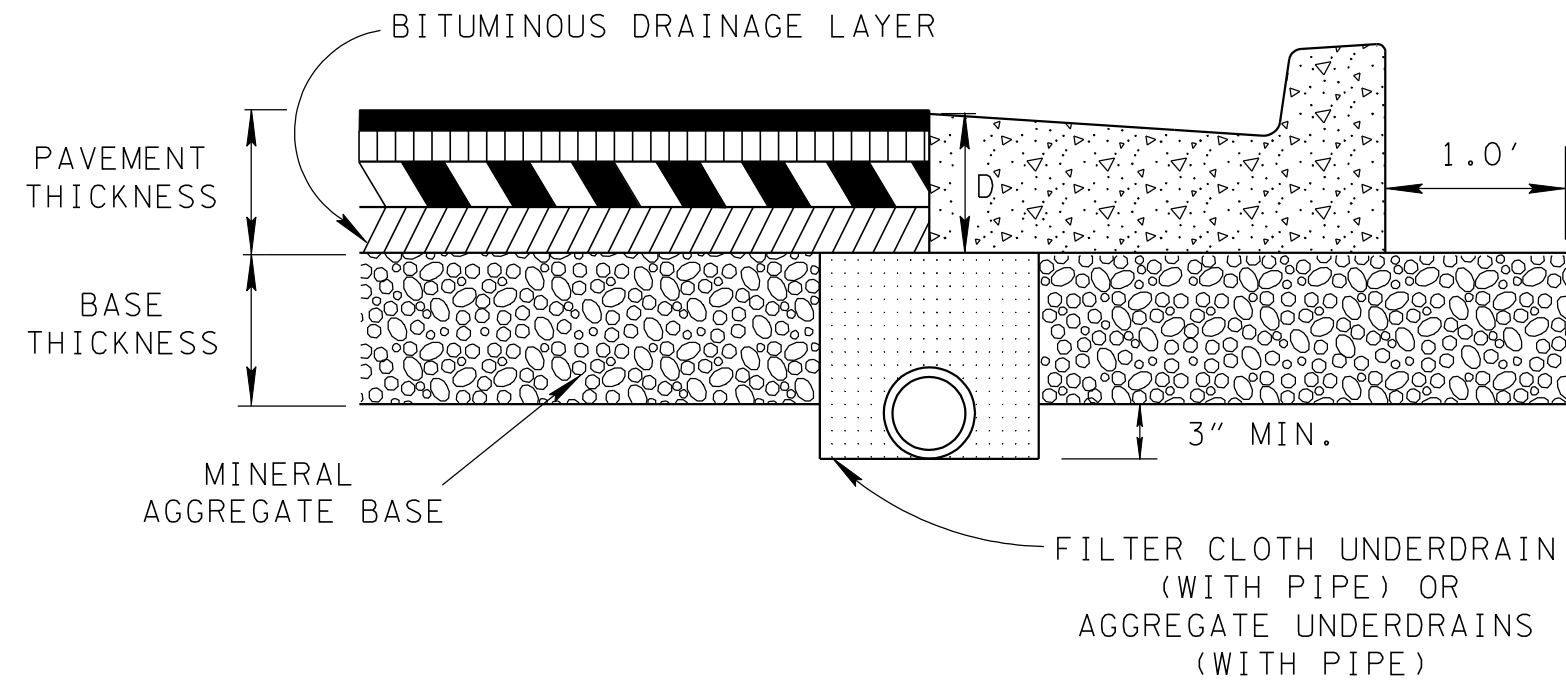


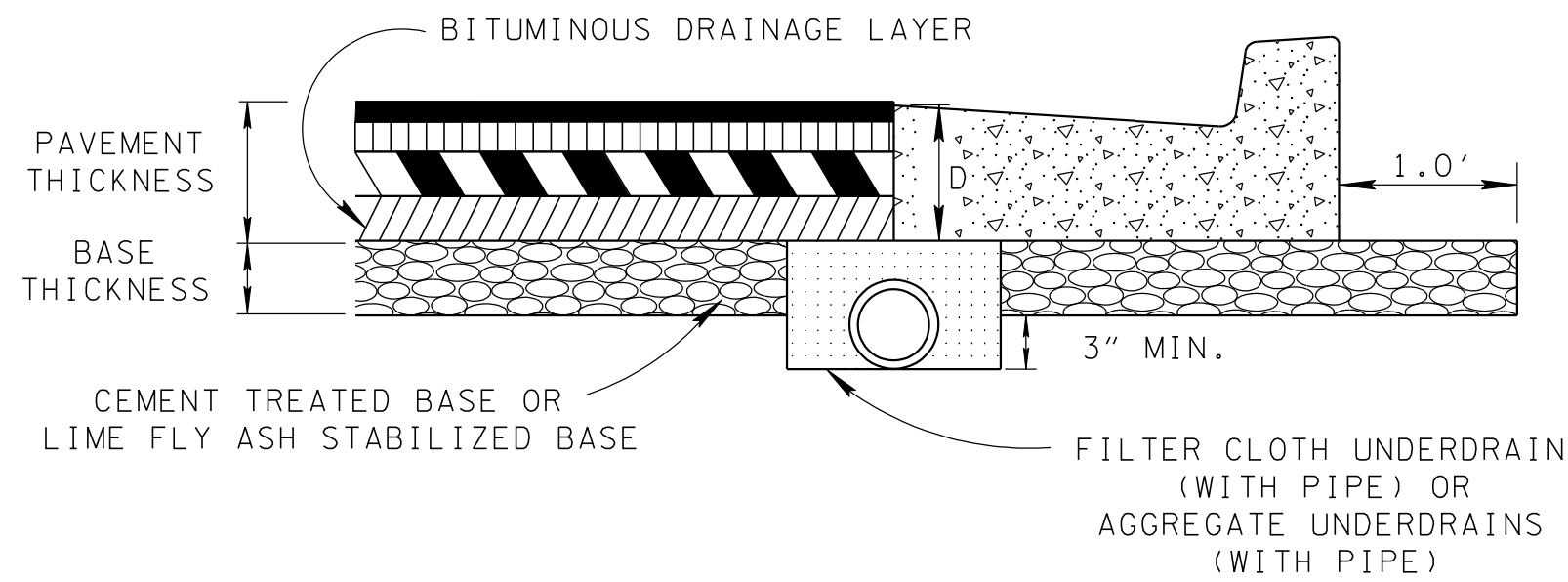
GENERAL NOTES

- (A) AGGREGATE OR FILTER CLOTH UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS, SECTION 710 AND/OR SPECIAL PROVISIONS.
- (B) AGGREGATE OR FILTER CLOTH UNDERDRAINS WITH 4" PERFORATED PIPE WILL BE INSTALLED ADJACENT TO THE LOW EDGE OF PAVEMENT. THE UNDERDRAIN SYSTEM WILL BEGIN AT THE BEGINNING OF THE PROJECT AND EXTEND TO THE END OF THE PROJECT INCLUDING PAVING LIMITS ON INTERCHANGE RAMP UNLESS OTHERWISE SPECIFIED ON THE PLANS. THE LATERAL PORTION OF THE UNDERDRAIN SYSTEM WILL DISCHARGE AT THE LOW POINTS OR HAVE OUTLETS PLACED AT MAXIMUM INTERVALS OF 190 TO 210 FEET THROUGHOUT THE LIMITS OF THE PROJECT.
- (C) THE TRENCH FOR THE UNDERDRAIN SHALL BE EXCAVATED TO A DEPTH OF 3" BELOW THE SUBGRADE, EXCEPT WHEN NECESSARY TO EXCAVATE DEEPER TO OBTAIN A MINIMUM SLOPE OF 0.50 PERCENT FOR THE UNDERDRAIN FLOW LINE.
- (D) UNDER NO CONDITIONS SHALL THE TRENCH BE EXCAVATED IN SOLID ROCK. IF A SUBSTANTIAL AMOUNT OF ROCK IS ENCOUNTERED, THE ENGINEER MAY DIRECT THAT THE TRENCH DEPTH BE ADJUSTED TO OBTAIN A MINIMUM SLOPE OF 0.50 PERCENT FOR THE UNDERDRAIN FLOW LINE. IF THE ROCK ENCOUNTERED IS ONLY MINOR SUCH AS A SMALL BOULDER, THE ENGINEER MAY DIRECT THAT THE TRENCH BE TURNED TO THE SIDE AND TERMINATED WITH A LATERAL UNDERDRAIN HEADWALL EVEN THOUGH THE 190 TO 210 FOOT INTERVAL HAD NOT BEEN COMPLETED. THE TRENCH MAY THEN BEGIN AGAIN ON THE OTHER SIDE OF THE MINOR ROCK ENCOUNTERED AS DIRECTED BY THE ENGINEER.
- (E) THE CONTRACTOR SHALL ENSURE THAT NO BASE OR SUBGRADE MATERIAL FALLS INTO THE TRENCH DURING THE TRENCHING OPERATION. HE ALSO WILL NOT BE ALLOWED TO USE THE STONE BASE MATERIAL TO HOLD THE FILTER CLOTH WHEN THE TRENCH IS FILLED.
- (F) ON CURB AND GUTTER SECTIONS, THE UNDERDRAINS WILL BE TIED INTO CATCHBASINS IN THE STORM SEWER SYSTEM.
- (G) THE BOTTOM SLOPE OF THE CURB AND GUTTER SHALL MATCH THE SLOPE OF THE BASE MATERIAL.
- (H) THE TYPE OF UNDERDRAIN SYSTEM SHALL BE SPECIFIED BY THE SPECIAL DESIGN AND ESTIMATES OFFICE WITH THE PAVEMENT DESIGN.
- (I) ON REHABILITATION PROJECTS WHERE AN ASPHALT CAP OR A LAYER OF ASPHALT IS PAVED OVER THE FILTER CLOTH UNDERDRAIN, NO TACK OR PRIME COAT SHALL BE USED ON THE UNDERDRAIN. ASPHALT CAPS SHALL BE COMPACTED TO DENSITY INDICATED IN SECTION 407.15 OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
- (J) ON REHABILITATION PROJECTS, THE DESIGNER SHALL CONTACT THE SPECIAL DESIGN AND ESTIMATES OFFICE FOR DETAILS REGARDING THE EXISTING UNDERDRAIN SYSTEM AND TO FIND OUT WHAT MODIFICATIONS MAY BE REQUIRED.
- (K) ALL COST FOR TRENCHING, FURNISHING AND INSTALLING THE PIPE AND AGGREGATE FOR THE UNDERDRAIN WITH PIPE WILL BE INCLUDED IN THE BID PRICE FOR ITEM NO. 710-02, AGGREGATE UNDERDRAINS (WITH PIPE) OR ITEM NO. 710-04, FILTER CLOTH UNDERDRAIN (WITH PIPE). THE UNIT OF PAYMENT WILL BE PER LINEAR FOOT.



DETAIL "A"

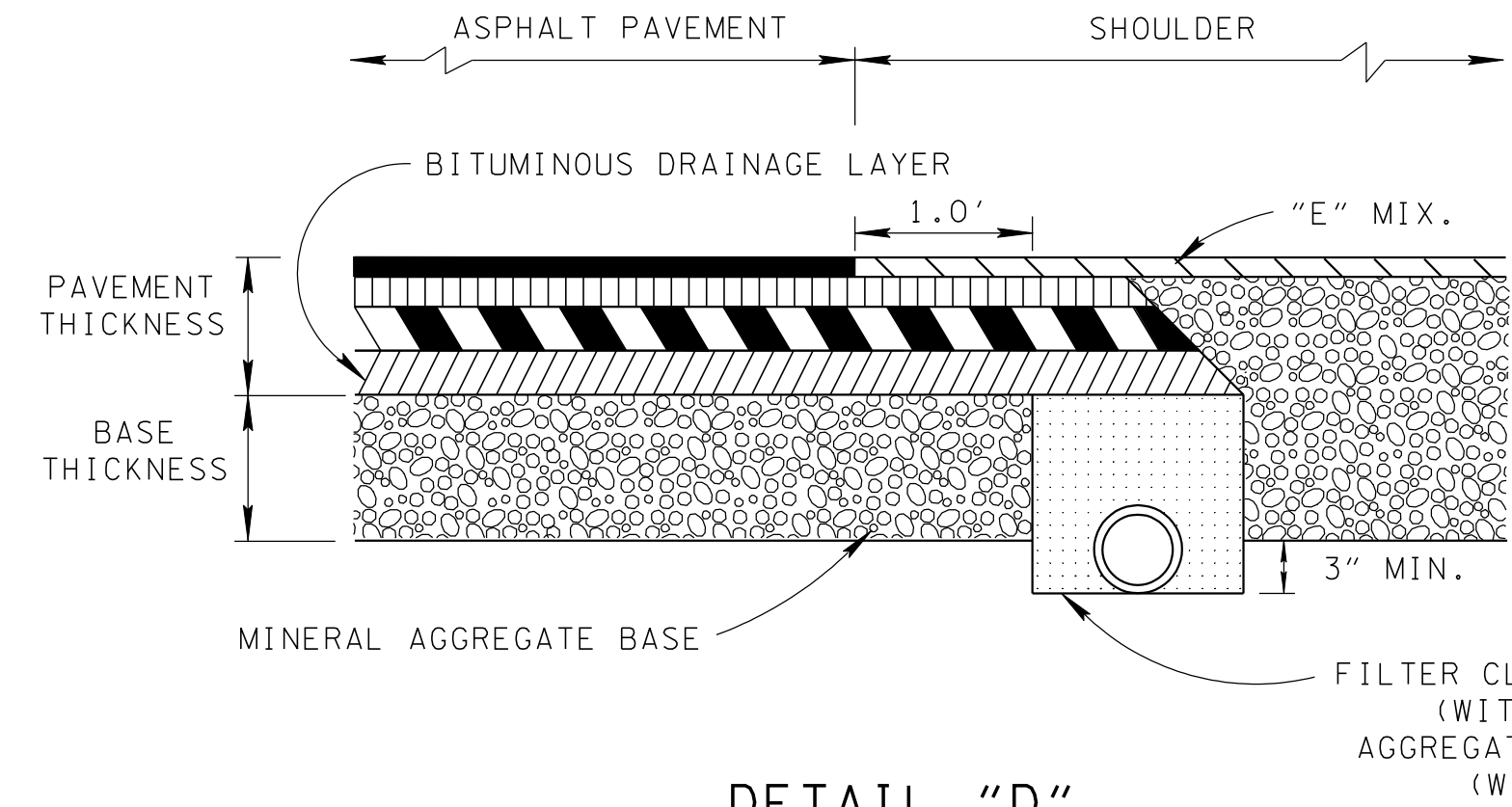
USE FOR 9.25" TO 12.50" ASPHALT PAVEMENT THICKNESS
(THICKNESS "D" TO BE ADJUSTED TO MATCH ASPHALT PAVEMENT THICKNESS)



DETAIL "B"

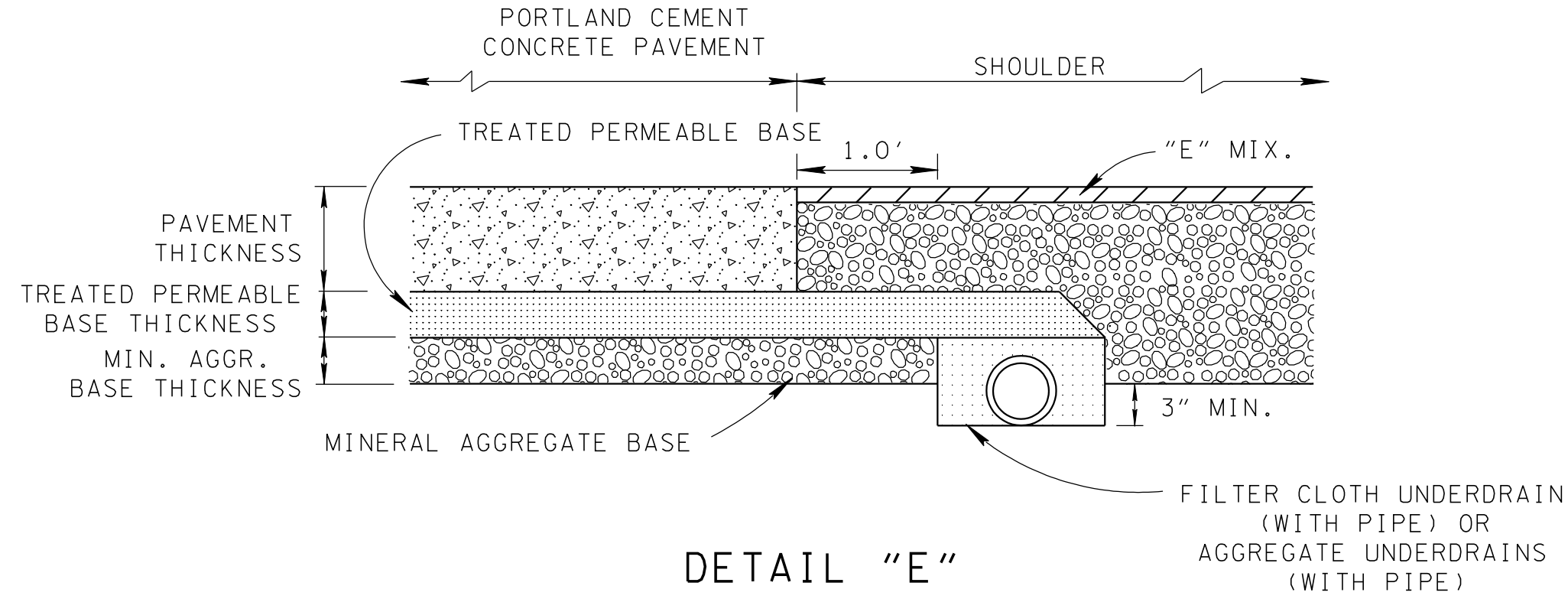
ALTERNATE DETAIL FOR CEMENT TREATED BASE OR
LIME FLY ASH STABILIZED BASE

(THICKNESS "D" TO BE ADJUSTED TO MATCH ASPHALT PAVEMENT THICKNESS)



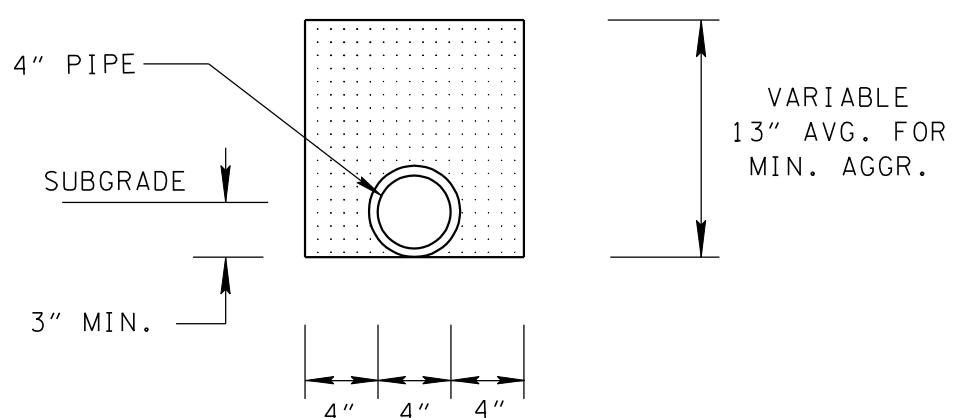
DETAIL "D"

ASPHALT PAVEMENT WITH ASPHALT SHOULDERS



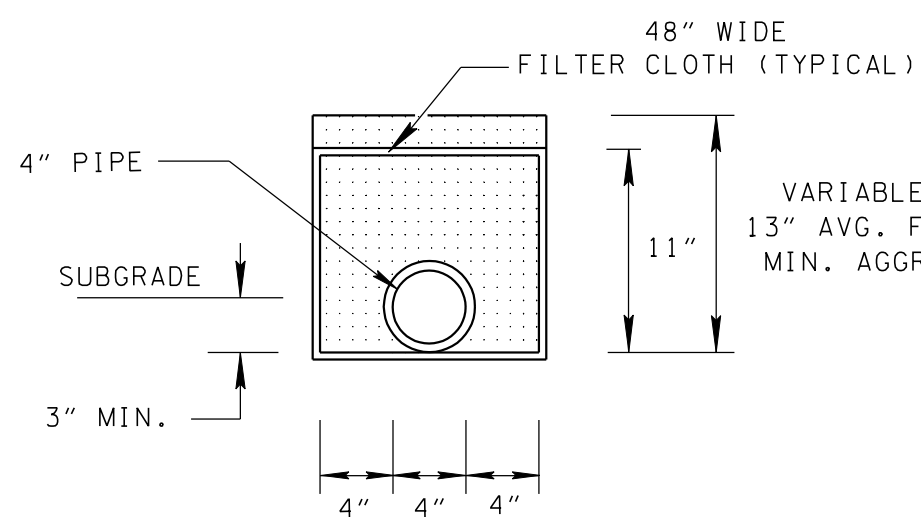
DETAIL "E"

PORTLAND CEMENT CONCRETE PAVEMENT
WITH ASPHALT SHOULDERS



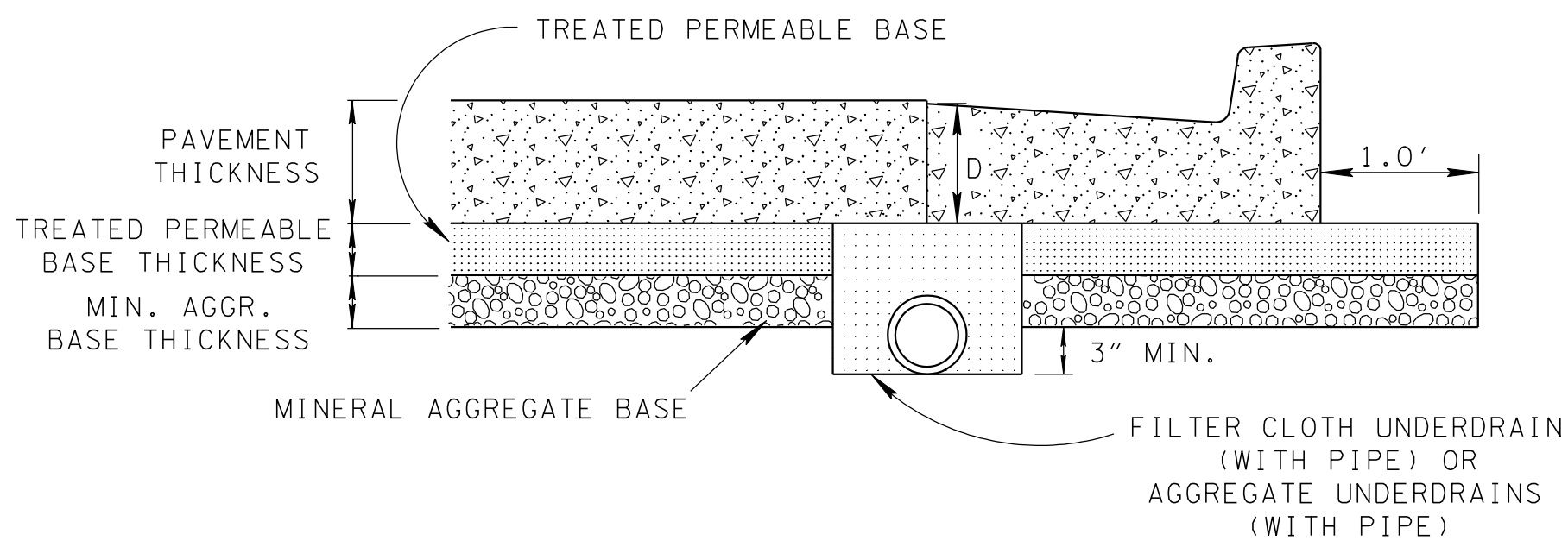
AGGREGATE UNDERDRAINS
(WITH PIPE)

(ITEM NO. 710-02)



FILTER CLOTH UNDERDRAINS
(WITH PIPE)

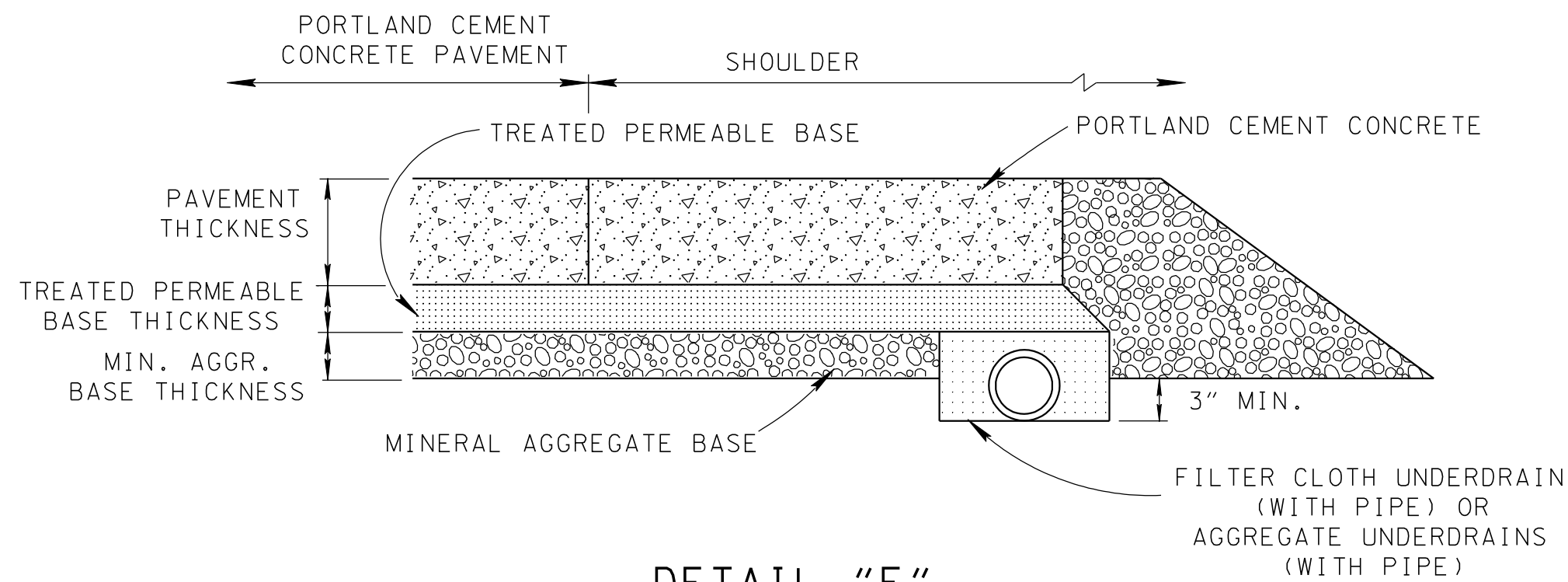
(ITEM NO. 710-04)



DETAIL "C"

PORTLAND CEMENT CONCRETE PAVEMENT
WITH CURB AND GUTTER

(THICKNESS "D" TO BE ADJUSTED TO MATCH CONCRETE PAVEMENT THICKNESS)



DETAIL "F"

PORTLAND CEMENT CONCRETE PAVEMENT
WITH CONCRETE SHOULDERS

REV. 7-29-96: REDREW AND REORGANNIZED SHEET. MOVED MATERIAL REGARDING LATERAL UNDERDRAINS TO STANDARD DRAWING NO. RD-UD-4. MOVED MATERIAL REGARDING MAINLINE UNDERDRAINS FROM STANDARD DRAWING NO. RD-UD-4. MOVED MAINLINE UNDERDRAINS IN ALL CURB AND GUTTER DETAIL FROM 1'-6" BEHIND BACK OF CURB TO DIRECTLY UNDER POINT WHERE PAVEMENT AND FRONT EDGE OF GUTTER INTERSECT. RAISED MAINLINE UNDERDRAIN PIPE. REDUCED MINIMUM DEPTH OF TRENCH FROM 6" TO 3".

REV.9-5-96: ADDED WIDTH OF FILTER CLOTH.

MINOR REVISION -- FHWA
APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

UNDERDRAIN
DETAILS

7-29-96

RD-UD-3