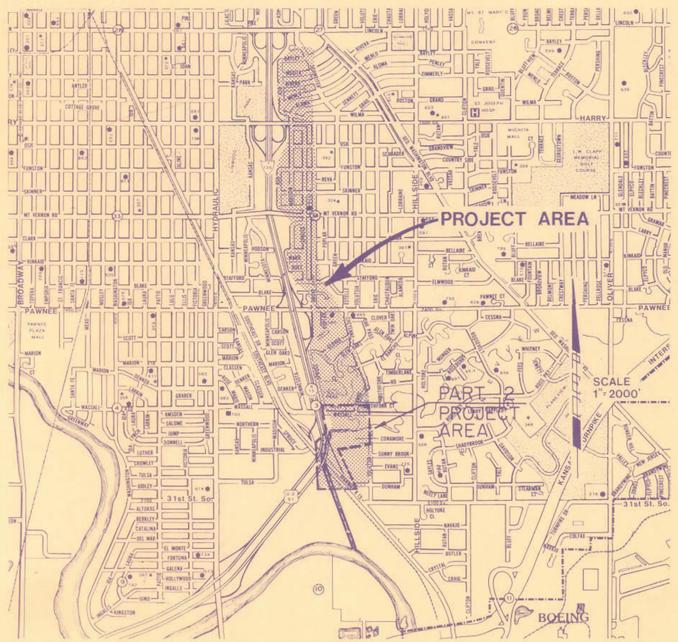
THE CITY OF WICHITA
SEDGWICK COUNTY, KANSAS

MICHAEL E. LINDEBAK, P.E.
CITY ENGINEER



LOCATION MAP

CITY MAP PROVIDED BY KANSAS BLUE PRINT CO., INC.

ALTER, REPAIR, RECONSTRUCT, OR CONSTRUCT PORTIONS OF

SANITARY SEWER NO. 12

BETWEEN LINCOLN STREET AND
WASTEWATER TREATMENT PLANT NO. 1

PHASE 1

~~PART 1 SEWER RELINING~~
PART 2A: S.S. NO. 12 RELIEF INTERCEPTOR
PART 2B: WASSALL STREET INTERCEPTOR
PART 2C: JOYLAND SEWER
PART 2D: SEWER ABANDONMENT AND MANHOLE MODIFICATIONS

NOVEMBER, 1986

CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001

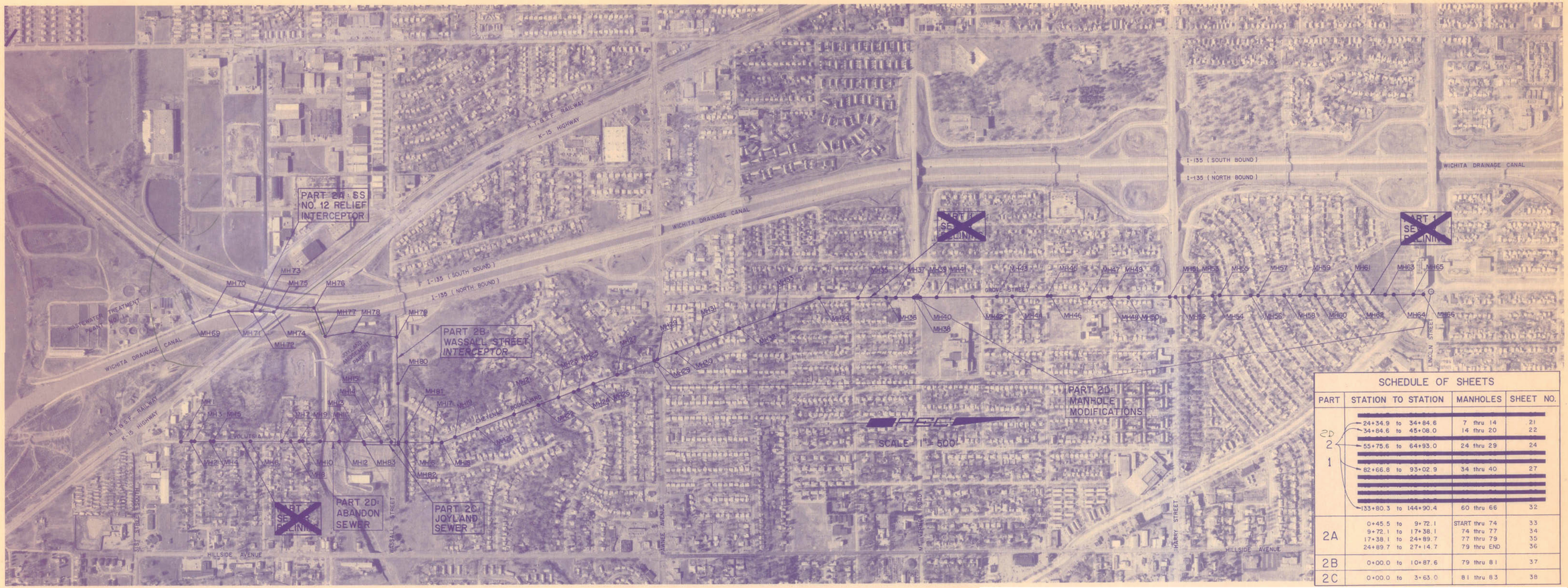
INDEX OF SHEETS

*SHEETS 20,23,25,26,28-31 NOT INCLUDED IN PART 2

DARREL LYNN REGIER LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

DEC 30 1986

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
WICHITA, KANSAS



SCHEDULE OF SHEETS

PART	STATION TO STATION	MANHOLES	SHEET NO.
2D 2 1	24+34.9 to 34+84.6	7 thru 14	21
	34+84.6 to 45+08.0	14 thru 20	22
	55+75.6 to 64+93.0	24 thru 29	24
	82+66.8 to 93+02.9	34 thru 40	27
	133+80.3 to 144+90.4	60 thru 66	32
2A	0+45.5 to 9+72.1	START thru 74	33
	9+72.1 to 17+38.1	74 thru 77	34
	17+38.1 to 24+89.7	77 thru 79	35
	24+89.7 to 27+14.7	79 thru END	36
2B	0+00.0 to 10+87.6	79 thru 81	37
2C	0+00.0 to 3+63.0	81 thru 83	38

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH CITY OF WICHITA SPECIFICATIONS AND STANDARD DETAILS EXCEPT AS SPECIFICALLY MODIFIED HEREIN AND IN THE SUPPLEMENTAL SPECIFICATIONS PROVIDED.
2. ALL ELEVATIONS SHOWN ARE CITY OF WICHITA DATUM. (USGS-1187.4=CITY DATUM)
3. THE CONTRACTOR SHALL LIMIT THE EXTENT OF TRENCH TO REMAIN OPEN OVERNIGHT AND WEEKENDS TO LESS THAN 50 FEET.
4. AT LEAST 48 HOURS PRIOR TO BEGINNING ANY EXCAVATION (EXCLUDING WEEKENDS AND HOLIDAYS), THE CONTRACTOR SHALL CONTACT THE KANSAS ONE-CALL SYSTEM, A UTILITY LOCATION SERVICE, AT (316) 687-2470 TO REQUEST THE FOLLOWING UTILITY COMPANIES TO LOCATE ANY EXISTING LINES WITHIN THE PROJECT AREA: KPL-GAS SERVICE; ARKLA GAS COMPANY, K.G.&E., THE WICHITA WATER DEPARTMENT, AND AIR CAPITAL CABLEVISION. THE CONTRACTOR MUST ALSO NOTIFY SOUTHWESTERN BELL TELEPHONE COMPANY AT (316) 571-2115 48 HOURS PRIOR TO BEGINNING EXCAVATION AND REQUEST THAT ANY LINES WITHIN THE PROJECT AREA BE FLAGGED.
5. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL CONTACT THE FOLLOWING PERSONNEL TO ADVISE THEM OF THE INTENDED WORK AND OF HIS PROPOSED SCHEDULE:

SEWAGE TREATMENT PLANT NO. 1
CITY OF WICHITA-WATER POLLUTION CONTROL
455 N. MAIN - CITY HALL
WICHITA, KANSAS 67202
MR. DUANE MORGAN
(316) 268-4286

INTERSTATE 135 HIGHWAY
KANSAS DEPARTMENT OF TRANSPORTATION
AREA ENGINEER'S OFFICE
3200 E. 45TH ST. NORTH
WICHITA, KANSAS 67220
MR. DON FOSTER (UTILITY COORDINATOR)
(316) 744-1271

K-15 HIGHWAY
KANSAS DEPARTMENT OF TRANSPORTATION
AREA ENGINEER'S OFFICE
3200 E. 45TH ST. NORTH
WICHITA, KANSAS 67220
MR. DON FOSTER (UTILITY COORDINATOR)
(316) 744-1271

ATCHISON, TOPEKA AND SANTA FE RAILWAY CO.
201 E. 6TH STREET
NEWTON, KANSAS 67114
MR. B.L. DRAPER (DIVISION ENGINEER) OR
MR. RUSS PIERCE (OFFICE ENGINEER)
(316) 283-7517

WICHITA DRAINAGE CANAL
ENVIRONMENTAL MAINTENANCE ENGINEER
455 N. MAIN - CITY HALL
WICHITA, KANSAS 67202
MR. GENE RATH
(316) 268-4559

JOYLAND AMUSEMENT PARK
2801 S. HILLSIDE
WICHITA, KANSAS 67216
MR. STAN NELSON (OWNER)
(316) 684-0179

SOWERS ELEMENTARY SCHOOL
USD NO. 259 - SCHOOL SERVICE CENTER
DIRECTOR OF SCHOOL PLANT PLANNING
AND OPERATION SERVICES
3850 N. HYDRAULIC
WICHITA, KANSAS 67219
DR. RICHARD L. HOLSTEAD
(316) 838-1211

CITY OF WICHITA PUBLIC STREETS (CLOSINGS)
TRAFFIC ENGINEERING
455 N. MAIN - CITY HALL
WICHITA, KANSAS 67202
MR. BILL MCKINLEY
(316) 268-4395

6. THE CONTRACTOR SHALL NOTIFY THE ATCHISON, TOPEKA & SANTA FE RAILWAY CO. DIVISION ENGINEER, AT THE ADDRESS ABOVE, AT LEAST 72 HOURS IN ADVANCE OF BEGINNING WORK ON THE RAILWAY RIGHT-OF-WAY SO THAT THE RAILWAY COMPANY CAN PROVIDE FLAGGING AS REQUIRED.
7. THE CONTRACTOR SHALL FILE A "HIGHWAY PERMIT AGREEMENT" WITH THE KANSAS DEPARTMENT OF TRANSPORTATION (KDOT) FOR "USE OF HIGHWAY RIGHT-OF-WAY". COPIES OF THE KDOT-APPROVED PERMITS SHALL BE DELIVERED TO THE ENGINEER PRIOR TO BEGINNING ANY CONSTRUCTION WORK NEAR I-135 OR K-15 HIGHWAYS. THE PERMIT FORMS ARE AVAILABLE FROM THE KDOT OFFICE LISTED ABOVE.
8. PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHOULD OBTAIN COPIES OF APPROVED RAILROAD CROSSING PERMITS. COPIES OF THE APPROVED PERMITS MAY BE OBTAINED FROM THE CITY ENGINEER'S OFFICE (455 N. MAIN, WICHITA, KANSAS - 7TH FLOOR).
9. EASEMENTS AND RIGHTS-OF-WAY PROVIDED BY THE OWNER FOR THE PROJECT ARE SHOWN IN THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACQUISITION OF ANY ADDITIONAL TEMPORARY EASEMENTS OR RIGHTS-OF-WAY THAT HE DESIRES TO USE IN COMPLETING THE WORK.
10. AT LEAST 7 DAYS PRIOR TO BEGINNING CONSTRUCTION ALONG STREETS, THE CONTRACTOR SHALL NOTIFY AREA RESIDENTS OF STREET CLOSINGS. RECONSTRUCTION OF STREETS SHALL BE COMPLETED AS EXPEDITIONLY AS POSSIBLE USING STANDARD CONSTRUCTION PRACTICES.
11. THE CONTRACTOR SHALL BE REQUIRED TO NOTIFY ALL PROPERTY OWNERS AND/OR TENANTS DIRECTLY AFFECTED BY THE CONSTRUCTION OF THIS PROJECT A MINIMUM OF SEVEN DAYS PRIOR TO STARTING CONSTRUCTION IN THE VICINITY OF THE AFFECTED PROPERTIES. THE CONTRACTOR SHALL AGAIN NOTIFY RESIDENTS IMMEDIATELY PRIOR TO BEGINNING WORK THAT SEWER SERVICE WILL BE DISRUPTED.
12. ALL ACTIVE BUILDING SERVICE LATERALS OR LINES WHICH ARE REMOVED FROM SERVICE DURING CONSTRUCTION, SHALL BE RECONNECTED AND RESTORED TO USE BY THE CONTRACTOR AS SOON AS FEASIBLE.
13. ONLY ACTIVE BUILDING SEWER LINES WHICH CONNECT ACTUAL BUILDINGS TO THE SEWER SYSTEM ARE TO BE RECONNECTED TO THE NEW SEWER CONSTRUCTION. BUILDING SEWER LINES AND/OR CONNECTIONS WHICH HAVE BEEN ABANDONED ARE NOT TO BE RECONNECTED TO THE NEW SEWER CONSTRUCTION. IT WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO ASCERTAIN WHICH SUCH BUILDING SEWER LINES AND/OR CONNECTIONS ARE ACTIVE AND WHICH SUCH SEWERS AND/OR CONNECTIONS HAVE BEEN ABANDONED. ALL WORK INVOLVED WITH BUILDING SEWER LINE CONSTRUCTION AND/OR BUILDING SEWER CONNECTIONS SHALL CONFORM TO THE APPLICABLE SECTION OF THE STANDARD SPECIFICATIONS.
14. THE BURIED UTILITIES AS LOCATED ON THE PLANS ARE APPROXIMATE LOCATIONS ONLY. IT SHOULD BE NOTED THAT OTHER BURIED LINES AND CABLES MAY EXIST WHICH ARE NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING TRENCHING OPERATIONS TO AVOID DAMAGING THESE LINES. ANY LINES DAMAGED SHALL BE REPLACED OR REPAIRED IMMEDIATELY AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
15. THE CONTRACTOR SHALL RESTORE ALL DITCHES, SWALES, ROAD SHOULDERS, ENTRANCES, AND BANK LINES TO THEIR ORIGINAL SLOPES AND GRADES EXCEPT AS SHOWN OTHERWISE.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRESERVING PROPERTY IRONS. THE CONTRACTOR SHALL BE REQUIRED TO RE-ESTABLISH ANY PROPERTY IRONS WHICH ARE DAMAGED OR DESTROYED BY HIS CONSTRUCTION OPERATIONS; SUCH IRONS SHALL BE RE-ESTABLISHED BY A LICENSED LAND SURVEYOR OR A LICENSED PROFESSIONAL ENGINEER IN ACCORDANCE WITH STATE LAWS. ALL COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO THE OTHER ITEMS OF WORK.
17. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL MANHOLE COVERS.
18. ANY TREES REMOVED BY THE CONTRACTOR WHICH ARE NOT MARKED FOR REMOVAL ON THE PLANS SHALL BE AT THE CONTRACTOR'S EXPENSE.
19. ALL EXCESS EXCAVATED MATERIAL FROM THIS PROJECT SHALL BE REMOVED FROM THE SITE AND WASTED AT A LOCATION APPROVED BY THE ENGINEER AT NO ADDITIONAL COST TO THE CITY.
20. IN SELECTING LOCATIONS FOR DISPOSAL OF EXCESS EXCAVATED SOIL, THE CONTRACTOR WILL GIVE PREFERENCE TO OWNERS OF PROPERTIES ADJACENT TO THE WORK. ANY AGREEMENTS PERTAINING TO WASTE SOIL DISPOSAL LOCATIONS, BETWEEN THE CONTRACTOR AND OTHER PARTIES SHALL NOT BE CONSIDERED PART OF THIS CONTRACT, ALTHOUGH THE LOCATIONS SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL. REMOVAL AND DISPOSAL OF WASTE SOIL SHALL BE CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.
21. TREES REMOVED AND OTHER DEBRIS SHALL BE HAULED OFF SITE BY THE CONTRACTOR TO A DISPOSAL LOCATION AS APPROVED BY THE ENGINEER AT NO ADDITIONAL COST TO THE CITY.
22. THE CONTRACTOR SHALL COORDINATE VEHICLE ACCESS TO HOMES AND BUSINESSES ALONG THE CONSTRUCTION WITH THE INDIVIDUAL RESIDENTS OR OWNERS. GENERALLY, RESIDENCE DRIVEWAYS MAY BE CLOSED FOR CONSTRUCTION ONLY BETWEEN THE HOURS OF 9:00 A.M. TO 4:00 P.M. BUSINESSES SHALL BE PROVIDED WITH ALTERNATE ACCESS FOR VEHICLES.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS FLOW OF SEWAGE THROUGH CONSTRUCTION. CONTRACTOR'S PROPOSED METHOD FOR MAINTAINING SEWAGE FLOW SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK. COST OF MAINTAINING FLOW OF SEWAGE THROUGH CONSTRUCTION WILL NOT BE PAID FOR DIRECTLY AND THIS COST SHALL BE CONSIDERED AS SUBSIDIARY TO THE OTHER PAY ITEMS OF WORK.
24. THE CONTRACTOR SHALL PROVIDE 24-HOUR VEHICLE ACCESS FOR AUTHORIZED SERVICE VEHICLES AND CITY EMPLOYEES' VEHICLES AT SEWAGE TREATMENT PLANT NO. 1 (STP #1) DURING THE CONSTRUCTION. THE SEPTIC TANK DUMP PIT AT STP #1 SHALL BE ACCESSIBLE AT ALL TIMES.
25. PRIOR TO BEGINNING CONSTRUCTION OF PART 2A, THE CONTRACTOR SHALL EXCAVATE TO UNCOVER THE 72-INCH PLUGGED PIPE STUB AT EXISTING MANHOLE 8, STA. 0+45.5±, ON THE STP #1 SITE. THE CONTRACTOR SHALL UNCOVER THE PIPE STUB TO VERIFY SIZE, CONDITION, FLOW LINE ELEVATION, LOCATION, AND DIRECTION OF THE PIPE STUB. THE CONTRACTOR SHALL ADVISE THE ENGINEER IMMEDIATELY OF THE INFORMATION DISCOVERED ON THE PIPE STUB SO THAT THE ENGINEER CAN DETERMINE WHETHER ANY ADJUSTMENTS TO THE PLANS ARE NECESSARY.
26. IT IS THE ENGINEER'S INTENT THAT THE CANAL LINING NOT BE DAMAGED BY THE CONSTRUCTION OF PART 2A. THE CONTRACTOR SHALL USE APPROPRIATE METHODS, SUCH AS SHEETING, TO PROTECT THE CANAL CONCRETE LINING FROM SETTLEMENT AND DAMAGE DURING AND AFTER THE CONSTRUCTION. THE CITY SHALL INSPECT THE CANAL BEFORE CONSTRUCTION, IMMEDIATELY AFTER CONSTRUCTION, AND ONE YEAR AFTER CONSTRUCTION TO DETERMINE THE CONDITION OF THE LINING.
27. THE CONTRACTOR SHALL INSTALL AND MAINTAIN TEMPORARY FENCING AND OTHER ACCESS CONTROL AS REQUIRED AT THE SEWAGE TREATMENT PLANT NO. 1 (STP #1) SITE.
28. THE CONTRACTOR SHALL BE RESPONSIBLE TO ACQUIRE THE USE OF STORAGE AND STAGING AREAS FOR MATERIALS AND EQUIPMENT. STORAGE OF MATERIALS AND EQUIPMENT WITHIN THE FENCED AREA OF THE STP #1 SITE WILL NOT BE ALLOWED.
29. THE STP #1 ACCESS ROAD, FROM THE INTERSECTION OF INDUSTRIAL STREET AND SPRUCE STREET TO THE PLANT GATE SHALL BE KEPT CLEAR AT ALL TIMES. THE CONTRACTOR SHALL NOT PARK OR STORE VEHICLES, EQUIPMENT, OR MATERIALS ON THE PAVEMENT OR ON THE TEMPORARY TRAFFIC WAY OF THE ACCESS ROAD.
30. EXCAVATED SOIL, DEBRIS, AND TOPSOIL STRIPPED FROM WITHIN THE STP #1 SITE SHALL BE REMOVED FROM THE SITE. MATERIALS SUITABLE FOR REUSE AT THE SITE SHALL BE STORED AT AN APPROVED LOCATION OUTSIDE OF THE PLANT FENCE.
31. TEMPORARY ROADWAYS ON OR NEAR THE STP #1 SITE, AS REQUIRED, SHALL BE A 6-INCH (MINIMUM) LAYER OF SA-1 OR SA-2 ROAD GRAVEL, PER CITY OF WICHITA STANDARD SPECIFICATIONS FOR GRAVEL SURFACING.
32. THE CONTRACTOR SHALL COMPLETELY REMOVE TEMPORARY FENCING, TEMPORARY ROAD SURFACING, AND OTHER TEMPORARY MATERIALS USED FOR THE WORK UPON COMPLETION OF THE WORK AT STP #1. SITE RESTORATION AND CLEANUP SHALL BE PROVIDED IMMEDIATELY FOLLOWING COMPLETION OF THE ASPHALT AT STP #1.
33. AT THE STP #1 SITE, THE CONTRACTOR SHALL SPREAD 3 INCHES OF PROCESSED SLUDGE, AS SUPPLIED BY THE OWNER, OVER THE FINISH GRADED AREAS TO BE SEEDED. DISTURBED AREAS SHALL BE SEEDED WITH K-31 FESCUE.
34. FINISH GRADING, TREES, SHRUBS, SIGNS, POSTS, FENCE, PAVEMENT AND OTHER IMPROVEMENTS AT STP #1 SHALL BE REMOVED AND REPLACED OR RESTORED IN-KIND AT NO ADDITIONAL COST TO THE CITY.
35. MANHOLE 12, AT STATION 30+39.0 OF PART 1, IS A REINFORCED CONCRETE SIPHON STRUCTURE TO BE ABANDONED IN PLACE. THE SIPHON STRUCTURE IS ADJACENT TO THE ROLLER COASTER OF JOYLAND PARK. THE CONTRACTOR SHALL EXERCISE APPROPRIATE CARE TO AVOID DAMAGING THE ROLLER COASTER STRUCTURE WHILE ABANDONING THE MANHOLE. BRACES, ANCHORS, AND OTHER STRUCTURAL SUPPORTS TO THE ROLLER COASTER, AFFECTED BY THE WORK, SHALL BE RESTORED OR REINFORCED BY THE CONTRACTOR AS REQUIRED AND AS APPROVED BY THE ENGINEER AT NO ADDITIONAL COST TO THE CITY.

NOTE: ITEMS CROSSED OUT DO NOT APPLY TO THIS PROJECT.

CONSTRUCTION PROCEDURES AND SEQUENCING

AT LEAST TWO WEEKS PRIOR TO BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT FOR THE ENGINEER'S APPROVAL, A DETAILED SCHEDULE FOR COMPLETING THE WORK. THE CONTRACTOR'S SCHEDULE SHALL INCLUDE DESCRIPTIONS OF THE PROCEDURES THAT THE CONTRACTOR INTENDS TO USE IN COMPLETING THE WORK AND PROTECTING EXISTING IMPROVEMENTS AND OPERATIONS. THE CONTRACTOR'S PROPOSED SCHEDULE AND PROCEDURES SHALL BE APPROVED BY THE ENGINEER BEFORE THE START OF CONSTRUCTION. THE CONTRACTOR'S PROPOSED SCHEDULE AND LIST OF PROCEDURES SHALL ADDRESS, BUT SHALL NOT NECESSARILY BE LIMITED TO, THE FOLLOWING REQUIREMENTS:

1. METHODS FOR MAINTAINING SEWAGE FLOW THROUGH THE VARIOUS SECTIONS OF THE PROJECT.
2. ON PART 2A, THE CONTRACTOR MAY FIND THAT IT WILL BE NECESSARY FOR THE OPERATORS AT STP #1 TO PUMP DOWN THE WET WELL LEVEL SO THAT THE PIPE PLUG CAN BE REMOVED AT STA. 0+45.5 AND THE NEW PIPE CAN BE CONNECTED. GENERALLY, THE BEST TIME TO DO THIS, WHEN WASTEWATER FLOWS ARE AT THE MINIMUM, IS ON MONDAYS BETWEEN 6:00 A.M. AND 11:00 A.M. THE CONTRACTOR SHALL CALL MR. DUANE MORGAN, AT 522-9307, AT LEAST 48 HOURS IN ADVANCE OF THESE OPERATIONS TO ARRANGE THE PUMPING DOWN OF THE WET WELL LEVEL.
3. THE CONTRACTOR'S SCHEDULE SHALL INCLUDE A TRAFFIC PLAN FOR MAINTAINING CONTINUOUS ACCESS INTO AND THROUGH STP #1 (PART 2A) FOR PLANT PERSONNEL AND FOR OTHER CONTRACTORS WHICH MAY BE WORKING AT THE SITE. THE SEPTIC TANK DUMP STATION SHALL REMAIN OPEN FOR OPERATION DURING DAYLIGHT HOURS, MONDAY THROUGH SATURDAY.
4. THE CONTRACTOR SHALL COMPLETE ALL WORK WITHIN STP #1, INCLUDING PAVEMENT REPLACEMENT AND SITE RESTORATION, PLUS PAVEMENT REPLACEMENT AS REQUIRED ON THE PLANT ACCESS ROAD NORTH OF THE PLANT GATE, WITHIN 30 CALENDAR DAYS OF THE BEGINNING OF CONSTRUCTION INSIDE THE STP #1 SITE.
5. MATERIAL AND EQUIPMENT STORAGE AREAS. THESE SHALL BE OUTSIDE OF THE STP #1 FENCE. ALSO, THE CONTRACTOR SHALL PROVIDE HIS OWN OFFICE FACILITIES, TELEPHONE, LUNCH ROOM, AND REST ROOM FACILITIES AT THE PROJECT AS REQUIRED. CITY FACILITIES AT STP #1 WILL NOT BE AVAILABLE FOR THE CONTRACTOR'S USE.
6. CONSTRUCTION OF THE RELIEF INTERCEPTOR (PART 2A) SHALL BE COMPLETE AND ACCEPTED BY THE ENGINEER BEFORE ABANDONMENT OF THE EXISTING INTERCEPTOR PIPE (PART 2D) BETWEEN STATION 26+39.7 AND STATION 36+45.9.
7. THE CONTRACTOR'S ACCESS TO PORTIONS OF THE WORK SHALL BE LIMITED TO ACCOMMODATE THE OPERATING SEASONS OF SOWERS ELEMENTARY SCHOOL AND JOYLAND PARK. CONSTRUCTION OF THE FOLLOWING PORTIONS OF THE PROJECT SHALL BE INITIATED AND COMPLETED WITHIN THE CORRESPONDING TIME PERIODS.

PART 2A: STA. 17+12 TO STA. 24+13 (JOYLAND PARK)	OCTOBER 15 TO APRIL 15
PART 2A: STA. 24+13 TO STA. 21+14.7 (SOWERS ELEMENTARY SCHOOL)	JUNE 10 TO AUGUST 10
PART 2B: STA. 0+00 TO STA. 3+69 (SOWERS ELEMENTARY SCHOOL)	JUNE 10 TO AUGUST 10
PART 2B, STA. 3+69 TO STA. 10+87.6 (JOYLAND PARK)	OCTOBER 15 TO APRIL 15
PART 2C, STA. 0+00 TO STA. 3+63.0 (JOYLAND PARK)	OCTOBER 15 TO APRIL 15
PART 2D, STA. 26+39.7 TO STA. 36+45.9 (JOYLAND PARK)	OCTOBER 15 TO APRIL 15

8. PART 2A AND PART 2B MUST BE COMPLETE & IN OPERATION & ACCEPTED BY THE CITY BEFORE THE CONTRACTOR BEGINS WORK ON PART 2D.
9. THE CONTRACTOR'S SCHEDULE SHALL INCLUDE START DATES AND COMPLETION DATES FOR EACH PART OF THE PROJECT, AND FOR SECTIONS OF THE PROJECT AS IDENTIFIED ABOVE.

DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

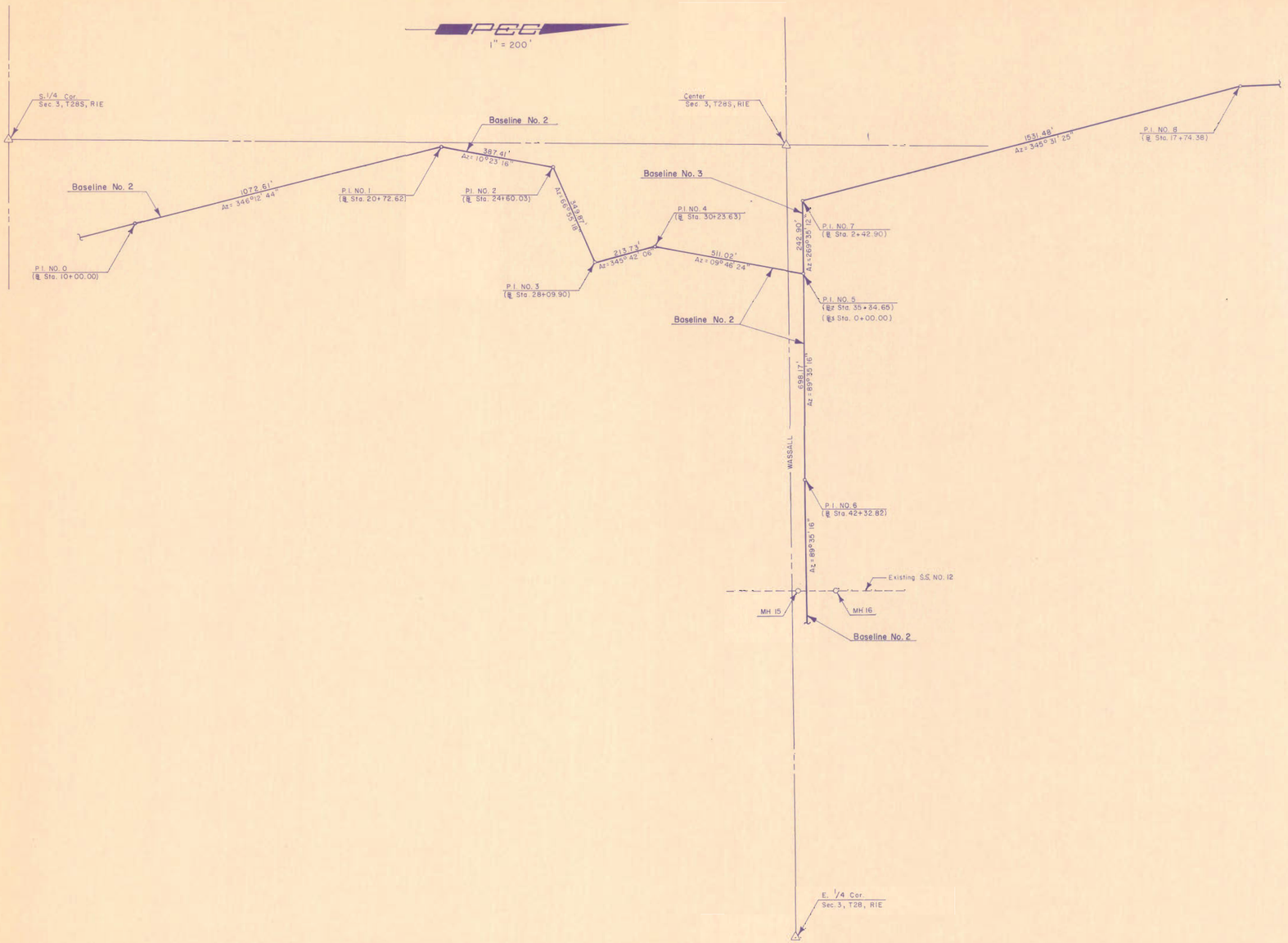
SANITARY SEWER NO. 12

KEY MAP

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM	Job No. 34-81420-042	Sht. 2 of 38
Drawn by DMM	Date December, 1985	



BASELINE NO. 2 REFERENCE TIES

P.I. NO. 0 — Sta. 10+00.00 N-4,812.90 E-3,753.48
1/2" rebar
30.10' W, Chiseled "+" in north rim sanitary sewer MH.
65.34' SSE, Chiseled "+" near south edge 10' concrete walk.
41.88' E, Chiseled "+" in top of curb.
27.58' N, Chiseled "+" in north rim sanitary sewer MH.

P.I. NO. 1 — Sta. 20+72.62 N-5,854.61 E-3,497.85
1/2" rebar
37.03' WNW, Chiseled "+" in north face 4' dia. concrete bridge support. (3rd support north of STP drive)
56.94' SW, Chiseled "+" in south face 2nd concrete bridge support north of STP drive.
70.63' SE, Concrete nail and shiner in top west end of railroad tie.
64.03' NNE, Concrete nail and shiner in top west end of railroad tie.

P.I. NO. 2 — Sta. 24+60.03 N-6,235.67 E-3,567.70
1/2" rebar
9.48' NW, PK nail in joint, east face concrete embankment.
79.27' SE, PK nail in joint, north side top of concrete canal liner.
66.00' E, Chiseled "+" in west side top of canal.
69.06' WSW, Concrete nail and shiner in north face guard rail post.

P.I. NO. 3 — Sta. 28+09.90 N-6,372.82 E-3,889.57
1/2" rebar
44.13' SE, 40# nail in west face 16" cottonwood.
129.59' SSW, Chiseled "+" in northeast corner top of concrete flume to canal.
89.60' SW, 40# nail in top of guard rail post, east side of on ramp.
100.51' NW Chiseled "+" southeast corner light pole base.
87.99' E, Nail and shiner in north face 21" Hackberry.

P.I. NO. 4 — Sta. 30+23.63 N-6,579.93 E-3,836.79
1/2" rebar
89.60' WNW, Chiseled "+" northeast corner light pole base.
90.01' WSW, North of 2 tie down bolts for guard rail on concrete cylinder at north end of guard rail.
59.78' E, 40# nail in south face 16" Hackberry.
59.55' NE, Nail and shiner in southeast face light pole.

P.I. NO. 5 — Sta. 35+34.65 N-7,083.53 E-3,923.53
1/2" rebar
80.00' NW, Chiseled "+" in concrete sidewalk, 12' northeast of southeast corner building.
66.0' WSW, Chiseled "+" in northeast corner 4' x 14' concrete unloading sidewalk.
66.0' SE, Chiseled "+" 1' east of northeast corner 2.5' x 5.0' storm drain inlet at back of curb south side of Wassall.
90.00' E, Chiseled "+" in back of curb 2' south of light pole.

P.I. NO. 6 — Sta. 42+32.82 N-7,088.55 E-4,621.68
1/2" rebar
98.96' N, Nail and shiner in west face power pole.
90.18' WSW, Chiseled "+" in west end curb return to gravel entrance to Joyland Amusement Park.
59.16' SSE, 1/2" rebar in fence line midway between posts at corner of "Dodgem" amusement ride.
8.17' WNW, Nail and shiner in north face light pole at northeast corner Range Road and Wassall.

BASELINE NO. 3 REFERENCE TIES

P.I. NO. 5 — Sta. 0+00.00 N-7,083.53 E-3,923.53
1/2" rebar
80.00' NW, Chiseled "+" in concrete sidewalk, 12' northeast of southeast corner building.
66.0' WSW, Chiseled "+" in northeast corner 4' x 14' concrete unloading sidewalk.
66.0' SE, Chiseled "+" 1' east of northeast corner 2.5' x 5.0' storm drain inlet at back of curb south side of Wassall.
90.00' E, Chiseled "+" in back of curb 2' south of light pole.

P.I. NO. 7 — Sta. 2+42.90 N-7,081.77 E-3,680.63
1/2" rebar
19.34' W, P.K. nail in centerline of Spruce.
42.12' SE, Nail & shiner in north face of power pole.
20.63' E, Chiseled "+" in southeast face of 18" concrete pillar.
34.57' W, Chiseled "+" in back of curb.

P.I. No. 8 — Sta. 17+74.38 N-8,564.60 E-3,297.80
1/2" rebar
53.35' N, Nail & shiner in east face of power pole.
19.09' E, Chiseled "+" in north edge of MH rim.
78.15' S, Chiseled "+" in west edge of 4' concrete sidewalk.
41.58' W, Chiseled "+" in north face of right-of-way fence post.

DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

SANITARY SEWER NO. 12
PHASE 1 - PART 2

BASELINE CONTROL DATA

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM	Job No. 34-81420-042	Sht. 3 of 38
Drawn by TLS	Date December, 1985	

MANHOLE FRAME AND COVER DETAIL

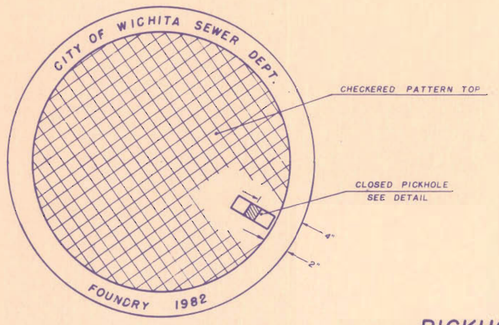
ADOPTED AS STANDARD DESIGN

BY

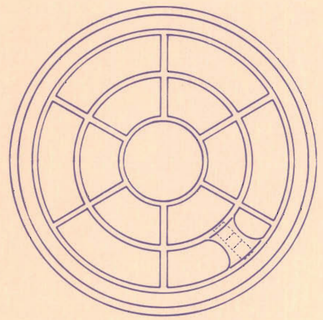
City of Wichita, Kansas

MANHOLE COVER

Weight: 180 Lbs.

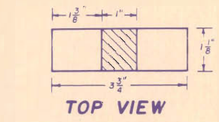


TOP VIEW

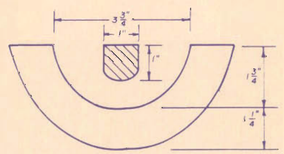


BOTTOM VIEW

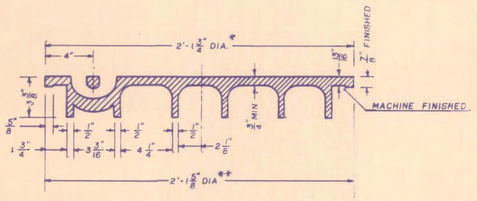
PICKHOLE DETAIL



TOP VIEW



SECTION VIEW



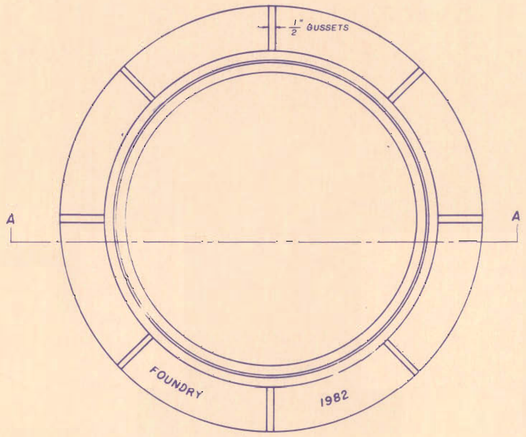
SECTION VIEW

* OUTSIDE DIA TOP OF COVER

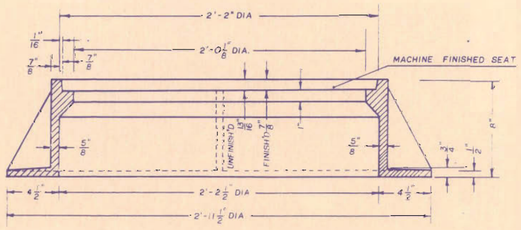
** OUTSIDE DIA. BOTTOM OF COVER

MANHOLE FRAME

Weight: 240 Lbs.



TOP VIEW



SECTION A-A

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.

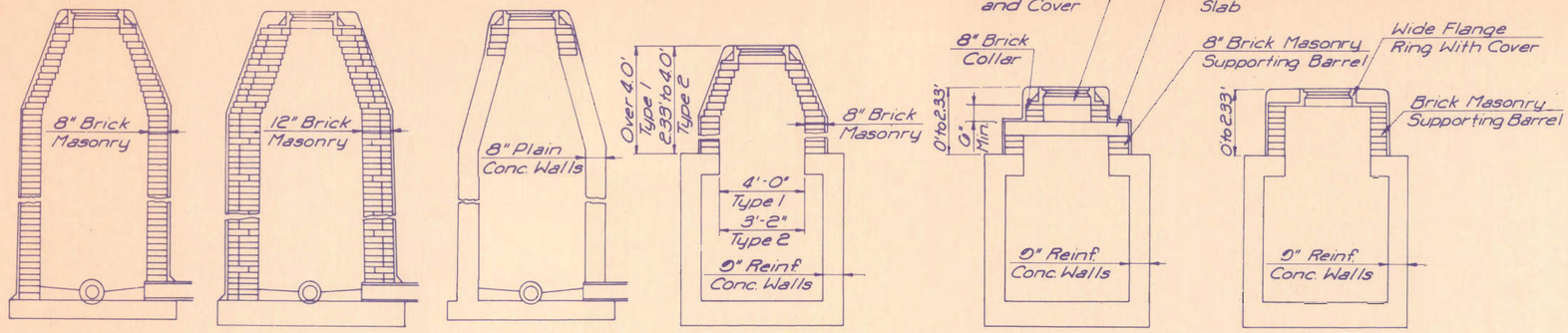
2. MANHOLE CASTINGS SHALL BE COATED WITH AN ASPHALT PAINT RESULTING IN A SMOOTH, TOUGH AND TENACIOUS COATING WHICH IS NOT BRITTLE OR TACKY.

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 1/8" 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.

JNL DEC. 1981



TYPE A
Single Wall Brick Masonry

TYPE B
Double Wall Brick Masonry

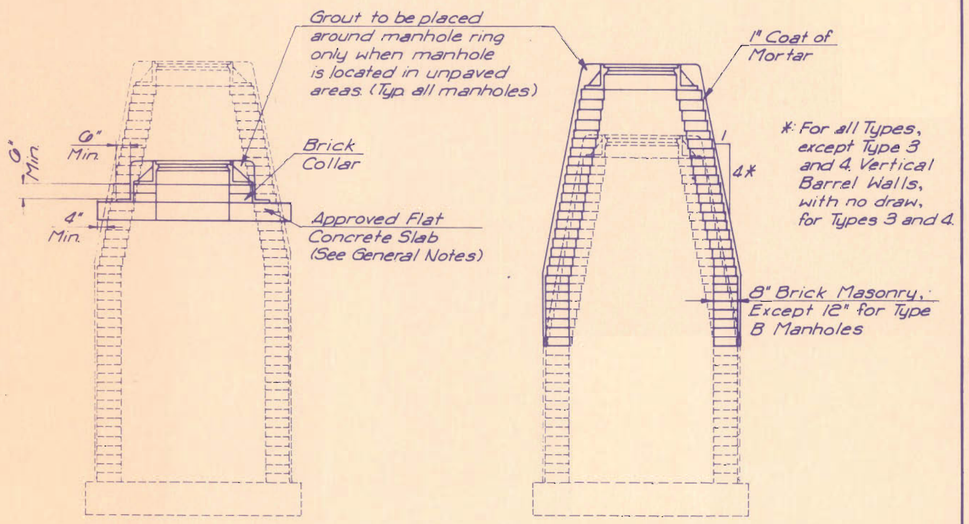
TYPE C & D
Cast in Place
(Type D is plastic lined & has brick draw)

TYPE 1 & 2
Reinforced Concrete

TYPE 3
Reinforced Concrete

TYPE 4
Reinforced Concrete (Wide Flange Ring)

DEFINITION SKETCHES - CITY OF WICHITA STANDARD MANHOLES



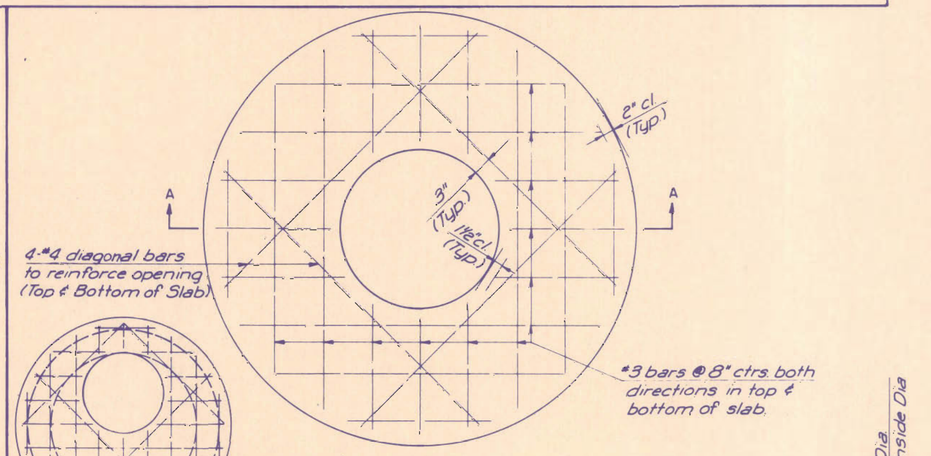
DOWNWARD ADJUSTMENT (GREATER THAN 12")
All Types

THE APPROPRIATE PORTIONS OF THE DRAW AND BARREL OF TYPE A, B, C, D, 1 AND 2 MANHOLES SHALL BE REMOVED. A FLAT CONCRETE SLAB SHALL BE PLACED AND THE RING AND COVER RESET. ALL WORK AND MATERIALS SHALL CONFORM TO THE DETAILS SHOWN AND THE GENERAL NOTES.

COURSES OF BRICK BARREL SUPPORTING THE WIDE FLANGE RING FOR TYPE 4 MANHOLES AND FLAT CONCRETE SLAB FOR TYPE 3 MANHOLES SHALL BE REMOVED AS NECESSARY PRIOR TO RESETTING THE WIDE FLANGE RING OR FLAT CONCRETE SLAB AND RING. ALL WORK AND MATERIALS SHALL CONFORM TO THE DETAILS SHOWN AND THE GENERAL NOTES.

UPWARD ADJUSTMENT (GREATER THAN 12")
All Types

THE ENTIRE DRAW OF TYPES A, B, C, D, 1 AND 2 MANHOLES SHALL BE REMOVED, THE MANHOLE BARREL RAISED THE APPROPRIATE AMOUNT, A NEW DRAW CONSTRUCTED, AND THE RING AND COVER RESET. THE UPPER PORTION OF TYPE 3 MANHOLES SHALL BE REMOVED TO THE BOTTOM OF THE FLAT CONCRETE SLAB, THE BRICK MASONRY BARREL SUPPORTING THE SLAB SHALL BE RAISED THE APPROPRIATE AMOUNT, AND THE SLAB AND RING AND COVER RESET. THE WIDE FLANGE RING AND COVER OF TYPE 4 MANHOLES SHALL BE REMOVED, THE BRICK MASONRY BARREL SUPPORTING THE RING SHALL BE RAISED THE APPROPRIATE AMOUNT AND THE RING AND COVER RESET. ALL WORK REQUIRED FOR A GREATER THAN TWELVE INCH (12") UPWARD ADJUSTMENT OF ANY MANHOLE SHALL BE ACCOMPLISHED WITH BRICK MASONRY IN ACCORDANCE WITH THE DETAILS SHOWN AND THE GENERAL NOTES.



*: To be used only if necessary to keep ring and cover from conflicting with curb or combined curb and gutter. Flat concrete slab shall be rotated on existing manhole to position ring and cover in pavement or behind curb.

FLAT CONCRETE SLAB DETAILS

MANHOLES DESIGNATED FOR ADJUSTMENT SHALL BE RAISED OR LOWERED AS NECESSARY SUCH THAT THE CASTING WILL CONFORM TO THE REQUIRED ELEVATION. TOPS OF STORM OR SANITARY SEWER MANHOLES LOCATED IN PAVED AREAS SHALL BE SET FLUSH WITH THE PAVEMENT. TOPS OF SANITARY SEWER MANHOLES LOCATED IN GRASSED AREAS SHALL BE SET FOUR TENTHS OF ONE FOOT (0.40') HIGHER THAN THE FINISHED GRADE. TOPS OF STORM SEWER MANHOLES LOCATED IN GRASSED AREAS SHALL BE SET FLUSH WITH THE FINISHED GRADE. TOPS OF STORM OR SANITARY SEWER MANHOLES LOCATED IN UNPAVED TRAVEL WAYS SHALL BE SET SIX INCHES (6") BELOW FINISHED GRADE.

THE NEW TOP ELEVATION SPECIFIED ON THE PLANS WAS ESTABLISHED FROM THE BEST INFORMATION AVAILABLE AT THE TIME THE PLANS WERE PREPARED. THE ACTUAL TOP ELEVATION SHALL BE VERIFIED OR ESTABLISHED, IN THE FIELD, BY THE ENGINEER AT THE TIME THE ADJUSTMENT IS BEING MADE. NO ADJUSTMENT IN BID PRICE SHALL BE MADE FOR A CHANGE IN TOP ELEVATION DEEMED NECESSARY BY THE ENGINEER.

THE ADJUSTMENT OF ALL MANHOLES WHICH ARE TO BE LOWERED OR RAISED TWELVE INCHES (12") OR LESS SHALL BE ACCOMPLISHED BY REMOVING THE EXISTING RING AND COVER AND REMOVING OR ADDING THE APPROPRIATE COURSE(S) OF BRICK AND REPLACEMENT OF THE RING AND COVER. ALL WORK SHALL BE IN ACCORDANCE WITH NOTES BELOW.

ALL UPWARD OR DOWNWARD ADJUSTMENTS IN EXCESS OF TWELVE INCHES (12") SHALL BE IN ACCORDANCE WITH DETAILS AND NOTES SHOWN ON THIS SHEET.

NEW BRICK USED IN THE ADJUSTMENT OF MANHOLES SHALL CONFORM TO THE REQUIREMENTS SPECIFIED FOR GRADE MS IN A.S.T.M. C 32-73 OR GRADE SW IN A.S.T.M. C 62-69. BRICK SHALL HAVE NOMINAL DIMENSIONS WHICH WILL PERMIT THE ADJUSTED PORTION TO MATCH THE DIMENSIONS OF THE WALLS OF THE STRUCTURE BEING ADJUSTED. UNDAMAGED EXISTING BRICK, SALVAGED AS PART OF EXISTING MANHOLE ADJUSTMENT(S), FOR THIS PROJECT, MAY BE REUSED IN COMPLETING ADJUSTMENT(S) IF THOROUGHLY CLEANED OF EXISTING MORTAR AND IF APPROVED AS TO SUITABILITY BY THE ENGINEER.

ALL BRICK SHALL BE LAID WITH SHOVE JOINTS. PORTLAND CEMENT MORTAR, AS SPECIFIED BELOW, SHALL BE USED IN LAYING THE BRICK. THE ENTIRE OUTSIDE SURFACE OF THE MANHOLES, ADJUSTED WITH BRICK, SHALL BE PLASTERED WITH A MINIMUM OF ONE INCH (1") OF THE CEMENT MORTAR. ALL CONTACT SURFACES BETWEEN BRICK MASONRY, FLAT CONCRETE SLABS (IF REQUIRED), AND CAST IRON RINGS SHALL BE SEALED WITH A LAYER OF THE CEMENT MORTAR. BACKFILL OF ADJUSTED SECTIONS SHALL NOT BE ACCOMPLISHED UNTIL THE MORTAR HAS CURED FOR TWENTY-FOUR (24) HOURS.

MORTAR USED IN ADJUSTMENT OF MANHOLES SHALL CONTAIN EIGHT (8) SACKS OF PORTLAND CEMENT PER CUBIC YARD, FINE AGGREGATE, AND SUFFICIENT WATER TO PRODUCE A WORKABLE AND PLASTIC MIX OF SUCH CONSISTENCY AS TO PERFORM PROPERLY THE FUNCTION OF MASONRY CONSTRUCTION.

CEMENT USED FOR MORTAR SHALL BE TYPE I COMPLYING WITH THE REQUIREMENTS OF THE LATEST REVISION OF A.S.T.M. DESIGNATION C-150.

FINE AGGREGATE USED FOR MORTAR SHALL MEET THE REQUIREMENTS FOR TYPE FA-A, DIVISION 1102, OF THE "STANDARD SPECIFICATIONS FOR STATE ROAD AND BRIDGE CONSTRUCTION," KANSAS DEPARTMENT OF TRANSPORTATION, 1980 EDITION.

WATER USED FOR MORTAR SHALL MEET THE REQUIREMENTS OF DIVISION 2401, OF THE MENTIONED STANDARD SPECIFICATIONS.

AN APPROVED TYPE OF FLAT CONCRETE SLAB, CONFORMING TO THE REQUIREMENTS OF A.S.T.M. C-478, SHALL BE USED TO SUPPORT THE MANHOLE RING AND COVER WHERE IT IS NECESSARY TO LOWER MANHOLES MORE THAN TWELVE INCHES (12"). ALL SURFACES OF THE FLAT CONCRETE SLAB, FOR SANITARY SEWER MANHOLES, WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE PROTECTED BY A PLASTIC LINING. A MINIMUM SIX INCH (6") BRICK COLLAR CONFORMING TO THE SAME TYPE OF CONSTRUCTION AS SPECIFIED ABOVE SHALL BE INSTALLED BETWEEN THE MANHOLE RING AND THE FLAT CONCRETE SLAB TO FACILITATE MINOR ADJUSTMENTS IN ELEVATION.

PLASTIC LINING REQUIRED FOR FLAT CONCRETE SLABS, TO BE PLACED IN CONNECTION WITH THE ADJUSTMENT OF SANITARY SEWER MANHOLES, MAY BE AMER-PLATE T-LOCK LINER PLATE, B.F. GOODRICH LOK-RIB KOROSEAL, OR AN APPROVED EQUAL. THE PLASTIC LINING MANUFACTURER'S RECOMMENDATIONS FOR INSTALLING, SEALING JOINTS, TESTING AND INSPECTION OF THE LINING SHALL BE CONSIDERED AS INCORPORATED IN AND FORMING A PART OF THESE SPECIFICATIONS. THREE (3) COPIES OF THE PLASTIC LINING MANUFACTURER'S RECOMMENDATIONS FOR LINING INSTALLATION SHALL BE FURNISHED TO THE ENGINEER FOR APPROVAL PRIOR TO THE FABRICATION OF ANY FLAT SLABS REQUIRING PLASTIC LINING.

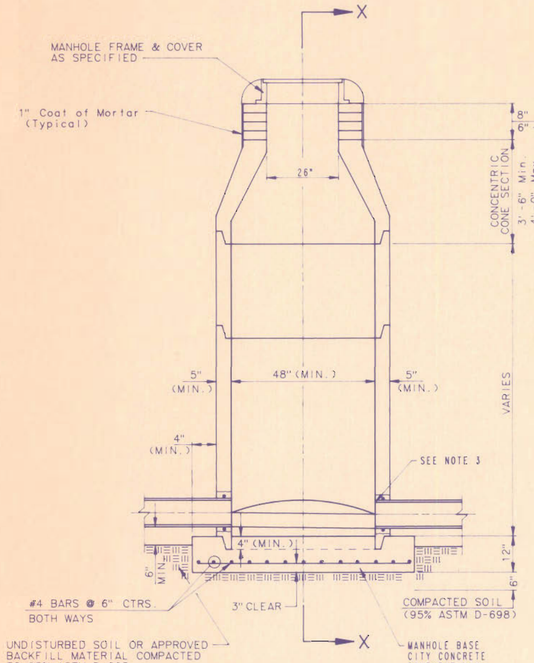
MANHOLE ADJUSTMENT DETAILS

CITY OF WICHITA, KANSAS
M. E. LINDEBAK – CITY ENGINEER

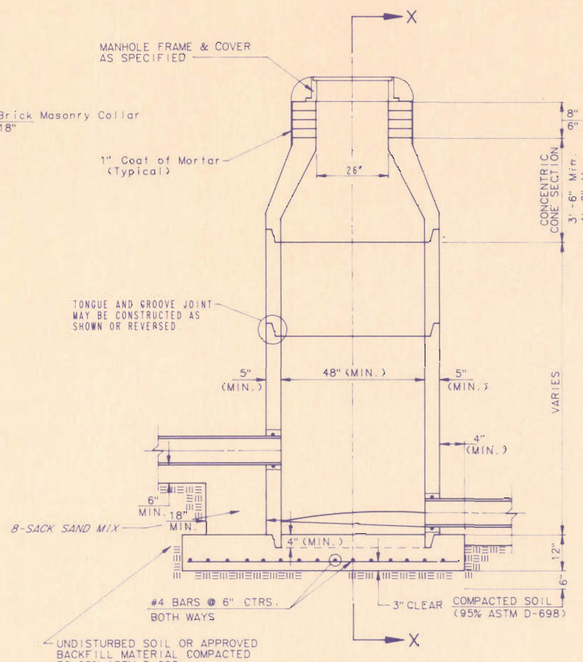
Designed by		Checked by	
Drawn by		Date	5 of 38

SEWER APPURTENANCES DETAILS

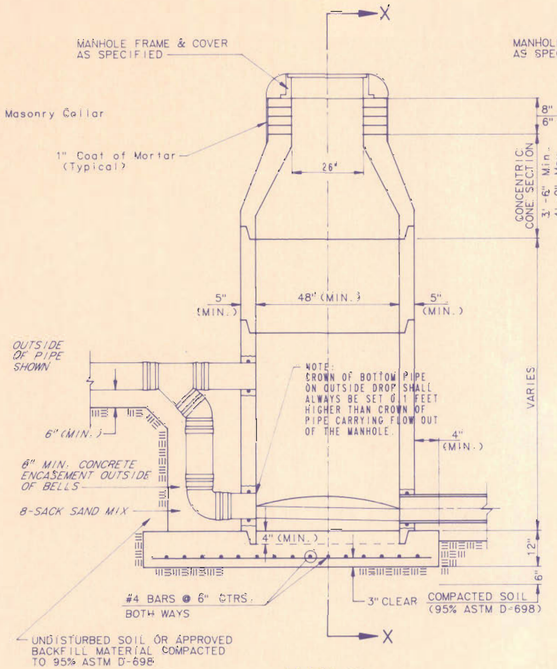
ADOPTED AS STANDARD DESIGN
BY
CITY OF WICHITA



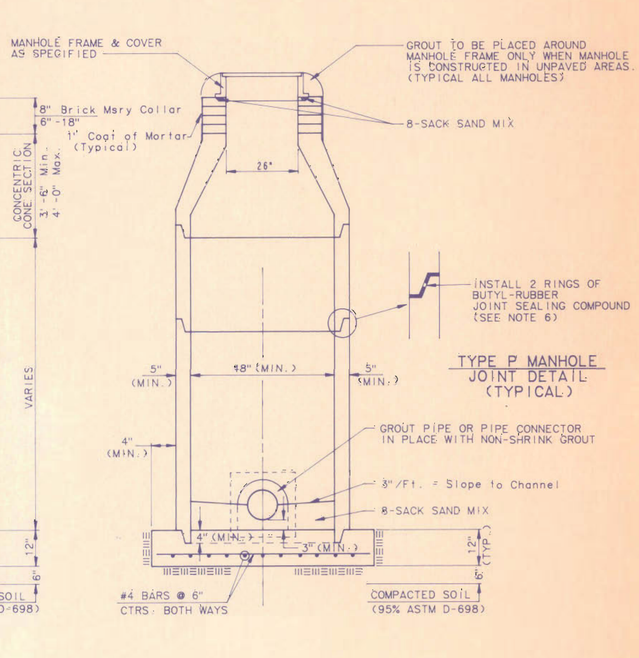
TYPE P
STANDARD MANHOLE



TYPE P
INSIDE DROP MANHOLE



TYPE P
OUTSIDE DROP MANHOLE



SECTION X
(TYPICAL)

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.B.S. COMPOSITE PIPE OR P.V.C. PIPE IS USED. FOR OTHER TYPES OF PIPE THE SEWER SHALL BE GROUTED 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 V.C.P. 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 TNEMEC SERIES 66 HI-BUILD EPOXOLINE, DRY THICKNESS OF 8 MILS (MIN.)

5. EXTERIOR MANHOLE WALLS SHALL BE COATED WITH 1 COAT MOBILARMA 633 BITUMINUS COATING.

6. JOINT SEALING COMPOUND SHALL BE KENT 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 SHAPED INVERT.

9. LIFTING HOLES SHALL BE FILLED WITH NON-SHRINK GROUT AND THE INTERIOR SURFACE COATED AS SPECIFIED.

10. MORTAR USED IN MASONRY CONSTRUCTION SHALL CONTAIN 8 SACKS 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 AIR ENTRAINING ADMIXTURE. MORTAR SHALL BE PLACED AROUND THE MANHOLE RING AS SHOWN ON THE DRAWINGS WHEN MANHOLES ARE CONSTRUCTED IN UNPAVED AREAS. MANHOLES CONSTRUCTED WHERE PIPE SIZES ARE SMALLER THAN 24" SHALL HAVE AN INSIDE DIAMETER OF 4'. MANHOLES CONSTRUCTED WHERE PIPE SIZES ARE 24" OR LARGER SHALL HAVE AN INSIDE DIAMETER OF 5'. COMPLETED MANHOLE SHALL BE WITHOUT LEAKS AND WATER TIGHT.

11. REINFORCING STEEL SHALL BE INSTALLED IN THE MANHOLE BASES AND SHALL CONSIST OF NO. 4 BARS PLACED ON 6" CENTERS IN BOTH DIRECTIONS. THE MANHOLE BASE REINFORCEMENT SHALL BE PLACED AT LEAST 3" 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.

12. 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. THIS WORK, INCLUDING MODIFICATION OF MANHOLE FLOOR, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR OUTSIDE DROP STACK CONSTRUCTED ON EXISTING MANHOLE.

13. 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.

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 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 INCLODED IN THE ONIT 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' 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.

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' UNLESS INDICATED OTHERWISE.

18. A BRICK MASONRY COLLAR SHALL BE INSTALLED BETWEEN THE CAST IRON FRAME AND THE CONCENTRIC CONE. THE COLLAR WILL HAVE 8" WALLS AND A VERTICAL HEIGHT OF 6" MINIMUM AND 18" MAXIMUM. A 1" COAT OF MORTAR WILL BE PLASTERED ON THE OUTSIDE OF THE COLLAR.

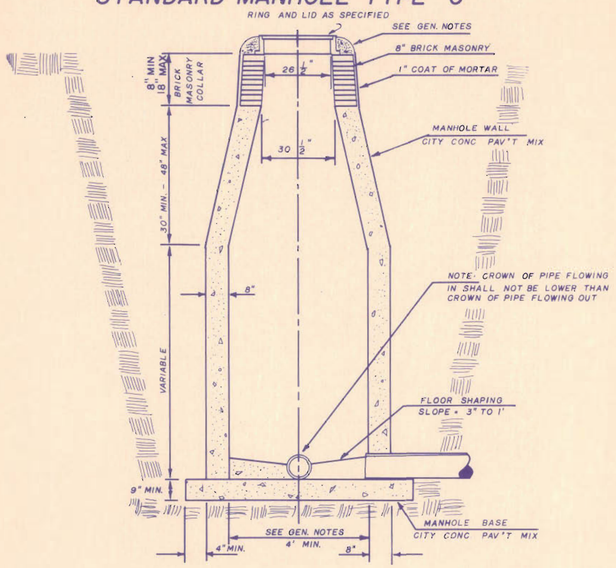
Revised: June 12, 1986

SEWER APPURTENANCES DETAILS

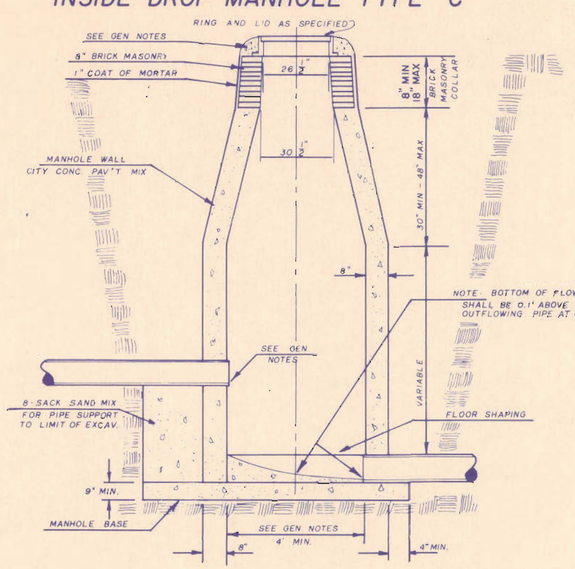
ADOPTED AS STANDARD DESIGN
BY

City of Wichita, Kansas

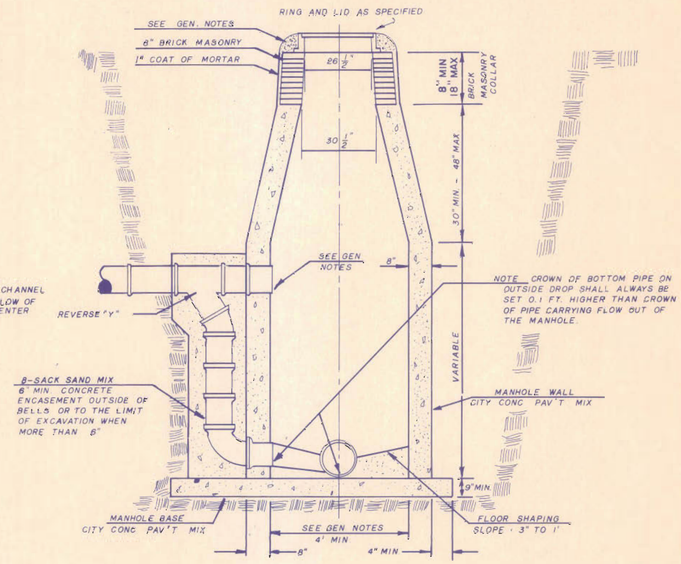
STANDARD MANHOLE TYPE "C"



INSIDE DROP MANHOLE TYPE "C"



OUTSIDE DROP MANHOLE TYPE "C"



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. TYPE "C" MANHOLES CAN BE CONSTRUCTED ONLY WHERE PIPE SIZES ARE 8" 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-SHRINK GROUT. THE EXTERIOR OF THIS COMPLETED CONNECTION SHALL BE SEALED WITH AN APPROVED BITUMINOUS COATING SUCH THAT THE CONNECTION WILL BE WATER TIGHT.

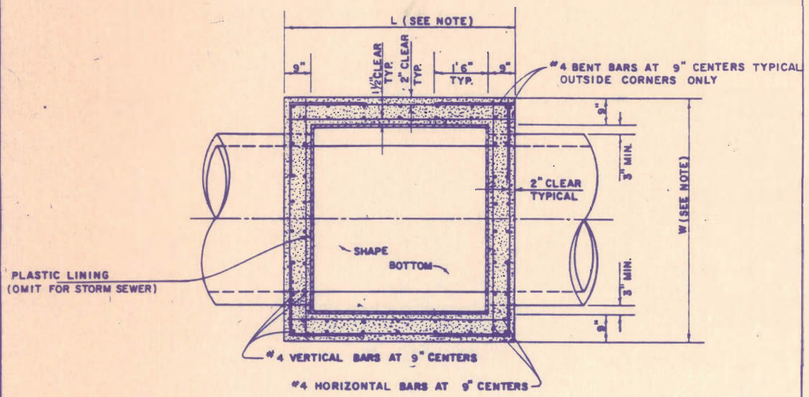
4. THE FLOORS OF ALL MANHOLES SHALL BE SHAPED WITH FLOW CHANNELS SUCH THAT THE MANHOLES WILL BE SELF CLEANING AND FREE OF AREAS WHERE SOLIDS COULD BE DEPOSITED AS SEWAGE FLOWS THROUGH THE MANHOLE FROM ALL INLET PIPES TO THE OUTLET PIPE. FLOW CHANNELS SHALL BE FORMED TO MATCH THE BOTTOM HALVES OF THE 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 MANHOLE 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.

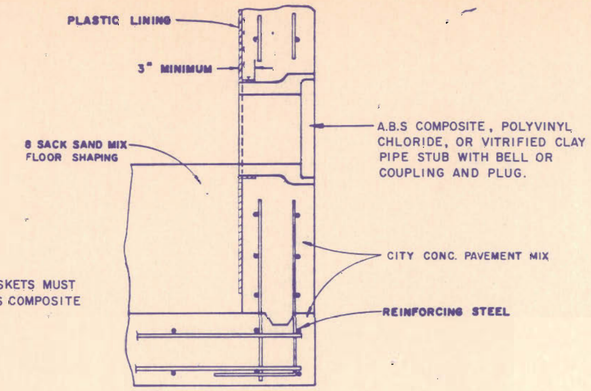
6. MANHOLE COVER CASTINGS AND MANHOLE FRAME CASTINGS SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE STANDARD SPECIFICATIONS AND AS SHOWN IN THE STANDARD DETAIL DRAWING.

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 "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.

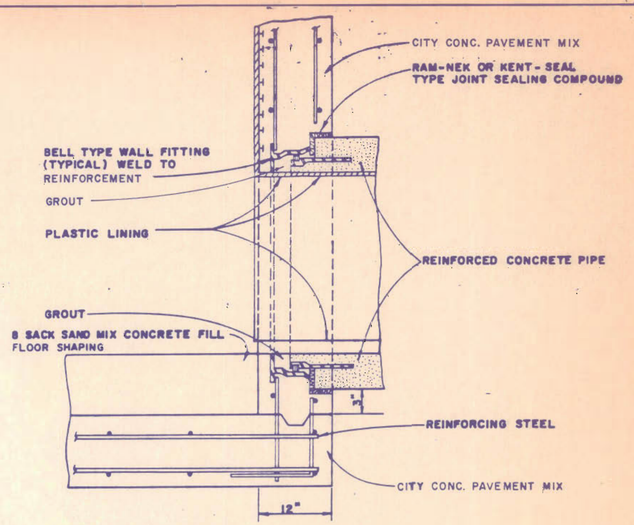


TOP VIEW

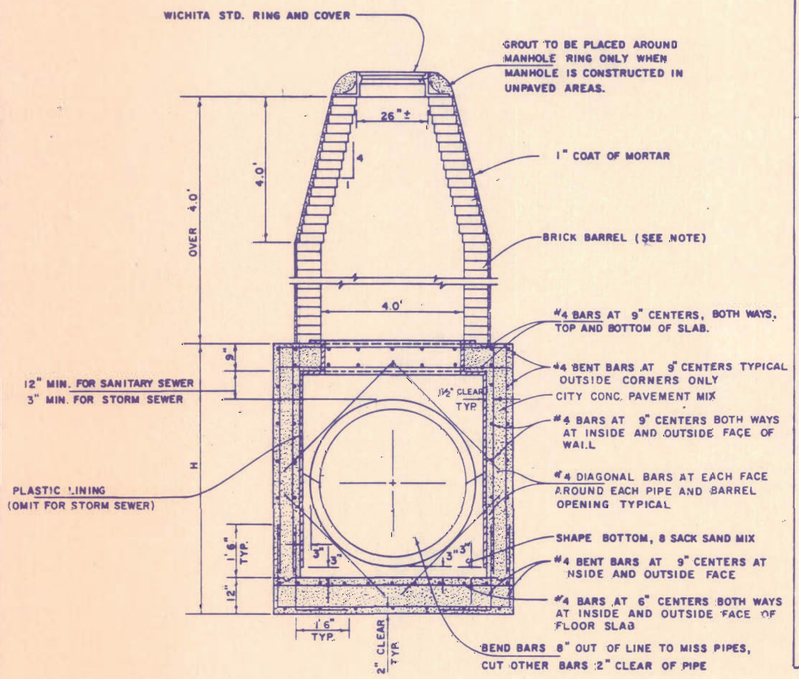


NOTE: WATERSTOP GASKETS MUST BE USED WITH A.B.S COMPOSITE OR P.V.C. PIPE.

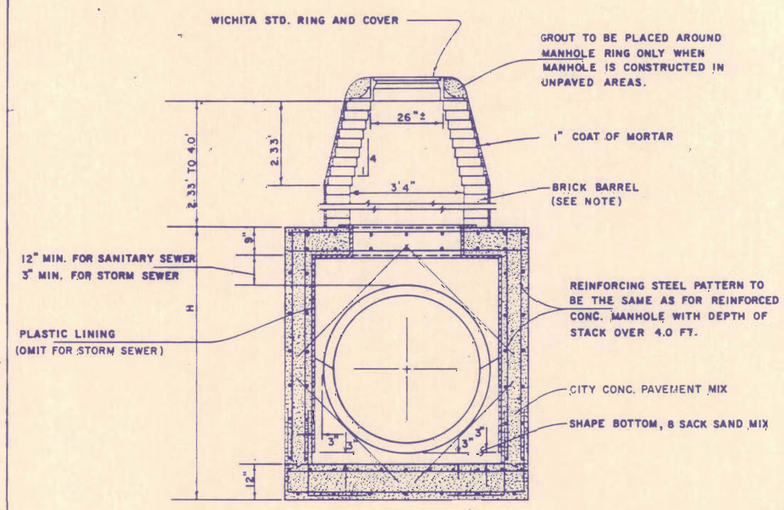
PIPE STUB DETAIL
SANITARY SEWER ONLY



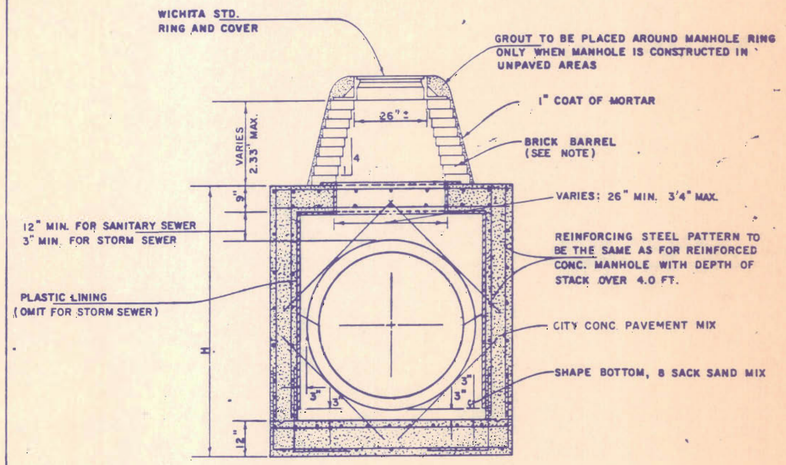
R.C.P. CONNECTION DETAIL
SANITARY SEWER ONLY



REINFORCED CONCRETE MANHOLE
DEPTH OF STACK: OVER 4.0'
SCALE 1" = 2'



REINFORCED CONCRETE MANHOLE
DEPTH OF STACK: 2.33' TO 4.0'
SCALE 1" = 2'



REINFORCED CONCRETE MANHOLE
DEPTH OF STACK: 0' TO 2.33'
SCALE 1" = 2'

NOTE:
BRICK BARRELS LESS THEN 16' DEEP SHALL HAVE 8" WALLS EXCEPT WHEN LOCATED WITHIN PUBLIC STREET OR ALLEY PAVEMENT THEN THE WALL SHALL BE 12". BRICK BARRELS MORE THEN 16' DEEP SHALL HAVE 12" WALLS. THE "L" AND "W" DIMENSIONS SHALL BE A MINIMUM OF 5'6" FOR BRICK BARRELS WITH 8" WALLS AND 6'2" FOR BRICK BARRELS WITH 12" WALLS WHEN THE BRICK BARRELS ARE OVER 4 FT. IN HEIGHT. COMLETED MANHOLE SHALL BE WITHOUT LEAKS AND WATERTIGHT.

REVISIED 1-7-85

STANDARD DETAILS
REINFORCED CONCRETE MANHOLES
CITY OF WICHITA

FEBRUARY 1984

MANHOLE NUMBER	MANHOLE STATION	TYPE OF CONSTRUCTION	MANHOLE REHABILITATION TYPE	1 CLEAN INTERIOR WALLS	2 REMOVE CAST IRON MH STEPS	3 RESHAPE BENCH AND CHANNEL (M-MAIN SEWER / L-LATERAL SEWER)	4 REPOINT INTERIOR MH WALLS & REPLACE MISSING OR BRITTLE BRICK	5 BREAKOUT TOP OF MAIN PIPE (PROVIDE 36" X 36" MINIMUM OPENING)	6 TRIM ENDS OF LATERAL SEWERS (3" MAXIMUM EXTENSIONS INTO MANHOLE)	7 RAISE MH TOP ELEVATION (AMOUNT OF ADJUSTMENT)	8 INSTALL NEW FRAME AND COVER	9 COAT INTERIOR MH WALLS	10 MODIFY MH AS REQUIRED TO ACCEPT NEW FRAME AND COVER	11 RECONSTRUCT MH DRAW SECTION (ECCENTRIC)	12 RECONSTRUCT BRICK BARREL TO TOP OF MAIN SEWER (C-CONCENTRIC DRAW / E-ECCENTRIC DRAW)	13 RECONSTRUCT MANHOLE (C-CONCENTRIC DRAW / E-ECCENTRIC DRAW)	14 REMOVE MH BARREL (AFTER INSITUFORM LINER IS IN PLACE)	15 ABANDON MANHOLE IN PLACE	16 REMOVE MANHOLE	COMMENTS	MANHOLE NUMBER
		TASK NO'S. →		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	← TASK NO'S.	
1	17+01.3	Brick	1	X	X	X (M)	X	---	X	---	X	X	---	---	---	---	---	-	-	Concrete Street	1
2	15+05.4	Brick	1	X	-	---	---	---	---	---	X	X	---	---	---	---	---	-	-	Concrete Street	2
3	15+33.1	Reinforced Concrete Box w/brick stack	1	X	-	---	X	---	---	---	X	X	---	---	X (C)	---	---	-	-	Concrete Street	3
4	17+02.1	Brick	1	X	-	X (L)	---	---	---	---	X	X	---	---	---	---	---	-	-	Gravel Street	4
5	17+24.1	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	X	-	-	Gravel Street	5
6	21+23.6	Brick	1	X	X	X (M)	---	---	---	---	X	X	---	---	---	---	---	-	-	Gravel Street	6
7	24+34.9	Brick	1	X	-	X (L)	---	---	---	---	X	X	---	---	---	---	---	-	-	Concrete Street	7
8	25+27.2	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	X	-	-	Concrete Street	8
9	26+26.6	Vinyl lined reinforced concrete box w/brick stack	3	X	-	X (L)	---	---	---	---	X	X	---	---	X (C)	---	---	-	-	Concrete Street	9
[redacted]																					
11	28+55.1	Reinforced Concrete Siphon outlet structure	-	-	-	---	---	---	---	---	-	-	---	---	---	---	---	-	X	Gravelled Area	11
12	30+39.0	Reinforced Concrete Siphon inlet structure	-	-	-	---	---	---	---	---	-	-	---	---	---	---	---	X	-	Gravelled Area	12
13	32+97.9	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	---	X	-	Asphalt Parking Lot	13
14	34+84.6	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	---	X	-	Grassed Area	14
15	35+94.7	Reinforced Concrete Box w/brick stack	-	-	-	---	---	---	---	---	-	-	---	---	---	---	---	X	-	Asphalt Road - poor condition	15
[redacted]																					
17	[illegible]+96.7	NOT INSPECTED - Buried	1	X	-	---	---	---	---	X 2.1'	X	X	---	---	---	---	---	-	-	Grassed Area	17
18	41+0[illegible]	Brick	4	-	-	---	---	---	---	---	X	-	---	---	---	X (C)	---	-	-	Grassed Area	18
19	42+62.0	Brick	1	X	-	X (L)	---	X	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	19
20	45+08.0	NOT INSPECTED - Under concrete street	1	X	X	X (M)	X	---	---	X 1.0'	X	X	---	---	---	---	---	-	-	Grassed Area	20
21	49+04.6±	Brick	1	X	-	---	---	---	---	X 2'±	X	X	---	---	---	---	---	-	-	Raise MH Top Elev. to flush with pavement Concrete Street	21
22	51+79.0	Brick	1	X	X	X (M)	X	---	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	22
23	54+06.5	Brick	2	X	-	X (L&M)	---	---	---	---	X	X	X	---	---	---	---	-	-	Concrete Street	23
24	55+75.6	Brick	1	X	-	X (L&M)	X	X	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	24
25	56+21.0	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	X	-	-	Grassed Area	25
26	58+07.2	Brick	2	X	-	X (L)	---	X	---	---	X	X	---	X	---	---	---	-	-	Concrete Street / in curb	26
27	60+73.2	Brick	1	X	X	---	X	---	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	27
28	64+84.6	Brick	1	X	-	X (M)	---	---	---	---	X	X	---	---	---	---	---	-	-	Asphalt Street	28
29	64+93.0	Brick	1	X	-	X (M)	X	---	---	---	X	X	---	---	---	---	---	-	-	Asphalt Street	29
30	66+97.2	Brick	1	X	-	X (L)	---	X	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	30
31	69+25.4	Brick	1	X	X	X (M)	X	---	---	X 1.2'	X	X	---	---	---	---	---	-	-	Grassed Area	31
32	73+72.8	Brick	1	X	X	---	X	---	X	X 1.9'	X	X	---	---	---	---	---	-	-	Grassed Area	32
33	77+72.9	Brick	1	X	X	X (M)	---	---	X	---	X	X	---	---	---	---	---	-	-	Grassed Area	33
34	82+66.8	Brick	2	X	-	X (M)	X	---	---	---	X	X	X	---	---	---	---	-	-	Replace 1st 8" Pipe Section East Concrete Street	34
35	86+69.7	Brick	1	X	X	X (M)	X	---	---	---	X	X	---	---	---	---	---	-	-	Concrete Street	35
36	89+70.6	Brick	2	X	-	---	---	X	---	---	X	X	X	---	---	---	---	-	-	Concrete Street	36
37	90+62.2	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	X	-	-	Concrete Street / in curb	37
38	92+58.6	Brick	1	X	-	---	---	X	---	---	X	X	---	---	---	---	---	-	-	[redacted]	
39	92+83.9	Vinyl lined reinforced box w/precast stack	1	X	-	X (M)	---	---	---	---	X	X	---	---	---	---	---	-	-	See Weir Detail, sheet no. 11 Concrete Street	39
40	93+02.9	Brick	1	X	-	X (L)	---	X	---	---	X	X	---	---	---	---	---	-	[redacted]		
41	94+74.2	Brick	3	X	X	---	X	---	---	---	X	X	---	---	X (E)	---	---	-	-	Concrete Street / in curb	41
42	98+49.8	Brick	4	-	-	---	---	---	---	---	X	-	---	---	---	X (E)	---	-	-	Concrete Street / in curb	42
43	101+05.2	Brick	2	X	-	X (M)	X	X	---	---	X	X	---	---	---	---	---	-	-	Concrete Street / in curb	43
44	102+48.9	Brick	4	-	-	---	---	---	---	---	X	-	---	---	---	X (E)	---	-	-	Concrete Street / in curb	44
45	106+24.3	Brick	2	X	X	---	X	X	---	---	X	X	---	X	---	---	---	-	-	Concrete Street / in curb	45
46	106+48.0	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	X	-	-	Concrete Street / in curb	46
47	110+51.8	Brick	3	X	X	X (M)	---	---	---	---	X	X	---	---	X (E)	---	---	-	-	Concrete Street / in curb	47
48	112+53.7	Brick	1	X	-	---	X	X	---	---	X	X	---	---	---	---	---	-	-	Concrete Street	48
49	112+69.9	Brick	1	X	-	X (L)	---	X	---	---	X	X	---	---	---	---	---	-	-	Concrete Street	49
50	114+51.1	Brick	4	-	-	---	---	---	---	---	X	-	---	---	---	X (E)	---	-	-	Concrete Street / in curb	50
51	118+87.1	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	X	-	-	Concrete Street / in curb	51
52	119+47.1	Brick	-	-	-	---	---	---	---	---	-	-	---	---	---	---	X	-	-	Concrete Street	52
53	120+88.8	Brick	1	X	X	X (L)	---	---	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	53
54	123+32.8	Brick - Under house foundation	-	-	-	---	---	---	---	---	-	-	---	---	---	---	---	X	-	See special detail, sheet no. 10 Under house foundation	54
55	123+98.9	Brick	1	X	X	X (M)	---	X	---	X 0.8'	X	X	---	---	---	---	---	-	-	Grassed Area	55
56	127+20.1	Brick	1	X	X	X (L)	---	X	---	---	X	X	---	---	---	---	---	-	-	Grassed Area / in sidewalk	56
57	127+80.0	Brick	1	X	X	X (M)	X	---	---	---	X	X	---	---	---	---	---	-	-	Concrete Street	57
58	130+48.4	Brick	1	X	X	---	---	X	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	58
59	132+23.3	Brick	1	X	X	X (M)	X	---	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	59
60	133+80.3	Brick	1	X	X	---	---	X	X	---	X	X	---	---	---	---	---	-	-	Grassed Area	60
61	136+63.4	NOT INSPECTED - Buried	1	X	-	---	---	---	---	X 2.0'	X	X	---	---	---	---	---	-	-	Grassed Area	61
62	137+50.3	Brick	1	X	X	---	---	X	---	---	X	X	---	---	---	---	---	-	-	Grassed Area	62
63	141+12.8±	NOT LOCATED - Under asphalt parking lot	-	-	-	---	---	---	---	---	-	X	---	---	---	---	X	-	-	Asphalt Parking	63
64	141+77.[illegible]	Brick	1	X	X	---	X	---	---	---	X	X	---	---	---	---	---	-	-	Plug 8" Pipe NE Asphalt Parking	64
65	[illegible]3.7	Brick	1	X	-	---	---	X	---	---	X	X	---	---	---	---	---	-	-	Asphalt Parking	65
[redacted]																					
Special: MH in Pawnee Ave. ±7' East of MH 28		Brick	1	X	-	X (M)	---	---	---	---	X	X	---	---	---	---	---	-	-	See Weir detail, sheet no. 11 Concrete Street	

← Remove plug, install weir. (PART 2D) See Sht. 27. (MH 39)

This table defines the tasks to be completed at each manhole. The Contractor shall correct all manhole deficienies as determined by the engineer during construction.

NOTE:
All costs for work identified as Task No's. 1 through 13 inclusive, shall be included in the price bid for manhole rehabilitation, per each, for the four Manhole Rehabilitation Types indicated below.

All costs for work identified as Task No's. 14 through 16 inclusive, shall be included in the price bid for manhole removal, per each, for the three Manhole Removal Types indicated below.

Each Manhole Rehabilitation Type is identified by the highest category of task to be performed as noted below, regardless of the number of tasks to be performed on an individual manhole.

MANHOLE REHABILITATION TYPES	
TYPE	TASKS
1	1 thru 9
[redacted]	

MANHOLE REMOVAL TYPES	
TYPE	TASKS
[redacted]	
ABANDON MH IN PLACE	15
REMOVE MH	16

DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

SANITARY SEWER NO. 12

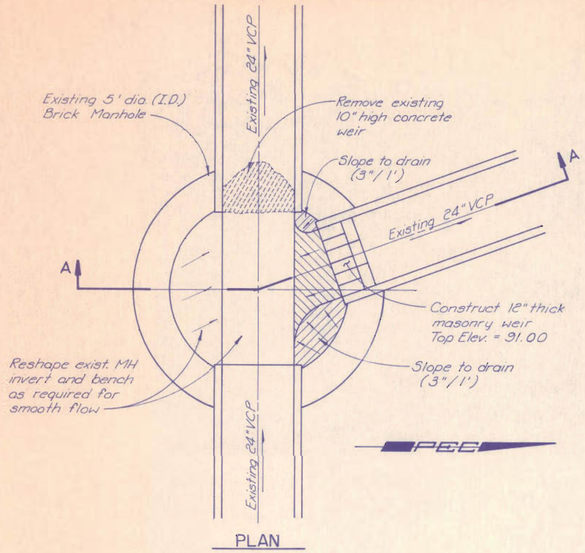
PHASE 1 - PART 1: SEWER RELINING

MANHOLE REHABILITATION /REMOVAL TASK SCHEDULE

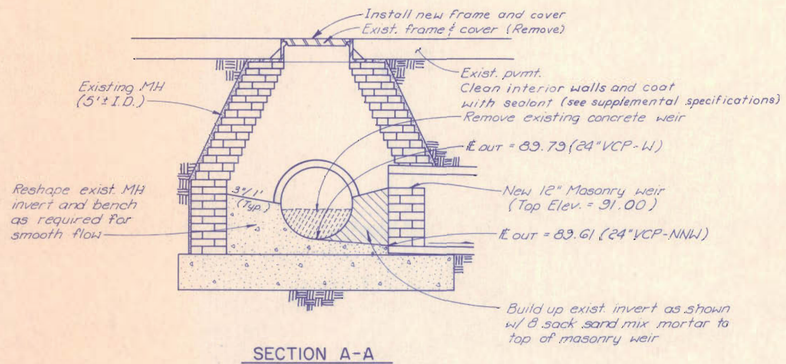
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM, RFJ	Job No. 34-81420-042	Sht. 9 of 38
Drawn by CAL	Date Sept. 1985	



PLAN



SECTION A-A

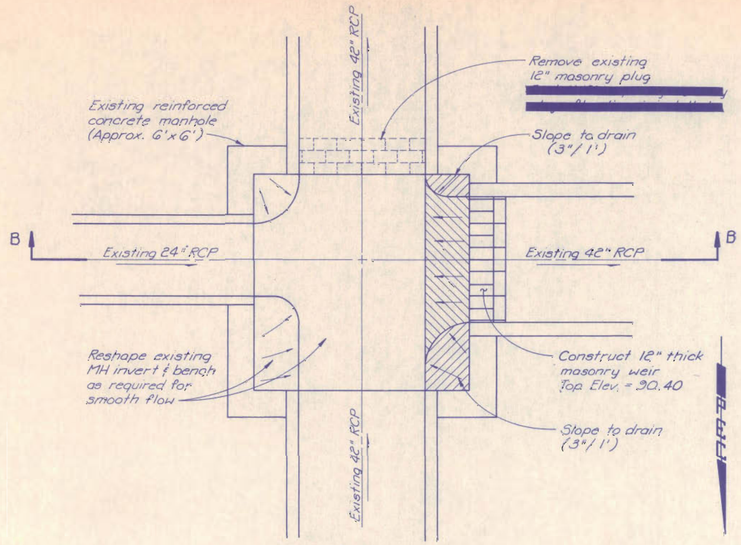
WEIR DETAIL

EXISTING MH - 7' EAST OF MH 28

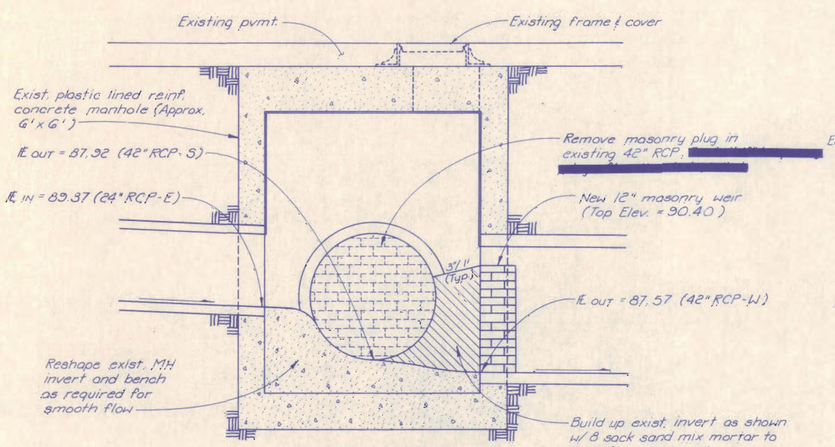
(See plan/profile sheet no. 24)

Scale : ½" = 1'-0"

PART 2D



PLAN



SECTION B-B

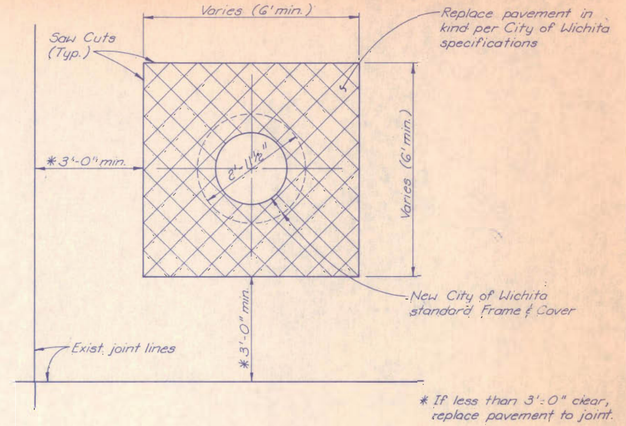
WEIR DETAIL

EXISTING MH 39

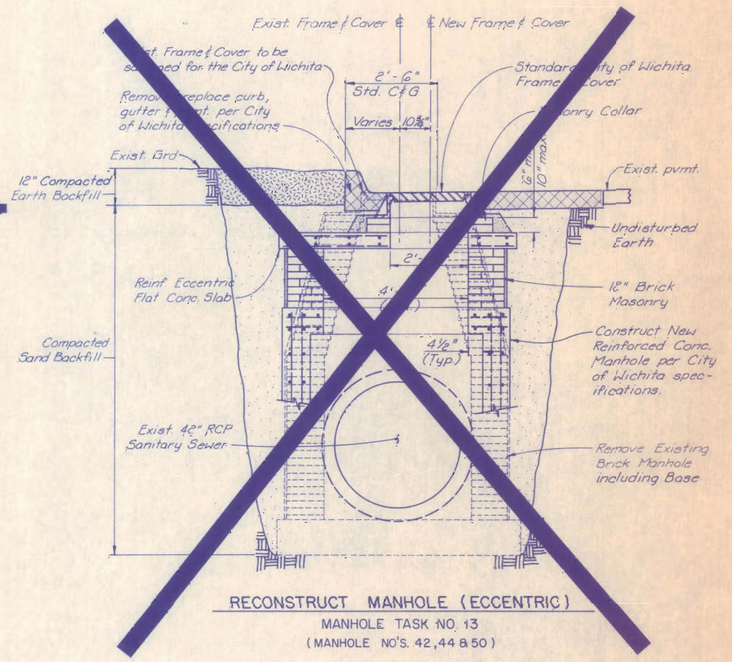
(See plan/profile sheet no. 27)

Scale : ½" = 1'-0"

PART 2D



TYPICAL MINIMUM PAVEMENT REMOVAL & REPLACEMENT



RECONSTRUCT MANHOLE (ECCENTRIC)

MANHOLE TASK NO. 13

(MANHOLE NO'S. 42, 44 & 50)

DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

SANITARY SEWER NO. 12

PHASE I - PART I - SEWER RELINING

MISCELLANEOUS DETAILS

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER

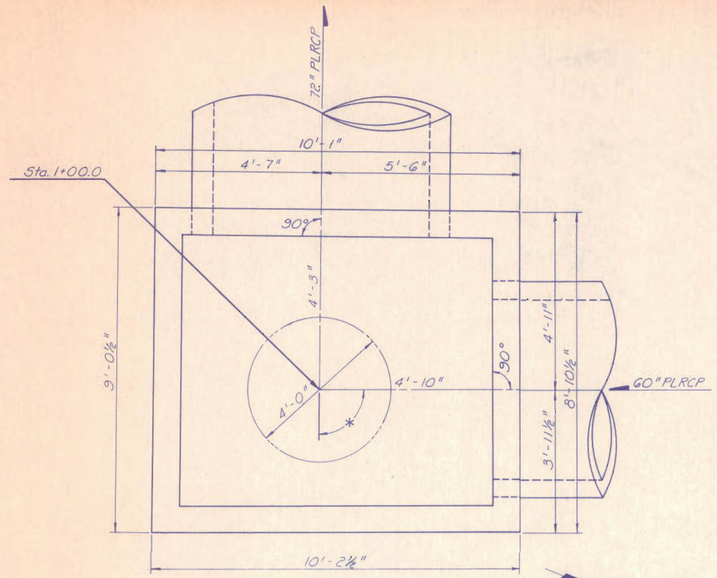
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.

ENGINEERS

WICHITA, KANSAS

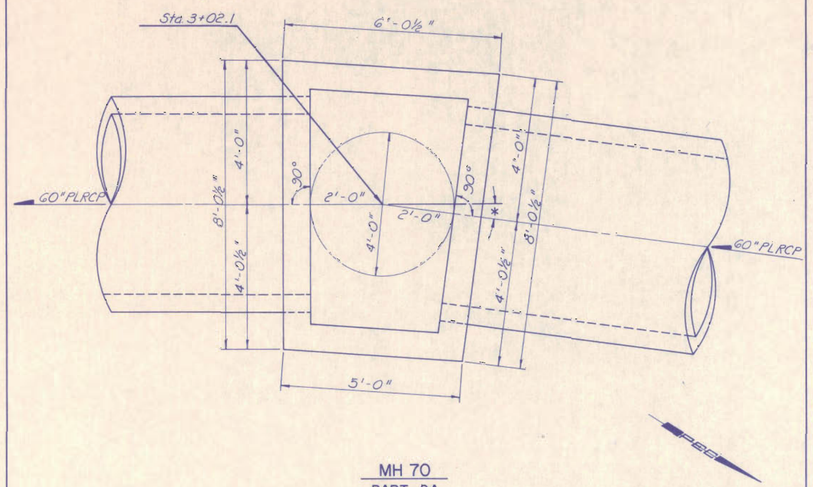
Designed by DLM	Job No. 34-81420-042	Sht. 11 of 38
Drawn by DMM	Date December, 1985	



MH 69
PART 2A

Depth of Stack = 10.32'

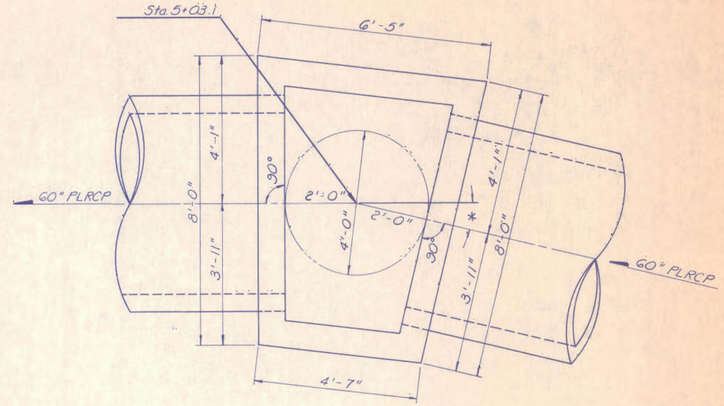
* 30°51'51"



MH 70
PART 2A

Depth of Stack = 10.33'

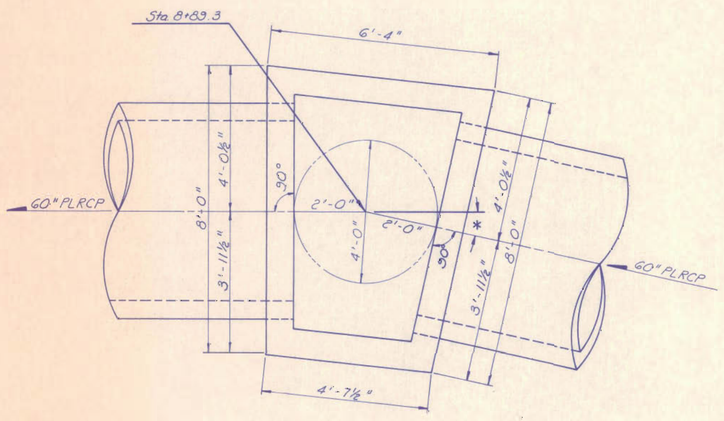
* 7°40'29"



MH 71
PART 2A

Depth of Stack = 10.47'

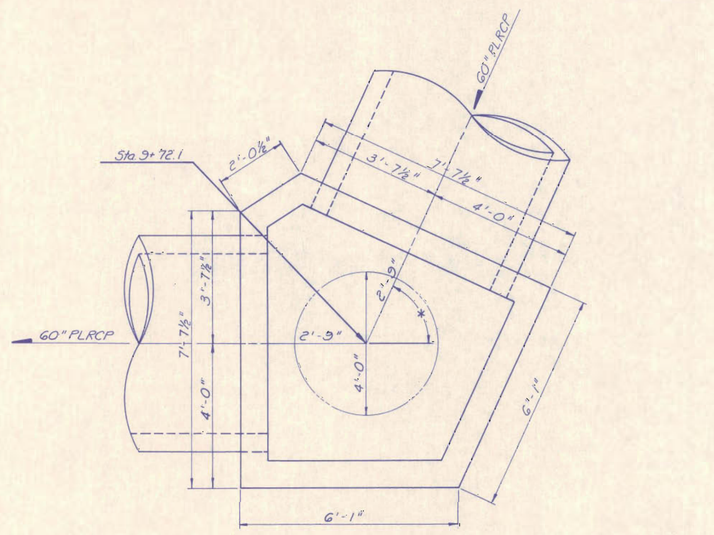
* 13°07'04"



MH 73
PART 2A

Depth of Stack = 12.37'

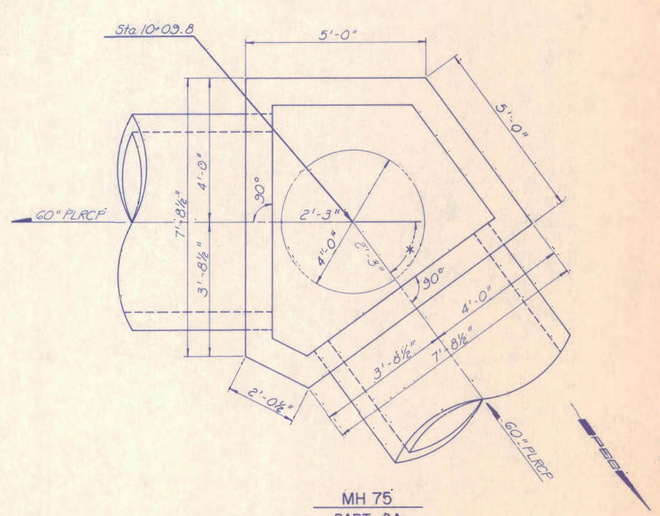
* 12°05'58"



MH 74
PART 2A

Depth of Stack = 12.16'

*65°17'41"



MH 75
PART 2A

Depth of Stack = 12.62'

* 53°26'21"

SCALE 1/2" = 1'-0"

DARREL LYNN MOORE
LICENSED
9055
KANSAS
PROFESSIONAL ENGINEER

No.	Revision	By	Date
	—		

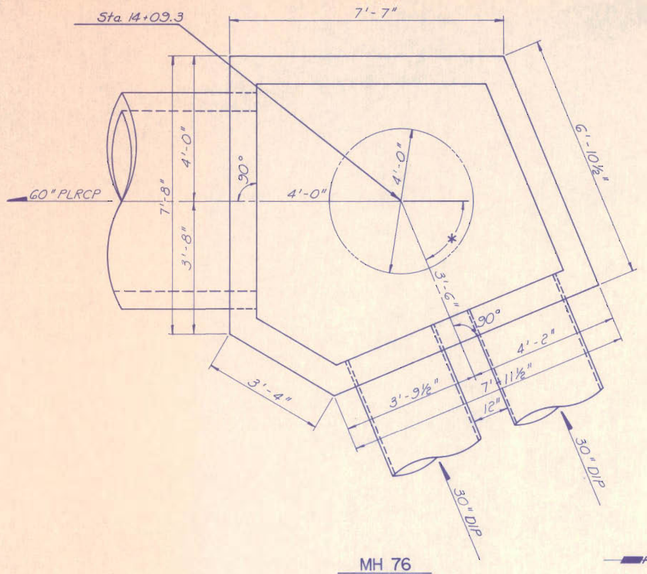
SANITARY SEWER NO. 12
PHASE I - PART 2

REINFORCED CONCRETE MANHOLES

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

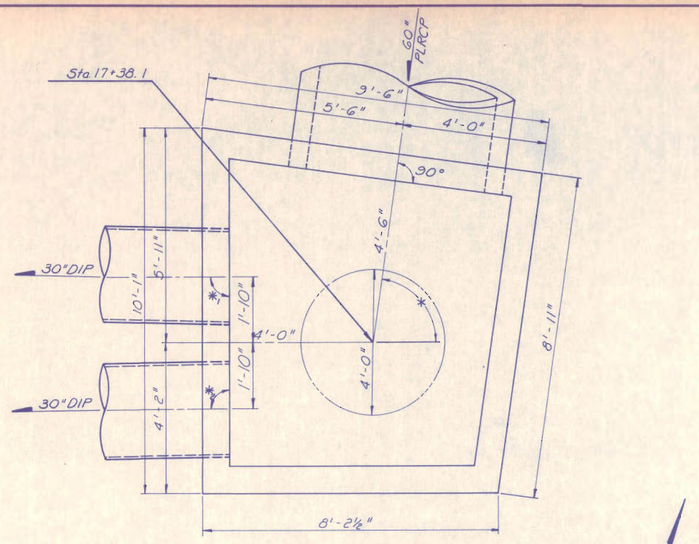
Designed by DLM	Job No. 34-81420-042	Sht. 12 of 38
Drawn by DMM	Date December, 1985	



MH 76
PART 2A

Depth of Stack = 11.20'

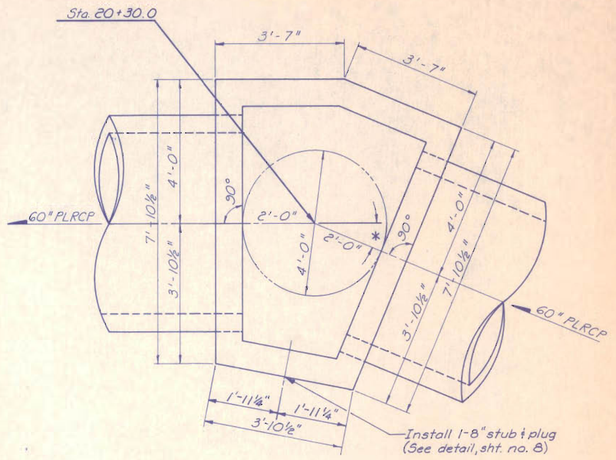
*67°55'67"



MH 77
PART 2A

Depth of Stack = 9.56'

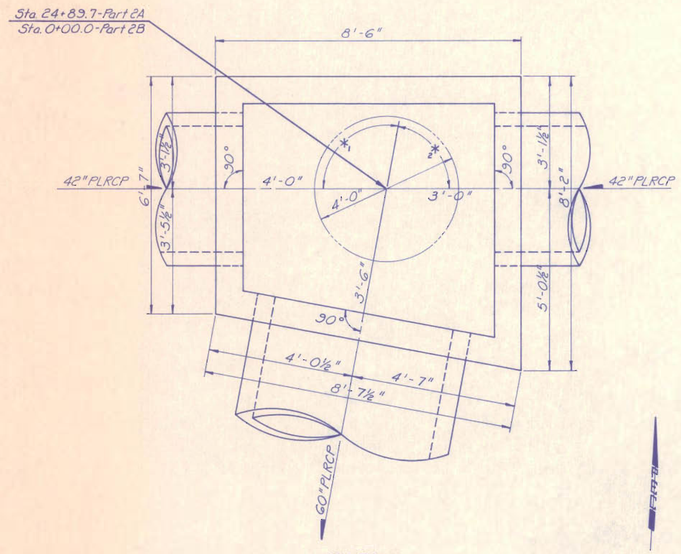
*1 32°17'35"
*2 81°55'20"



MH 78
PART 2A

Depth of Stack = 3.83'

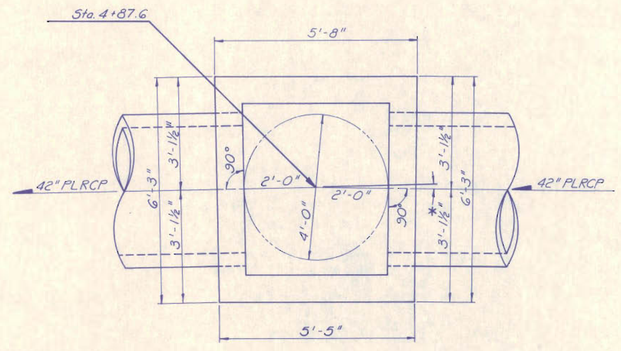
*22°33'15"



MH 79
PART 2A

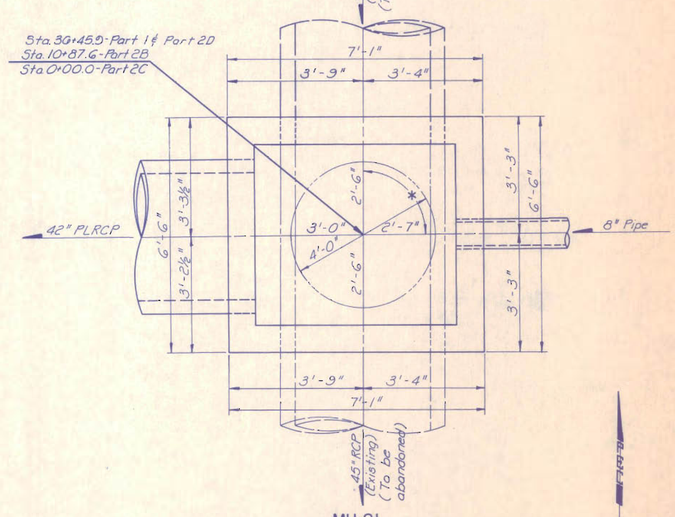
Depth of Stack = 7.35'

*1 100°26'29"
*2 79°33'31"



MH 80
PART 2B

*1°55'39"



MH 81
PART 2B

Depth of Stack = 8.87'

*89°25'33"

SCALE 1/2" = 1'-0"

DARREL LYNN MOORE
LICENSED
9055
KANSAS
PROFESSIONAL ENGINEER

No.	Revision	By	Date

SANITARY SEWER NO. 12
PHASE 1 - PART 2

REINFORCED CONCRETE MANHOLES

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM | Job No. 34-81420-042 | Sht. 13 of 38
Drawn by DMM | Date December, 1985

SCALE
PLAN & PROFILE
0 5 10
5
0

Top of Slope
Existing Keyed Joint
Toe of Slope
Shaded area indicates limits of Pavement Removal & Replacement
Toe of Slope
Existing Keyed Jt.
Top of Slope
Underdrain Manhole See detail, sht. no. 16
Underdrain Manhole See detail, sht. no. 16
Sta. 14+09.3
MH 76
See details, sht. nos. 13 & 17
Sta. 15+36.3
Begin Pipe Deflection
12" Perforated Pipe
℄ Drainage Channel
℄ Siphon
30" Ductile Iron Pipe — Flow
30" Ductile Iron Pipe — Flow
Barrel #1
Barrel #2
Flow
Flow
3'-8"
3'-8"
2' (min)
2' (min)
℄ 60" PLRCP
Flow
℄ 2 Sta. 25+01.00
29.00' Right
Install 8" Masonry Plug
Install 8" Masonry Plug
Sta. 15+79.3
End Pipe Deflection
4'-10½"
All concrete to be removed from the channel lining shall be sawed with a diamond blade saw. Saw to a minimum depth of one-half the concrete thickness & through the reinforcing steel

95 90 85 80 75 70 65

Top Elev. = 94.1
Existing Ground
Existing Ground
6" Conc. canal lining
6" Conc. canal lining
℄ IN = 77.47
30" D.I.P.
(Barrel #2)
℄ IN = 74.97
30" D.I.P.
(Barrel #1)
6" Filter Blanket
6" Filter Blanket
6"12-14 WWF (12" transverse)
6"12-14 WWF (12" Transverse)
Sta. 14+55.3
Sta. 14+95.8 ± ℄ Drainage Channel
Sta. 15+36.3
Sta. 15+79.3
Sta. 15+80.8
#5 bars @ 18" ctrs.
#5 bars @ 18" ctrs.
12" Perforated Pipe Drain Material
11" Conc. canal lining
6" Filter Blanket
12" Perforated Pipe Drain Material
Reinforced Concrete Encasement
℄ OUT = 74.87
60" PLRCP
Sta. 14+12.8
℄ Inv. = 70.81
℄ Inv. = 70.55
℄ Inv. = 71.51
℄ 1 = 72.52
℄ 2 = 72.77
168.0 L.F. Reinforced Conc. Encasement
166.5 L.F. 2-30" Polylined Ductile Iron Pipe
SIPHON CONSTRUCTION

DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

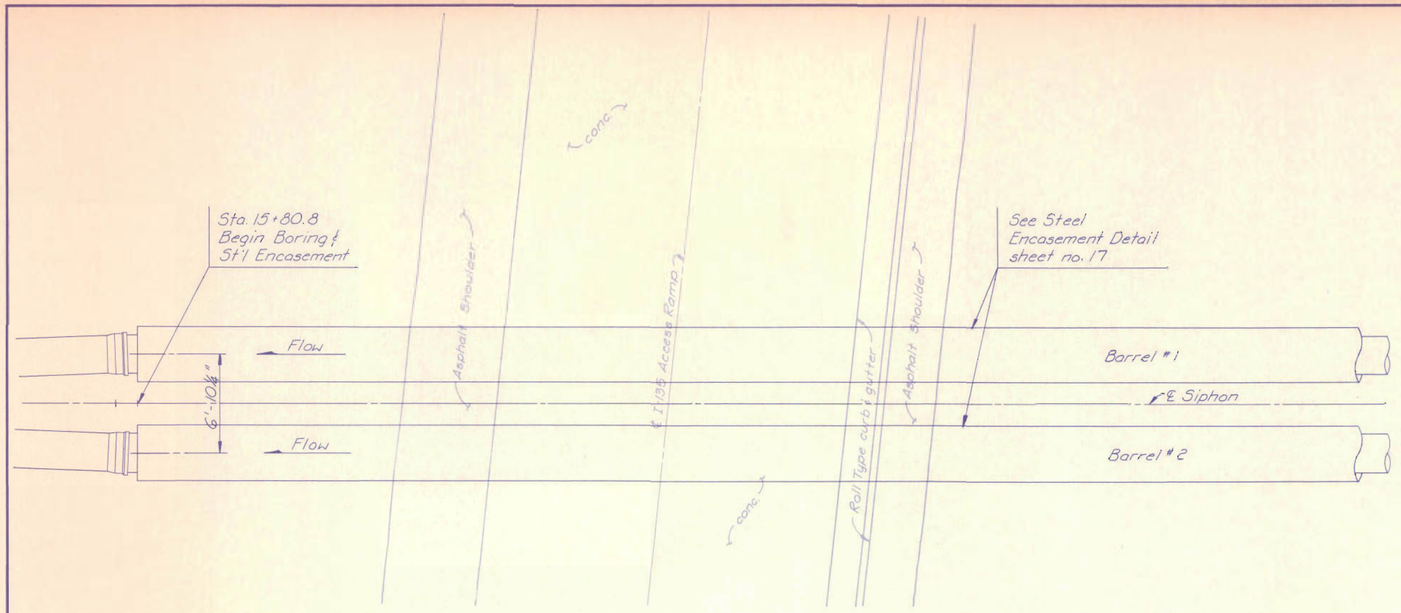
No.	Revision	By	Date

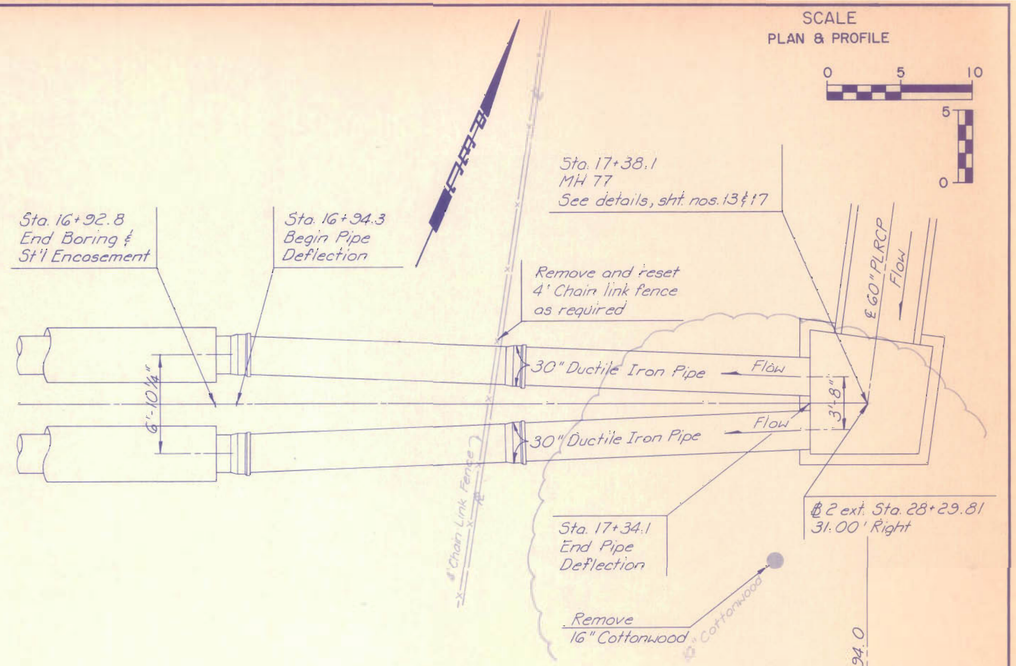
SANITARY SEWER NO. 12
PHASE I - PART 2A
INVERTED SIPHON - PLAN / PROFILE
(STA. 14+10.0 to STA. 15+80.0)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

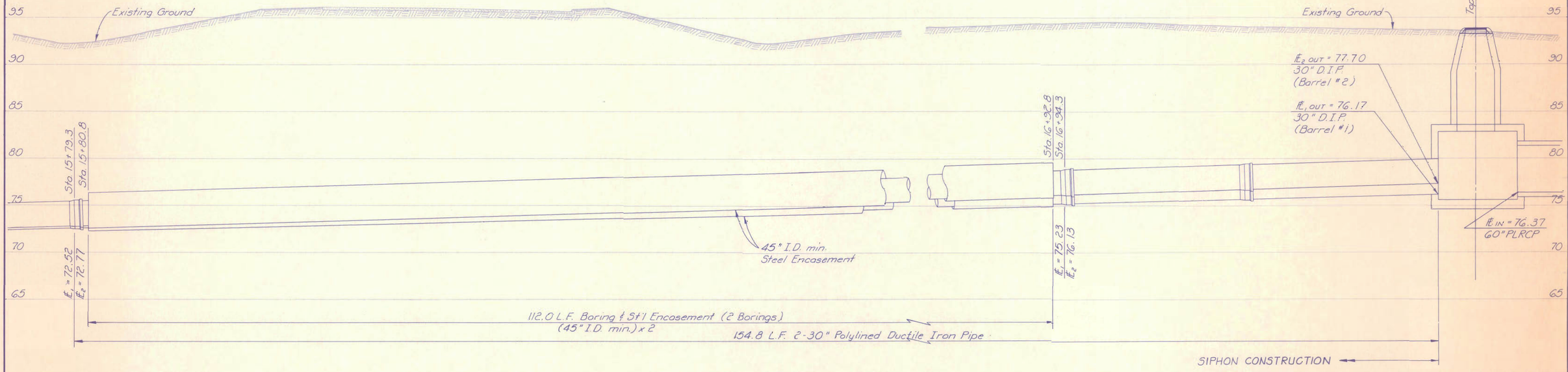
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM	Job No. 34-81420-042	Sht. 14 of 38
Drawn by DMM	Date December, 1985	

SCALE
PLAN & PROFILE
0 5 10
5
0







DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

SANITARY SEWER NO. 12
PHASE I - PART 2A

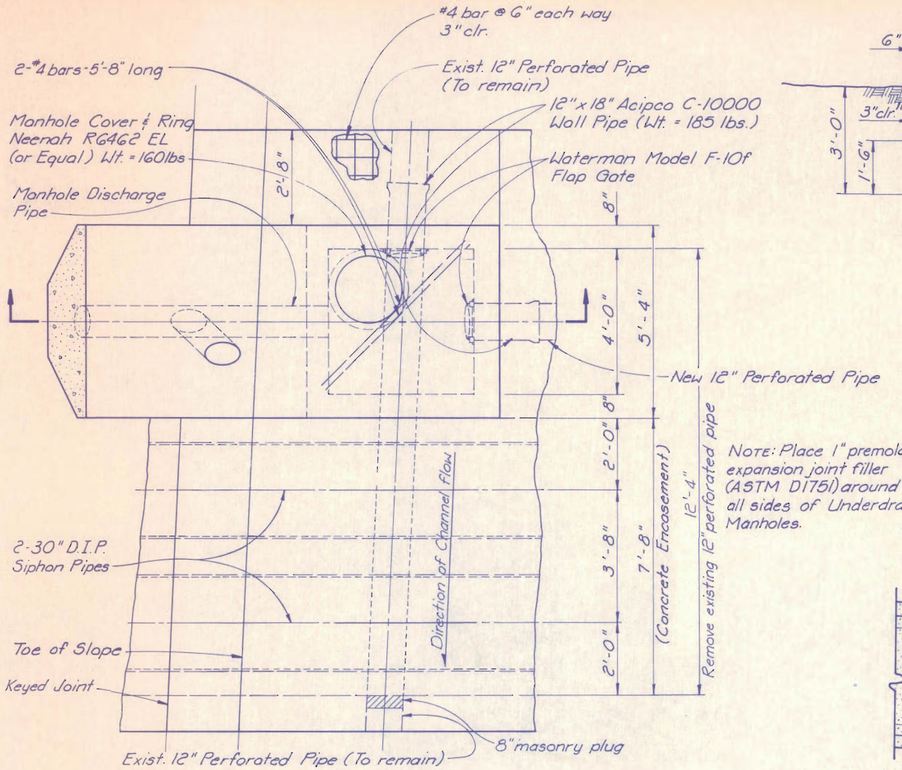
INVERTED SIPHON - PLAN / PROFILE

(STA. 15+80.0 to STA. 17+38.8)

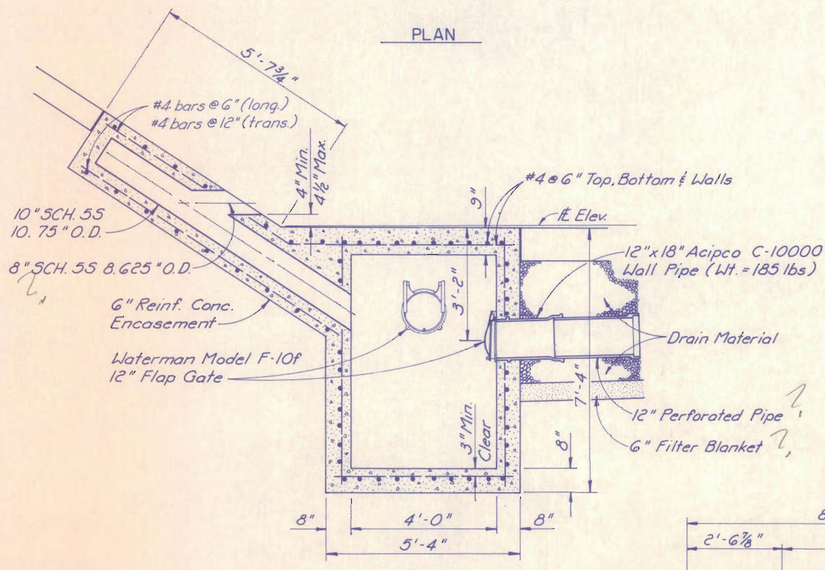
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM	Job No. 34-81420-042	Sht. 15 of 38
Drawn by DMM	Date December, 1985	

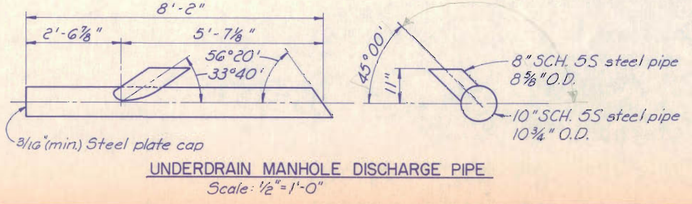


PLAN

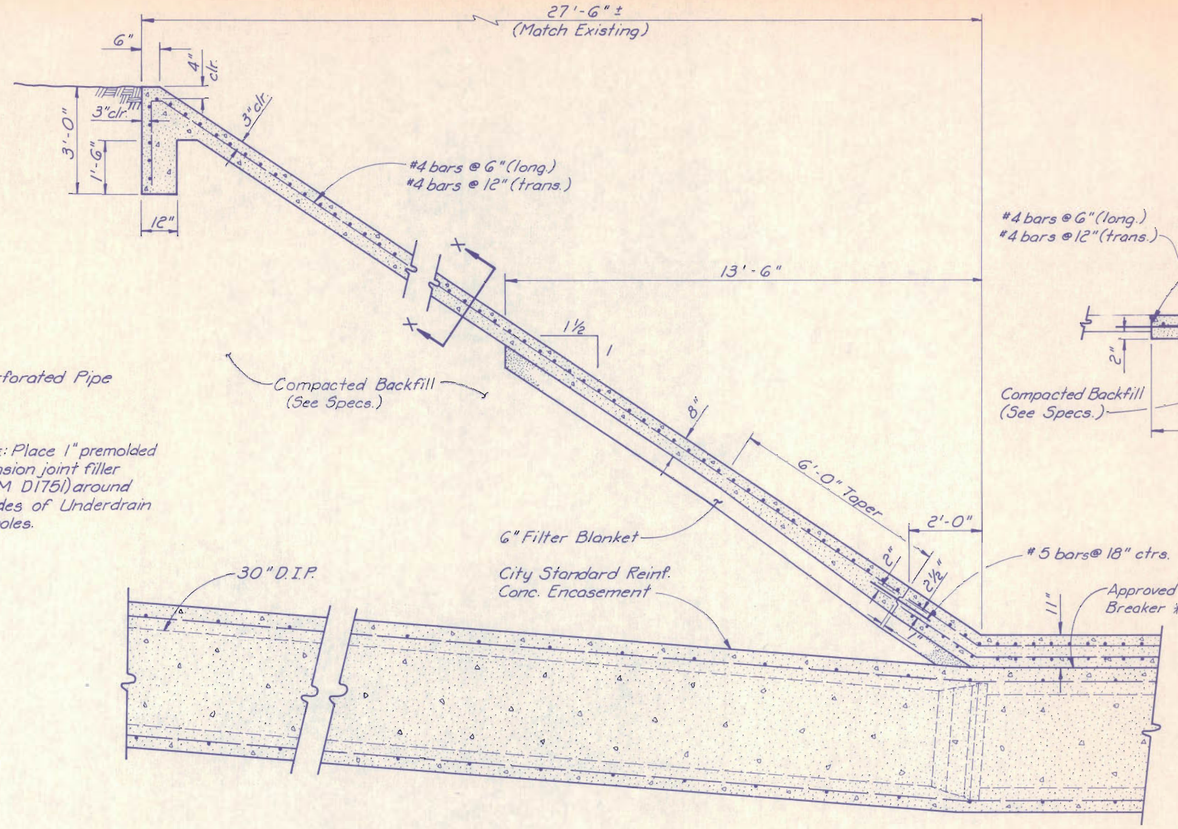


SECTION

UNDERDRAIN MANHOLE DETAILS
Scale: ½" = 1'-0"

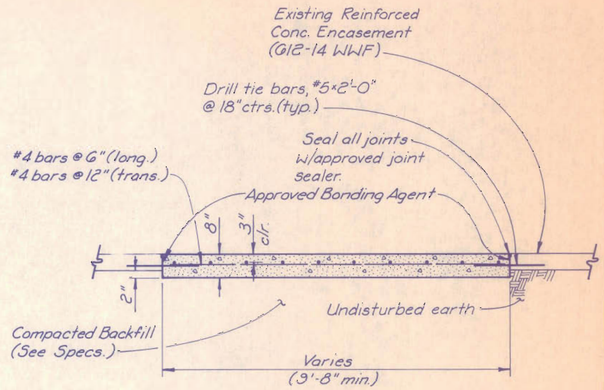


UNDERDRAIN MANHOLE DISCHARGE PIPE
Scale: ½" = 1'-0"

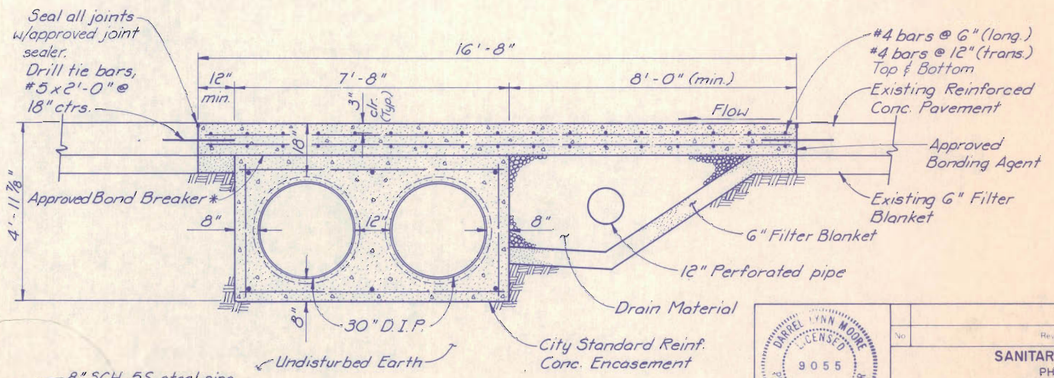


TYPICAL CHANNEL SIDE SLOPE

SECTION
Scale: ½" = 1'-0"



SECTION X-X
Scale: ½" = 1'-0"



SECTION @ ℄ DRAINAGE CHANNEL
Scale: ½" = 1'-0"

* NOTE: Bond Breaker shall be 2 thicknesses of 30lb/100 sq. ft. Tar Paper or approved equal.

DARNEL LYNN MOORE
LICENSED
9055
KANSAS
PROFESSIONAL ENGINEER

No.	Revision	By	Date

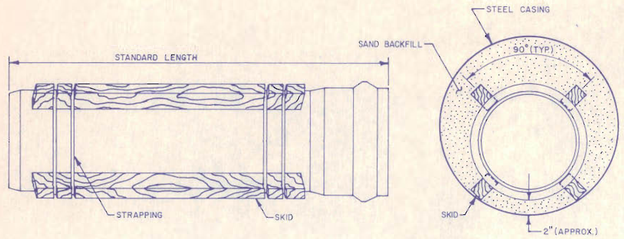
SANITARY SEWER NO. 12
PHASE I - PART 2

MISCELLANEOUS DETAILS

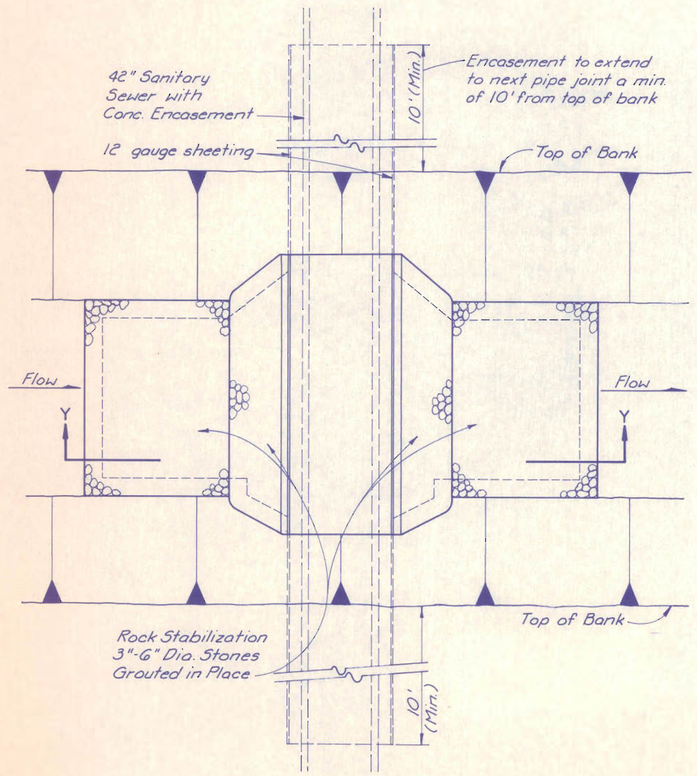
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM	Job No. 34-81420-042	Sht. 16 of 38
Drawn by DMM	Date December, 1985	



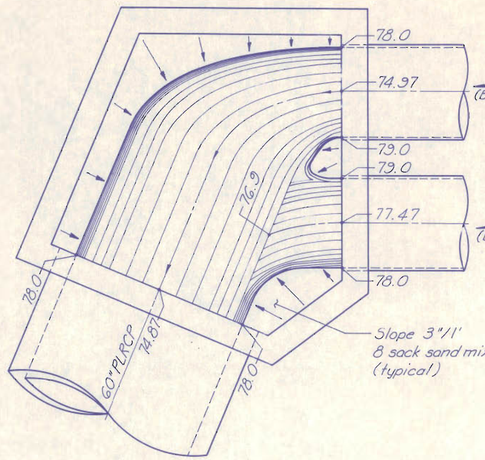
STEEL ENCASEMENT DETAIL



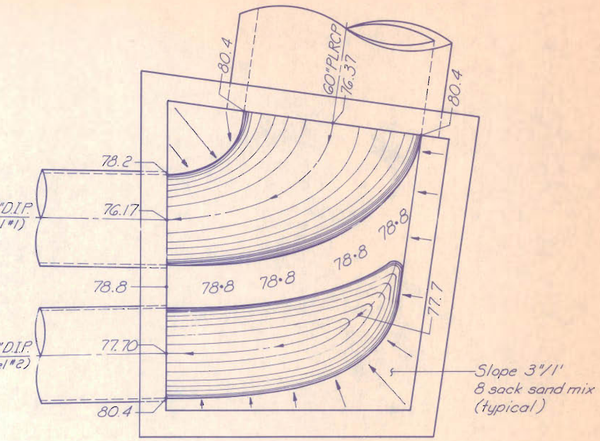
PLAN

CREEK CROSSING DETAIL

Scale: ½" = 1'-0"

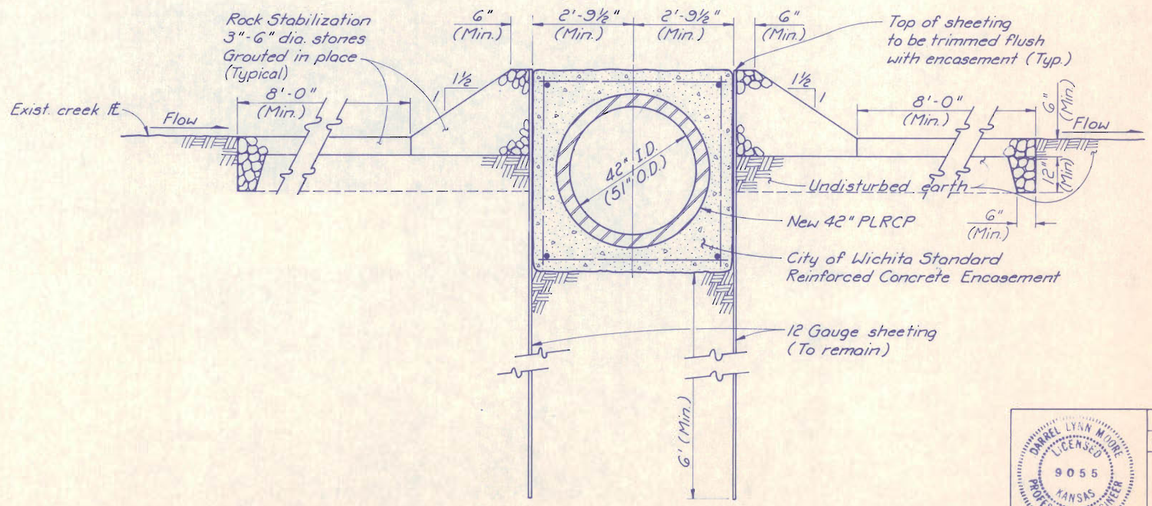


MH 76 - OUTLET STRUCTURE



MH 77 - INLET STRUCTURE

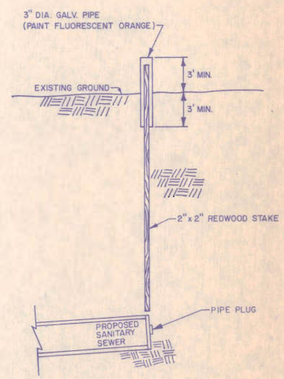
INVERTED SIPHON MANHOLES
FLOOR SHAPING
(See sht no. 13 for manhole dimensions)



SECTION Y-Y

CREEK CROSSING DETAIL

Scale: ½" = 1'-0"



BURIED PIPE STAKING DETAIL

(STAKING & PLUGGING SHALL BE SUBSIDIARY TO THE PIPE LINE INSTALLATION)

DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

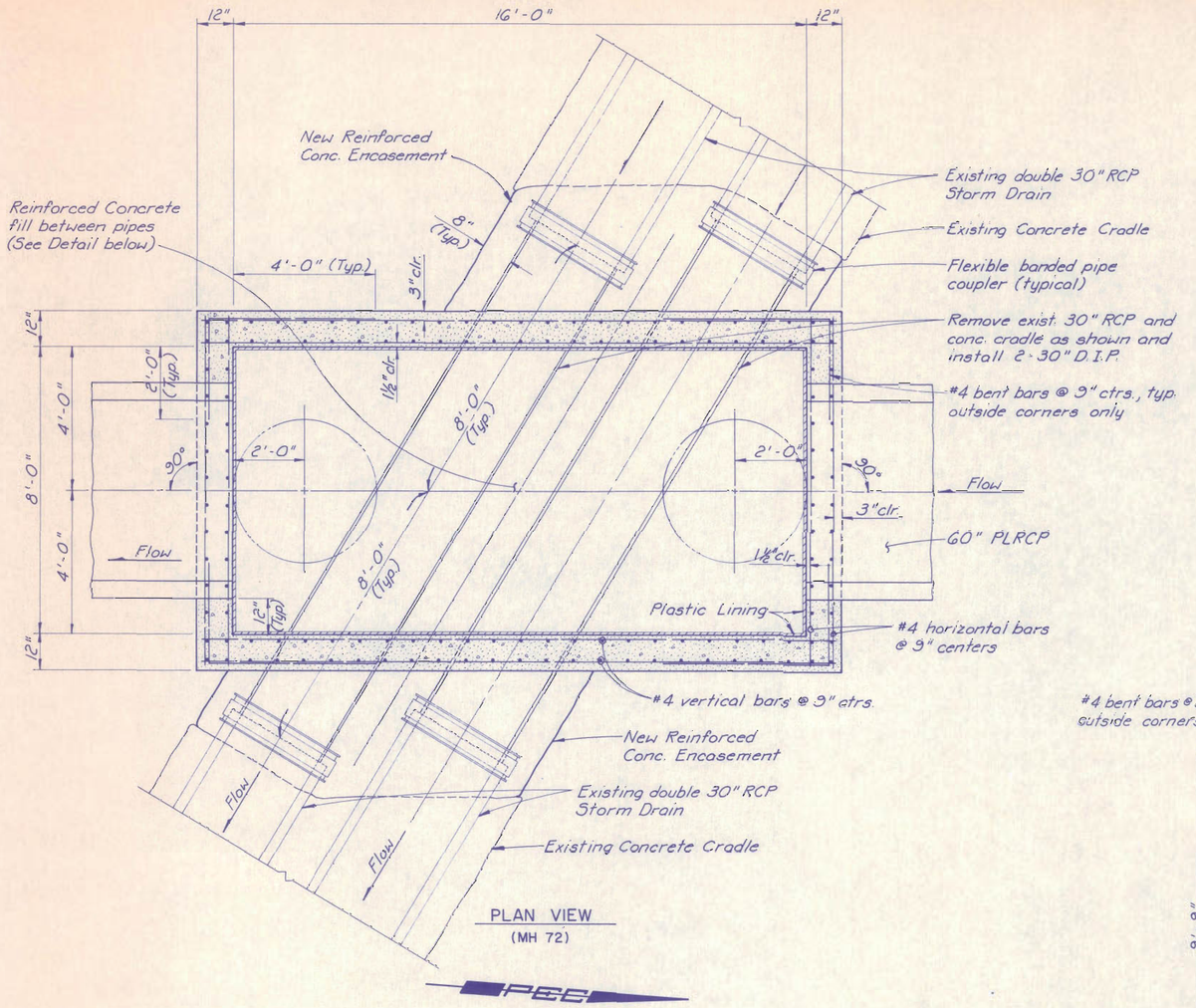
SANITARY SEWER NO. 12
PHASE I - PART 2

MISCELLANEOUS DETAILS

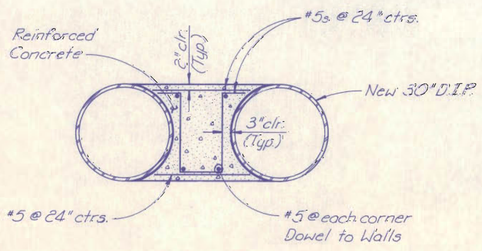
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

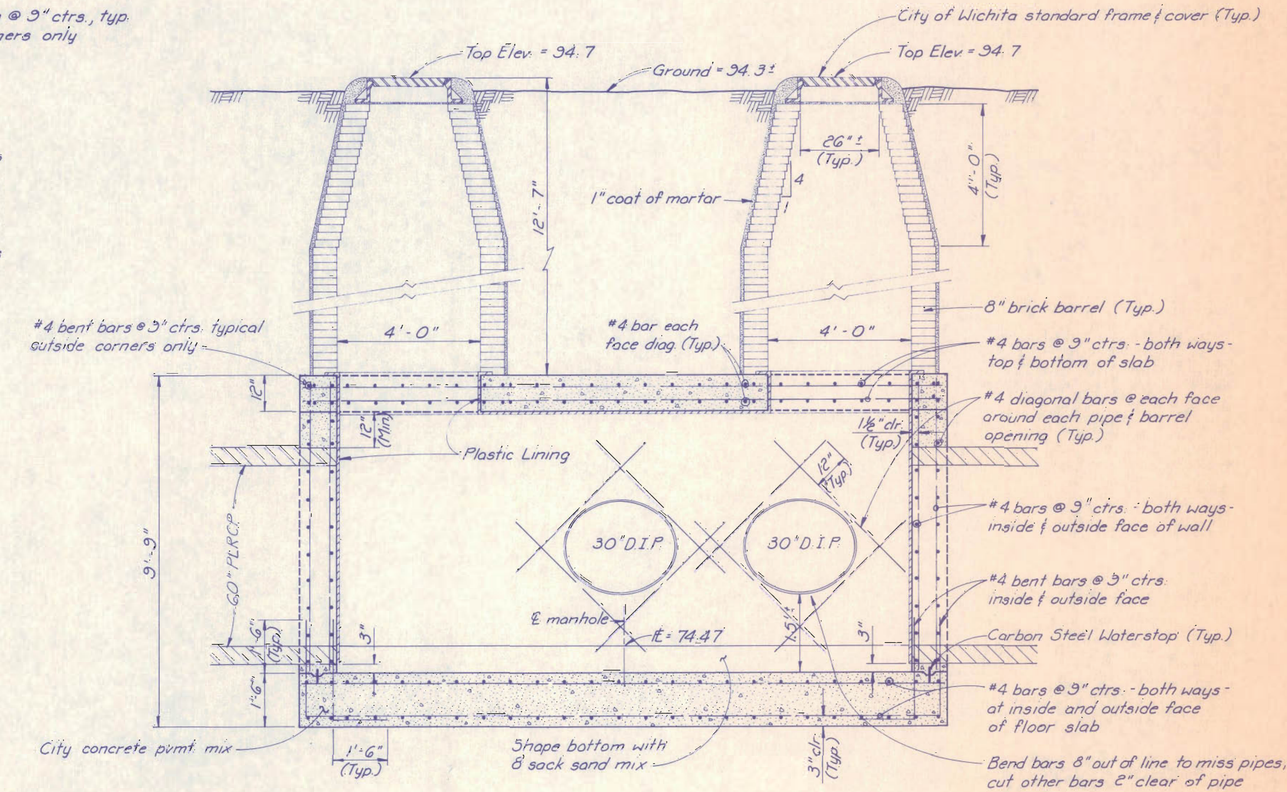
Designed by DLM	Job No. 34-81420-042	Sht 17 of 38
Drawn by DMM	Date December, 1985	



PLAN VIEW
(MH 72)



REINFORCED CONCRETE FILL DETAIL



ELEVATION VIEW
(MH 72)
Scale ½" = 1'-0"

DARREL LYNN K. DORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

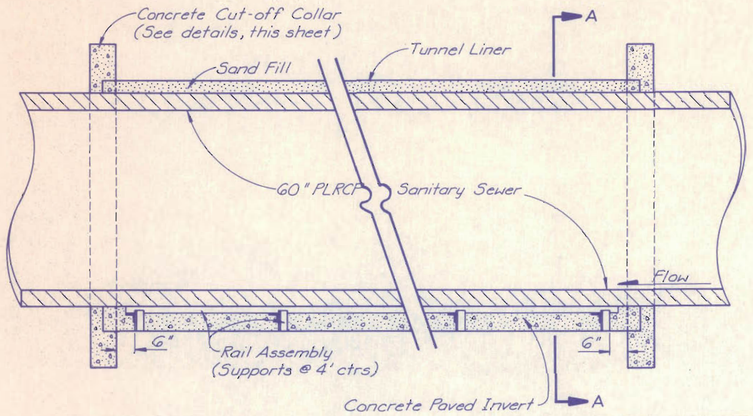
SANITARY SEWER NO. 12
PHASE I - PART 2

MISCELLANEOUS DETAILS

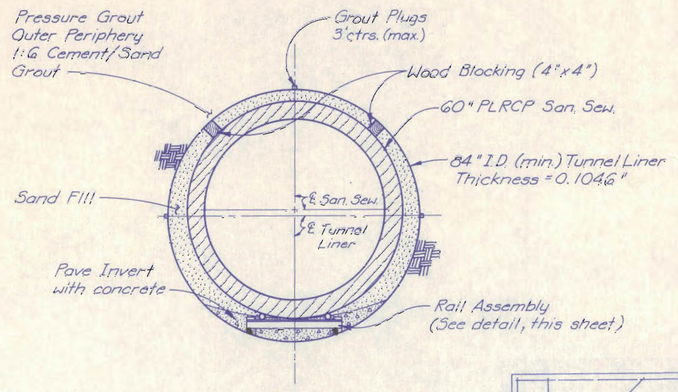
MICHAEL E. LINDEBAK, PE - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by: DLM, GLA | Job No. 34-81420-042 | Sht. 18 of 38
Drawn by: DMM | Date: December, 1985



ELEVATION



SECTION A-A

INSTALLATION

A. CARE SHALL BE USED TO TUNNEL AS NEATLY AS POSSIBLE TO ELIMINATE VOIDS OR OVERBREAK AND THUS OBTAIN MAXIMUM PLATE-TO-GROUND CONTACT.

B. LINER PLATES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

C. AFTER LINER PLATE RINGS HAVE BEEN INSTALLED, THE AREA BETWEEN THE LINER PLATE AND EARTH SHALL BE GROUTED TO FILL ALL VOIDS. GROUTING SHALL BE CONDUCTED IN A MANNER TO PREVENT BUCKLING OR SHIFTING OF THE LINER RING. GROUTING SHALL BE ACCOMPLISHED AS QUICKLY AS POSSIBLE BEHIND THE TUNNELING OPERATION. GROUT SHALL BE INTRODUCED THROUGH THE BUSHINGS PROVIDED AT A GROUTING PRESSURE OF NOT LESS THAN 5 PSI.

D. BEFORE INSTALLING SEWER PIPE INTO LINER, SUPPORT RAILS SHALL BE INSTALLED AT PROPER HEIGHT TO LOCATE SEWER PIPE AT DESIGN ELEVATIONS. PAVE INVERT WITH CONCRETE TO ELEVATIONS INDICATED.

E. SECTIONS OF PIPE SHALL BE CONNECTED ONE AT A TIME WITHIN THE LINER AREA IN THEIR FINAL POSITION.

F. AFTER PIPE IS IN PLACE AND JOINT COMPLETED, BLOCKING SHALL BE INSTALLED AT EACH SECTION TO PREVENT VERTICAL AND/OR HORIZONTAL MOVEMENT OF THE PIPE. BLOCKING SHALL BE AS FOLLOWS UNLESS OTHERWISE APPROVED BY THE ENGINEER.

1. BLOCKING SHALL BE MADE BETWEEN THE TOP EXTERIOR SURFACE OF THE PIPE AND THE LINER PLATE WITH PAIRS OF TAPERED WOOD WEDGES.
2. LENGTH OF WEDGES SHALL BE 20% OF THE LENGTH OF THE PIPE WITH A ONE FOOT MINIMUM LENGTH.
3. WEDGES SHALL BE DRIVEN HOME TIGHT.
4. THE SETS OF WEDGES SHALL BE PLACED AT UPPER QUARTER POINTS ON EACH CONCRETE SECTION.

TUNNEL LINER MATERIAL

A. LINER PLATES SHALL BE MADE FROM STEEL SHEETS CONFORMING TO THE REQUIREMENTS OF ASTM DESIGNATION A 569.

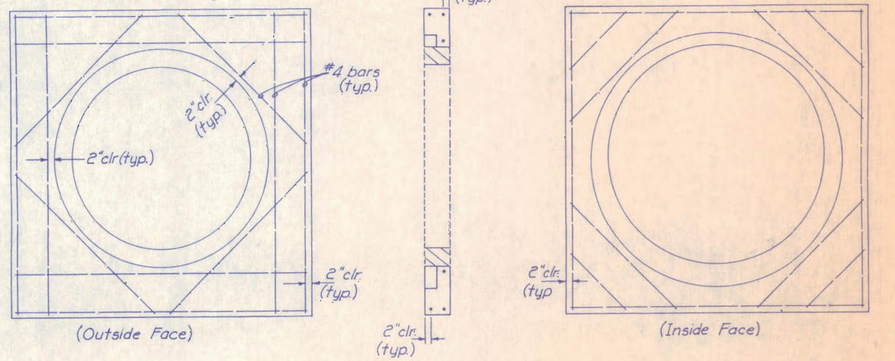
B. ALL PLATES SHALL BE PUNCHED FOR BOLTING ON BOTH LONGITUDINAL AND CIRCUMFERENTIAL SEAMS AND SHALL BE FABRICATED SO AS TO PERMIT COMPLETE ASSEMBLY FROM THE INSIDE OF THE TUNNEL.

C. THE FABRICATED SEGMENTS SHALL HAVE FLANGED CIRCUMFERENTIAL JOINTS. THE LONGITUDINAL JOINT SHALL BE OF THE OFFSET LAPPED TYPE (FLANGED LONGITUDINAL JOINTS WILL NOT BE ACCEPTABLE).

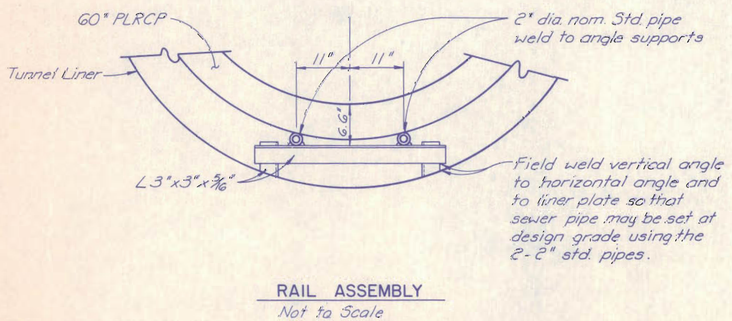
D. THE MATERIAL USED FOR THE CONSTRUCTION OF THESE PLATES SHALL BE NEW AND UNUSED AND SUITABLE FOR THE PURPOSE INTENDED. WORKMANSHIP SHALL BE FIRST-CLASS IN EVERY RESPECT. THE PLATES SHALL BE SUPPLIED WITH THREADED BUSHINGS AND PLUGS AS REQUIRED TO PERMIT GROUTING BETWEEN LINER AND SURROUNDING EARTH MATERIAL.

E. LINER PLATES SHALL BE PROVIDED WITH 2 INCH STANDARD PIPE HALF COUPLINGS WELDED INTO A HOLE IN THE CENTER CORRUGATION. COUPLINGS SHALL BE FITTED WITH CAST IRON PLUGS. SPACE COUPLINGS WITHIN EACH ROW AT THREE FOOT (MAXIMUM) CENTERS. LOCATE COUPLINGS ONE AT TOP AND ONE AT EACH SIDE OF LINER.

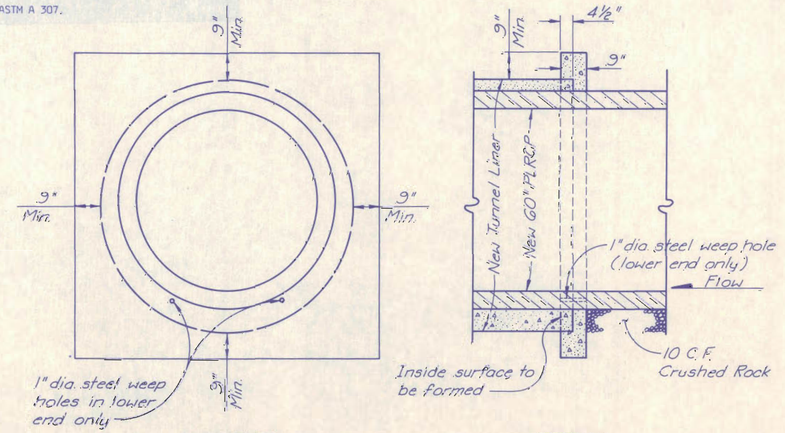
F. BOLTS SHALL BE IN CONFORMANCE WITH ASTM A 307.



COLLAR REINFORCING
1/2" = 1'-0"



RAIL ASSEMBLY
Not to Scale



ELEVATION SECTION

CONCRETE CUT-OFF COLLAR
1/2" = 1'-0"

DARREL E. LINDEBAK 9055 KANSAS PROFESSIONAL ENGINEER

Ver.	Revision	By	Date

SANITARY SEWER NO. 12
PHASE I - PART 2

TUNNEL LINER DETAILS

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468.76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM	Job No. 34-81420-042	Sht. 19 of 38
Drawn by DMM	Date December, 1985	

PLAN
SURVEYED
NOTE BOOK
ALIGNMENT CHECKED
RT. OF WAY CHECKED
NO.
BY
DATE
SCALE
PLAN 1"=40'
PROFILE:
HORIZ. 1"=40'
VERT. 1"=5'
MH 7 Sta. 24+34.9
MH 9 Sta. 26+26.6
MH 8 Sta. 25+27.2
MH 10 Sta. 26+39.7
MH 11 Remove Siphon Structure Sta. 28+55.1
MH 12 Siphon Structure Sta. 30+39.0 Abandon in place
MH 13 Sta. 32+97.9 Abandon in place
MH 14 Sta. 34+84.6 Abandon in place
BUTLER'S
CONAMORE STREET
VOLUTSIA AVENUE
JOYLAND
AMUSEMENT PARK
WASSALL STREET
SECOND REPLAT OF PART OF PAWNEE RANCH ADDITION
SECOND ADDITION
Construct 2-12" masonry plugs in 45" RCP
Construct 2-12" masonry plugs in 20" D.I. Pipes
Construct 1-12" masonry plug in 45" RCP
Abandon 83.9 L.F. 2-20" D.I. Pipes in place
Construct 2-12" masonry plugs in end of remaining 20" D.I. Pipes
Remove 2-20" D.I. Pipes (100 L.F. Each)
Remove 45 L.F. 45" RCP
170.4 L.F. 45" RCP Abandon in place
258.9 L.F. 45" RCP Abandon in place
186.7 L.F. 45" RCP Abandon in place
See Phase 1-Part 2C Sht. no. 38 for construction of Joyland sewer and reconnection of existing 6" service line
30' Sanitary Sewer Easement (City of Wichita Ordinance #3318) Page 477, Journal H, of the Wichita City Commission proceedings, approved 8/30/1932
CONSTRUCTION SEQUENCING See sheet no. 2
See "MANHOLE REHABILITATION TASK SCHEDULE" on sheet no. 9 for specific manhole tasks.
Pipes larger than 15" abandoned in place must be sand filled per specifications (Typical)
MH 7 (24+34.9) Top Elev.=94.94
MH 8 (25+27.2) Top Elev.=95.13
MH 9 (26+26.6) Top Elev.=94.86
MH 10 (26+39.7) Top Elev.=94.81
MH 11 (28+55.1) Top Elev.=93.49
MH 12 (30+39.0) Top Elev.=96.04
MH 13 (32+97.9) Top Elev.=96.16
MH 14 (34+84.6) Top Elev.=96.89
Existing Ground
FL IN=85.39 (W) from 8" Pipe
FL IN=85.25 (E) from 8" VCP
FL IN=82.64 (E) from 42" RCP
FL IN=85.39 (W) from 8" VCP
FL IN=85.17 (E) from 8" VCP
FL IN=85.16 (ENE) from 6" Pipe
12"x45" Masonry plugs
2-12"x20" Masonry plugs
2-12"x20" Masonry plug
Install 204.8 L.F. liner in existing 45" RCP
Abandon in place 170.4 L.F. 45" RCP
Remove 45 L.F. 45" RCP
Remove 100 L.F. 2-20" D.I. Pipes
Abandon in place 83.9 L.F. 2-20" D.I. Pipes
Abandon in place 445.6 L.F. 45" RCP
FL=81.69
FL=81.70
FL=81.83
FL OUT=81.86 FL IN=78.96
FL OUT=79.02 FL IN=82.11
FL=82.26
FL=82.39
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00
105
100
95
90
85
80
75
70
65
DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER
PART 2D
SANITARY SEWER NO. 12
PHASE 1-PART 1 SEWER RELINING
STA. 24+34.9 to STA. 34+84.6
(MH 7) (MH 14)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-00
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS WICHITA, KANSAS
Job No. 34-8420-042
Date Dec. 1985
Designed by DLM
Drawn by SM
Sht. 21 of 38
PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
B. M.'S NOTED
STRUCTURE NOTATIONS CHKD.
PLATE 1 PLAN-PROFILE

Sta. 36+45.9 (Part 2D) = MH81 Sta. 10+87.6 (Part 2B) Begin liner Installation
MH 14 Sta. 34+84.6
MH 15 Sta. 35+94.7 Abandon in place
Future Wassall St. Interceptor
Part 2B Wassall Street Interceptor See Sheet no. 37
Sta 35+43± Service Tap See sht. no. 58
SECOND
RESERVE "B"
RESERVE "C"
Future MH
30' Sanitary Sewer Easement
Construct 2-12" masonry plugs in 42"x46" Concrete Box Pipe
JOYLAND AMUSEMENT PARK
110.1 L.F. 42"x46" Concrete Box Pipe Abandon in place
Part 2C - Joyland Sewer See sheet no. 38
Construct 2-12" masonry plugs in 45" RCP
55.2 L.F. 45" RCP Abandon in place
WASSALL
SOUTH FORK COURT
REPLAT OF
MH 16 Sta. 37+20.4
MH 17 Sta. 39+96.7
RANGE ROAD
PART OF
PAWNEE
RANCH
ADDITION
MH 18 Sta. 41+07.2 Remove existing MH Construct Standard Reinforced Concrete MH See detail, sht. no. 3
MH 19 Sta. 42+62.0
MH 20 Sta. 45+08.0
CHEYENNE BLVD.
8" VCP Sanitary Sewer
PAWNEE RANCH ADDITION
SCALE PLAN 1"=40' PROFILE HORIZ. 1"=40' VERT. 1"=5'
[redacted]
Remove 15" pipe as necessary for MH construction. Const. 1-15" masonry plug at end of pipe. Cost of plug incidental to MH. Rehab.
Construction Sequencing See sheet no. 2
See "Manhole Rehabilitation-Task Schedule" on sheet no. 9 for specific manhole tasks
MH 14 (34+84.6) Top Elev.=96.89
Sta. 35+43± Service Tap (Lt.)
MH 15 (35+94.7) Top Elev.=96.23
(New) MH (36+49.9) See sheet no. 13
MH 16 (37+20.4) Top Elev.=93.5
MH 17 (39+96.7) Top Elev.=93.59 New Top elev.=95.7
MH 18 (41+07.2) Top Elev.=95.27
MH 19 (42+62.0) Top Elev.=95.93
MH 20 (45+08.0) Top Elev.=95.24
Existing Ground
℄ IN 86.13 (E) from 8" VCP
℄ IN 86.07 (W) from 8" VCP
℄ IN = 86.42 from 2-8" Pipes
℄ IN = 86.86 (WSW) from 8" VCP
12"x42"x46" Masonry plugs
12"x45" Masonry plugs
Abandon in place 110.1 L.F. 42"x46" Concrete Box Pipe
Abandon in place 55.2 L.F. 45" RCP
Install 858.1 L.F. of liner in existing 45" RCP
℄=82.39
℄=82.47
℄=82.51
℄=82.74
℄=82.82
℄=82.95
℄=83.04
105
100
95
90
85
80
75
70
65
35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00
DARREL LINN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER
PART 2D
SANITARY SEWER NO. 12
PHASE I - PART I - SEWER RELINING
STA. 34+84.6 to STA. 45+08.0
(MH 14) (MH 20)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS
Designed by DLM
Drawn by SM
Job No. 34-81420-042
Date Dec. 1985
Sht. 22 of 38
PLAN
PROFILE
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
GRADES CHECKED
B. M.'S NOTED
STRUCTURE NOTATIONS CH'K'D
NOTE BOOK
NO.
BY
DATE


MH 24
Sta. 55+75.6
MH 26
Sta. 58+07.2
MH 27
Sta. 60+73.2
MH 28
Sta. 64+84.6
MH 29
Sta. 64+93.0
SCALE
PLAN 1"=40'
PROFILE
HORIZ. 1"=40'
VERT. 1"=5'
GLEN
PAWNEE
CLOVER LANE
RANCH
CHEYENNE BLVD.
CHURCH OF GOD
ADDITION
PAWNEE AVE.
CHILTON'S PAWNEE AND GROVE ADDITION
35' Util. Esmt.
15' Esmt.
OAKS
DRIVE
12" Pinched Pipe
7TH
Exist. MH-7' East of MH 28
Remove weir on west side.
Construct weir on north side. See detail sht no. 11
See Task Schedule, Sht No. 9
CONSTRUCTION SEQUENCING
See sheet no. 2
See "MANHOLE REHABILITATION-TASK SCHEDULE" on sheet no. 9 for specific manhole tasks
Existing Ground
Existing Ground
℄ IN=89.01 (WSW) from 4" CIP
℄ IN=88.47 (ENE) from 8" VCP
℄ IN=87.78 (W) from 8" VCP
℄ IN=88.65 (N) from 8" VCP
℄ IN=89.79 (E) from 24" VCP
℄ IN=88.03 (W) from 8" VCP
℄ IN=89.11 (S) from 6" Service
℄ IN=88.13 (E) from 8" VCP
MH 24 (55+75.6) Top Elev.=96.0
MH 26 (58+07.2) Top Elev.=94.66
MH 27 (60+73.2) Top Elev.=95.73
Install 917.4 L.F. of liner in existing 42" RCP
105
100
95
90
85
80
75
70
65
56+00
57+00
58+00
59+00
60+00
61+00
62+00
63+00
64+00
65+00
DAREL LYNN MOUG
LICENSED
9055
KANSAS
PROFESSIONAL ENGINEER

PART 2D

SANITARY SEWER NO. 12
PHASE I-PART I: SEWER RELINING
STA. 55+75.6 to STA. 64+93.0
(MH 24) (MH 29)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Job No. 34-81420-042
Date Dec, 1985
Designed by DLM
Drawn by SM
Sht. 24 of 38

PLAN
NOTE BOOK
NO.
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED

PROFILE
NOTE BOOK
NO.
SURVEYED
PLOTTED
GRADES CHECKED
B. M.'S NOTED
STRUCTURE NOTATIONS

GROVE AVE.
CLARK STREET
MT. VERNON
KENNETH W. ROSE ADDITION
WILD ACRES ADDITION
KULLMAN ADDITION
SAVINA ADDITION
LINWOOD PARK ADDITION
ROBERT MYERS ADDITION
RUSSELL ROSS ADDITION
MEAD INTERMEDIATE SCHOOL
MH 34 Sta. 82+66.8
MH 35 Sta. 86+69.7
MH 36 Sta. 89+70.6
MH 37 Sta. 90+62.2
MH 39 Sta. 92+83.9
Remove brick plug (south) Construct weir (west) See detail sht. no. 11
MH 40 Sta. 93+02.9
Remove existing 42" plug and restore existing 42" RCP to service
RESERVE
Plugged
42" RCP Sanitary Sewer
42" PL RCP Sanitary Sewer
SCALE
PLAN 1"=40'
PROFILE:
HORIZ. 1"=40'
VERT. 1"=5'
CONSTRUCTION SEQUENCING See sheet no. 2
See "MANHOLE REHABILITATION - TASK SCHEDULE" on sheet no. 9 for specific manhole tasks.
Existing Ground
MH 34 (82+66.8) Top Elev.=95.77
MH 35 (86+69.7) Top Elev.=96.66
MH 36 (89+70.6) Top Elev.=96.34
MH 37 (90+62.2)
MH 38 (92+58.6) Top Elev.=96.46
MH 39 (92+83.9) Top Elev.=96.67
MH 40 (93+02.9) Top Elev.=96.75
fl in=90.43 (E) from 8" Pipe
fl in=89.37± (E) from 24" VCP
fl out=87.57 (W) into 42" PL RCP
fl in=90.92 (E) from 12" VCP
Install 1,036.1 L.F. of liner in existing 42" RCP
fl=87.09
fl=87.61
fl=87.70
fl=87.89
fl=87.92
fl=87.94
105
100
95
90
85
80
75
70
65
83+00
84+00
85+00
86+00
87+00
88+00
89+00
90+00
91+00
92+00
93+00
DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

PART 2D

SANITARY SEWER NO. 12
PHASE 1-PART 1: SEWER RELINING

STA. 82+66.8 to STA. 93+02.9
(MH 34) (MH 40)

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM | Job No. 34-81420-042
Drawn by SM | Date Dec., 1985

Sht. 27 of 38

Existing MH - Construct
1-12"×21" masonry plug
in 21" VCP west

Construction Sequencing
See sheet no. 2

See "Manhole Rehabilitation - Task Schedule"
on sheet no. 9 for specific manhole tasks

Install 1,110.1 L.F. of liner
in existing 42" RCP

PLAN
NOTE BOOK
NO.
SURVEYED
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
BY
DATE

PROFILE
NOTE BOOK
NO.
SURVEYED
PLOTTED
GRADES CHECKED
B. M.'S NOTED
STRUCTURE NOTAT'NS CH'KD
BY
DATE

DARREL LYNN MOORE
9055

PART 2D

SANITARY SEWER NO. 12
PHASE I - PART I: SEWER RELINING
STA. 133+80.3 to STA. 144+90.4
(MH 60) (MH 66)

MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81571-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM
Drawn by SM
Job No. 34-81420-042
Date Dec, 1985

Sht. 32 of 38


Sta. 0+45.5± Begin Phase I - Part 2A Connect 72" PLRCP to existing 72" RCP stub in existing MH 8. See General Note No. 24 sheet no. 2
Sta. 1+00.0 Const. MH 69 Reinf. Conc. MH See detail, sht. no. 12
Sta. 3+02.1 Const. MH 70 Reinf. Conc. MH See detail, sht. no. 12
Remove and reset 12" RCP Storm Drain as required
Remove and reset Gate & Signal system as required
Sta. 5+03.1 Const. MH 71 Reinf. Conc. MH See detail, sht. no. 12
Sta. 7+49.6 Const. MH 72 Special Reinf. Conc. MH. See detail, sht. no. 18
Sta. 8+89.3 Const. MH 73 Reinf. Conc. MH See detail, sht. no. 12
Sta. 9+72.1 Const. MH 74 Reinf. Conc. MH See detail, sht. no. 12
Chain link fence to be removed and reset as required
I-135 (NORTH BOUND)
I-135 (SOUTH BOUND)
WASTEWATER TREATMENT PLANT NO. 1
℄ 2 Sta. 11+26.00 4.00' Left
Install 50.3 L.F. 72" PLRCP
Install 78.1 L.F. 60" PLRCP
SCALE
0 40 80
PLAN Lat. & Long.
PROFILE Horiz. same as above Vertical
SEWAGE TREATMENT PLANT ACCESS ROAD
Install 197.0 L.F. 60" PLRCP
Install 236.5 L.F. 60" PLRCP
Install 129.7 L.F. 60" PLRCP
WICHITA DRAINAGE CANAL
Contractor shall coordinate removal and resetting of the existing telephone pole and junction box with the utility company
℄ 2 Sta. 11+33.00 50.00' Right
Install 195.3 L.F. 60" PLRCP
Remove and replace concrete pavement as required
℄ 2 Sta. 13+33.00 21.00' Right
℄ 2 Sta. 15+34.00 19.00' Right
℄ 2 Sta. 17+74.61 72.55' Right
℄ 2 Sta. 19+10.98 102.30' Right
Sta. 8+02.1 to Sta. 9+08.6 Const. 105 L.F. 84" I.D. (min) Tunnel with liner. See detail, sht. no. 19
K-15 HIGHWAY (SOUTH BOUND)
K-15 HIGHWAY (NORTH BOUND)
A.T. & S.F. RAILROAD
℄ 2 Sta. 19+86.85 137.44' Right
BM 48 Chiseled "+" in top of curb @ East end of small parking area East-southeast of Sewage Treatment Plant No. 1 main building Elev. = 93.80
BM 47 Chiseled "□" in East top of curb access road 22.2' North of Sewage Treatment Plant No. 1 North gate. Elev. = 91.75
Contractor shall coordinate removal and resetting of exist. railroad communication pole with the R.R. Co.
PLAN
PROFILE
Begin Phase I
Inside Wall Inlet Tunnel MH
Telephone
Electric
MH 69 Top Elev. = 93.9
MH 70 Top Elev. = 93.0
MH 71 Top Elev. = 92.7
MH 72 Top Elev. = 94.7
MH 73 Top Elev. = 94.5
MH 74 Top Elev. = 94.7
Existing Ground
IE = 86.02 12" RCP Storm Drain
Tunnel Liner
72" PLRCP
60" PLRCP
60" PLRCP
IE = 73.01
IE = 73.95
IE = 74.02
IE = 74.09
IE = 74.16
IE = 74.23
IE = 74.30
IE = 74.37
IE = 74.40
IE = 74.44
IE = 74.50
IE = 74.51
IE = 74.56
54.5 L.F. @ 0.07%
202.1 L.F. @ 0.07%
201.0 L.F. @ 0.07%
246.5 L.F. @ 0.07%
139.7 L.F. @ 0.07%
82.8 L.F. @ 0.07%
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
100
95
90
85
80
75
70
65
DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

SANITARY SEWER NO. 12
PHASE I - PART 2A : S.S. NO. 12 RELIEF INTERCEPTOR
STA. 0+45.5 to STA. 9+72.1
(START) (MH 74)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Designed by DLM	Job No. 34-81420-042
Drawn by DMM	Date Dec., 1985

PLATE 1 PLAN-PROFILE D. F. B. & K. E. STANDARD

PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
EST. OF MAT. CHECKED
NOTE BOOK
NO.
BY
DATE

PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
BY
NOTE BOOK
NO.
STRUCTURE NO. & STA. OF CH'KD.

B 2 Sta. 20+15.00
113.06 ' Right

CAUTION !!
78" Sanitary
Sewer

Sta. 10+09.8
Const. MH 75
Reinf. Conc. MH
See detail,
sht. no. 12

Sta. 14+09.3
Const. MH 76
Reinf. Conc. MH
See detail,
sht. nos. 13 & 17

I-135 (SOUTH BOUND)

Sta. 9+72.1
MH 74

Baseline

P.I. 1

P.I. 2

I-135 (NORTH BOUND)

Remove and reset
4' Chain link fence
as required

I-135 ACCESS ROAD

Sta. 17+38.1
Const. MH 77
Reinf. Conc. MH
See detail,
sht. nos. 13 & 17

Install 32.7 L.F.
60" PLRCP

Install 393.3 L.F.
60" PLRCP

MH 76 to MH 77
Const. Inverted Siphon
See detail, sht. nos. 14 & 15

WICHITA DRAINAGE CANAL

ATCHISON, TOPEKA & SANTA FE RAILROAD

K-15 HIGHWAY (SOUTH BOUND)

K-15 HIGHWAY (NORTH BOUND)

40' Temporary
Construction Esmt.

40' Perm. Sewer Easement

SCALE
0 40 80
PLAN: 1 at 1 Long.
PROFILE: Horiz. same as above
Vertical
5 0

JOYLAND
AMUSEMENT
PARK

PEC

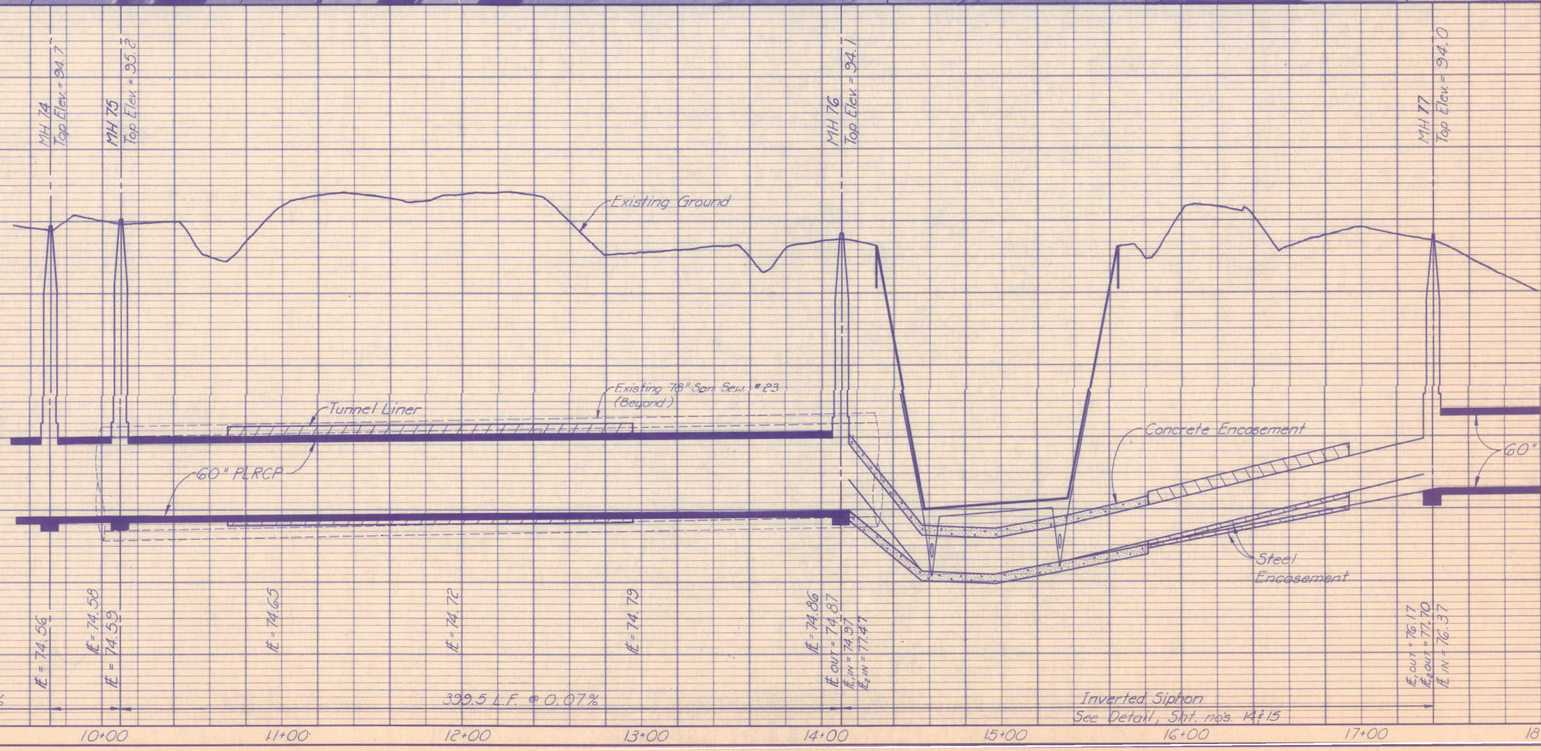
Sta. 10+70.0 to Sta. 12+35.0
Const. 225.0 L.F. 84" I.D. (min.)
Tunnel with liner. See detail
sheet no. 19

B 2 Sta. 19+86.25
137.44 ' Right

B 2 Sta. 25+01.00
29.00' Right

B 2 ext. Sta. 28+29.81
31.00 ' Right

BM2 City of Wichita standard brass cap at the North
end of the East hubguard at the northbound bridge
on K-15 highway over the Wichita Drainage Canal. Elev.= 97.95



PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
BY
NOTE BOOK
NO.
STRUCTURE NO. & STA. OF CH'KD.
DATE

DARREL LYNN MOORE
LICENSED
9055
KANSAS
PROFESSIONAL ENGINEER

SANITARY SEWER NO. 12
PHASE I - PART 2A - S.S. NO. 12 RELIEF INTERCEPTOR
STA. 9+72.1 to STA. 17+38.1
(MH 74) (MH 77)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS
Job No. 34-81420-042
Date Dec., 1985
Designed by DLM
Drawn by DMM
Sht. 34 of 38

PLATE 1 PLAN-PROFILE O. P. R. & R. E. STANDARD
EUGENE DIETZGEN CO.

I-135 (NORTH BOUND)
WICHITA DRAINAGE CHANNEL
I-135 ACCESS ROAD
Install 1-8" stub and plug (E)
Miniature railroad tracks to be removed and reset by Joyland Amusement Park
Sta. 20+30.0 Const. MH 78 Reinf. conc. MH See detail, sht. no. 13
Remove and reset 3" Chain link fence as required
SOWERS
CAUTION!! Buried Utilities
ELEMEN
Sta. 24+89.7 Const. MH 79 Reinf. Conc. MH See detail sht. no. 13
SCHOOL
Sta. 17+38.1 MH 77
40' Sanitary Sewer Easement
10' Temporary Construction Esmt.
30' Sanitary Sewer Easement
30' Temporary Construction Esmt.
40' Temporary Construction Esmt.
GYPSUM CREEK DRAINAGE CHANNEL
Install 285.4 L.F. 60" PLRCP
Install 454.2 L.F. 60" PLRCP
Remove and replace Concrete pavement as required
℄ 2 ext. Sta. 28+29.81 31.00' Right
℄ 3 Sta. 0+14.09 6.43' Right
20' Temporary Easement
Easement
JOYLAND
AMUSEMENT
PARK
WASSALL STREET
Remove and reset sign as required
BM 24 Railroad spike in the Northeast face of 12" Ash, East of miniature Railroad tracks, ... East of proposed MH 78 in the Northeast ... of Joyland Amusement Park Elev. 87.7
Part 2B Wassall Street Interceptor See sht. no. 37
SCALE
0 40 80
PLAN: Lat. & Long.
PROFILE: Horiz. same as above
Vertical
0 5
PEC

100
95
90
85
80
75
70
65
MH 77 Top Elev. = 94.0
MH 78 Top Elev. = 88.5
MH 79 Top Elev. = 93.5
Telephone
8" Water
2" Gas
Existing Ground
℄ IN = 80.90 from 1-8" stub (E)
℄ IN = 78.39 42" PLRCP (LJ)
60" PLRCP
60" PLRCP
℄ OUT = 76.17
℄ OUT = 77.70
℄ IN = 76.37
℄ = 76.41
℄ = 76.48
℄ = 76.55
℄ = 76.57
℄ = 76.62
℄ = 76.69
℄ = 76.76
℄ = 76.83
℄ OUT = 76.89
291.9 L.F. @ 0.07%
459.7 L.F. @ 0.07%
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
DARREL LYNN MOORE LICENSED 9086 KANSAS PROFESSIONAL ENGINEER

PLAN	BY	DATE
SURVEYED		
PLOTTED		
ALIGNMENT CHECKED		
RT. OF WAY CHECKED		

NOTE BOOK
NO.

PROFILE	BY	DATE
SURVEYED		
PLOTTED		
GRADES CHECKED		
B. M.'s NOTED		
STRUCTURE NOTATN'S CH'KD		

NOTE BOOK
NO.

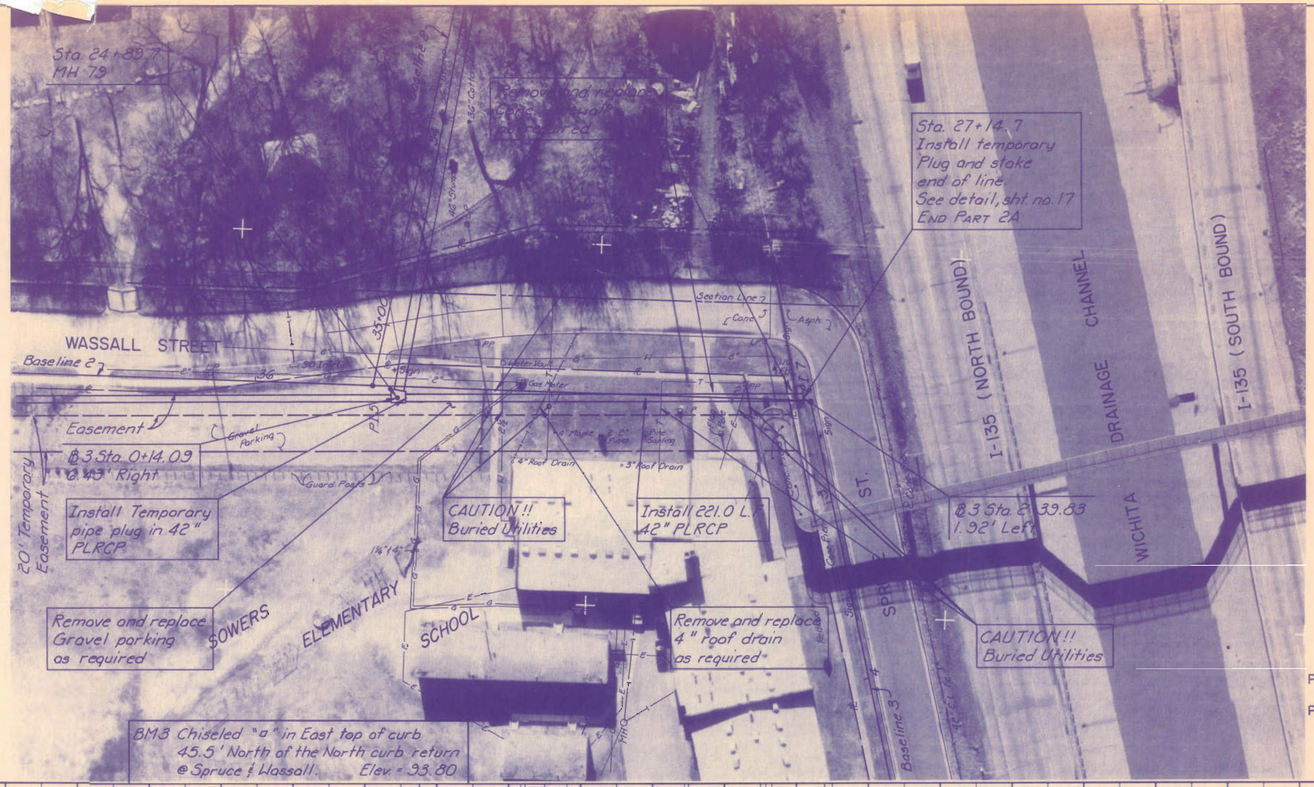
PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

SANITARY SEWER NO. 12
PHASE 1 - PART 2A - S.S. NO. 12 RELIEF INTERCEPTOR
STA. 17+38.1 to STA. 24+89.7
(MH 77) (MH 79)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

Designed by DLM
Drawn by DMM
Job No. 34-81420-042
Date Dec., 1985

Sht. 35 of 38

PLATE 1 PLAN-PROFILE



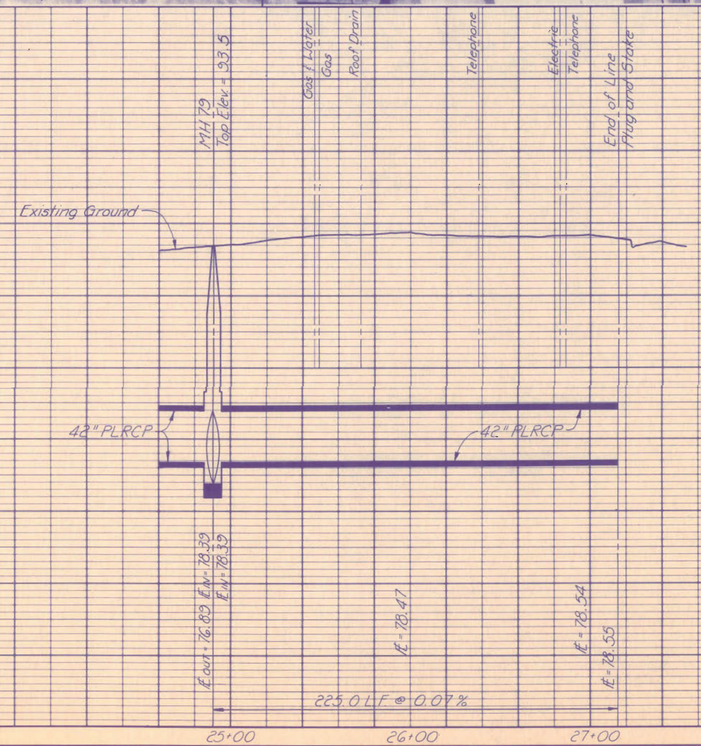
NORTH

SCALE

0 40 80

PLAN: Lat. & Long.

PROFILE: Horiz. same as above
Vertical → 5 0



PLAN | SURVEYED | BY | DATE
PLOTTED
ALIGNMENT CHECKED
RT. OF WAY CHECKED
NOTE BOOK
NO.

PROFILE | SURVEYED | DATE
PLOTTED
GRADES CHECKED
B. M.'s NOTED
STRUCTURE NOTATNS CHKD.
NOTE BOOK
NO.

MICHAEL LYNN LINDEBAK
LICENSED
9059
KANSAS
PROFESSIONAL ENGINEER

SANITARY SEWER NO. 12
PHASE I - PART 2A - S.S. NO. 12 RELIEF INTERCEPTOR
STA. 24+89.7 to STA. 27+14.7
(MH 79) (END)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-84164-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS
Designed by DLM
Drawn by DMM
Job No. 34-84420-042
Date Dec., 1985
Sht. 36 of 38

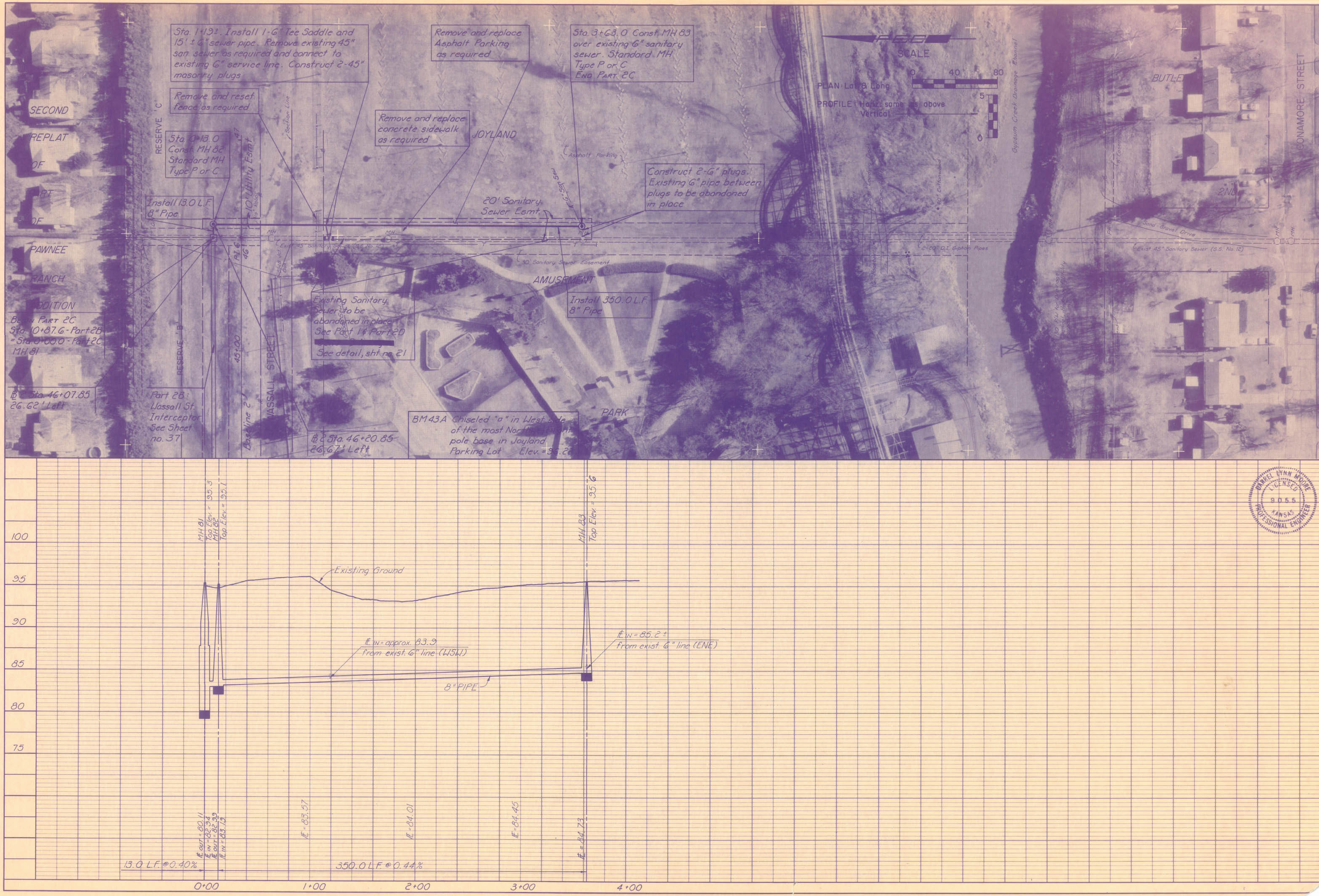
PLATE 1 PLAN-PROFILE O. P. R. & R. E. STANDARD


Begin Part 2B
Sta. 24+83.7 - Part 2A
Sta. 0+00.0 - Part 2B
MH 79
Construct Creek Crossing. See detail, sht. no. 17
Remove and replace Gravel parking as required
Remove and reset 15" RCP Storm Drain as required
CAUTION !! 2" Gas Line
Remove and replace Conc. pavement as required
Sta. 4+87.6
Const MH 80
Reinf. conc. MH
See detail, sht. no. 13
20' Temporary Easement
15' Utility Easement
CAUTION !! Undg. utilities
20' Temporary Construction Esmt.
CAUTION !! Buried Telephone Cable
10' Utility Easement
25' Utility Easement
Part 2C Joyland Sewer See sht. no. 38
WASSALL STREET
SOWERS
ELEMENTARY
SCHOOL
SECOND
REPLAT
OF
PART
OF
RANGE ROAD
PAWNEE
RANCH
ADDITION
RESERVE 'A'
RESERVE 'B'
Baseline 2
30' Temporary Construction Esmt.
Install 487.6 L.F. 42" PLRCP
Install 595.0 L.F. 42" PLRCP
℄ 2 Sta. 40+07.85 24.53' Left
℄ 2 Sta. 46+07.85 26.62' Left
JOYLAND
AMUSEMENT
PARK
20' Sanitary Sewer Easement
BMT City of Wichita standard brass cap the Northeast corner of Wassall St. bridge West of Range Rd. Elev 94.35
SCALE
PLAN: Lat. & Long.
PROFILE: Horiz. Same as above Vertical
MH 79 Top Elev 93.5
MH 80 Top Elev 92.1
MH 81 Top Elev 95.3
Existing Ground
2" Gas
Water
Telephone
℄ = 86.58 (15") RCP Storm Drain
℄ = 86.38 (8") VCP San. Sew.
℄ IN = 82.50 (45") from exist. line (N)
42" PLRCP
Concrete Encasement
℄ OUT = 76.89 ℄ IN = 78.39
℄ = 78.46
℄ = 78.53
℄ = 78.60
℄ = 78.67
℄ = 78.73 ℄ = 78.76
℄ = 78.99
℄ = 79.22
℄ = 79.45
℄ = 79.68
℄ = 79.91
℄ OUT = 80.11 ℄ IN = 82.34
487.6 L.F. @ 0.07%
600.0 L.F. @ 0.23%
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
PLAN
PROFILE
DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

SANITARY SEWER NO. 12
PHASE I - PART 2B : WASSALL STREET INTERCEPTOR
STA. 0+00.0 to STA. 10+87.6
(MH 79) (MH 81)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS

Job No. 34-81420-042
Date Dec. 1985
Designed by DLM
Drawn by DMM
Sht. 37 of 3


Sta. 1+13±. Install 1-6" Tee Saddle and 15' ± 6" sewer pipe. Remove existing 45" san. sewer as required and connect to existing 6" service line. Construct 2-45" masonry plugs
Remove and replace Asphalt Parking as required
Sta. 3+63.0 Const. MH 83 over existing 6" sanitary sewer. Standard MH Type P or C Eng Part 2C
SCALE
PLAN
PROFILE
Remove and reset fence as required
Remove and replace concrete sidewalk as required
JOYLAND
SECOND REPLAT OF PT OF PAWNEE RANCH ADDITION
RESERVE 'C'
Sta. 0+18.0 Const. MH 82 Standard MH Type P or C
10' Utility Esmt.
Install 13.0 L.F. 8" Pipe
20' Sanitary Sewer Esmt.
Construct 2-6" plugs. Existing 6" pipe between plugs to be abandoned in place
VOLUTSIA AVE
BUTLER
ONAMORE STREET
AMUSEMENT
PARK
Begin Part 2C Sta. 10+87.6 - Part 2B = Sta. 0+00.0 - Part 2C MH 81
Existing Sanitary Sewer to be abandoned in place See Part 1 & Part 2D
See detail, sht no. 21
Install 350.0 L.F. 8" Pipe
RESERVE 'B'
VASSALL STREET
Baseline
℄ Sta. 46+07.85 26.62' Left
Part 2B Vassall St. Interceptor See Sheet no. 37
℄ Sta. 46+20.85 26.67' Left
BM 43A Chiseled "a" in West side of the most North light pole base in Joyland Parking Lot Elev. = 95.22
MH 81 Top Elev. = 95.3
MH 82 Top Elev. = 95.1
MH 83 Top Elev. = 95.6
Existing Ground
I.E. IN = approx. 83.9 from exist. 6" line (WSW)
I.E. IN = 85.2± from exist. 6" line (ENE)
8" PIPE
100
95
90
85
80
75
I.E. out = 80.11
I.E. IN = 82.94
I.E. out = 82.99
I.E. IN = 83.13
I.E. = 83.57
I.E. = 84.01
I.E. = 84.45
I.E. = 84.73
13.0 L.F. @ 0.40%
350.0 L.F. @ 0.44%
0+00
1+00
2+00
3+00
4+00
DARREL LYNN MOORE LICENSED 9055 KANSAS PROFESSIONAL ENGINEER

SANITARY SEWER NO. 12
PHASE 1 - PART 2C: JOYLAND SEWER
STA. 0+00.0 to STA. 3+63.0
(MH 81) (MH 83)
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER
CITY OF WICHITA PROJECT NO. 468-76-245-81464-000-000-001

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
ENGINEERS
WICHITA, KANSAS
Job No. 34-81420-042
Date Dec., 1985

PLAN: SURVEYED / PLOTTED / ALIGNMENT CHECKED / RT. OF WAY CHECKED — NOTE BOOK — NO. — BY — DATE

PROFILE: SURVEYED / PLOTTED / GRADES CHECKED / B.M. NOTED / STRUCTURE NOTATIONS CHK'D — NOTE BOOK — NO. — BY — DATE

PLATE 1 PLAN-PROFILE