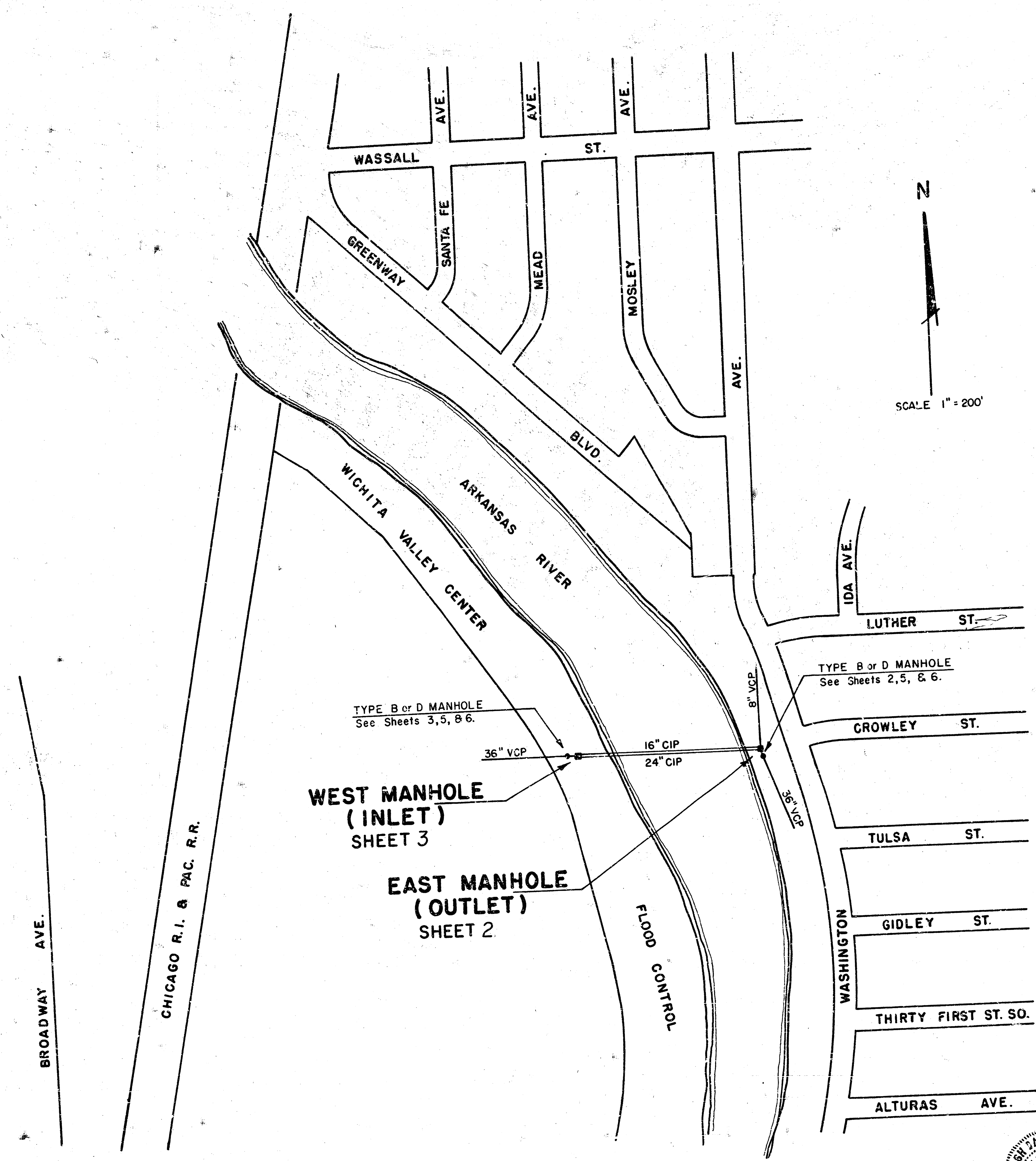
RECONSTRUCTION OF TWO SIPHON MANHOLES ON SANITARY SEWER NO. 22

CROSSING THE ARKANSAS RIVER AT TULSA & WASHINGTON

PROJ. NO. 468-76-245-81229-000-000-001

CITY OF WICHITA
DEPARTMENT OF ENGINEERING

R. W. BRUGGEMAN DIRECTOR OF ENGINEERING / CITY ENGINEER



GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS TO COMPLY WITH CITY OF WICHITA SPECIFICATIONS AND STANDARDS.
2. ALL ELEVATIONS SHOWN ARE CITY OF WICHITA DATUM (USGS-1187.4 = CITY DATUM).
3. AT LEAST 48 HOURS PRIOR TO BEGINNING EXCAVATION (EXCLUDING WEEKENDS AND HOLIDAYS), THE CONTRACTOR SHALL CONTACT THE UTILITY LOCATION SERVICE "KAN-U-DIG-IT" AT (316) 267-2889 TO REQUEST THE FOLLOWING UTILITY COMPANIES TO LOCATE ANY EXISTING LINES WITHIN THE PROJECT AREA: GAS SERVICE COMPANY, KG&E, SOUTHWESTERN BELL TELEPHONE COMPANY, CABLEVISION AND THE WICHITA WATER DEPARTMENT.
4. EXCESS EXCAVATED MATERIAL AND OTHER DEBRIS, INCLUDING ANY TREES REMOVED, TREE TRIMMINGS, AND FENCES REMOVED SHALL BE WASTED ON SITES TO BE PROVIDED BY THE CONTRACTOR AS APPROVED BY THE ENGINEER AND SHALL BE CONSIDERED AS INCIDENTAL TO THE CONTRACT PRICE BID FOR SITE CLEARANCE AND SITE RESTORATION.
5. THE CONTRACTOR SHALL RESTORE ALL DITCHES, SWALES, ROAD SHOULDERS, ENTRANCES AND BANK LINES TO THEIR ORIGINAL SLOPES. WHERE EXISTING ENTRANCE PIPE, DRAINAGE PIPE, SIGNS, FENCES, IMPROVED WALKWAYS, ETC., CONFLICT WITH THE PROPOSED WORK HEREIN, THEY SHALL BE REMOVED AND CONSIDERED AS INCIDENTAL ITEMS TO THE CONTRACT PRICE BID FOR SITE CLEARANCE AND RESTORATION. THE REPLACE-MENT OF ALL THE AFOREMENTIONED ITEMS SHALL BE CONSIDERED AS INCIDENTAL ITEMS TO THE CONTRACT PRICE BID FOR SITE CLEARANCE AND SITE RESOTRATION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS FLOW OF SEWAGE THROUGH CONSTRUCTION. CONTRACTOR'S PROPOSED METHOD FOR MAINTAINING SEWAGE FLOW SHALL BE APPROVED BY THE ENGINEER. CONTRACTOR MAY INSTALL ADDITIONAL MANHOLES, OPEN FLUMES, OR PIPES TO FACILITATE MAINTAINING CONTINUOUS SEWAGE FLOW. TYPE AND LOCATION OF EXTRA MANHOLES, OPEN FLUMES, OR OTHER TECHNIQUES TO FACILITATE HANDLING OF SEWAGE SHALL BE AS APPROVED BY THE ENGINEER. COST OF MAINTAINING FLOW OF SEWAGE THROUGH CONSTRUCTION WILL NOT BE PAID FOR DIRECTLY AND THIS COST SHALL BE CONSIDERED AS INCIDENTAL TO THE CONTRACT PRICE BID FOR REINFORCED CONCRETE MANHOLE (INLET OR OUTLET). ALL ADDITIONAL COSTS DURING CONSTRUCTION BY THE CONTRACTOR TO FACILITATE HANDLING SEWAGE THROUGH CON-STRUCTION SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT PRICE BID FOR REIN-FORCED CONCRETE MANHOLE (INLET OR OUTLET).
7. ALL STEEL REINFORCEMENT SHALL BE WELDED AND/OR TIED SECURELY TO ADJOINING AND INTERSECTING STEEL REINFORCEMENT.
8. 24" STUB SHALL BE PLUGGED AFTER FLOW HAS BEEN ESTABLISHED THROUGH REIN-FORCED CONCRETE MANHOLE. COST TO PLUG 24" STUB SHALL BE INCLUDED WITH "MA[illegible]G FLOW OF SEWAGE THROUGH CONSTRUCTION".
9. BALL AND/OR MECHAN[illegible] INSTALLATION ON 16" AND 24" PIPE SHALL BE CON-SIDERED INCIDENTAL [illegible] CONTRACT PRICE BID FOR "24" P.L.D.I.P. AND 16" P.L.D.I.P. SANITARY SEWER WITH FLANGES". DUCTILE IRON BALL JOINT PIPE SHALL BE AMERICAN FLEX-LOK OR APPROVED EQUIVALENT.

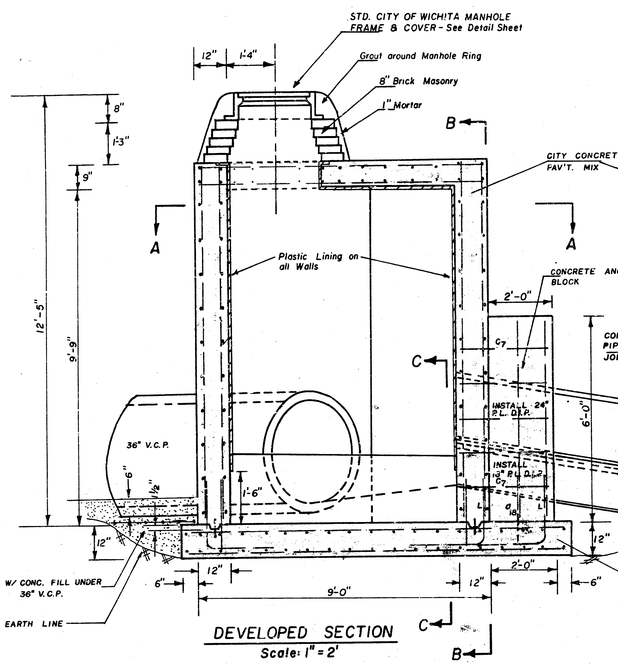
YASH SARYASHAI DESAI
LICENSED
8217
KANSAS
PROFESSIONAL ENGINEER

P. L. REINFORCED CONCRETE MANHOLE — EAST : OUTLET

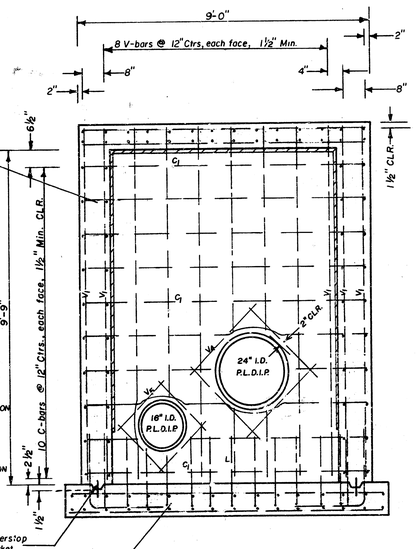
REBAR SCHEDULE

Bar	Shape & Size	No. & Length	Weight
a_1	#5	20 @ 11' 8"	243.44
a_2	#5	2 @ 11' 3"	23.47
a_3	#5	2 @ 10' 4"	21.55
a_4	#5	2 @ 9' 4"	19.46
a_5	#5	2 @ 8' 4"	17.38
a_6	#5	2 @ 7' 5"	15.48
a_7	#5	4 @ 6' 6"	27.12
a_8	#5	20 @ 9' 8"	201.72
a_9	#5	2 @ 9' 6"	19.82
a_{10}	#5	2 @ 9' 1"	18.94
a_{11}	#5	2 @ 8' 7"	17.90
a_{12}	#5	2 @ 8' 2"	17.04
a_{13}	#5	2 @ 7' 9"	16.17
a_{14}	#5	2 @ 7' 3"	15.12
a_{15}	#5	2 @ 6' 9"	14.08
a_{16}	#5	2 @ 6' 3"	13.04
a_{17}	#5	2 @ 6' 0"	12.52
a_{18}	#5	50 @ 2' 0"	104.30
L	2' / 2'	#5 — 50 @ 4' 0"	208.60
C_1	#5	40 @ 8' 8"	361.71
C_2	#5	20 @ 6' 1"	126.83
C_3	#5	10 @ 5'10"	60.81
C_4	#5	10 @ 5' 4"	55.58
C_5	#5	10 @ 3'10"	39.95
C_6	#5	10 @ 3' 7"	37.34
C_7	2'9" / 8'0" — #6	5 @ 13' 6"	102.13
H_1	#5	22 @ 8' 8"	198.94
H_2	#5	2 @ 8' 6"	17.73
H_3	#5	2 @ 8' 2"	17.04
H_4	#5	2 @ 4' 3"	8.86
H_5	#5	2 @ 3' 6"	7.30
H_6	#5	10 @ 3' 0"	31.29
H_7	#5	2 @ 2' 9"	5.74
H_8	#5	4 @ 5'10"	24.32
H_9	#5	2 @ 5' 4"	11.12
H_{10}	#5	4 @ 4'10"	20.15
H_{11}	#5	2 @ 4'11"	10.26
H_{12}	#5	2 @ 5' 6"	11.47
H_{13}	#5	2 @ 7' 9"	16.17
H_{14}	#5	2 @ 6' 9"	14.08
H_{15}	#5	2 @ 5' 9"	11.99
H_{16}	#5	2 @ 3' 9"	7.99
V_1	#5	63 @ 10' 2"	668.26
V_2	#6	11 @ 5' 8"	93.68
V_3	#5	8 @ 3'10"	31.96
V_4	#5	8 @ 3' 0"	25.03
V_5	#5	8 @ 2' 0"	16.69

Total Rebar 3061.41 lbs.
Concrete = 21.00 Cu. Yds.

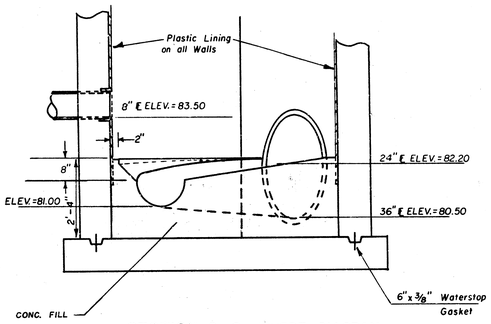


DEVELOPED SECTION
Scale: 1" = 2'

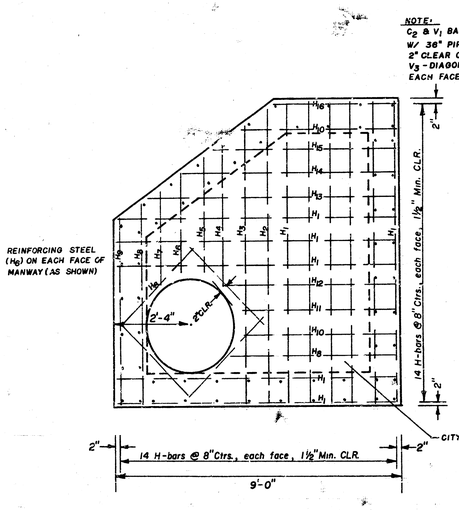


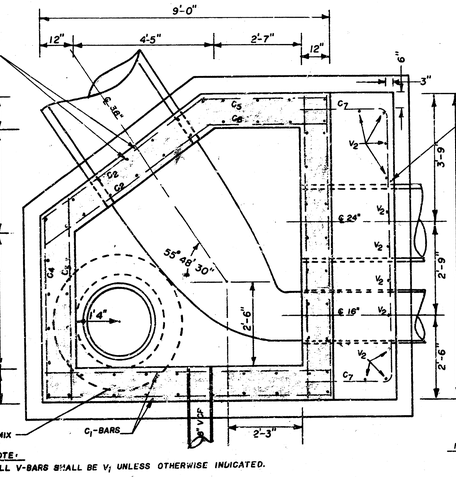
SECTION B-B REINFORCEMENT
Scale: 1" = 2'

NOTE:
1.) C_6 & V_1 BARS INTERSECTING W/ 24" & 16" PIPE SHALL BE CUT 2" CLEAR OF PIPE.
2.) BEND BARS OUT OF LINE TO MISS PIPES (AS SHOWN).
3.) REINFORCING STEEL AT EACH FACE OF PIPES — V_4 24", & V_5 16".

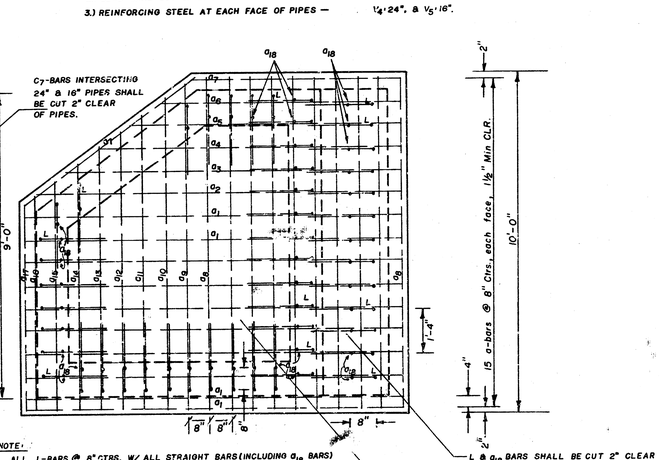


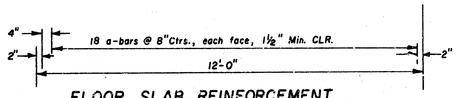
SECTION C-C INVERT DIAGRAM
Scale: 1" = 2'





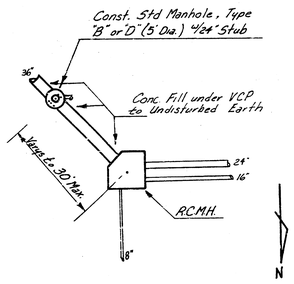
SECTION A-A
Scale: 1"=2'





FLOOR SLAB REINFORCEMENT
Scale: 1"=2'

TOP SLAB REINFORCEMENT
Scale: 1"=2'



LOCATION OF BYPASS MANHOLE
NO SCALE

PROJECT DESCRIPTION
RECONSTRUCT TWO SIPHON MANHOLES ON S.S. NO. 22 CROSSING THE ARKANSAS RIVER, at Tulsa & Washington

PROJECT NUMBER
468-76-245-81229-000-000-001

BOOK NO.	APPROVED BY	DATE 12 / 82
DRAWN BY JL		REVISED

CITY OF WICHITA
DEPARTMENT OF ENGINEERING
DIRECTOR OF ENG./CITY ENGINEER
R. W. BRUGGEMAN
SCALE 1" = 2'

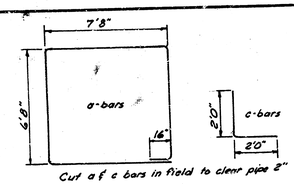
2/16

P. L. REINFORCED CONCRETE MANHOLE —— WEST : INLET

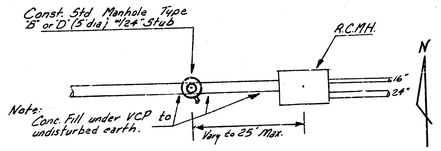
BAR SCHEDULE

BAR	LENGTH	NUMBER	SHAPE	lbs.
a	30'0"	10	□	375
c	4'0"	36	L	150
d_1	3'0"	8	——	25
d_2	2'4"	6	——	14
d_3	3'4"	10	——	37
d_4	4'4"	4	——	19
e	9'8"	26	——	262
f	8'8"	30	——	271
g_1	7'8"	26	——	208
g_2	3'11"	6	——	25
g_3	1'4"	4	——	6
g_4	2'3"	4	——	9
h_1	6'8"	20	——	139
h_2	2'11"	6	——	18
h_3	8'8"	10	——	90
v_1	9'1"	48	——	455
$v_{1/2}$	4'10"	5	——	25
v_2	2'9"	2	——	6
$v_{1/2}$	2'0"	2	——	4
v_3	6'3"	6	——	39
v_4	4'9"	6	——	30
Total (16.0 cu. yd conc.				2147

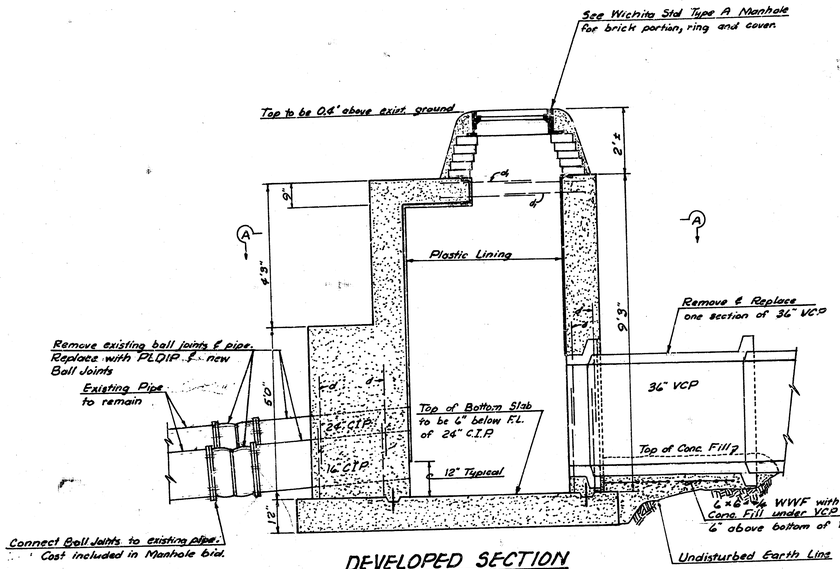
All bars are #5
All bars to clear all faces, pipes & opening by 1½ min.



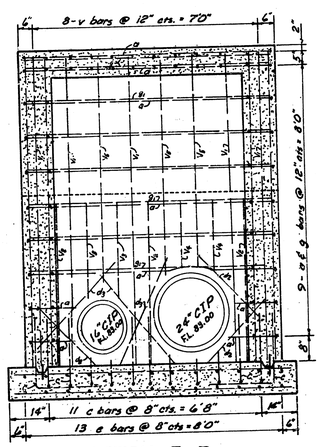
BAR DETAIL
No Scale



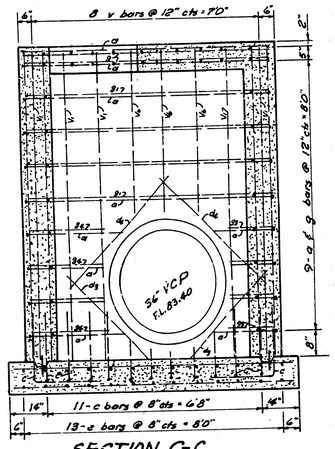
LOCATION OF BYPASS MANHOLE
No Scale



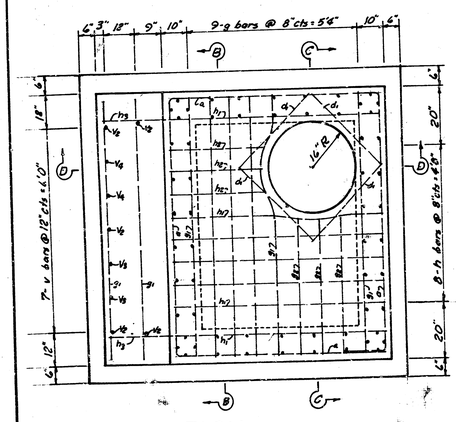
DEVELOPED SECTION
Scale: ½"=1'0"



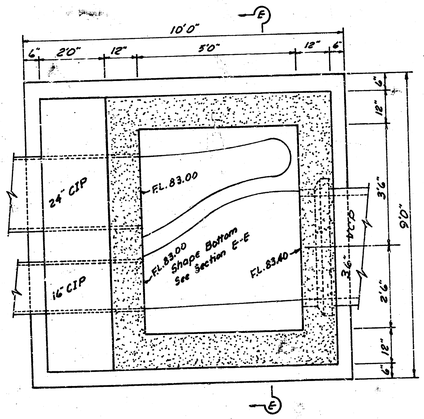
SECTION B-B
Scale: ½"=1'0"



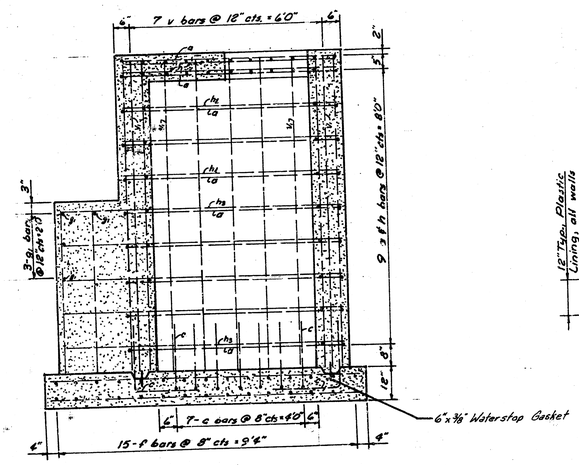
SECTION C-C
Scale: ½"=1'0"



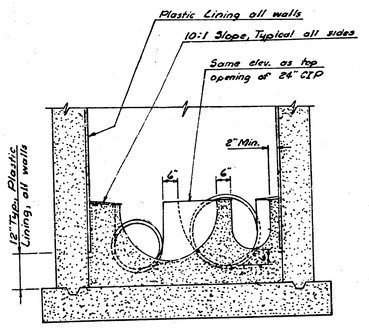
PLAN (WITHOUT STACK)
Scale: ½"=1'0"



SECTION A-A
Scale: ½"=1'0"



SECTION D-D
Scale: ½"=1'0"



SECTION E-E
SCALE: ½"=1'0"

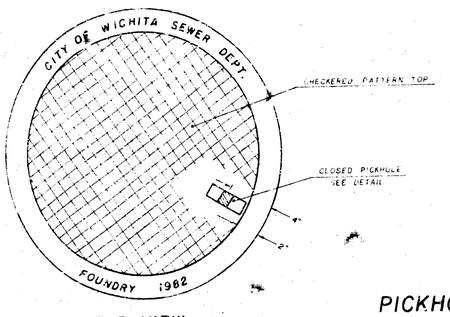
Rev. 12-13-82

PROJECT DESCRIPTION: RECONSTRUCT TWO SIPHON MANHOLES ON S.S. NO. 22 CROSSING THE ARKANSAS RIVER, at Tulsa & Washington	
PROJECT NUMBER: 468-76-245-81229-000-000-001	
BOOK NO.	APPROVED BY / DATE 12/82
DRAWN BY WK	REVISED
CITY OF WICHITA DEPARTMENT OF ENGINEERING	
DIRECTOR OF ENG./CITY ENGINEER R. W. BRUGGEMAN	SCALE

MANHOLE FRAME AND COVER DETAIL

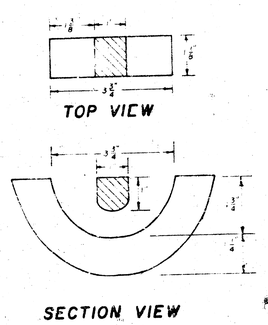
ADOPTED AS STANDARD DESIGN
BY
City of Wichita, Kansas

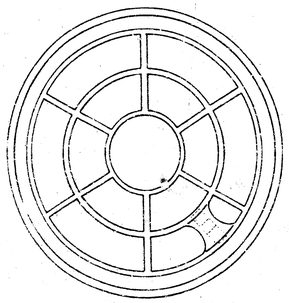
MANHOLE COVER
Weight: 180 Lbs.



TOP VIEW

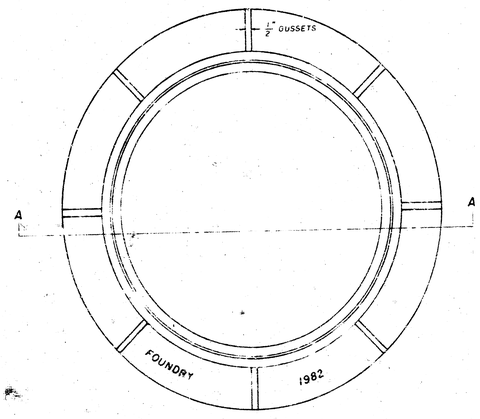
PICKHOLE DETAIL



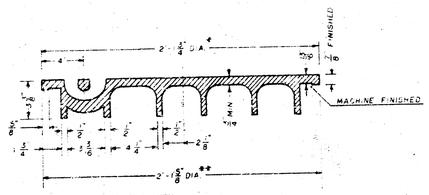


BOTTOM VIEW

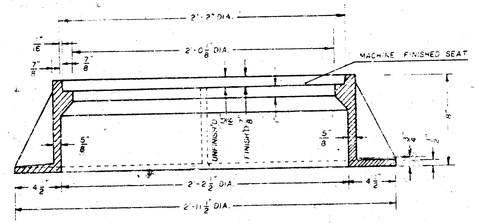
MANHOLE FRAME
Weight: 240 Lbs.



TOP VIEW



SECTION VIEW



SECTION A-A

* OUTSIDE DIA. TOP OF COVER
** OUTSIDE DIA. BOTTOM OF COVER

GENERAL NOTES

1. MANHOLE CASTINGS SHALL BE MANUFACTURED USING GOOD QUALITY GRAY IRON CONFORMING TO CLASS 30 OF A.S.T.M. DESIGNATION A-48. DIMENSIONS AND WEIGHTS SHOWN ON THE DETAILED DRAWINGS SHALL BE CONSIDERED AS MINIMUM REQUIREMENTS AND ANY DEVIATIONS FROM THE DIMENSIONS SHOWN MUST BE SPECIFICALLY APPROVED. THE FINISHED CASTINGS SHALL BE OF UNIFORM QUALITY, FREE FROM BLOWHOLES, POROSITY, HARD SPOTS, SHRINKAGE DISTORTIONS OR OTHER DEFECTS.

2. MANHOLE CASTINGS SHALL BE COATED WITH AN ASPHALT PAINT RESULTING IN A SMOOTH, TOUGH AND TENACIOUS COATING WHICH IS NOT BRITTLE OR TACKY.

3. MANHOLE CASTINGS SHALL BE MANUFACTURED SUCH THAT A COVER MANUFACTURED BY ANY ONE FOUNDRY WILL FIT INTERCHANGEABLY INTO A FRAME MANUFACTURED BY ANOTHER FOUNDRY AND STILL MEET ALLOWABLE CLEARANCES AND NON-ROCKING REQUIREMENTS. THIS WILL REQUIRE MANUFACTURING OF THE MATCHING FACES ON THE COVER AND THE FRAME TO CLOSE TOLERANCES.

4. THE OUTSIDE CIRCUMFERENCE OF THE VERTICAL FACE OF THE COVER AND THE INSIDE CIRCUMFERENCE OF THE VERTICAL FACE IN THE FRAME RECESS SHALL BE MANUFACTURED TO TOLERANCES SUCH THAT THE CLEARANCE BETWEEN THE COVER AND FRAME WILL NOT EXCEED 1/4" AT ANY POINT AROUND THE CIRCUMFERENCE OF THE COVER. THE SEATING SURFACES BETWEEN THE COVER AND FRAME SHALL BE MACHINED SUCH THAT THESE SURFACES SHALL MAKE FULL CONTACT FOR THEIR FULL CIRCUMFERENCE TO PRECLUDE THE COVER FROM ROCKING IN THE FRAME.

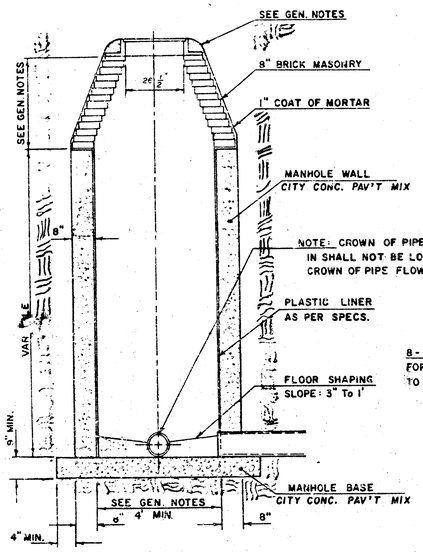
5. THE MANHOLE FRAME AND COVER SHALL BE MARKED WITH LETTERING INDICATING THE NAME OF THE MANUFACTURER AND THE YEAR WHEN THE COVER OR FRAME WAS CAST. THE COVER SHALL BE FURTHER IDENTIFIED WITH REGARDS TO OWNERSHIP USING LETTERS AT LEAST 1" IN HEIGHT. THIS IDENTIFICATION SHALL BE "CITY OF WICHITA SEWER DEPARTMENT". THE WORD DEPARTMENT MAY BE ABBREVIATED. THE TEXTURE OF THE TOP SURFACE OF THE COVER SHALL BE MANUFACTURED IN A CHECKERED PATTERN DESIGN AS INDICATED ON THE DRAWINGS. SMOOTH BLOCKOUTS SHALL BE UTILIZED TO HIGHLIGHT THE LETTERING ON THE COVER SURFACE. THE TOTAL AREA OF SMOOTH SURFACE BLOCKOUT SHALL NOT EXCEED THE AREA AS INDICATED ON THE DRAWING. POSITIONING OF SMOOTH BLOCKOUTS AND LETTERING MAY VARY FROM THAT SHOWN ON THE DETAILED DRAWING.

SEWER APPURTENANCES DETAILS

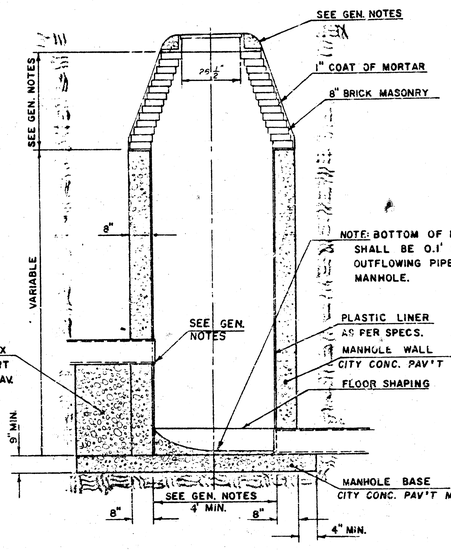
ADOPTED AS STANDARD DESIGN
BY

CITY OF WICHITA, KANSAS

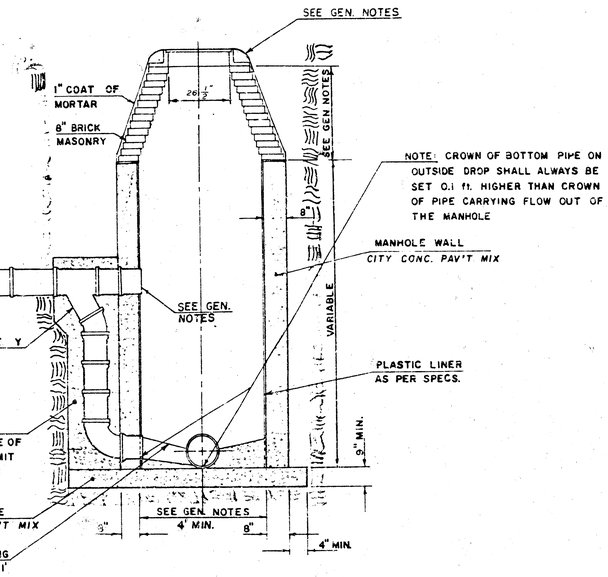
TYPE "D" MANHOLE



TYPE "D" INSIDE DROP MANHOLE



TYPE "D" OUTSIDE DROP MANHOLE



GENERAL NOTES

1. MORTAR USED IN MASONRY CONSTRUCTION SHALL CONTAIN 8 SACKS OF CEMENT PER CUBIC YARD. CONCRETE USED IN MANHOLE WALLS AND BASES SHALL CONFORM TO THE REQUIREMENTS OF CONCRETE FOR CONCRETE PAVEMENT CONSTRUCTION AS SPECIFIED IN THE CITY STANDARD PAVING SPECIFICATIONS USING CITY CONCRETE PAVEMENT MIX WITHOUT AIR ENTRAINING ADMIXTURE. MORTAR SHALL BE PLACED AROUND THE MANHOLE RING AS SHOWN ON THE DRAWINGS WHEN MANHOLES ARE CONSTRUCTED IN UNPAVED AREAS. PLASTIC LINING INSIDE THE MANHOLE SHALL CONFORM TO THE REQUIREMENTS SPECIFIED IN THE STANDARD SPECIFICATIONS FOR PLASTIC LINING FOR REINFORCED CONCRETE PIPE FOR SANITARY SEWER CONSTRUCTION. ALL INSIDE SURFACES OF THE MANHOLE WALL WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE PROTECTED BY THE PLASTIC LINING. TYPE "D" MANHOLES MAY BE USED ON PIPE SIZES 10" TO 36" WHEN THE MANHOLE DEPTH EXCEEDS THE REQUIRED CORBEL HEIGHT BY 1' PLUS THE OUTSIDE DIAMETER OF THE LARGEST PIPE IN THE MANHOLE. MANHOLES CONSTRUCTED WHERE PIPE SIZES ARE SMALLER THAN 24" SHALL HAVE A DIAMETER OF 4'. MANHOLES CONSTRUCTED WHERE THE PIPE SIZES ARE 24" OR LARGER SHALL HAVE A DIAMETER OF 5'. THE HEIGHT OF THE CORBELS ON 4' DIAMETER MANHOLES SHALL BE 4' MANHOLES HAVING A DIAMETER OF 5' SHALL HAVE CORBELS 6' IN HEIGHT. COMPLETED MANHOLE SHALL BE WITHOUT LEAKS AND WATER TIGHT.

2. REINFORCING STEEL SHALL BE INSTALLED IN THE MANHOLE BASE. REINFORCING STEEL SHALL CONSIST OF NO. 4 BARS PLACED ON 6" CENTERS IN BOTH DIRECTIONS. REINFORCING STEEL SHALL BE PLACED 6" ABOVE THE BOTTOM OF THE MANHOLE BASE. COST OF FURNISHING AND INSTALLING REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.

3. AN OPENING SHALL BE CUT IN THE MANHOLE WALL FOR THE UPPER INLET PIPE FOR INSIDE AND OUTSIDE DROP MANHOLES. THE UPPER INLET PIPE SHALL BE GROUTED INTO THIS OPENING WITH NON-SHRINK GROUT. THE EXTERIOR OF THIS COMPLETED CONNECTION SHALL BE SEALED WITH AN APPROVED BITUMINOUS COATING SUCH THAT THE CONNECTION WILL BE WATER TIGHT. THE INTERIOR PLASTIC LINING SHALL BE SEALED AROUND THE INLET PIPE OPENING IN SUCH A MANNER THAT WILL EFFECTIVELY MAINTAIN THE INTEGRITY OF THE PROTECTIVE PLASTIC LINER.

4. THE FLOORS OF ALL MANHOLES SHALL BE SHAPED WITH FLOW CHANNELS SUCH THAT THE MANHOLES WILL BE SELF CLEANING AND FREE OF AREAS WHERE SOLIDS COULD BE DEPOSITED AS SEWAGE FLOWS THROUGH THE MANHOLE FROM ALL INLET PIPES TO THE OUTLET PIPE. FLOW CHANNELS SHALL BE FORMED TO MATCH THE BOTTOM HALVES OF THE INFLOWING PIPES AND THE OUTFLOWING PIPE AS SHOWN BY THE DRAWINGS EXCEPT FOR INSIDE DROP MANHOLES. FLOW CHANNELS FOR INSIDE DROP MANHOLES SHALL BE CONSTRUCTED AS INDICATED BY THE DRAWING. MANHOLE FLOORS SHALL HAVE SLOPES OF 3 INCHES PER FOOT IN THE AREAS OUTSIDE OF THE FLOW CHANNELS SLOPED TOWARD THE FLOW CHANNELS. PIPES LAID THROUGH MANHOLES SHALL HAVE THE TOP HALF REMOVED TO NEAT LINES FOR THE FULL INSIDE DIAMETER OF THE MANHOLE. MANHOLE FLOORS SHALL THEN BE SHAPED AROUND THE BOTTOM HALF OF THE PIPE WHICH FORMS THE FLOW CHANNEL.

5. PIPES INSTALLED WITHIN THE EXCAVATION MADE FOR THE MANHOLE SHALL BE CRADLED WITH CONCRETE TO THE LIMITS OF THE MANHOLE EXCAVATION. WHEN CLAY PIPE IS USED, THE CRADLE SHALL EXTEND TO THE FIRST JOINT OUTSIDE THE MANHOLE. THE CRADLE SHALL BE TERMINATED AT THE CLAY PIPE JOINT IN A MANNER WHICH WILL MAINTAIN THE FLEXIBILITY OF THE JOINT. COST OF CRADLE WITHIN MANHOLE EXCAVATION OR TO CLAY PIPE JOINTS ADJACENT TO MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.

6. MANHOLE COVER CASTINGS AND MANHOLE FRAME CASTINGS SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE STANDARD SPECIFICATIONS AND AS SHOWN IN THE STANDARD DETAIL DRAWING.

7. THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 4' FOR INFLOWING PIPES SIZED 12" OR SMALLER AND 2' FOR INFLOWING PIPES LARGER THAN 12". THE CROWNS OF INFLOWING PIPES SHALL NEVER BE SET LOWER THAN THE CROWN OF THE OUTFLOWING PIPE.

8. STANDARD MANHOLES TYPE "D" AND STANDARD INSIDE DROP MANHOLES TYPE "D" SHALL BE BID AS STANDARD MANHOLES FOR THE TYPE AND DIAMETER INDICATED. OUTSIDE DROP MANHOLES TYPE "D" SHALL BE BID AS STANDARD OUTSIDE DROP MANHOLES FOR THE TYPE AND DIAMETER INDICATED. ALL MANHOLE DIAMETERS WILL BE 4' UNLESS INDICATED OTHERWISE.

REVISED MAY 1981

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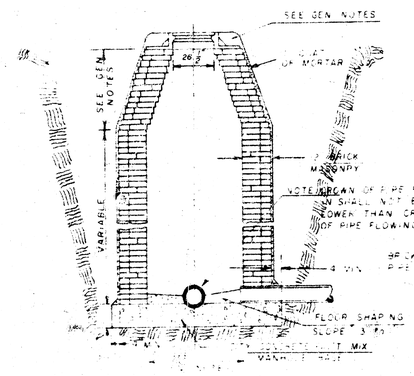
SEWER APPURTENANCES DETAILS

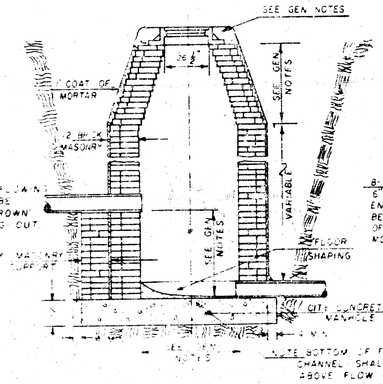
ADOPTED AS STANDARD DESIGN BY

City of Wichita, Kansas

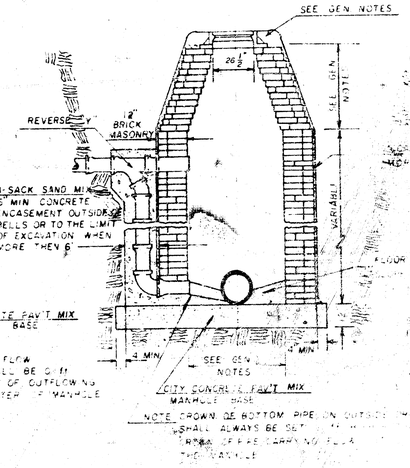
TYPE "B" MANHOLE



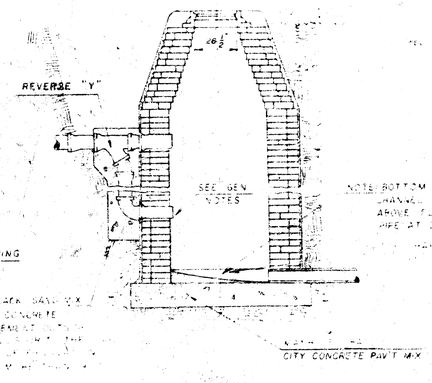
TYPE "B" INSIDE DROP MANHOLE



TYPE "B" OUTSIDE DROP MANHOLE



DETAIL OF OUTSIDE DROP CONSTRUCTED ON EXISTING MANHOLE



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2. REINFORCING STEEL SHALL BE INSTALLED IN THE MANHOLE BASES AND SHALL CONSIST OF NO. 4 BARS PLACED ON 9" CENTERS IN BOTH DIRECTIONS. THE MANHOLE BASE REINFORCEMENT SHALL BE PLACED 6" ABOVE THE BOTTOM OF THE MANHOLE BASE. ALL COSTS FOR FURNISHING AND INSTALLING REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.

3. OPENINGS SHALL BE CUT INTO THE MANHOLE WALL WHEN OUTSIDE DROPS ARE CONSTRUCTED ON EXISTING MANHOLES. SUCH OPENINGS CUT INTO EXISTING MANHOLES SHALL BE AS SMALL AS PRACTICAL TO FACILITATE INSTALLING AND GROUTING THE NEW PIPE IN PLACE. WATERSTOP GASKETS SHALL BE USED WITH P.V.C. AND A.B.S. COMPOSITE PIPE. THE NEW PIPE SHALL BE GROUTED INTO THE OPENING USING AN APPROVED NONSHRINK GROUT FOR THE FULL MANHOLE WALL THICKNESS. THE EXTERIOR OF THE COMPLETED CONNECTION SHALL BE SEALED WITH AN APPROVED BITUMINOUS COATING SUCH THAT THE CONNECTION WILL BE WATER TIGHT. FLOOR OF MANHOLE SHALL BE MODIFIED TO FORM NEW FLOW CHANNEL FOR THE NEW CONNECTION AS INDICATED BY THE DRAWING. THE VERTICAL DROP FROM THE LOWER PIPE ON SUCH OUTSIDE DROP CONNECTION SHALL NOT EXCEED 4' FOR INFLOWING PIPES SIZED 12" OR SMALLER AND 2' FOR INFLOWING PIPES SIZED LARGER THAN 12", EXCEPT THE CROWN OF THE LOWER PIPE SHALL NEVER BE SET BELOW THE CROWN OF ANY LARGER OUTFLOWING PIPE. THIS WORK, INCLUDING MODIFICATION OF MANHOLE FLOOR, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR OUTSIDE DROP STACK CONSTRUCTED ON EXISTING MANHOLE.

4. THE FLOORS OF ALL MANHOLES SHALL BE SHAPED WITH FLOW CHANNELS SUCH THAT THE MANHOLES WILL BE SELF CLEANING AND FREE OF AREAS WHERE SOLIDS COULD BE DEPOSITED AS SEWAGE FLOWS THROUGH THE MANHOLE FROM ALL INLET PIPES TO THE OUTLET PIPE. FLOW CHANNELS SHALL BE FORMED TO MATCH THE BOTTOM HALVES OF THE INFLOWING PIPES AND THE OUTFLOWING PIPE AS SHOWN BY THE DRAWINGS EXCEPT FOR INSIDE DROP MANHOLES. FLOW CHANNELS FOR INSIDE DROP MANHOLES SHALL BE CONSTRUCTED AS INDICATED BY THE DRAWING. MANHOLE FLOORS SHALL HAVE SLOPES OF 3 INCHES PER FOOT IN THE AREAS OUTSIDE OF THE FLOW CHANNELS SLOPED TOWARD THE FLOW CHANNELS. PIPES LAID THROUGH MANHOLES SHALL HAVE THE TOP HALF REMOVED TO NEAT LINES FOR THE FULL INSIDE DIAMETER OF THE MANHOLE. MANHOLE FLOORS SHALL THEN BE SHAPED AROUND THE BOTTOM HALF OF THE PIPE WHICH FORMS THE FLOW CHANNEL.

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