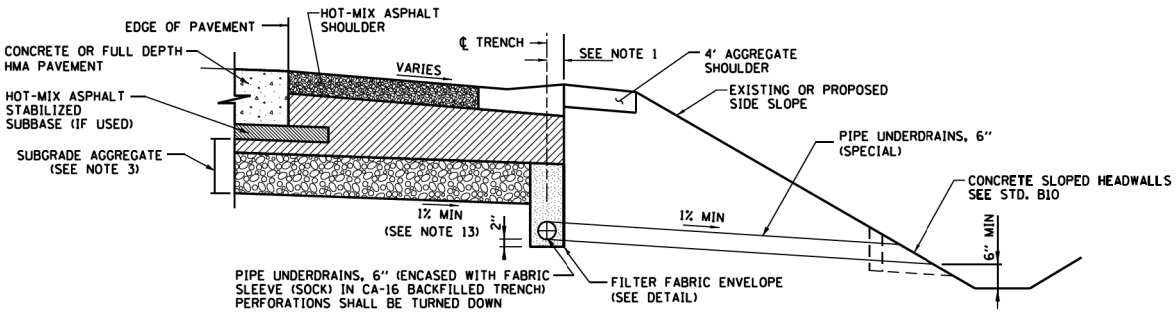
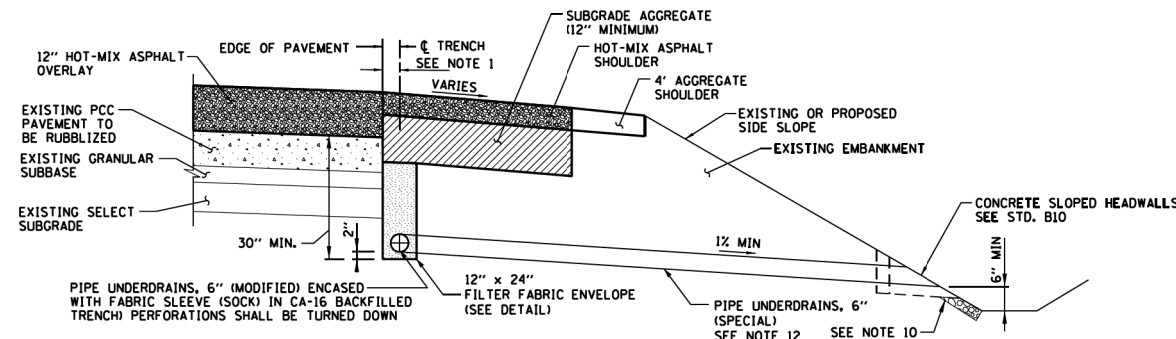


DETAIL OF PIPE UNDERDRAIN, 6"
(NEW CONSTRUCTION OR WIDENING WITHOUT GUTTER)

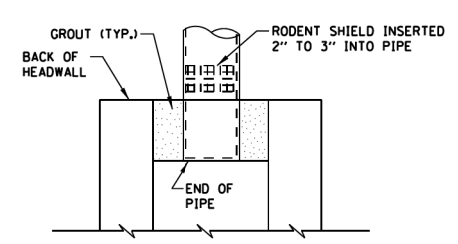


DETAIL OF PIPE UNDERDRAIN, 6"
(NEW CONSTRUCTION OR WIDENING WITH GUTTER)

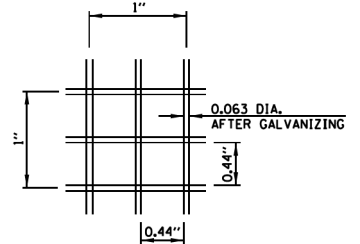


DETAIL OF PIPE UNDERDRAIN, 6" (MODIFIED)
(RUBBLIZED CONCRETE PAVEMENT)

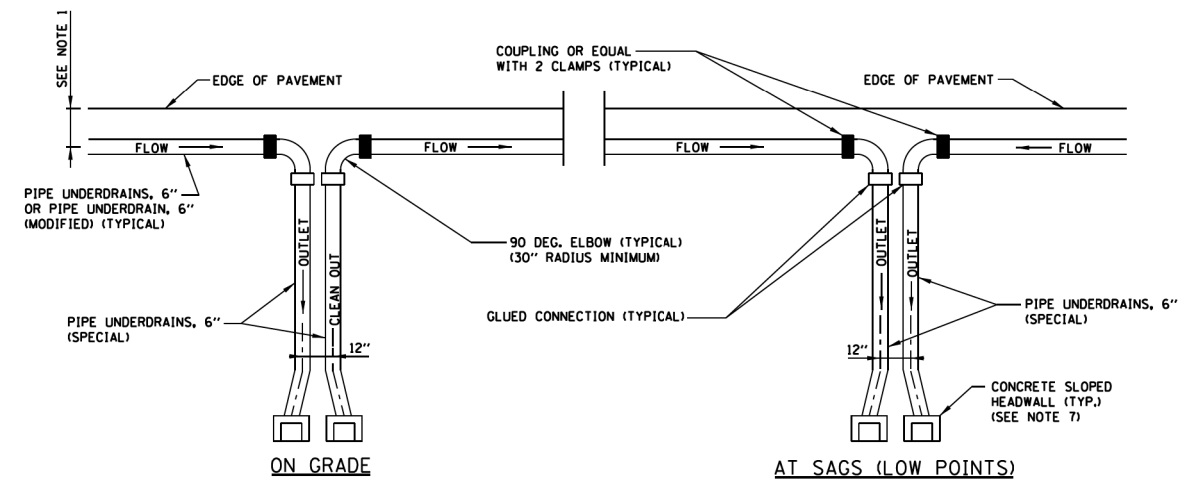
MAXIMUM ALLOWABLE DRAINAGE DISTANCE TO OUTLET OR SEPARATION DISTANCE BETWEEN OUTLETS (SEE NOTE 11)	
ROADWAY PROFILE GRADE (%)	DISTANCE
≤ 1	250 FT.
BETWEEN 1 AND 2	375 FT.
≥ 2	500 FT. (NOTE 6)



RODENT SHIELD PLACEMENT



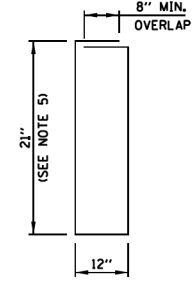
SECTION A-A



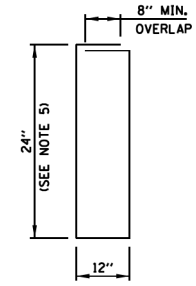
ON GRADE

AT SAGS (LOW POINTS)

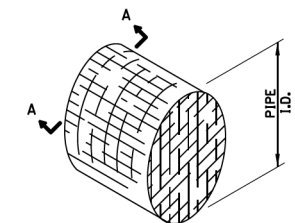
DETAIL OF PIPE UNDERDRAIN OUTLETS
(SEE NOTE 8)



FILTER FABRIC ENVELOPE
(NEW CONSTRUCTION OR WIDENING)



FILTER FABRIC ENVELOPE
(RUBBLIZED CONCRETE PAVEMENT)



DETAIL OF RODENT SHIELD

NOTES FOR PIPE UNDERDRAIN

- FOR NEW CONSTRUCTION WITH A GUTTER AT THE EDGE OF SHOULDER THE PROPOSED PIPE UNDERDRAIN SHALL BE LOCATED UNDER THE GUTTER AS SHOWN. FOR NEW CONSTRUCTION WITHOUT A GUTTER THE PROPOSED PIPE UNDERDRAIN SHALL BE AT THE EDGE OF PAVEMENT WITH A DIMENSION OF 6". FOR RUBBLIZED PAVEMENT THE DISTANCE SHALL BE 6".
- FOR NEW CONSTRUCTION OR WIDENING PROJECTS, THE PIPE UNDERDRAIN INSTALLATION SHALL OCCUR AFTER SUBGRADE HAS BEEN PREPARED AND AFTER LIFT OF PGE BASE IS PLACED AND BEFORE 3" AND VARIES CA-6 CAPPING STONE IS PLACED. FOR PAVEMENT RUBBLIZATION PROJECTS, THE PIPE UNDERDRAIN SHALL BE INSTALLED PRIOR TO RUBBLIZATION.
- SUBGRADE AGGREGATE SHALL CONSIST OF A 3" AND VARIES CA-6 CAP ABOVE A PGE BASE, THICKNESS AS NOTED IN THE PLANS.
- ON SUPERELEVATED CURVES PLACE LONGITUDINAL UNDERDRAIN ON LOW SIDE ONLY.
- IN AREAS WHERE ROADWAY LONGITUDINAL GRADE IS LESS THAN 0.3%, DIMENSION WILL INCREASE AS NECESSARY TO MAINTAIN MINIMUM 0.3% SLOPE IN PIPE UNDERDRAIN.
- IF 500' MAXIMUM DISTANCE IS EXCEEDED, PIPE UNDERDRAIN SHALL BE INCREASED TO 8" DIAMETER AND TRENCH WIDTH INCREASED TO 16".
- AT OUTLET LOCATIONS, PIPE UNDERDRAINS SHALL SEPARATE SUFFICIENTLY TO PROVIDE SPACE FOR TWO END SECTIONS, OR TWO PIPES CAN RUN PARALLEL INTO A LARGER HEADWALL.
- IN AREAS WHERE A CLOSED DRAINAGE SYSTEM EXISTS, THE PIPE UNDERDRAIN, 6" (SPECIAL) SHALL DRAIN TO THE NEAREST CATCH BASIN. THE UPPER END OF A RUN ON GRADE SHALL ALSO BE CONNECTED TO A CATCH BASIN TO BE USED AS A CLEANOUT.
- THE OUTLET END OF THE SUBDRAIN SHALL BE PROTECTED BY A PERMANENT RODENT SHIELD. THE RODENT SHIELD SHALL HAVE THE CONFIGURATION SHOWN AND BE CONSTRUCTED FROM HOT DIP GALVANIZED STEEL INDUSTRIAL WIRE CLOTH 3x3 MESH, 0.063"x0.063" WIRE SIZE IN ACCORDANCE WITH AASHTO M232 (ASTM A153). THE COST OF THE RODENT SHIELD IS INCLUDED IN CLASS 51 CONCRETE.
- FOR RUBBLIZATION PROJECTS, ADDITIONAL EROSION CONTROL MEASURES MAY BE NECESSARY AT THE BASE OF THE HEADWALL.
- FOR RUBBLIZATION PROJECTS, MAXIMUM DISTANCE SHALL BE 250 FT. REGARDLESS OF ROADWAY PROFILE.
- TRENCH FOR PIPE UNDERDRAIN 6" (SPECIAL) FOR RUBBLIZATION PROJECTS SHALL BE BACKFILLED WITH CA-6.
- BOTTOM OF SUBGRADE SLOPE SHALL MATCH PAVEMENT SLOPE OF OUTSIDE LANE, BUT SHALL NOT BE LESS THAN 1%.



DATE	REVISIONS
6-1-09	CHANGES TO PIPE UNDERDRAIN, 6" (MODIFIED) DETAIL

PIPE UNDERDRAINS	
STANDARD B24-01	

Paul Kovacs
APPROVED..... CHIEF ENGINEER..... DATE 6-1-2009...

BOWMAN, BARRETT & ASSOCIATES INC.
CONSULTING ENGINEERS
Chicago, Illinois
312.228.0100
www.bbandainc.com

USER NAME = default	DESIGNED -	REVISED -
PLOT SCALE = H=1"=10' V=1"=5'	DRAWN -	REVISED -
PLOT DATE = 6/18/2012	CHECKED - RGR	REVISED -
	DATE - 6/19/2012	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

TOLLWAY STANDARD DRAWING

SCALE: SHEET NO. N/A OF N/A SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
94	49-1-R-1	LAKE	677	629
CONTRACT NO. 60L77				
ILLINOIS FED. AID PROJECT				

S:\1101\95\CADD\60L77_IL_173\60L77_IL_173\60L77-INT-1511A.dwg