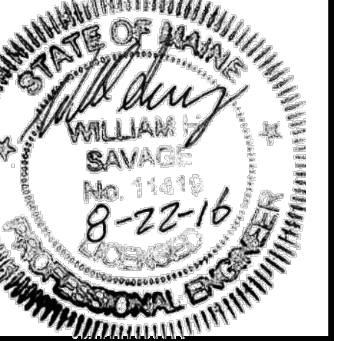


ISSUED FOR	BY
PRELIMINARY APP	WHS
FINAL APP	WHS
REVISION	REV. DATE

DRAINAGE DETAILS  
 PROJECT NAME: 70 ANDERSON STREET REDEVELOPMENT  
 CLIENT: REDFERN PROPERTIES, LLC  
 P.O. BOX 8816 PORTLAND, ME 04104

ACORN ENGINEERING, INC.  
 158 BANGOR ST. PORTLAND, MAINE 04102  
 (207) 775-2655

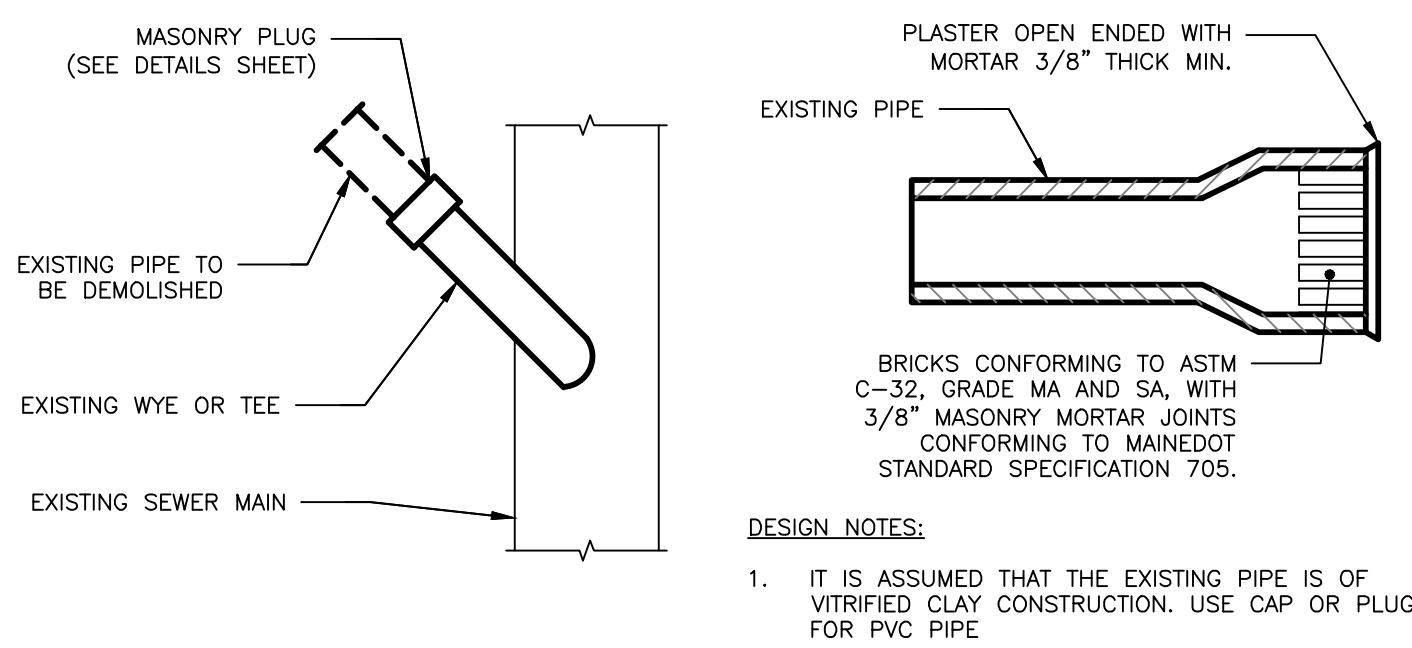
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 DRAWN BY: QUD  
 CHECKED BY: WHS



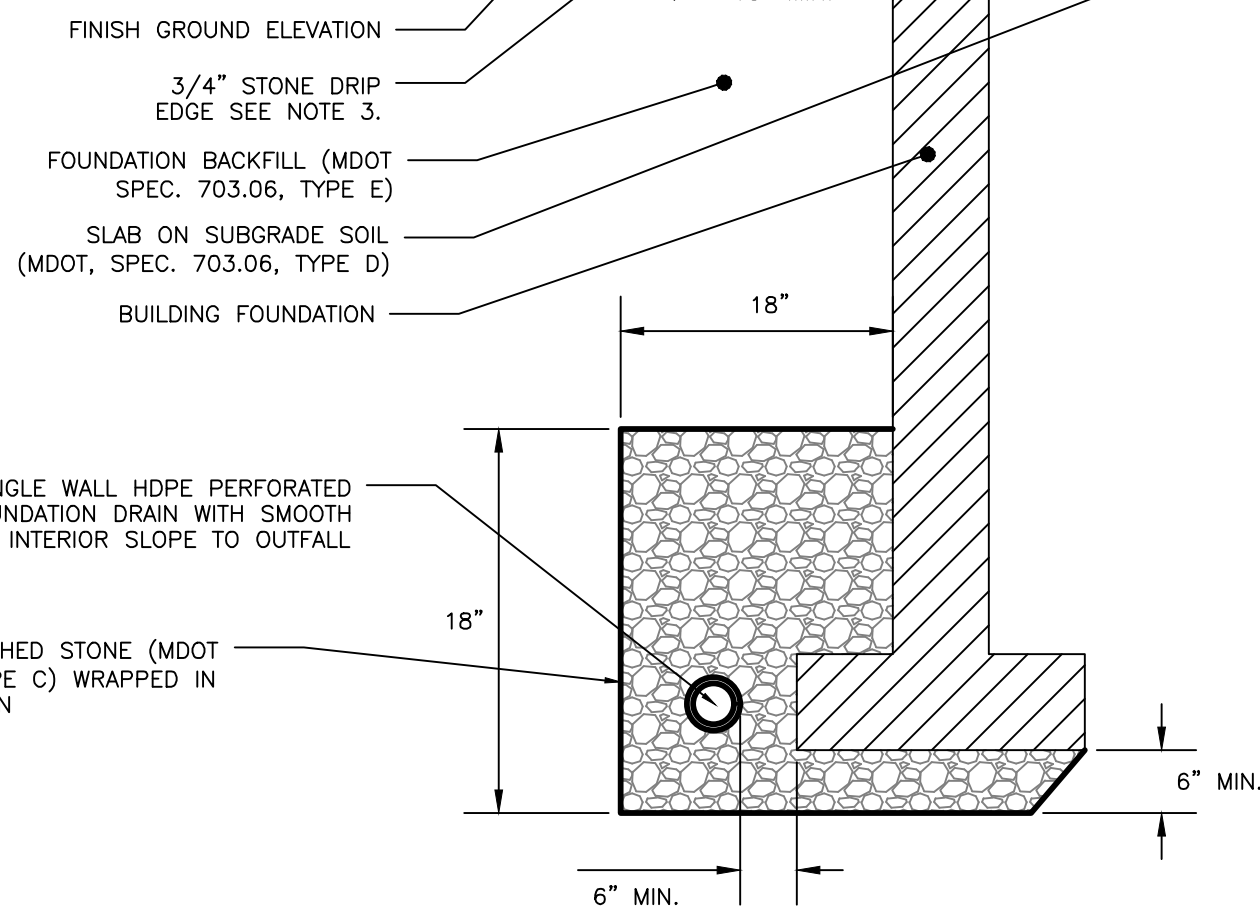
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NOTES:

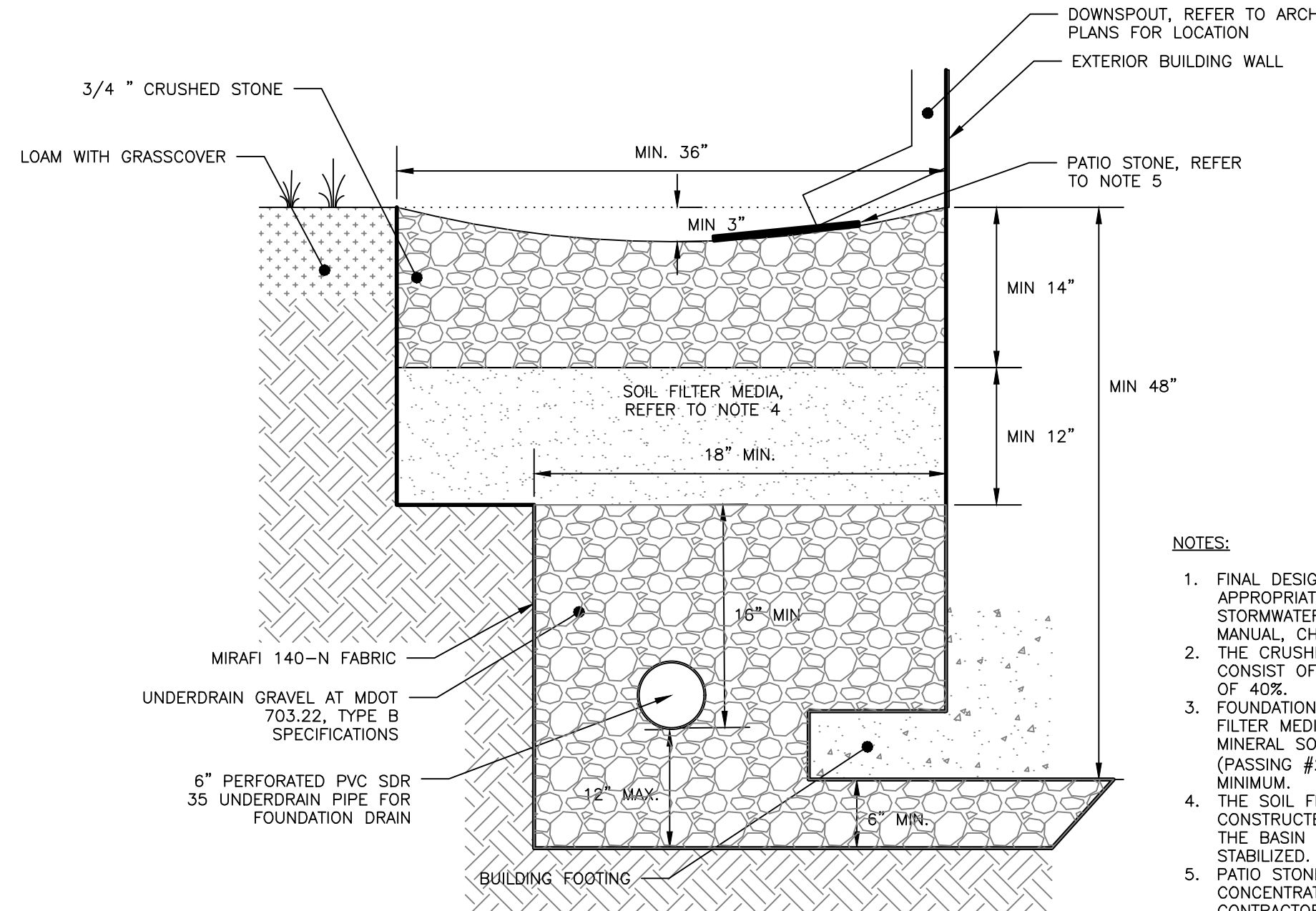
- REFER TO THE BUILDING ARCHITECTS PLANS FOR THE BUILDING FOUNDATION, BACKFILL, ROOF DRAIN, SIDEWALK AND OTHER DETAILS.
- PERFORATIONS IN UNDERDRAIN PIPE SHALL BE ORIENTED DOWN.
- INSTALL STONE DRIP EDGE IN A LOCATIONS SUBJECT TO ROOF RUNOFF. WIDTH SHALL BE A MIN. 12" BEYOND THE PROJECT OF THE ROOF EYE.
- FOUNDATION WALL FOOTINGS SHALL BE CONSTRUCTED TO A MIN. DEPTH OF 4 FT BELOW ADJACENT FINISH GRADE. REFER TO STRUCTURAL ENGINEERS PLANS FOR ADDITIONAL INFORMATION AND MIN. REQUIREMENTS.



MASONRY PLUG DETAIL  
NOT TO SCALE



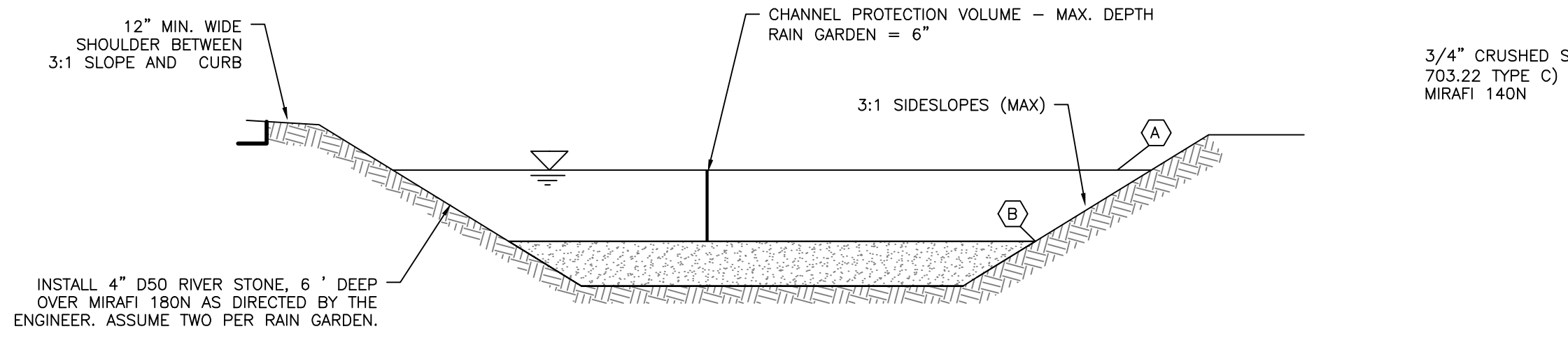
FOUNDATION DRAIN DETAIL  
NOT TO SCALE



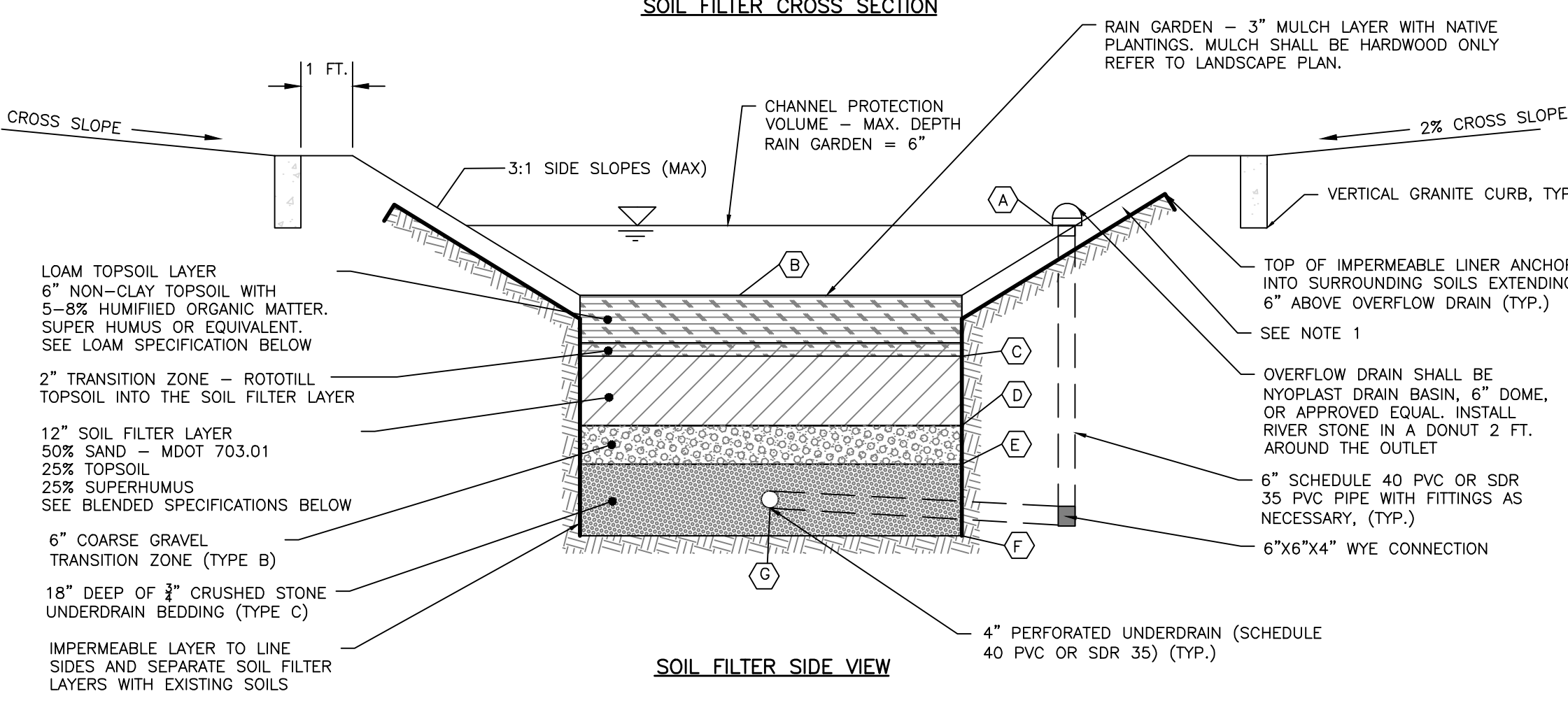
ROOF DRIPLINE FILTRATION DETAIL  
NOT TO SCALE

NOTES:

- FINAL DESIGN MUST COMPLY WITH ALL APPROPRIATE SPECIFICATIONS FROM THE STORMWATER MANAGEMENT FOR MAINE BMP MANUAL, CHAPTER 7.
- THE CRUSHED STONE RESERVOIR BED MUST CONSIST OF CRUSHED ROCK WITH A POROSITY OF 40%.
- FOUNDATION BACKFILL MAY BE USED AS SOIL FILTER MEDIA AS LONG AS THE MATERIAL IS A MINERAL SOIL WITH BETWEEN 4-7% FINES (PASSING #200 SIEVE) AND IS 4" THICK AT MINIMUM.
- THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.
- PATIO STONE TO BE PLACED AS TO REDIRECT CONCENTRATED FLOW FROM DOWNSPOUT. CONTRACTOR TO FINALIZE STONE SIZE.



SOIL FILTER CROSS SECTION



SOIL FILTER SIDE VIEW

NOTES:

- WRAP ALL SIDES BETWEEN THE SOIL FILTER MATERIALS, IMPERMEABLE LINER AND EXISTING SOILS WITH MIRAFI 180N OR EQUIVALENT.
- THE SIDESLOPES SHALL BE STABILIZED WITH A MIN. OF 4" LOAM, EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX.
- LIGHT COMPACTION SOIL FILTER AND PIPE BEDDING MATERIAL. (90 TO 92% STANDARD PROCTOR). TESTING SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING FIRM.
- THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.
- A SCHEDULE OF APPROPRIATE PLANTS FOR THE RAIN GARDENS AT THE SITE CONDITIONS IS LOCATED IN THE GRADING PLAN. LANDOWNER IS TO FINALIZE THE SCHEDULE.
- TESTING: SIEVE ANALYSIS INCLUDING HYDROMETER TESTING FOR CLAY CONTENT FOR EACH LAYER SHALL BE PERFORMED BY A QUALIFIED SOIL TESTING LABORATORY AND SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL 2 WEEKS PRIOR TO CONSTRUCTION. ALL TESTING AND SUBMITTALS SHALL BE IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE MAINE DEP - TECHNICAL DESIGN MANUAL SECTION 7.2.5 TESTING AND SUBMITTALS.
- ACORN ENGINEERING, INC., RECOMMENDS THE SOIL FILTER LAYER BE SUPPLIED BY JONES ASSOCIATES, INC., AUBURN, ME.

SCHEDULE		
ITEM		ELEVATION
(A)	PROPOSED OVERFLOW RIM	18.40'
(B)	TOP OF LOAM TOPSOIL LAYER	17.90'
(C)	TOP OF SOIL FILTER	17.40'
(D)	TOP OF GRAVEL	16.40'
(E)	TOP OF STONE	15.90'
(F)	BOTTOM OF STONE	14.40
(G)	UNDERDRAIN INVERT	14.65'

6" LOAM TOPSOIL LAYER SPECIFICATION	
SIEVE SIZE	% PASSING BY WEIGHT
#4	75 - 95
#10	60 - 90
#40	35 - 85
#200	20 - 70

SOIL FILTER BED - SUPERHUMUS OR EQUIV. SPECIFICATION	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
#200	0 - 5

12" SOIL FILTER BED - BLENDED SAND, LOAM, SUPERHUMUS SIEVE ANALYSIS	
SIEVE SIZE	% PASSING BY WEIGHT
#10	85 - 100
#20	70 - 100
#60	15 - 40
#200	8 - 15

SOIL FILTER BED - TRANSITION ZONE (TYPE B)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90 - 100
1/2"	75 - 100
#4	50 - 100
#20	15 - 80
#50	0 - 5
#200	0 - 5

SOIL FILTER BED - UNDERDRAIN BEDDING (TYPE C)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 - 100
3/8"	0 - 75
#4	0 - 25
#10	0 - 5

CONSTRUCTION OBSERVATION:

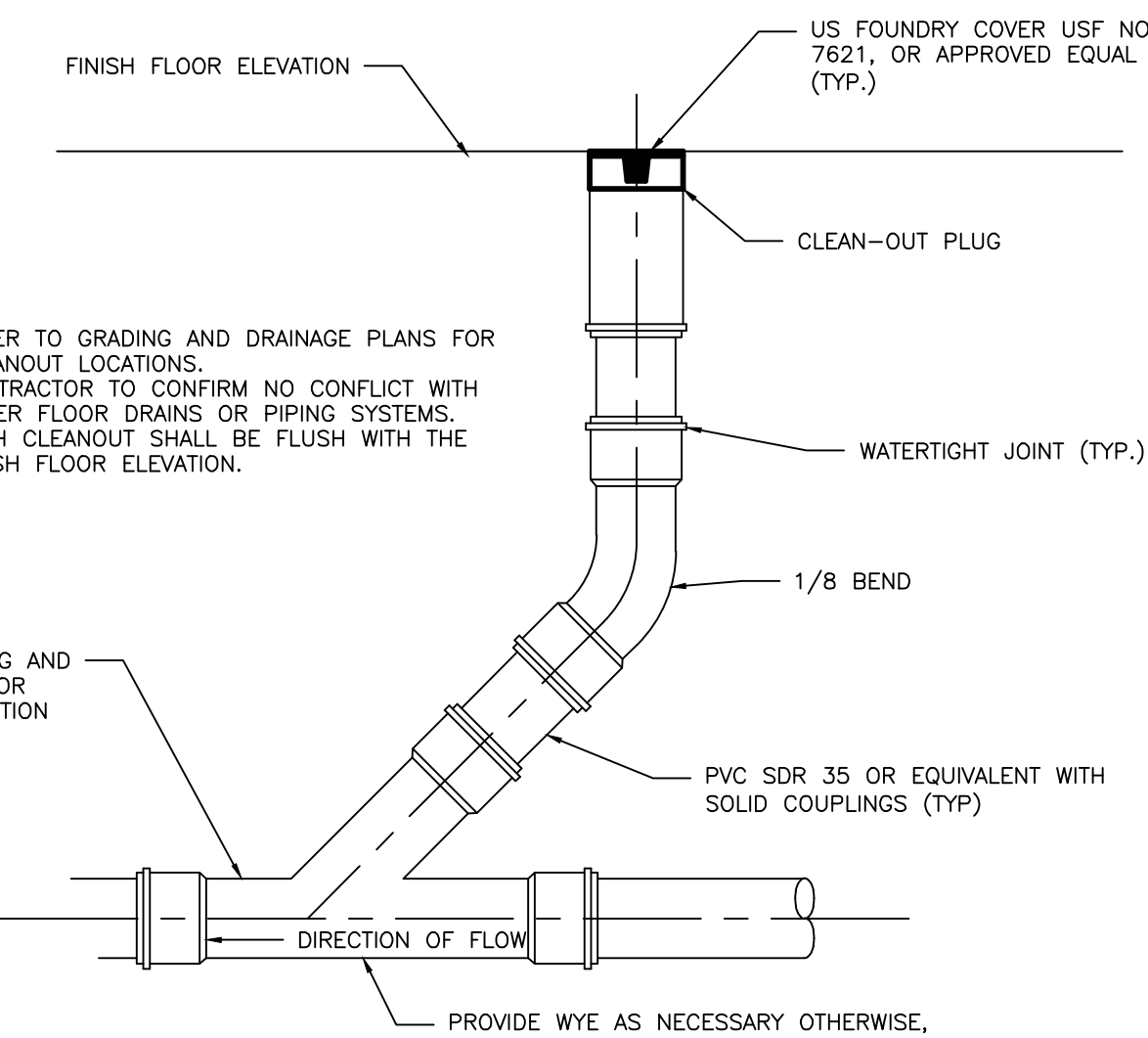
- CONSTRUCTION OBSERVATION SHALL BE PROVIDED FOR EACH PHASE OF CONSTRUCTION BY ACORN ENGINEERING. THE CONTRACTOR OR OWNERS REPRESENTATIVE SHALL NOTIFY ACORN ENGINEERING A MINIMUM 48 HOURS OR 2 BUSINESS DAY WHICH EVER IS GREATER PRIOR TO ANY OF THE PHASES OF CONSTRUCTION LISTED BELOW SO THAT THE FOLLOWING SITE VISITS MAY BE SCHEDULED.
- ONE SITE VISIT AFTER PRELIMINARY CONSTRUCTION OF THE BIORETENTION CELL GRADES;
  - ONE SITE VISIT DURING THE INSTALLATION OF THE IMPERVIOUS LINER.
  - ONE SITE VISIT AFTER THE UNDER DRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
  - ONE SITE VISIT DURING THE CONSTRUCTION OF THE SOIL FILTER LAYER.
  - ONE SITE VISIT DURING THE CONSTRUCTION OF THE TOPSOIL LAYER.
  - ONE SITE VISIT DURING THE FLOODING OF THE BIORETENTION CELL, IF REQUIRED.

- CLAY FRACTION <10% PASSING THE #200 SIEVE, <10% CLAY PASSING THE #200 SIEVE ALLOWED PER EMAIL FROM MARIANNE HUBERT - MDEP TO WILL SAVAGE DATED 9/20/13
- LOAM SHALL BE LOOSE AND FRIABLE AND SHALL BE FREE FROM ADMIXTURE OF SUBSOIL, REFUSE, LARGE STONES, CLODS OR ROOTS OR RHIZOMES OR "WICH GRASS" OR OTHER UNDESIRABLE GRASSES.

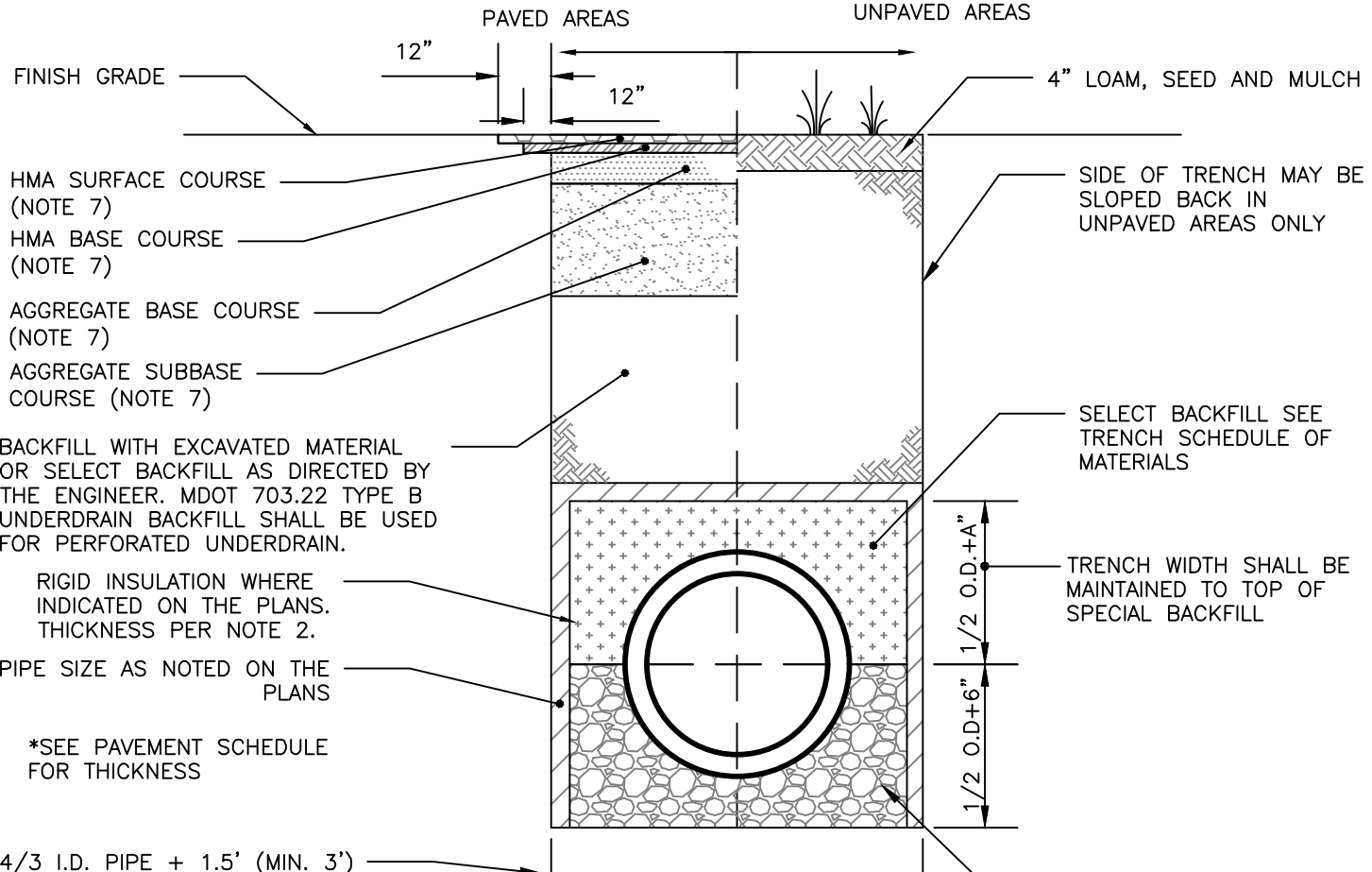
RAIN GARDEN DETAIL  
NOT TO SCALE

NOTES:

- REFER TO GRADING AND DRAINAGE PLANS FOR CLEANOUT LOCATIONS.
- CONTRACTOR TO CONFIRM NO CONFLICT WITH OTHER FLOOR DRAINS OR PIPING SYSTEMS.
- EACH CLEANOUT SHALL BE FLUSH WITH THE FINISH FLOOR ELEVATION.



CLEANOUT DETAIL  
NOT TO SCALE

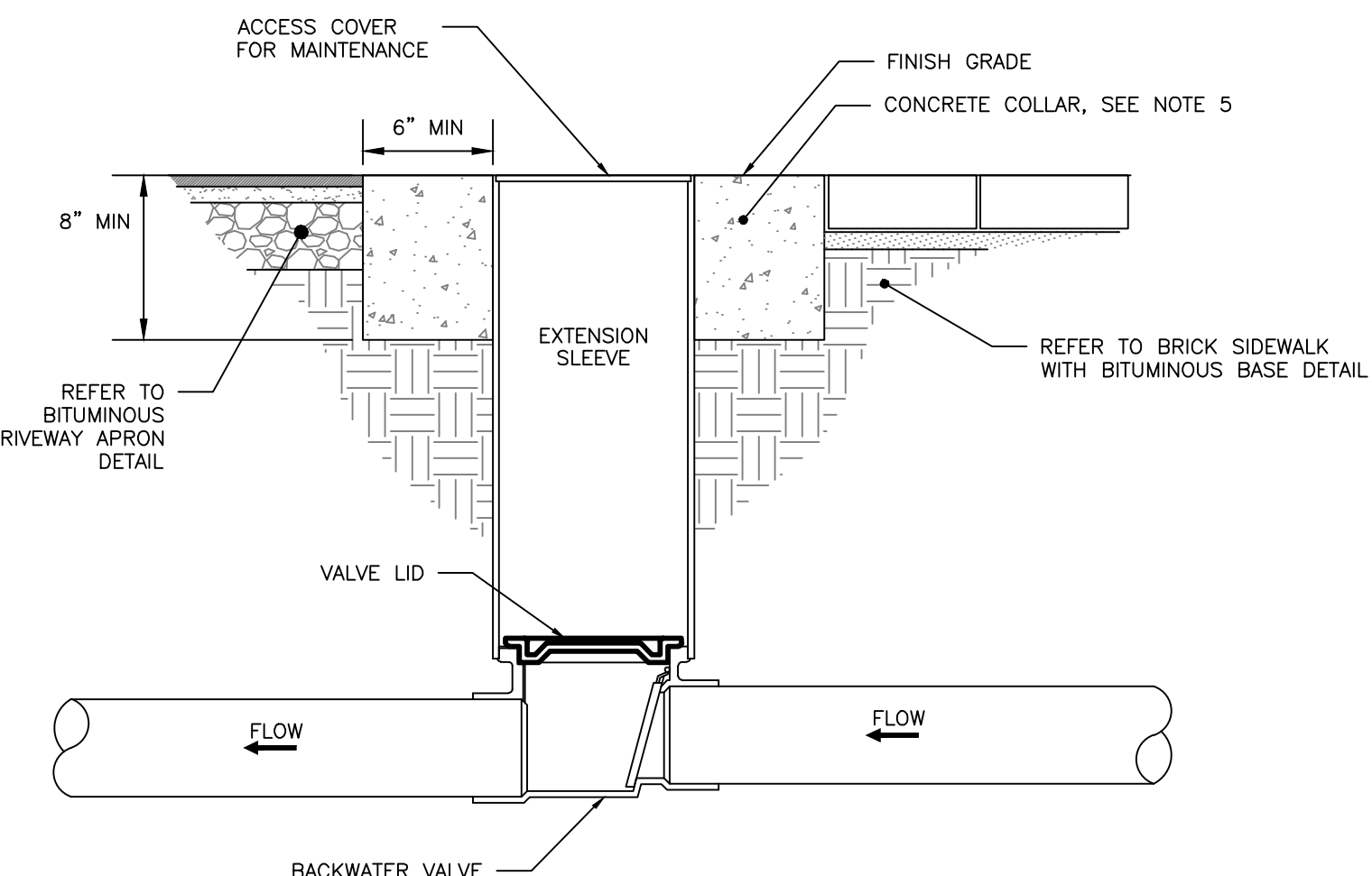


STORM DRAIN AND SEWER TYPICAL TRENCH SECTION  
NOT TO SCALE

SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP	MDOT 703.22 TYPE B LID BACKFILL	MDOT 703.22 TYPE B LID BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B LID BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

NOTES:

- BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
- STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION, COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
- INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
- MINIMUM COVER
  - 2'-0" - STORM DRAIN
  - 5'-0" - SEWER
- NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE.
- THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE TRENCHES OUTSIDE OF THE CITY OF PORTLAND ROW.
- THICKNESS AS NOTED BY SURFACE DETAILS.



BACKFLOW VALVE ASSEMBLY  
NOT TO SCALE

NOTES:

- BACKFLOW VALVE TO BE PROVIDED BY AGRI DRAIN CORPORATION OR AN APPROVED EQUAL.
- VALVE TO BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS AND COMPLY WITH RULES AND REGULATIONS AS OUTLINED IN SECTION 2 OF THE CITY OF PORTLAND TECHNICAL MANUAL.
- VALVE SHALL BE INSTALLED WITH A VALVE BOX AND COVER TO PROVIDE EASY ACCESS AND MAINTENANCE; VALVE COVER SHALL STATE "SEWER" ON LID FLUSH TO SURFACE. REFER TO VALVE & BOX COVER DETAIL FOR ADDITIONAL INFORMATION.
- CONCRETE COLLAR AT A MINIMUM 24-HOUR COMPRESSIVE STRENGTH OF 3,000 PSI.

FINAL APPLICATION  
NOT ISSUED FOR  
CONSTRUCTION