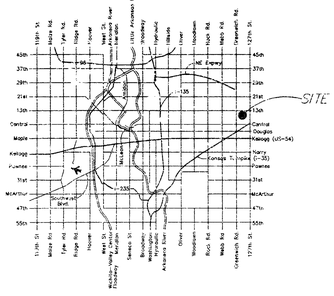
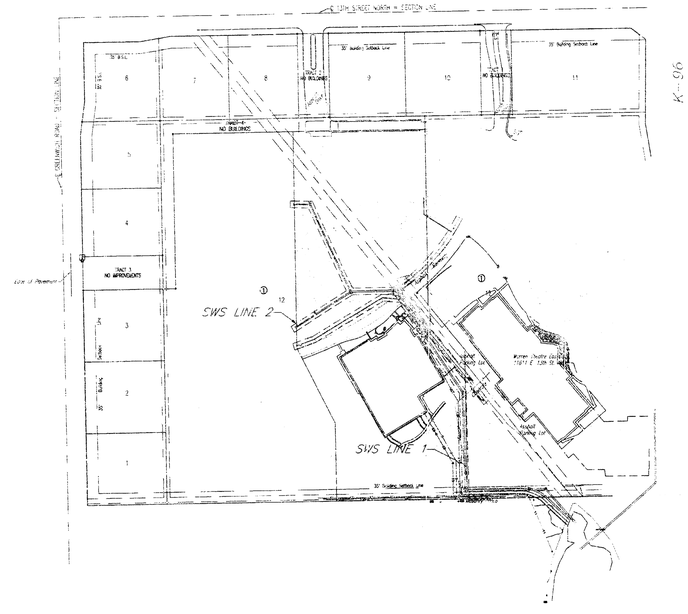
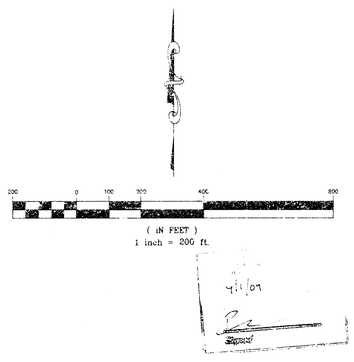
INDEX OF SHEETS

STORM SEWER TO SERVE
JOMA BOWLING ALLEY
LOT 12, BLOCK 1
THE GATEWAY CENTER ADDITION
1405 PPS (607861)
CITY OF WICHITA, KANSAS
Jim Armour, P.E., City Engineer



LOCATION MAP





GENERAL NOTES

1. Contractor will be required to provide notice to utility companies a minimum of twenty-four (24) hours prior to any excavation, as follows:

   Kansas One-Call 811 or 1-800-344-7233

   The Contractor must notify the following in case of an emergency:

Westar Energy	383-8650
	383-8600
Aquila (Natural Gas	
Southwestern Bell Telephone Company	1-571-2611
City of Wichita Water Department	268-4908
City of Wichita Sewer Department	268-4024
Kansas Gas Service	832-3168
or	832-3167
Aquila Networks	942-8811
	1-800-303-0357
Farmland Industries	918-333-4111

2. Exist. utilities and their locations, as shown on the plans, represent the best information obtainable for design. Location information has been obtained from the various utility companies and is either from company record drawings or company-provided field locations. The Contractor will be required to work around existing utilities which do not conflict with proposed construction.

3. The Contractor to verify utility locations prior to construction of this project.

4. Utility service and installation shall be coordinated with the respective utility owners. Contacts are:

Kansas Gas Service	Charlene Lawless	832-3121
Westar Energy	Shane Price	261-6251
Aquila Networks	John Stork	942-8811
Wichita Water	Paul Bryant	268-4555
SBC	Jim Tobin	268-2759
Cox Communications	Mark Anaya	252-4270

5. All lawn/turf areas disturbed by construction of proposed improvements shall be restored with sod. All sodding work shall be in accordance with the City of Wichita standard specifications and the City of Wichita administative regulation No. AR78 which governs cleanup and replacement following construction. All costs for this work shall be subsidiary to the lump sum price bid for "Site Restoration."

6. Traffic affected by the construction of this project shall be handled in accordance with the latest edition of the Manual on Uniform Traffic Control Devices.

7. All commercial signs to be moved by others prior to construction.

8. Properties within the project may have underground irrigation systems (lawn sprinklers) which conflict with the new construction. Contractor shall remove such components as needed during construction of the project. The irrigation system shall be reinstalled in like kind before project completion. Any irrigation system modifications required because of project improvements shall be coordinated with the property owner. Portions of underground irrigation systems not in conflict with construction shall be protected from damage and shall remain in place. All work related to underground irrigation/sprinklers shall be subsidiary to Site Restoration.

9. Cuts made to paved surfaces on public property will be repaired by the City's contractor and charged against the owner / applicant. Unit repair Prices are available from the City at 268-4418. A surcharge may be applicable: Call 268-4418 for details. Repair costs to be paid prior to release of water service if water service is affected.

12. The contractor shall be responsible for preserving property irons. The contractor will 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 in accordance with state laws.

13. Since the water main is being installed on private property, it will be the owner's responsibility for locating and staking the water line.

14. The maintenance and repair of the water facilities on site are the responsibility of the property owner after the two year maintenance period by the contractor.

15. Construction shall be in accordance with the City of Wichita standard construction practices.

BENCHMARK
CUW DISC NORTH SIDE OF BRIDGE
X96 AND 13TH STREET NORTH.

ELEVATION=1204.22

APPROVED AS NOTED

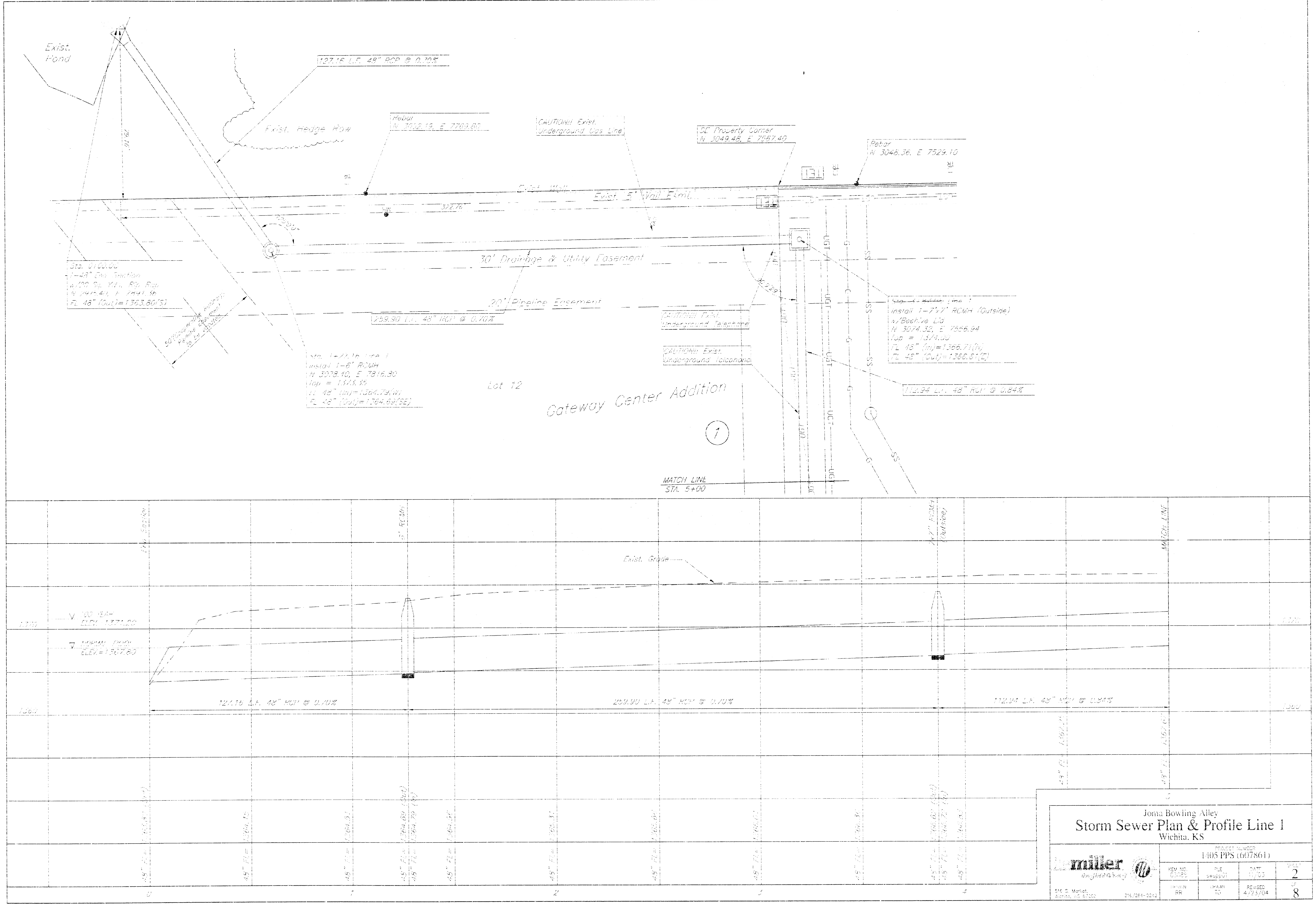
City Engineer Office VRH 3/23/09

NOTE TO CONTRACTORS

Installation, inspection and testing for this project is to be provided by a Licensed Consulting Engineering Firm under contract with the Owner/Developer. Said inspection to be in accordance with the City of Wichita standard construction engineering practices and certified by a Licensed Professional Engineer. No work shall be performed in dedicated easements or public right-of-way by the Contractor without such inspection nor shall any work be commenced without written authorization by the City Engineer. All Construction and Materials shall comply with the City of Wichita Specifications and Standards (on file and available in the City Engineer's Office).

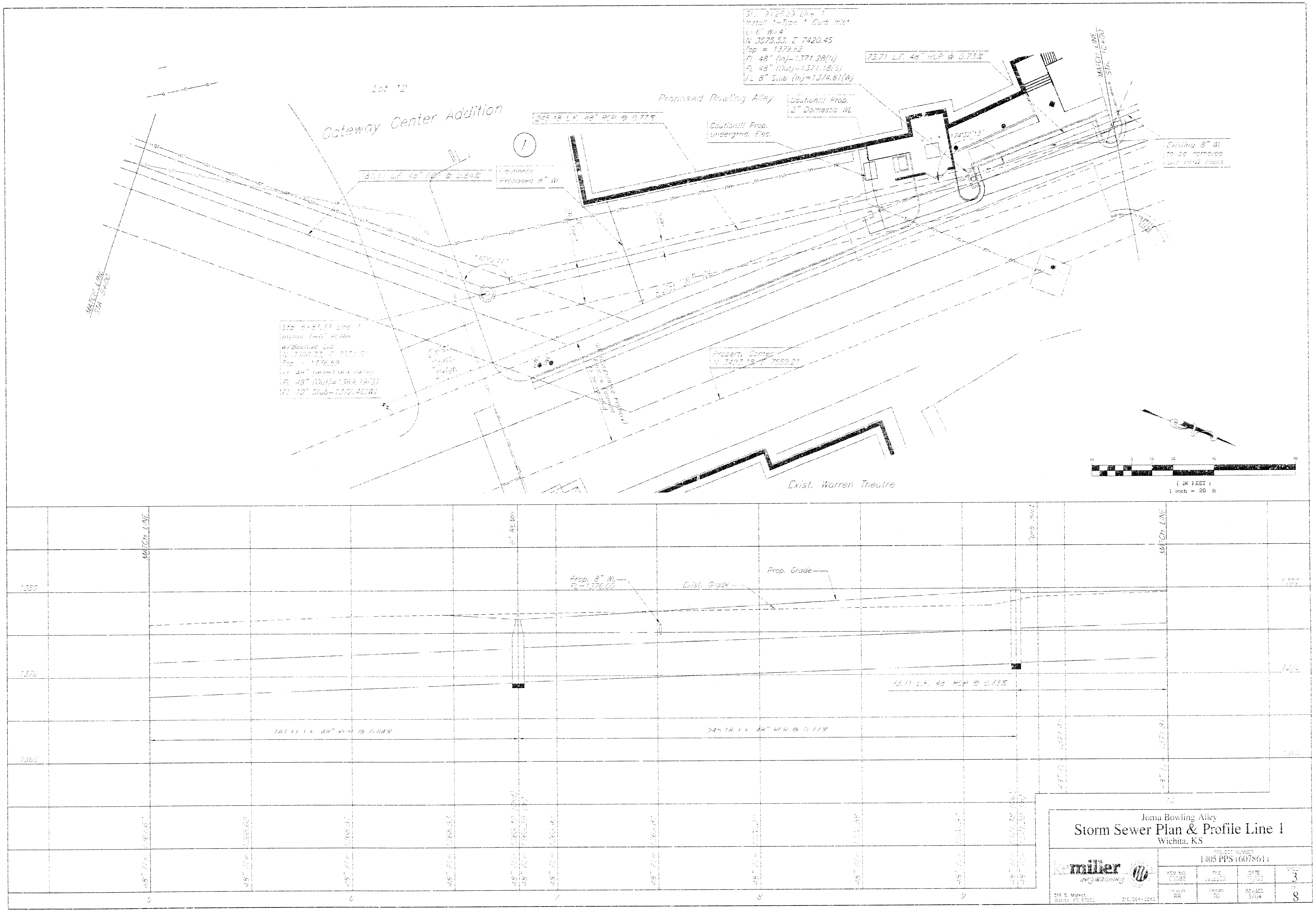
RYAN AARON RINDT LICENSED 17265 3/12/09 KANSAS PROFESSIONAL ENGINEER

miller engineering
516 S. Market,
Wichita, KS 67202 316/264-0242



Joma Bowling Alley
Storm Sewer Plan & Profile Line 1
Wichita, KS

miller engineering	PROJECT NUMBER 1405 PPS (607861)			
	KEM NO. 03089	FILE swspp01	DATE 11/03	SHEET 2
516 S. Market, Wichita, KS 67202 316/264-0242	DESIGN RR	DRAWN TO	REVISED 4/23/04	OF 8



Joma Bowling Alley

Storm Sewer Plan & Profile Line 1

Wichita, KS

PROJECT NUMBER 1405 PPS (607861)

miller engineering
516 S. Market, Wichita, KS 67202
316/264-0242

KEM NO.	FILE	DATE	SHEET
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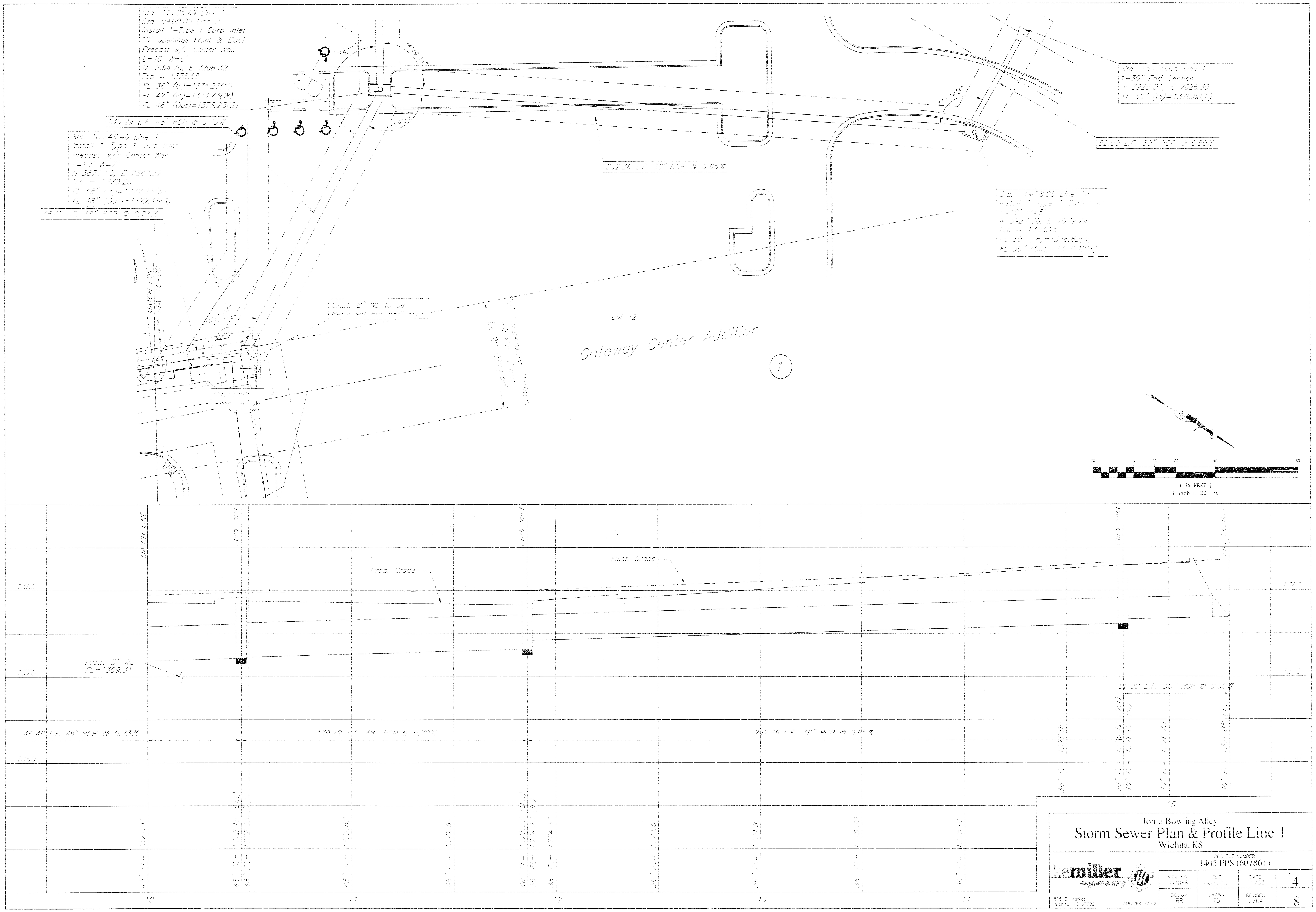
DESIGN	DRAWN	REVISED	OF
RR	TO	3/04	8



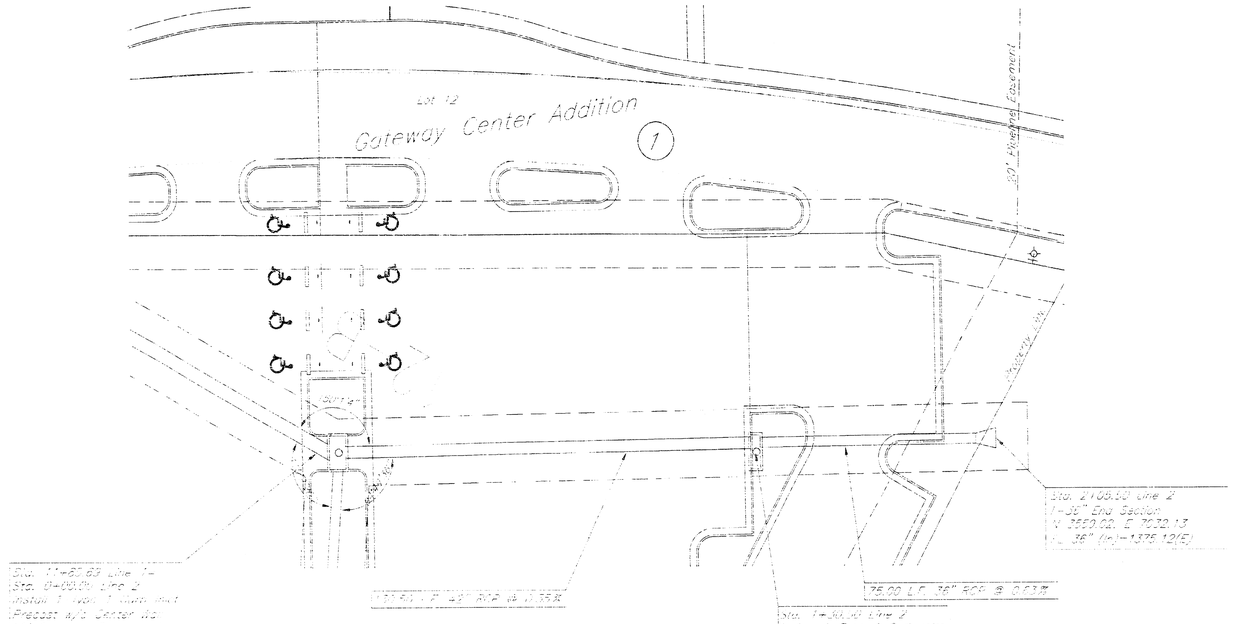
Joma Bowling Alley

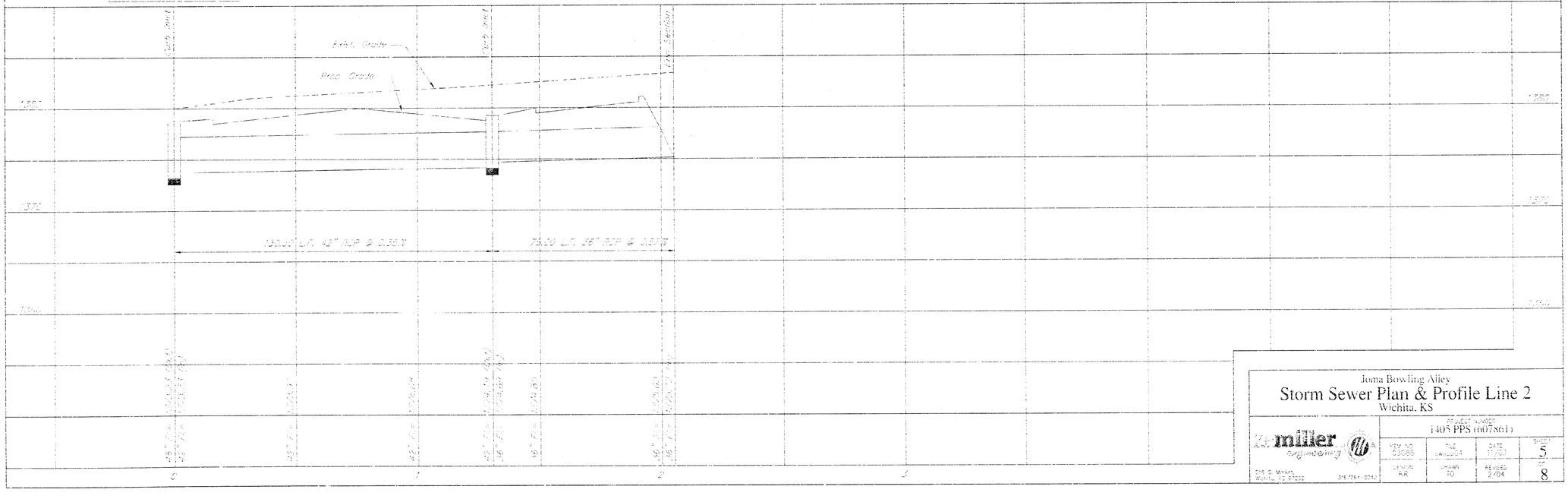
Storm Sewer Plan & Profile Line 1

Wichita, KS

PROJECT NUMBER 1405 PPS (607861)				
KEM NO. 03088	FILE swspp03	DATE 11/03	SHEET 4	
DESIGN RR	DRAWN TO	REVISED 2/04	OF 8	

kemiller engineering
516 S. Market, Wichita, KS 67202
316/264-0242





Joma Bowling Alley

Storm Sewer Plan & Profile Line 2

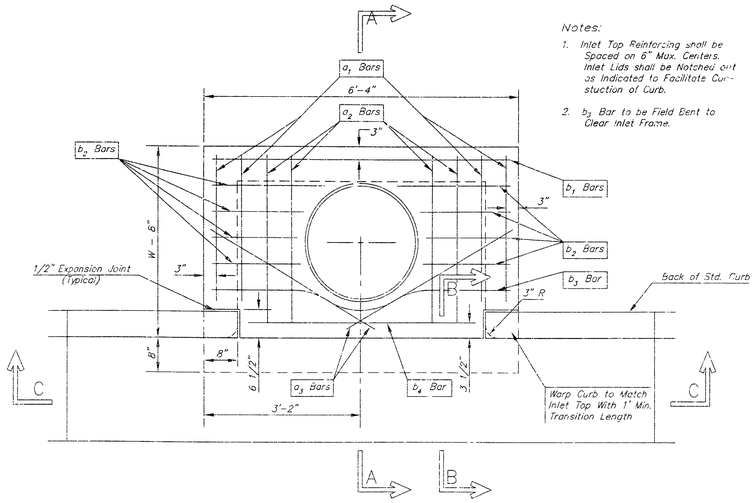
Wichita, KS

miller engineering

316 E. Myrtle
Wichita, KS 67202
316/261-2043

PROJECT NUMBER
1405 PPS (607861)

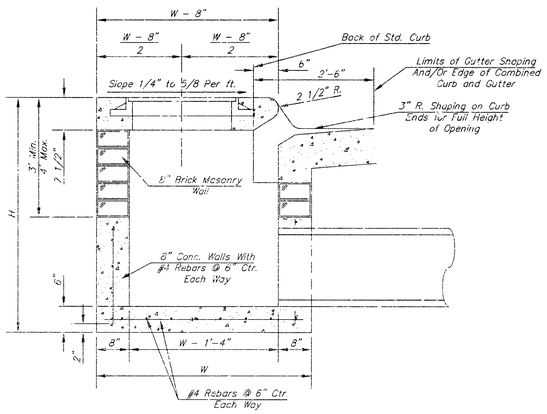
REV. NO.	FILE	DATE	SHEET
03088	LAYOUT24	11/03	5
DESIGN	DRAWN	REVISED	OF
RR	TO	2/04	8



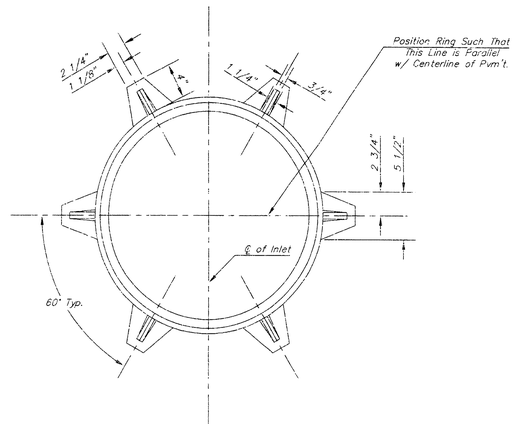
PLAN

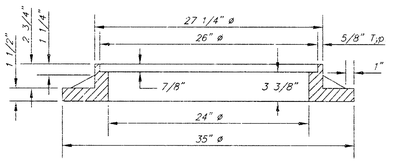
Notes:

1. Inlet Top Reinforcing shall be Spaced on 6" Max. Centers. Inlet Lids shall be Notched out as Indicated to Facilitate Construction of Curb.
2. b_2 Bar to be Field Bent to Clear Inlet Frame.



SECTION A-A

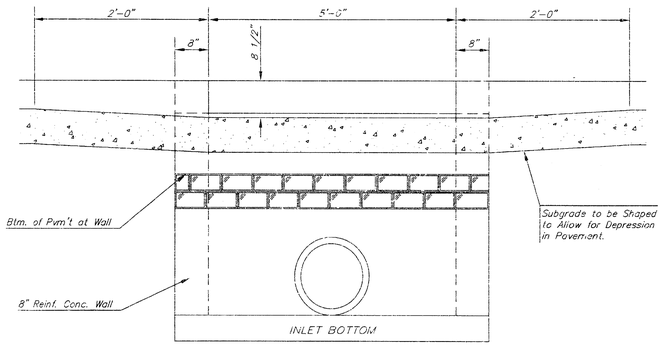




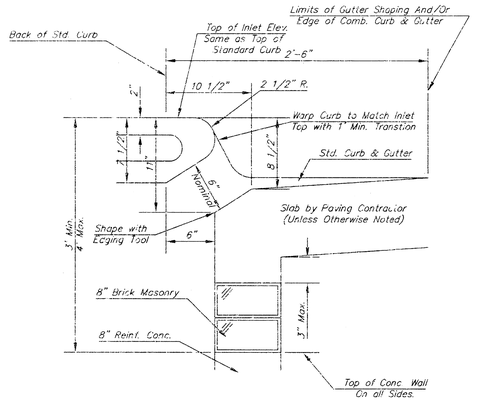
WT. = 180 lbs.

MANHOLE RING AND COVER

*See City of Wichita Standard Manhole Ring and Cover Detail Sheets for Cover Details to Be Used With Inlet Frame.



SECTION C-C



SECTION B-B

STEEL SCHEDULE

BAR		a_1	a_2	a_3	b_1 W=4'-4"	b_1 W=5'-4"	b_1 W=6'-4"	b_1 W=7'-4"	b_1 W=8'-4"	b_2	b_3	b_4	Wt. Lbs.
NUMBER		4	4	2	1	3	5	7	9	6	1	1	
SIZE		#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#6	
LENGTH	W=4'-4"	5'-7"	6'-7"	4'-0"	6'-1"	–	–	–	–	1'-9"	6'-2"	4'-8"	60±
	W=5'-4"	7'-7"	8'-7"	5'-0"	–	6'-1"	–	–	–	1'-9"	6'-2"	4'-8"	81±
	W=6'-4"	9'-7"	10'-7"	6'-0"	–	–	6'-1"	–	–	1'-9"	6'-2"	4'-8"	101±
	W=7'-4"	11'-7"	12'-7"	7'-0"	–	–	–	6'-1"	–	1'-9"	6'-2"	4'-8"	121±
	W=8'-4"	13'-7"	14'-7"	8'-0"	–	–	–	–	6'-1"	1'-9"	6'-2"	4'-8"	141±

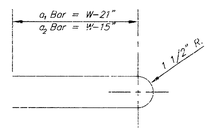
Note: a_3 Bars to be Placed Approx. 2" Below Top of Inlet Cover.

STANDARD CURB INLET PRECAST TOPS

W	PRE-CAST TOP SIZE	PIPE SIZE	CU. YD. CONC.
4'-4"	3'-8" 6'-4" 7 1/2"	21" & SMALLER	0.38±
5'-4"	4'-8" 6'-4" 7 1/2"	24" & 30"	0.51±
6'-4"	5'-8" 6'-4" 7 1/2"	36" & 42"	0.64±
7'-4"	6'-8" 6'-4" 7 1/2"	48" & 54"	0.77±
8'-4"	7'-8" 6'-4" 7 1/2"	60" & 66"	0.90±

GENERAL NOTES

1. Concrete tops to be installed on thin mortar cushion to insure full support along brick walls. Concrete tops may be cast in place or precast. Concrete used for inlet construction shall be concrete pavement mix.
2. Contractor shall have the option of constructing 8" brick masonry walls between the concrete inlet base and top on this inlet when W=6'-4" and H=7'-0" or less.
3. Inlet invert shall be shaped with 8 sack sand mix concrete to create flow channels and to increase hydraulic efficiency such that the inlet will be self cleaning between all inlet and/or outlet pipes.
4. The ends of all pipes installed in inlets shall be cut off flush with the inside face of the inlet wall.



BENDING DIAGRAM

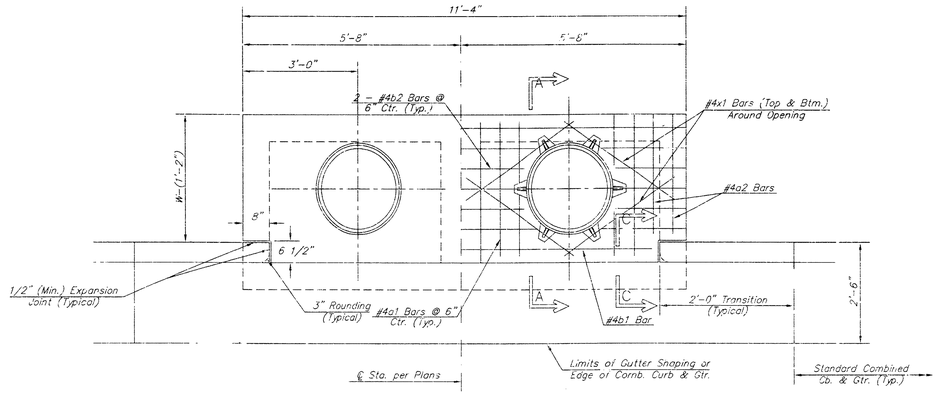
THE CITY OF WICHITA

CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501
(316) 268-4114 FAX

STANDARD TYPE 1 CURB INLET
OPENING = 6" x 5'-0"

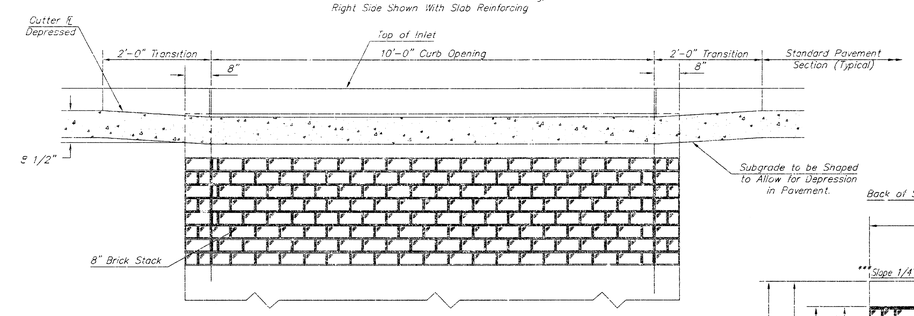
Neil D. Cable, P.E., City Engineer

FILE NAME	KEM Project
Type 1 Inlet	03088
DATE: NOV 03	SHEET 6 OF 8

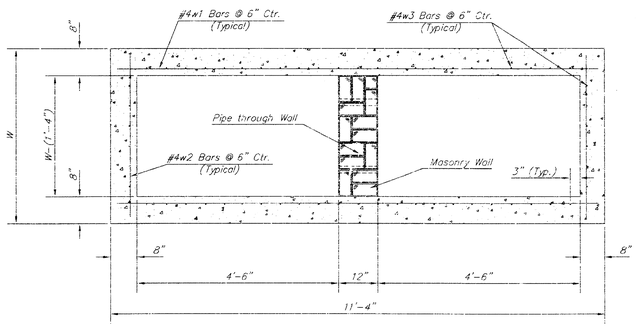


PLAN

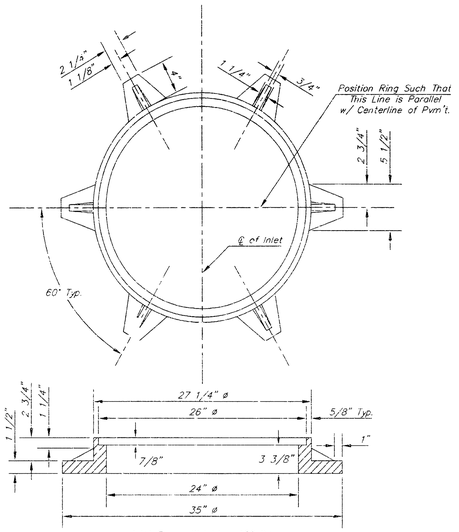
*Left Side Shown Without Slab Reinforcing, Right Side Shown With Slab Reinforcing



ELEVATION



SECTION B-B



Inlet Frame Weight = 180 lbs

MANHOLE RING AND COVER

*See City of Wichita Standard Manhole Ring and Cover Detail Sheet for Cover Details to Be Used With Inlet Frame.

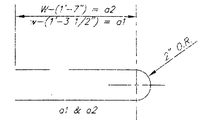
PRECAST SLAB AND FLOOR REINFORCING									
		W = 4'-4"		W = 5'-4"		W = 6'-4"		W = 7'-4"	W = 8'-4"	
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO. LENGTH
a1	#4	13	6'-7"	13	8'-7"	13	10'-7"	13	12'-7"	13 14'-7"
* a2	#4	4	6'-0"	4	8'-0"	4	10'-0"	4	12'-0"	4 14'-0"
a3	#4	23	4'-1"	23	5'-1"	23	6'-1"	23	7'-1	23 8'-1"
b1	#4	1	9'-9"	1	9'-9"	1	9'-9"	1	9'-9"	1 9'-9"
* b2	#4	23	11'-1"	29	11'-1"	35	11'-1"	41	11'-1"	47 11'-1"
x1	#4	16	3'-10"	16	4'-2"	16	4'-6"	16	4'-10"	16 5'-2"
WALL REINFORCING										
		W = 4'-4"		W = 5'-4"		W = 6'-4"		W = 7'-4"	W = 8'-4"	
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO. LENGTH
w1	#4	①	11'-1"	①	11'-1"	①	11'-1"	①	11'-1"	① 11'-1"
w2	#4	①	4'-1"	①	5'-1"	①	6'-1"	①	7'-1"	① 8'-1"
w3	#4	52	②	56	②	60	②	64	②	68 ②

* Field Bend or Cut Reinforcing as Required for Clearance.

① 4 (HI - 12") (HI - 21") Rounded down to nearest 0.5'

② HI - 3"

STANDARD CURB INLET PRECAST TOPS			
W	PRE-CAST TOP SIZE	PIPE SIZE	CU. YD. CONC.
4'-4"	3'-8" x 11'-4" x 7 1/2"	21" & SMALLER	0.83±
5'-4"	4'-8" x 11'-4" x 7 1/2"	24" & 30"	1.09±
6'-4"	5'-8" x 11'-4" x 7 1/2"	36" & 42"	1.35±
7'-4"	6'-8" x 11'-4" x 7 1/2"	48" & 54"	1.61±
8'-4"	7'-8" x 11'-4" x 7 1/2"	60" & 66"	1.87±



BENDING DIAGRAM

GENERAL NOTES:

Concrete shall be C.O.W. standard paving mix. All exposed edges shall be finished with an edging tool. Reinforcing bars shall be field bent or cut to clear pipes and inlet rings. All bars are #4 bars @ 6" spacing and shall have a minimum clearance of 1 1/2" unless otherwise noted. Floors of inlet shall be shaped with a sack sand mix concrete to increase hydraulic efficiency such that the inlet will be self cleaning between all inlet and/or outlet pipe(s). The contractor will be required to construct 8" brick masonry walls between the inlet base and top on this inlet when H=7'-0" or less and W=6'-4" or less. When W is greater than 6'-4" and H is less than 7'-0", the outside inlet walls below the brick stack shall be reinforced concrete construction.

Concrete tops to be installed on thin mortar cushion to insure full support along brick walls. Concrete tops may be cast in place or precast.

The ends of all pipes installed in inlets shall be cut off flush with the inside face of the inlet wall.

This detail is identical to the standard detail drawing except that the gutter transition length is increased from 2'-0" to 3'-6".

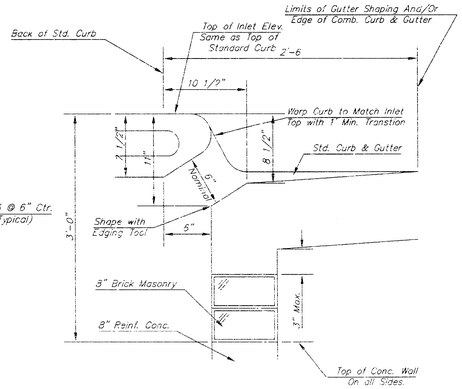
TYPICAL INLET SECTION AT CENTER WALL (REINFORCED CONCRETE WALLS)

TYPICAL INLET SECTION AT CENTER WALL (MASONRY WALLS)

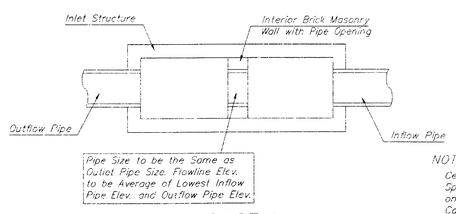
NOTES:

** A center wall opening shall be provided by means of a section of reinforced concrete pipe. See Case I and Case II below.

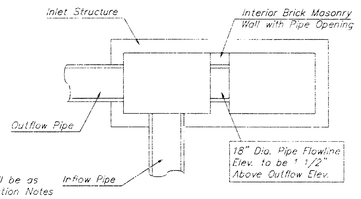
*** Slope of inlet tops to match sidewalk or parking slopes within limits indicated.



SECTION C-C

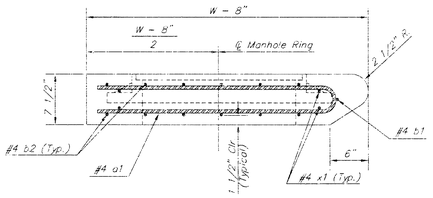


CASE I



NOTE:
Center Wall Pipe Size shall be as Specified in Inlet Construction Notes on the Plan/Profile Sheets for those Cases not Shown Here.

CASE II



SECTION A-A

THE CITY OF WICHITA

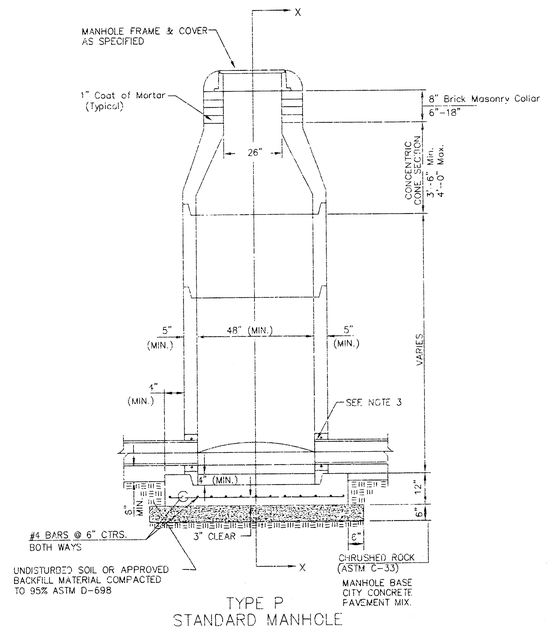
CITY ENGINEER'S OFFICE
CITY HALL - SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501
(316) 268-4174 FAX

STANDARD TYPE 1 CURB INLET OPENING = 6" x 10'-0"

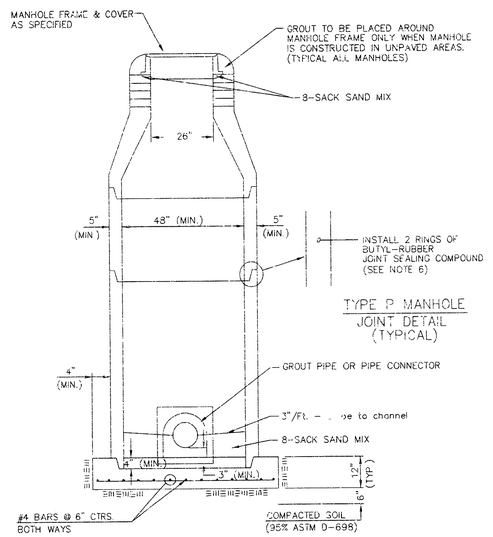
Neil D. Cahle, P.E., City Engineer

FILE NAME	KEM Project
Type 1 Inlet Dbl	03088
DATE	SHEET 7 OF 8
NOV 03	

SEWER APPURTENANCES DETAILS



TYPE P
STANDARD MANHOLE



SECTION X
(TYPICAL)

GENERAL NOTES

PRECAST MANHOLE NOTES

1. ALL PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO THE LATEST REVISIONS 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 THEMEC SERIES 66 HI-BUILD EPOXOLINE, DRY THICKNESS OF 8 MILS (MIN.)
5. EXTERIOR MANHOLE WALLS SHALL BE COATED WITH 1 COAT MOBILARMA 633 BITUMINOUS 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 6 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 INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.
15. MANHOLE COVER CASTINGS AND MANHOLE FRAME CASTINGS SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE STANDARD SPECIFICATIONS AND AS SHOWN IN THE STANDARD DETAIL DRAWING.
16. THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 2' 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. 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. THE USE OF PRE-CAST CONCRETE SPACERS FOR MANHOLE TOP ADJUSTMENT IS ALSO ALLOWED.
18. CRUSHED ROCK CONFORMING TO ASTM C-33 WITH A GRADATION OF NO. 67 SHALL BE INSTALLED AT THE BASE OF THE MANHOLE TO A DEPTH OF NO LESS THAN 6", AND SHALL EXTEND NO LESS THAN 6" OUTSIDE THE DIAMETER OF THE CONCRETE FLOOR OF THE MANHOLE.

Joma Bowling Alley

Storm Sewer Manhole Deltail

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PROJECT NUMBER 1405 PPS (607861)

KEM NO.	FILE	DATE	SHEET
G3088	Type P MH	11/03	8
DESIGN RR	DRAWN TG	REVISED	OF 8