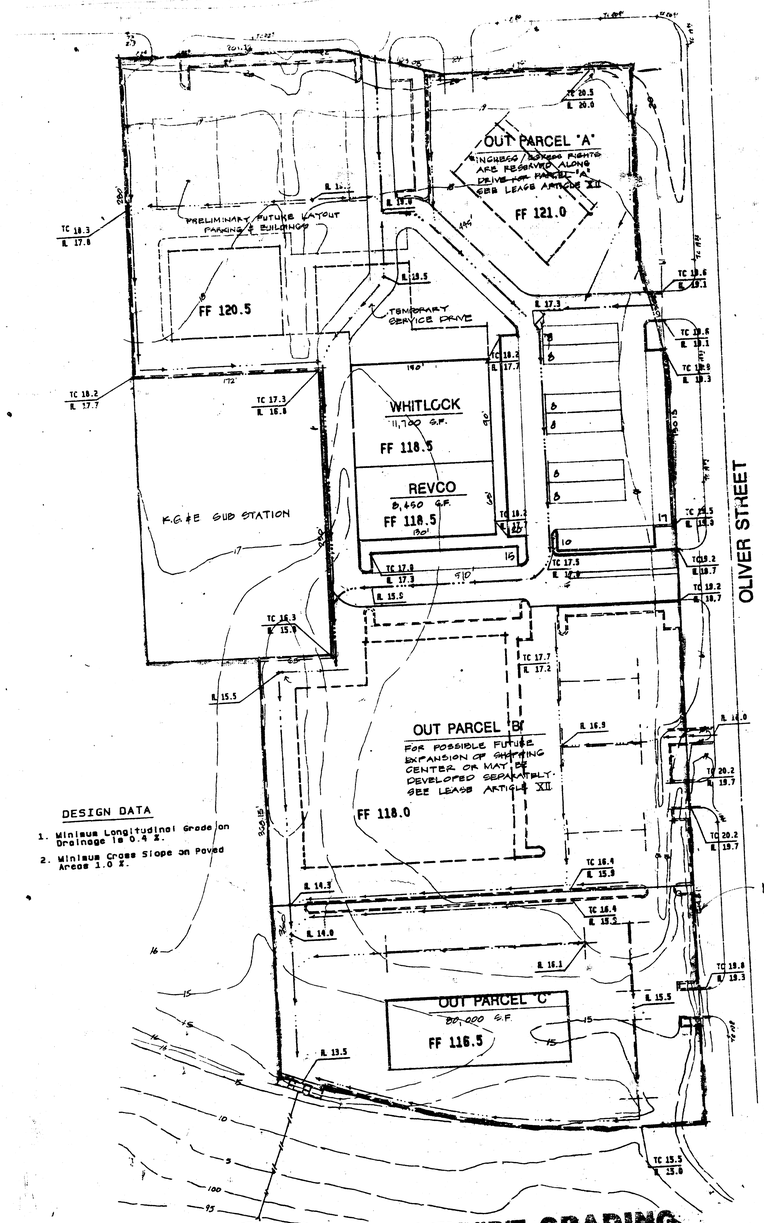


POE & ASSOCIATES OF KANSAS INC.
CONSULTING ENGINEERS
434 N. Oliver, Suite 110 • Wichita, KS 67208 • 316/685-4114

January 3, 1989

Ms. Vicki Huang, P.E.
Engineering, 7th Floor
455 North Main
Wichita, Kansas 67202

Re: Spencer Gardens 2nd Addition

Dear Vicki:

The enclosed plans are for the construction of an area inlet and storm sewer to drain the above referenced addition. Calculations for drainage runoff from the current site plan for this area indicate a 52 cfs peak discharge for the 100 year storm. This was the design storm used to size the inlet and pipe for this structure. Calculations for this design are enclosed.

Please review the plans and contact me if you have any questions.

Yours truly,

POE & ASSOCIATES OF KANSAS, INC.

Kenny E. Hill, P.E.
Project Manager

KEH:crb

Encl.

FINAL DESIGN

PROJECT SPENCER GARDENS 2nd — TABLE 8 MINOR LOSSES AND HYDRAULIC GRADE LINE — SHEET 1 OF 1 — BY K. HILL — DATE 12-20-88

① STRUCTURE NO.	② TYPE (MH OR C.B.)	③ RIM ELEVATION H.G.L.	④ D_2/D_1	⑤ K_j	⑥ V	⑦ H_f	⑧ H_j	⑨ H_{mh}	⑩ E.G.L.	⑪ H_v	⑫ H.G.L.	⑬ INVERT ELEVATION	⑭ DEPTH
1	HOOD	111.9			10.6				115.06	1.74	*111.9	*106.00	5.9
90'	20' CMP @ 92 cfs					0.93			116.53	1.74	112.83	96.75	
2	BEND				10.6		0.17		114.76	1.74	113.00		
86'	30" CMP @ 52 cfs					1.65			113.59	1.74	111.85	108.00	
3	INLET												
	V = 4.2 fps @ 20.9 cfs												

① NOT LESS THAN 1 FT. BELOW BOTTOM OF SL-SB.
② RATIO OF LARGER TO SMALLER PIPE DIAMETER.
③ FROM CHART 7.
④ VELOCITY FROM TABLE 6
⑤ HEAD LOSS DUE TO FRICTION FROM TABLE 7
⑥ H_j = HEAD LOSS AT JUNCTION = COL. 5 X COL. 11
⑦ H_{mh} = HEAD LOSS AT MH = 0.02 ALWAYS.
⑧ E.G.L.= ENERGY GRADE LINE
⑨ H_v = VELOCITY HEAD = $V^2/64.4$
⑩ H.G.L = HYDRAULIC GRADE LINE = E.G.L - H_v
* GIVEN

FINAL DESIGN

4 DEEP INLET 5' x 5' A = 6
$Q = 0.67\ A\left[64.32\left(d - \frac{h}{2}\right)\right]^{1/2}$
d = 7.5 h = 0.5 Q = 48.4 112.5 + 2.5 = 115.0 HW

BEHIND

$Q = 5.37\ Ad^{0.5}$

d = 1.5' $A = \frac{\pi r^2}{2} = 1.6$ 50% OPEN AREA

Q = 10.5 cfs 113.5 + 1.5 = 115.0 HW

10.5 + 48.4 = 58.9 cfs TOTAL INFLOW @ HW = 115

HWV2.36 SN:84021495 — TEXAS HYDRAULIC SYSTEM - 221108 — THYSYS

DATA FILE: C:\FRIEND\SPENCR2.THY

THYSYS
TEXAS HYDRAULICS SYSTEM

YS AND PUBLIC TRANSPORTATION — XEQ: 12/27/1988 Time: 15:00
HWV2.36 SN:84021495 — TEXAS HYDRAULIC SYSTEM - 221108 — THYSYS

HYDRAULIC DATA

RUN	U.S. ID	D.S. ID	'N'	JUNC LOSS	FLOW	U.S. HEAD	D.S. HEAD	HYDR. GRAD	DEPTH	VELOC.	PIPE CAPAC
1	1	A 2	0.018	0.00	52.00	115.64	112.99	0.03082	0.49	21.7	110.0
2		A 3	0.018	0.17	52.00	112.99	111.90	0.03082	1.00	10.6	20.9

HMV2.36 SN:84021495 — TEXAS HYDRAULIC SYSTEM - 221108 — THYSYS

SEWER ANALYSIS — L1315V — SEWER FREQUENCY=99 YR 2 — T 22 30 6 52 — 38

DA A 1 5.6
JUNC A 1 TYPE= GSAG
SEW0028--1INLET DATA INCOMPLETE.
JUNC A 2 TYPE=JUNCT

OUTLET	STATION	ING	0.00 T.W. ELEV	111.9	A 3		
DSCN	1	A 1	A 2	US 110.5	DS 98.65	86	.018 30 CIRC
DSGN	2	A 2	A 3	US 98.65	DS 98.50	30	.018 30 CIRC
ANAL	1	A 1	A 2	1	23		.17
ANAL	2	A 2	A 3	1	23		

ENDATA

HIGHWAYS AND PUBLIC TRANSPORTATION — XEQ: 12/27/1988 Time: 15:00
HMV2.36 SN:84021495 — TEXAS HYDRAULIC SYSTEM - 221108 — THYSYS

SEWER

SEWER ANALYSIS

CONFIGURATION DATA

RUN	U.S. ID	D.S. ID	U.S. F.L. ELEV	D.S. F.L. ELEV	LENGTH FEET	SLOPE	BBLS	RISE	SPAN	SHAPE
1	A 1	A 2	108.00	96.15	86	0.13779	1	30	30	CIRC
2	A 2	A 3	96.15	96.00	30	0.00500	1	30	30	CIRC

SUMMER

To

SPENCER GARDENS - DRAINAGE CONCEPT THYS

WEST AREA 6.3 Ac. L = 1170' S = 6/1170' = 0.54%

V = 1.08 1170 ÷ 1.08 ÷ 60 = 18.0 MIN Tc C = 0.85 I = 4.2

Q5 = 6.3 x 0.85 x 4.2 = 22.5 cfs

Q100 = 6.5 x 2.91 x 3.53 = 39.2 cfs

EAST AREA 3.3 Ac. L = 693 S = 2/693 = 0.29% V = 1.0

693 ÷ 1.0 = 11.5 MIN. Tc I = 5.01 C = 0.85

Q5 = 3.3 x 0.85 x 5.01 = 14.2 cfs

Q100 = 3.3 x 0.91 x 3.15 = 9.5 cfs

TYPE I-A INLET MAY START TO SURCHARGE WITH ORIFICE FLOW @ T.C. TONIGHT

$Q = 0.67\ A\left[64.32\left(d - \frac{h}{2}\right)\right]^{1/2}$ h = 0.5' A = 5' x 5' = 25 ft²

$Q = 0.67 \times 25\left[64.32\left(.92 - \frac{.5}{2}\right)\right]^{1/2}$ d = 11" = 0.92'

Q = 11.0 cfs

WEST AREA - DESIGN FOR Q100 = 39.2 cfs

USE 4 TYPE I-A INLETS = 44 cfs MAX TO T.C. 39.2 cfs REQ'D 9.8 cfs/INLET

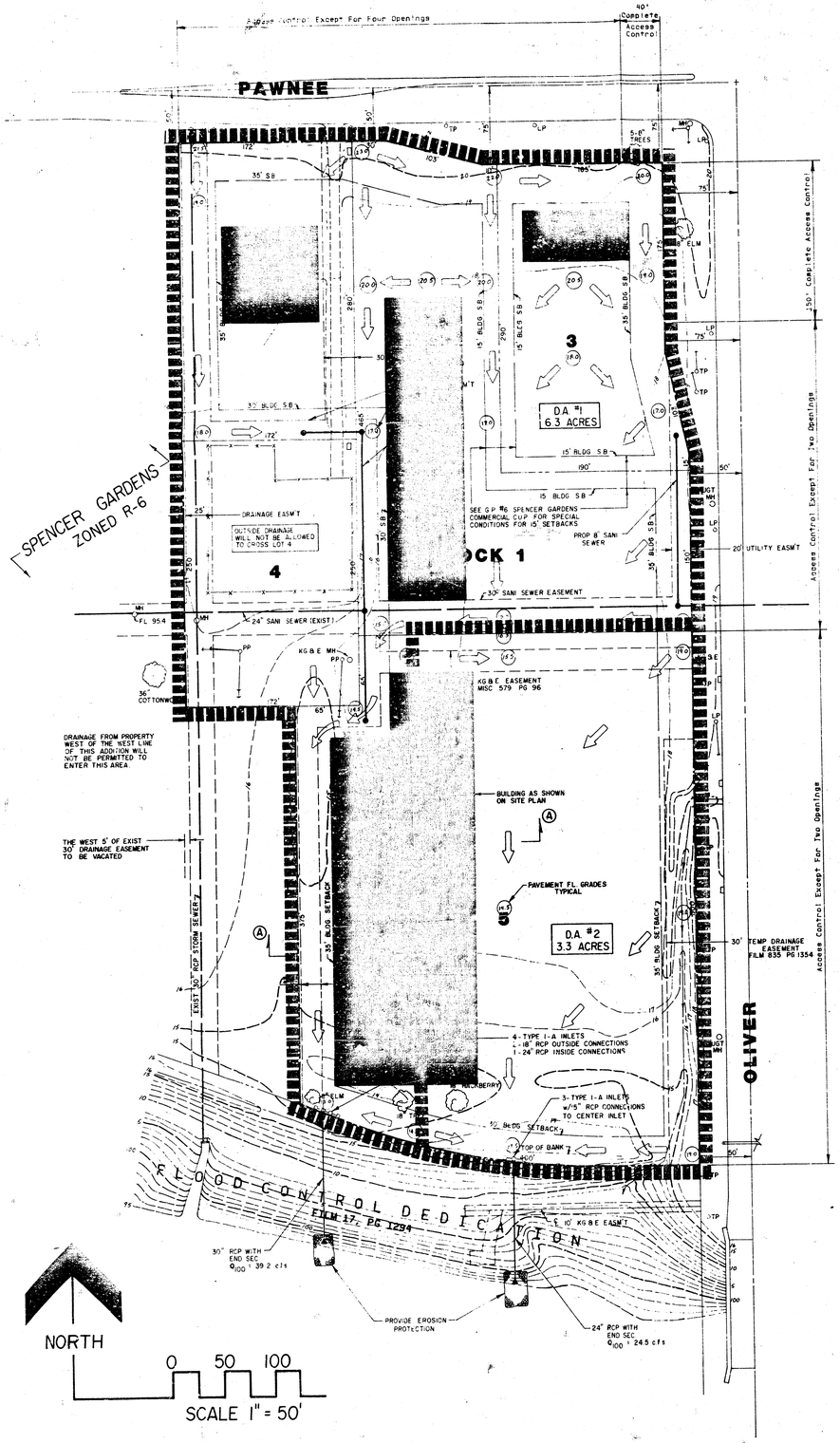
18" @ 9.8 cfs HGL = 0.9% V = 5.6 fps
24" @ 19.6 cfs HGL = 0.8% V = 6.2 fps
30' RCP @ 40 cfs HGL = 1.0% V = 8 fps
30' Q5 = 22.5 cfs HGL @ 0.3% V = 4.5 fps

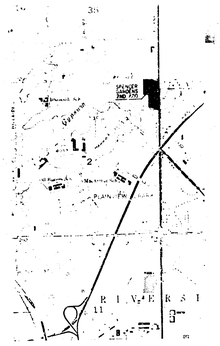
EAST AREA - DESIGN FOR Q100 = 9.5 cfs

USE 1 TYPE I-A INLETS = 11 cfs MAX TO T.C. 9.5 cfs REQ'D

15" RCP @ 9.5 cfs HGL @ 1.5% V = 6.5
24' RCP @ 14.5 cfs HGL @ 1.25% V = 8 fps

24" Q5 = 14.2 cfs HGL @ 0.3% V = 4.0 fps





VICINITY
SCALE 1" =

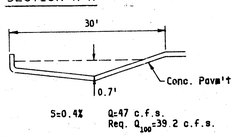
SPENCER GARDENS 2ND ADDITION
(Drainage)

7

NOTE:

1. Cross Lot Drainage Will Be Provided As Shown.
2. Refer To "Spencer Gardens Drainage Computations" Dated 5-15-87 For Detailed Calculations.

SECTION A-A



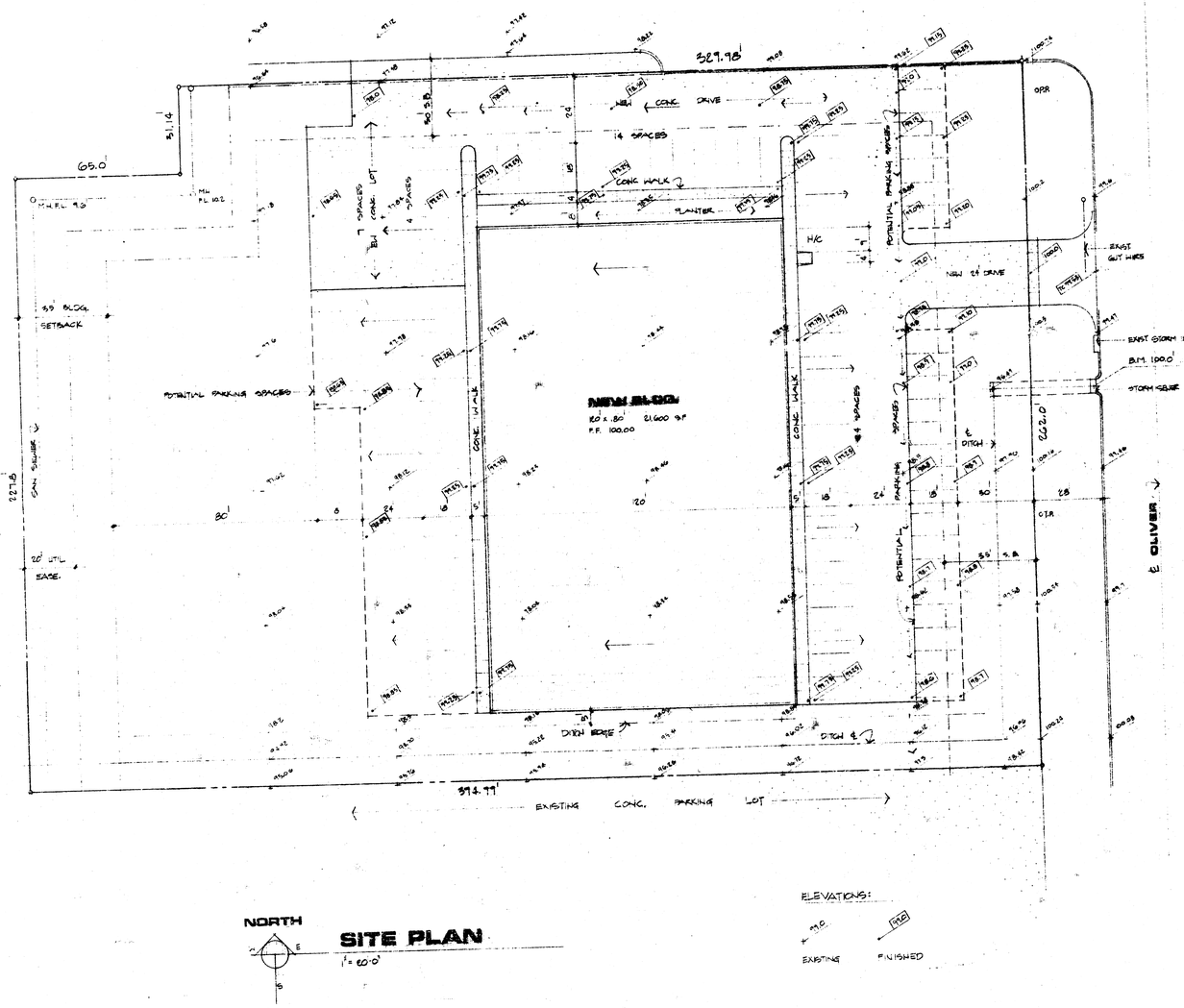
Cross lot drainage easements or agreements
Lot 1 across Lot 4, Lot 3 across Lot 2 and Lot 1 across Lot 5.
SWS may be part of site development
Temporary drainage easement to be vacated?

GENERAL NOTES:

1. Topographic Survey Completed Jan. 14, 1987
2. B.M. #1 City of Wichita Std. Disc 52' N. and 42' E. of the Centerlines of Oliver and Pawnee. Elev. 121.146
3. Elevations shown are to City of Wichita Datum.
4. Platting will conform to requirements indicated on the Spencer Gardens Commercial Community Unit Plan DP-169.
5. Spencer Gardens is a replat of part of Lots 2, 4 and all of Lots 3, 5 in Spencer Gardens Addition.
6. All Lots in this Subdivision will be zoned L-C.

DRAINAGE PLAN
SPENCER GARDENS SECOND ADDITION

DATA BLOCK		
SITE	BUILDING	MECHANICAL
LEGAL DESCRIPTION	FLOOR AREA 12,600 S.F.	PLUMBING FIXTURES 2 TOILETS 2 LAVATORIES
ZONING	BUILDING TYPE B-N	FIRE HYDRANT N.E. CORN. SILVER & CORNING
ACREAGE 111,618.72 S.F.	OCCUPANCIES	ELECTRICAL
PARKING SPACES 49 SHOWN	SEPARATION	SPRINKLERS
FLOOD PLAIN	LIVE LOADS 100 # LIVE 20	
PAD ELEVATION F.F. 100.00	OCCUPANT LOADS	



NORTH

SITE PLAN

1" = 60'-0"

ELEVATIONS:

EXISTING 99.0 — FINISHED 100

SHEET SCHEDULE

SHEET	DESCRIPTION
A-1	SITE PLAN
A-2	FOUNDATION PLAN & DETAILS
A-3	FOUNDATION PLAN & DETAILS
A-4	FLOOR PLAN
A-5	FINISH SCHEDULES
A-6	ELEVATIONS
M-1	PLUMBING PLAN
M-2	HVAC PLAN
E-1	ELECTRICAL PLAN

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SMITH CONSTRUCTION CO., INC.
WICHITA, KS 67213
(316) 942-7869
P.O. BOX 13213
4820 EISENHOWER

SPENCER GARDENS 2ND ADDITION
(Drainage)

THE BEDROOM

6505 N. OLIVER
WICHITA, KANSAS

REVISIONS
30 NOV 89
11 DEC 1989

7 NOV 89

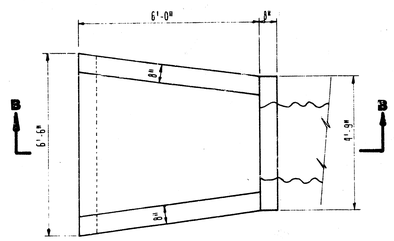
1" = 20'

D. WILLIAMS

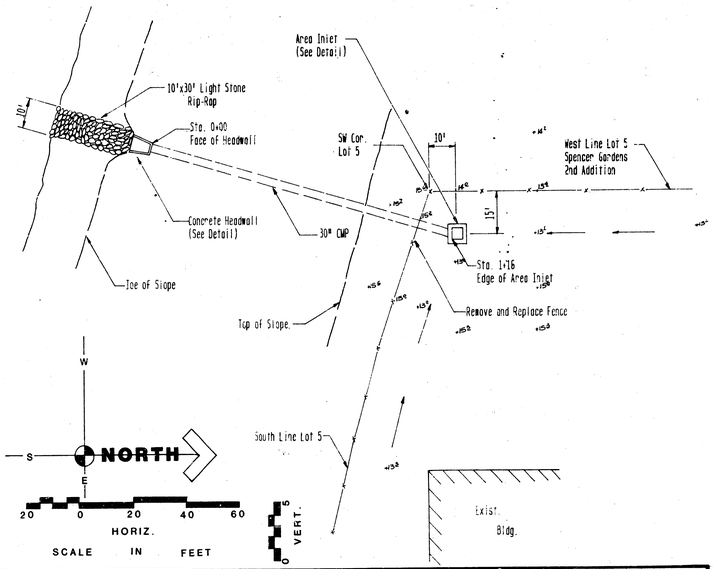
A-1

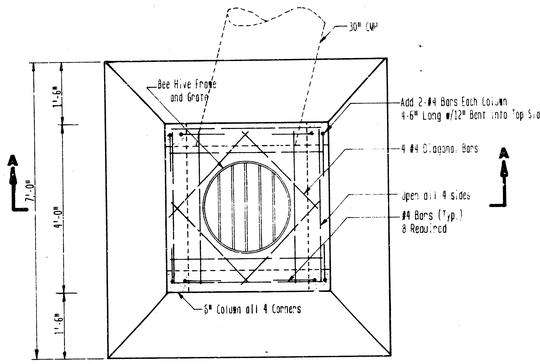
B.M. "X" cut on KG&E Manhole Ring 42'± N. and 9'± W. of SE Cor. Lot 4 Spencer Gardens 2nd Addition
Elev. 116.66 City of Wichita Datum

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS

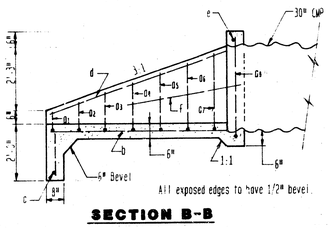


PLAN





PLAN

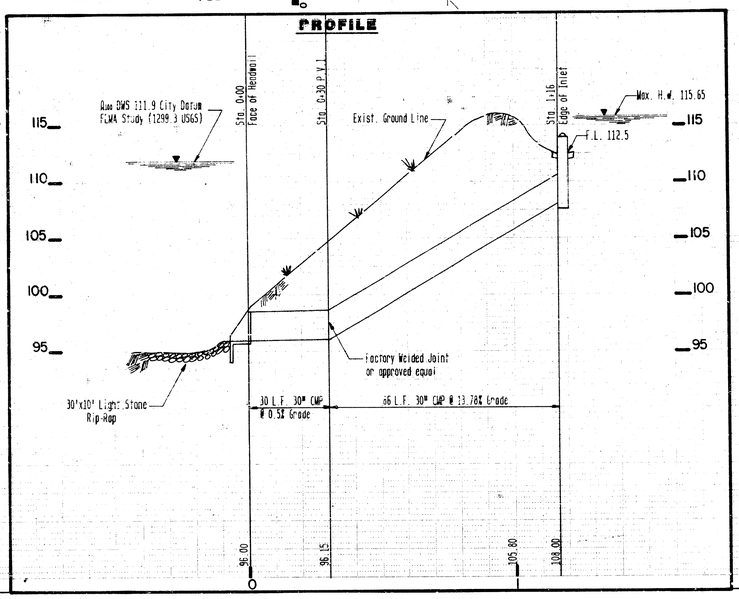


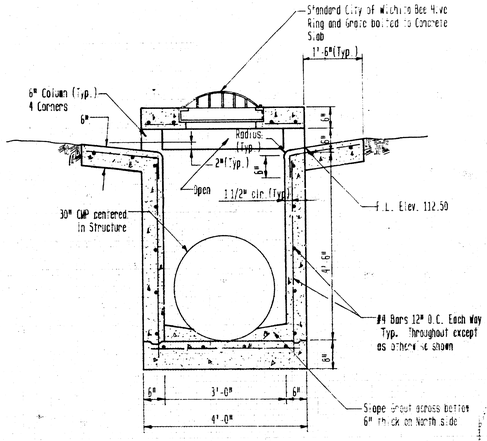
SECTION B-B

BAR	L	W	NUMBER	SIZE
a1	5'-8"	8"	1	#4
a2	5'-6"	11"	1	#4
a3	5'-3"	1'-3"	1	#4
a4	5'-0"	1'-7"	1	#4
a5	4'-8"	1'-11"	1	#4
a6	4'-6"	2'-3"	1	#4
a7	4'-3"	2'-7"	1	#4
a8	4'-1"	3'-6"	1	#4
b	7'-0"	1'-6"	7	#4
c	6'-0"	-	1	#4
d	7'-6"	-	2	#4
e	4'-5"	-	1	#4
f	4'-3"	-	2	#4

CONCRETE HEADWALL DETAILS
SCALE 1/2" = 1'-0"

PROFILE





SECTION A-A

AREA INLET
SCALE 3/4" = 1'-0"

POE & ASSOCIATES OF KANSAS INC. CONSULTING ENGINEERS 434 N. Oliver Suite 110 ■ Wichita, KS 67208 ■ (316) 685-4114	
ENGINEER K.H.	Spencer Gardens 2nd Addition To CITY OF WICHITA, KANSAS
ENG. TECH.	
DRAWN BY T.E.B.	
DATE DEC. 1988	
SHEET 1 OF 1	PROJECT NO. 199

PLAN — SCALE 1/8" = 1'-0"

PROFILE — SCALE 1/8" = 1'-0"

NO.	NOTE BOOK	REVISED PLOTTED	DRAFT