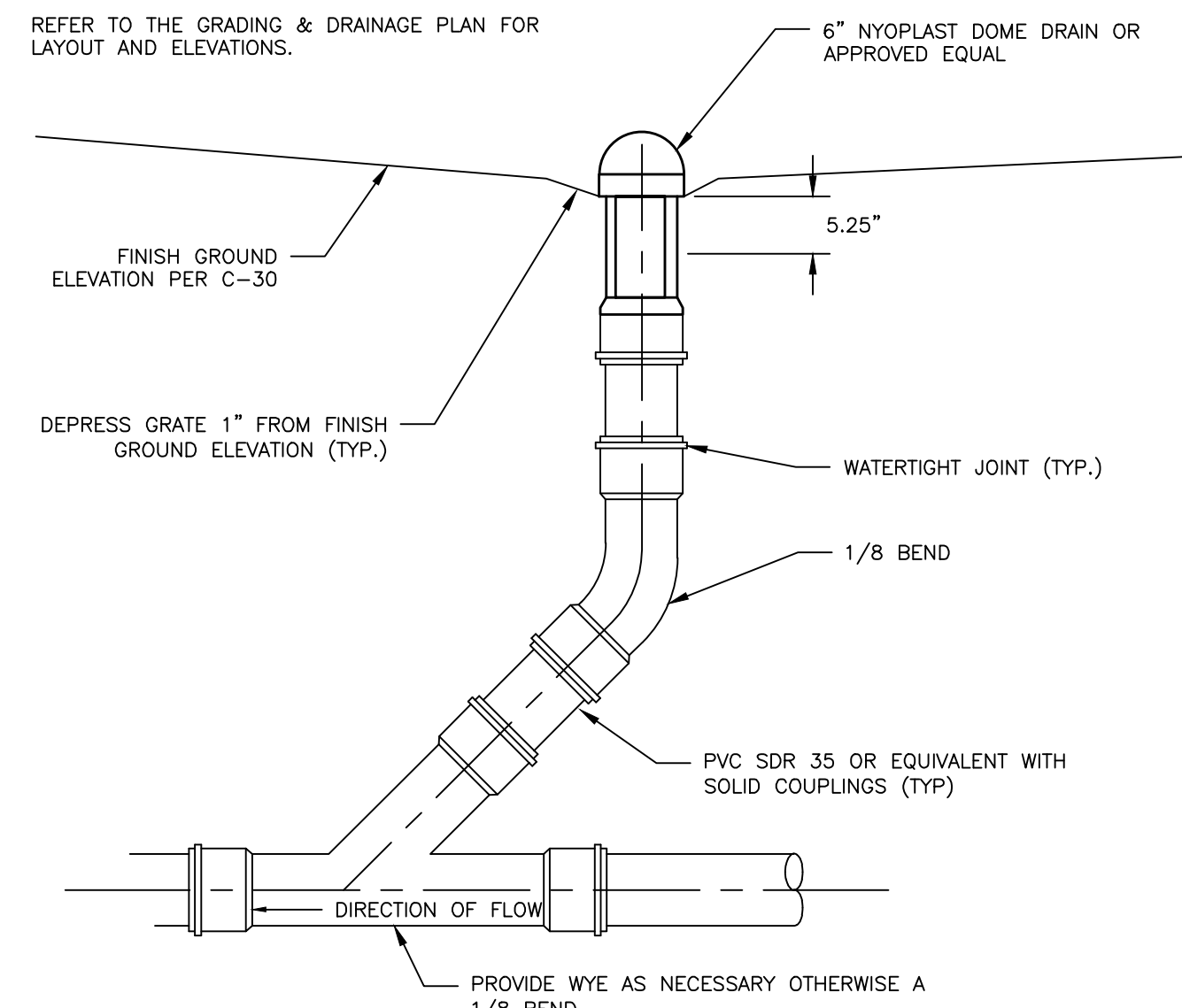


NOTE:

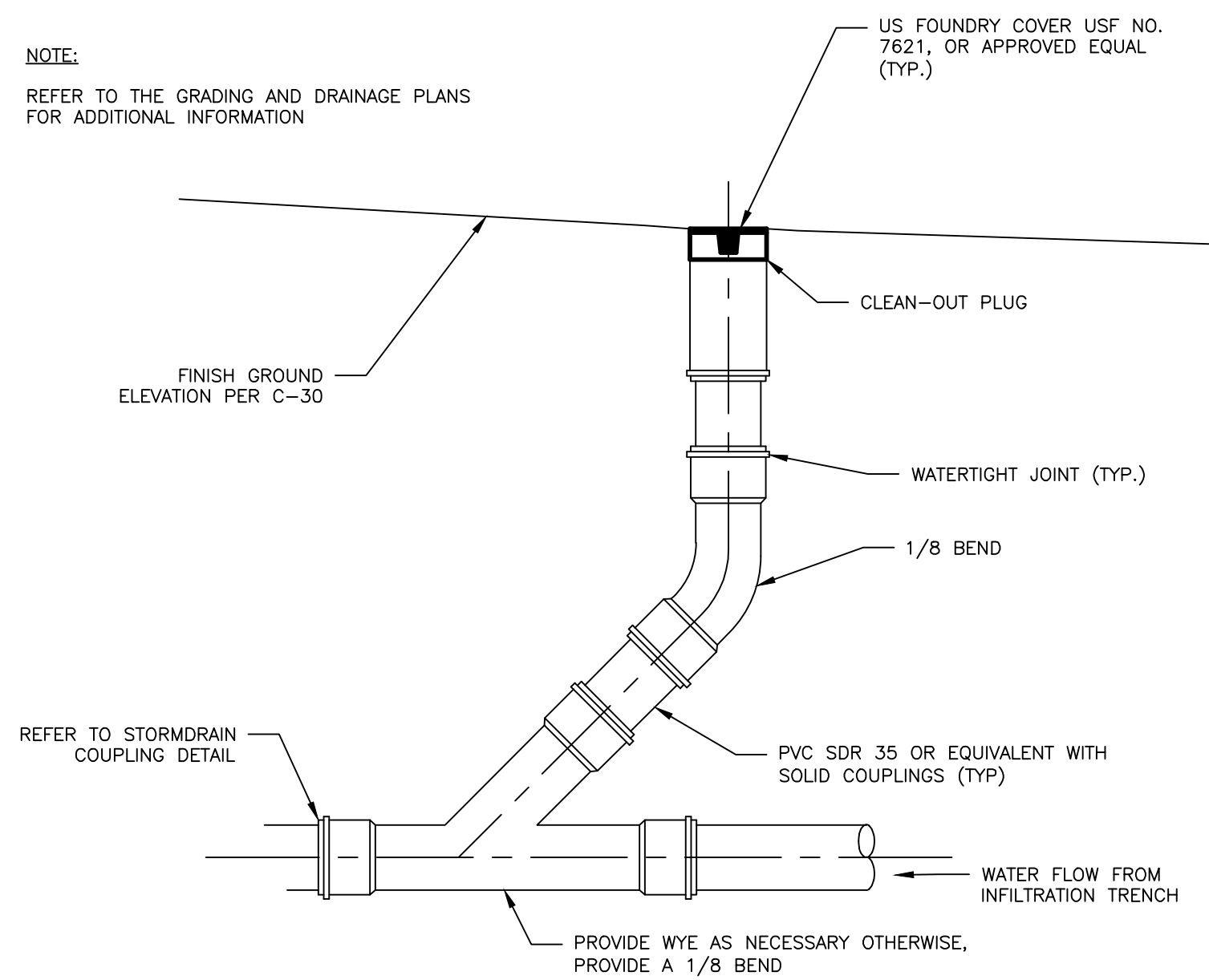
REFER TO THE GRADING & DRAINAGE PLAN FOR LAYOUT AND ELEVATIONS.



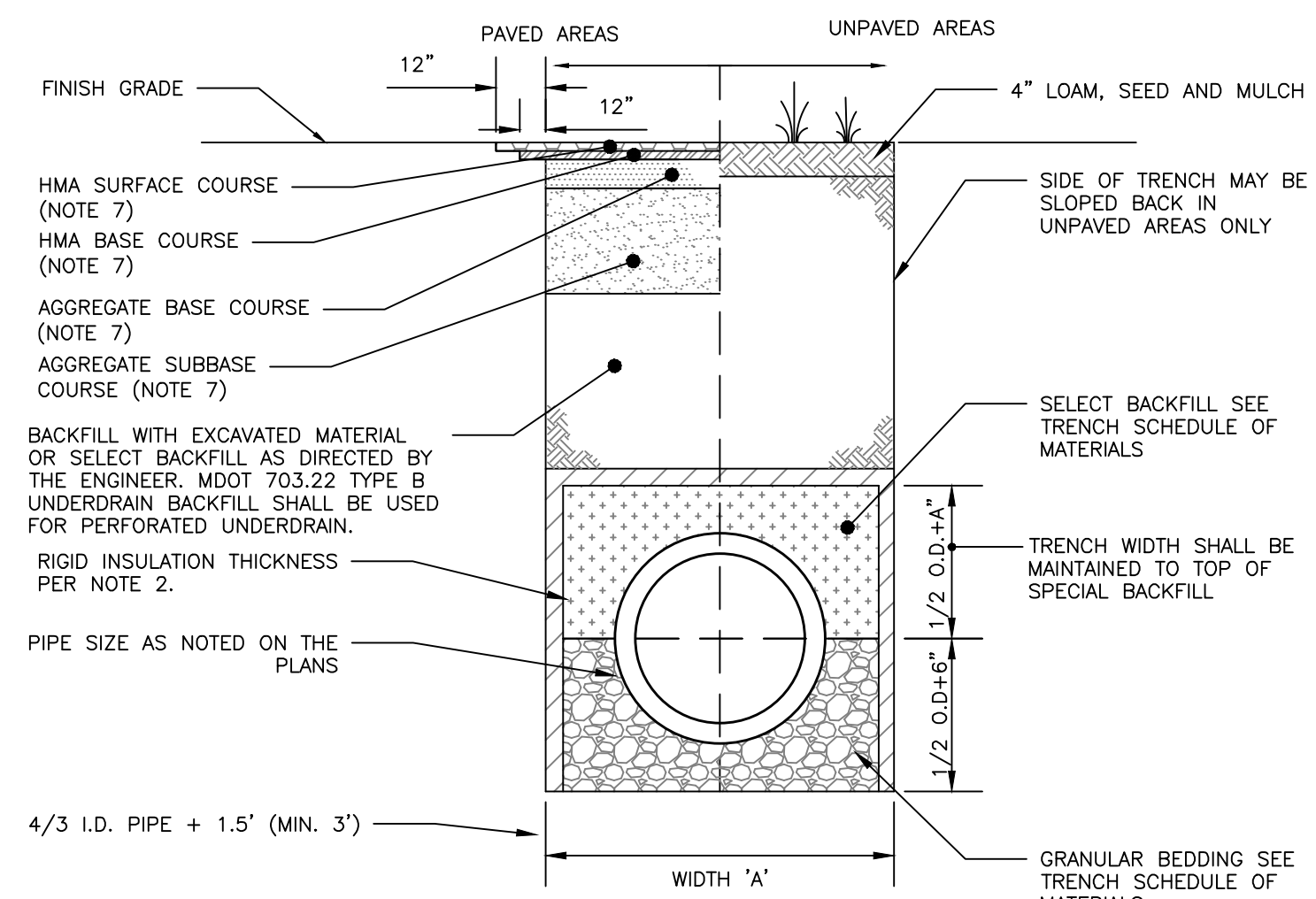
**OVERFLOW DRAIN DETAIL**  
NOT TO SCALE

NOTE:

REFER TO THE GRADING AND DRAINAGE PLANS FOR ADDITIONAL INFORMATION



**CLEANOUT DETAIL**  
NOT TO SCALE



- ALLOWABLE PIPE MATERIALS:**
- REINFORCED CONCRETE PIPE (RCP) MIN. STRENGTH OF CLASS III
  - PVC RING TYPE SEWER (SDR 35) OR EQUIVALENT, MIN PS-46 RATING
  - PVC RING TYPE SEWER PIPE MEETING ASTM F 789
  - DUCTILE IRON PIPE (DIP)
  - ADS N-12 HP TRIPLE-WALL MIN PS-46 RATING
  - ADS SANITITE HP MIN. PS-46

NOTES:

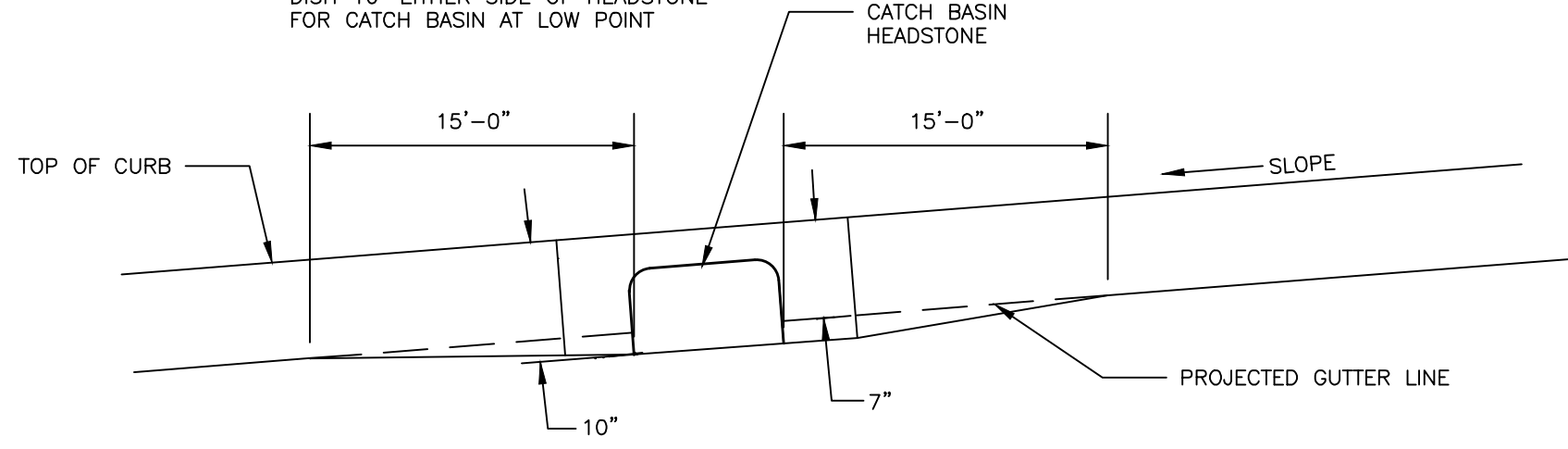
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION, COVER BETWEEN 3' AND 4' SHALL INCLUDE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

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

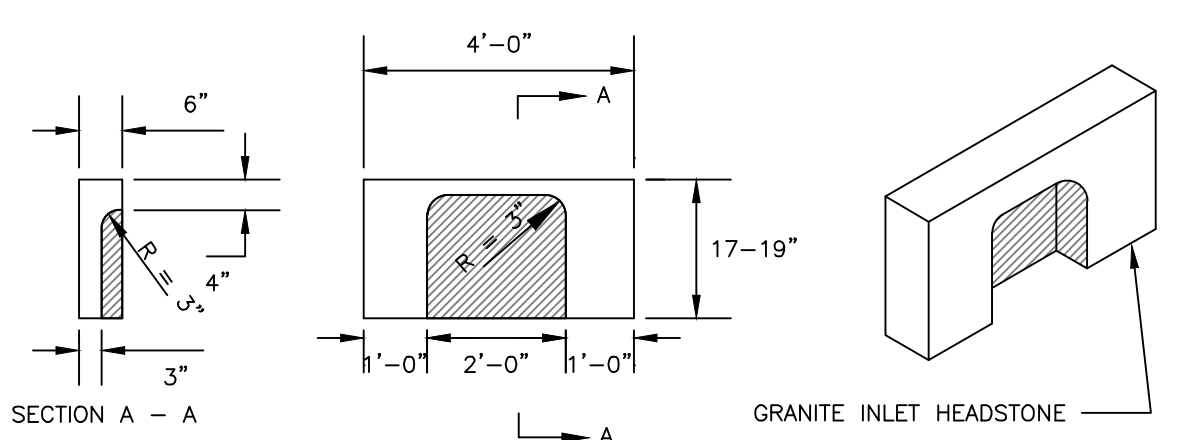
TRENCH WIDTH	
PIPE DIAMETER (IN)	MAX. TRENCH WIDTH, A (FT)
4	4
6	4
8	4
10	4
12	5
15	5
18	5
24	6
36	6
48	7

NOTE:

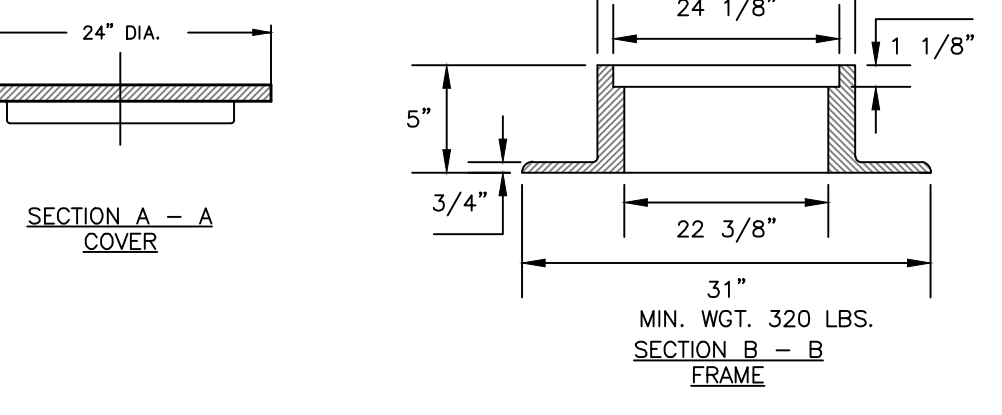
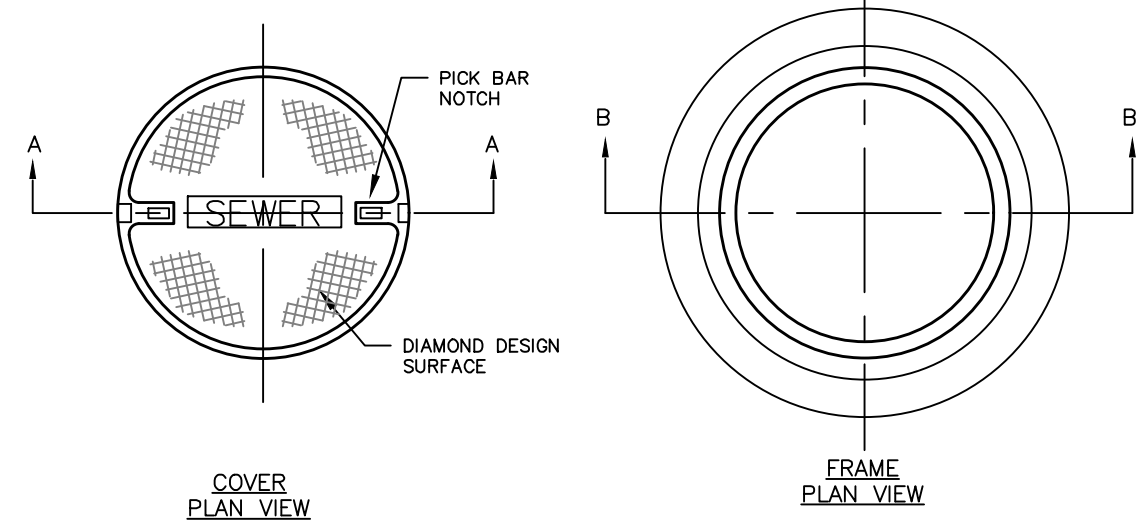
DISH 10" EITHER SIDE OF HEADSTONE FOR CATCH BASIN AT LOW POINT



**PAVEMENT GRADING ON SLOPES FOR CATCH BASIN AND INLET**  
NOT TO SCALE



**4' GRANITE HEADSTONE FOR CATCH BASIN INLET**  
NOT TO SCALE

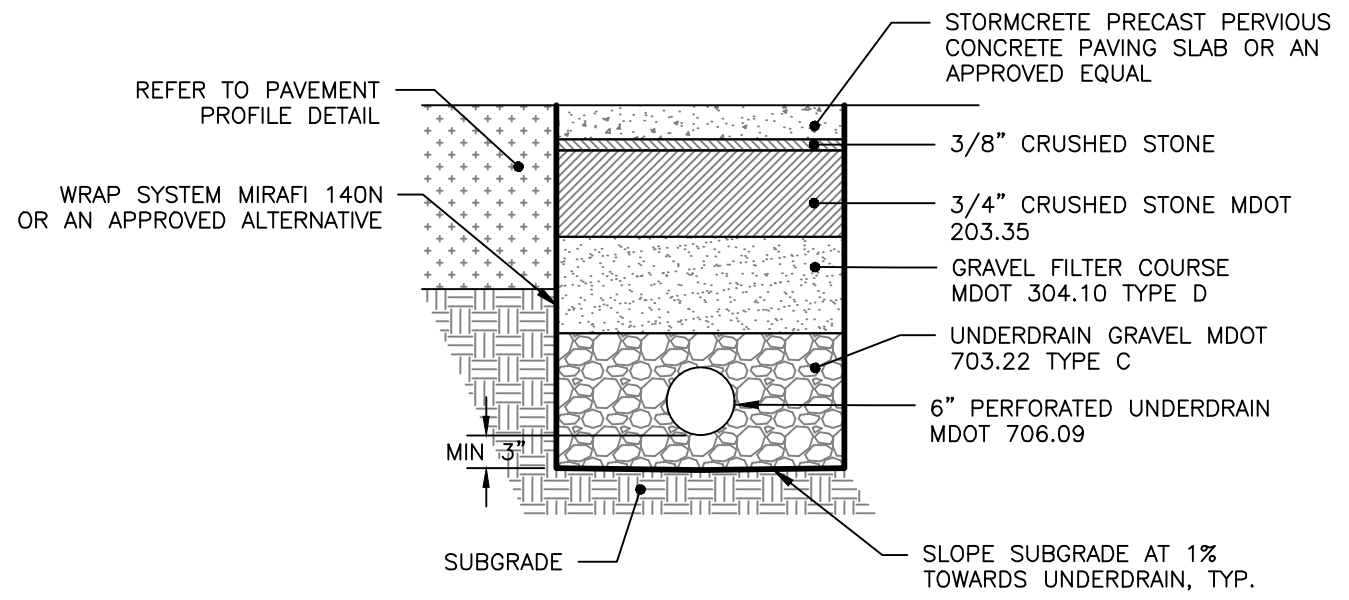


**CAST IRON MANHOLE COVER AND FRAME**  
NOT TO SCALE

NOTES:

1. ALL SANITARY AND STORMWATER/DRAIN MANHOLE COVERS SHALL BE 24" x 5".
2. ALL SANITARY MANHOLE COVERS AND SHALL HAVE "SEWER" CAST INTO THE COVER.
3. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
4. APPROVED MANHOLE FRAMES:
  - 4.1. EAST JORDAN = 1690Z
  - 4.2. NEENAH = R-1496
  - 4.3. OR APPROVED EQUAL
5. APPROVED MANHOLE COVERS:
  - 5.1. EAST JORDAN = 2160A
  - 5.2. NEENAH = R-1496
  - 5.3. OR APPROVED EQUAL

**STORM DRAIN AND SEWER TYPICAL TRENCH SECTION**  
NOT TO SCALE



NOTES:

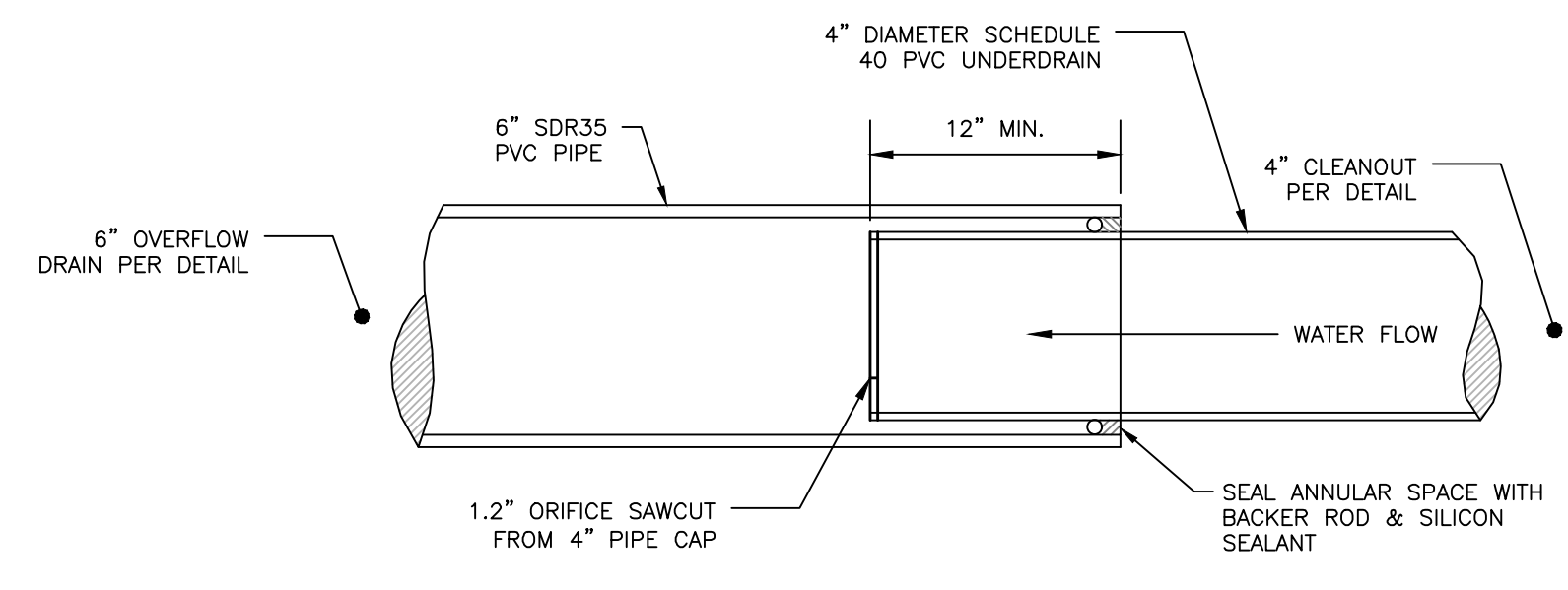
1. DO NOT COMPACT SUBGRADE.
2. PRECAST PAVING SLABS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND STANDARDS. SLABS TO BE REPLACED IF GREATER THAN 40% OF THE PERVIOUS SYSTEM SHOWS SIGNS OF CLOGGING.
3. COMPACT THE GRAVEL FILTER COURSE TO 95% MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D-1557. DO NOT OVER-COMPACT. THE INFILTRATION RATE SHALL BE DETERMINED BY ASTM D-3385 OR AN APPROVED ALTERNATE AT THE DISCRETION OF THE ENGINEER. THE INFILTRATION RATE SHALL BE NO LESS THAN 5-30 FT/DAY OR 50% OF THE HYDRAULIC CONDUCTIVITY (ASTM D-2434) AT 95% STANDARD PROCTOR COMPACTION. FILTER COURSE SHALL HAVE A HYDRAULIC CONDUCTIVITY OF 10-60 FT/DAY (0.0036 TO 0.022 CM/SEC) AT 95% COMPACTION.

THICKNESS OF LAYERS	
STANDARD	LAYERS
5"	PRECAST CONCRETE PANEL
2"	3/8" CRUSHED STONE PER MANUFACTURER'S SPECIFICATIONS
15"	3/4" CRUSHED STONE MDOT 203.35
18"	GRAVEL FILTER COURSE MDOT 304.10 TYPE D
12"	UNDERDRAIN GRAVEL MDOT 702.33 TYPE C

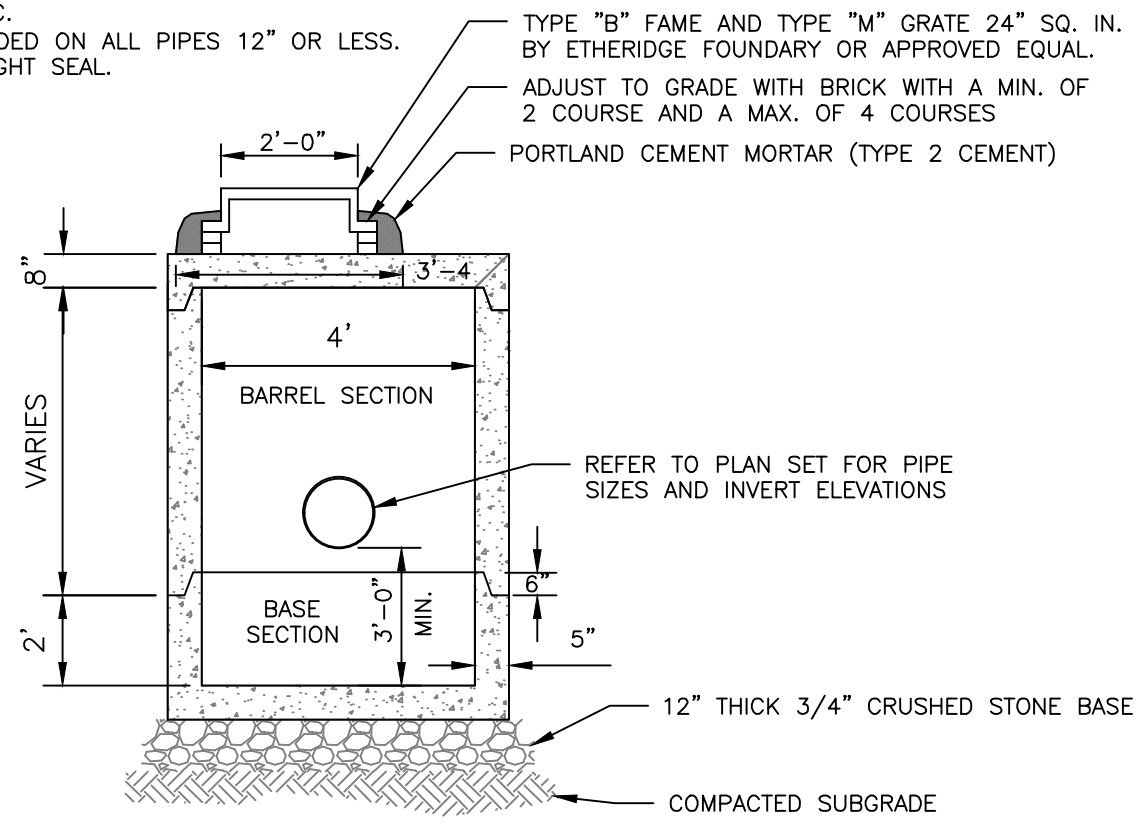
**PRECAST PERVIOUS PANELS PROFILE**  
NOT TO SCALE

NOTES:

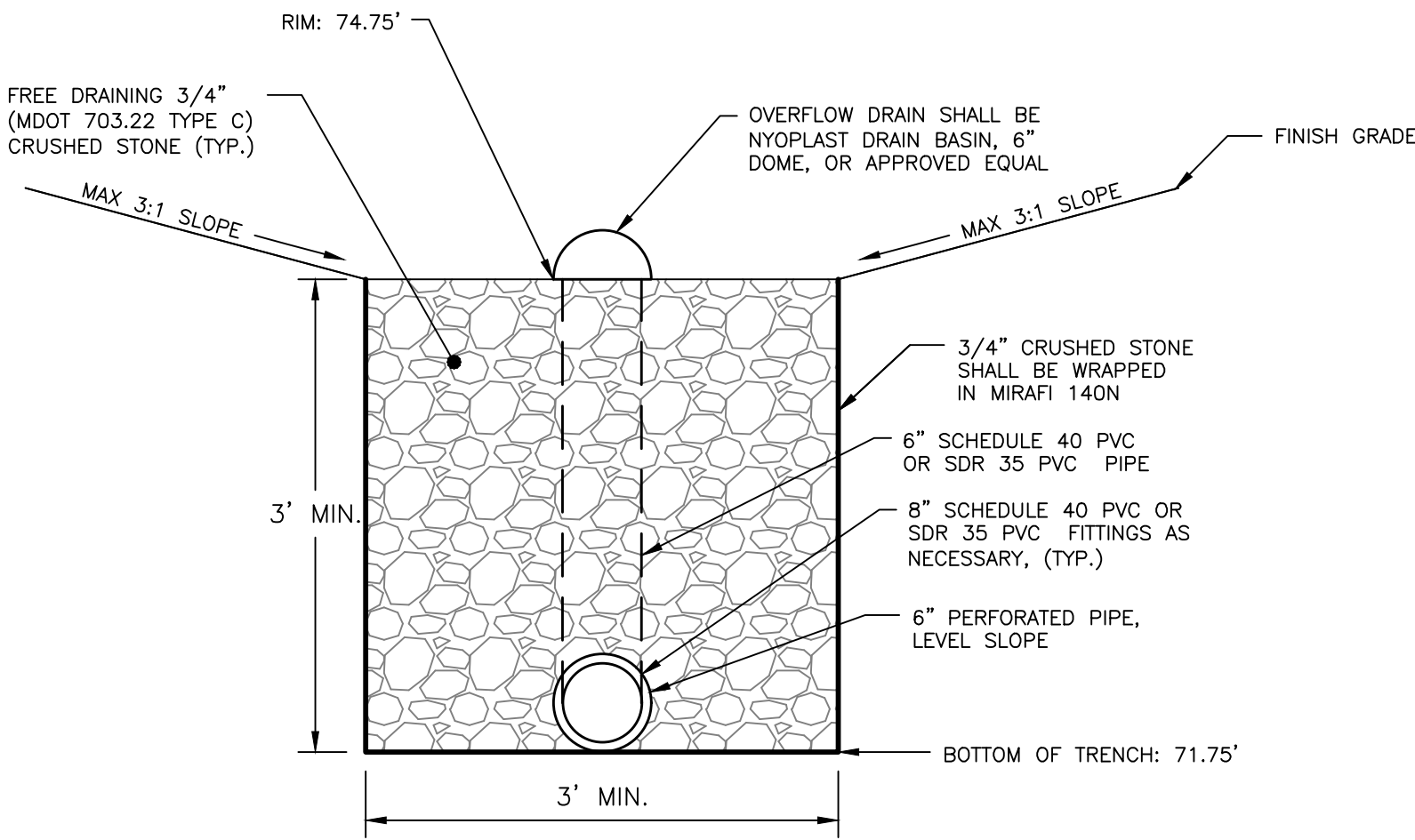
1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN. SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES 12" OR LESS.
8. ALL PIPES TO HAVE A WATERTIGHT SEAL.



**4" TO 6" STORMDRAIN COUPLING WITH ORIFICE**  
NOT TO SCALE



**4'-0" PRECAST CATCH BASIN WITH FLATTOP**  
NOT TO SCALE



**INFILTRATION TRENCH DETAIL**  
NOT TO SCALE

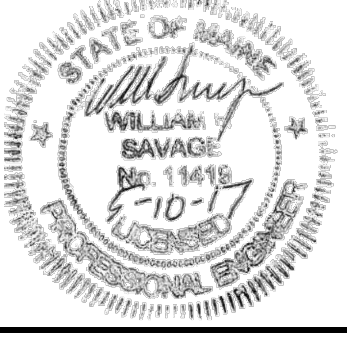
PERMIT LEVEL  
NOT ISSUED FOR  
CONSTRUCTION

ISSUED FOR	BY	DATE
FINAL APP	WHS	2/9/17
HYDROCAD UPDATE	WHS	2/22/17
COMMENT RESPONSE	WHS	2/27/17
BUILDING PERMIT	WHS	3/7/17

DRAWING NAME: **DRAINAGE DETAILS**  
PROJECT NAME: **WASHINGTON AVE. PARKING LOT REDEVELOPMENT**  
CLIENT: **CSH 123, LLC**  
75 WASHINGTON AVE, SUITE 2H, PORTLAND, MAINE 04101

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

FILE: 1076\_CIVIL  
JN: 1076  
SCALE: NTS  
DESIGNED BY: WHS  
DRAWN BY: QJD  
CHECKED BY: WHS



DRAWING NO. **C-42**