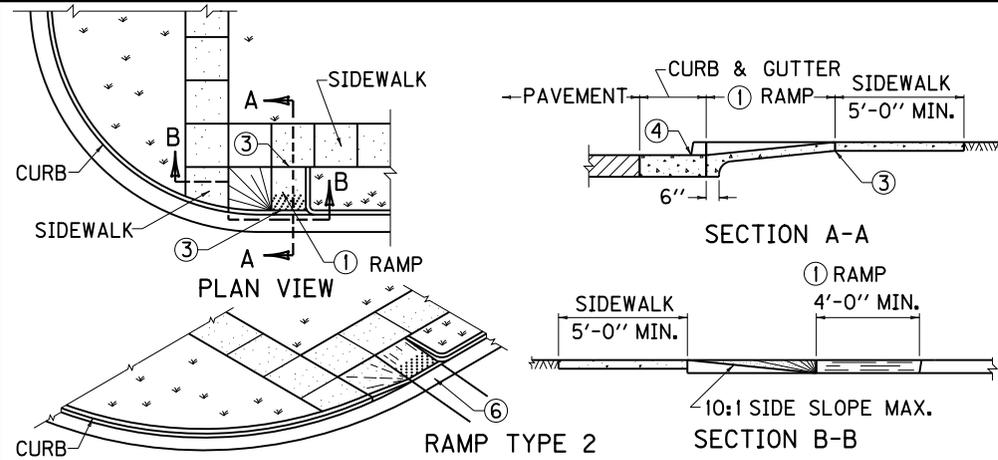
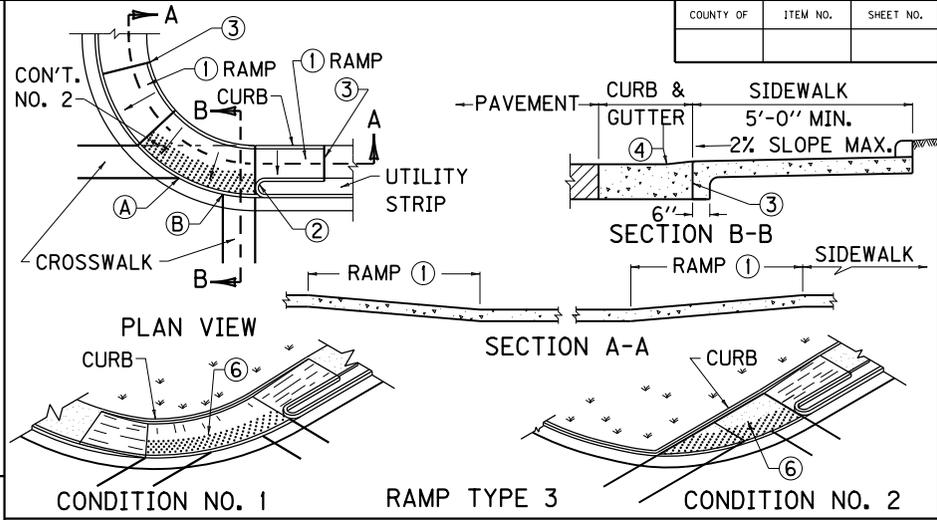
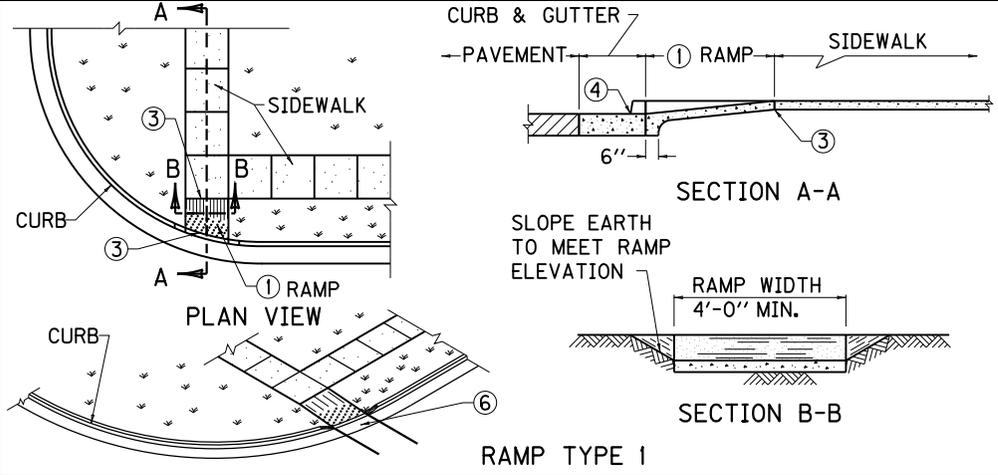


KENTUCKY
DEPARTMENT OF HIGHWAYS

CONCRETE
ENTRANCE PAVEMENT
AND SIDEWALK

APPROVED: *[Signature]* **03-13-09**
KENTUCKY DIVISION OF HIGHWAY DESIGN DATE

013



NOTES

RAMPS SHALL BE PAID PER SQ. YARD OF 4" CONC. SIDEWALK AND THE UNIT PRICE SHALL INCLUDE ALL MATERIALS, FORMS, CURB BEHIND RAMP AND LANDING, AND INCIDENTALS NECESSARY FOR CONSTRUCTION.

THE RAMP SHALL BE CONSTRUCTED OF CLASS "A" CONCRETE. A BROOM FINISH OR EQUAL NON-SKID FINISH IS REQUIRED. **DETECTABLE WARNINGS SHALL BE A SEPARATE BID ITEM.**

THE NORMAL GUTTER LINE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.

RAMPS SHOULD BE LOCATED WITHIN MARKED LIMITS OF CROSSWALKS.

USE RAMP TYPE 3 WHEN POINT A TO B IS LESS THAN 20 FEET.

USE RAMP TYPE 4 WHEN POINT A TO B IS 20 FEET OR MORE.

① CURB RAMP GRADE SHALL NOT EXCEED 12:1, CROSS SLOPE SHALL NOT EXCEED 2%. **ON RETROFIT CURB RAMPS, GRADES OF 12.5% FOR 2'-0" OR 10% FOR 5'-0" ARE PERMISSIBLE.**

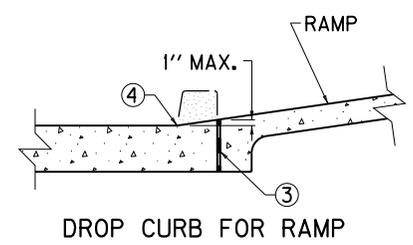
② CURB RETURN REQUIRED WHEN UTILITY STRIP IS 4 FEET OR GREATER. FOR UTILITY STRIPS LESS THAN 4 FEET, THE AREA IS TO BE SURFACED WITH SIDEWALK WITHIN THE RAMP.

③ 1/2" EXPANSION JOINT AT BACK OF CURB LINE AND AT SIDEWALK LINE.

④ NO BUMP PERMITTED. SAME SLOPE AS RAMP AND NOT TO EXCEED 1" IN HEIGHT. RAMPS SHALL BE CONSTRUCTED SO THAT WATER WILL NOT ACCUMULATE ON WALKING SURFACES.

5. ALL SIDEWALK RAMPS REQUIRE DETECTABLE WARNINGS.

⑥ LANDINGS WILL PROVIDE A LEVEL AREA (LESS THAN 2% GRADE OR CROSS SLOPE) AT APPROXIMATE STREET ELEVATION. A 4 FOOT SQUARE LEVEL LANDING IS THE REQUIRED MINIMUM.

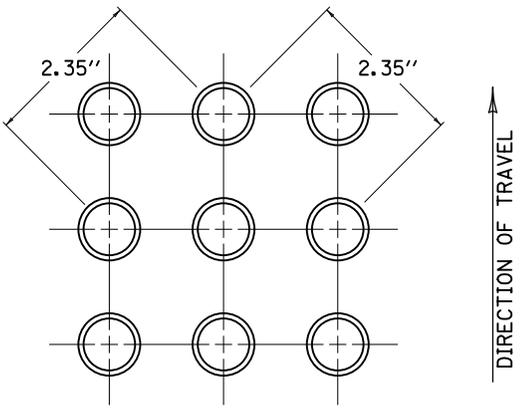


KENTUCKY
DEPARTMENT OF HIGHWAYS

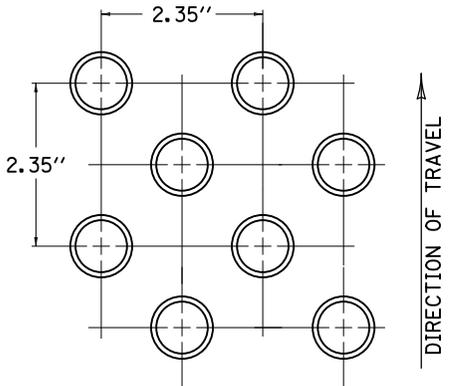
**SIDEWALK
RAMPS**

APPROVED: *[Signature]* 12-16-08
HIGHWAY DIVISION OF HIGHWAY DESIGN DATE

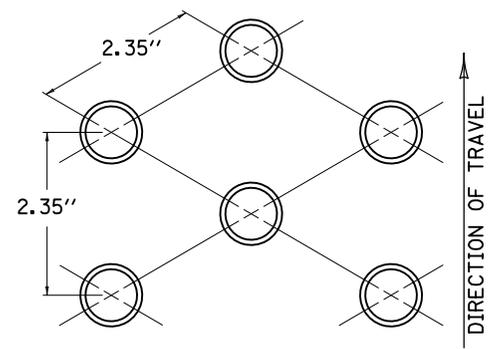
014



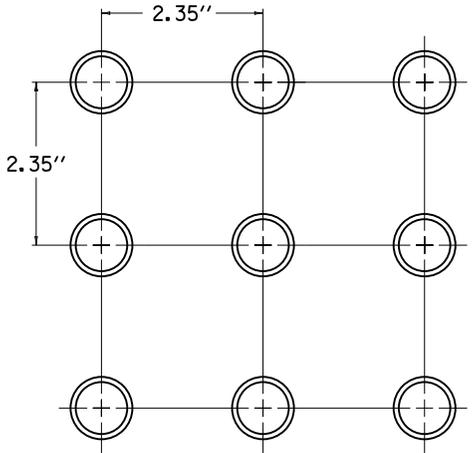
SQUARE PATTERN (PARALLEL ALIGNMENT)



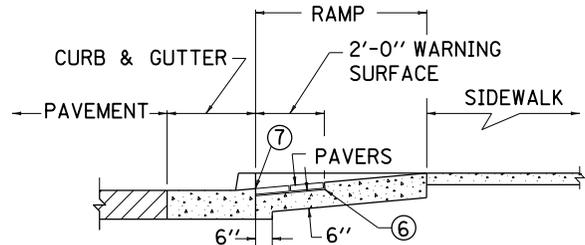
SQUARE PATTERN (DIAGONAL ALIGNMENT)



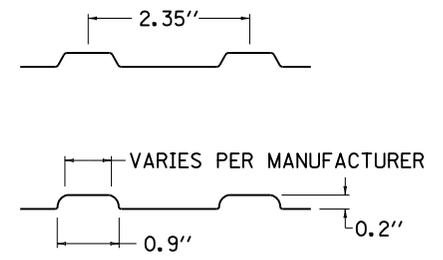
TRIANGULAR PATTERN



SQUARE PATTERN



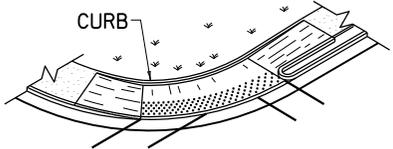
TYPICAL DETECTABLE WARNING INSTALLATION



DETECTABLE WARNINGS PROFILE

NOTES

- BID ITEM AND UNIT TO BID.
 DETECTABLE WARNINGS - SQ. FT.
- LANDINGS WILL PROVIDE A LEVEL AREA (LESS THAN 2% GRADE OR CROSS SLOPE) AT APPROXIMATE STREET ELEVATION. A 4 FOOT SQUARE LEVEL LANDING IS THE REQUIRED MINIMUM.
 - ALL SIDEWALK RAMPS REQUIRE DETECTABLE WARNINGS.
 - COMMERCIAL DRIVEWAYS WITH TRAFFIC CONTROL DEVICES REQUIRE ADA SIDEWALK TREATMENTS WITH DETECTABLE WARNINGS.
 - PAVERS SHALL BE CONCRETE WITH A MINIMUM THICKNESS OF 2".
 - PAVERS SHALL BE A COLOR HOMOGENOUS THROUGHOUT THE PAVER, THAT COLOR SHALL CONTRAST VISUALLY WITH THE ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. THE DEPARTMENT WILL ALLOW EITHER YELLOW OR RED AS COLORS.
 - PAVERS TO BE SET IN MORTAR.
 - DETECTABLE WARNING SURFACE BEGINS AT BACK OF CURB.



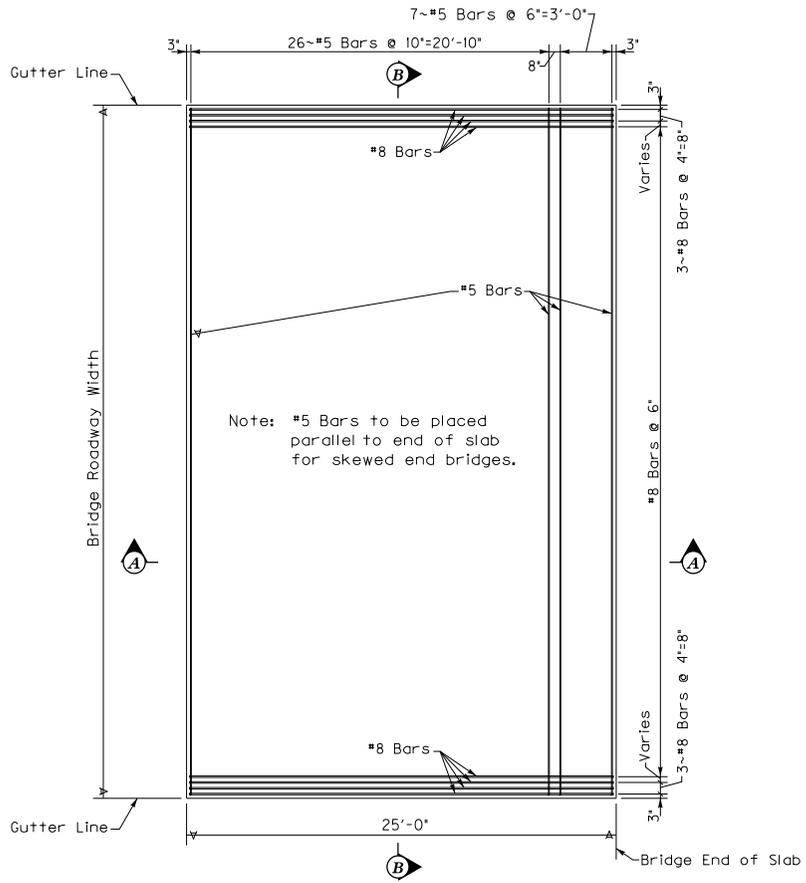
TYPICAL PLACEMENT PARALLEL CURB RAMPS

USE WITH CUR. STD. DWGS.
 RPM-160 AND RPM-170

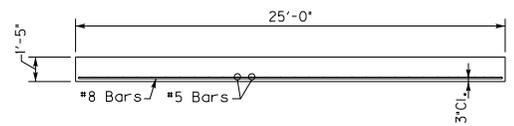
KENTUCKY
 DEPARTMENT OF HIGHWAYS

DETECTABLE
 WARNINGS

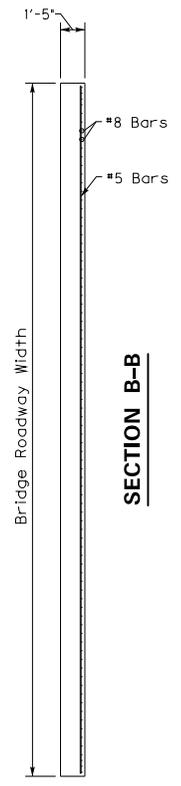
APPROVED: *[Signature]* 03-13-09
TECH. DIVISION OF HIGHWAY DESIGN DATE



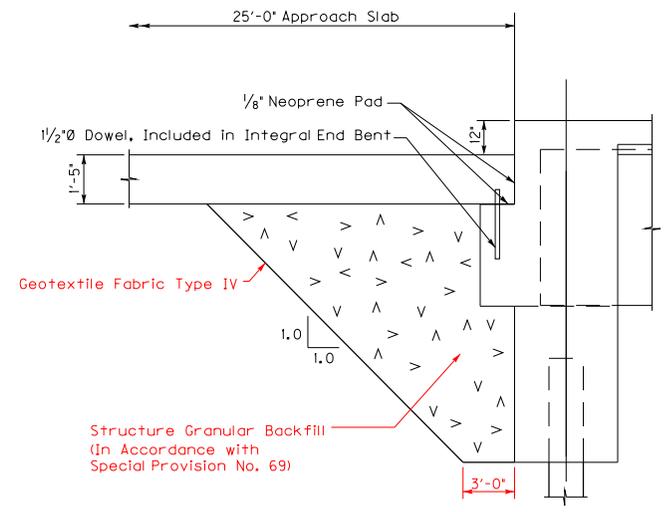
PLAN



SECTION A-A



SECTION B-B



TYPICAL SECTION @ BRIDGE END

GENERAL NOTES

CROWN: Crown shall conform to the rate of crown at the approach pavement and bridge deck. If the rate of crown at the bridge deck differs from that of approach pavement, a smooth transition shall be provided within the limits of the approach slab.

CONCRETE: Concrete shall be Class 'AA'.

REINFORCEMENT: All steel reinforcement shall be Grade 60 and epoxy coated.

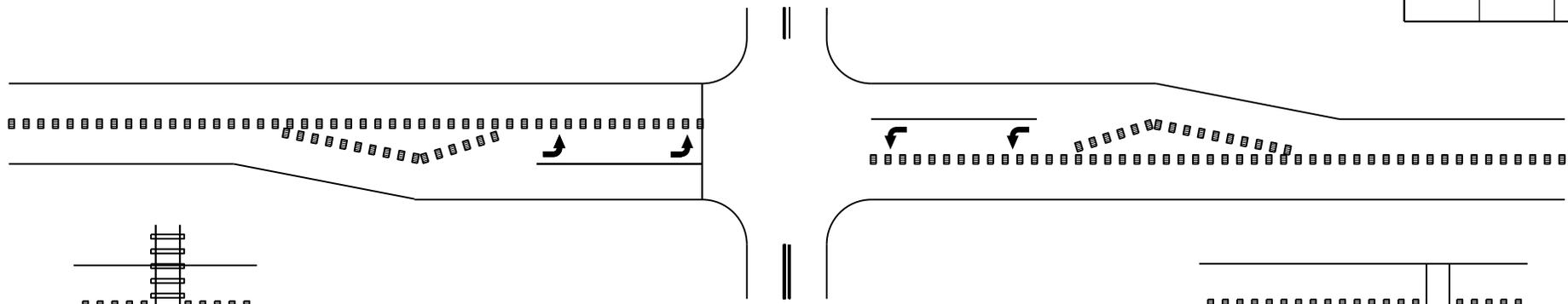
PAYMENT: Include the cost of Class 'AA' Concrete, epoxy-coated steel reinforcement, and all labor and materials required to construct the approach slab in the bid item for Approach Slab.

KENTUCKY DEPARTMENT OF HIGHWAYS

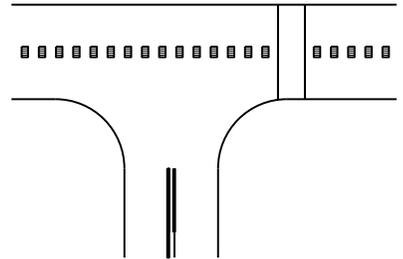
APPROACH SLAB

APPROVED: *Mud Rut* 03-13-09
DIRECTOR DIVISION OF STRUCTURAL DESIGN DATE

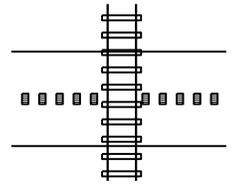
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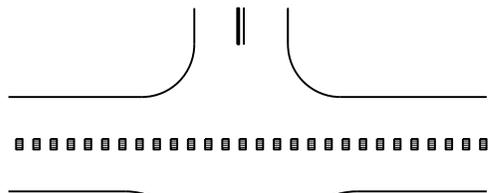
MAJOR INTERSECTION WITH LEFT-TURN LANES ①



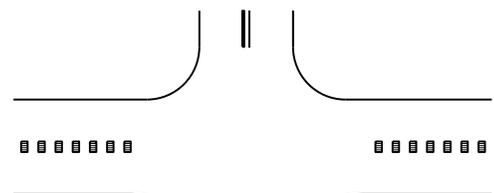
MARKED CROSSWALK ③



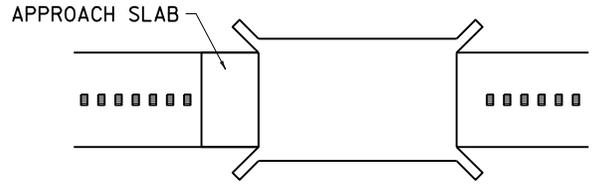
HIGHWAY-RAIL GRADE CROSSING ②



MINOR INTERSECTION ⑤



MAJOR INTERSECTION WITHOUT LEFT-TURN LANES ①



BRIDGE DECK/APPROACH SLAB ④

APPLICATION

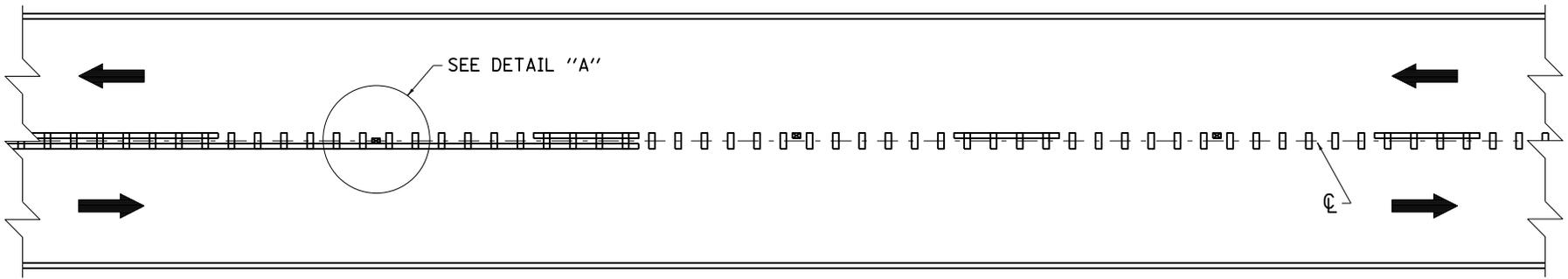
THIS SEPIA DRAWING APPLIES TO CENTERLINE RUMBLE STRIPS ON TWO-LANE HIGHWAYS AND FOUR-LANE UNDIVIDED HIGHWAYS.

DRAWING NOT TO SCALE

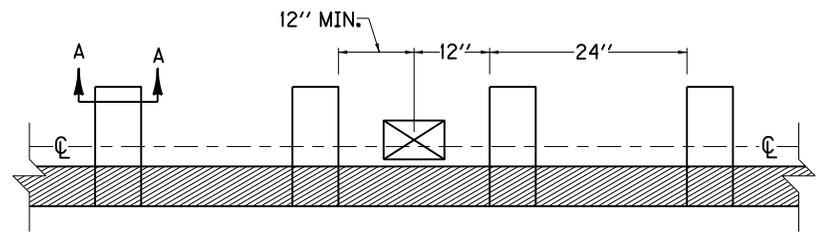
GENERAL NOTES

- ① CENTERLINE RUMBLE STRIPS SHALL BE OMITTED THROUGH MAJOR INTERSECTIONS WITH OR WITHOUT LEFT-TURN LANES. RUMBLE STRIPS SHALL BE OMITTED IN THE AREA WHERE CENTERLINE PAVEMENT MARKINGS HAVE BEEN OMITTED (NORMALLY WHERE SIDE STREET RADIUS INTERSECTS MAINLINE).
- ② CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED ACROSS HIGHWAY-RAIL GRADE CROSSINGS.
- ③ CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED THROUGH MARKED CROSSWALKS.
- ④ CENTERLINE RUMBLE STRIPS SHALL NOT BE INSTALLED ON BRIDGE DECKS OR APPROACH SLABS.
- ⑤ CENTERLINE RUMBLE STRIPS SHALL BE INSTALLED THROUGH MINOR INTERSECTIONS/ENTRANCES.
6. WARNING SIGNS THAT WARN MOTORCYCLISTS OF THE PRESENCE OF CENTERLINE RUMBLE STRIPS SHALL BE INSTALLED IN ACCORDANCE WITH THE TRAFFIC OPERATIONS GUIDANCE MANUAL.

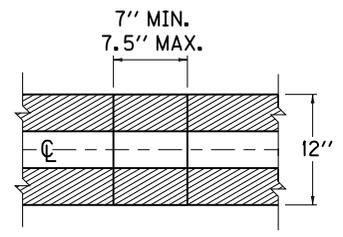
KENTUCKY DEPARTMENT OF HIGHWAYS	
CENTERLINE RUMBLE STRIPS PLACEMENT	
APPROVED: <i>B. Allen Wolfe</i> <small>DIRECTOR OF TRAFFIC OPERATIONS</small>	03-13-09 <small>DATE</small>
017	



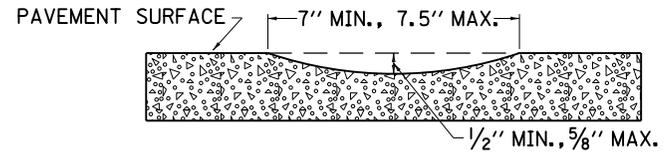
PLAN VIEW



DETAIL "A"



RUMBLE STRIP DETAIL



SECTION A-A

DRAWING NOT TO SCALE

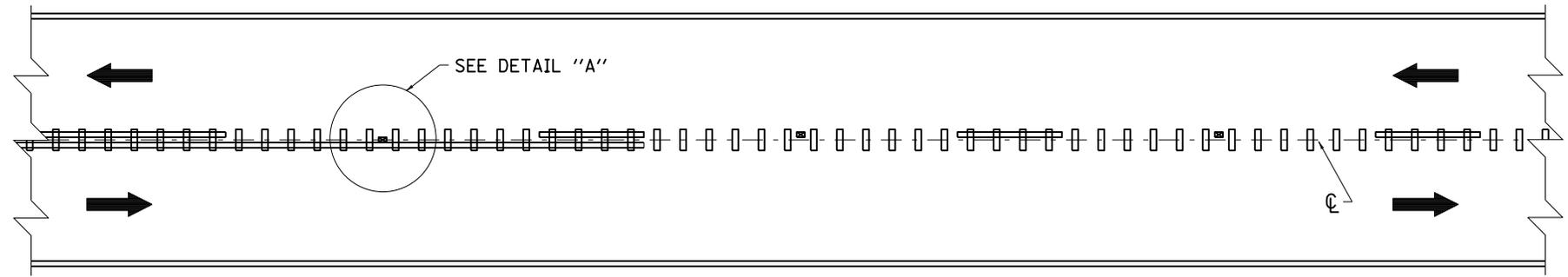
APPLICATION

THIS SEPIA DRAWING APPLIES TO CENTERLINE RUMBLE STRIPS ON TWO-LANE HIGHWAYS AND FOUR-LANE UNDIVIDED HIGHWAYS WITH FOUR-INCH STRIPING. CENTERLINE RUMBLE STRIPS SHALL BE PLACED ON ALL SUPER TWO HIGHWAYS. RUMBLE STRIPS MAY ALSO BE PLACED ON HIGHWAYS WITH A LANE WIDTH OF 12', A POSTED SPEED LIMIT GREATER THAN 45 MPH, AND A PATTERN OF COLLISIONS SUSCEPTIBLE TO CORRECTION BY THE INSTALLATION OF THESE DEVICES.

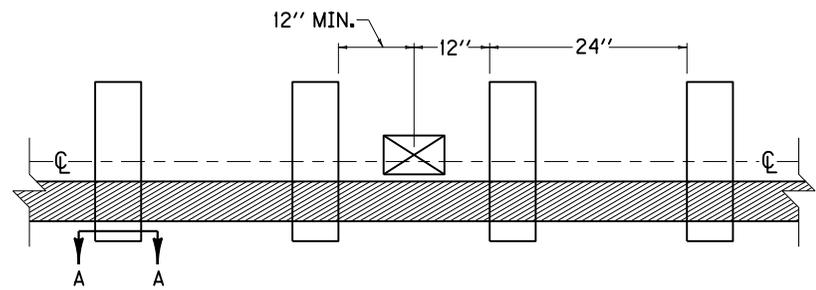
GENERAL NOTES

1. DISTANCES SHOWN ARE APPROXIMATE. MAINTAIN RUMBLE STRIP DIMENSIONS AND SPACING AS MUCH AS POSSIBLE.
2. RUMBLE STRIPS SHALL BE INSTALLED IN LINE WITH THE CENTER OF THE ROADWAY AS MUCH AS POSSIBLE.
3. DISCONTINUE RUMBLE STRIPS AT LEAST 12" BEFORE AND AFTER THE CENTER OF EACH RAISED PAVEMENT MARKER. INSTALL AS MANY RUMBLE STRIPS AS POSSIBLE BETWEEN ADJACENT PAVEMENT MARKERS WHILE MAINTAINING THE 24" CYCLE.
4. DO NOT INSTALL CENTERLINE RUMBLE STRIPS IN AREAS INDICATED ON SEPIAS 17 AND 19.
5. WARNING SIGNS THAT WARN MOTORCYCLISTS OF THE PRESENCE OF CENTERLINE RUMBLE STRIPS SHALL BE INSTALLED IN ACCORDANCE WITH THE TRAFFIC OPERATIONS GUIDANCE MANUAL.

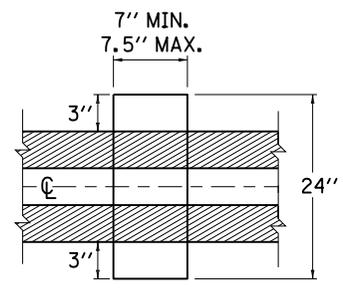
KENTUCKY DEPARTMENT OF HIGHWAYS	
CENTERLINE RUMBLE STRIPS 4 INCH STRIPING	
APPROVED: <i>B. Allen Wolf</i> DIRECTOR OF TRAFFIC OPERATIONS	03-13-09 DATE
018	



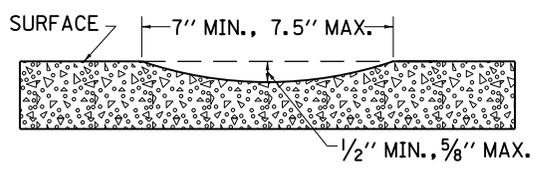
PLAN VIEW



DETAIL "A"



RUMBLE STRIP DETAIL



SECTION A-A

APPLICATION

THIS SEPIA DRAWING APPLIES TO CENTERLINE RUMBLE STRIPS ON TWO-LANE HIGHWAYS AND FOUR-LANE UNDIVIDED HIGHWAYS WITH SIX-INCH STRIPING. CENTERLINE RUMBLE STRIPS SHALL BE PLACED ON ALL SUPER TWO HIGHWAYS. RUMBLE STRIPS MAY ALSO BE PLACED ON HIGHWAYS WITH A LANE WIDTH OF 12', A POSTED SPEED LIMIT GREATER THAN 45 MPH, AND A PATTERN OF COLLISIONS SUSCEPTIBLE TO CORRECTION BY THE INSTALLATION OF THESE DEVICES.

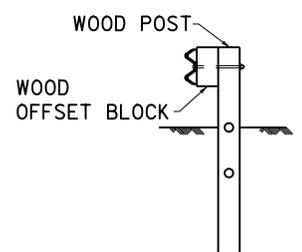
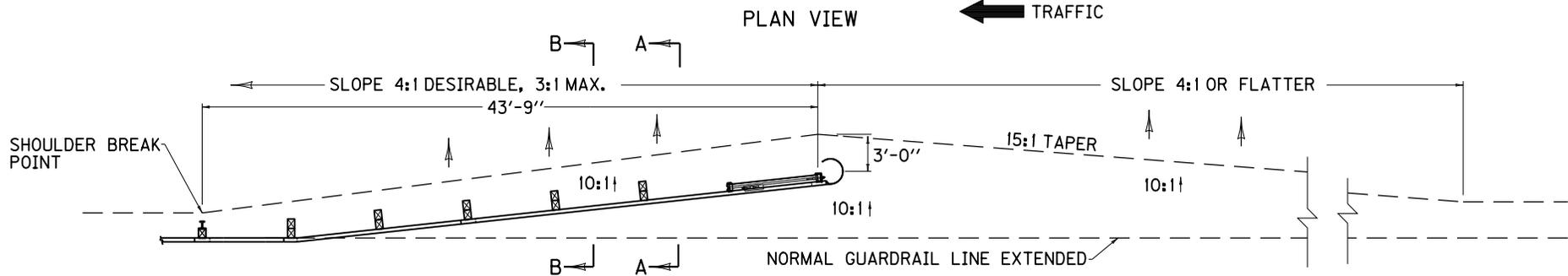
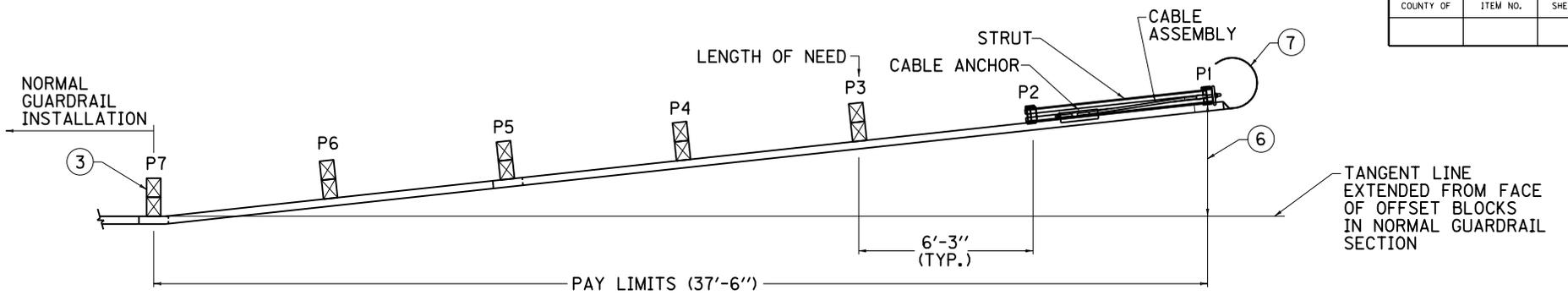
GENERAL NOTES

1. DISTANCES SHOWN ARE APPROXIMATE. MAINTAIN RUMBLE STRIP DIMENSIONS AND SPACING AS MUCH AS POSSIBLE.
2. RUMBLE STRIPS SHALL BE INSTALLED IN LINE WITH THE CENTER OF THE ROADWAY AS MUCH AS POSSIBLE.
3. DISCONTINUE RUMBLE STRIPS AT LEAST 12" BEFORE AND AFTER THE CENTER OF EACH RAISED PAVEMENT MARKER. INSTALL AS MANY RUMBLE STRIPS AS POSSIBLE BETWEEN ADJACENT PAVEMENT MARKERS WHILE MAINTAINING THE 24" CYCLE.
4. DO NOT INSTALL CENTERLINE RUMBLE STRIPS IN AREAS INDICATED ON SEPIA DRAWING 17 AND 18.
5. WARNING SIGNS THAT WARN MOTORCYCLISTS OF THE PRESENCE OF CENTERLINE RUMBLE STRIPS SHALL BE INSTALLED IN ACCORDANCE WITH THE TRAFFIC OPERATIONS GUIDANCE MANUAL.

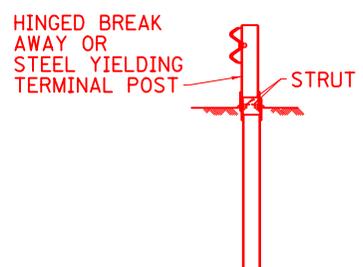
KENTUCKY
DEPARTMENT OF HIGHWAYS

CENTERLINE
RUMBLE STRIPS
6 INCH STRIPING

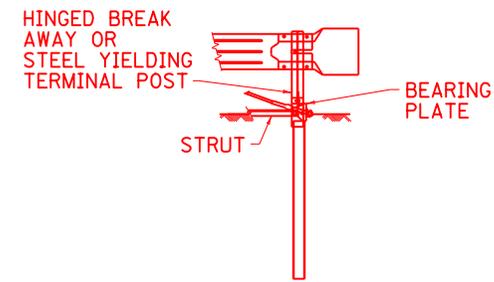
APPROVED: *B. Allen Wolf* 03-13-09
DIRECTOR OF TRAFFIC OPERATIONS DATE



SECTION B-B
(POSTS P3 THRU P7)



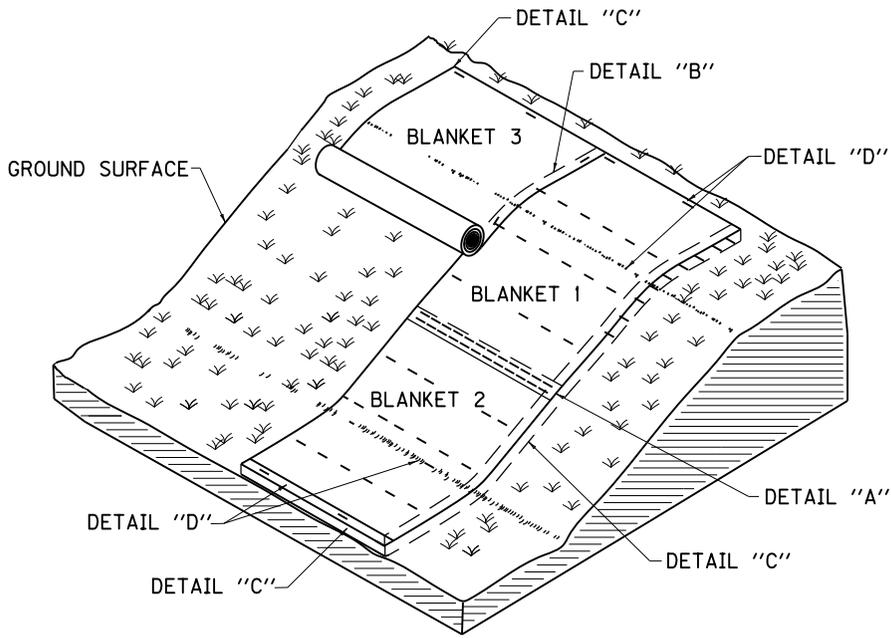
SECTION A-A
(POST P2)



ENLARGED VIEW P1

1. BID ITEMS AND UNIT TO BID:
 - A. GUARDRAIL END TREATMENT TYPE 4A - EACH
 - B. MATERIAL USED TO CONSTRUCT WIDENING SHALL BE BID AS ROADWAY OR BORROW EXCAVATION OR EMBANKMENT-IN-PLACE AT THE CONTRACT UNIT PRICE PER CUBIC YARD.
2. INTENDED USE: AREAS WITH ADEQUATE VEHICLE RECOVERY ZONE BEHIND GUARDRAIL.
- ③ POST P7 SHALL BE A CRT BREAKAWAY WOOD POST.
4. GUARDRAIL END TREATMENT TYPE 4A IS A PATENTED (ONE SOURCE) PRODUCT MANUFACTURED BY TRINITY INDUSTRIES, INC. OF DALLAS, TX. OR ROAD SYSTEMS, INC. OF BIG SPRING, TX.
5. THE MANUFACTURER SHALL FURNISH TWO (2) SETS OF SHOP PLANS TO THE CONTRACTOR WITH EACH INSTALLATION.
- ⑥ SYSTEM OFFSET OF 4'-0" SHALL BE MEASURED FROM FACE OF OFFSET BLOCK AT NORMAL GUARDRAIL SECTION TO FACE OF POST AT P1.
- ⑦ OBJECT MARKER TYPE 3 (SEE CURRENT MUTCD MANUAL FOR DETAILS).

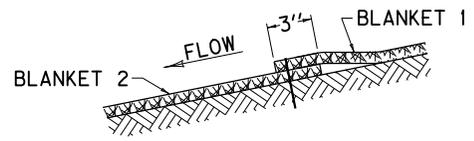
KENTUCKY DEPARTMENT OF HIGHWAYS	
GUARDRAIL END TREATMENT TYPE 4A	
APPROVED _____ DIRECTOR / DIVISION OF DESIGN	03-13-09 DATE



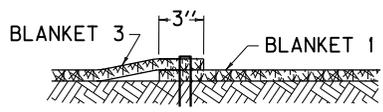
TURF MAT
SLOPE INSTALLATION

NOTES

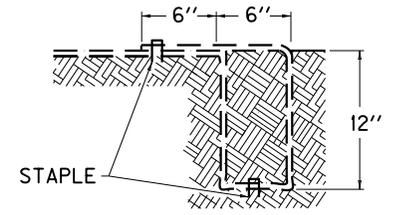
1. CONSTRUCT A 6" X 12" ANCHOR TRENCH AT THE BEGINNING OF THE SLOPE. LINE THE ANCHOR TRENCH WITH TURF REINFORCING MAT LEAVING 12" EXTENDING PAST THE ANCHOR TRENCH. FASTEN THE MAT MATERIAL INTO THE ANCHOR TRENCH ON 12" CENTERS BACKFILL THE TRENCH WITH TOPSOIL AND COMPACT. COVER THE AREA WITH THE REMAINING 12" OF THE MAT'S TERMINAL END LEAVING 6" TO OVERLAP THE TURF REINFORCING MAT. SECURE THE 6" OVERLAP WITH STAPLES ON 12" CENTERS.
2. UNROLL THE MAT PARALLEL TO THE PRIMARY DIRECTION OF WATER FLOW AND PLACE IN DIRECT CONTACT WITH THE SOIL SURFACE. DO NOT STRETCH OR ALLOW THE MATERIAL TO BRIDGE OVER SURFACE INCONSISTENCIES.
3. SECURELY FASTEN THE MAT TO THE SOIL BY INSTALLING STAPLES AT A MINIMUM RATE OF 1.5 PER SQ. YD. ANCHORS SHALL BE SELECTED SO THAT THEY HAVE SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT. INCREASE ANCHORING FREQUENCY FOR SITE CONDITIONS (LOOSE, SANDY, OR WET SOILS) AS DIRECTED BY THE ENGINEER AND MANUFACTURER'S REPRESENTATIVE.
4. OVERLAP EDGES OF PARALLEL AND PERPENDICULAR BLANKETS ALONG THE SLOPE A MINIMUM OF 3" AND SECURE WITH STAPLES AT A MAXIMUM SPACING OF 1'.
5. CONSTRUCT A 6" X 12" ANCHOR TRENCH AT THE TOE OF THE SLOPE FOLLOWING SIMILAR PROCEDURE DENOTED FOR THE TOP OF THE SLOPE ANCHOR TRENCH.
6. ENSURE THAT THE MAT IS IN DIRECT CONTACT WITH THE SOIL SURFACE WITH NO PROJECTIONS OR PROTRUSIONS.
7. APPLY SEEDING AND PROTECTION ACCORDING TO SECTION 212.03.03 USING SEED MIX TYPE I. DIRECTLY AFTER APPLYING SEEDING AND TREATMENTS IN 212.03.03, BUT BEFORE APPLYING MULCHING OR HYDROMULCHING; INFILL THE VOID SPACES IN THE MAT WITH 1/2" OF TOPSOIL. TOPSOIL IS THE SOIL PROFILE DEFINED TECHNICALLY AS "A" HORIZON BY THE SOIL SCIENCE SOCIETY OF AMERICA. USE LOOSE, FRIABLE TOPSOIL THAT IS FREE OF STONES 1" OR GREATER IN OVERALL DIMENSIONS, ADMIXTURE OF SUBSOIL, REFUSE, STUMPS, ROOTS, BRUSH, WEEDS AND OTHER MATERIALS THAT PREVENT THE FORMATION OF A SUITABLE SEED BED. DO NOT USE TOPSOIL FROM SITES HAVING JOHNSON GRASS, CANADA THISTLE, QUACK GRASS, NODDING THISTLE OR EXCESSIVE AMOUNTS OF WEEDS OR THEIR RHIZOMES.



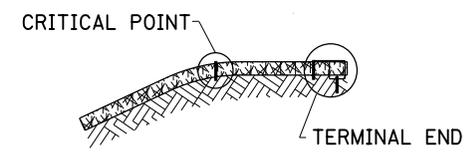
PROFILE VIEW
DETAIL "A"



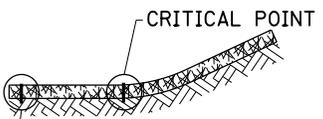
CROSS SECTION VIEW
DETAIL "B"



PROFILE VIEW
DETAIL "C"



TERMINAL END

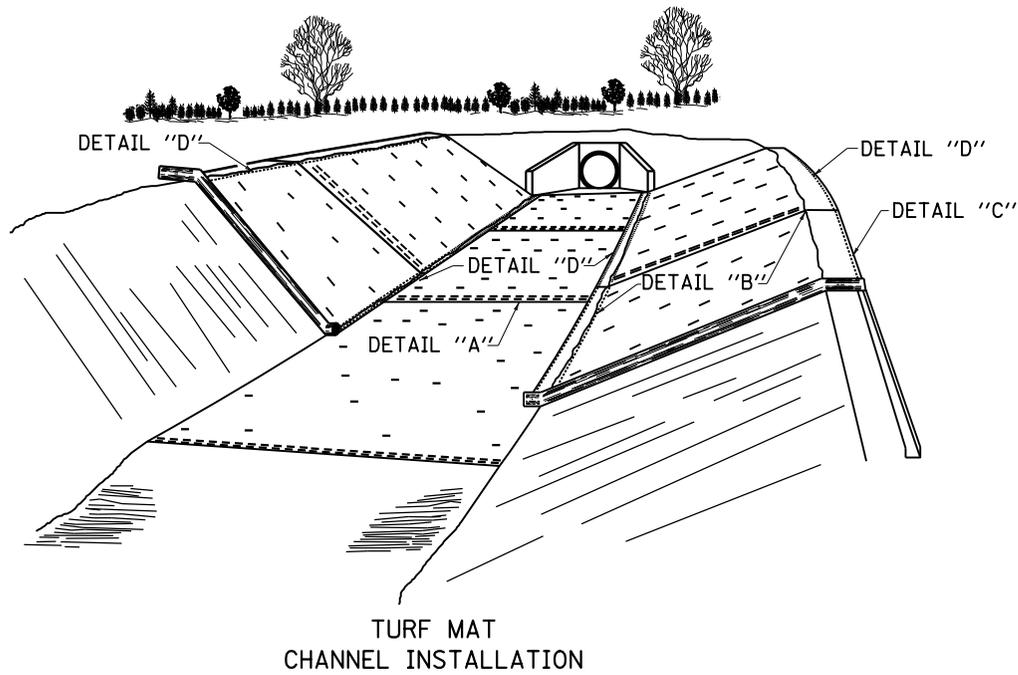


CRITICAL POINTS
DETAIL "D"

KENTUCKY
DEPARTMENT OF HIGHWAYS

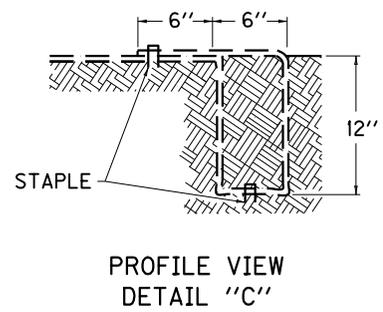
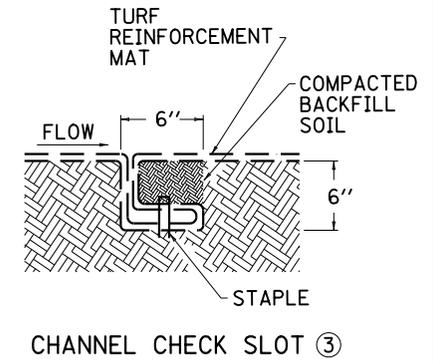
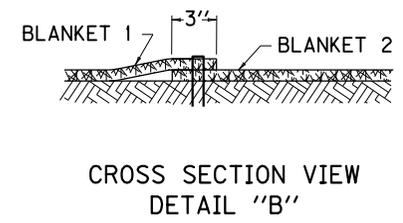
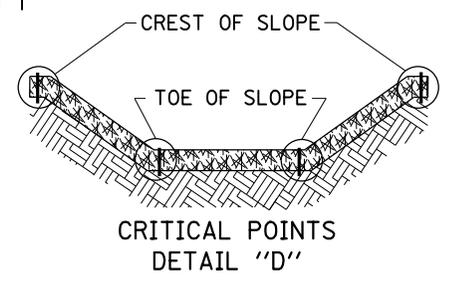
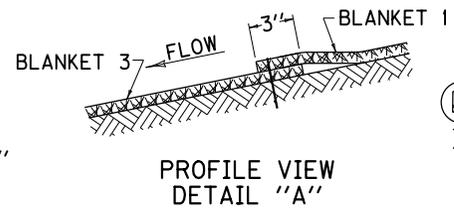
TURF MAT
SLOPE
INSTALLATION

SUBMITTED *[Signature]* 05-20-09
DIRECTOR OF DIVISION OF HIGHWAY DESIGN DATE



NOTES

1. CONSTRUCT A 6" X 12" ANCHOR TRENCH AT THE BEGINNING OF THE CHANNEL. LINE THE ANCHOR TRENCH WITH TURF REINFORCING MAT LEAVING 12" EXTENDING PAST THE ANCHOR TRENCH. FASTEN THE MAT MATERIAL INTO THE ANCHOR TRENCH ON 12" CENTERS BACKFILL THE TRENCH WITH TOPSOIL AND COMPACT. COVER THE AREA WITH THE REMAINING 12" OF THE MAT'S TERMINAL END LEAVING 6" TO OVERLAP THE TURF REINFORCING MAT. SECURE THE 6" OVERLAP WITH STAPLES ON 12" CENTERS.
2. UNROLL THE MAT PARALLEL TO THE PRIMARY DIRECTION OF WATER FLOW AND PLACE IN DIRECT CONTACT WITH THE SOIL SURFACE. DO NOT STRETCH OR ALLOW THE MATERIAL TO BRIDGE OVER SURFACE INCONSISTENCIES.
- ③ EXCAVATE 6" X 6" CHECK SLOTS EVERY 25' ALONG THE LENGTH OF THE CHANNEL. LINE THE SIDE AND BOTTOM OF THE SLOT WITH THE MAT AND THEN PULL BACK OVER. FASTEN WITH STAPLES ON 12" CENTERS. FILL THE CHECK SLOT WITH TOPSOIL, COMPACT, AND CONTINUE UNROLLING MAT DOWN THE CHANNEL.
4. CONTINUE UNROLLING THE MAT DOWNSTREAM OVER THE COMPACTED SLOT TO NEXT CHECK SLOT OR TERMINAL ANCHOR TRENCH. IF MORE THAN ONE SECTION OF MAT IS USED OVERLAP UPSTREAM MATS OVER TOP OF THE DOWNSTREAM MAT 3" AND SECURE STAPLES ON 12" CENTERS.
5. SECURE MATS WHILE UNROLLING ON SIDESLOPES AND CHANNEL BOTTOMS WITH STAPLES AT A FREQUENCY THE TABLE INDICATES. USE STAPLES HAVING SUFFICIENT GROUND PENETRATION TO RESIST PULLOUT. INCREASE ANCHORING FREQUENCY AS DIRECTED BY THE ENGINEER AND MANUFACTURER'S REPRESENTATIVE.
6. APPLY SEEDING AND PROTECTION ACCORDING TO SECTION 212.03.03 USING SEED MIX TYPE I. DIRECTLY AFTER APPLYING SEEDING AND TREATMENTS IN 212.03.03, BUT BEFORE APPLYING MULCHING OR HYDROMULCHING: INFILL THE VOID SPACES IN THE MAT WITH 1/2" OF TOPSOIL. TOPSOIL IS THE SOIL PROFILE DEFINED TECHNICALLY AS "A" HORIZON BY THE SOIL SCIENCE SOCIETY OF AMERICA. USE LOOSE, FRIABLE TOPSOIL THAT IS FREE OF STONES 1" OR GREATER IN OVERALL DIMENSIONS, ADMIXTURE OF SUBSOIL, REFUSE, STUMPS, ROOTS, BRUSH, WEEDS AND OTHER MATERIALS THAT PREVENT THE FORMATION OF A SUITABLE SEED BED. DO NOT USE TOPSOIL FROM SITES HAVING JOHNSON GRASS, CANADA THISTLE, QUACK GRASS, NODDING THISTLE OR EXCESSIVE AMOUNTS OF WEEDS OR THEIR RHIZOMES.



SLOPE GRADE	ANCHORING FREQUENCY
UP TO 2H:1V	1.5 ANCHORS/SQUARE YARD
2H:1V TO 1H:1V	2.0 ANCHORS/SQUARE YARD
STEEPER THAN 1H:1V AND CHANNEL BOTTOMS	3.0 ANCHORS/SQUARE YARD

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