

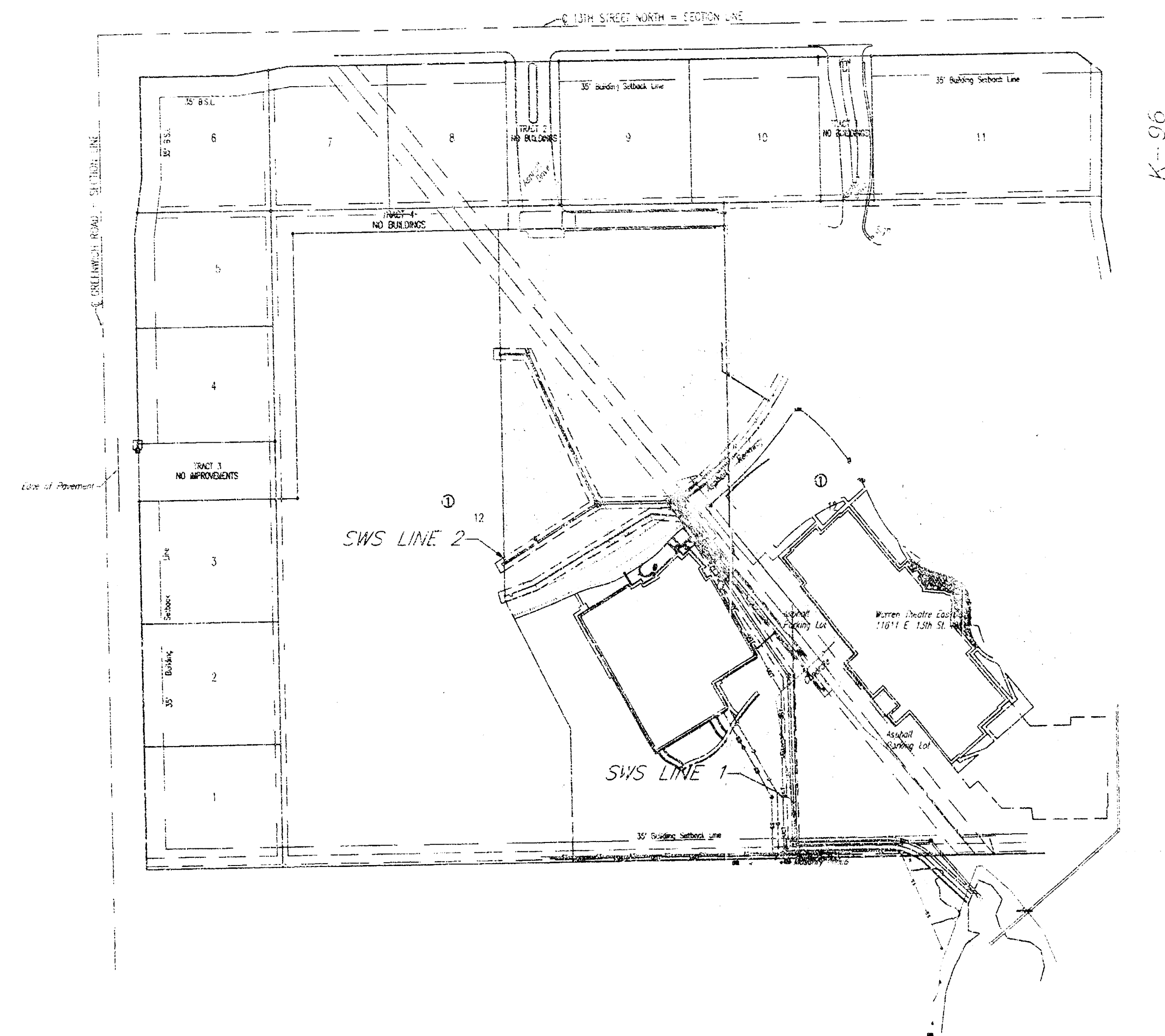
**STORM SEWER TO SERVE
JOMA BOWLING ALLEY
LOT 12, BLOCK 1
THE GATEWAY CENTER ADDITION
1405 FPS (607861)
CITY OF WICHITA, KANSAS
Jim Armour, P.E., City Engineer**

INDEX OF SHEETS

- 1 Cover Sheet
- 2-5 Plan and Profile
- 6 Single Type1 Inlet Detail
- 7 Double Type1 Inlet Detail
- 8 Manhole Detail

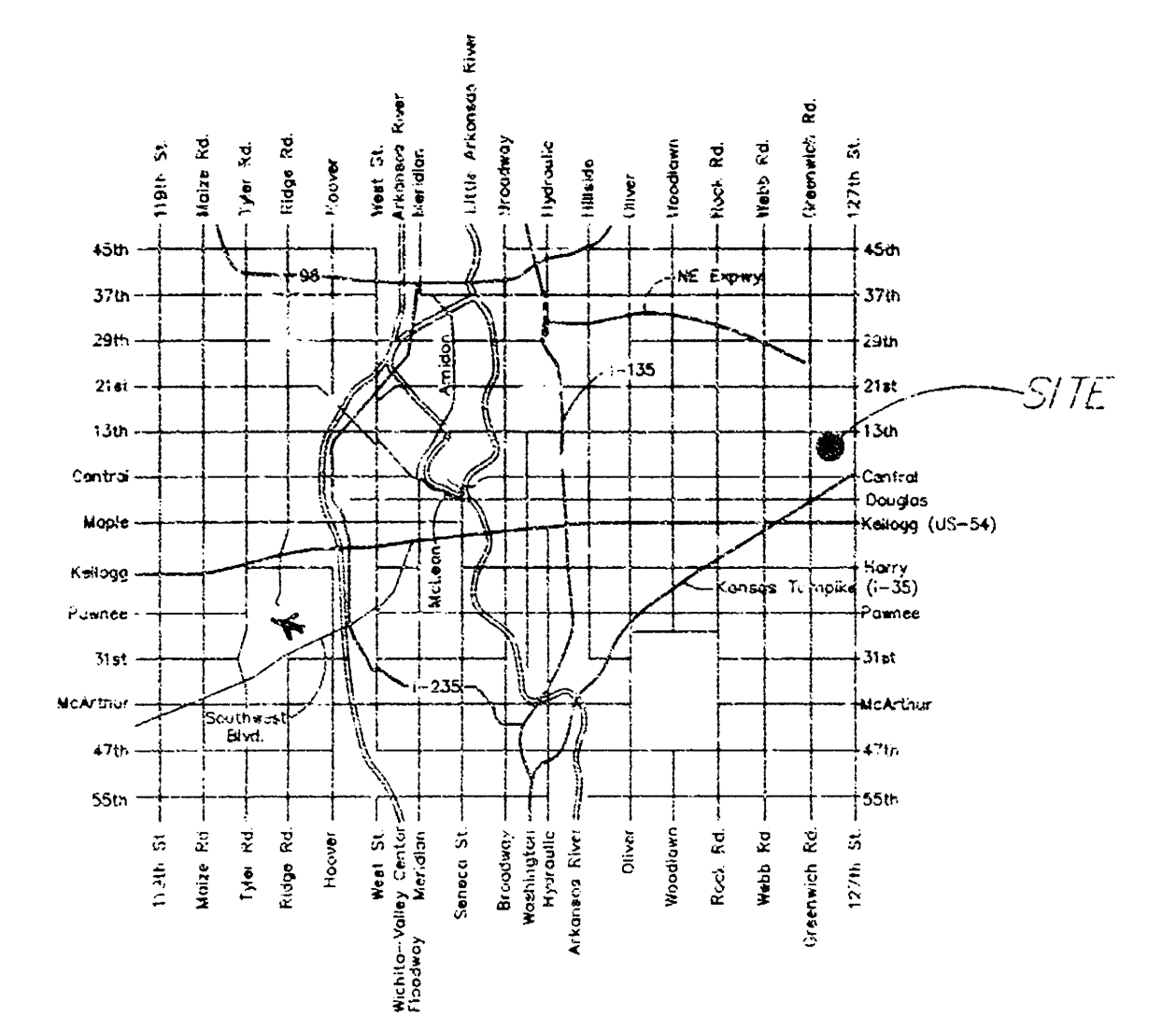
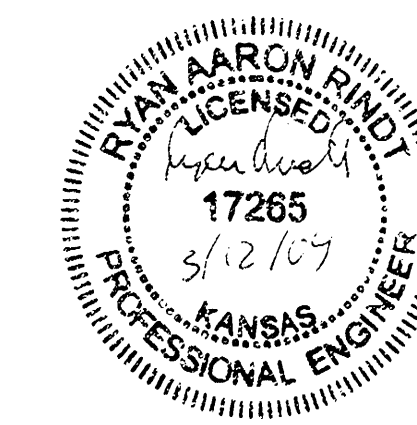
GENERAL NOTES

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 887-2470
 The Contractor must notify the following in case of an emergency:
 Westar Energy 383-8650
 383-8600
 Aquila Natural Gas 1-571-2611
 Southwestern Bell Telephone Company 268-4908
 City of Wichita Water Department 268-4024
 City of Wichita Sewer Department 832-3168
 Kansas Gas Service 832-3167
 or
 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 Stark 942-8811
 Wichita Water Paul Bryant 268-4555
 SBC Jim Tobin 268-2759
 Cox Communications Mark Anaya 262-4270
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 administrative 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.

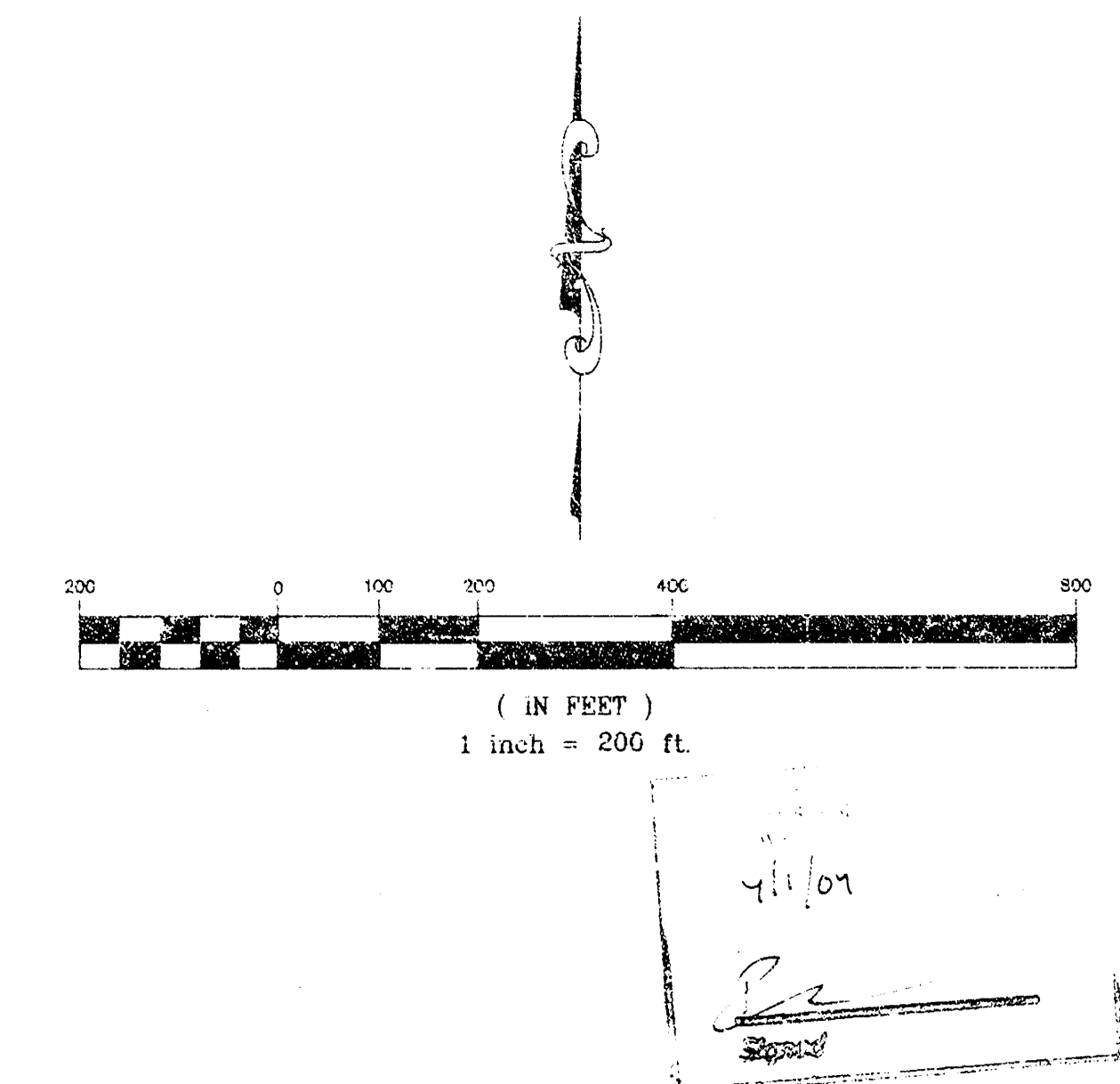


12. The contractor shall be responsible for preserving property irons. The contractor will be required to re-establish any property irons which are damaged or destroyed by his construction operations. Such irons shall be re-established by a licensed land surveyor in accordance with state laws.
13. Since 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
LOW DISC NORTH SIDE OF BRIDGE
K96 AND 13TH STREET NORTH
ELEVATION=204.22



LOCATION MAP



APPROVED AS NOTED

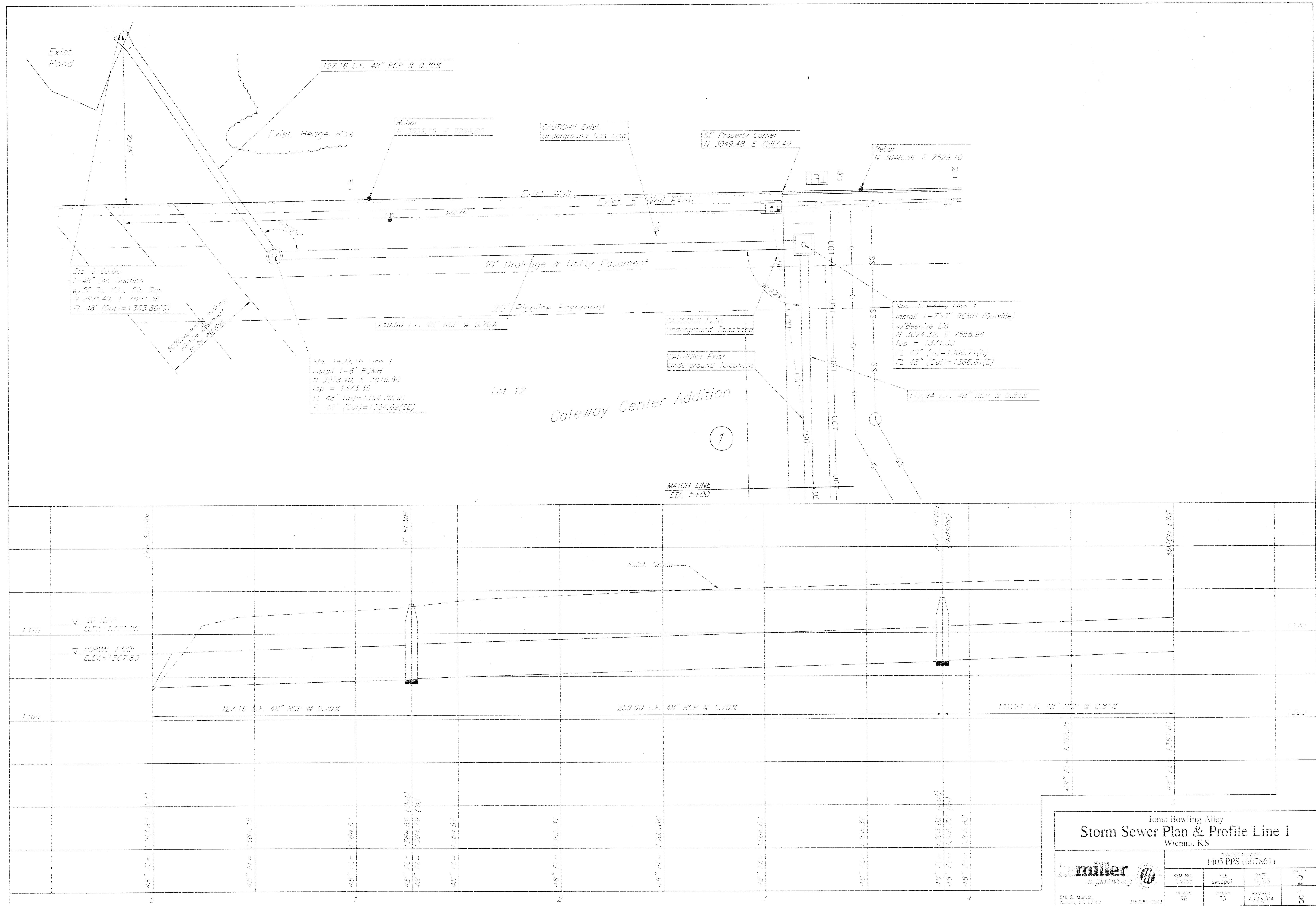
City Engineer Office VRH 3/23/04

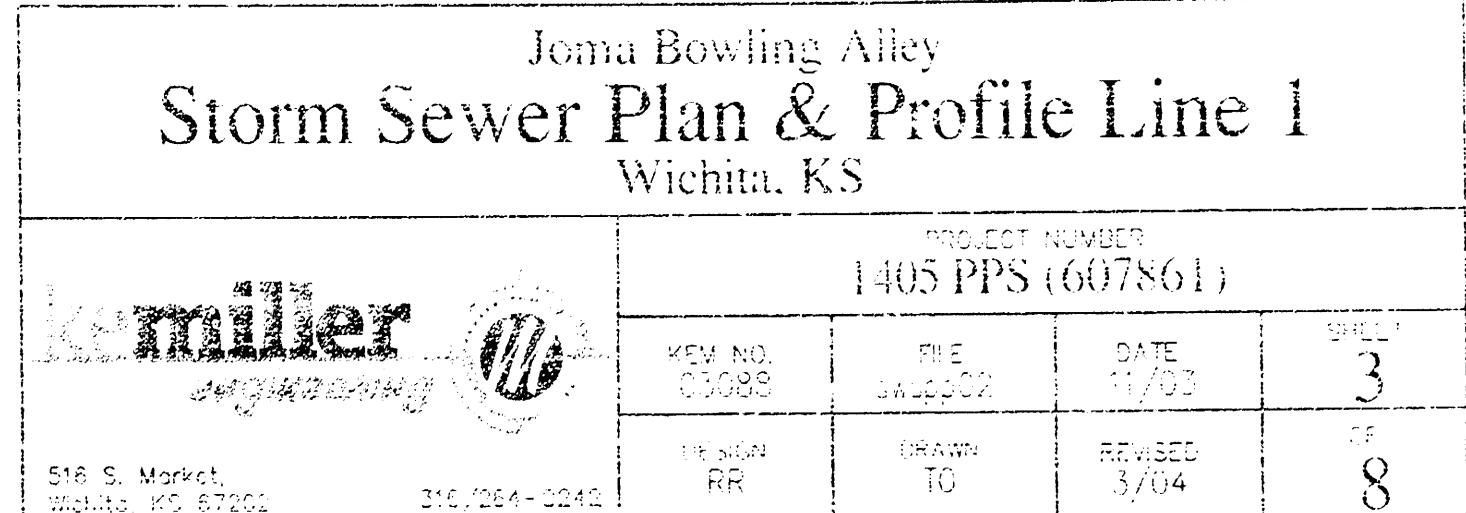
NOTE TO CONTRACTORS

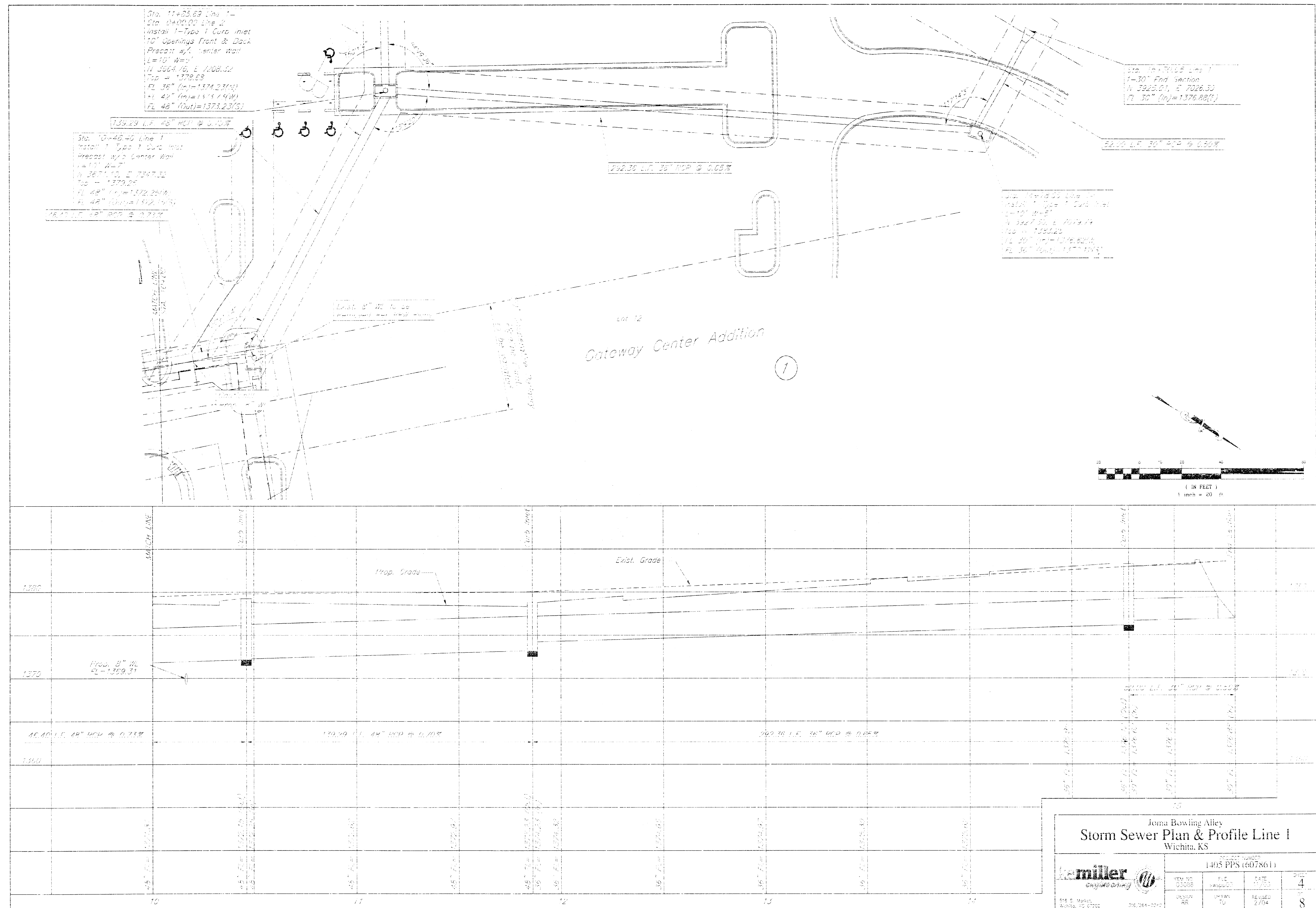
Installation, inspection and testing for this project is to be provided by a Licensed Consulting Engineering Firm under contract with the Owner/Developer. Said inspection to be in accordance with the City of Wichita standard construction engineering practices and certified by a Licensed Professional 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).

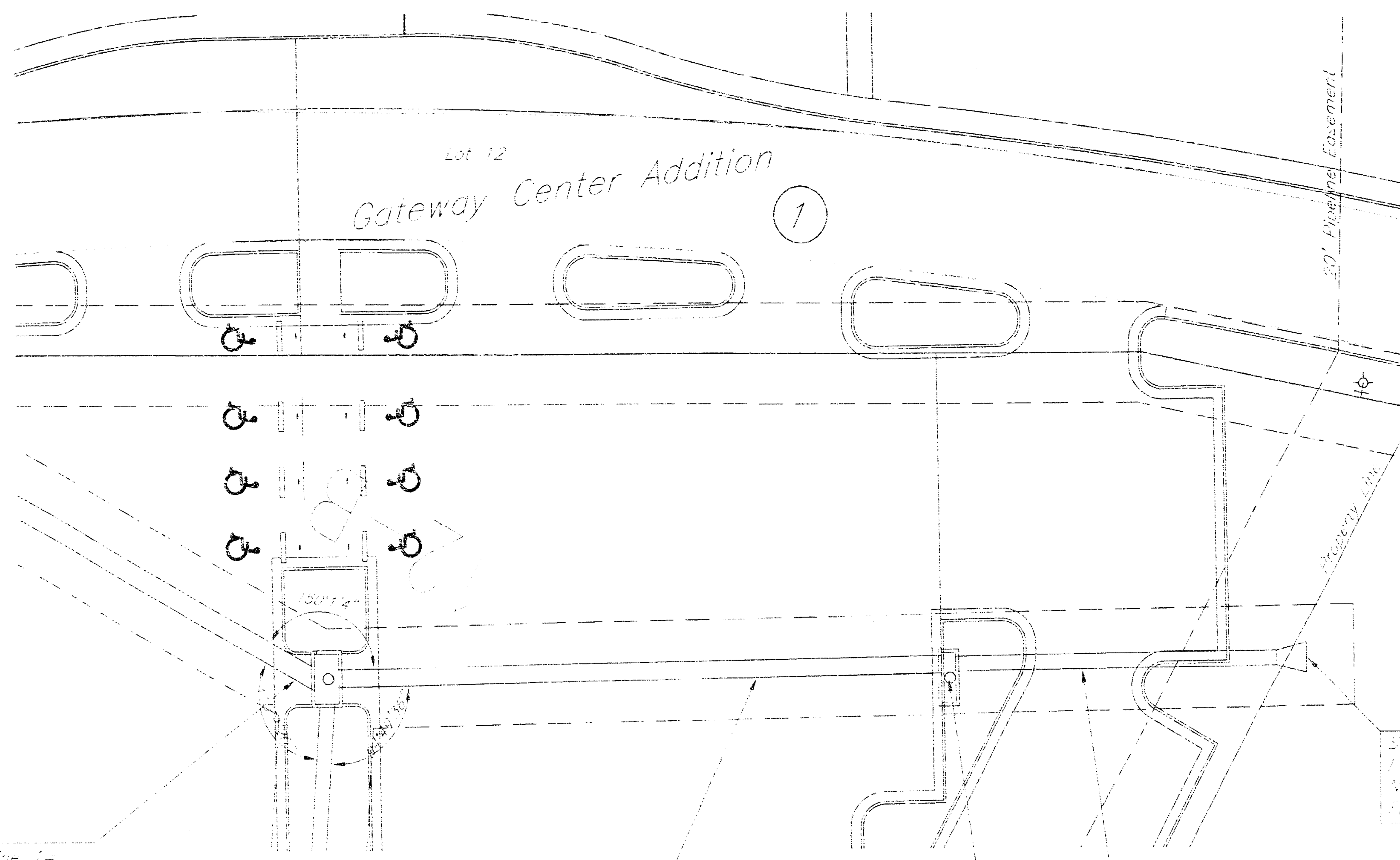
Hamiller
engineering

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









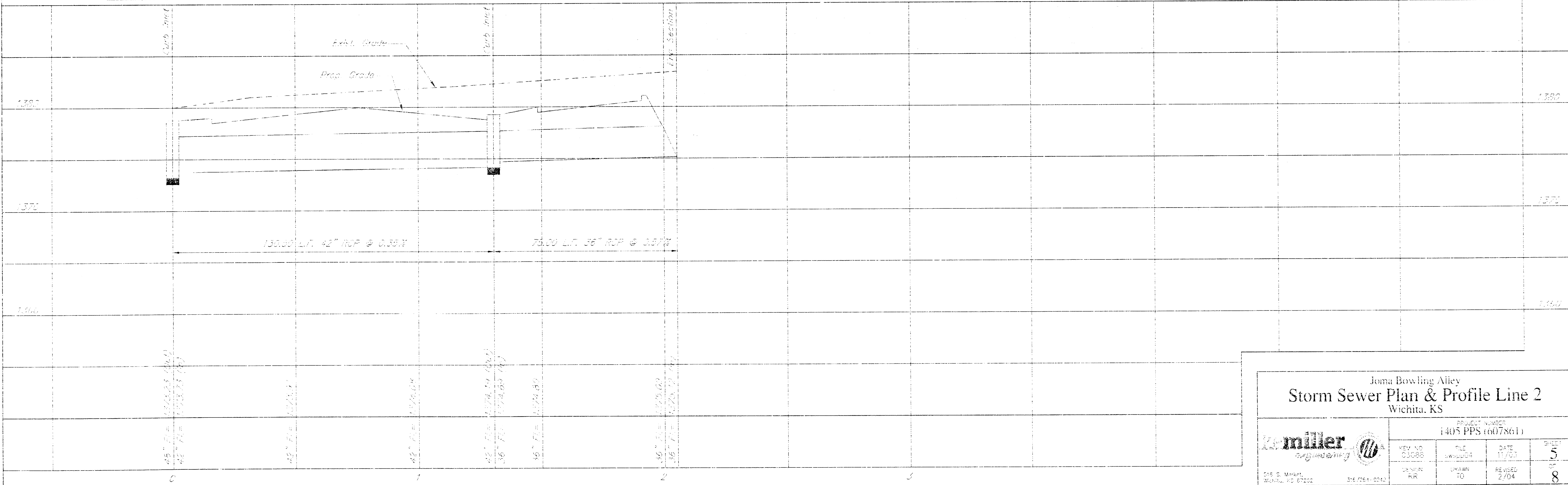
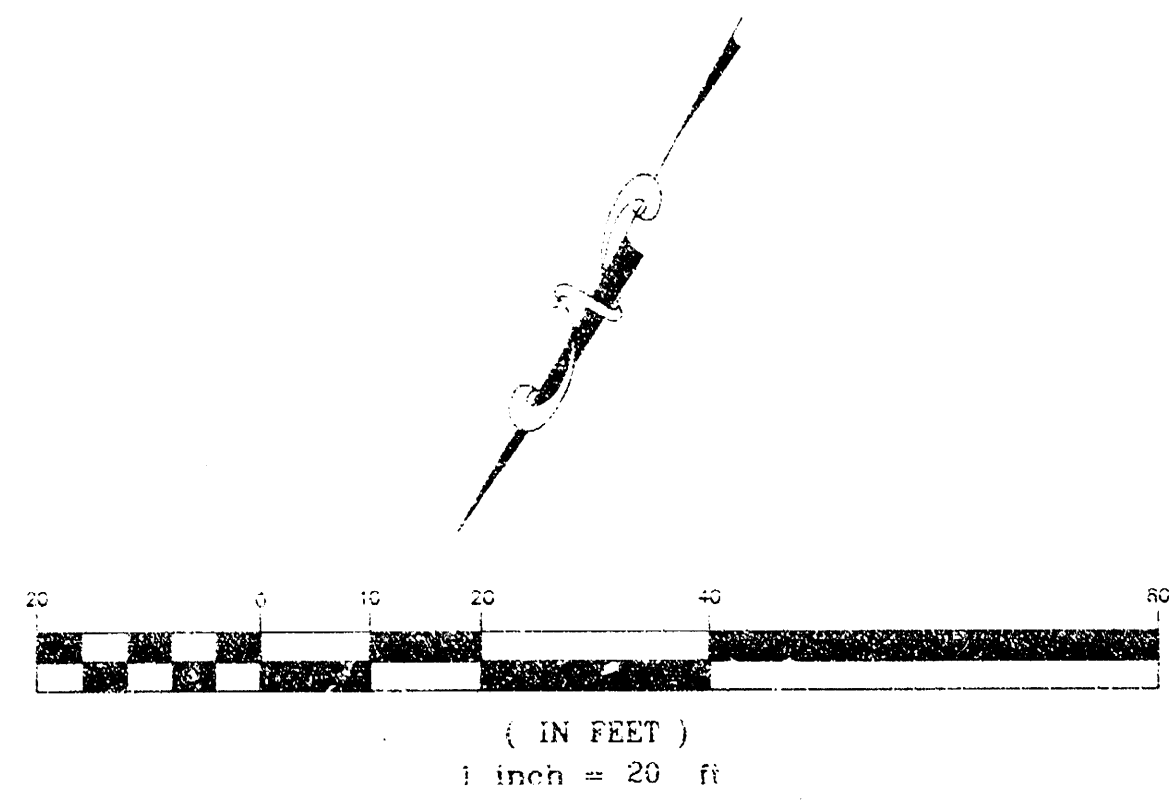
Sta. 1+00.00 Line 1-
Sta. 0+00.00 Line 2
Instal. 1-Type 1 Catch Inlet
Precast w/3 Center Box
10' Catching Basin 10' Box
1'-10" W-1'
10' Catching Basin 10' Box
1'-10" W-1'
10' Catching Basin 10' Box
1'-10" W-1'
10' Catching Basin 10' Box
1'-10" W-1'
10' Catching Basin 10' Box
1'-10" W-1'

130.00 L.F. 42" RCP @ 0.33%

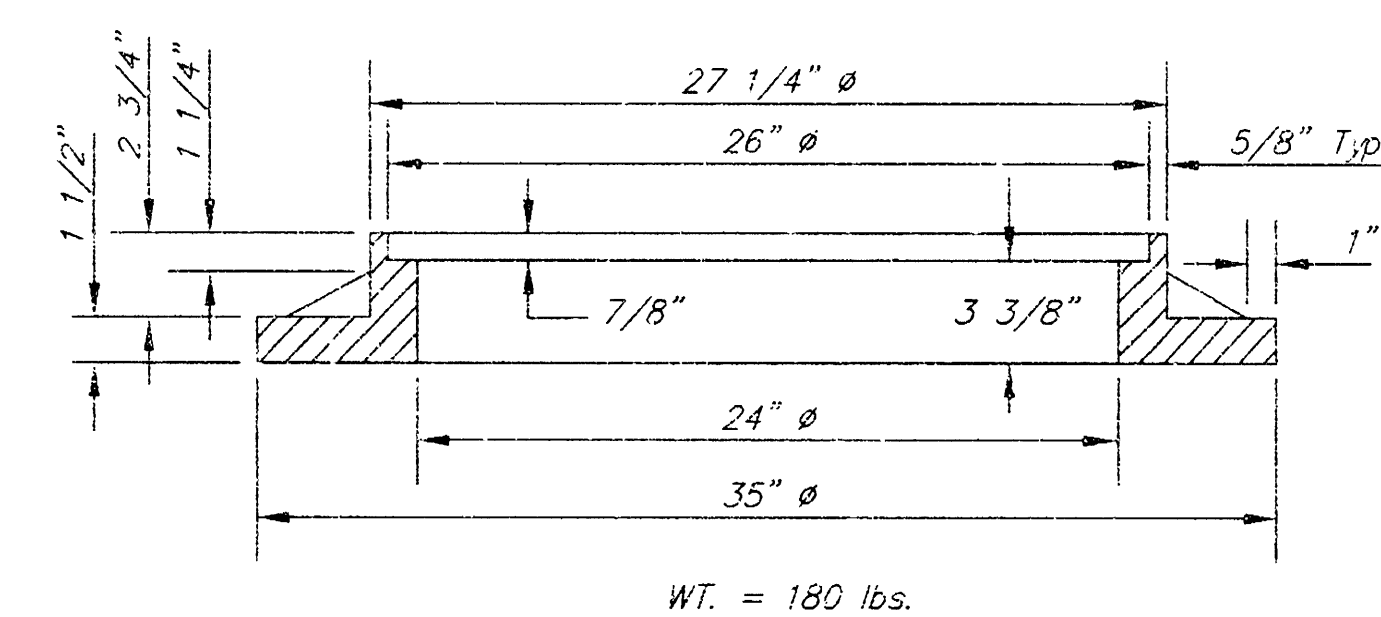
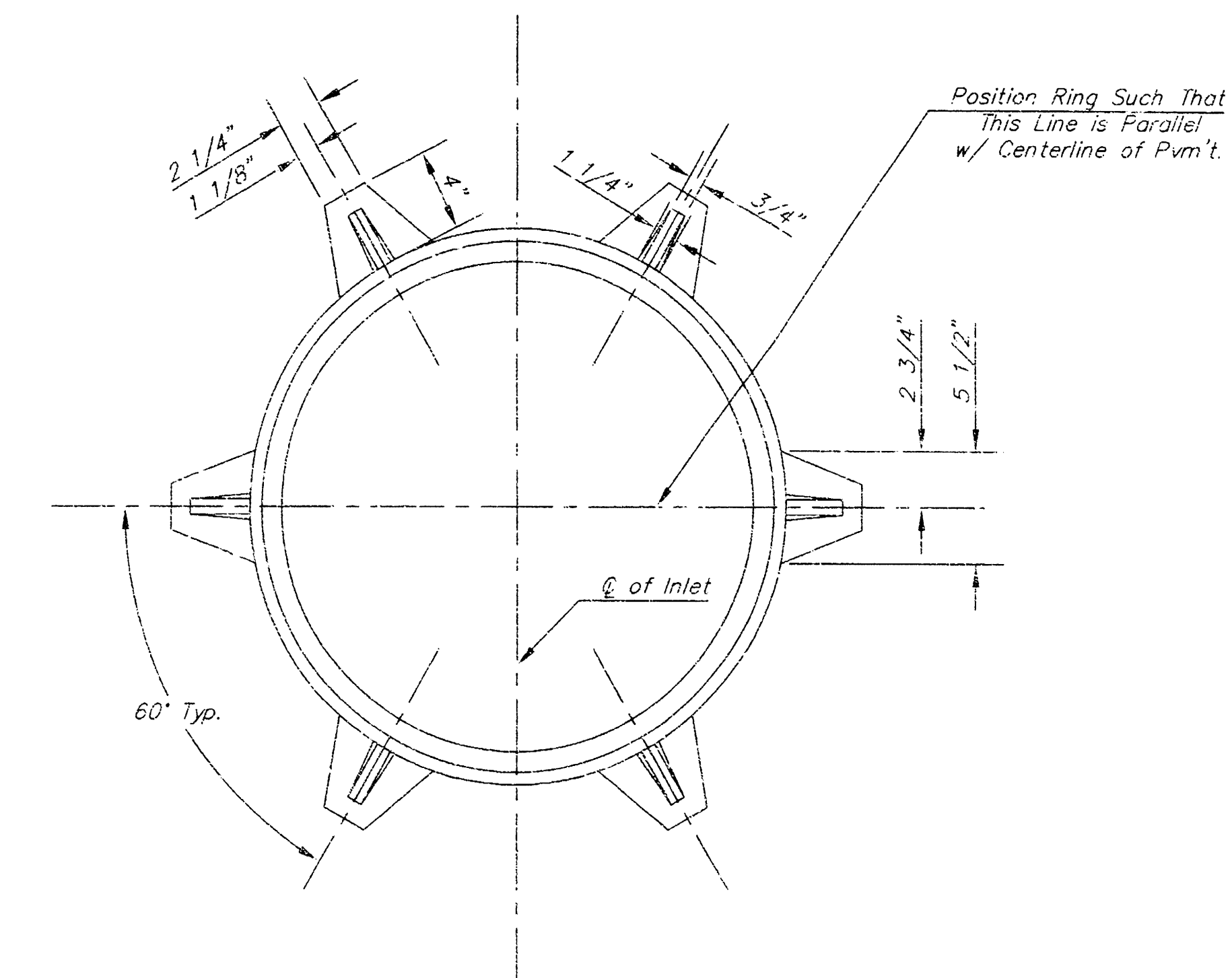
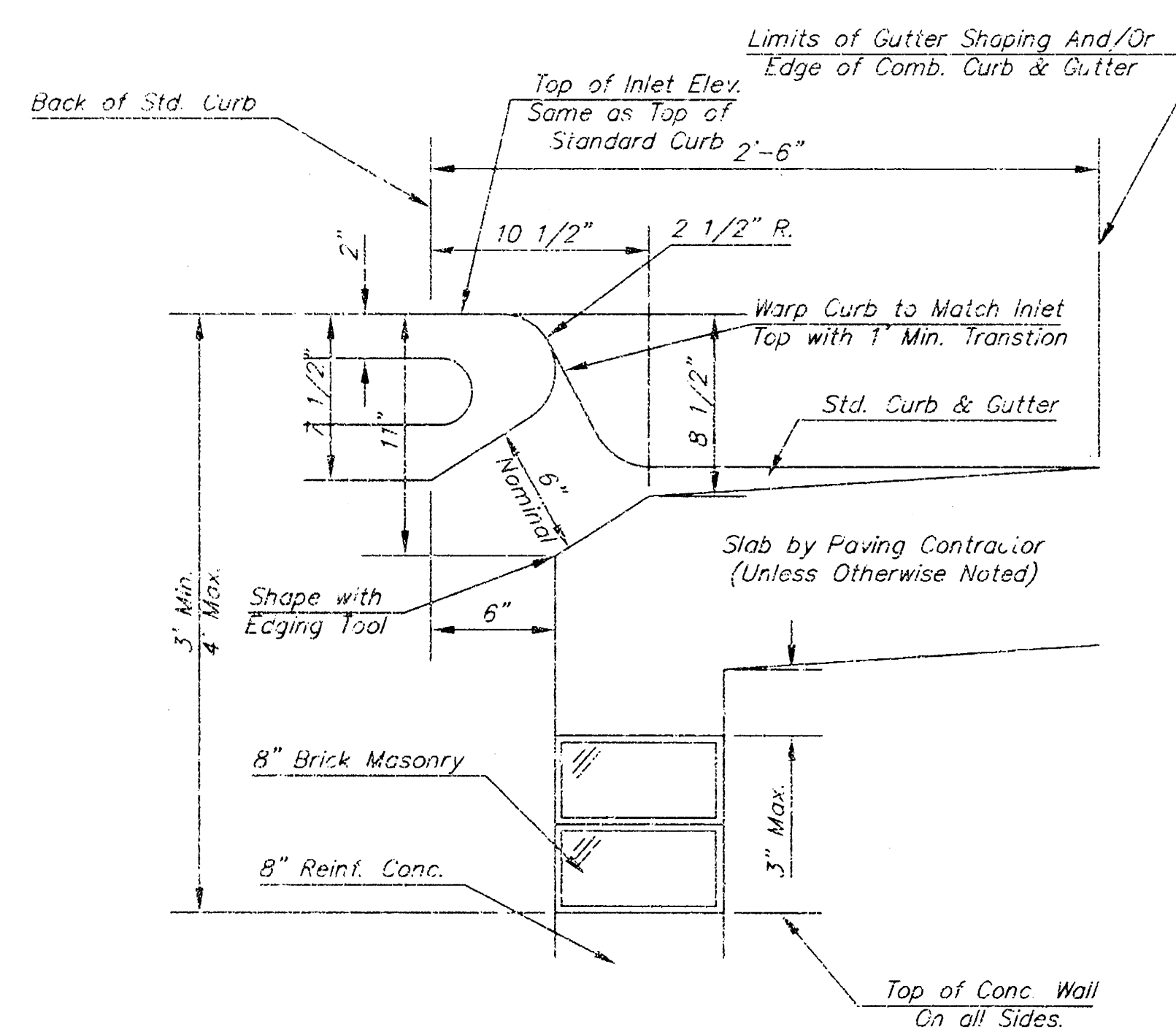
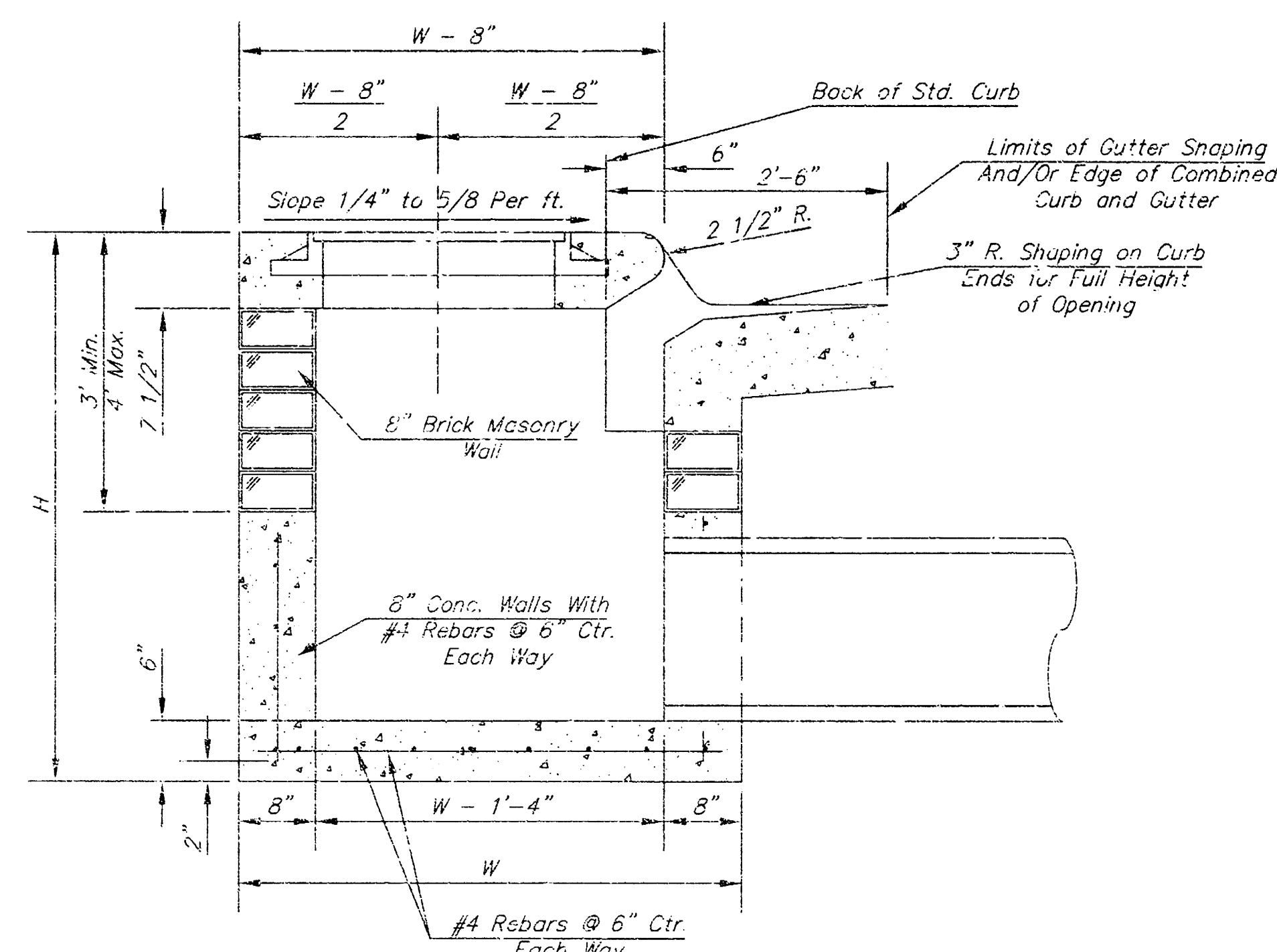
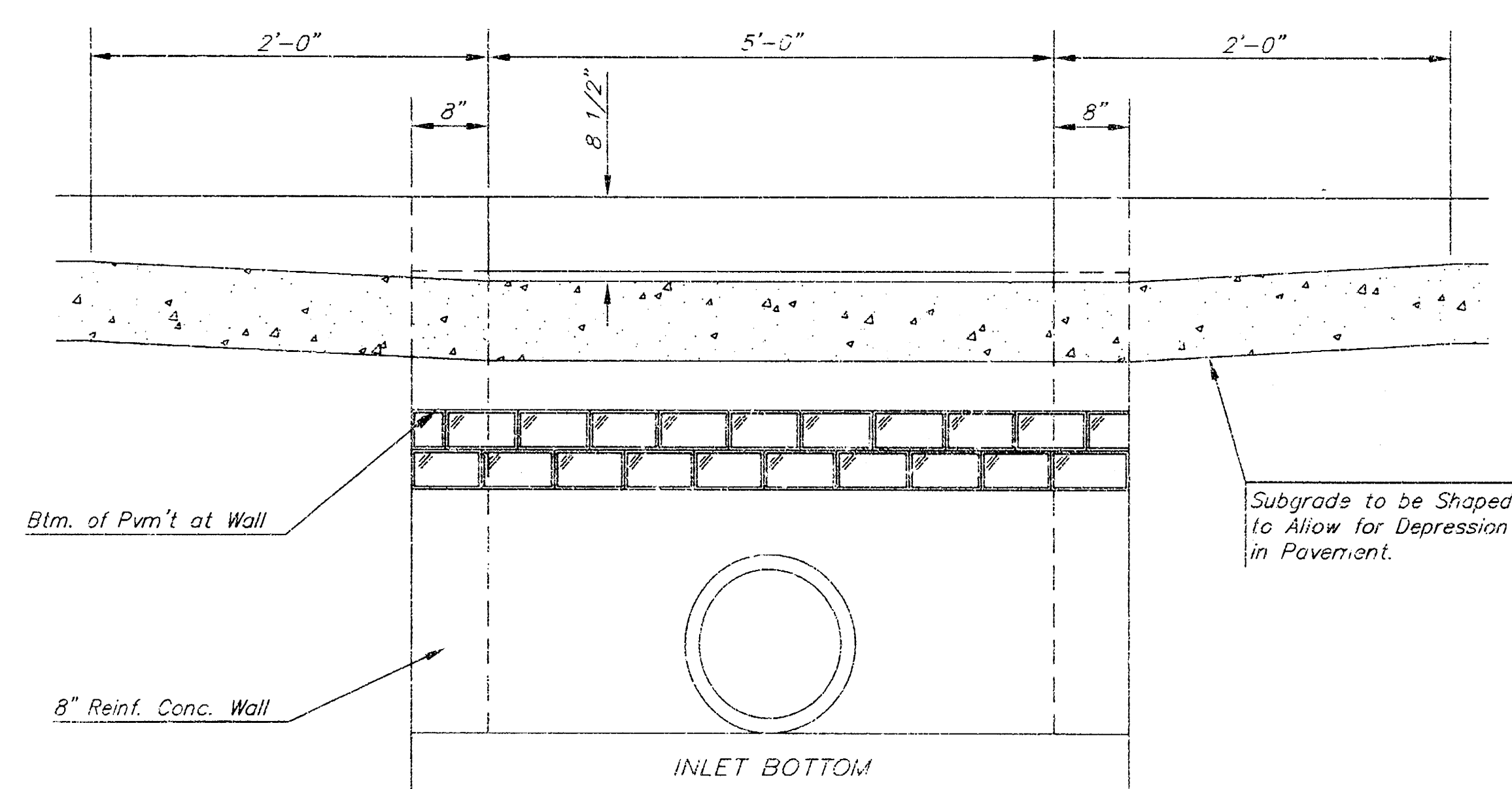
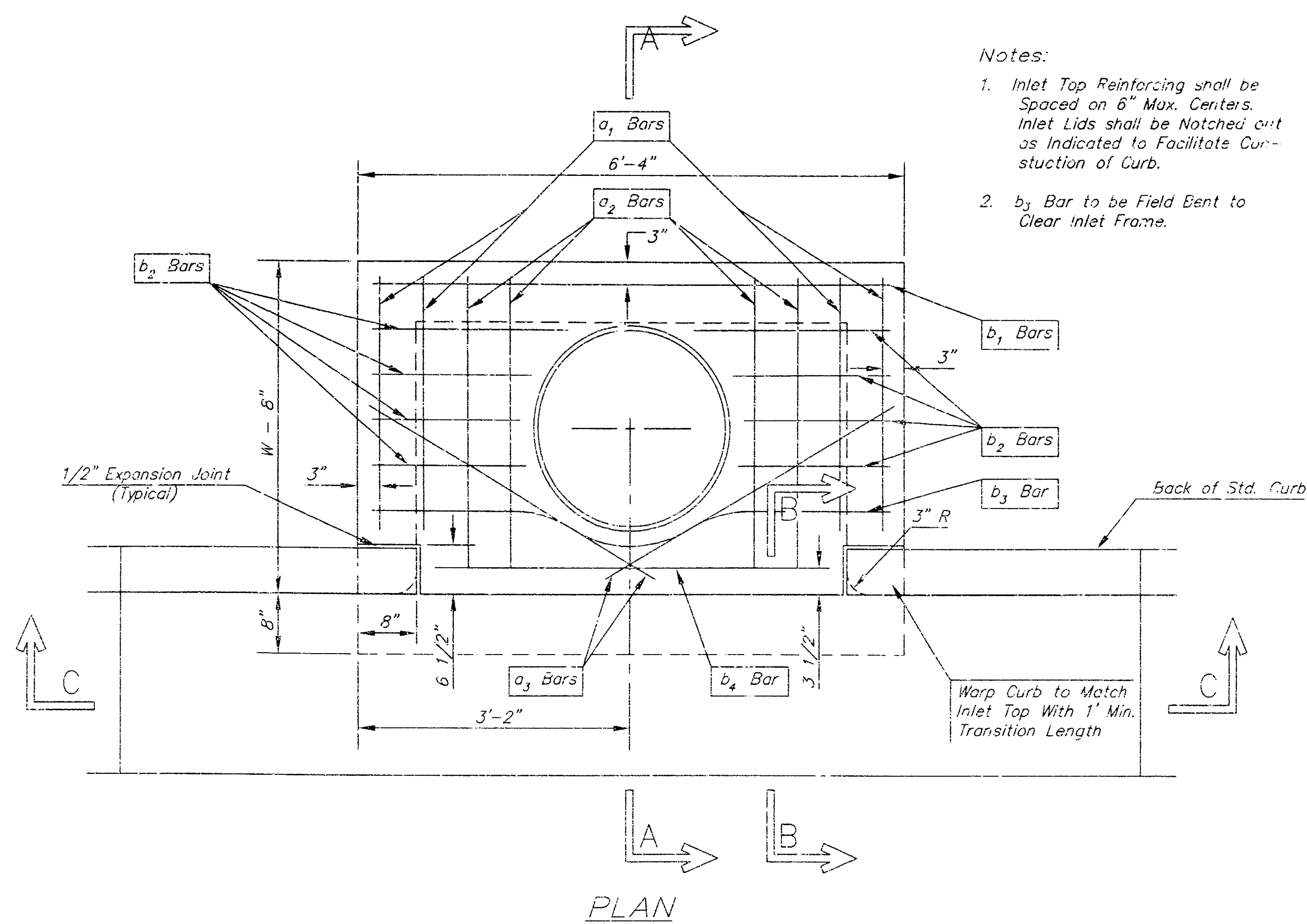
75.00 L.F. 36" RCP @ 0.33%

Sta. 1+00.00 Line 2
Instal. 1-Type 1 Catch Inlet
1'-10" W-1'
10' Catching Basin 10' Box
1'-10" W-1'
10' Catching Basin 10' Box
1'-10" W-1'
10' Catching Basin 10' Box
1'-10" W-1'

Sta. 2+00.00 Line 2
1'-36" End Section
1'-36" (In)-1375.12(E)
1'-36" (In)-1375.12(E)

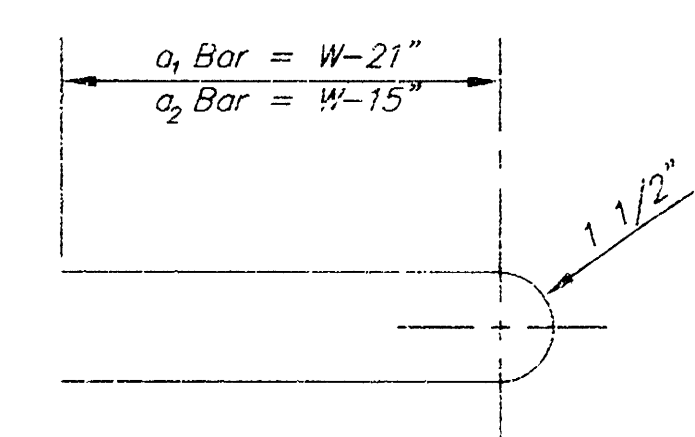


Joma Bowling Alley Storm Sewer Plan & Profile Line 2 Wichita, KS			
PROJECT NUMBER 1405 PPS (007861)			
REV. NO. 01088	FILE 01088	DATE 11/01	SHEET 5
DRAWN RR	BY TO	REVISION 2/04	SHEET 8



MANHOLE RING AND COVER

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



STEEL SCHEDULE

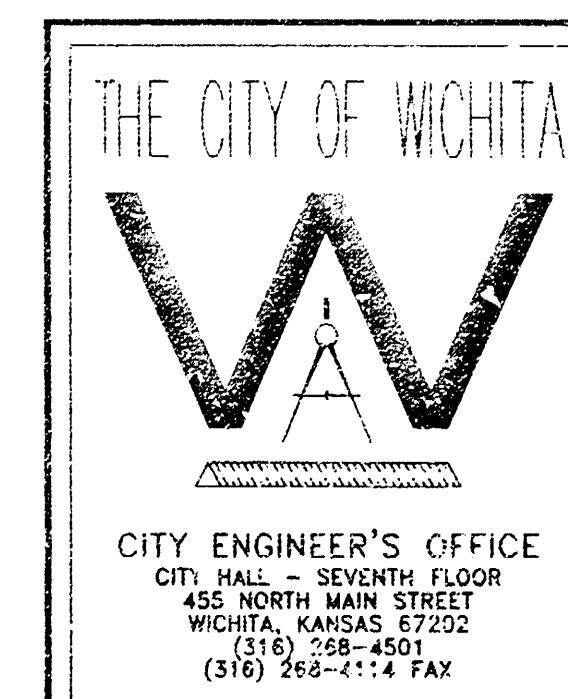
SAR	a ₁	a ₂	a ₃	b ₁				b ₂	b ₃	b ₄	WT. LBS.	
				W=4'-4"	W=5'-4"	W=6'-4"	W=7'-4"	W=8'-4"				
NUMBER	4	4	2	1	3	5	7	9	6	1	1	
SIZE	#4	#4	#4	#4	#4	#4	#4	#4	#4	#6		
LENGTH	W=4'-4"	5'-7"	6'-7"	4'-0"	6'-1"	-	-	-	1'-5"	6'-2"	4'-8"	60±
	W=5'-4"	7'-7"	8'-7"	5'-0"	6'-1"	-	-	-	1'-9"	6'-2"	4'-8"	81±
	W=6'-4"	9'-7"	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.

W	PRE-CAST TOP SIZE	PIPE SIZE	CU. YD. CONC.
4'-4"	3'-8" 6'-4" 7 1/2"	21" & SMALLER	0.58±
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

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



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

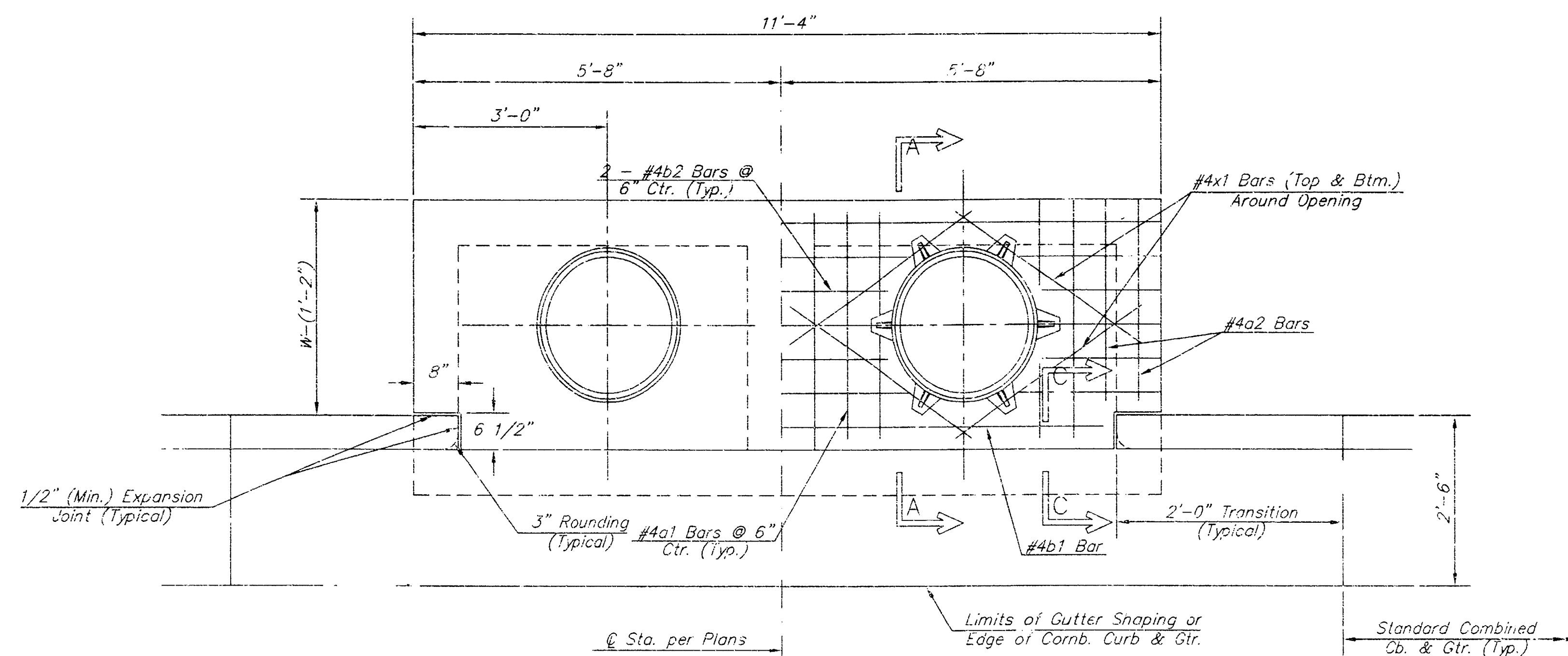
Neil D. Cable, P.E., City Engineer

FILE NAME KEM Project

Type 1 Inlet 03088

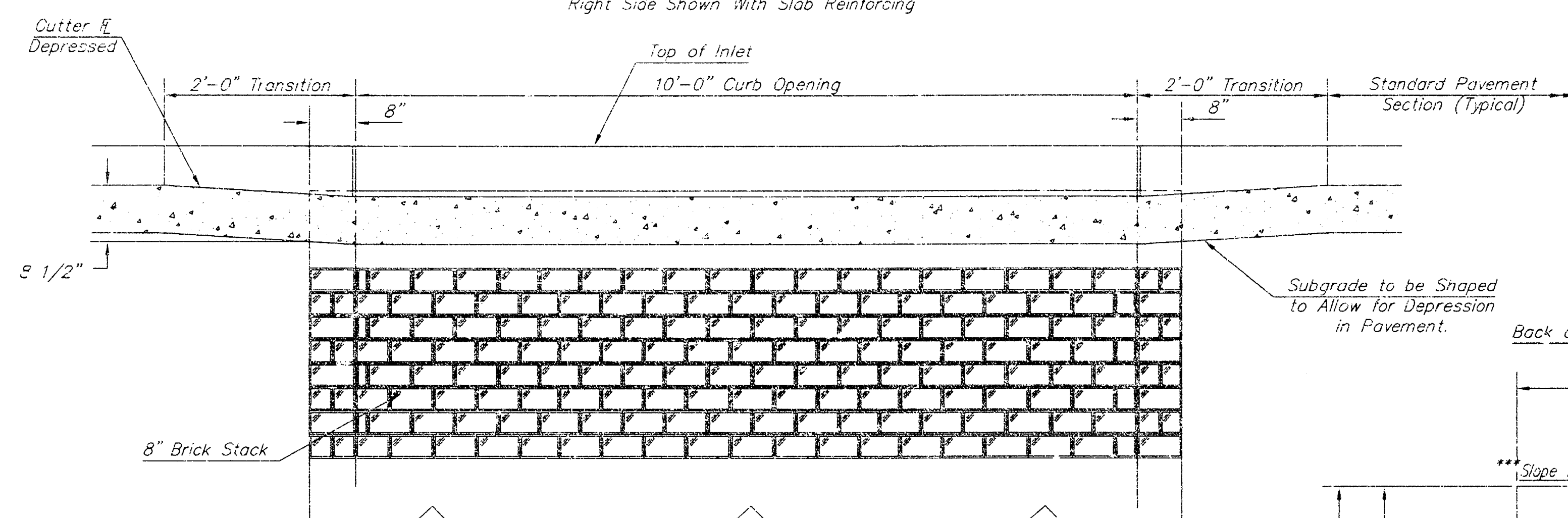
DATE NOV 03

SHEET 6 OF 8

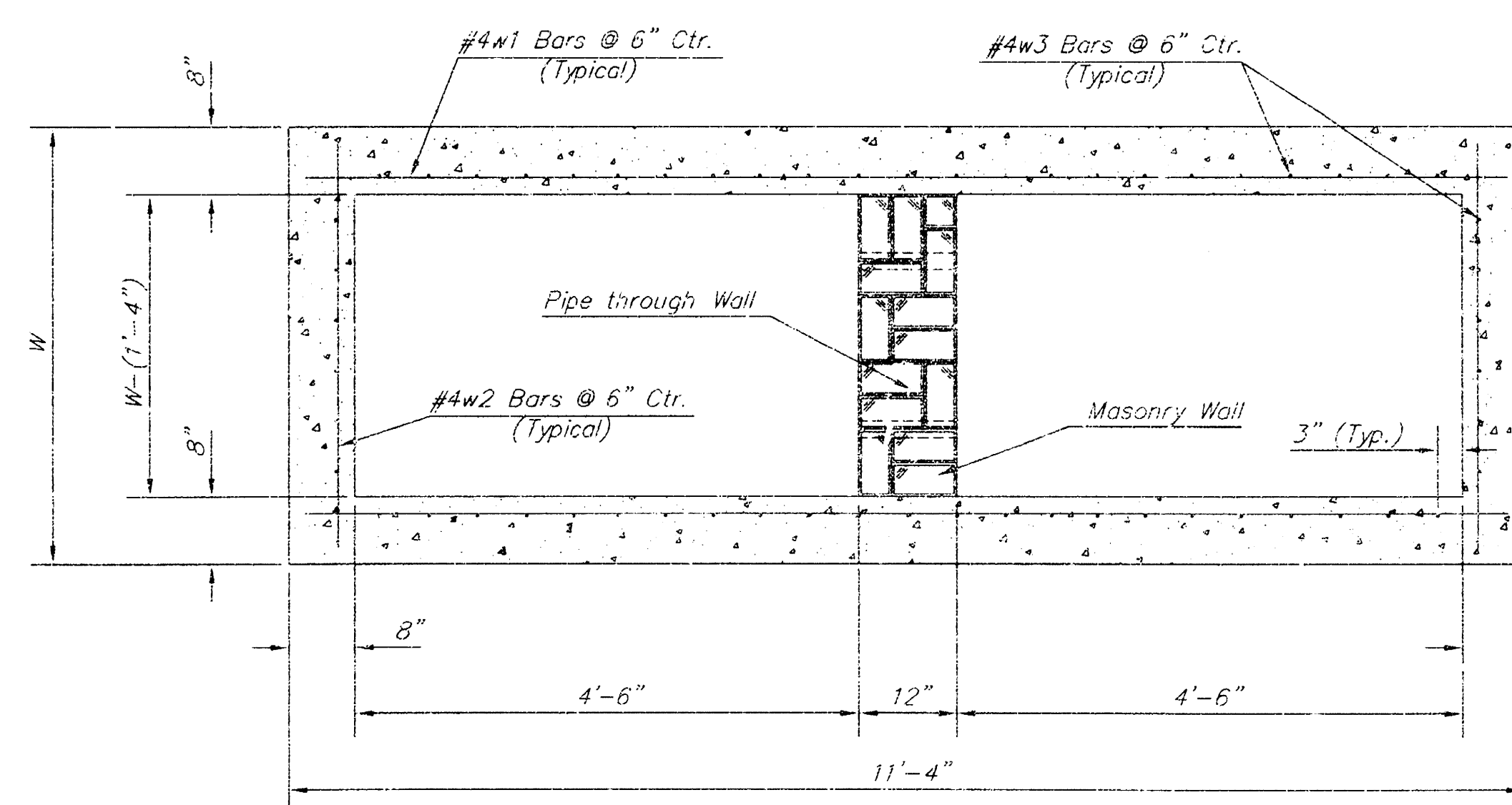


PLAN

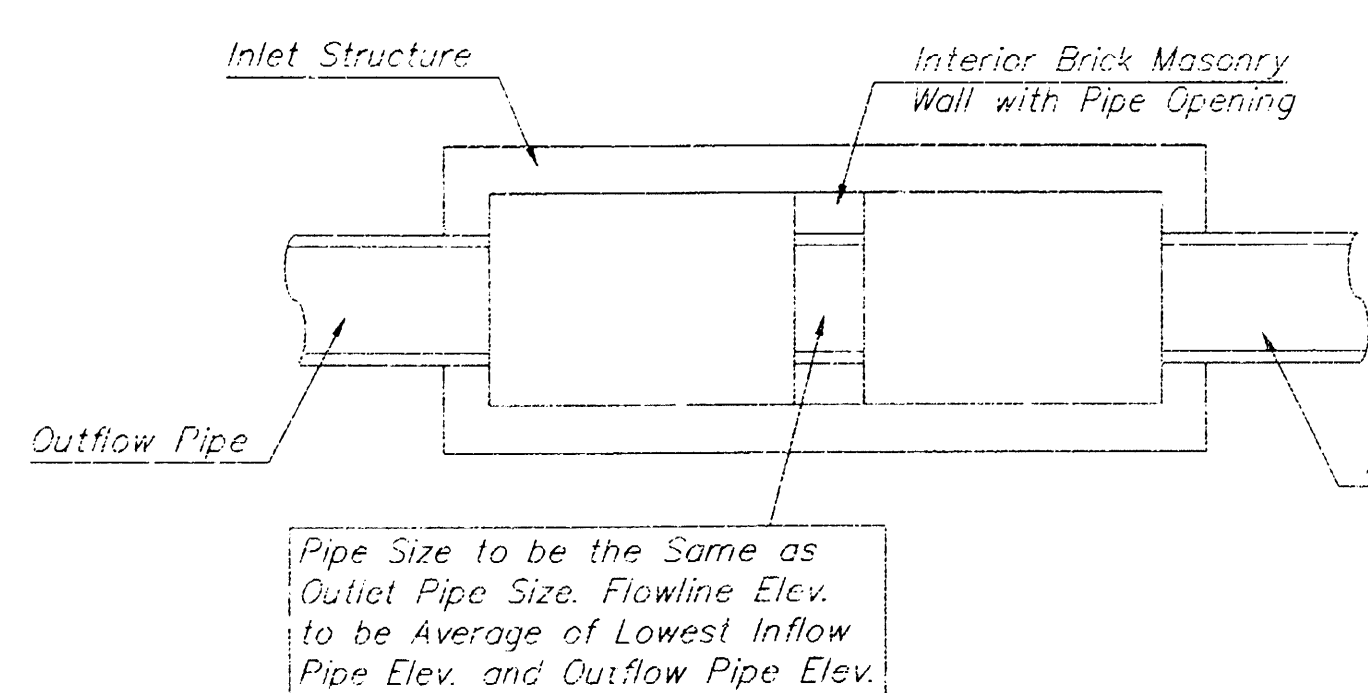
*Left Side Shown Without Slab Reinforcing,
Right Side Shown With Slab Reinforcing



ELEVATION

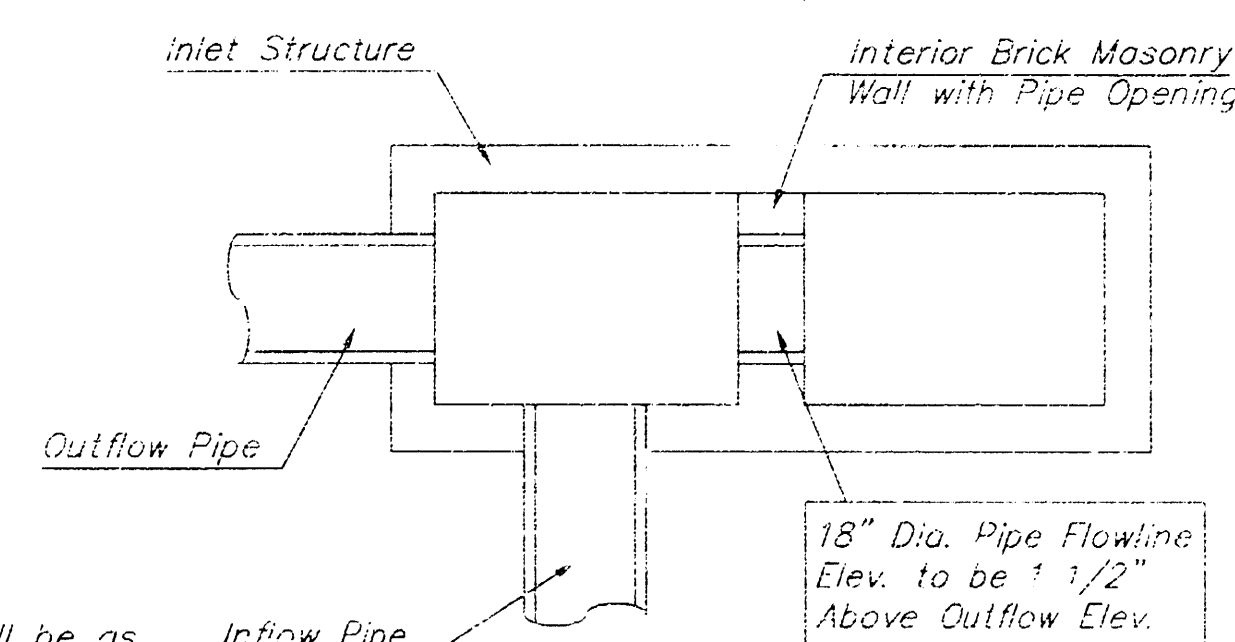


SECTION B-B

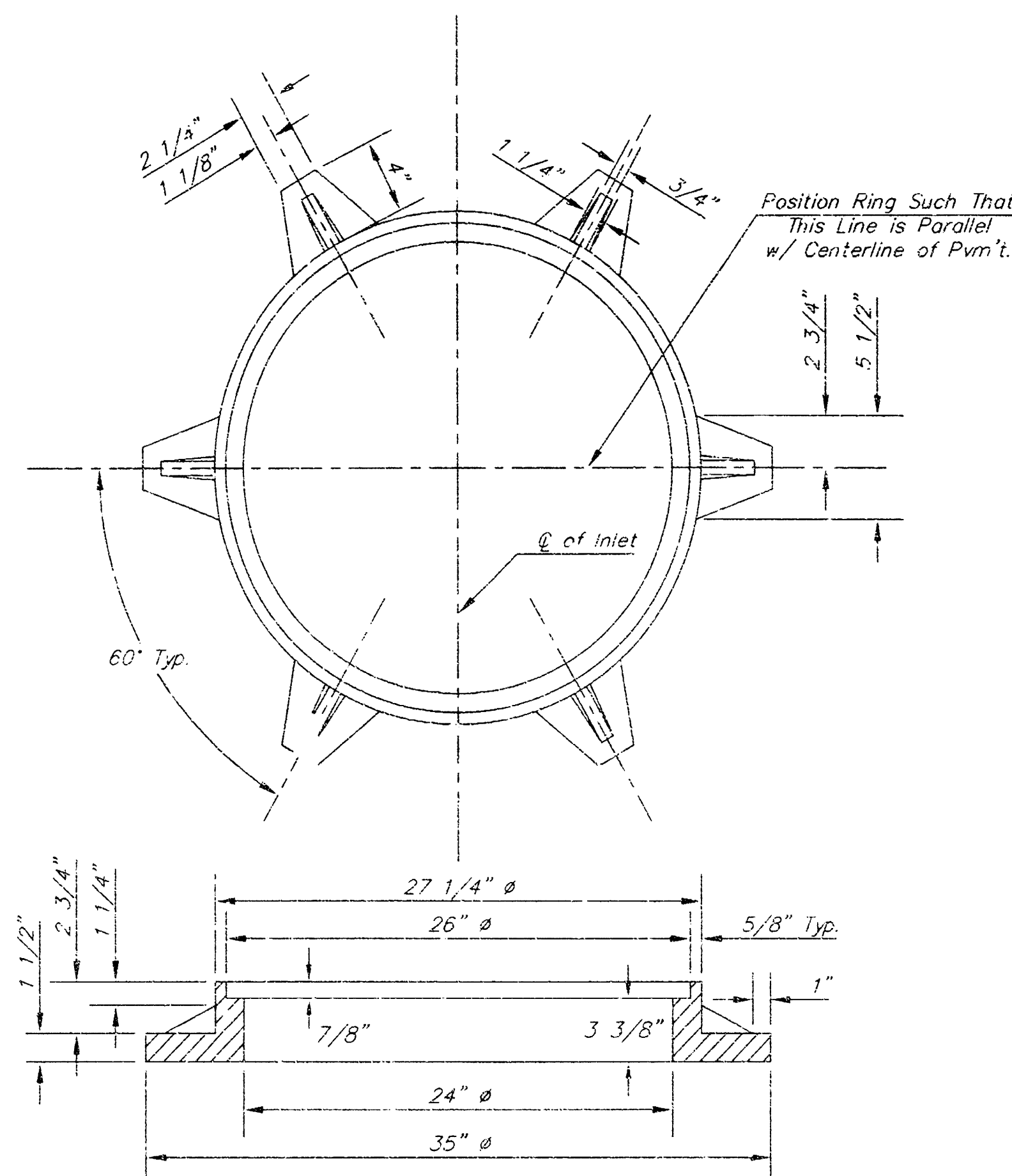


CASE I

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

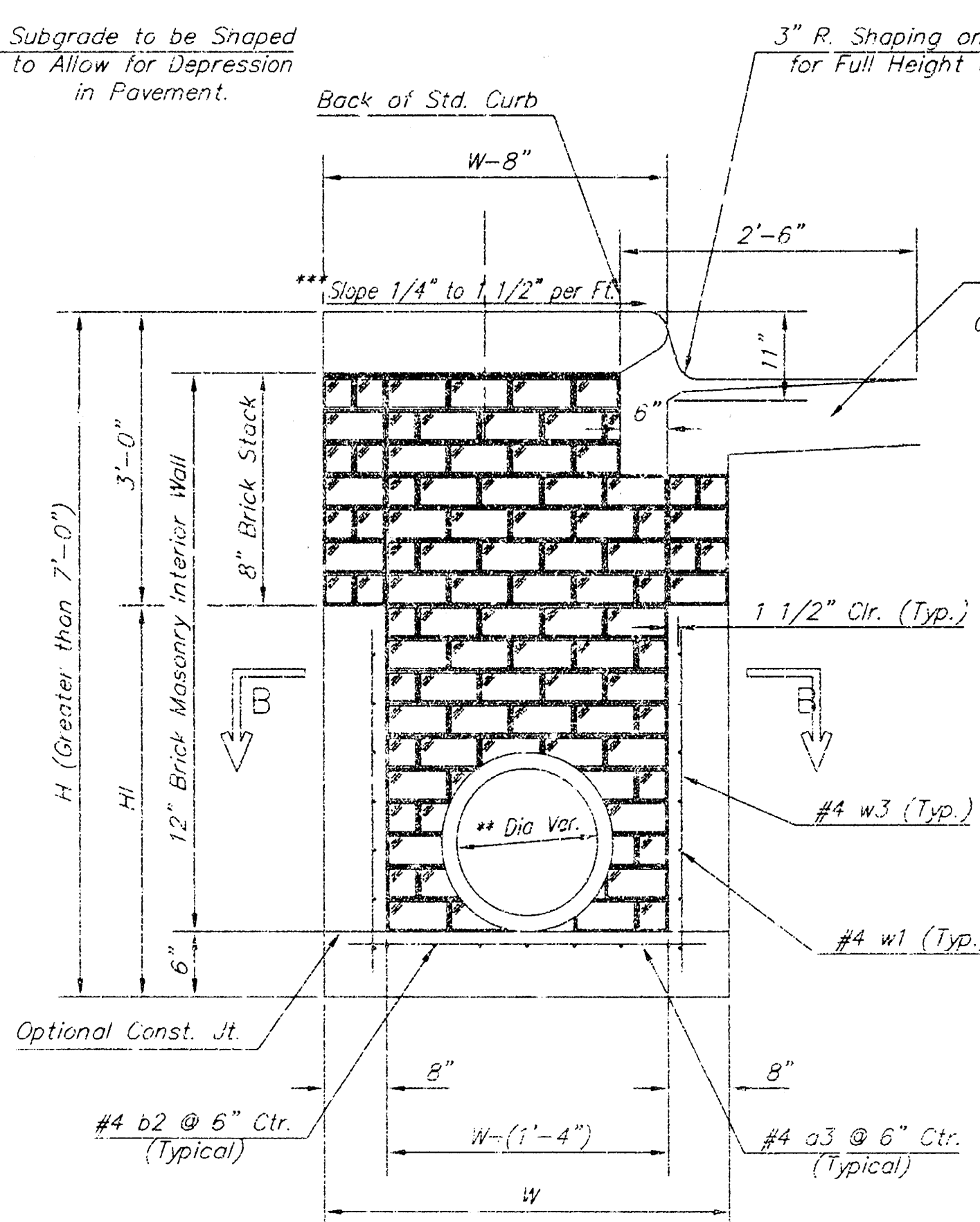


CASE II



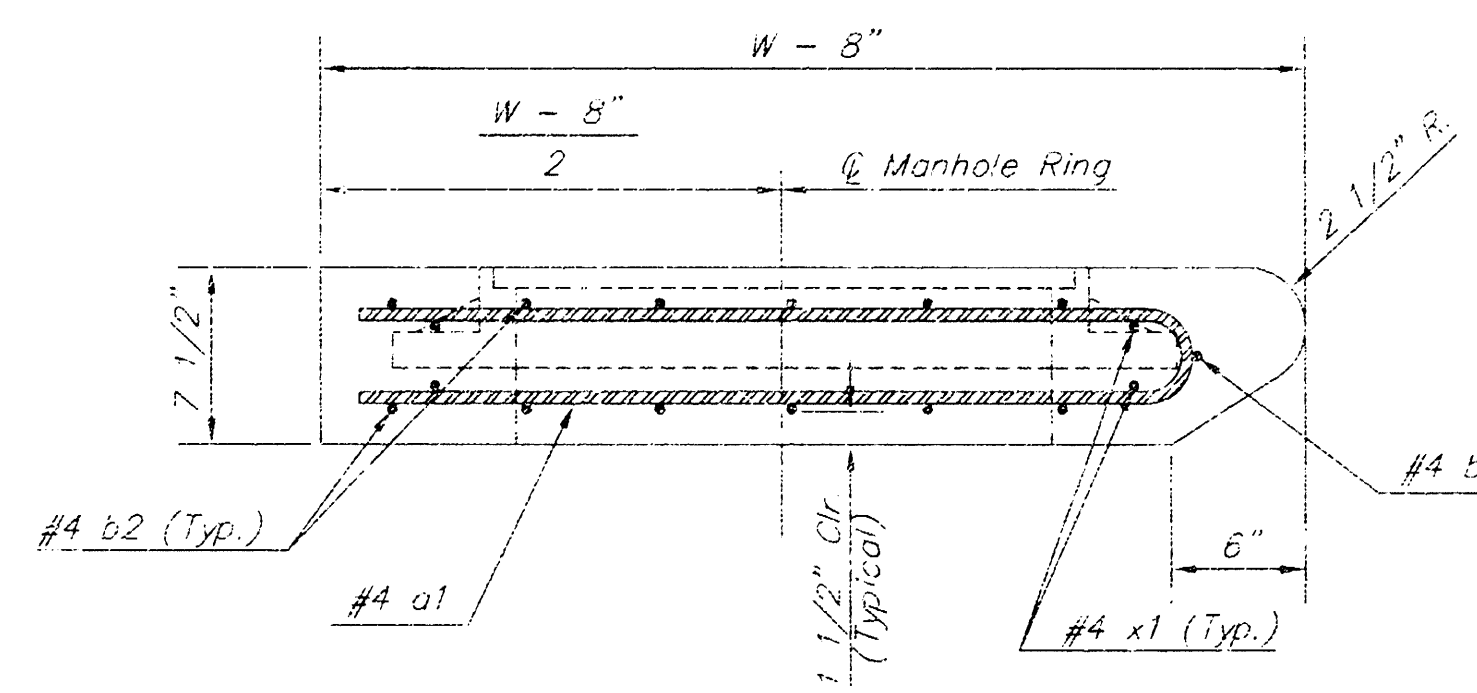
MANHOLE RING AND COVER

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



TYPICAL INLET
SECTION AT CENTER WALL
(REINFORCED CONCRETE 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 of
parking slopes within limits indicated



SECTION A-A

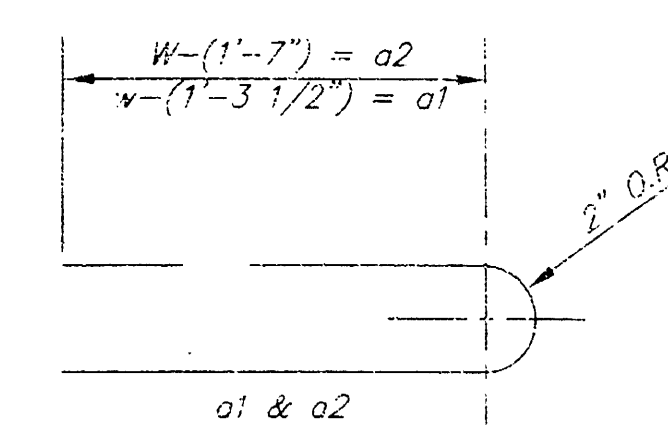
PRECAST SLAB AND FLOOR REINFORCING									
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
a1	#4	13	6'-7"	13	8'-7"	13	10'-7"	13	12'-7"
a2	#4	4	6'-0"	4	8'-0"	4	10'-0"	4	12'-0"
a3	#4	23	4'-1"	23	5'-1"	23	6'-1"	23	7'-1"
b1	#4	1	9'-9"	1	9'-9"	1	9'-9"	1	9'-9"
b2	#4	23	11'-1"	29	11'-1"	35	11'-1"	41	11'-1"
x1	#4	16	3'-10"	16	4'-2"	16	4'-6"	16	4'-10"

WALL REINFORCING									
MARK	SIZE	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH
w1	#4	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"
w3	#4	52	2	56	2	60	2	64	2

* Field Bend or Cut Reinforcing as Required for Clearance.

① 4 (#6 - 12") (H1 - 21") Rounded down to nearest 0.5"

② H1 - 3"



BENDING DIAGRAM

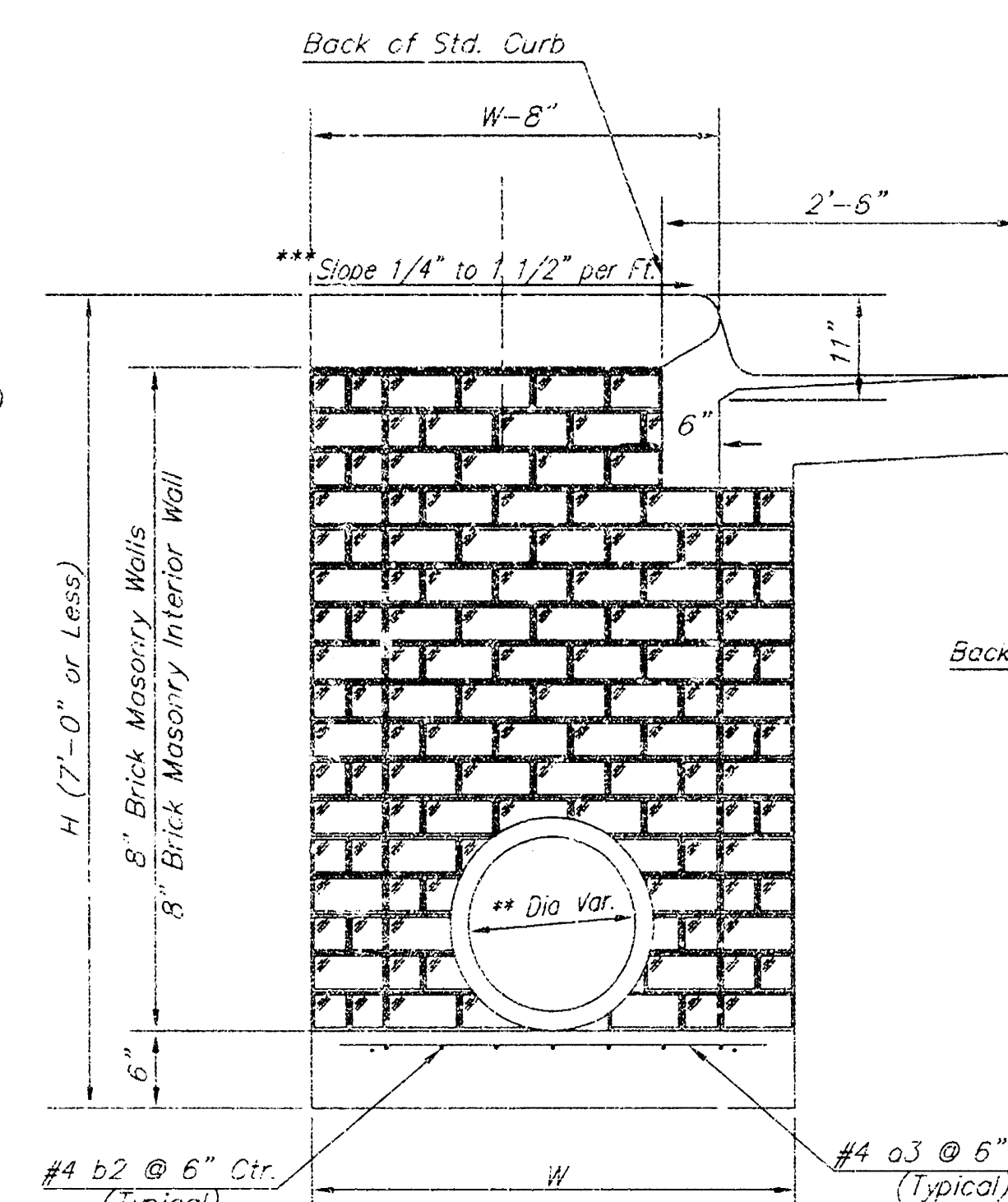
GENERAL NOTES:

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 8 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.

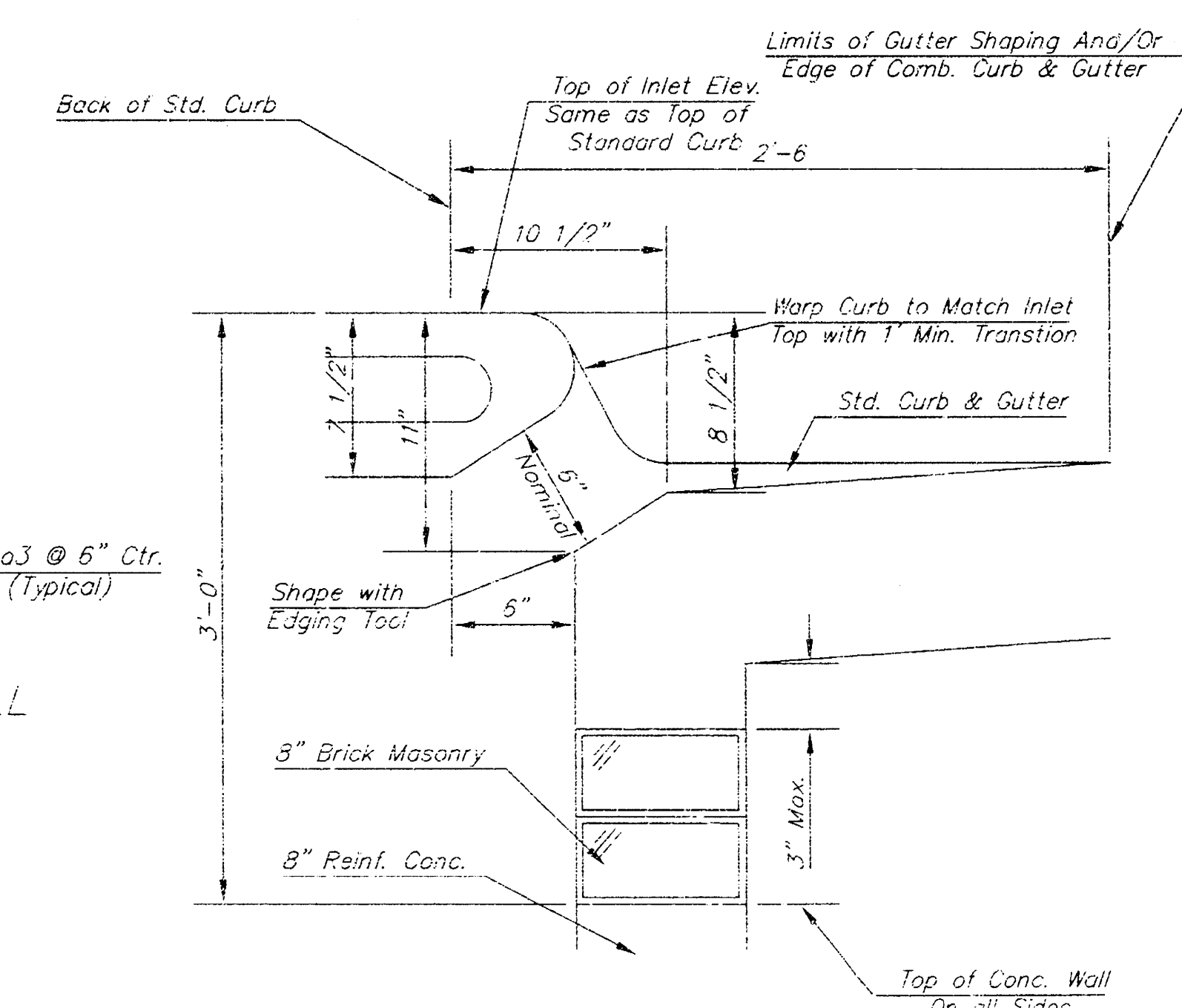
Concrete tops to be installed on thin mortar cushion to
insure full support along brick walls. Concrete tops may be
cast in place or precast.

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
(MASONRY WALLS)



SECTION C-C

THE CITY OF WICHITA CITY ENGINEER'S OFFICE CITY HALL - SEVENTH FLOOR 455 NORTH MAIN STREET WICHITA, KANSAS 67202 (316) 268-1400 FAX		STANDARD TYPE 1 CURB INLET OPENING = 6" x 10'-0" Neil D. Cable, P.E., City Engineer	
FILE NAME Type 1 Inlet Dbl		NEW Project 0308B	
DATE NOV 03		SHEET 7 OF 8	

MANHOLE FRAME & COVER
AS SPECIFIED

1" Coat of Mortar
(Typical)

26"

8" Brick Masonry Collar
6'-18"

CONCENTRIC
CONE SECTION
3'-0" Min.
4'-0" Max.

5" (MIN.)

48" (MIN.)

5" (MIN.)

VARIES

1" (MIN.)

SEE NOTE 3

8" (MIN.)

12"

5"

6"

3" CLEAR

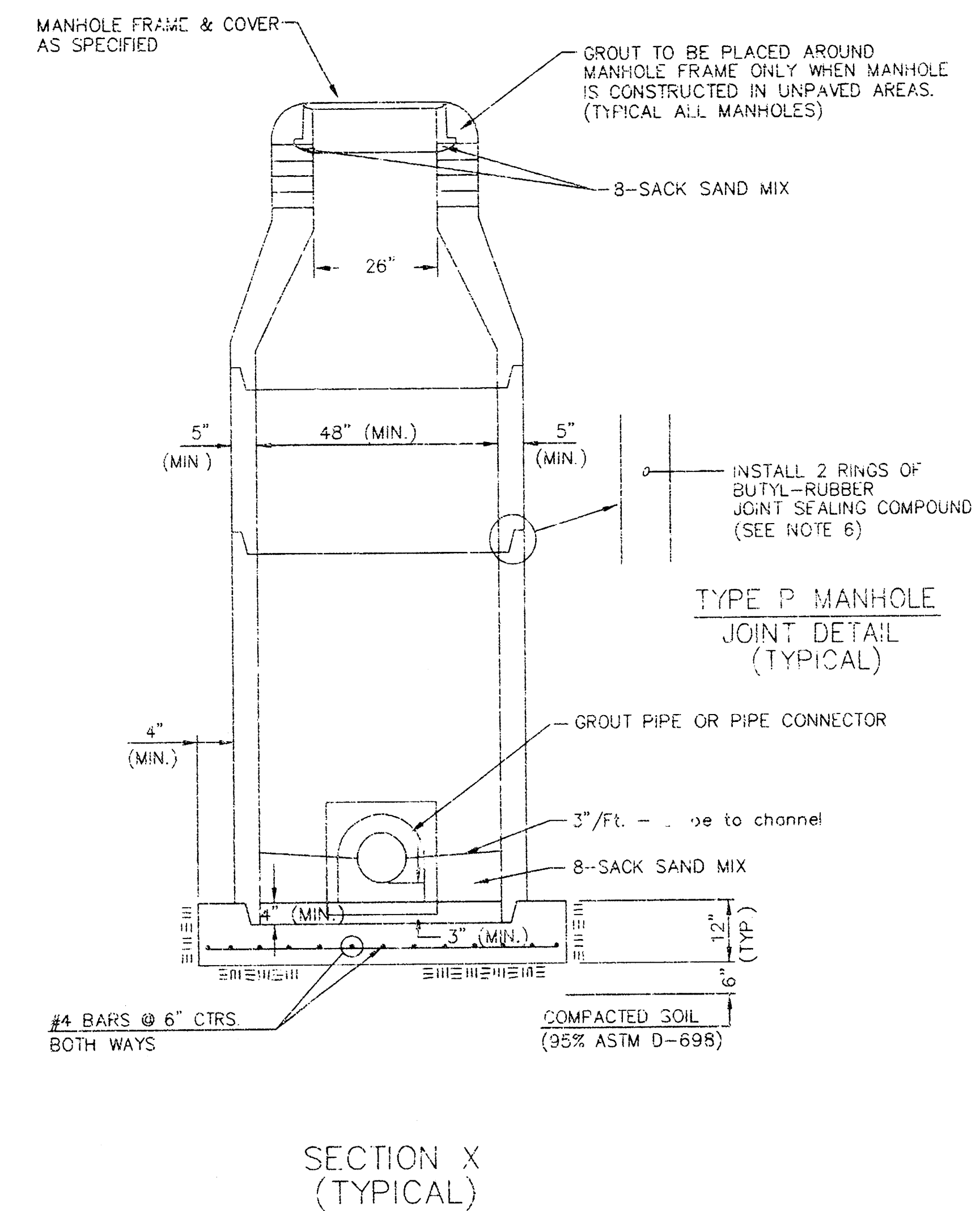
#4 BARS @ 6" CTRS.
BOTH WAYS

UNDISTURBED SOIL OR APPROVED
BACKFILL MATERIAL COMPACTED
TO 95% ASTM D-698

CRUSHED ROCK
(ASTM C-33)

MANHOLE BASE
CITY CONCRETE
PAVEMENT MIX.

TYPE P
STANDARD MANHOLE



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 GASKETS SHALL BE LOCATED 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 BE CONNECTED IN 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 LOCATED AT 2 COAT (TWO) SERIES 65 IN-BUILD EPOXYDUE DRY THICKNESS OF 8 MILS (MILS).
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. 10% INSURE SUFFICIENT MINIMUM THICKNESS OF SHALED 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 BAGS OF CEMENT PER CUBIC YARD. CONCRETE USED IN MANHOLE BASES SHALL CONFORM TO THE REQUIREMENTS OF CONCRETE FOR CONCRETE PAYMENT CONSTRUCTION AS SPECIFIED IN THE DRAWINGS. IN PAVING CONSTRUCTION SPECIFICATIONS USING CURE CONCRETE PAYMENT 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 WITH PIPE SIZES ARE SMALLER THAN 24" SHALL HAVE AN INSIDE DIAMETER OF 4" MANHOLES CONSTRUCTED WITH PIPE SIZES ARE 24" OR LARGER SHALL HAVE AN INSIDE DIAMETER OF 6". 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. THE MANHOLE BASE FLASHING AND INSULATION REINFORCEMENT 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 FLASHING AND GROUTING OF THE CONNECTION. THE CONNECTIONS TO 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 NON-SINK GROUT FOR JOINT PROPERTIES. THE JOINTS 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 BASE FOR THE MANHOLE. THE MODIFICATION SHALL BE SHOWN 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 TO MATCH THE SLOPE OF THE FLOOR. THE SLOPE AND FREE OF AREAS WHERE FLOIDS 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 VALUES OF THE FLOW CHANNELS TO MATCH THE OUTLINE OF THE CONNECTION. THE DRAWINGS EXCEPT FOR INSIDE DROP MANHOLES. FLOW CHANNELS FOR INSIDE DROP MANHOLES SHALL BE CONSTRUCTED AS INDICATED BY THE DRAWING. THE FLOORS AND FLOORS OF INSIDE DROP MANHOLES SHALL BE SHAPED THE AREAS OUTSIDE OF THE FLOW CHANNELS SLIPPED TOWARD THE FLOW CHANNELS. PIPES LAID THROUGH MANHOLES SHALL HAVE THE TOP HALF OF THE PIPE TO NEARLY TO THE 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 JOINT OF THE JOINT OF THE JOINT OF THE JOINT OF THE JOINT. THE JOINTS SHALL BE TERMINATED AT THE CLAY PIPE JOINT IN A MANNER WHICH WILL MAINTAIN THE FLEXIBILITY OF THE JOINT. COST OF CRADLE WITHIN THE EXCAVATION MADE FOR THE MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE. THE MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE. THE MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE. THE MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE.

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 INSTEAD D+OP MANHOLES SHALL NOT EXCEED 2' FOR INFLOWING PIPES SIZED 12" OR SMALLER AND 3' 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 CONCRETE CROWN. THE COLLAR WILL HAVE 8" WALLS AND A VERTICAL HEIGHT OF 6" MINIMUM AND 12" 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 4" AND SHALL BE SET 8" OUTSIDE THE DIAMETER OF THE CONCRETE FLOOR OF THE MANHOLE.

Joma Bowling Alley Storm Sewer Manhole Deltail Wichita, KS					
		PROJECT NUMBER 1405 PPS (607861)			
516 S. Market, Wichita, KS 67203		KEY NO 6-0052	FILE Type P MH	DATE 11/03	SHEET 8
316/284-0242		DESIGN RR	DRAWN TO GRAND	REVISED	> 8