

REVISED	FHWA REGION	STATE	FEDERAL AID PROJECT	ROUTE	STATE PROJECT	SHEET NO.
	3	VA.				1

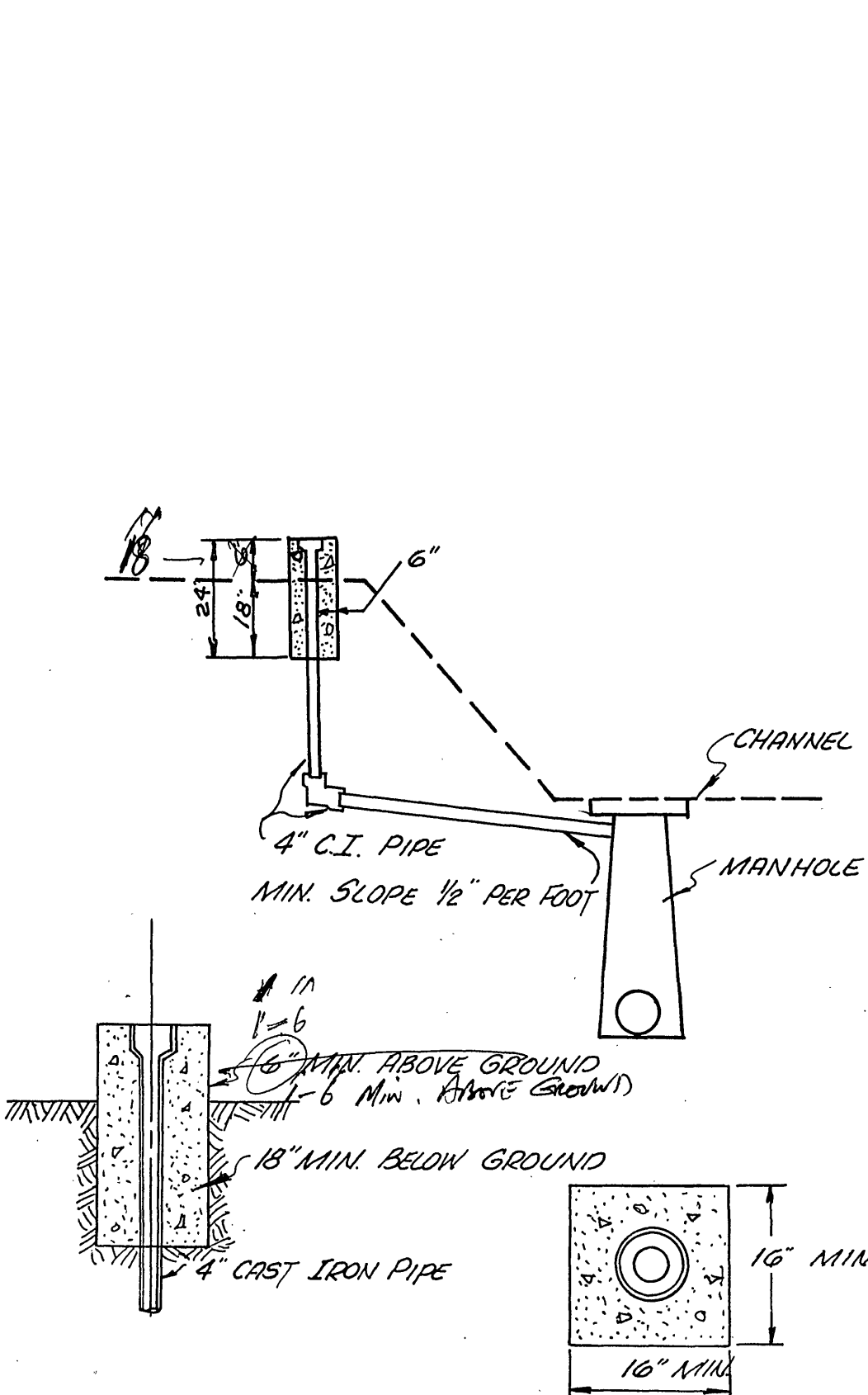
SANITARY SEWER WORK 100% CITY OF ROANOKE COST

SHEET NO.	SANITARY SEWER SUMMARY														
	1 8" SAN. SEW. PIPE	2 18" SAN. SEWER DROP CONNECTION	3 21" SAN. SEWER PIPE	4 15" SAN. SEWER DROP CONNECTION	5 15" SAN. SEWER PIPE	6 24" SAN. SEW. PIPE	7 16" STEEL ENCASEMENT PIPE	8 24" JACKED 30" STEEL ENCASEMENT PIPE	9 SAN. SEW. MANHOLE	10 SAN. SEW. FRAME & COVER	11 SAN. SEW. SEAL TIGHT FRAME & COVER	12 SAN. SEW. 16" DUCTILE IRON SAN. SEWER PIPE	13 CONCRETE COLLAR; CLASS A3	14 20" DUCT. IRON SEWER PIPE	15 4" CAST IRON VENT PIPE
	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.	EACH	EACH	L.F.	Cu. Yd.	L.F.	L.F.
2			250			430			38.45	2	2				
3	50	2.8	1597						28.90	1	4				10
4	160		1530				132		24.00	1	3				
5	68		1028						39.50	1	4				
6	175		1528	4.8	45		165		61.95	2	6			185	26
7					655			165	70.65	3	2	605			
8					365			75	53.54	3	2	830			
TOTAL	453	2.8	6533	4.8	1065.0	430	297	240	316.99	13	23	1435	12 Cu. Yds	185	42

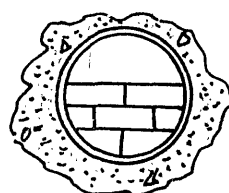
NOTE:

1. ASBESTOS CEMENT PIPE, CLASS AS SHOWN ON PLANS.
2. SMOOTH WALL STEEL PIPE, WALL THICKNESS 0.25", ASTM A139 GRADE "B" OR EQUIVALENT.*
3. SMOOTH WALL STEEL PIPE, WALL THICKNESS 0.50", ASTM A139 GRADE "B" OR EQUIVALENT.*
4. SMOOTH WALL STEEL PIPE, WALL THICKNESS 0.375", ASTM A139 GRADE "B" OR EQUIVALENT.*
5. STANDARD M.H.-2, ECCENTRIC TAPER UNIT, STANDARD I.S.-A BOTTOM.
6. CITY OF ROANOKE STANDARD SANITARY SEWER M.H. FRAME & COVER (SEE DETAIL - SHEET NO.1)
7. DUCTILE IRON PIPE, CLASS 50, WALL THICKNESS 0.34", PUSH-ON JOINT.
8. FRAME & COVER SHALL BE WATER TIGHT & EQUAL TO NEENAH, R-1755 F SERIES & SHALL BE USED WHEN M.H. IS LOCATED IN PROP. CHANNEL.
9. CONCRETE SLABS FOR SEAL TIGHT M.H. TO BE USED IN UNPAVED CHANNEL ONLY (SEE DETAIL - SHEET NO.1)
10. DUCTILE IRON PIPE, CLASS 50, WALL THICKNESS 0.36", PUSH-ON JOINT.
11. VENTILATION PIPE; 4" CAST IRON, STANDARD WEIGHT.

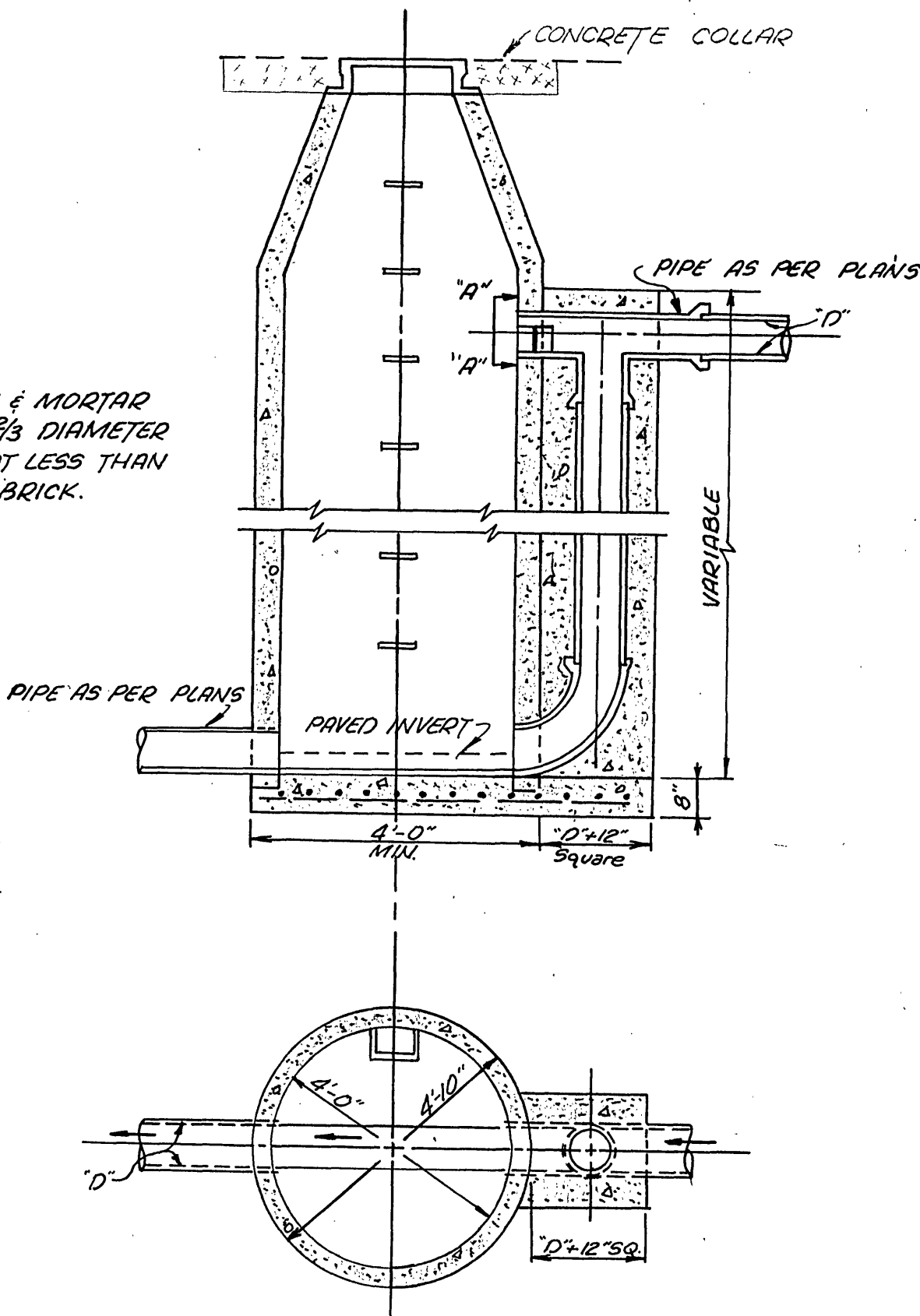
* - ALL STEEL ENCASEMENT PIPE TO BE BUTT-WELDED JOINT.



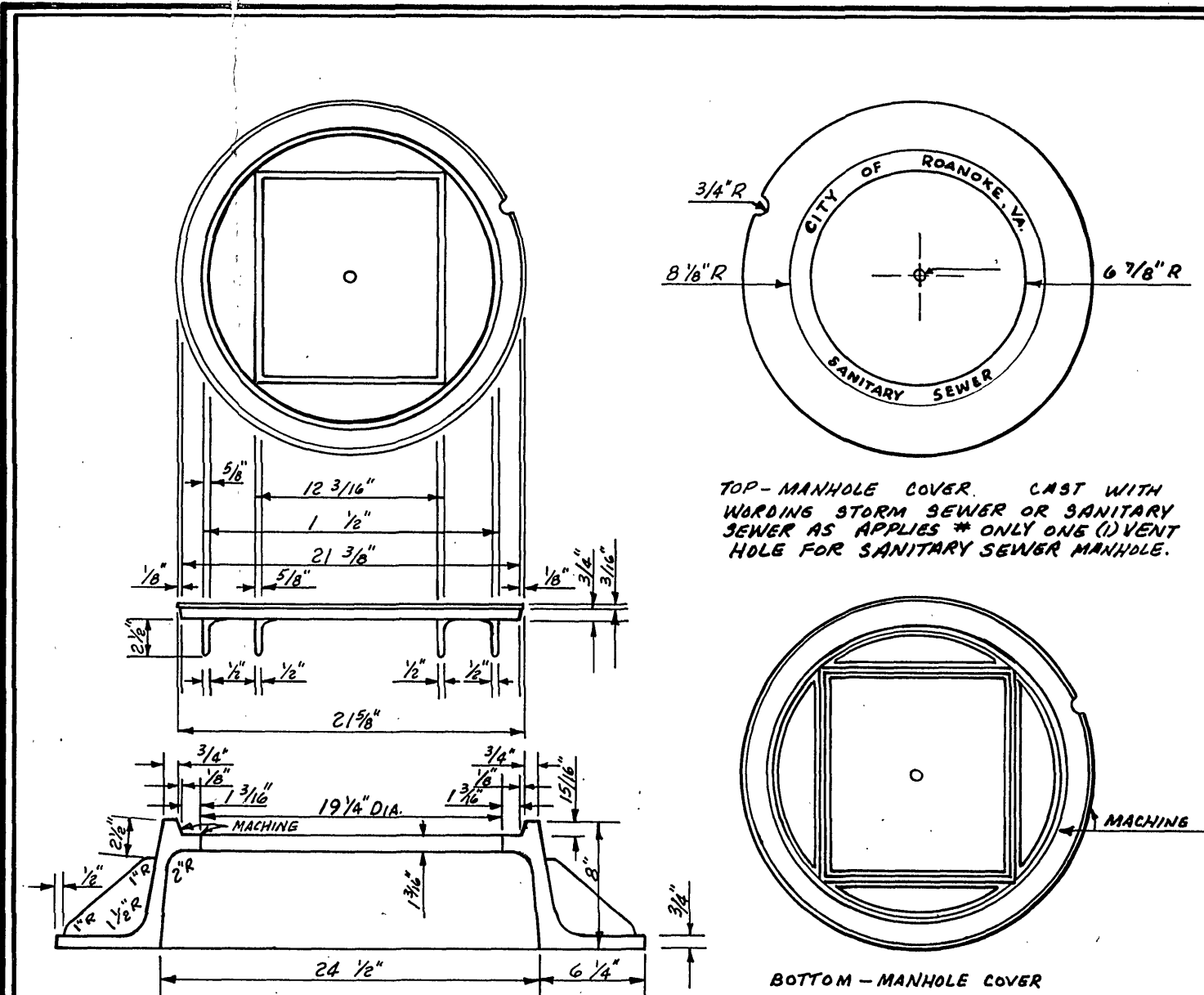
VENT PIPE DETAIL FOR M.H. 8 & 16.



SECTION "A-A"
DAM WITH BRICK & MORTAR NOT LESS THAN 3/8" DIAMETER OF PIPE. AND NOT LESS THAN TWO (2) ROWS OF BRICK.



DROP M.H. CONNECTION DETAIL



ALL CASTINGS SHALL BE COMMERCIALY MACHINEABLE THE FOLLOWING PORTIONS OF COVER SEATS AND COVERS SHALL BE MACHINED TO THE FOLLOWING DIMENSIONS:

FRAME - HORIZONTAL AND VERTICAL SURFACES OF COVER SEAT COVER - UNDER SURFACE WHICH RESETS UPON THE COVER SEAT AND THE VERTICAL SURFACE WHICH FITS INTO THE COVER SEAT.

AFTER MACHINING IT SHALL NOT BE POSSIBLE TO ROCK ANY COVER AFTER IT HAS BEEN SEATED IN ANY POSITION IN ITS ASSOCIATED FRAME.

AFTER ANY COVER HAS BEEN SEATED IN ANY POSITION IN ITS ASSOCIATED FRAME, IT IS DESIRED THAT THE EDGE OF THE COVER BE FLUSH WITH THE UPPER SURFACE OF THE FRAME. IN THOSE CASES WHERE SUCH ALIGNMENT IS NOT OBTAINED, THE DIFFERENCE IN LEVEL BETWEEN ANY COVER AND THE FRAME SHALL NOT EXCEED 1/8" AT ANY POINT AND SHALL NOT EXCEED 1/4" OVER A TOTAL OF MORE THAN ONE-QUARTER OF THE CIRCUMFERENCE.

IT SHALL BE POSSIBLE TO PLACE EACH COVER IN ANY POSITION IN ITS ASSOCIATED FRAME WITHOUT HAVING MORE THAN 1/8" SIDE PLAY IN ANY DIRECTION BETWEEN THE COVER AND THE FRAME.

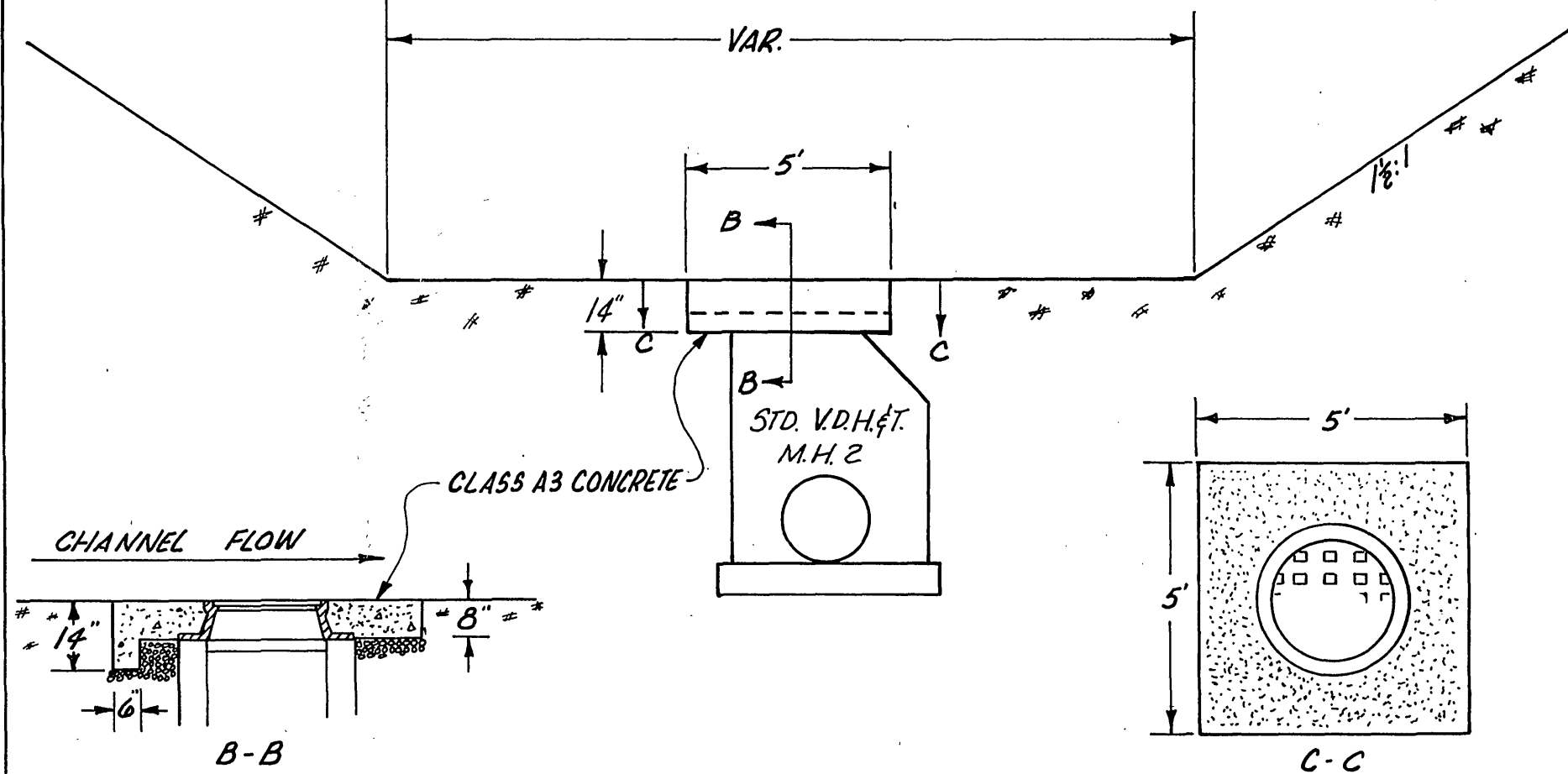
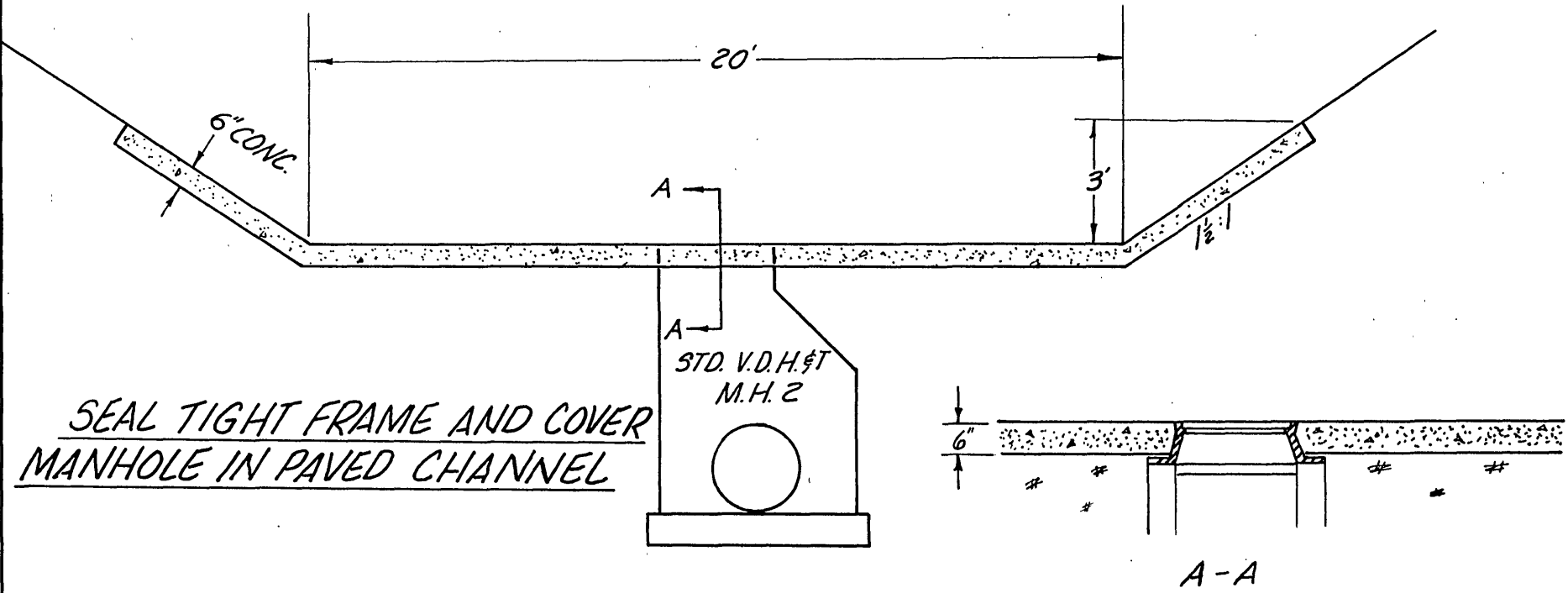
ALL CAST IRON SHALL CONFORM TO A.S.T.M. A-48-36.

DIMENSION "D" TO BE 6 1/2" IF COVER TO FIT BRICK MANHOLE.

DIMENSION "D" TO BE 4 1/2" IF COVER TO FIT PRE-CAST MANHOLE.

AFTER MACHINING @ FACTORY, M.H. FRAME & COVER ARE TO REMAIN INTACT THRU CONSTRUCTION.

OFFICE OF THE CITY ENGINEER - CITY OF ROANOKE, VIRGINIA		STANDARD		PLAN NO.
APPROVED <i>James J. Brady</i>	DATE 4/25/77	CITY OF ROANOKE	SANITARY SEWER	
REVISIONS: 2-12-70, 3-16-70, 8-26-75		MANHOLE FRAME & COVER		5B



PIPE SIZE	NUMBER OF SKIDS PER PIPE END	SKID ARRANGEMENTS FOR VARIOUS PIPE SIZES
12" AND UNDER	4	78" SKID SPACING - 60" SKID SPACING - 12" UNDER-6 SKIDS
14"-16"	5	14" 16" 5 SKIDS - 18" 24" 6 SKIDS - 30" OVER-8 SKIDS
18"-24"	6	
30" AND OVER	8	

SKIDS:

SKIDS SHOULD BE 24" TO 30" LONG AND HIGH ENOUGH TO ALLOW FOR CLEARANCE BETWEEN THE COUPLINGS AND THE CASING BOTTOM. THE LEADING OR FORWARD ENDS OF THE SKIDS SHOULD BE ROUNDED AS SHOWN FOR "A" IN THE ABOVE DIAGRAM. THE CENTER OF THE SKIDS (LENGTHWISE) SHOULD BE LOCATED AT POINTS ABOUT 1/8" THE PIPE LENGTH FROM EACH END. NOTCH THE SKIDS AS SHOWN FOR THE STRAPPING OR WIRE TO CONTROL THE STRAPPING OPERATION AND TO PREVENT UNDE MOVEMENT OF THE STRAPS. FASTEN SKIDS SECURELY TO PIPE WITH HEAVY STEEL STRAPPING OR WIRE. THE SPACING ARRANGEMENT OF THE SKIDS SHOULD BE ACCORDING TO DIAGRAMS SHOWN ABOVE. SKID ATTACHMENTS MUST BE SECURE TO PREVENT MOVEMENT OF THE SKIDS ALONG THE PIPE BARREL DURING THE PULLING OR PUSHING OPERATIONS. SKID SHOULD BE PROVIDED FOR BOTH ENDS OF EACH PIPE LENGTH.

PLAN NO.	PROJECT	FILE NO.	SHEET NO.
A			1 of 10