

SANITARY SEWER / STORM WATER SEWER

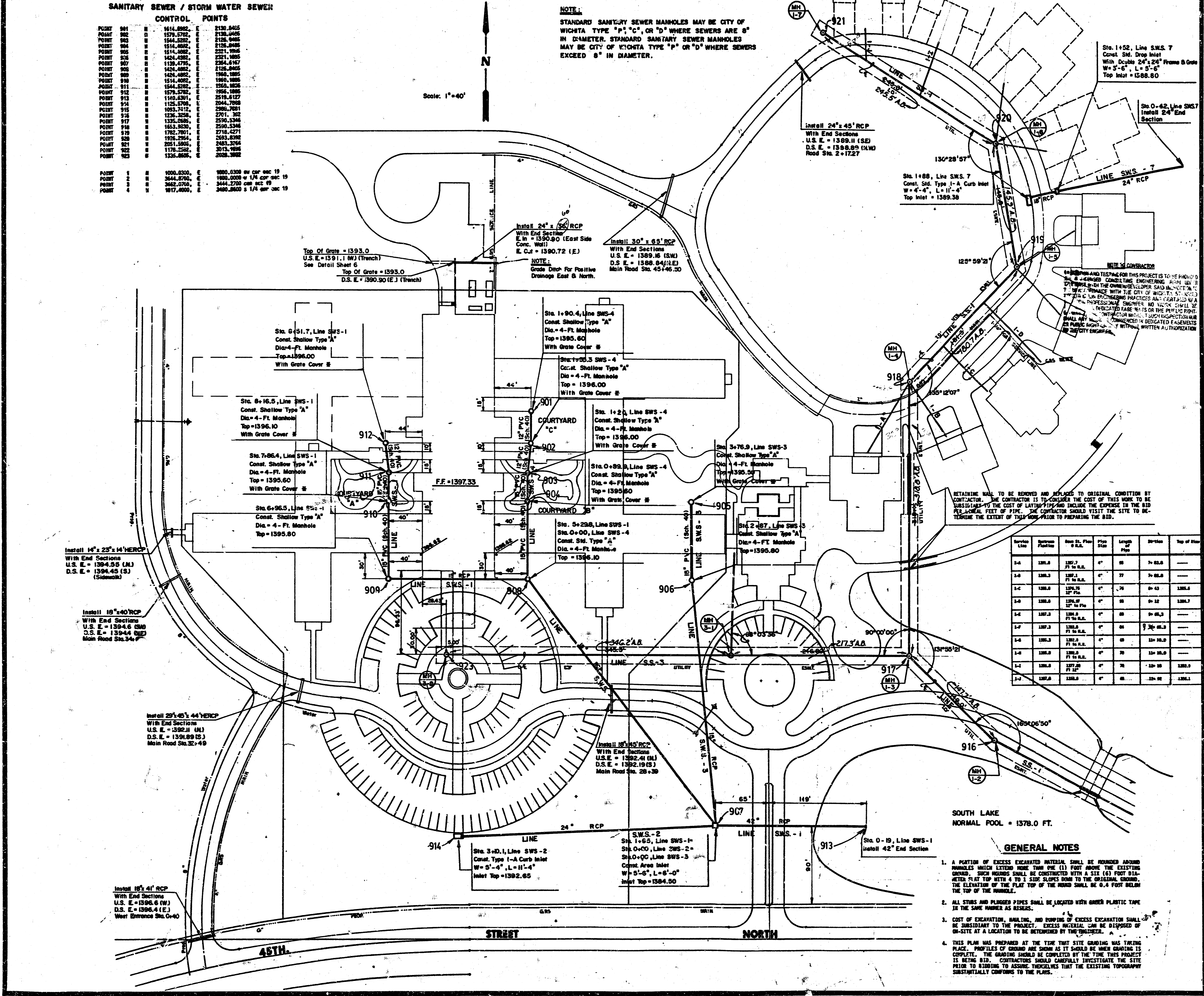
CONTROL POINTS

POINT 901	1814.8962	2138.8455
POINT 902	1814.8202	2138.8455
POINT 903	1814.8202	2138.8455
POINT 904	1814.8202	2138.8455
POINT 905	1814.8202	2138.8455
POINT 906	1814.8202	2138.8455
POINT 907	1814.8202	2138.8455
POINT 908	1814.8202	2138.8455
POINT 909	1814.8202	2138.8455
POINT 910	1814.8202	2138.8455
POINT 911	1814.8202	2138.8455
POINT 912	1814.8202	2138.8455
POINT 913	1814.8202	2138.8455
POINT 914	1814.8202	2138.8455
POINT 915	1814.8202	2138.8455
POINT 916	1814.8202	2138.8455
POINT 917	1814.8202	2138.8455
POINT 918	1814.8202	2138.8455
POINT 919	1814.8202	2138.8455
POINT 920	1814.8202	2138.8455
POINT 921	1814.8202	2138.8455
POINT 922	1814.8202	2138.8455
POINT 923	1814.8202	2138.8455

VIEW 1	1000.0000	1980.0000	1/4" cor sec 19
POINT 1	3644.6700	1980.0000	1/4" cor sec 19
POINT 2	3642.0700	3444.2700	cor sec 19
POINT 3	3617.4000	3460.8600	1/4" cor sec 19

NOTE:
STANDARD SANITARY SEWER MANHOLES MAY BE CITY OF WICHITA TYPE "P", "C", OR "D" WHERE SEWERS ARE 8" IN DIAMETER. STANDARD SANITARY SEWER MANHOLES MAY BE CITY OF WICHITA TYPE "P" OR "D" WHERE SEWERS EXCEED 8" IN DIAMETER.

Scale: 1"=40'

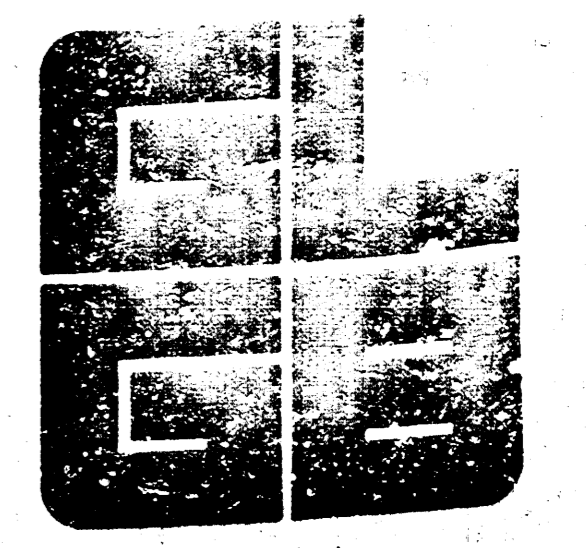


Station	Between	Run St. Elev.	Pipe Size	Length	Station	Top of Man.
S-4	1391.0	1397.7	4"	66	7+63.0	
S-4	1391.0	1397.7	4"	77	7+63.0	
S-4	1391.0	1397.7	4"	78	8+43	1398.0
S-4	1391.0	1397.7	4"	79	8+12	1398.7
S-4	1391.0	1397.7	4"	80	9+05.0	
S-4	1391.0	1397.7	4"	81	9+30.0	
S-4	1391.0	1397.7	4"	82	10+00.0	
S-4	1391.0	1397.7	4"	83	10+50.0	
S-4	1391.0	1397.7	4"	84	11+00.0	
S-4	1391.0	1397.7	4"	85	11+50.0	
S-4	1391.0	1397.7	4"	86	12+00.0	
S-4	1391.0	1397.7	4"	87	12+50.0	
S-4	1391.0	1397.7	4"	88	13+00.0	
S-4	1391.0	1397.7	4"	89	13+50.0	
S-4	1391.0	1397.7	4"	90	14+00.0	

SOUTH LAKE
NORMAL POOL = 1378.0 FT.

GENERAL NOTES

- A PORTION OF EXCESS EXCAVATED MATERIAL SHALL BE BOUNDED AROUND MANHOLES WHICH EXTEND MORE THAN THE (1) FOOT ABOVE THE EXISTING GROUND. SUCH HEAVY SHALL BE CONSTRUCTED WITH A SIX (6) FOOT DIAMETER FLAT TOP WITH 4 TO 1 SIDE SLOPES DOWN TO THE ORIGINAL GROUND. THE ELEVATION OF THE FLAT TOP OF THE ROAD SHALL BE 0.4 FOOT BELOW THE TOP OF THE MANHOLE.
- ALL STRES AND PIPES SHALL BE LOCATED WITH GREEN PLASTIC TAPE IN THE SAME MANNER AS RISERS.
- COST OF EXCAVATION, HAULING, AND DUMPING OF EXCESS EXCAVATION SHALL BE RESPONSIBILITY TO THE CONTRACTOR. EXCESS MATERIAL CAN BE DISPOSED OF ON-SITE AT A LOCATION TO BE DETERMINED BY THE ENGINEER.
- THIS PLAN WAS PREPARED AT THE TIME THAT SITE GRADING WAS TAKING PLACE. PROFILES OF GROUND AND SHOW AS IT SHOULD BE WHEN GRADING IS COMPLETE. THE GRADING SHOULD BE COMPLETED BY THE TIME THIS PROJECT IS BEING BIDD. CONTRACTORS SHOULD CAREFULLY INVESTIGATE THE SITE PRIOR TO BIDDING TO ASSURE THEMSELVES THAT THE EXISTING TOPOGRAPHY SUBSTANTIALLY CONFORMS TO THE PLANS.



COSSIEN LIVINGSTON & GRIFFITH AND BONHAM
A PROFESSIONAL ENGINEERING CORPORATION
1000 WEST WICHITA AVENUE, SUITE 100
WICHITA, KANSAS 67202
PH: 316-261-1111
FAX: 316-261-1112

APPROVED AS NOTED
By CITY ENGINEER OF WICHITA

Sanitary Sewer
Storm Water
Water Main

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
UTILITIES

PRIVATE PROJECT
12/9/95

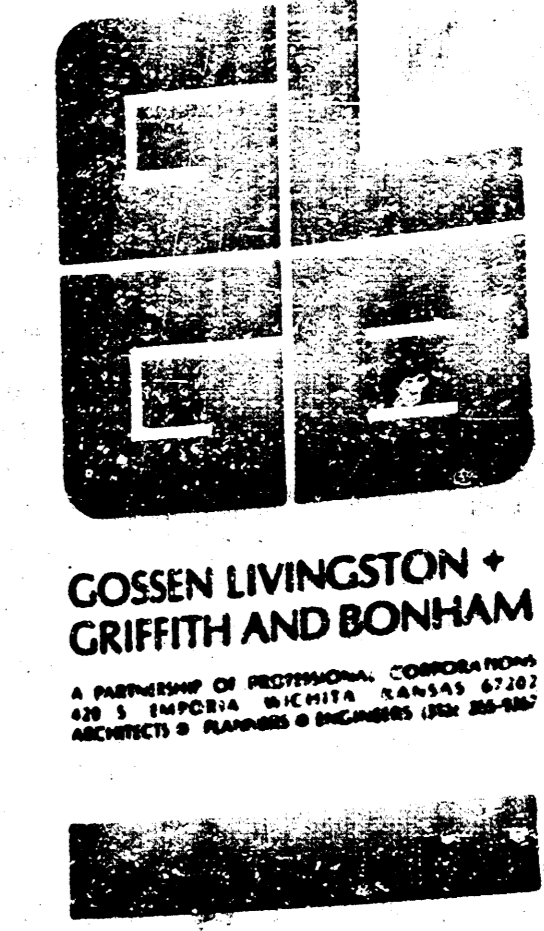


SANITARY SEWER / STORM WATER SEWER PLAN

DATE: 12/9/95
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CHECKED BY: [Signature]

2 of 22

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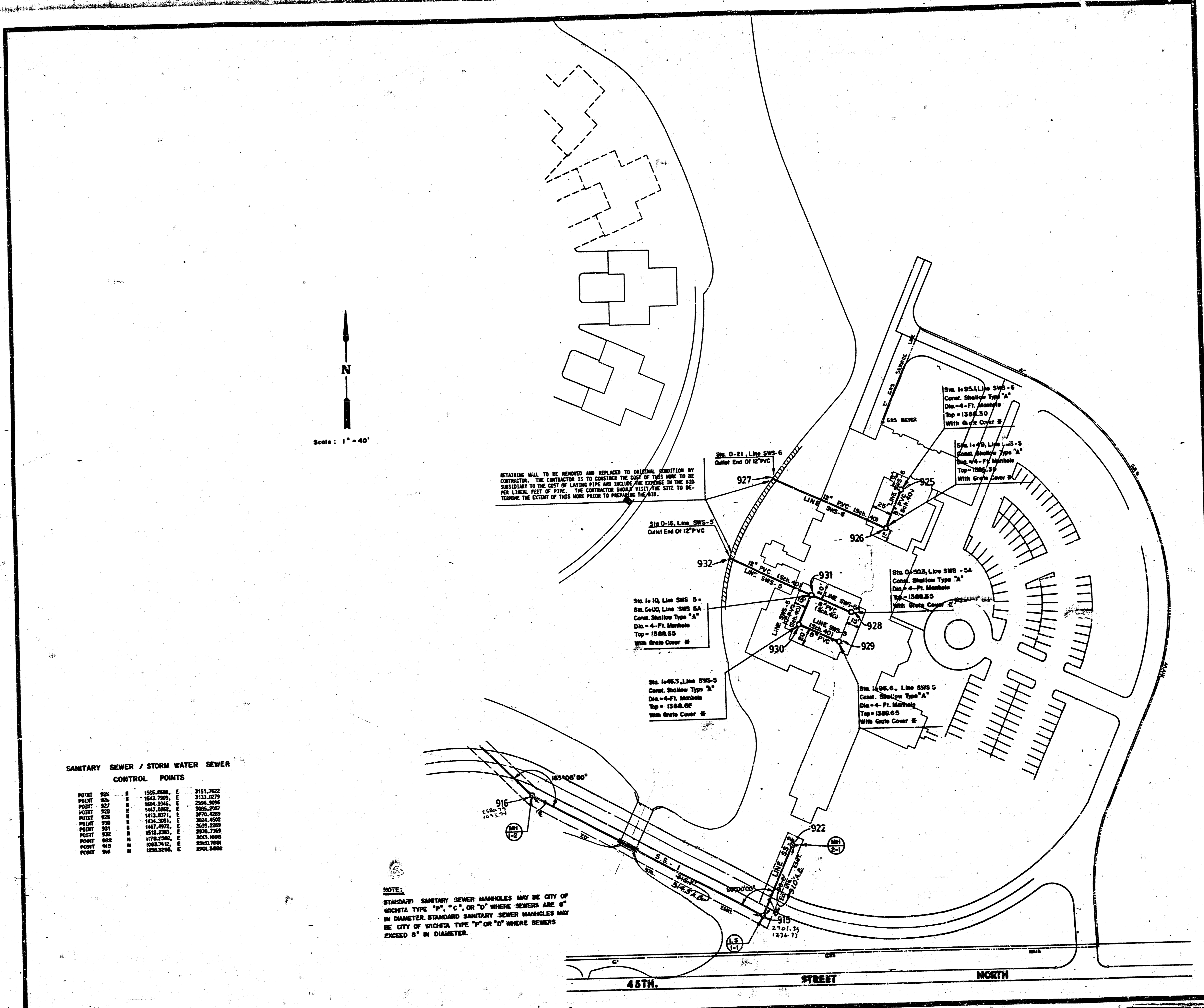
COSSEN LIVINGSTON & GRIFFITH AND BONHAM
A PARTNERSHIP OF PROFESSIONAL CORPORATIONS
1001 N. FEDERAL HIGHWAY, SUITE 200
WICHITA, KANSAS 67202

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
UTILITIES

PRIVATE PROJECT
SANITARY SEWER / STORM WATER SEWER PLAN
JOB NO. 041.030
DATE: APR. 12, 2004
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3
of
22

2/13

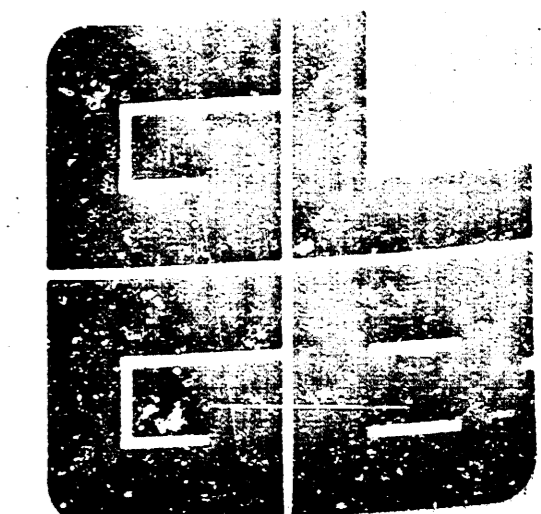
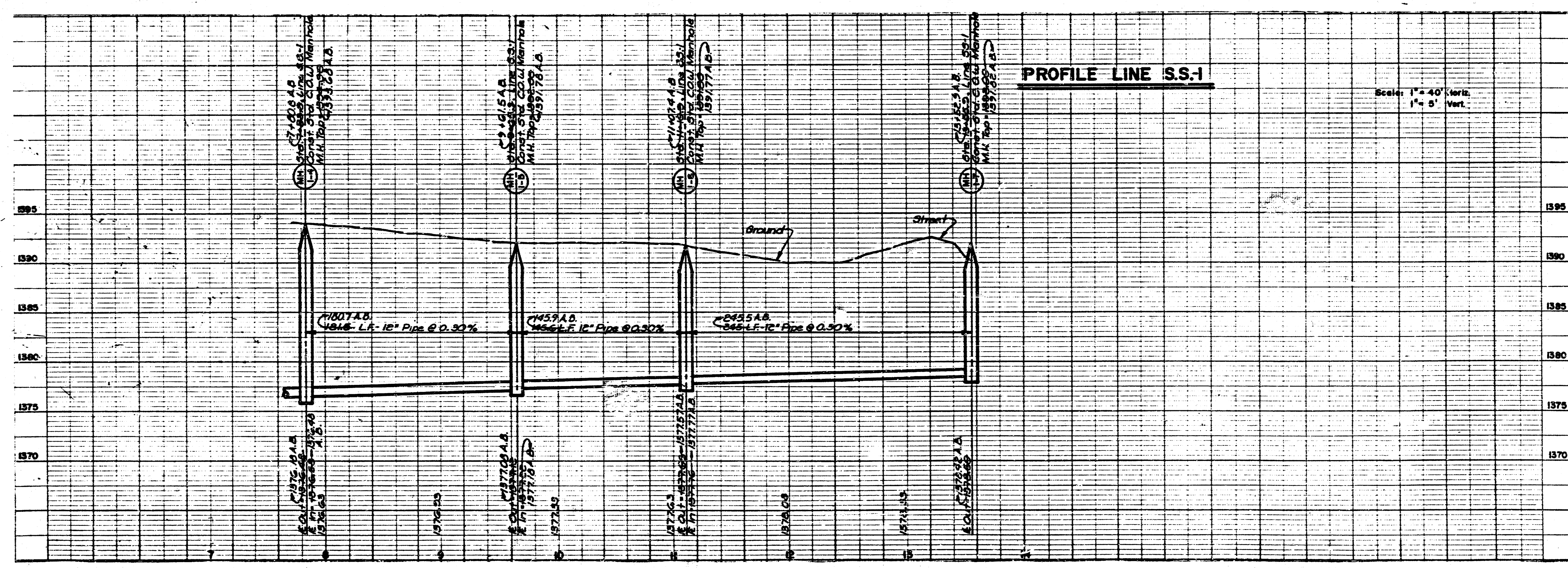
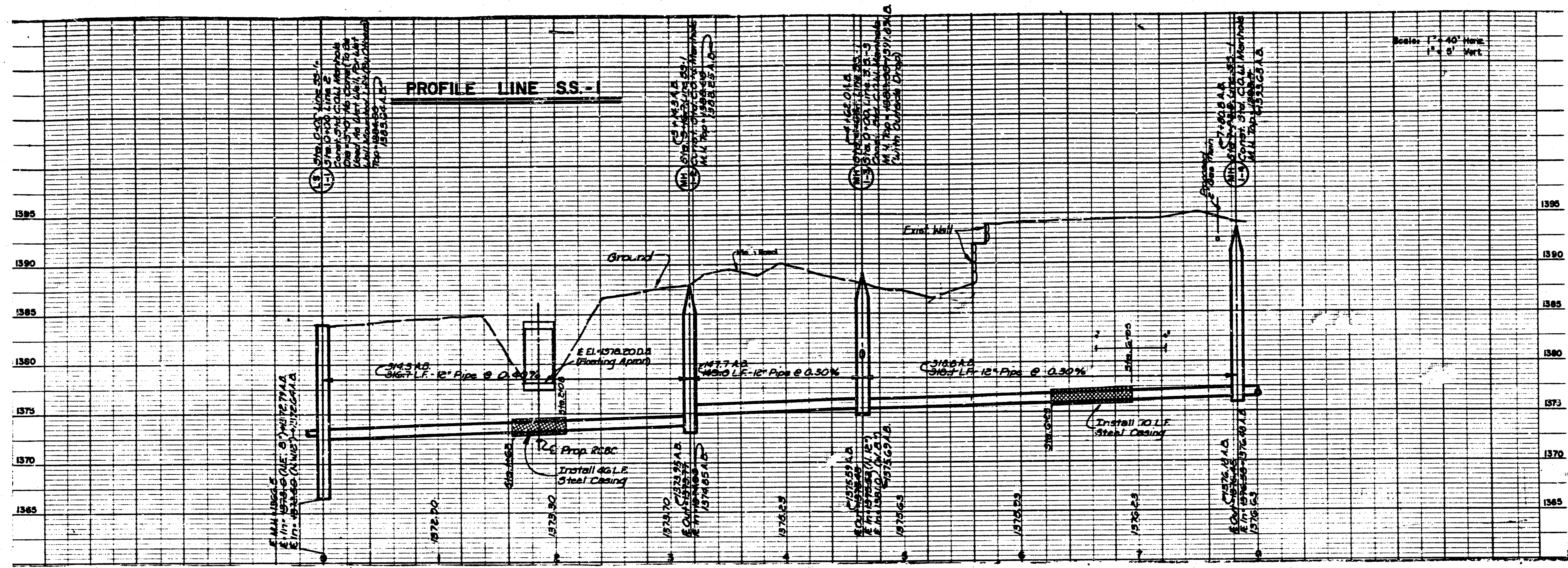


SANITARY SEWER / STORM WATER SEWER
CONTROL POINTS

POINT	NO.	N	E	ELEVATION
POINT 925	1565.8608	3151.7622		
POINT 926	1563.7200	3133.8279		
POINT 927	1604.2246	2996.9096		
POINT 928	1427.2522	3095.2927		
POINT 929	1413.8371	3070.4289		
POINT 930	1434.2081	3004.4552		
POINT 931	1447.4572	3039.2259		
POINT 932	1512.2383	2919.7369		
POINT 933	1178.2580	3003.6096		
POINT 934	1268.7412	2980.7888		
POINT 936	1286.3296	2704.3488		

NOTE:
STANDARD SANITARY SEWER MANHOLES MAY BE CITY OF WICHITA TYPE "P", "C", OR "D" WHERE SEWERS ARE 6" IN DIAMETER. STANDARD SANITARY SEWER MANHOLES MAY BE CITY OF WICHITA TYPE "P" OR "D" WHERE SEWERS EXCEED 6" IN DIAMETER.

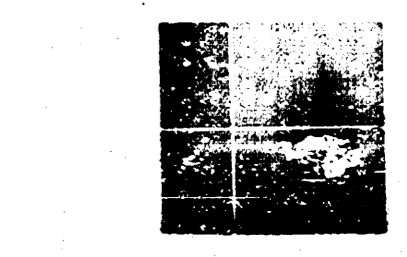
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GOSSEN LIVINGSTON +
GRIFFITH AND BONHAM

A MEMBER OF PROFESSIONAL CORPORATION
REGISTERED PROFESSIONAL ENGINEERS
REGISTERED PROFESSIONAL ARCHITECTS
REGISTERED PROFESSIONAL LAND SURVEYORS
REGISTERED PROFESSIONAL PLANNERS

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
UTILITIES

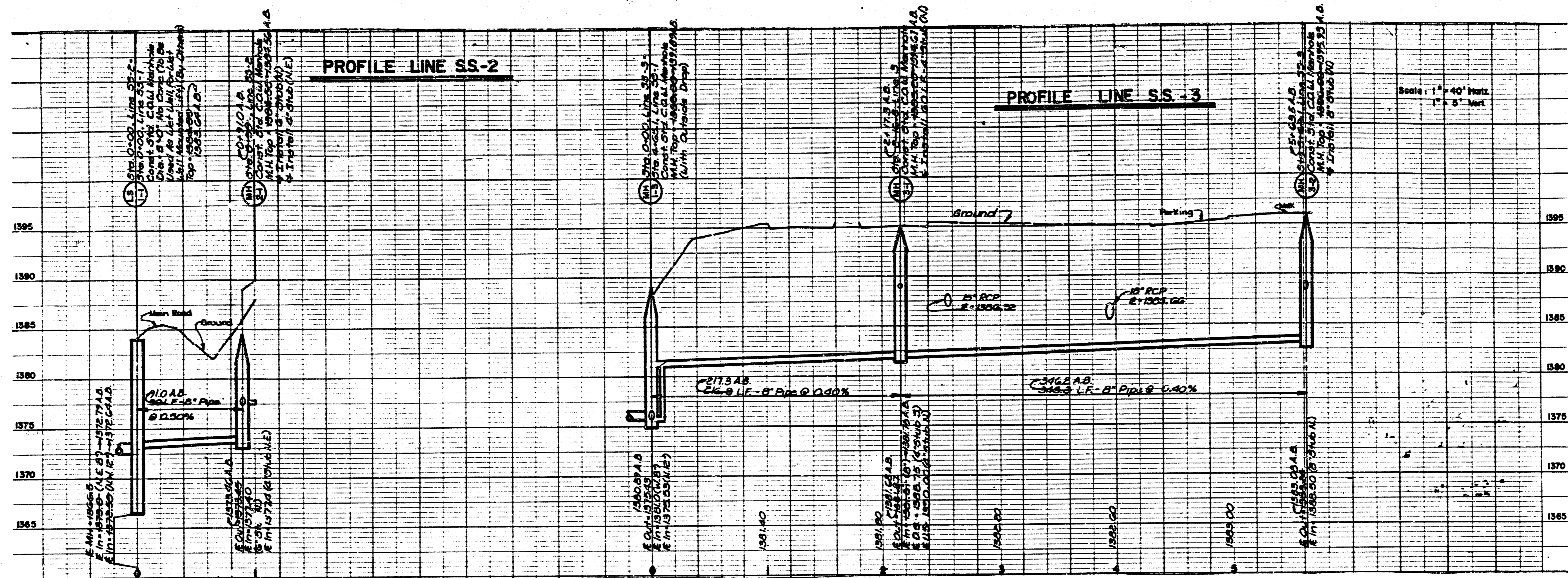


PRIVATE PROJECT
22395

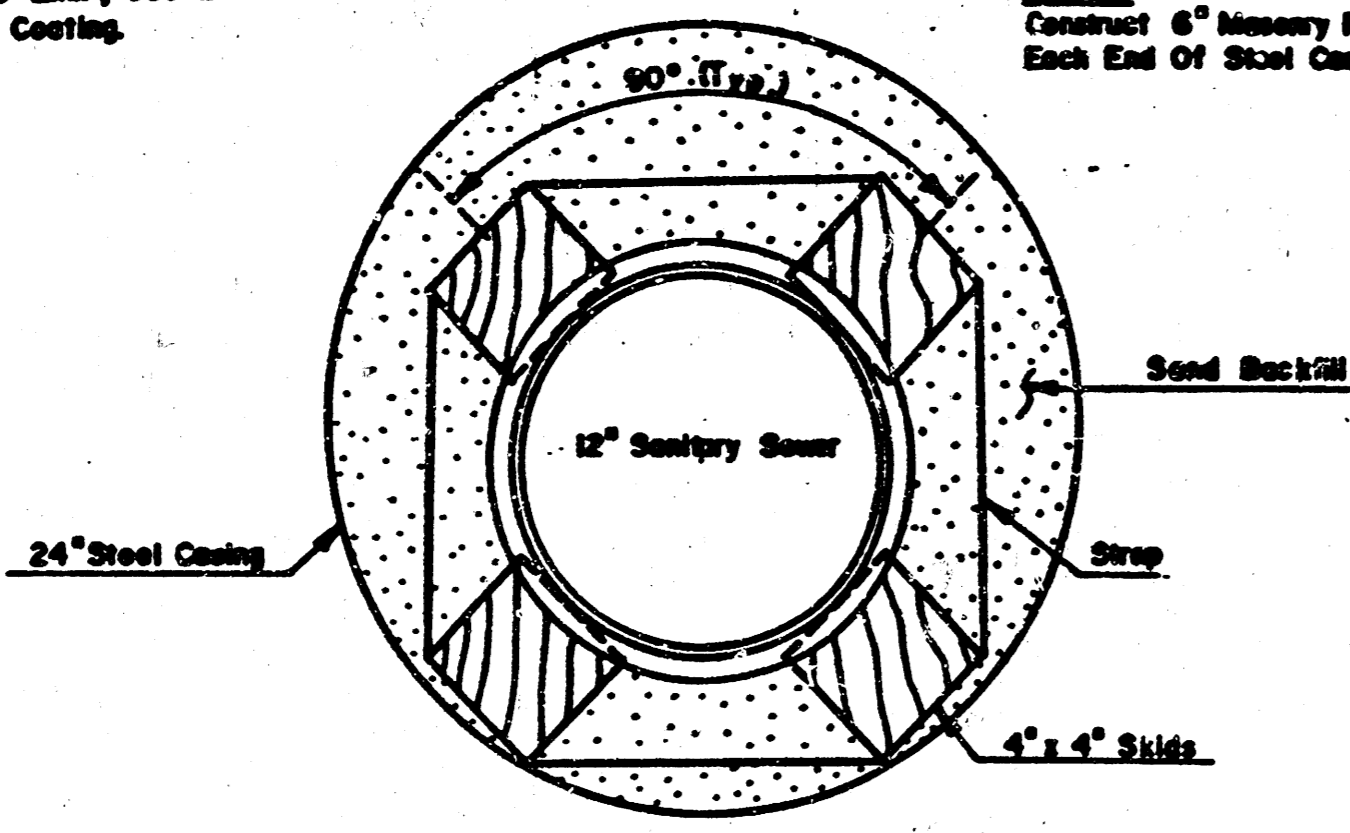
SANITARY SEWER
PROFILE

JOB NO.	12
DRAWN BY	9/3
CHECKED	22

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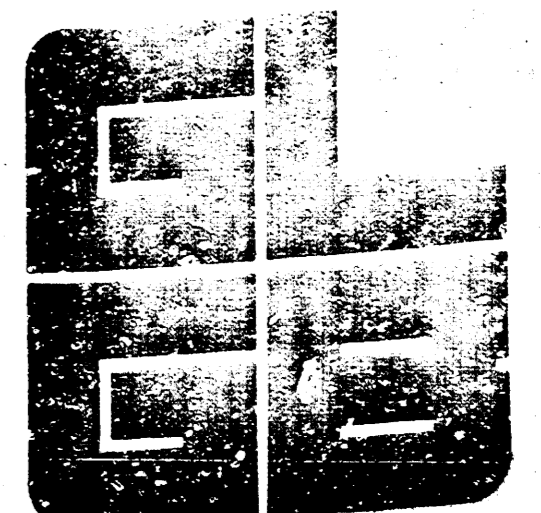


NOTE:
 Slabote 10-.250" Wall Thickness; Sand Slab
 Interior And Coat With 5 MIL Minimum Of
 Inorganic Zinc; Use 20 MIL Minimum Bitumastic
 Outside Coating.



CASEMENT DETAIL
 STA. 6+25 TO STA. 6+95
 1/8" SCALE

NOTE:
 Casted 6" Heavy Plug In
 Each End Of Steel Casing.



**GOSSEN LIVINGSTON +
 GRIFFITH AND BONHAM**
 A PARTNERSHIP OF PROFESSIONAL CORPORATIONS
 100 S. W. 10TH AVENUE, SUITE 1200
 MIAMI, FLORIDA 33135
 TELEPHONE 305-375-1100
 FACSIMILE 305-375-1101

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
 UTILITIES

PRIVATE PROJECT
 22399

**SANITARY SEWER
 PROFILE & DETAIL**

JOB NO. 13
 DATE REV. 2, 1991
 DRAWN BY
 CHECKED BY

1/13

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SANITARY SEWER / STORM WATER SEWER

CONTROL POINTS

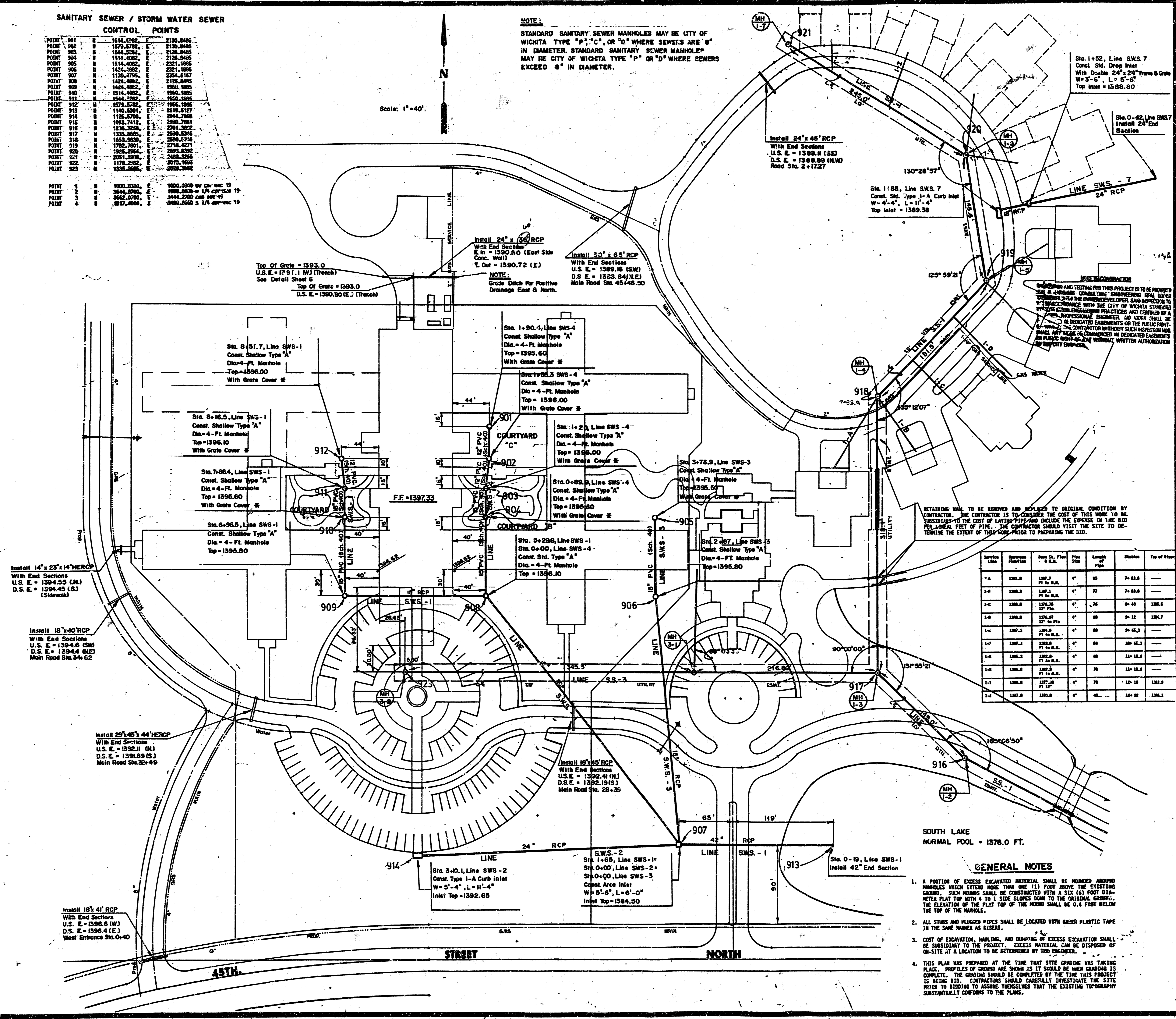
POINT 901	1614.5962	2130.8485
POINT 902	1579.5782	2130.8485
POINT 903	1544.5602	2128.8485
POINT 904	1514.4082	2128.8485
POINT 905	1514.4082	2221.1885
POINT 906	1454.2882	2221.1885
POINT 907	1334.4792	2254.6147
POINT 908	1334.4792	2130.8485
POINT 909	1424.4882	1964.1885
POINT 910	1514.4082	1964.1885
POINT 911	1544.2882	1964.1885
POINT 912	1579.5782	1964.1885
POINT 913	1140.4301	2519.6127
POINT 914	1125.3708	2544.2908
POINT 915	1093.7412	2564.7881
POINT 916	1236.2298	2701.2022
POINT 917	1236.2298	2564.5346
POINT 918	1253.3638	2590.2346
POINT 919	1782.7611	2718.2271
POINT 920	1926.2564	2953.8392
POINT 921	2051.5996	2983.2264
POINT 922	1178.2522	3075.4664
POINT 923	1335.8882	2928.3882

POINT 1	1000.1300	1000.1300 or 1/4" cor=sec 19
POINT 2	1000.1300	1000.1300 or 1/4" cor=sec 19
POINT 3	3662.0700	3662.0700 cor=sec 19
POINT 4	3017.4000	3660.8400 s 1/4" cor=sec 19

NOTE 1

STANDARD SANITARY SEWER MANHOLES MAY BE CITY OF WICHITA TYPE "P", "C", OR "D" WHERE SEWERS ARE 8" IN DIAMETER. STANDARD SANITARY SEWER MANHOLE MAY BE CITY OF WICHITA TYPE "P" OR "D" WHERE SEWERS EXCEED 8" IN DIAMETER.

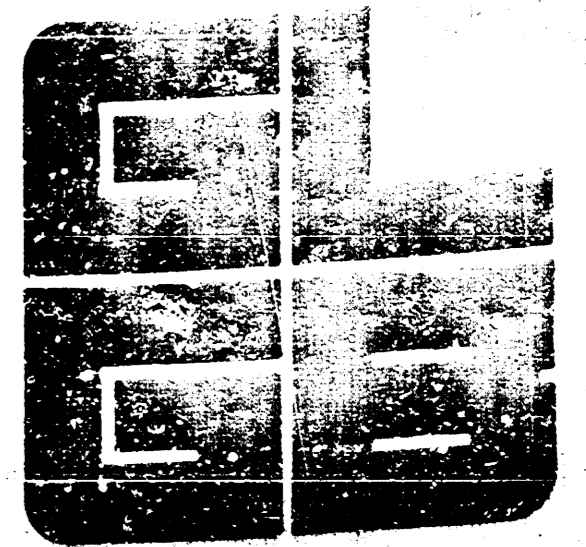
Scale: 1" = 40'



Station	Bottom	Top	Flow	Length	Station	Top of
1-4	1386.0	1397.0	12"	85	7+83.0	
1-4	1386.0	1397.0	12"	77	7+83.0	
1-C	1386.0	1397.0	12"	70	8+43	1386.0
1-4	1386.0	1397.0	12"	88	9+12	1386.7
1-C	1387.0	1398.0	12"	88	9+62.3	
1-7	1387.0	1398.0	12"	86	10+62.3	
1-4	1386.0	1397.0	12"	88	11+18.0	
1-4	1386.0	1397.0	12"	76	11+18.0	
1-1	1386.0	1397.0	12"	76	12+18	1386.0
1-4	1387.0	1398.0	12"	88	12+62	1386.3

GENERAL NOTES

- A PORTION OF EXCESS EXCAVATED MATERIAL SHALL BE HONDED AROUND MANHOLES WHICH EXCEED MORE THAN ONE (1) FOOT ABOVE THE EXISTING GROUND. SUCH HONDS SHALL BE CONSTRUCTED WITH A SIX (6) FOOT DIAMETER FLAT TOP WITH 4 TO 1 SIDE SLOPES DOWN TO THE ORIGINAL GROUND. THE ELEVATION OF THE FLAT TOP OF THE HOND SHALL BE 0.4 FOOT BELOW THE TOP OF THE MANHOLE.
- ALL STUBS AND PLUGGED PIPES SHALL BE LOCATED WITH ORANGE PLASTIC TAPE IN THE SAME NUMBER AS RISERS.
- COST OF EXCAVATION, HAULING, AND DUMPING OF EXCESS EXCAVATION SHALL BE SUBSIDIARY TO THE PROJECT. EXCESS MATERIAL CAN BE DISPOSED OF ON-SITE AT A LOCATION TO BE DETERMINED BY THE ENGINEER.
- THIS PLAN WAS PREPARED AT THE TIME THAT SITE GRADING WAS TAKING PLACE. PROFILES OF GROUND ARE SHOWN AS IT SHOULD BE WHEN GRADING IS COMPLETE. THE GRADING SHOULD BE COMPLETED BY THE TIME THIS PROJECT IS BEING BIDD. CONTRACTORS SHOULD CAREFULLY INVESTIGATE THE SITE PRIOR TO BIDDING TO ASSURE THEMSELVES THAT THE EXISTING TOPOGRAPHY SUBSTANTIALLY CONFORMS TO THE PLANS.



GOSSEN LIVINGSTON + GRIFFITH AND BONHAM
A PARTNERSHIP OF PROFESSIONAL CORPORATION
400 S. WASHINGTON, SUITE 1700
WICHITA, KANSAS 67202
ARCHITECTS & ENGINEERS REGISTERED PROFESSIONAL ENGINEERS

APPROVED AS NOTED
BY CITY ENGINEER OF WICHITA

Sanitary Sewer
Storm Water
Utility
Water

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
UTILITIES

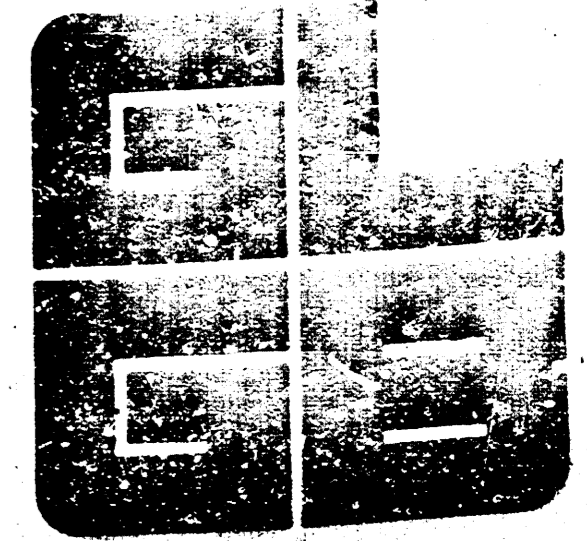
PRIVATE PROJECT
2739PS



SANITARY SEWER / STORM WATER SEWER PLAN

JOB NO. 2
DATE PWD 12, 2000
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GOSSEN LIVINGSTON + GRIFFITH AND BONHAM

A DIVISION OF PROFESSIONAL CORPORATION
101 S. WASHINGTON STREET, SUITE 1000
WICHITA, KANSAS 67202
ARCHITECTS & ENGINEERS LICENSE NO. 4232

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
UTILITIES

PRIVATE PROJECT
223795

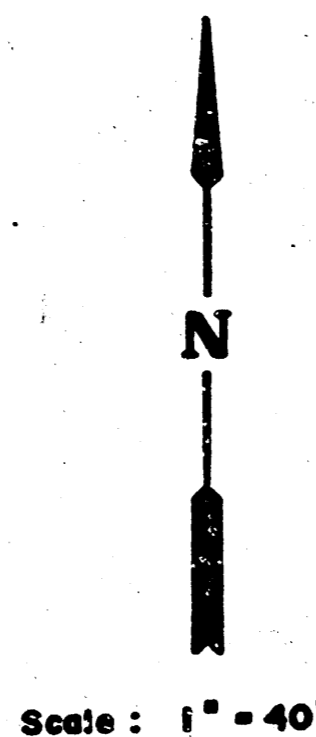
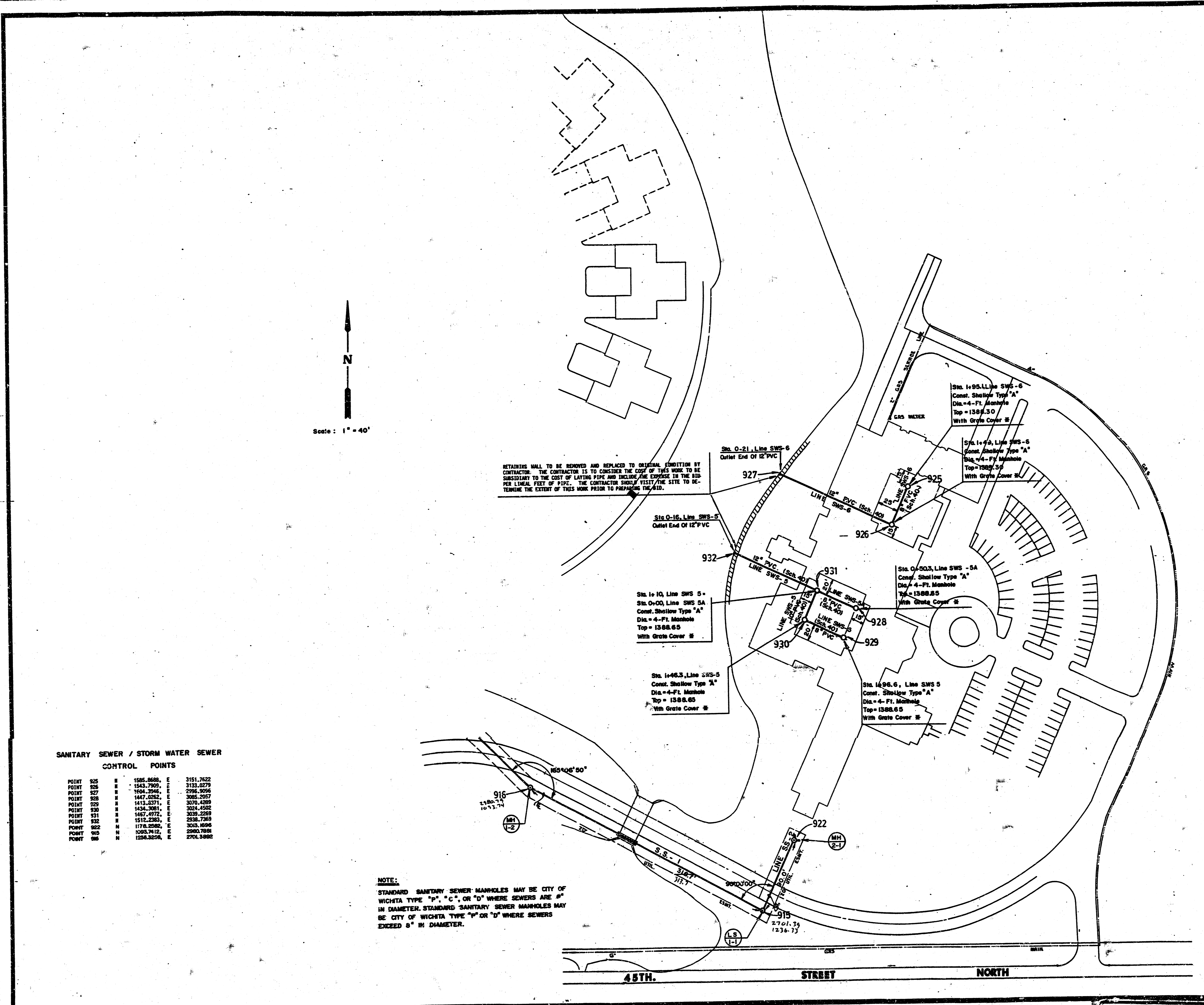


SANITARY SEWER / STORM
WATER SEWER PLAN

JOB NO. 641.030
DATE: APRIL 12, 1990
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22

6/13



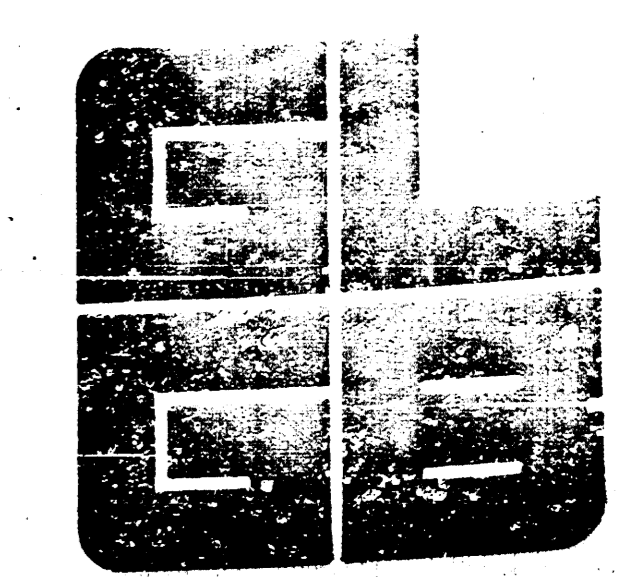
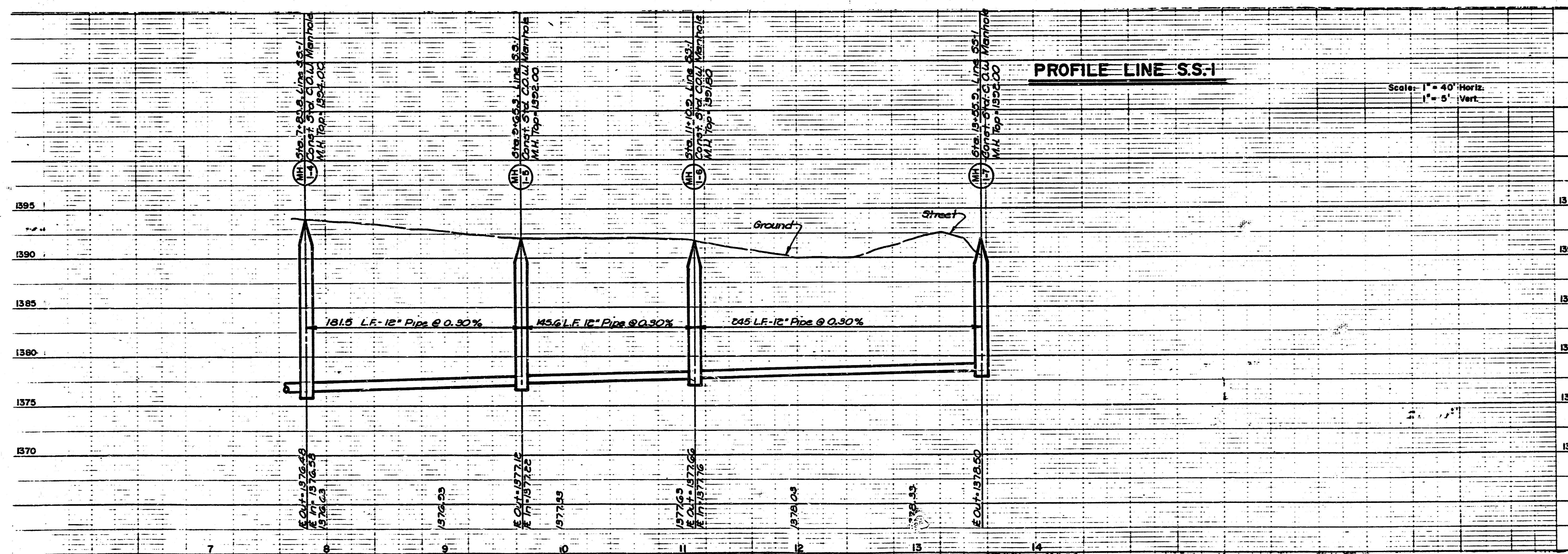
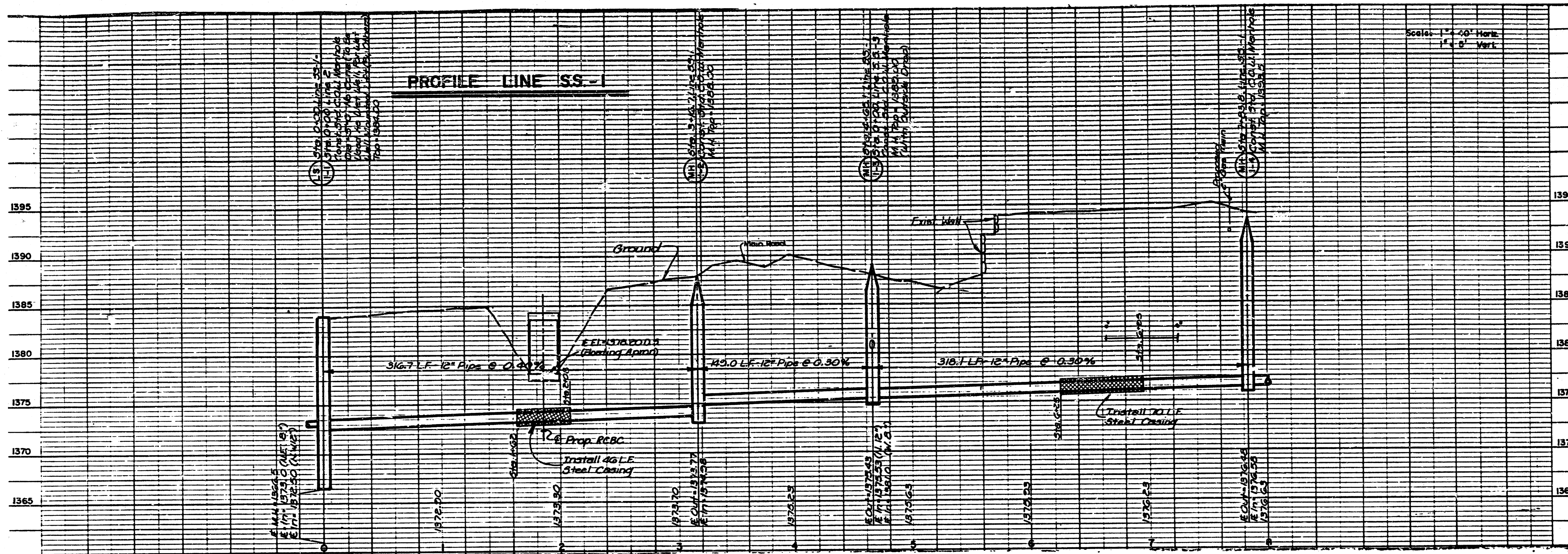
RETAINING WALL TO BE REMOVED AND REPLACED TO ORIGINAL CONDITION BY CONTRACTOR. THE CONTRACTOR IS TO CONSIDER THE COST OF THIS WORK TO BE SUBSIDIARY TO THE COST OF LAYING PIPE AND INCLUDE THE EXPENSE IN THE BID PER LINEAL FEET OF PIPE. THE CONTRACTOR SHOULD VISIT THE SITE TO DETERMINE THE EXTENT OF THIS WORK PRIOR TO PREPARING HIS BID.

SANITARY SEWER / STORM WATER SEWER
CONTROL POINTS

POINT 925	N	1585.0680	E	3151.7622
POINT 926	N	1543.7909	E	3133.0279
POINT 927	N	1604.2946	E	2996.9096
POINT 928	N	1447.0352	E	3065.2057
POINT 929	N	1413.8371	E	3070.4289
POINT 930	N	1434.3081	E	3024.4502
POINT 931	N	1467.4972	E	3039.2269
POINT 932	N	1512.2283	E	2938.7369
POINT 922	N	1178.2582	E	3040.8690
POINT 915	N	1263.7412	E	2993.7898
POINT 916	N	1258.3256	E	2701.9882

NOTE:
STANDARD SANITARY SEWER MANHOLES MAY BE CITY OF WICHITA TYPE "P", "C", OR "D" WHERE SEWERS ARE 8" IN DIAMETER. STANDARD SANITARY SEWER MANHOLES MAY BE CITY OF WICHITA TYPE "P" OR "D" WHERE SEWERS EXCEED 8" IN DIAMETER.

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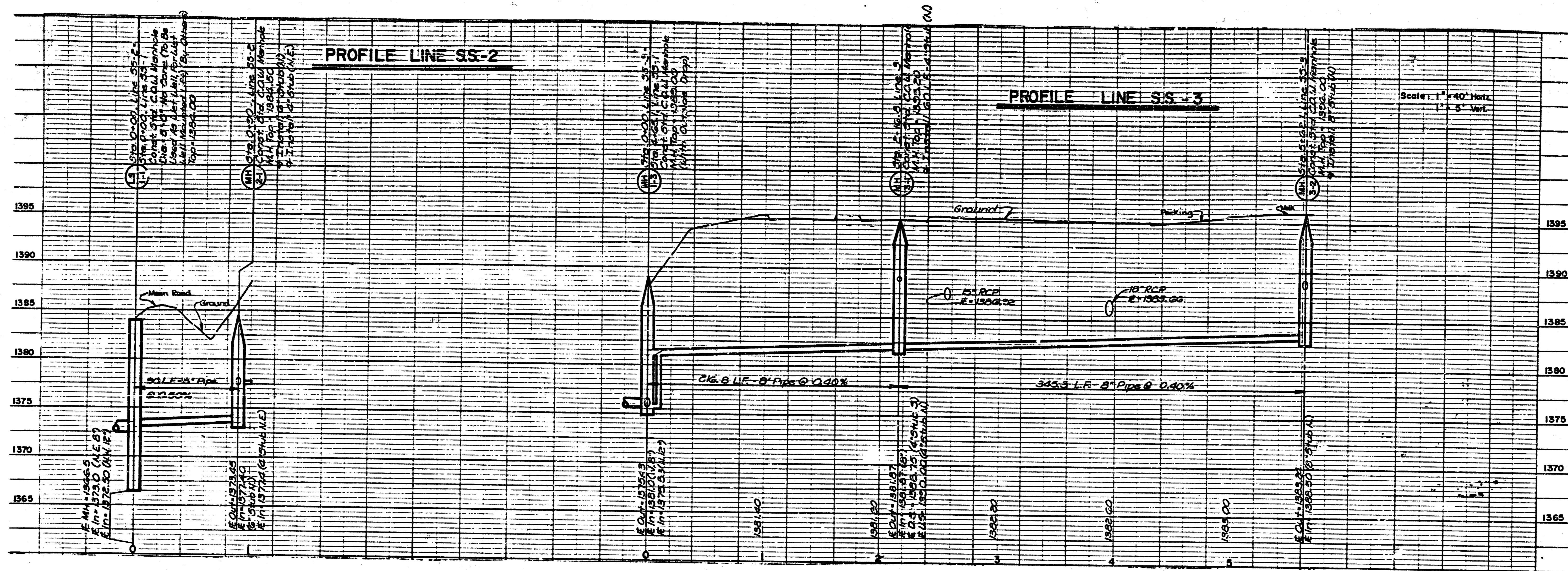
COSSE LIVINGSTON + GRIFFITH AND BONHAM
 A PARTNERSHIP OF PROFESSIONAL CORPORATION
 401 S. E. 10TH AVENUE, SUITE 1000, WICHITA, KANSAS 67202
 ARCHITECTS & PLANNERS & ENGINEERS LICENSE NO. 200

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
 UTILITIES

PRIVATE PROJECT
 22395
WICHITA
 SANITARY SEWER
 PROFILE

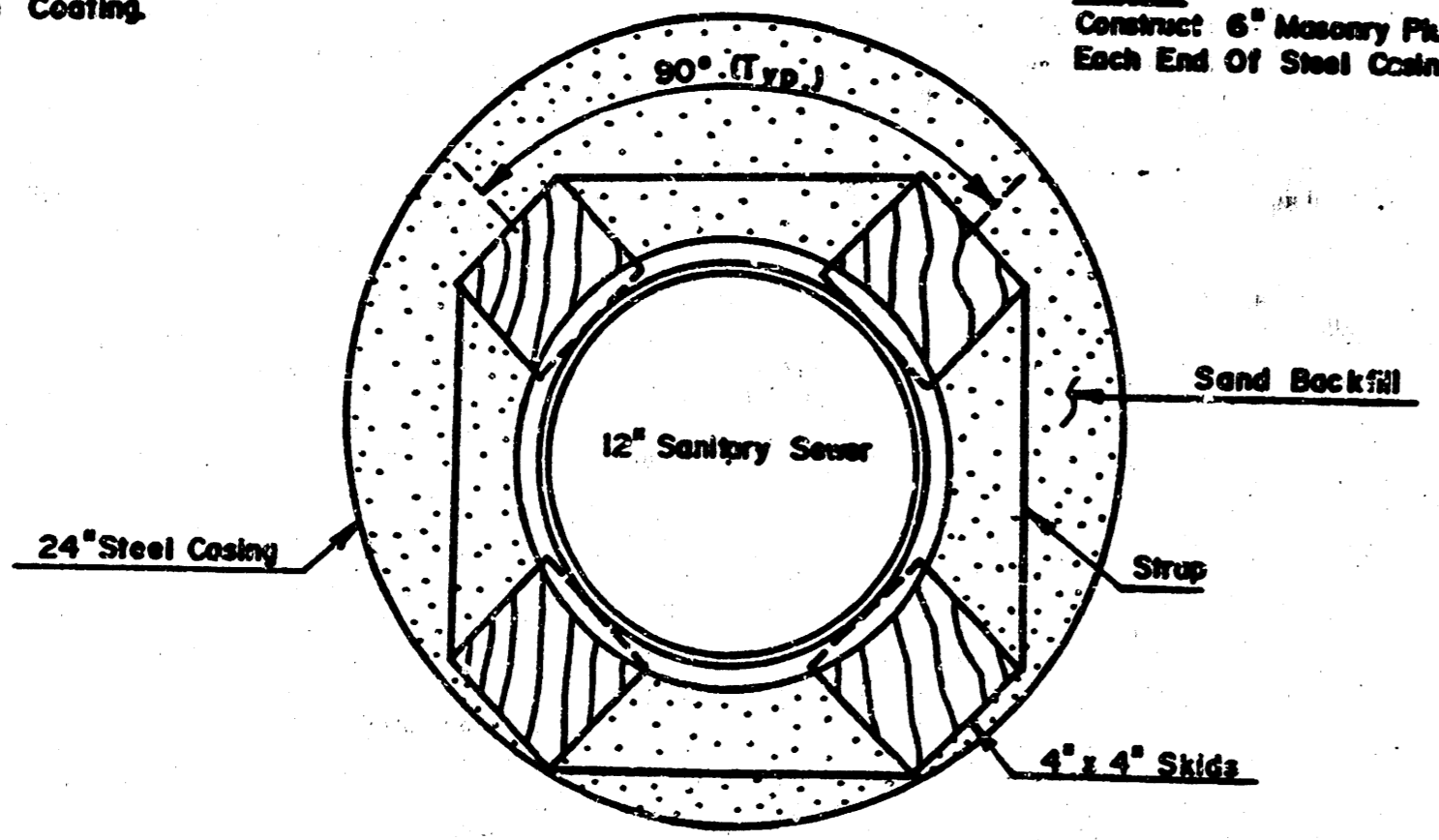
JOB NO. 12
 DATE APR. 12, 2009
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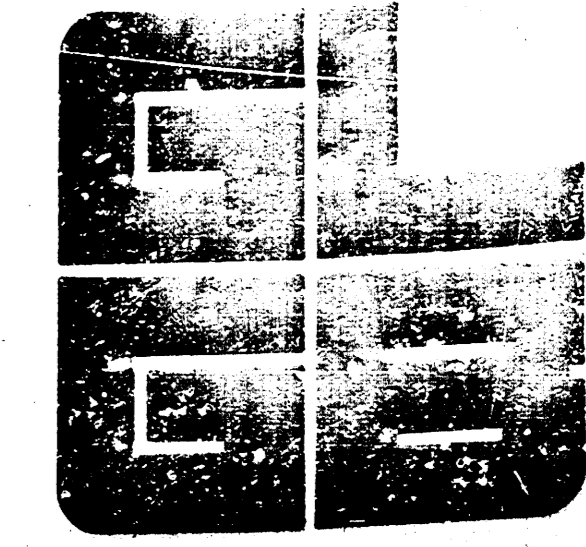


NOTE:
 Schedule 40 - 250" Wall Thickness; Sand Blast
 Interior And Coat With 6 Mil. Minimum Of
 Inorganic Zinc; Use 20 Mil. Minimum Bitumatic
 Outside Coating.

NOTE:
 Construct 6" Masonry Plug In
 Each End Of Steel Coating.



CASEMENT DETAIL
 STA. 6+25 TO STA. 6+95
 NO SCALE



**COSSEN LIVINGSTON +
 GRIFFITH AND BONHAM**
 A PARTNERSHIP OF PROFESSIONAL CORPORATION
 100 S. LAMAR, WICHITA, KANSAS 67202
 ARCHITECTS PLANNERS & ENGINEERS SINCE 1917

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
 UTILITIES

PRIVATE PROJECT
 23396

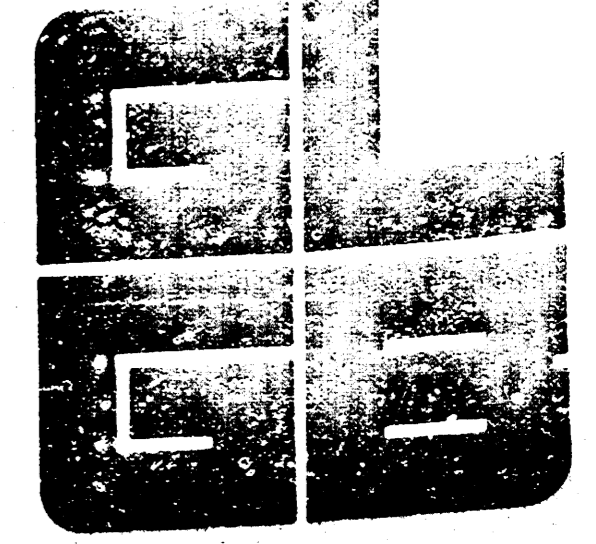
**SANITARY SEWER
 PROFILE & DETAIL**

JOB NO. _____
 DATE PLOT. & DES. _____
 DRAWN _____
 CHECKED _____

13
 OF
 22

7/13

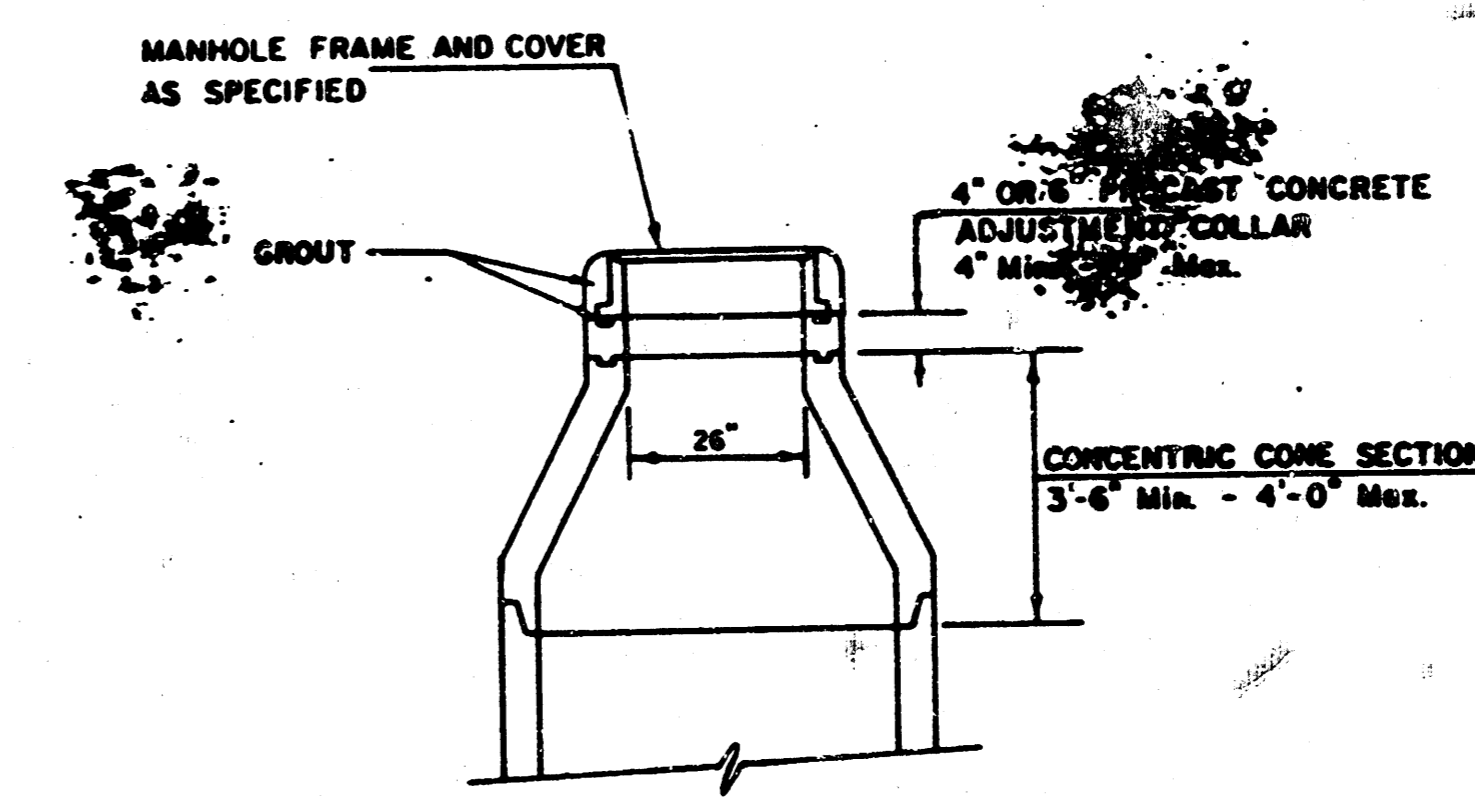
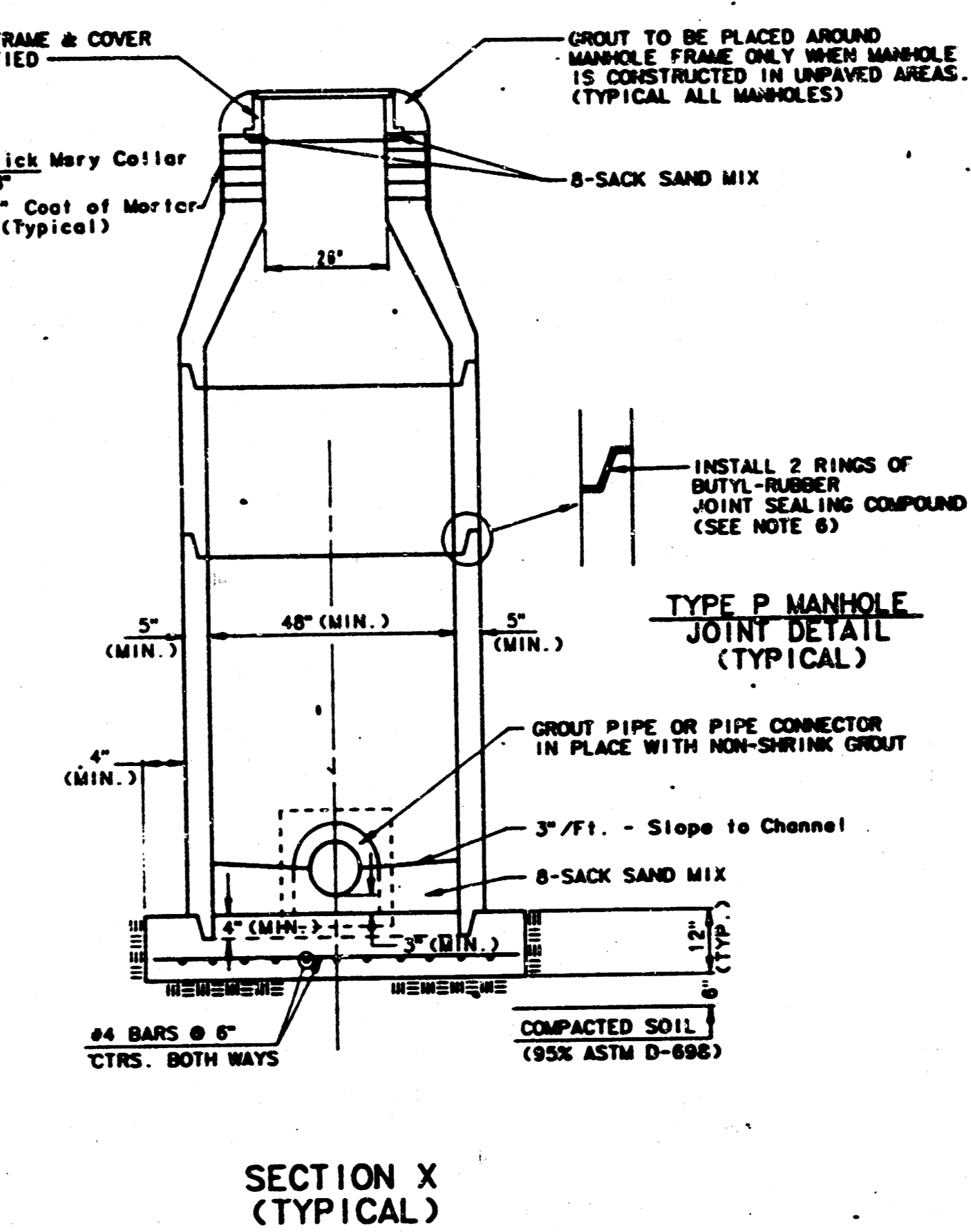
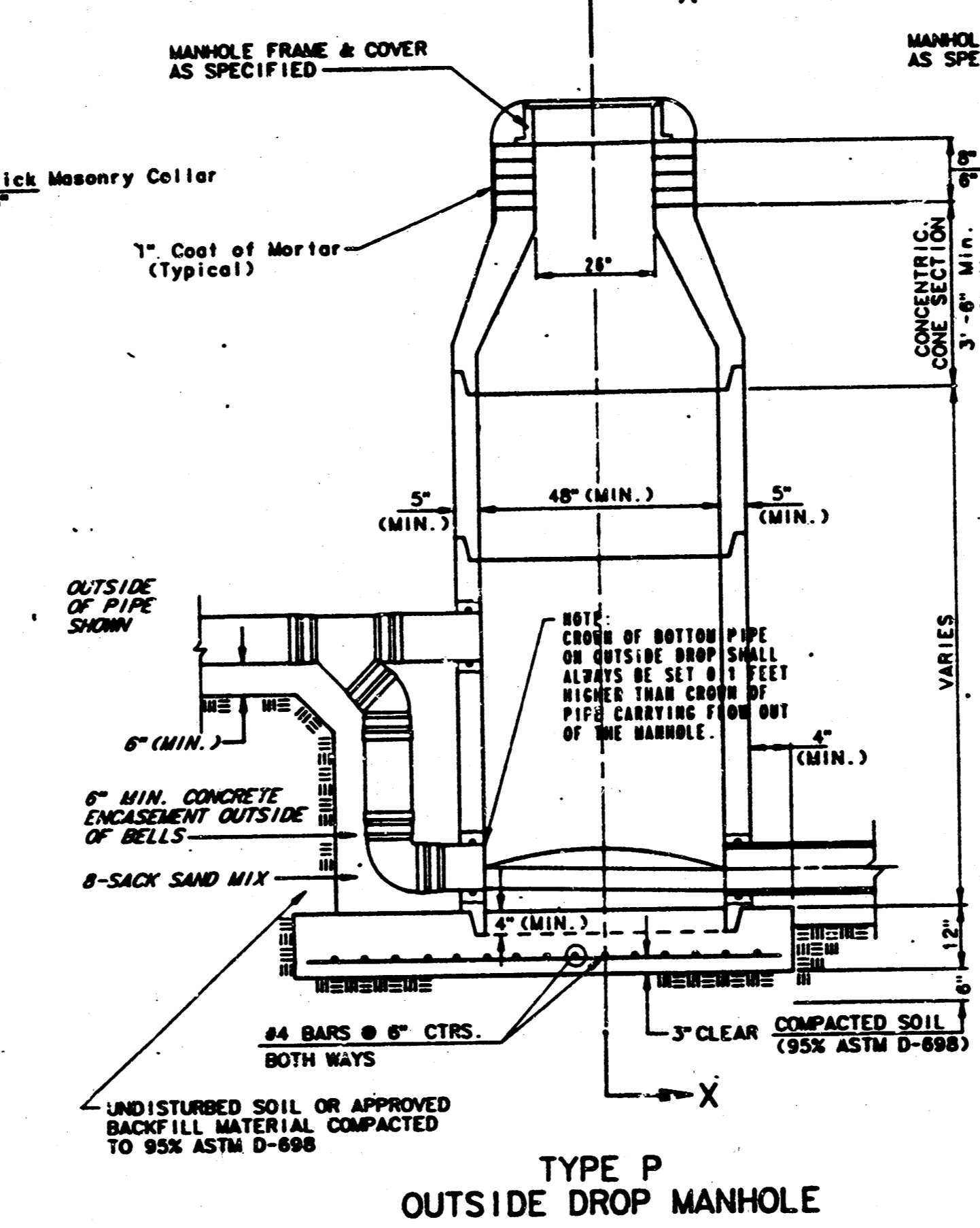
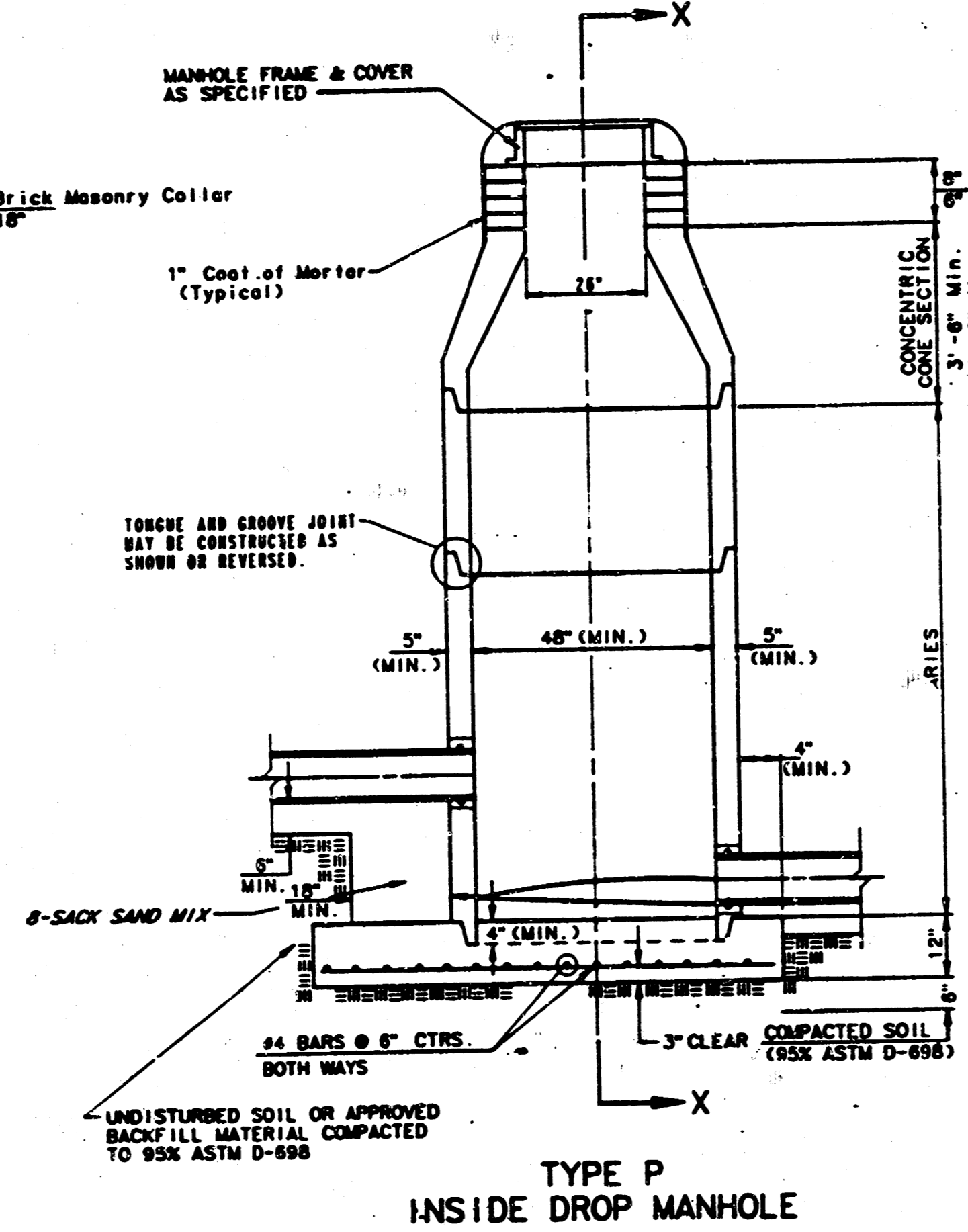
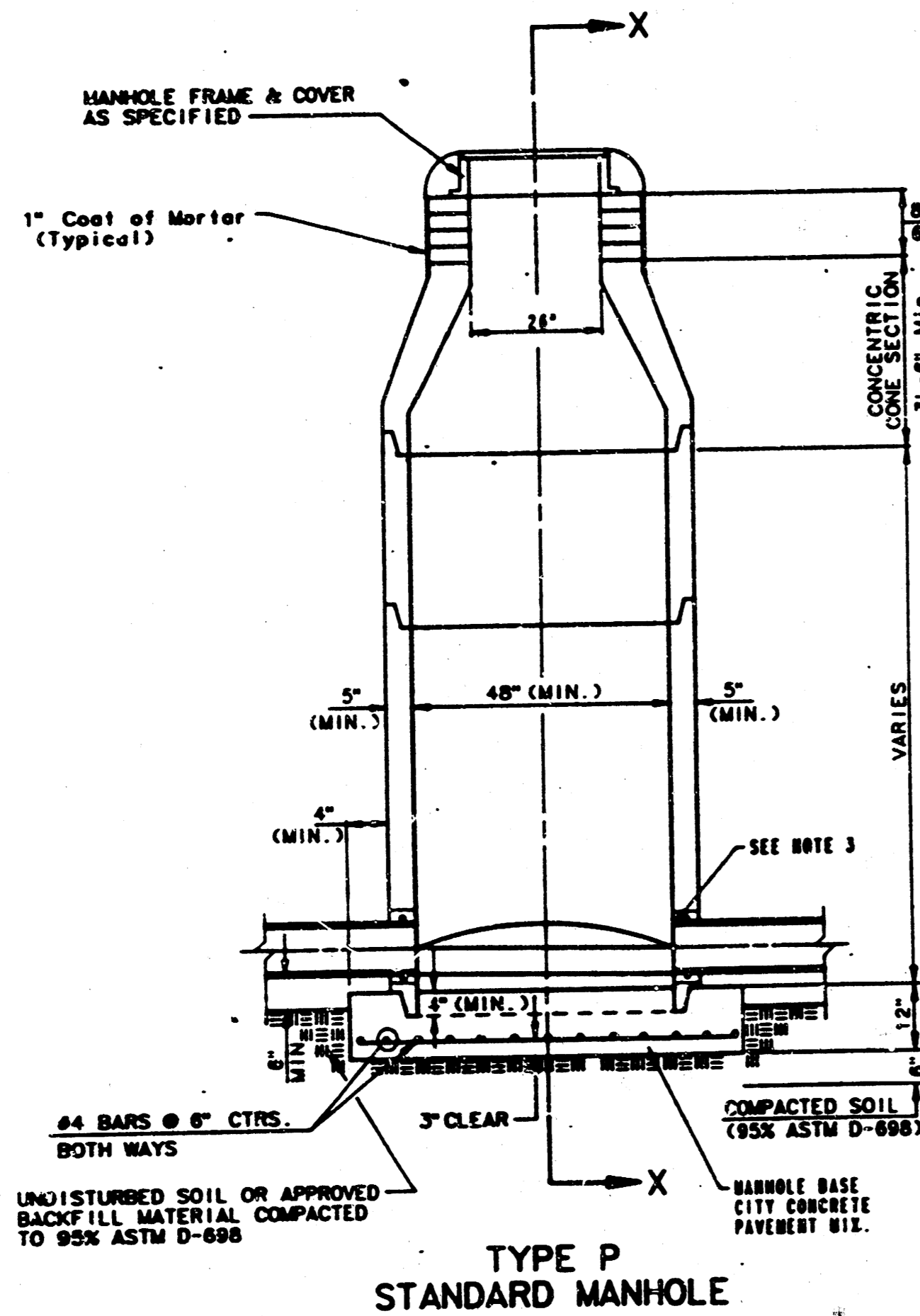
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GOSSEN LIVINGSTON + GRIFFITH AND BONHAM

A PARTNERSHIP OF PROFESSIONAL CORPORATION
430 S. WILSONIA WICHITA, KANSAS 67202
MEMBERSHIP IN EXHIBITS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

SEWER APPURTENANCES DETAILS ADOPTED AS STANDARD DESIGN BY CITY OF WICHITA



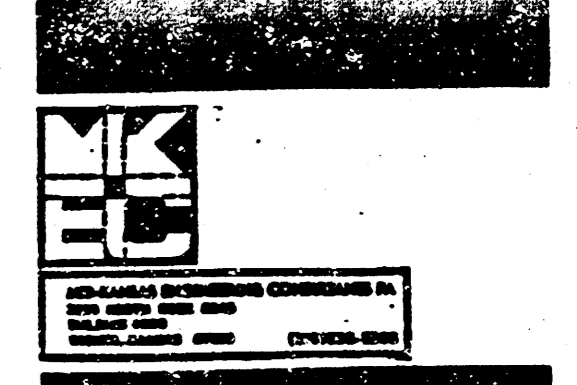
- GENERAL NOTES**
- PRECAST MANHOLE NOTES**
1. ALL PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO THE LATEST REVISION OF A.S.T.M. C478 AS MODIFIED BY THE SPECIFICATIONS.
 2. NON-SHRINK GROUT SHALL BE NON-METALLIC TYPE.
 3. APPROVED FLEXIBLE WATERSTOP GASKETS SHALL BE INSTALLED TO JOIN THE SEWER TO THE MANHOLE WALL WHEN A.S.T.M. COMPOSITE PIPE OR P.V.C. PIPE IS USED. FOR OTHER TYPES OF PIPE THE SEWER SHALL BE GROUDED IN PLACE WITH NON-SHRINK GROUT. THE SEWER PIPE SHALL BE SUPPORTED WITH CONCRETE ENCASEMENT A MINIMUM OF 3 FEET FROM THE MANHOLE WALL AND TO THE FIRST JOINT FOR P.V.C. SUCH THAT THE JOINT REMAINS FLEXIBLE.
 4. ALL INSIDE SURFACES OF THE CONCRETE MANHOLE WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE COATED WITH 2 COATS THINCOAT SERIES OR MI-BUILD EPOXYGLOE, DRY THICKNESS OF 0.015 (MIN.)
 5. EXTERIOR MANHOLE BELLS SHALL BE COATED WITH 1 COAT BODILLAMA 633 BITUMASTOIC COATING.
 6. JOINT SEALING COMPOUND SHALL BE REET-SEAL NO. 2 OR APPROVED EQUAL.
 7. PRECAST MANHOLES SHALL BE SET AT LEAST 4 INCHES INTO THE MANHOLE BASE.
 8. TOP OF MANHOLE FLOOR SLAB SHALL BE AT LEAST 3 INCHES BELOW THE FLOW LINE OF THE OUTLET PIPE TO INSURE SUFFICIENT MINIMUM THICKNESS OF SLABED (OVER).
 9. LIFTING HOLES SHALL BE FILLED WITH NON-SHRINK GROUT AND THE EXTERIOR SURFACE COATED AS SPECIFIED.
 10. MORTAR USED IN MASONRY CONSTRUCTION SHALL CONTAIN 8 BAGS OF CEMENT PER CUBIC YARD. CONCRETE USED IN MANHOLE 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 AND CONTAINING ADMIXTURE. MORTAR SHALL BE PLACED AROUND THE MANHOLE TIME AS SHOWN IN THE DRAWINGS WHEN MANHOLES ARE CONSTRUCTED TO UNPAVED AREAS. MANHOLES CONSTRUCTED UNDER PIPE SIZES ARE SMALLER THAN 24\"/>

11. REINFORCING STEEL SHALL BE INSTALLED IN THE MANHOLE BASES AND SHALL CONSIST OF NO. 4 BARS PLACED ON 6\"/>
12. OPENINGS SHALL BE CUT INTO THE MANHOLE WALL WHEN OUTSIDE DROPS ARE CONSTRUCTED OR EXISTING MANHOLES. SUCH OPENINGS CUT INTO EXISTING MANHOLES SHALL BE AS SMALL AS PRACTICAL TO FACILITATE INSTALLING AND GROUDED THE NEW PIPE IN PLACE. WATERSTOP GASKETS SHALL BE USED WITH P.V.C. AND A.S.T.M. COMPOSITE PIPE. THE NEW PIPE SHALL BE GROUDED INTO THE OPENING USING AN APPROVED NONSHRINK GROUT FOR THE FULL MANHOLE WALL THICKNESS. THE EXTERIOR OF THE COMPLETE 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. THIS WORK, INCLUDING MODIFICATION OF MANHOLE FLOOR, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR OUTSIDE DROP STAGE CONSTRUCTED ON EXISTING MANHOLE.
13. THE FLOORS OF ALL MANHOLES SHALL BE SHAPED WITH FLOW CHANNELS SUCH THAT THE MANHOLES WILL BE KEPT CLEARING AND FREE OF AREAS WHERE SOLIDS COULD BE DEPOSITED AS SEWER 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\"/>
14. 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 VENTURATED AT THE CLAY PIPE JOINT IN A WAGON WHEEL RILL CALLED BY THE FLEXIBILITY OF THE JOINT. CAST OF CRADLE WITHIN MANHOLE EXCAVATION OR TO CLAY PIPE JOINTS ADJACENT TO MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.

15. 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.
16. THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 4\"/>
17. STANDARD MANHOLES AND STANDARD INSIDE DROP MANHOLES SHALL BE BID AS STANDARD MANHOLES FOR THE TYPE AND DIAMETER INDICATED. OUTSIDE DROP MANHOLES SHALL BE BID AS STANDARD OUTSIDE DROP MANHOLES FOR THE TYPE AND DIAMETER INDICATED. ALL MANHOLE DIAMETERS WILL BE 4\"/>
18. A BRICK MASONRY COLLAR SHALL BE INSTALLED BETWEEN THE CAST IRON FRAME AND THE CONCENTRIC CORE. THE COLLAR WILL HAVE 4\"/>

CATHOLIC DIOCESE OF WICHITA
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SANITARY SEWER
TYPE "P" MANHOLE DETAILS

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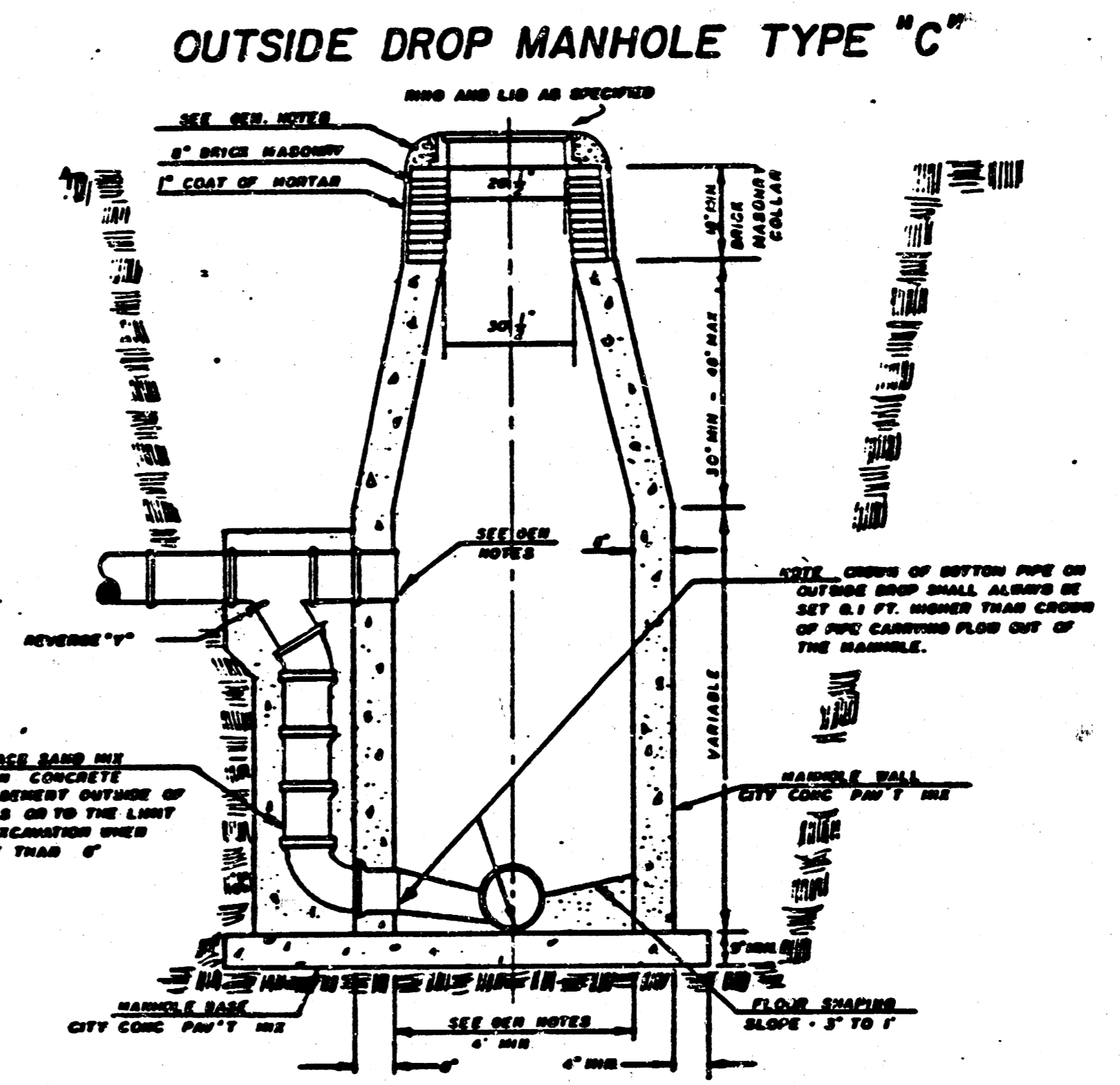
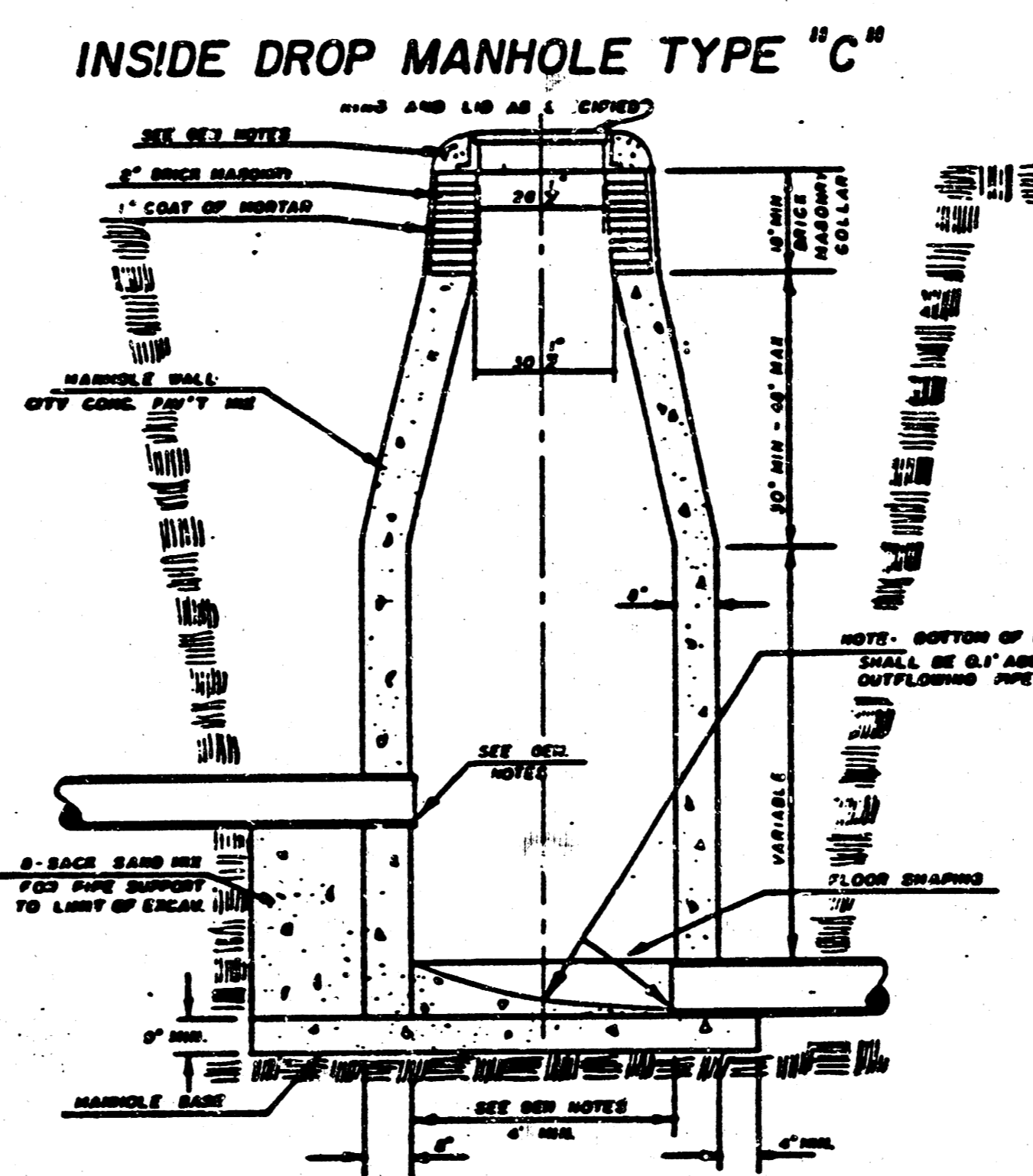
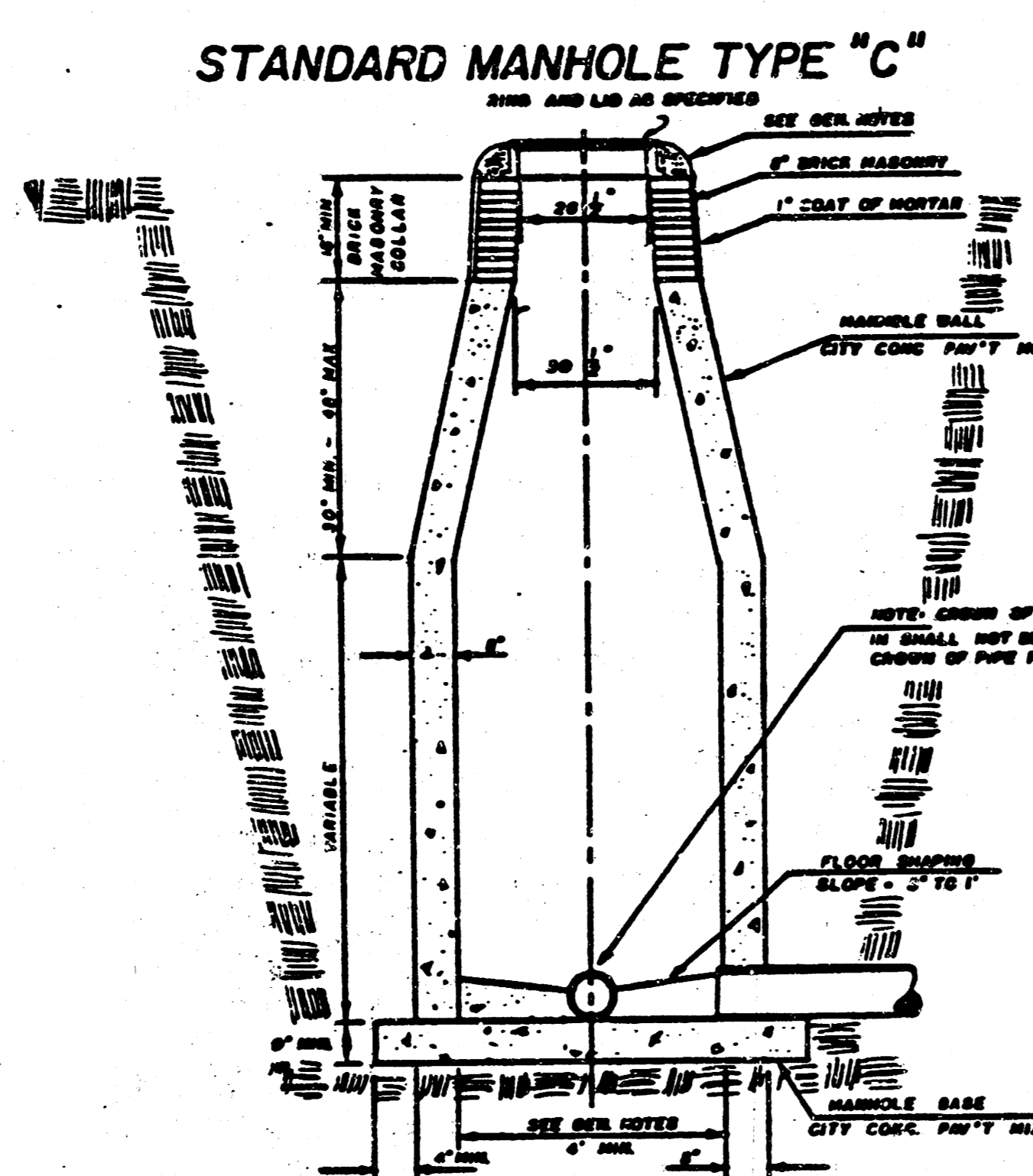
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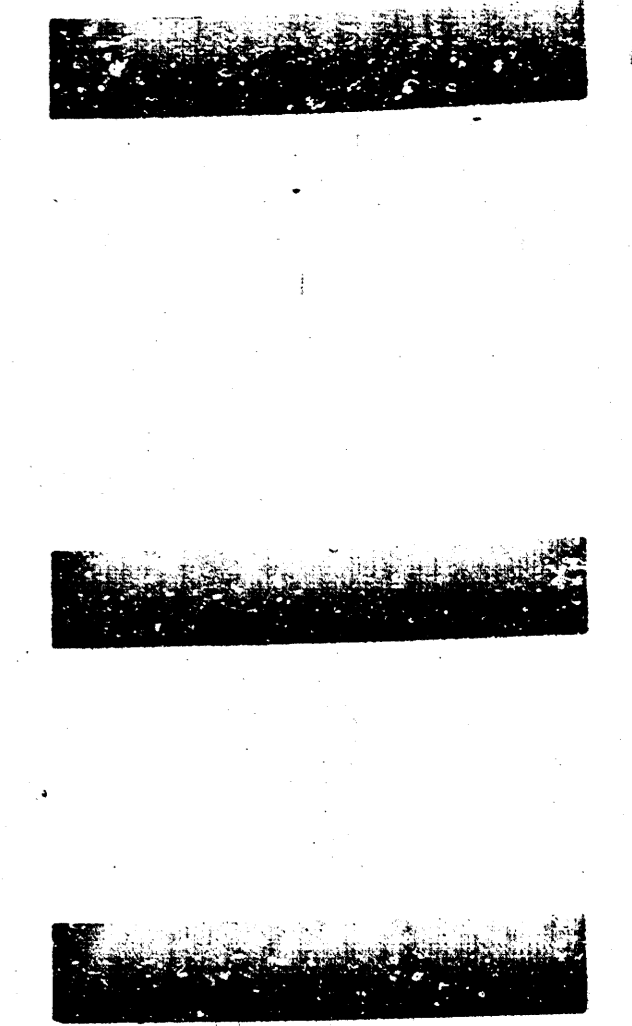
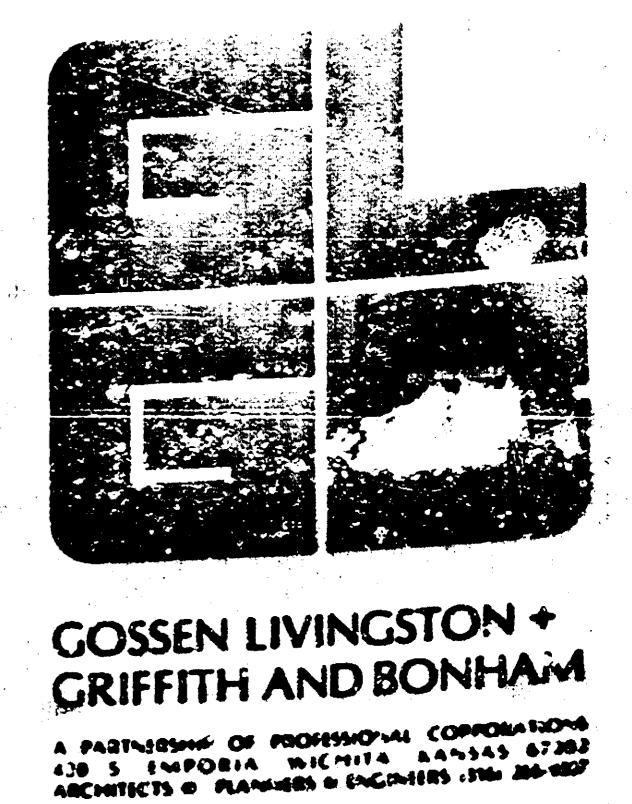
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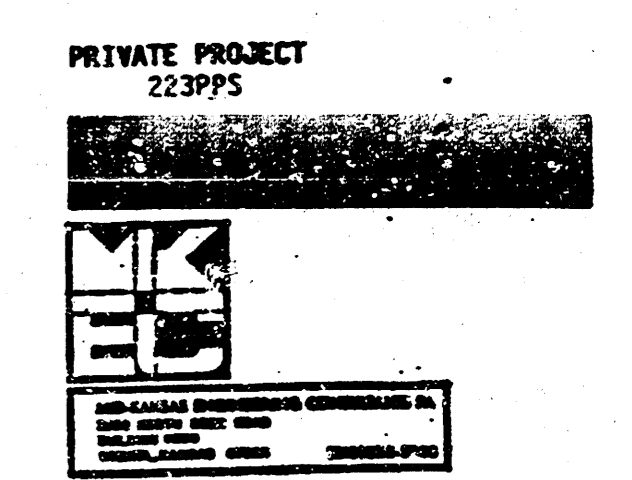
City of Wichita, Kansas



- GENERAL NOTES**
1. MORTAR USED IN BRICKWORK CONSTRUCTION SHALL CONTAIN 8 BAGS 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 PORTLAND CEMENT WITH 40% AIR ENTRAINMENT. MORTAR SHALL BE PLACED AROUND THE MANHOLE RINGS AS SHOWN ON THE DRAWINGS WHEN MANHOLES ARE CONSTRUCTED IN IMPROVED AREAS. TYPE "C" MANHOLES CAN BE CONSTRUCTED ONLY IN PIPE SIZES 4" OR SMALLER. THE INSIDE DIAMETER OF TYPE "C" MANHOLES SHALL BE 4". 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-SHRINKING GROUT. THE EXTERIOR OF THIS COMPLETED CONNECTION SHALL BE SEALED WITH AN APPROVED BITUMINOUS COATING SINCE THIS CONNECTION WILL BE UNDER TIGHT.
 4. THE FLOORS OF ALL MANHOLES SHALL BE SHIPPED WITH FLUM 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. FLUM CHANNELS SHALL BE FORMED TO MATCH THE BOTTOM BOWLS OF THE INLET PIPES AND THE OUTLET PIPE AS SHOWN BY THE DRAWINGS EXCEPT FOR INSIDE DROP MANHOLES. FLUM CHANNELS FOR INSIDE DROP MANHOLES SHALL BE CONSTRUCTED AS INDICATED BY THE DRAWINGS. MANHOLE FLOORS SHALL HAVE SLOPES OF 3 INCHES PER FOOT IN THE AREAS OUTSIDE OF THE FLUM CHANNELS SLOPED TOWARD THE FLUM CHANNELS. PIPES LAID THROUGH MANHOLES SHALL HAVE THE TOP HALF REMOVED TO NEAR LEAKS FOR THE FULL INSIDE DIAMETER OF THE MANHOLE. MANHOLE FLOORS SHALL THEN BE SHIPPED AROUND THE BOTTOM HALF OF THE PIPE WHICH FORMS THE FLUM CHANNEL.
 5. PIPES INSTALLED WITHIN THE EXCAVATION SPACE FOR THE MANHOLE SHALL BE CEMENTED WITH CONCRETE TO THE LIMITS OF THE MANHOLE EXCAVATION. WHEN CLAY PIPE IS USED, THE CEMENT SHALL EXTEND TO THE FIRST JOINT OUTSIDE THE MANHOLE. THE CEMENT SHALL BE TERMINATED AT THE CLAY PIPE JOINT IN A MANNER WHICH WILL MAINTAIN THE FLEXIBILITY OF THE JOINT. COST OF CEMENT 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 DRAWINGS.
 7. THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 4" FOR INLET PIPES SIZE 12" OR SMALLER AND 2" FOR INLET PIPES LARGER THAN 12". THE CROWN OF INLET PIPES SHALL NEVER BE SET LOWER THAN THE CROWN OF THE OUTLET PIPE.
 8. STANDARD MANHOLES TYPE "C" AND STANDARD INSIDE DROP MANHOLES TYPE "C" SHALL BE BID AS STANDARD MANHOLES FOR THE TYPE AND DIAMETER INDICATED. OUTSIDE DROP MANHOLES TYPE "C" SHALL BE BID AS STANDARD OUTSIDE DROP MANHOLES FOR THE TYPE AND DIAMETER INDICATED. ALL MANHOLE DIAMETERS WILL BE 4' UNLESS INDICATED OTHERWISE.



CATHOLIC DIOCESE OF WICHITA
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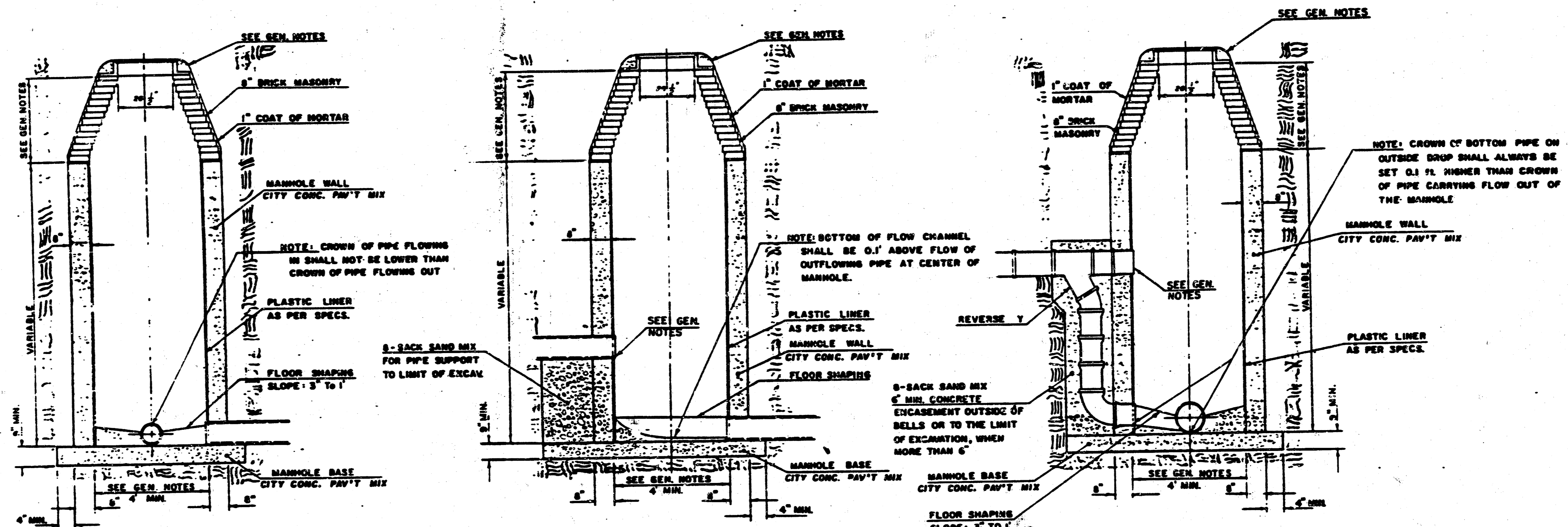
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TYPE "D" MANHOLE

TYPE "D" INSIDE DROP MANHOLE

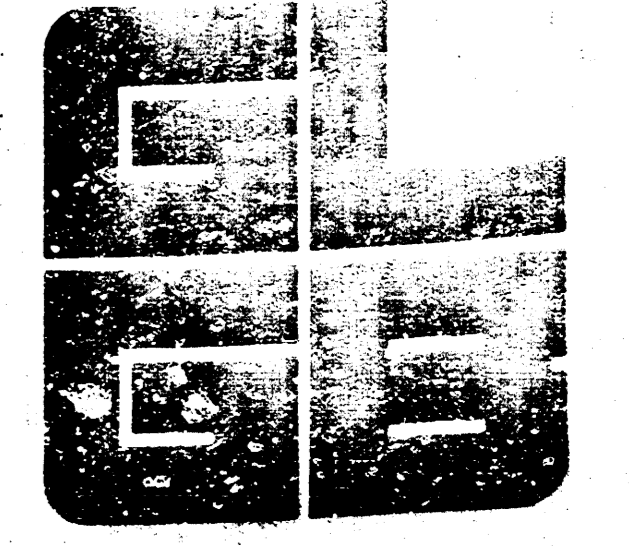
TYPE "D" OUTSIDE DROP MANHOLE



GENERAL NOTES

- MORTAR USED IN MASONRY CONSTRUCTION SHALL CONTAIN 8 BAGS 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 ADJUSTMENT. 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 CORREL 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.
- 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.
- 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 GAUDED INTO THIS OPENING WITH NON-SHRINK GROUT. THE EXTERIOR OF THIS COMPLETE CONNECTION SHALL BE SEALED WITH AN APPROVED BITUMINOUS COATING SUCH THAT THE CONNECTION WILL BE WATER TIGHT. THE EXTERIOR 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.
- 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 FILMS THROUGH THE MANHOLE FROM ALL INLET PIPES TO THE OUTLET PIPE. FLOW CHANNELS SHALL BE FORMED TO MATCH THE BOTTOM WAVES 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 HEAT 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.
- 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.
- 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.
- 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.
- 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.

TYPE "D"
EPOXY COATING ON INTERIOR CONCRETE SURFACES
MAY BE DELETED WHEN TYPE "D" MANHOLES ARE
CONSTRUCTED ON SEWERS WITH DIAMETERS SMALLER
THAN 10 INCHES.



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GRIFFITH AND BONHAM
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400 S. WASHINGTON, WICHITA, KANSAS 67202
ARCHITECTS & PLANNERS & ENGINEERS (L.S. 20,000)

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SANITARY SEWER
TYPE "D" MANHOLE DETAILS

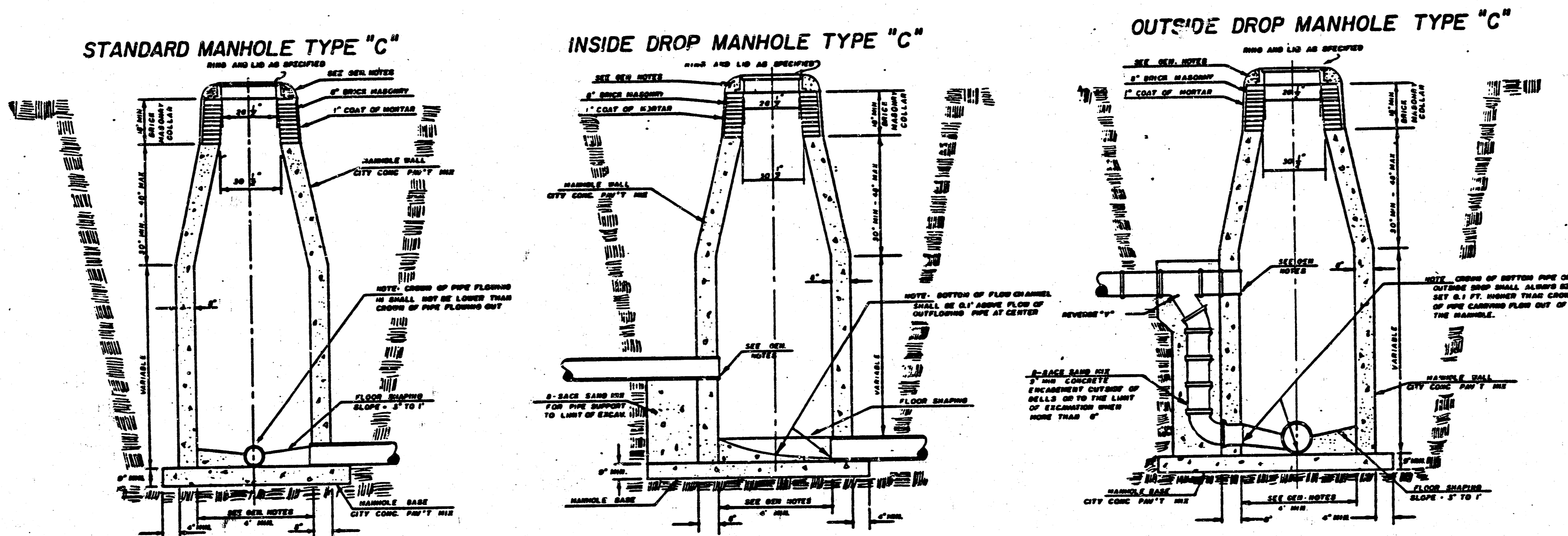
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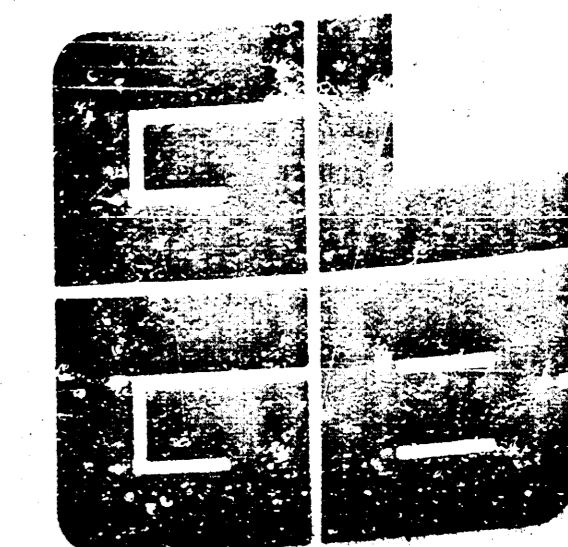
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BY

City of Wichita, Kansas



GENERAL NOTES

1. MORTAR USED IN MASONRY CONSTRUCTION SHALL CONTAIN 8 BAGS 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 WITH 5% AIR ENTRAINING AGENT. MORTAR SHALL BE PLACED AROUND THE MANHOLE JOINTS AS SHOWN ON THE DRAWINGS USED HEREIN. THE CONSTRUCTION IS IMPROVED AREA. TYPE "C" MANHOLES CAN BE CONSTRUCTED ONLY WHERE PIPE SIZES ARE 6" OR SMALLER. THE INSIDE DIAMETER OF TYPE "C" MANHOLES SHALL BE 4'. 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 PROVIDING AND INSTALLING REINFORCING STEEL SHALL BE INCLUDED IN THE BIDDING PRICE 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 GRADED INTO THIS OPENING WITH NON-CORRODING GROUT. THE EXTENSION OF THIS CONNECTION SHALL BE SEALED WITH AN APPROVED BITUMINOUS COATING SUCH THAT THE CONNECTION WILL BE WATER TIGHT.
4. THE FLOORS OF ALL MANHOLES SHALL BE SHAPED WITH FLAT CHANNELS SUCH THAT THE MANHOLES WILL BE SELF-CLEANING AND FREE OF AREAS WHERE SOLIDS COULD BE DEPOSITED AS SEWAGE FLIES THROUGH THE MANHOLE FROM ALL INLET PIPES TO THE OUTLET PIPE. FLAT CHANNELS SHALL BE FORMED TO MATCH THE BOTTOM SLOPES OF THE INLET PIPES AND THE OUTLET PIPE AS SHOWN ON THE DRAWINGS EXCEPT FOR INSIDE DROP MANHOLES. FLAT CHANNELS FOR INSIDE DROP MANHOLES SHALL BE CONSTRUCTED AS INDICATED BY THE DRAWINGS. MANHOLE FLOORS SHALL HAVE SLOPES OF 3 INCHES PER FOOT TO THE AREAS OUTSIDE OF THE FLAT CHANNELS SLOPED TOWARD THE FLAT CHANNELS. PIPES LINED THROUGH MANHOLES SHALL HAVE THE TOP HALF REMOVED TO REVEAL 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 FLAT CHANNEL.
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7. THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 4' FOR INLET PIPES SIZED 12" OR SMALLER AND 2' FOR INLET PIPES LARGER THAN 12". THE CHANGES OF INLET PIPES SHALL NEVER BE SET LOWER THAN THE CROWN OF THE OUTFLOWING PIPE.
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SANITARY SEWER
TYPE "C" MANHOLE DETAILS

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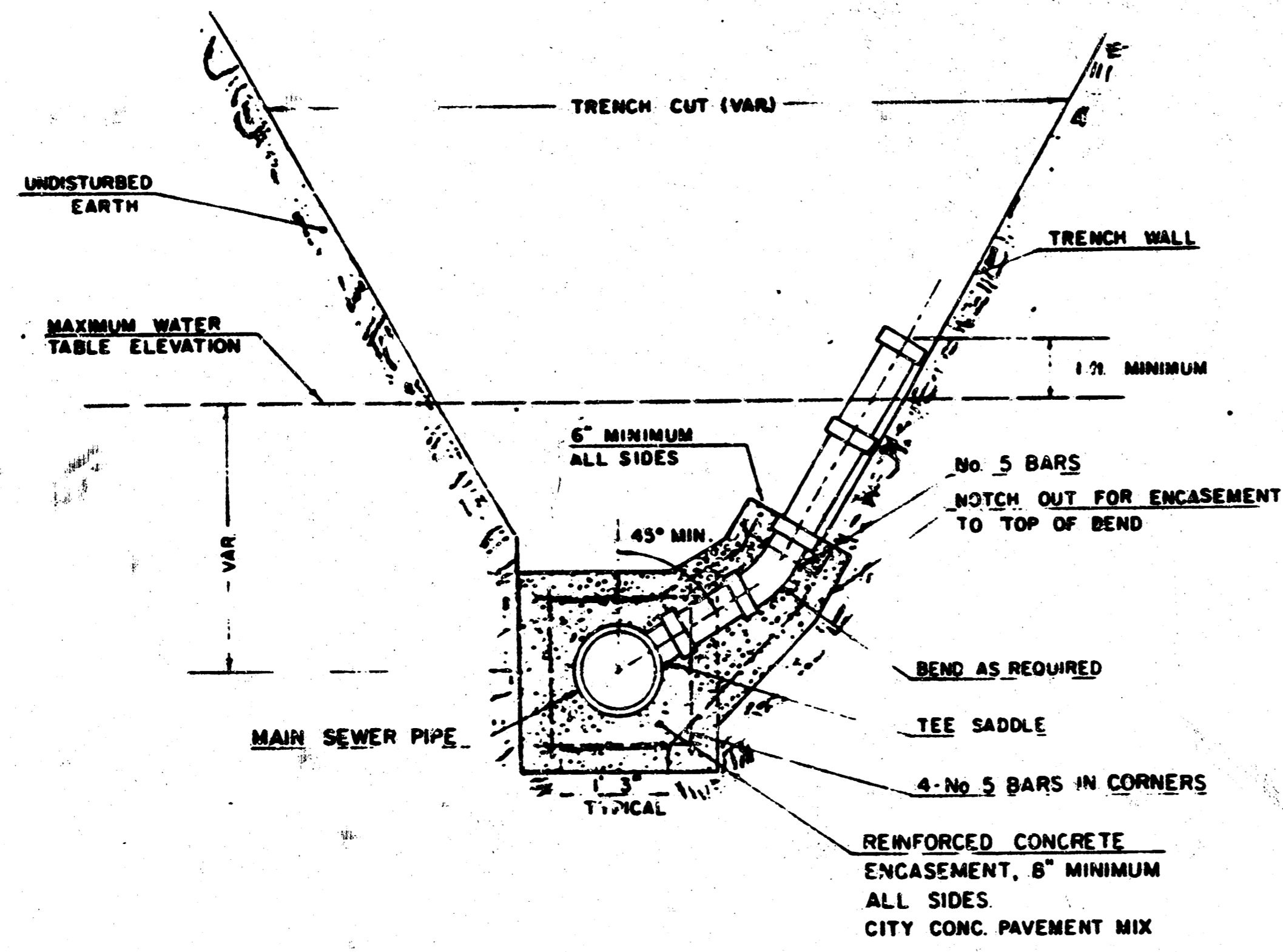
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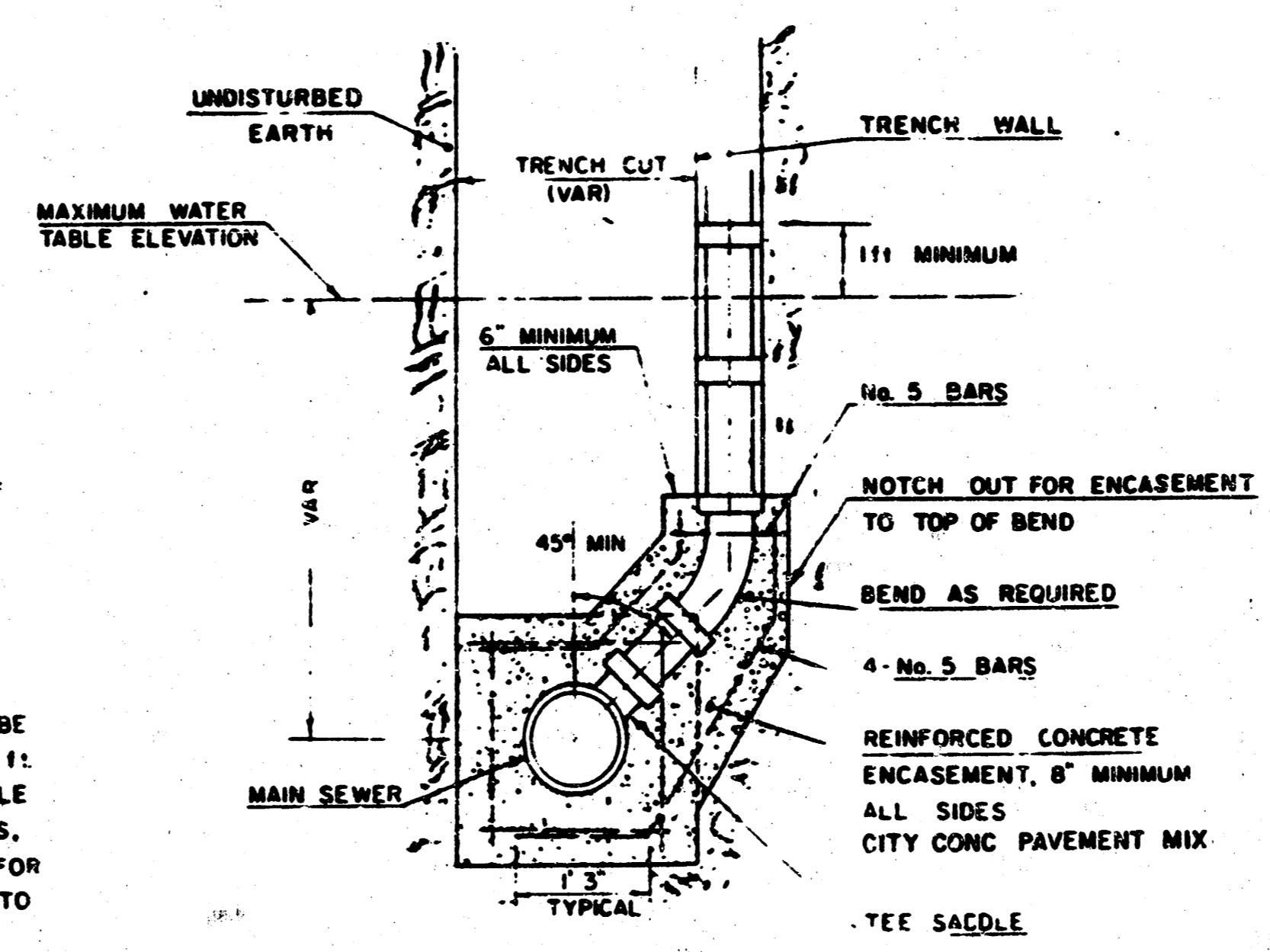
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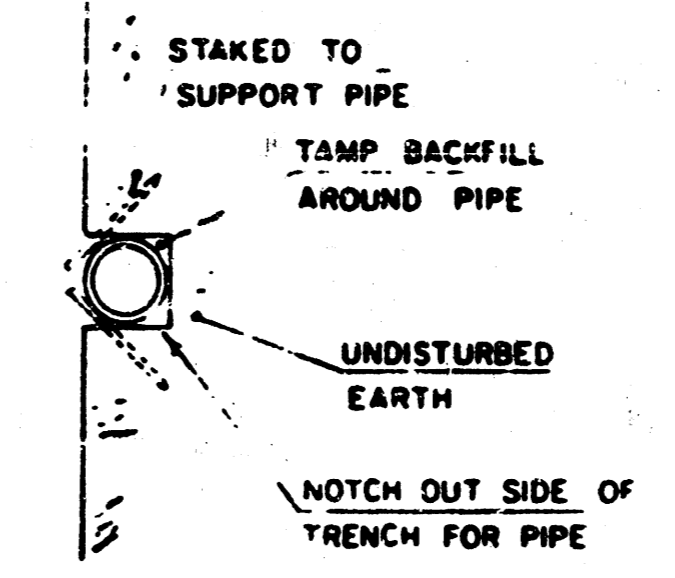


TYPICAL RISER FOR SLOPING TRENCH WALLS

NOTE:
TOP OF 4" OR 6" RISER PIPE TO BE EXTENDED TO AN ELEVATION OF 1' MINIMUM ABOVE THE WATER TABLE ELEVATION, WHEN WATER EXISTS, OR TO AN ELEVATION SUITABLE FOR PROVIDING SERVICE TO THE LOT TO BE SERVED AND THEN PLUGGED.



TYPICAL RISER FOR VERTICAL TRENCH WALLS

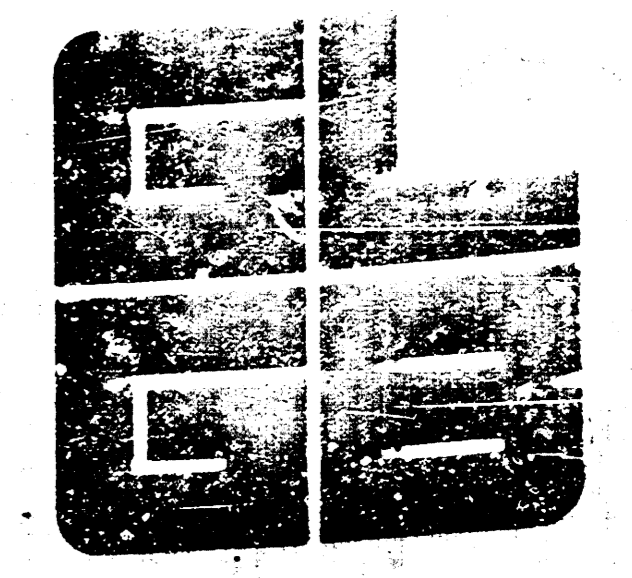


GENERAL NOTE

RISERS SHALL BE SET AS FOLLOWS: TO SERVE ALL LOTS OR TRACTS UNDER THE MAIN SEWER LINE IS HELD TO BE THE WATER TABLE. RISERS SHALL ALSO BE INSTALLED TO SERVE ALL LOTS AND TRACTS UNDER THE MAIN SEWER LINE DEPTH IS SIX (6) FEET FROM THE FINISH GRADE TO THE CONNECTION POINT. THE LOCATION OF RISERS TO SERVE DEVELOPED PROPERTY SHALL BE APPROVED BY THE PROPERTY OWNER. PIPE STUBS SHALL BE INSTALLED IN MANHOLES WHERE LOCATIONS OF MANHOLES WERE PROVIDED BY THE FIELD ENGINEER. CONDUITS AS DETERMINED BY THE FIELD ENGINEER. THE VERTICAL DISTANCE FROM THE FLOW LINE OF THE MAIN PIPE TO THE TOP OF THE TRUNK OF THE STUB TO ENTER THE TOP OF THE 18" MAIN SEWER PIPE. PIPE STUBS AND RISERS INSTALLED TO SERVE COMMERCIAL OR INDUSTRIAL PROPERTY SHALL BE 6" INCH. PIPE STUBS AND RISERS INSTALLED TO SERVE RESIDENTIAL PROPERTY MAY BE RISERS 4" INCH OR 6" INCH DEPENDING UPON THE AVAILABLE GRADE AND THE SIZE OF THE LOT AS DETERMINED BY THE FIELD ENGINEER. ENCASEMENT OF VERIFIED CLAY MAIN SEWER PIPE SHALL EXTEND TO THE FIRST JOINT IN THE MAIN SEWER CLAY PIPE ON EACH SIDE OF THE RISER INSTALLATION. ENCASEMENT OF A.S.C. COMPOSITE OR P.V.C. MAIN SEWER PIPE SHALL EXTEND A MINIMUM OF 1' ON BOTH SIDES OF THE CENTERLINE OF THE RISER. FOUR INCH AND SIX INCH RISER PIPE SHALL BE ENCASED WITH CONCRETE TO THE TOP OF THE STUB AS INDICATED IN THE DRAWINGS. FOUR INCH AND SIX INCH CLAY PIPE FOR RISERS SHALL BE EXTRA STRENGTH PIPE CONFORMING TO THE REQUIREMENTS OF THE LATEST EDITION OF A.S.T.M. DESIGNATION C750-87. COMPRESSION JOINTS AS SPECIFIED FOR CLAY PIPE TO THE STANDARD SPECIFICATIONS. FOUR INCH AND SIX INCH A.S.C. OR P.V.C. PIPE SHALL BE APPROVED FOR USE IN THE CITY BY THE CHIEF PLUMBING AND OR AN ARCHITECT FOR THE CENTRAL INSPECTION DIVISION OF THE DEPARTMENT OF HOUSING AND ECONOMIC DEVELOPMENT. LOCATIONS OF THE RISERS SHALL BE MARKED BY PAINTING GREEN COLORED PLASTIC TAPE TO THE END OF THE RISER WHICH SHALL BE EXTENDED TO THE GROUND SURFACE AS THE EXCAVATION IS BACKFILLED SUCH THAT THE COLORED TAPE WILL BE VISIBLE WHEN THE PROJECT IS COMPLETED. THE ENDS OF THE RISER PIPE AND MANHOLE STUBS SHALL BE CAPPED OR PLACED USING FITTINGS FURNISHED BY THE MANUFACTURER OF THE PIPE. CONTRACTOR'S METHOD FOR SUPPORTING AND BACKFILLING RISER PIPE SHALL BE APPROVED BY THE ENGINEER.

FINISHING AND INSTALLING RISERS SHALL BE PAID FOR AT THE UNIT PRICES BID FOR "PIPE, 4" PIPE AND REINFORCED CONCRETE ENCASEMENT" FOR THE VARIOUS MAIN SEWER PIPE SIZES INDICATED WHICH PRICE SHALL INCLUDE ALL COSTS FOR COMPLETION OF THIS ITEM INCLUDING SADDLES, BENDS, CONCRETE REINFORCING STEEL, CAPS OR PLUGS, AND ALL OTHER NECESSARY MATERIALS OR WORK. CONCRETE ENCASEMENT OF THE RISER PIPE TO THE TOP OF THE BEND AS SHOWN BY THE DRAWINGS WILL NOT BE PAID FOR DIRECTLY AND THE COST FOR THIS WORK SHALL BE CONSIDERED AS SUBSIDIARY TO THE OTHER ITEMS OF WORK.

THE PROJECT INSPECTOR SHALL REPORT ON INSPECTION CARDS THE LOCATION OF ALL RISERS CONSTRUCTED AS REQUIRED FROM THE NEAREST MANHOLE, THE DIRECTION OF SERVICE, THE ELEVATION OF THE TOP OF THE RISER, AND THE DISTANCE FROM THE MANHOLE. THE PROJECT INSPECTOR SHALL ALSO REPORT IN INSPECTION CARDS THE LOCATION, DIRECTION OF SERVICE, AND SIZE OF ALL RISERS INSTALLED IN MANHOLES.



GOSSEN LIVINGSTON & GRIFFITH AND BONHAM

CATHOLIC DIOCESE OF WICHITA
CATHOLIC LIFE CENTER
UTILITIES

PRIVATE PROJECT
223795

ENGINEER

**SANITARY SEWER
VERTICAL RISER DETAILS**

JOB NO. _____
DATE PLOT. & MOD. 17
DRAWN _____
CHECKED _____ 22

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