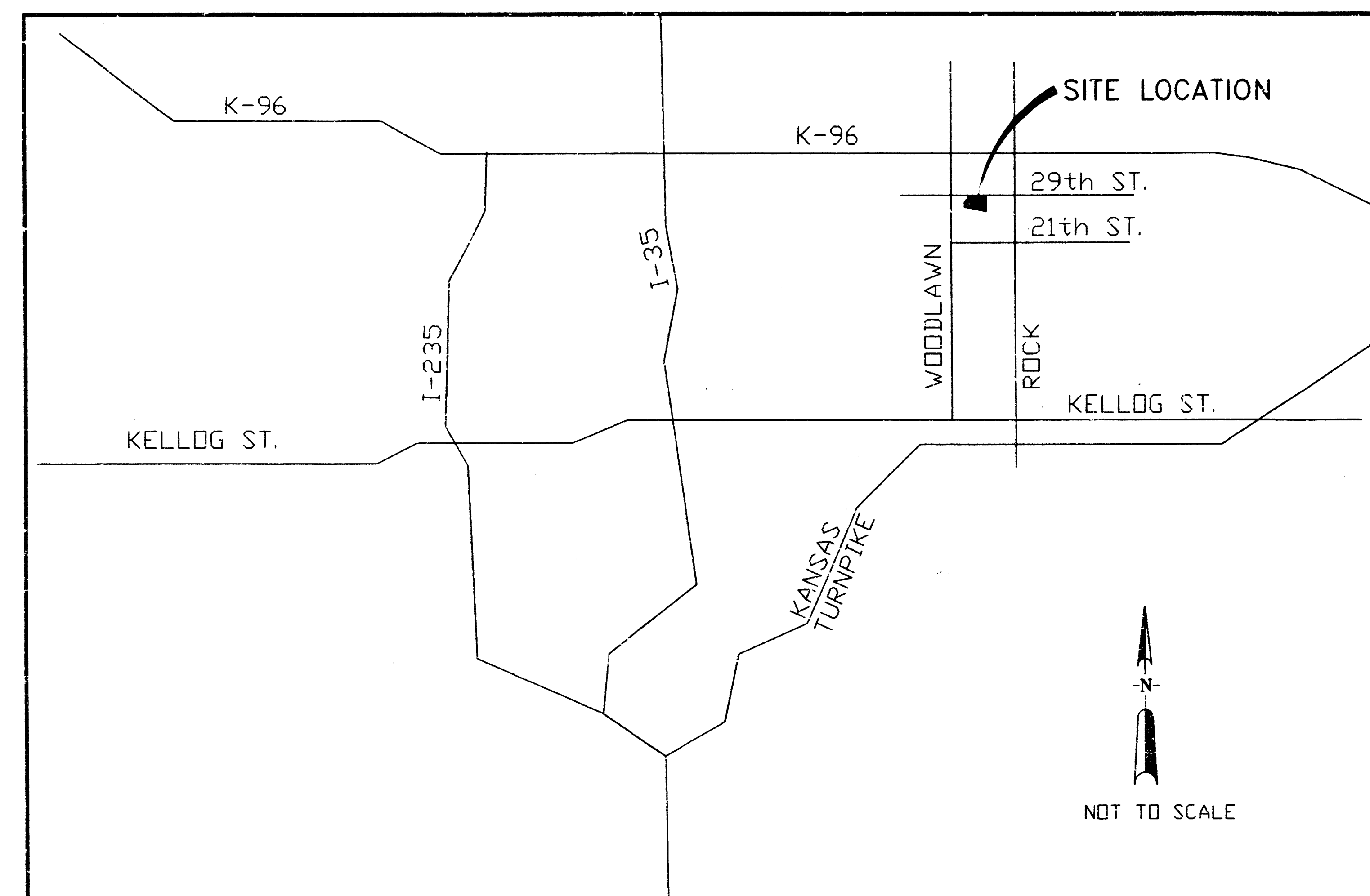


CONSTRUCTION PLANS FOR STORM WATER SEWER AND SANITARY SEWER TO SERVE LOT 1, BLOCK 1, PEPPERWOOD LAKES IN THE CITY OF WICHITA, SEDGWICK COUNTY, KANSAS MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER

GENERAL NOTES:

- 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 687-2470
KG&E 264-1141
KANE 262-1408
- The contractor shall be responsible for preserving property corners.
- Contractor shall not start work on the Project until the project inspector is assigned to the project and is present on site. Any work done without inspection will be required to be uncovered for inspection.
- The contractor shall notify pipeline and Electrical companies at least 24 hours in advance of any work being performed across and/or adjacent to pipelines and overhead Electrical.
- All work shall be done in accordance with and conform to the City of Wichita Standard Specifications.



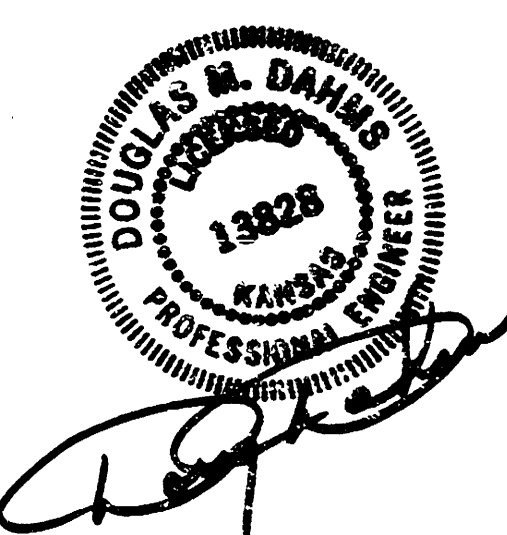
BENCHMARK

City of Wichita Benchmark
N.W. Corner RCBC. 100'±
South of 29th, on Gouverneur St.
DLK 8-93. El.=1370.86 msl
(183.46 City)

INDEX OF SHEETS

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SHEET 2	DETAIL SHEET - CITY OF WICHITA STANDARD
SHEET 3	STORM WATER SEWER
SHEET 4	STORM WATER SEWER
SHEET 5	SANITARY SEWER
SHEET 6	SANITARY SEWER
SHEET 7	SITE PLAN

SEWERAGE
BOOKED
9-1-98
MCG
D-202



CITY OF WICHITA PROJECT NO. 741-PPS (607861)

SPECIAL NOTE TO SANITARY SEWER CONTRACTOR:

NO SANITARY SEWER SERVICE LINE CONNECTIONS ARE TO BE MADE TO THE SANITARY SEWER LINES UNTIL ALL TESTING, INCLUDING ALL NECESSARY AIR AND TELEVISION TESTS, HAVE OCCURRED. NO SANITARY SEWER SERVICE LINES SHALL BE PLACED UNTIL ALL NECESSARY APPROVALS HAVE BEEN GRANTED BY THE CITY OF WICHITA FOR THE SEWER LINES. THE SEWER CONTRACTOR SHALL BE RESPONSIBLE FOR, AND MUST OBTAIN THE NECESSARY PERMITS TO INSTALL THE SEWER SERVICE LINES FROM THE OFFICE OF CENTRAL INSPECTION (CONTACT BETTY ROARK @ 268-4341) PRIOR TO INSTALLING THE SANITARY SEWER SERVICES.

SEPTEMBER 1997

**PLANS PREPARED BY
DOUGLAS M. DAHMS P.E.
ARVADA, COLO.**

Sanitary Sewer
Booked
P-30
8/11/98
R. Loomis

APPROVED AS NOTED
BY CITY ENGINEER OF WICHITA

Sanitary Sewers VRH 10/16/97

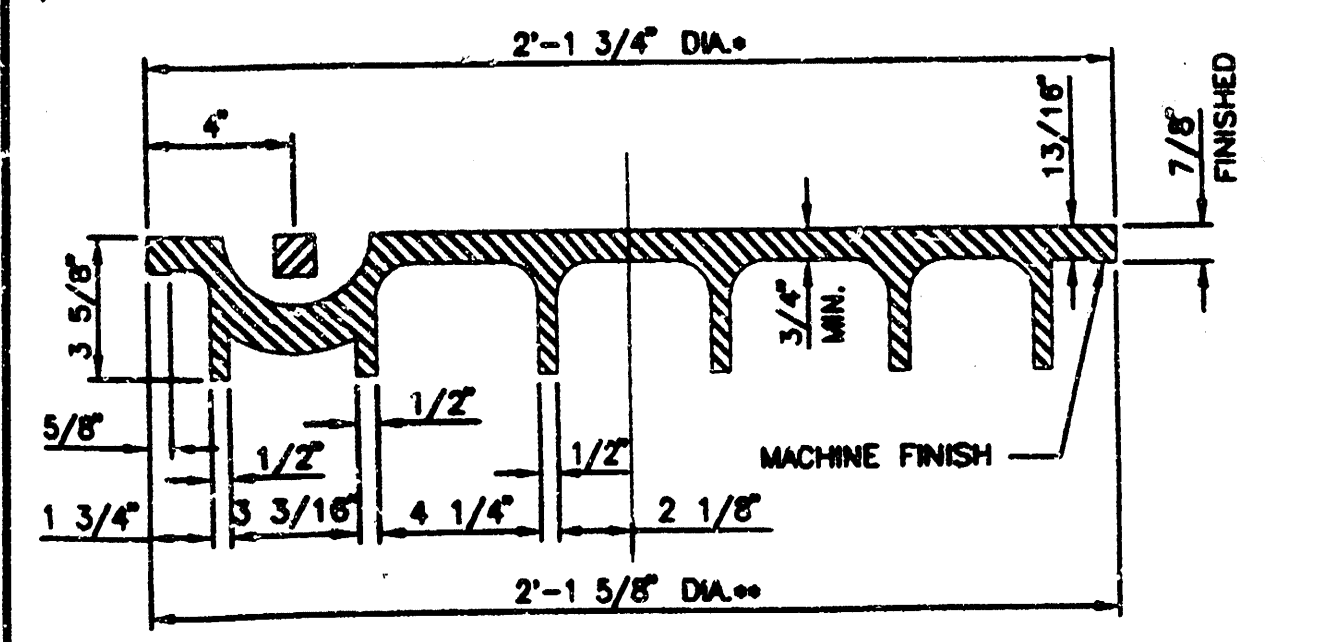
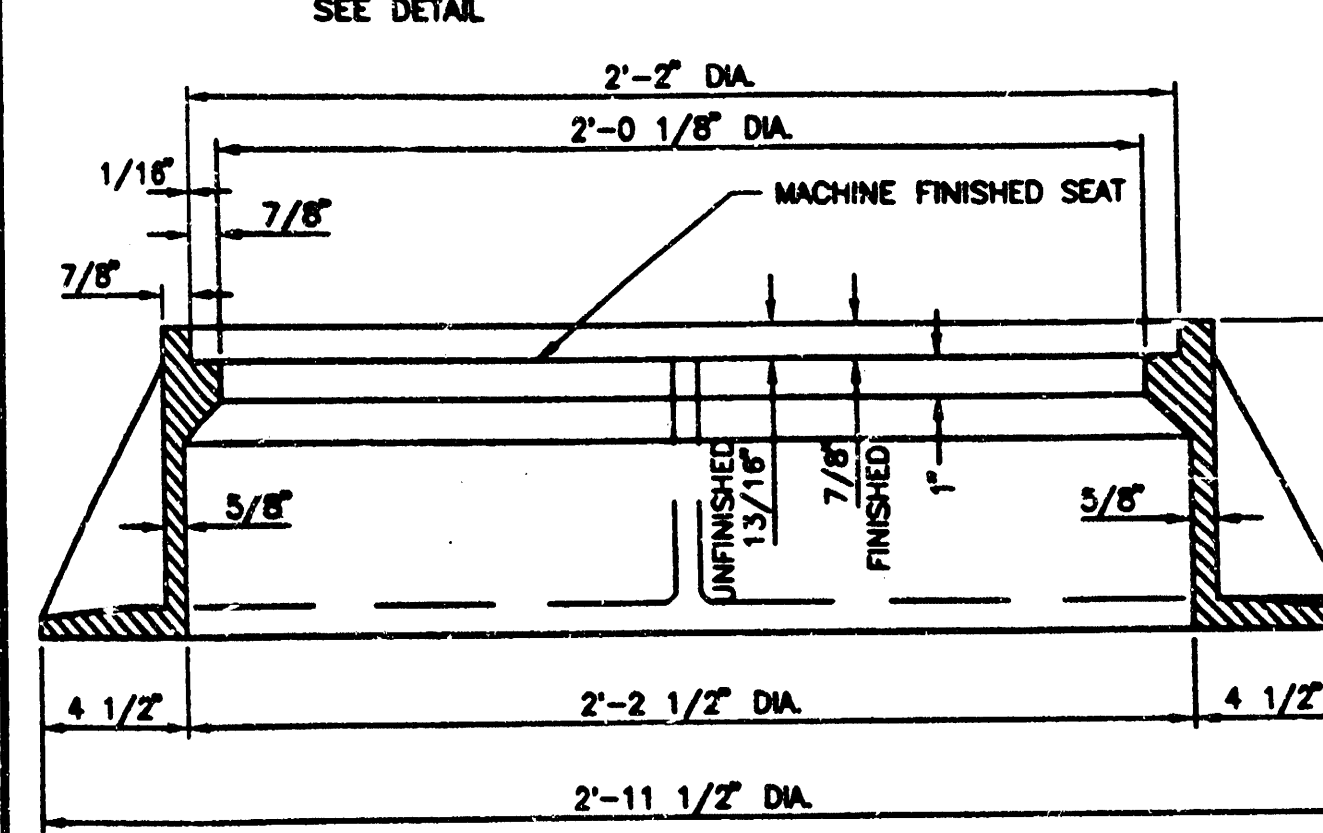
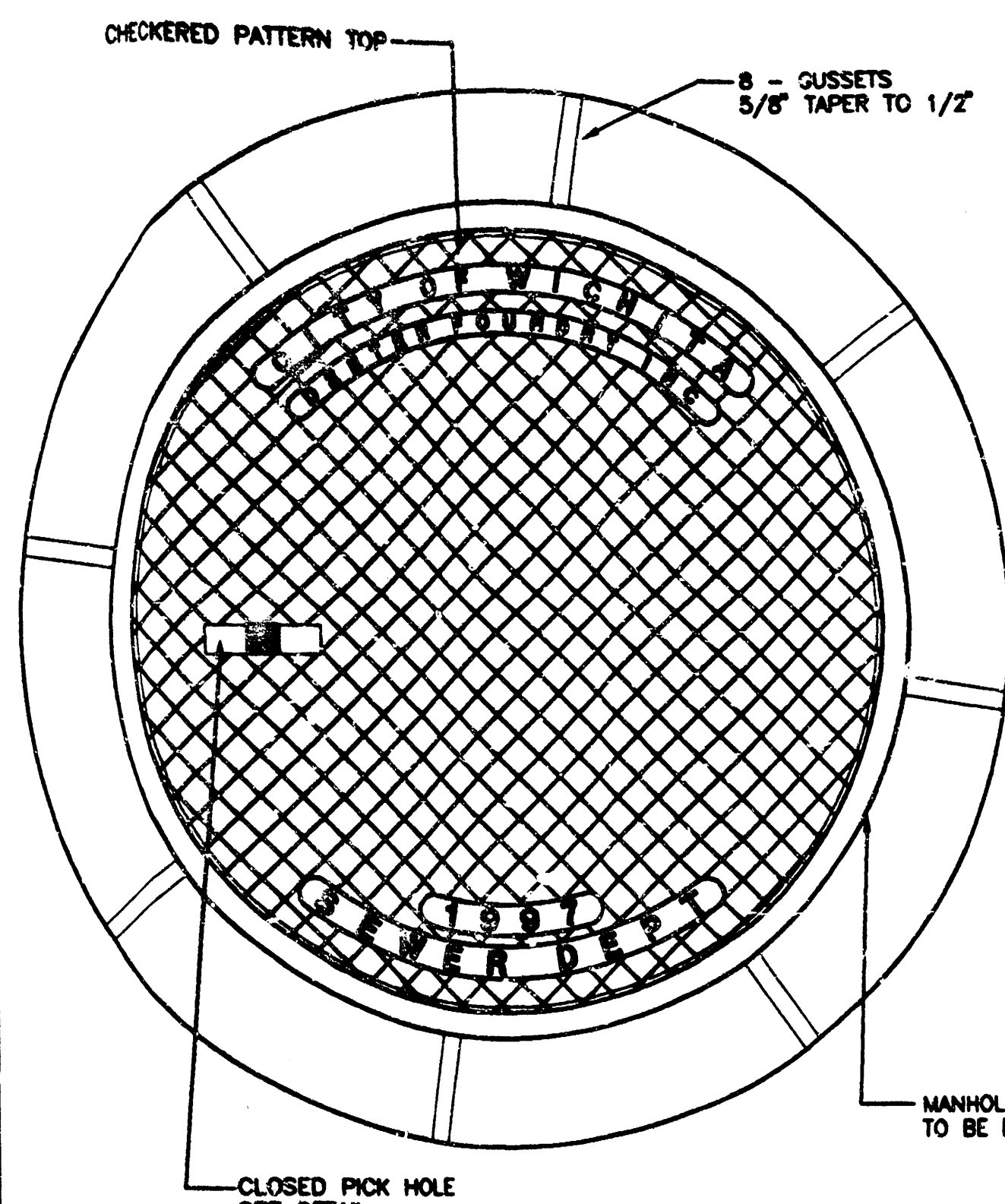
Storm Sewers VRH 10/16/97

NOTE TO CONTRACTORS

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).

SEWER APPURTENANCES DETAILS

ADOPTED AS STANDARD DESIGN BY CITY OF WICHITA

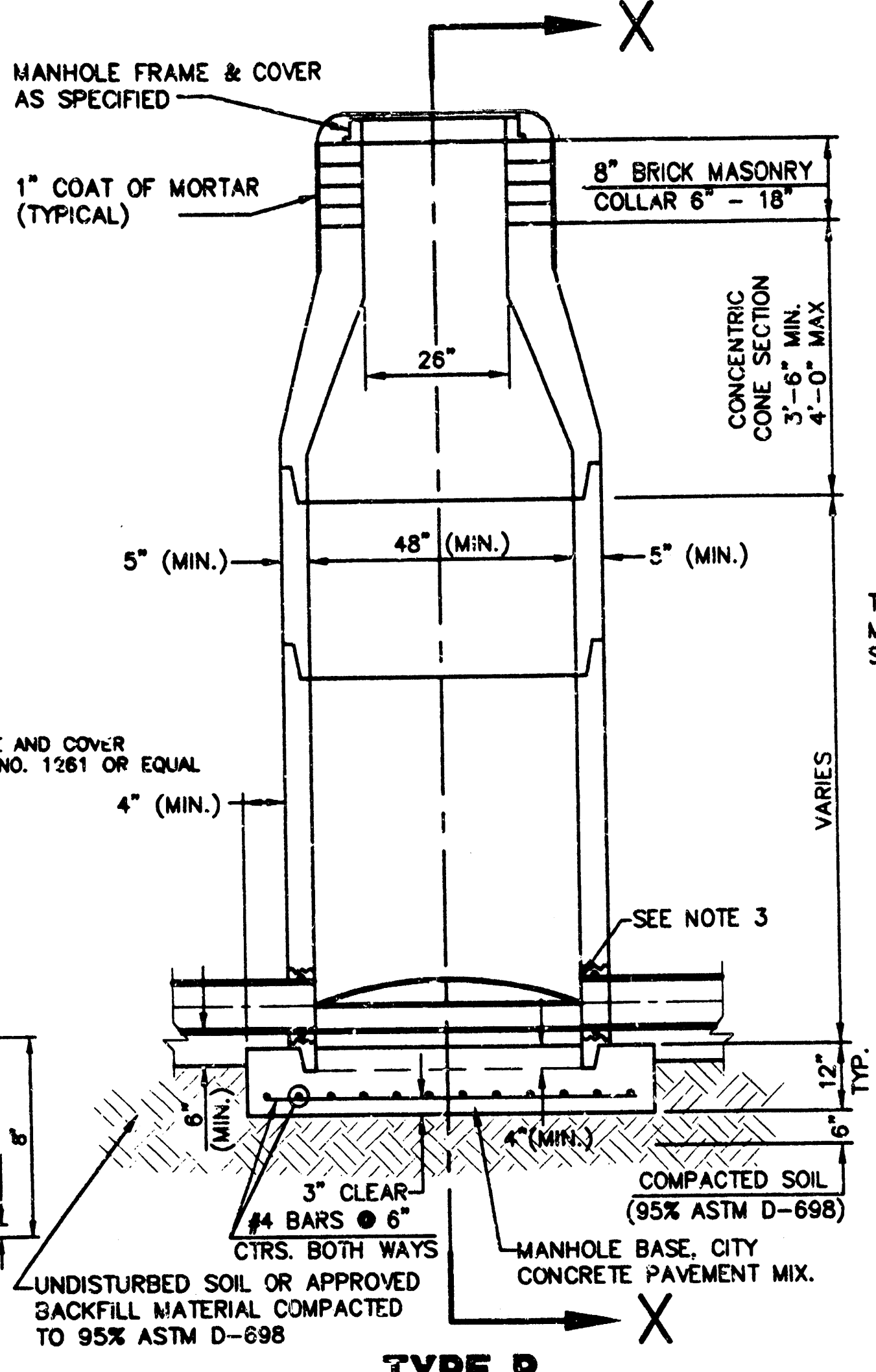
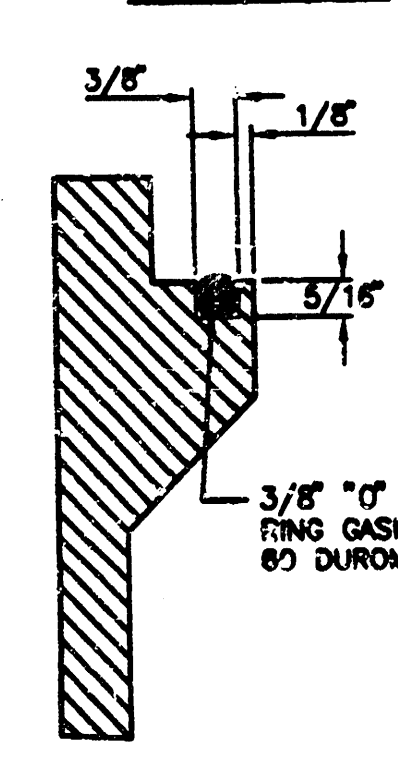
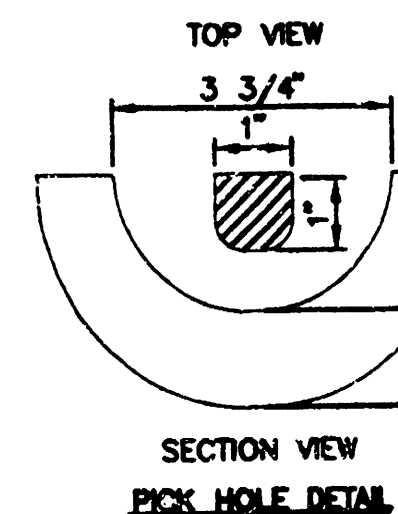


MANHOLE FRAME AND COVER

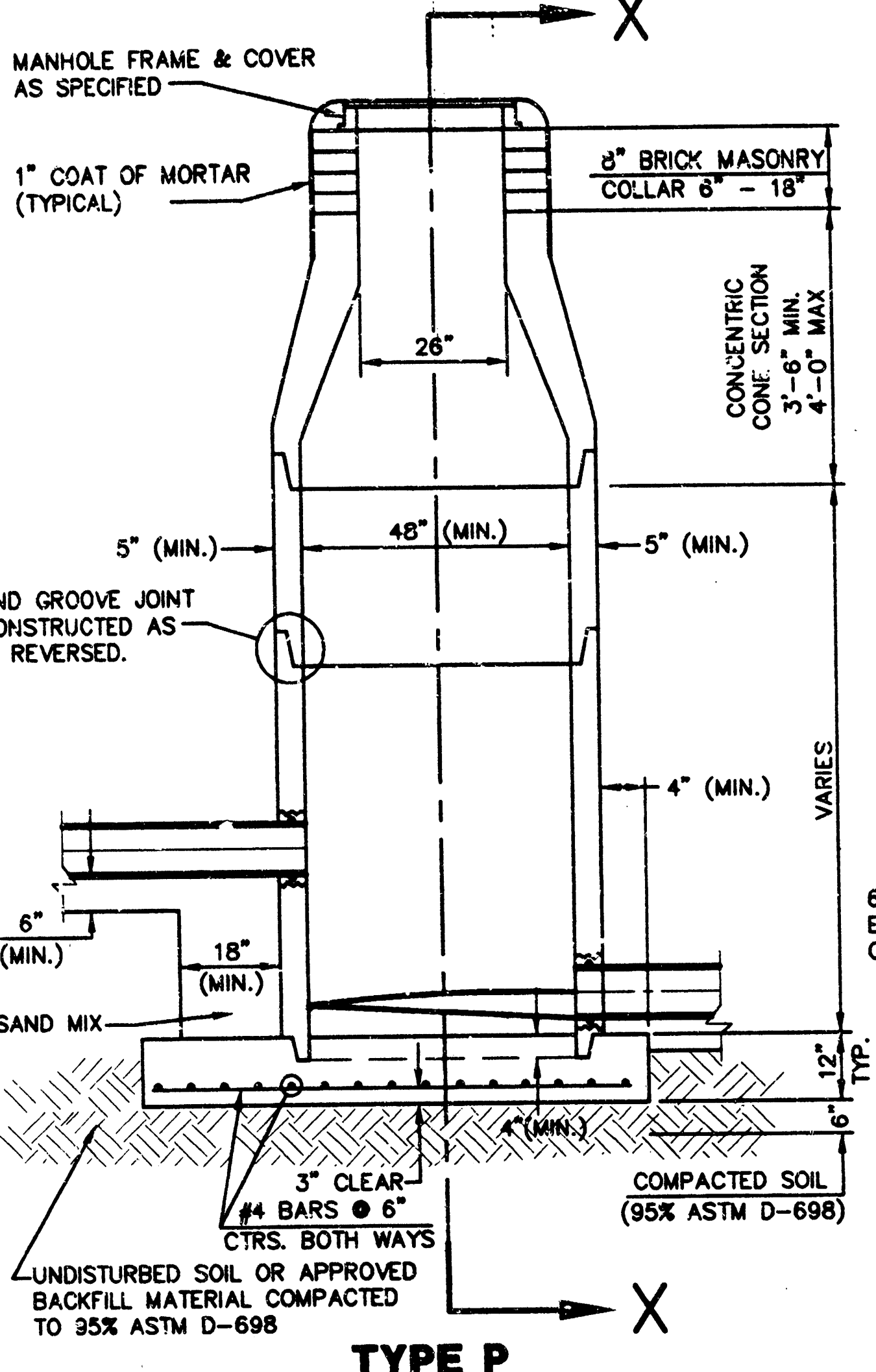
(TOTAL WEIGHT = 430 LBS.)

MANHOLE FRAME AND COVER NOTES

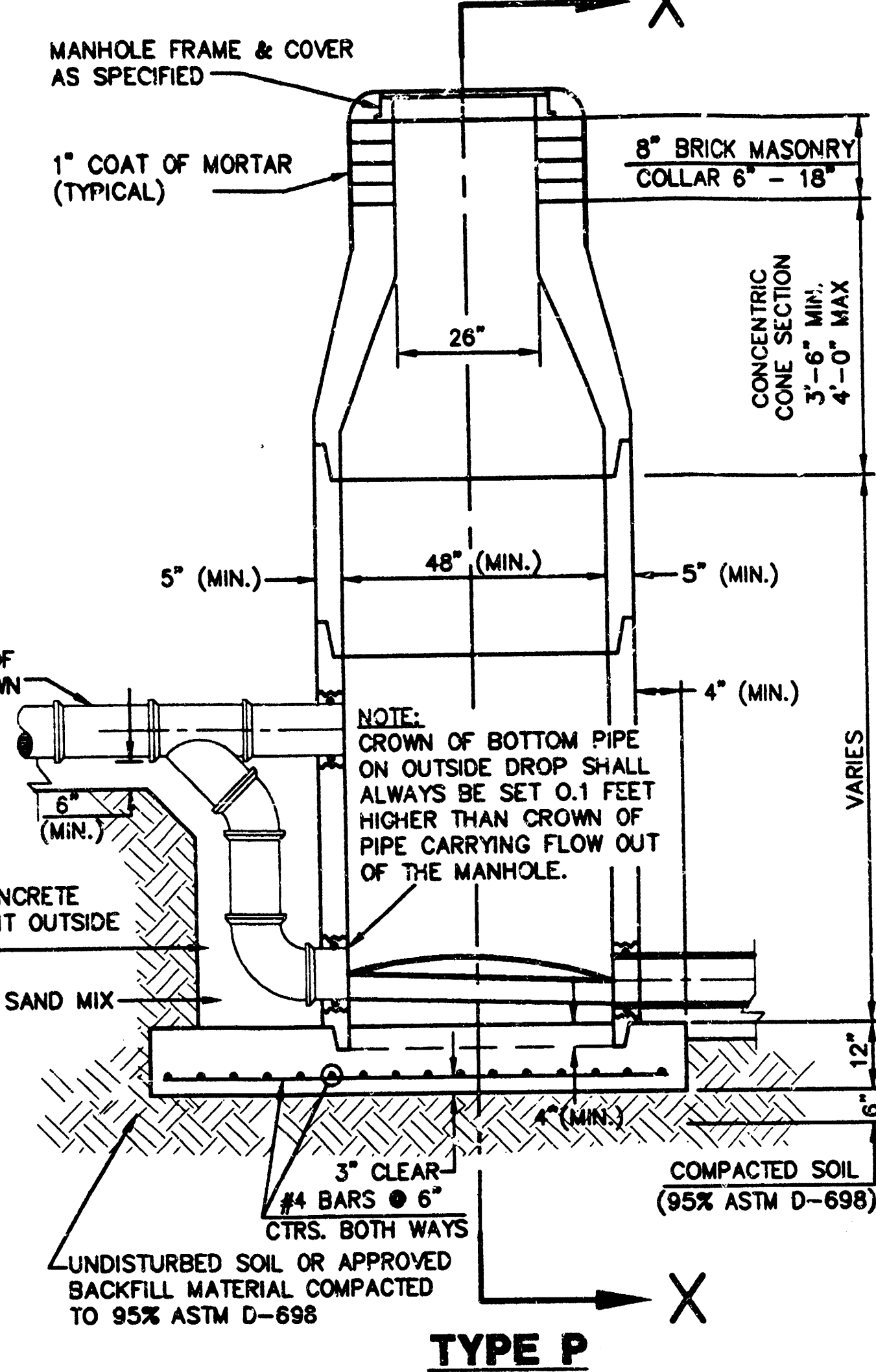
- CAST IRON MANHOLE FRAME AND COVER SHALL CONFORM TO ASTM A-48, CLASS 30, OR BETTER.
- THE FRAMES AND COVERS SHALL BE OF A NON-SHRINKING TYPE OR WITH MACHINED BEARING SURFACES SO FITTING PARTS WILL NOT RATTLE OR ROCK UNDER TRAFFIC.
- MANHOLE CASTINGS SHALL BE DETEER FOUNDRY INC. NO. 1281 OR APPROVED EQUAL, UNLESS OTHERWISE SPECIFIED IN THE SPECIAL CONDITIONS. (MINIMUM WT. 430 LBS.) ALL MANHOLE CASTINGS, REGARDLESS OF TYPE, SHALL BE CONSIDERED SUBSIDIARY TO THE UNIT PRICE BID FOR THE VARIOUS MANHOLE TYPES.
- GRIND ALL BURS SMOOTH, CLEAN THOROUGHLY, THEN APPLY SHOP COAT OF ASPHALT BASE PAINT.
- THE MANUFACTURER SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO MANUFACTURE. THE ENGINEER SHALL RETURN THE RIGHT TO REJECT CASTINGS NOT CONFORMING TO THE SPECIFICATIONS OR THE APPROVED SHOP DRAWINGS.
- WHEN SELF-SEALING MANHOLE FRAMES ARE SPECIFIED ON THE PLANS, THE MANHOLE FRAME SHALL BE FURNISHED WITH AN APPROVED 10 RING GASKET GROOVED INTO THE BEARING SURFACE OF THE MANHOLE FRAME (PER DETAIL). THE 10 RING GASKET SHALL NOT BE INSTALLED IN THE MANHOLE FRAME UNTIL AFTER FINAL INSPECTION AND ACCEPTANCE OF THE PROJECT BY THE ENGINEER. THE CONTRACTOR SHALL SUPPLY TO THE OWNER ONE (1) REPLACEMENT 10 RING GASKET FOR EACH SELF-SEALING MANHOLE SPECIFIED.



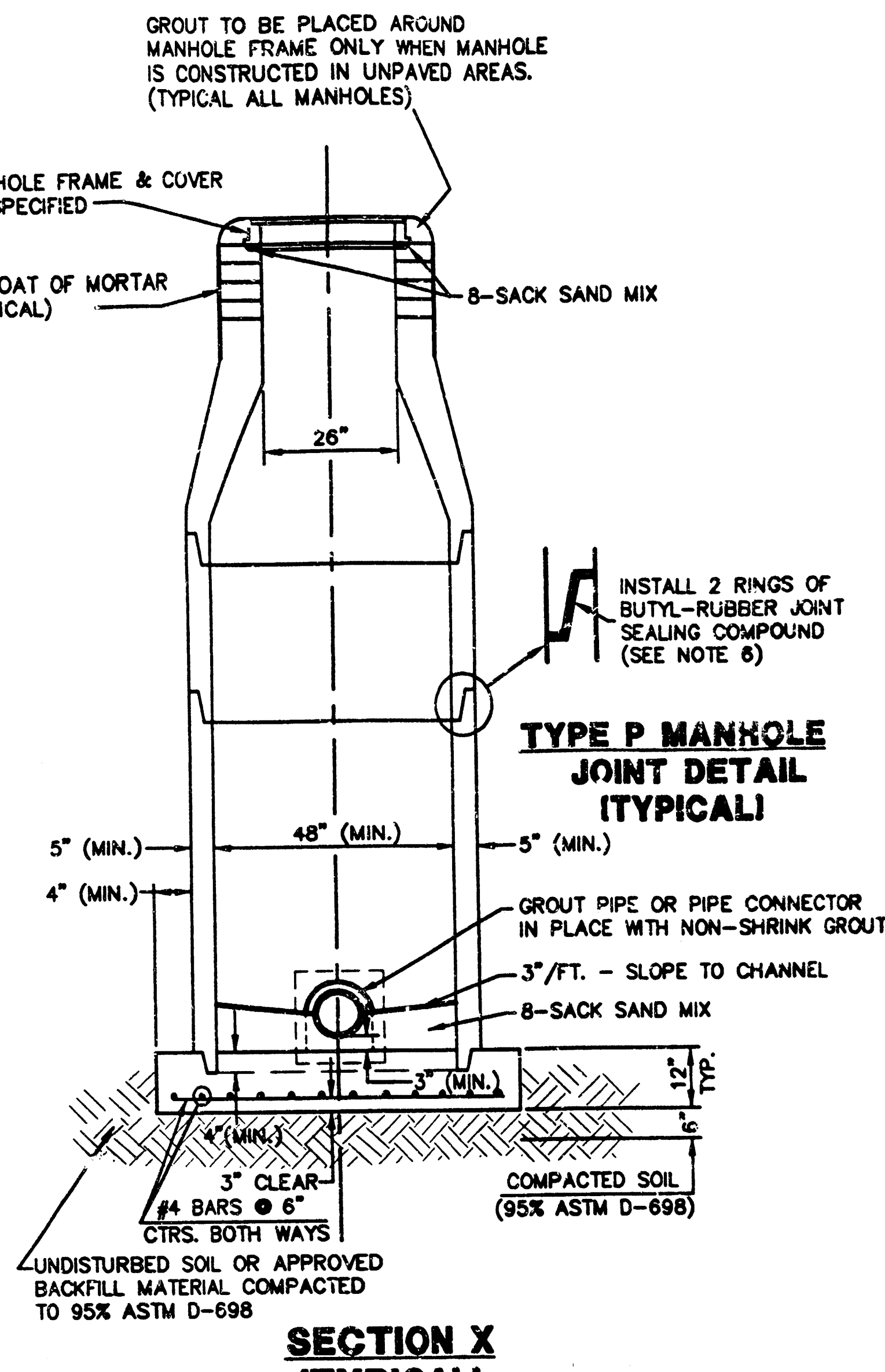
**TYPE P
STANDARD MANHOLE**



**TYPE P
INSIDE DROP MANHOLE**



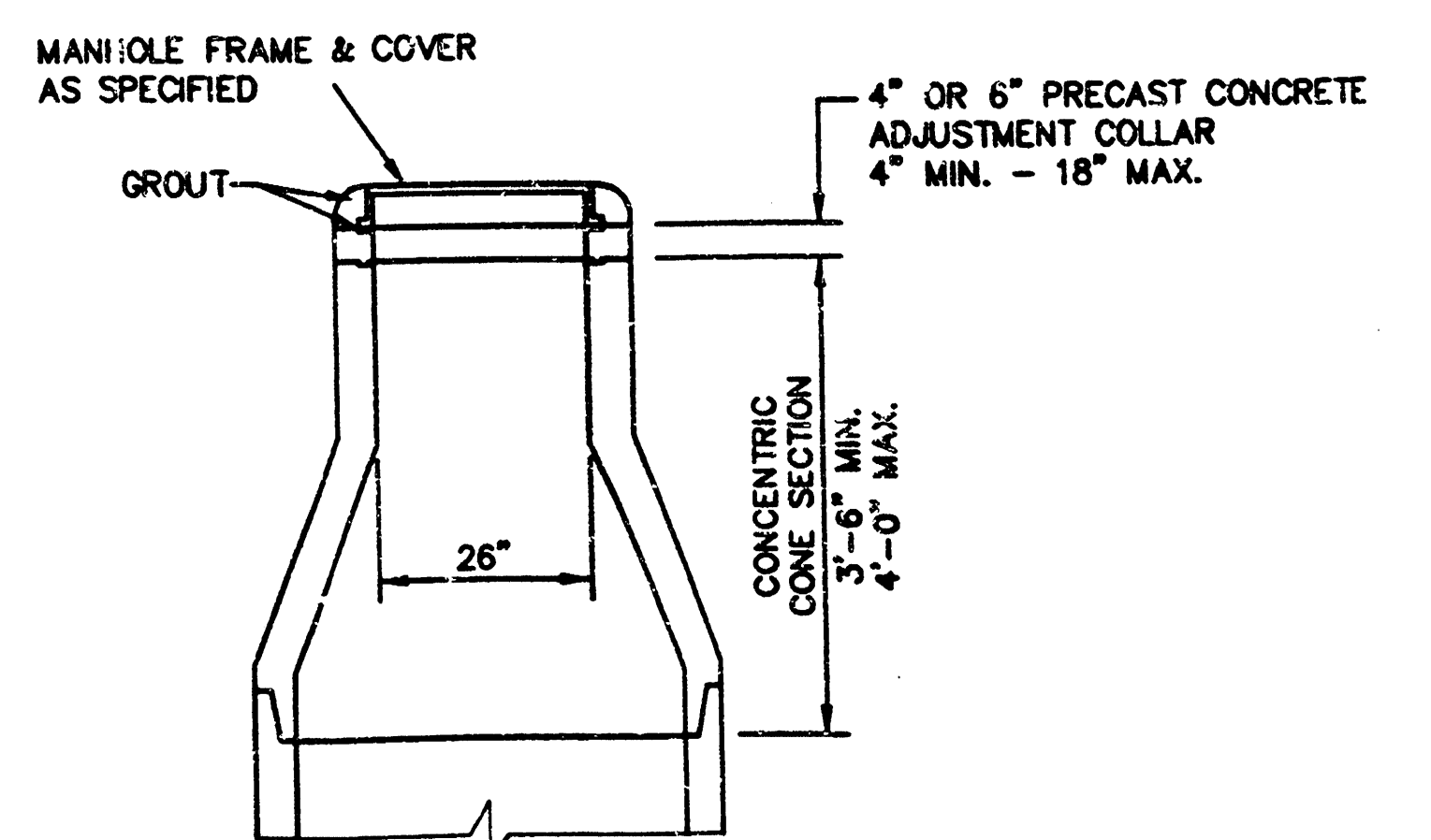
**TYPE P
OUTSIDE DROP MANHOLE**



**TYPE P MANHOLE
JOINT DETAIL
(TYPICAL)**

GENERAL NOTES - PRECAST MANHOLE NOTES

- ALL PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO THE LATEST REVISIONS OF A.S.T.M. C478 AS MODIFIED BY THE SPECIFICATIONS.
- NON-SHRINK GROUT SHALL BE NON-METALLIC TYPE.
- 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.
- ALL INSIDE SURFACES OF THE CONCRETE MANHOLE WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE COATED WITH 2 COATS TNEPEC SERIES 66 HI-BUILD EPOXYLINE, DRY THICKNESS OF 8 MILS (MIN.)
- EXTERIOR MANHOLE WALLS SHALL BE COATED WITH 1 COAT MOBILARMA 633 BITUMINUS COATING.
- JOINT SEALING COMPOUND SHALL BE KENT SEAL NO. 2 OR APPROVED EQUAL.
- PRECAST MANHOLES SHALL BE SET AT LEAST 4 INCHES INTO THE MANHOLE BASE.
- 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.
- LIFTING HOLES SHALL BE FILLED WITH NON-SHRINK GROUT AND THE INTERIOR SURFACE COATED AS SPECIFIED.
- 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 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.
- 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.
- 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.
- 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.
- PIPES INSTALLED WITHIN THE EXCAVATION MADE FOR THE MANHOLE SHALL BE CRADLED WITH CONCRETE TO THE LIMITS OF THE MANHOLE EXCAVATION. WHEN CLAY PIPE IS USED, THE CRADLE SHALL EXTEND TO THE FIRST JOINT OUTSIDE THE MANHOLE. THE CRADLE SHALL BE TERMINATED AT THE CLAY PIPE JOINT IN A MANNER WHICH WILL MAINTAIN THE FLEXIBILITY OF THE JOINT. COST OF CRADLE WITHIN MANHOLE EXCAVATION OR TO CLAY PIPE JOINTS ADJACENT TO MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.
- MANHOLE COVER CASTINGS AND MANHOLE FRAME CASTINGS SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE STANDARD SPECIFICATIONS AND AS SHOWN IN THE STANDARD DETAIL DRAWING.
- THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 2' FOR INFLOWING PIPES. THE CROWNS OF INFLOWING PIPES SHALL NEVER BE SET LOWER THAN THE CROWN OF THE OUTFLOWING PIPE.
- 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.



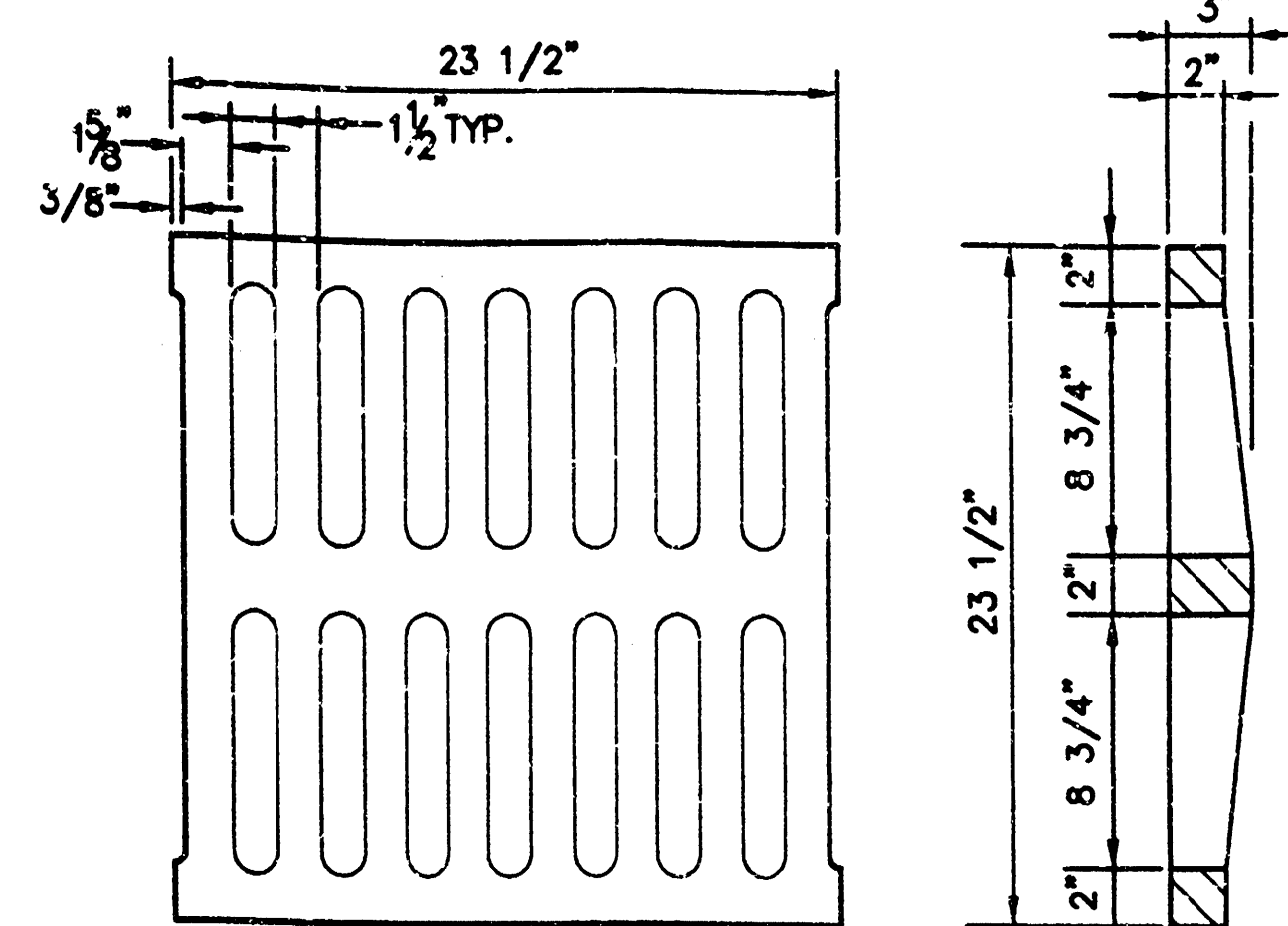
**ALTERNATE CONSTRUCTION
IN UNPAVED AREAS**

REVISED: 6-12-66

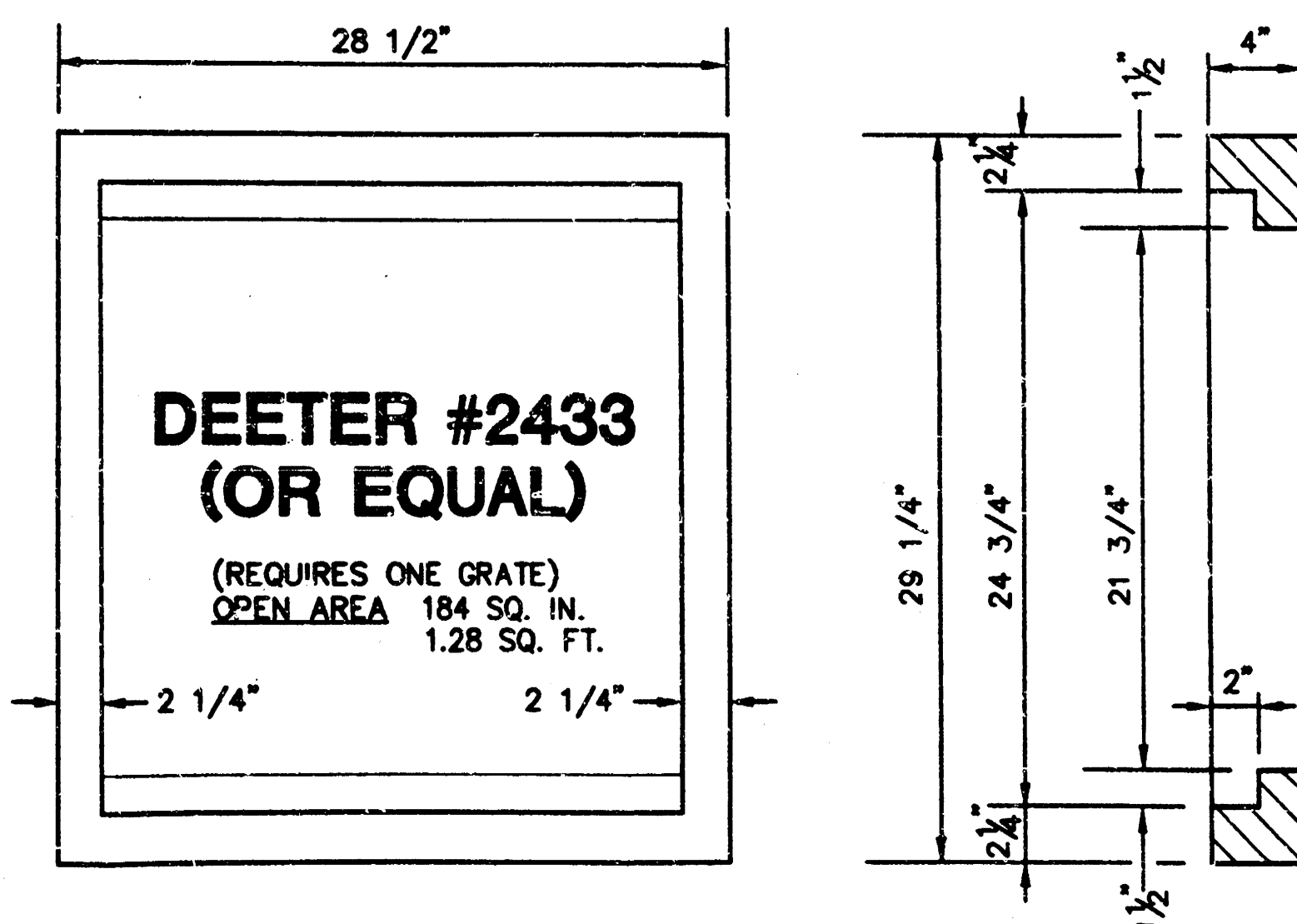
MANHOLE DETAILS

CITY OF WICHITA, KANSAS			
Design	C.O.W.	Checked by	
Drawn by		Date	APRIL 1997
		Job No.	96066802

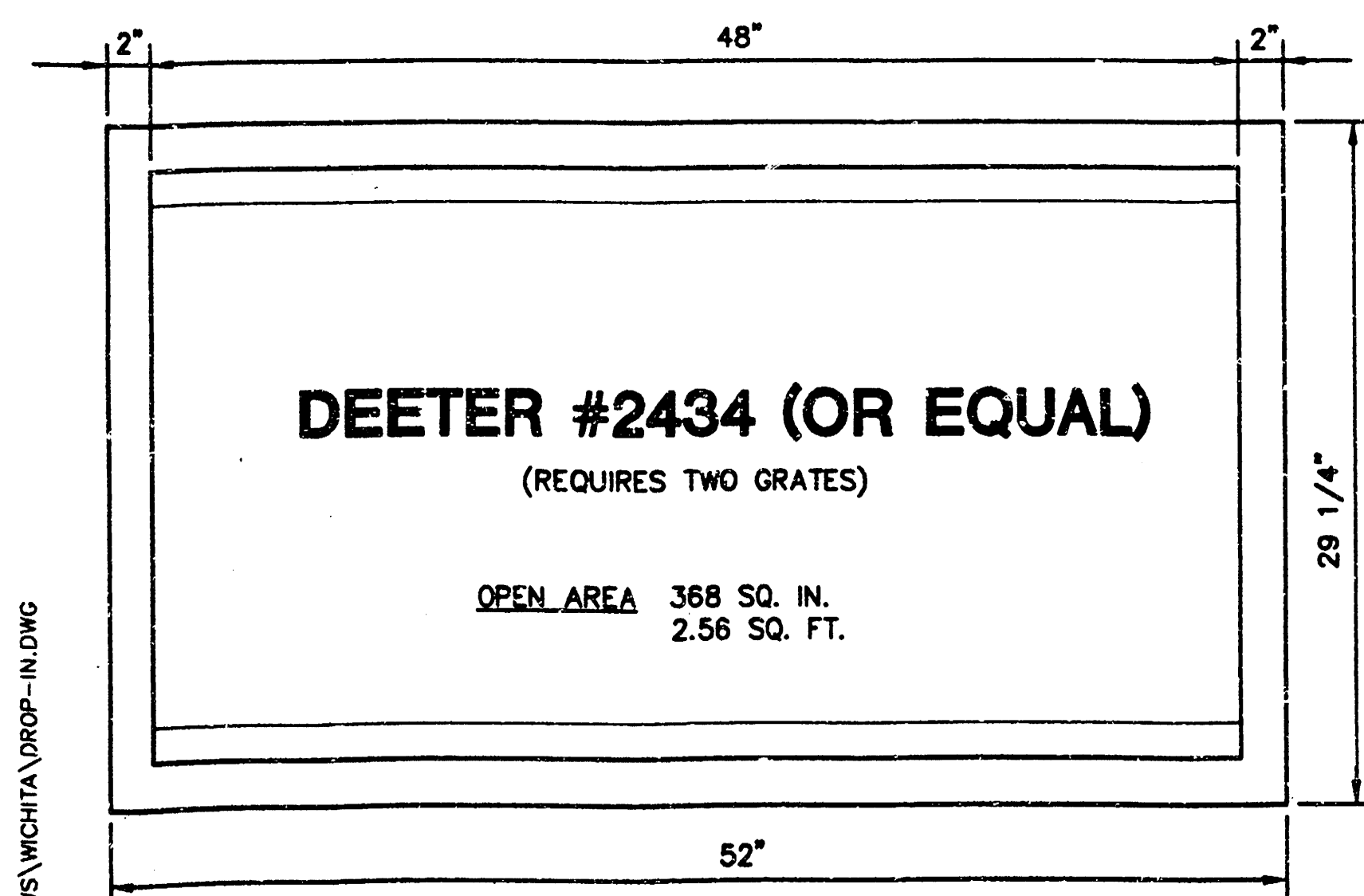
NOTE: GRATES SHALL BE IMPRINTED ON THE TOP SURFACE WITH "CITY OF WICHITA" USING LETTERS AT LEAST 1" IN HEIGHT. OTHER MARKING METHODS MAY BE USED ONLY IF APPROVED BY THE ENGINEER.



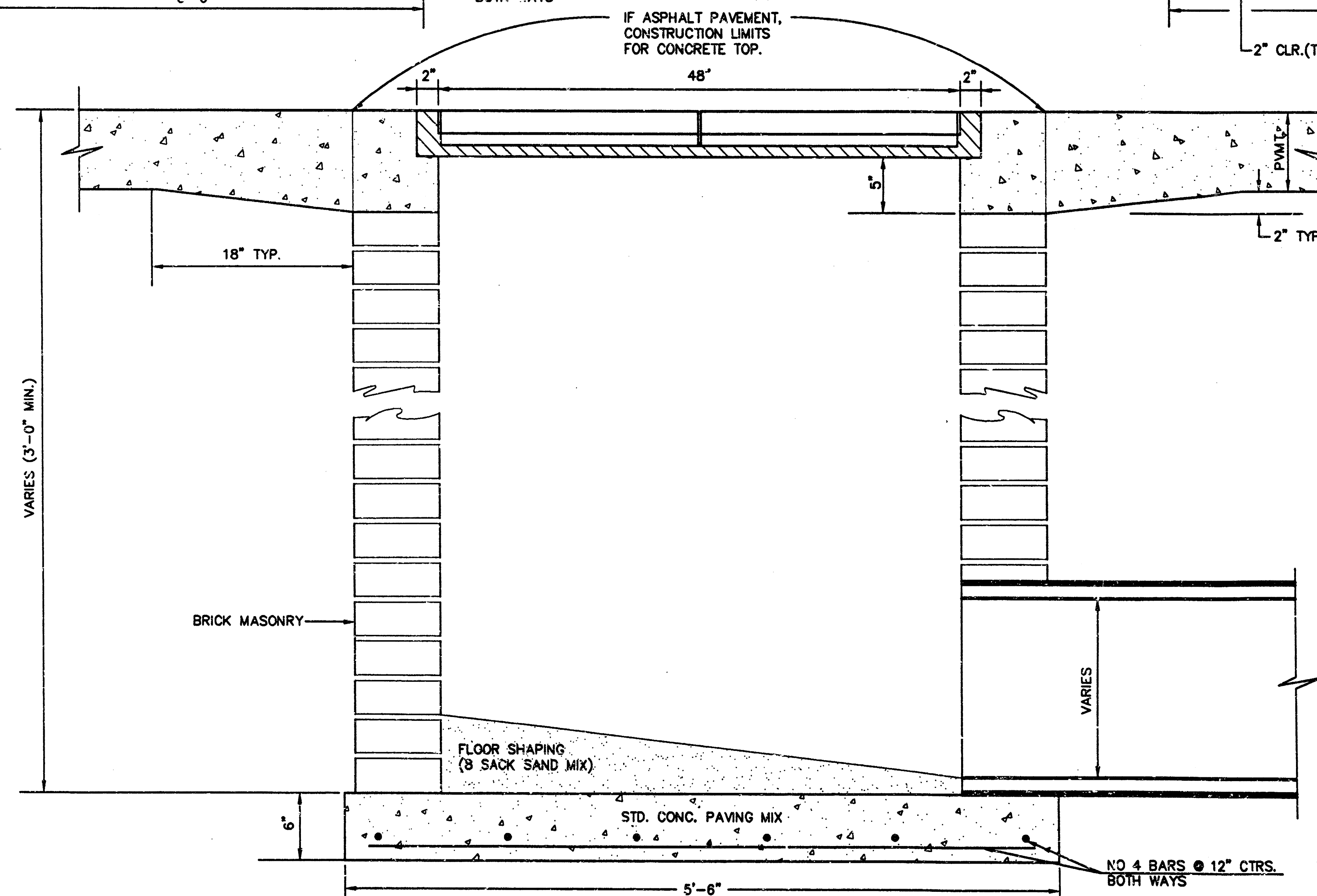
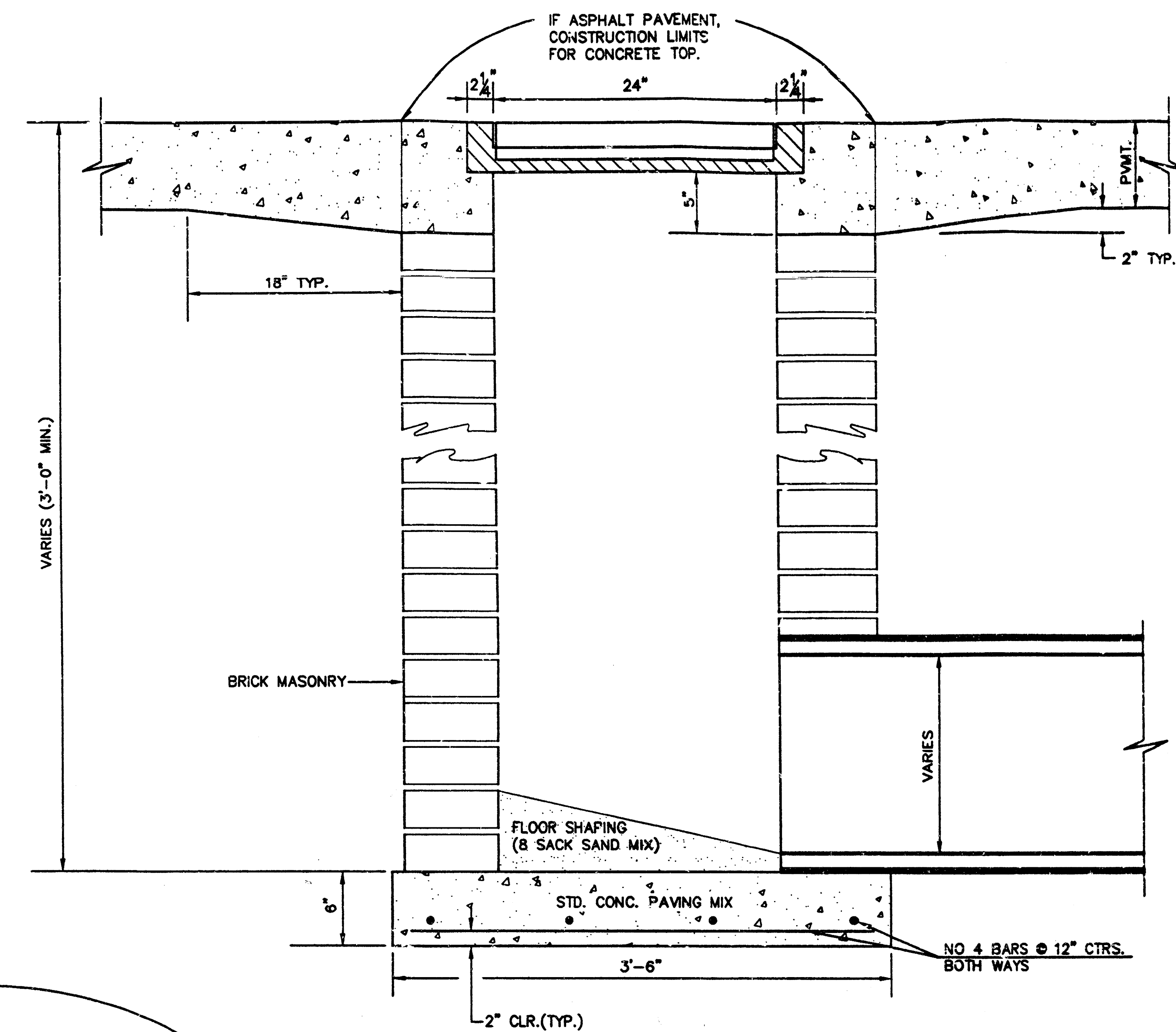
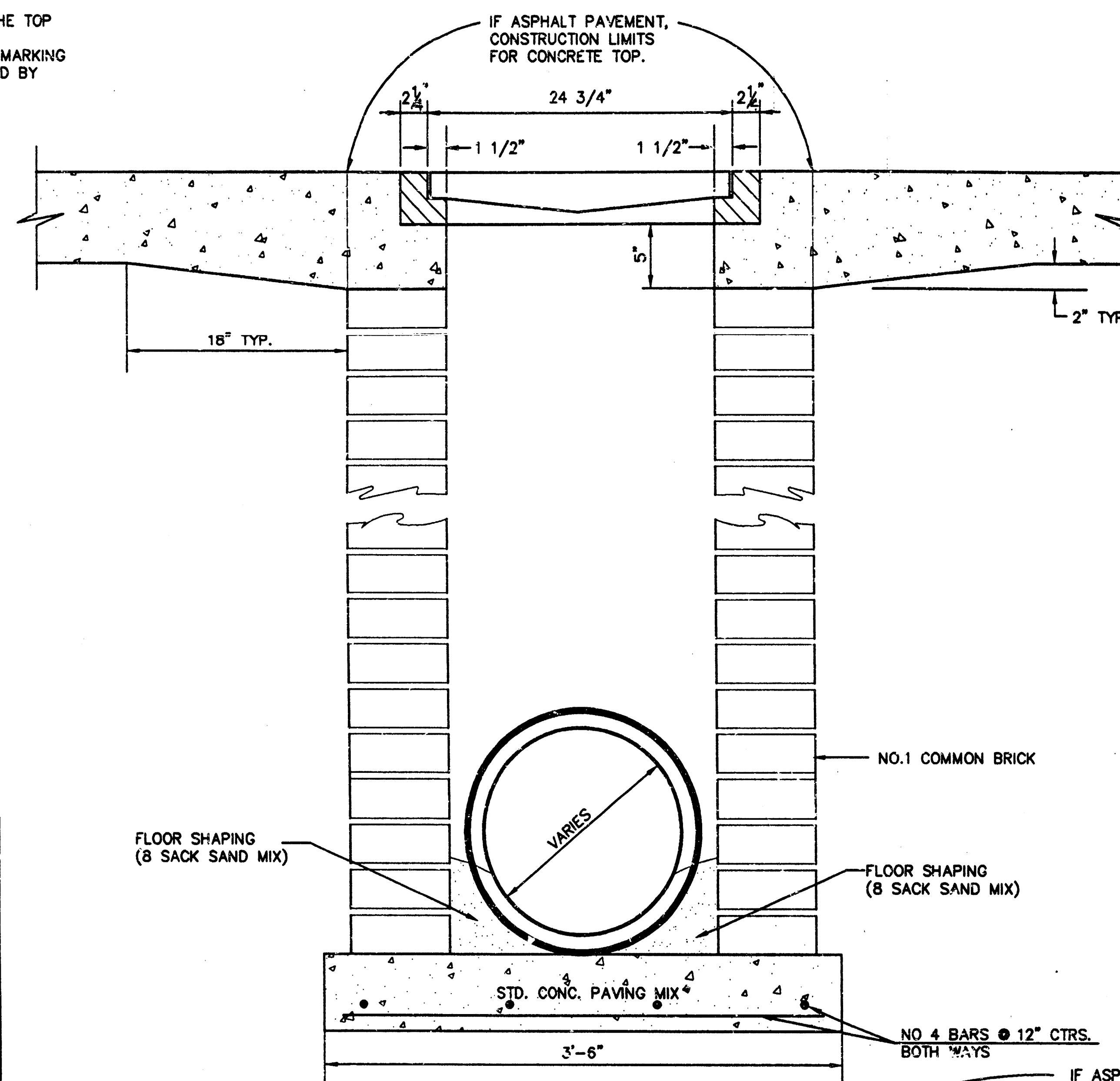
24"x24" GRATE DETAIL



SINGLE 24"x24" FRAME DETAIL



DOUBLE 24"x24" FRAME DETAIL



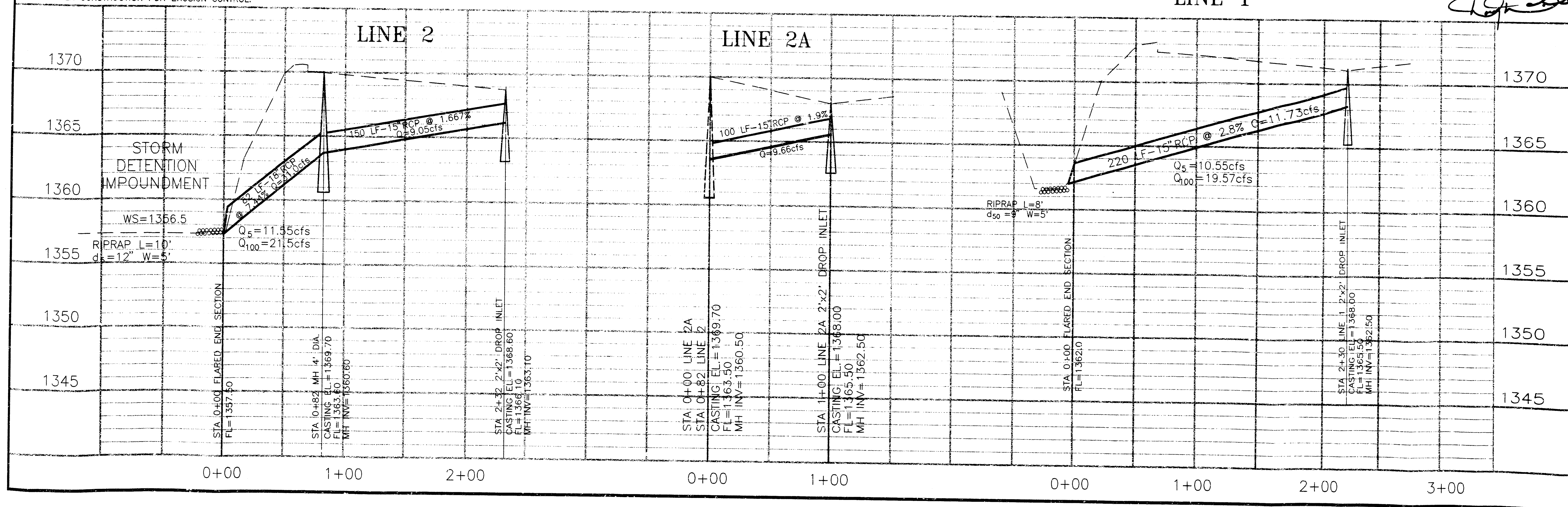
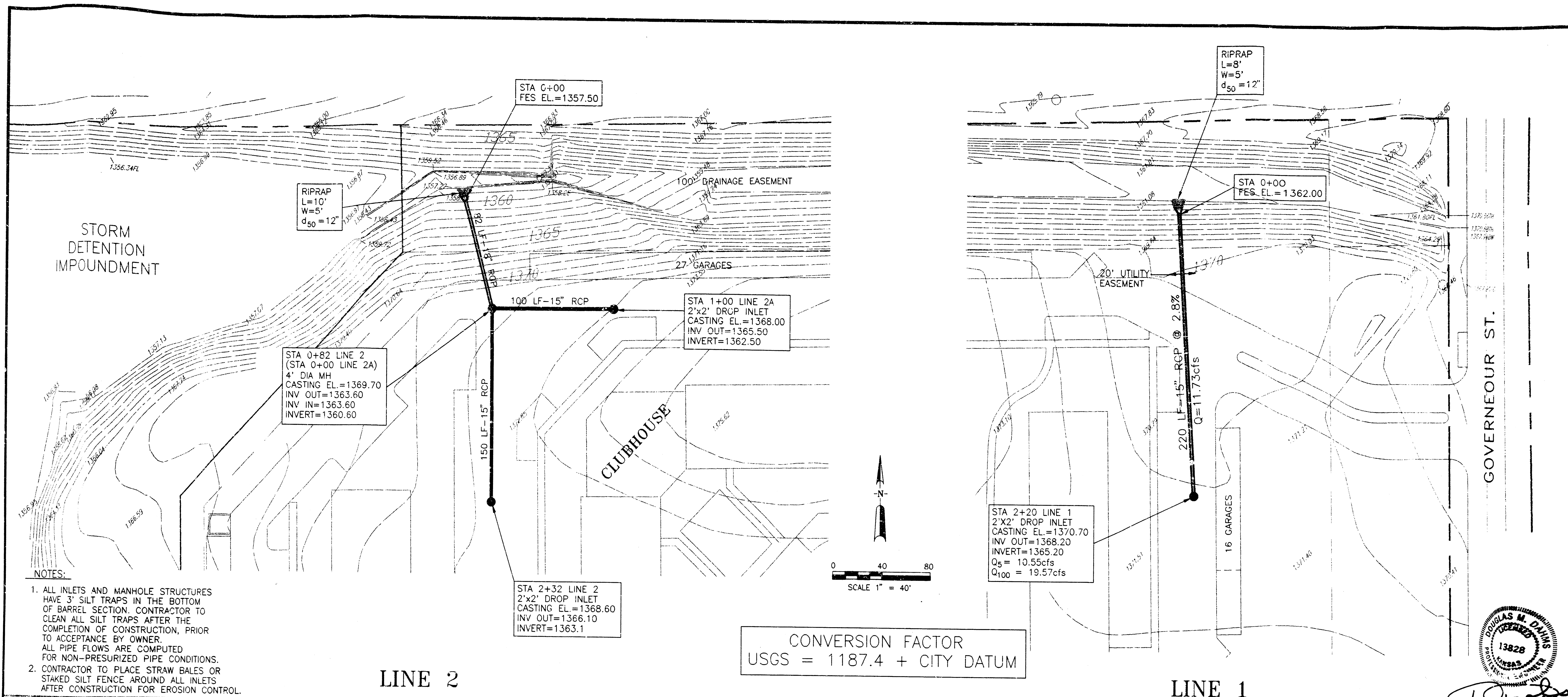
ORIFICE EQUATION		
$Q = C \cdot A \cdot \sqrt{2gh}$ $C = 0.60$		
h (DEPTH)	#2433 (SINGLE)	#2434 (DOUBLE)
0.1	1.95 cfs	3.89 cfs
0.2	2.75 cfs	5.50 cfs
0.3	3.37 cfs	6.74 cfs
0.4	3.89 cfs	7.78 cfs
0.5	4.35 cfs	8.70 cfs
0.6	4.77 cfs	9.53 cfs
0.7	5.15 cfs	10.30 cfs
0.8	5.50 cfs	11.01 cfs
0.9	5.84 cfs	11.67 cfs
1.0	6.15 cfs	12.30 cfs

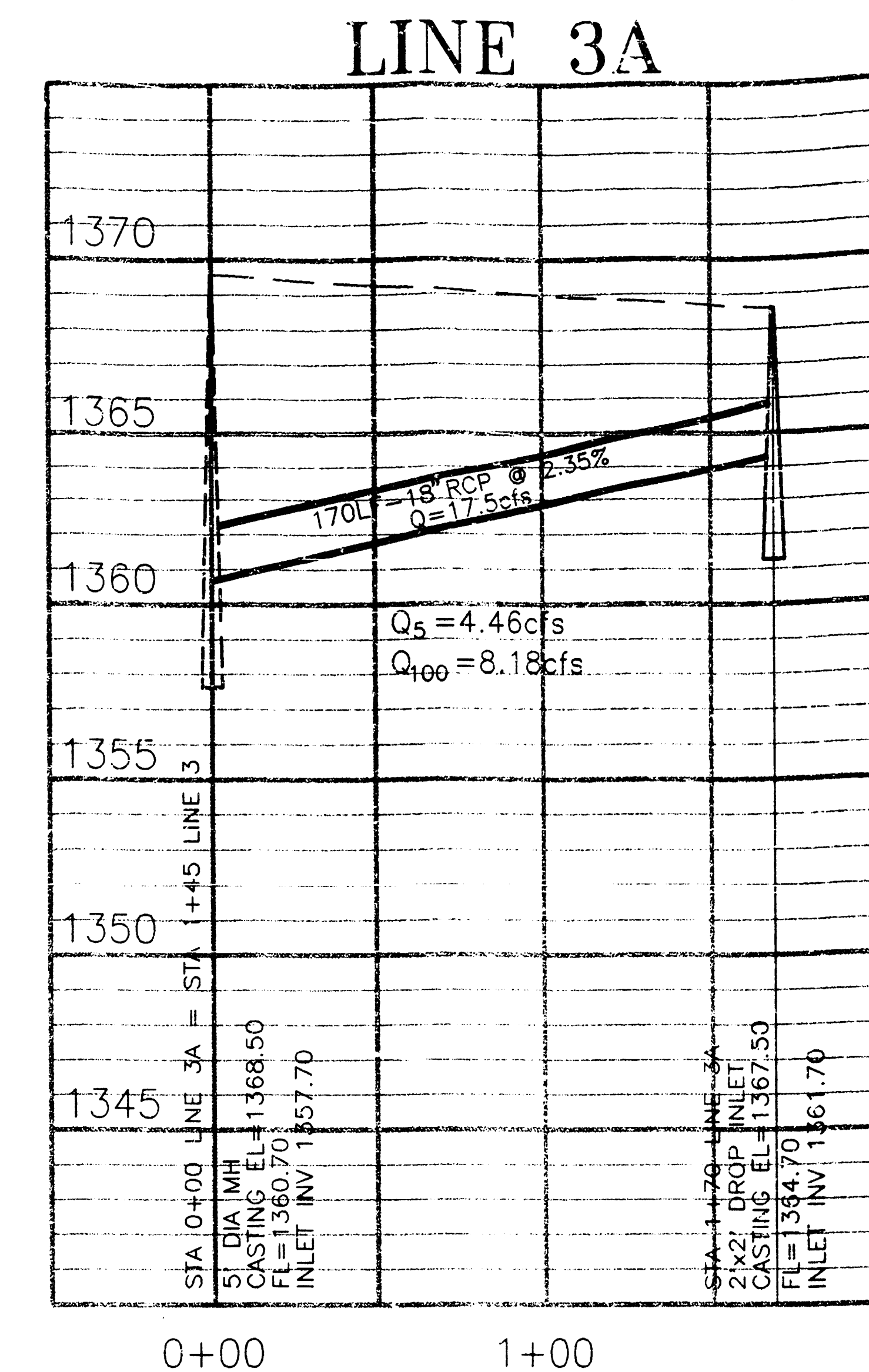
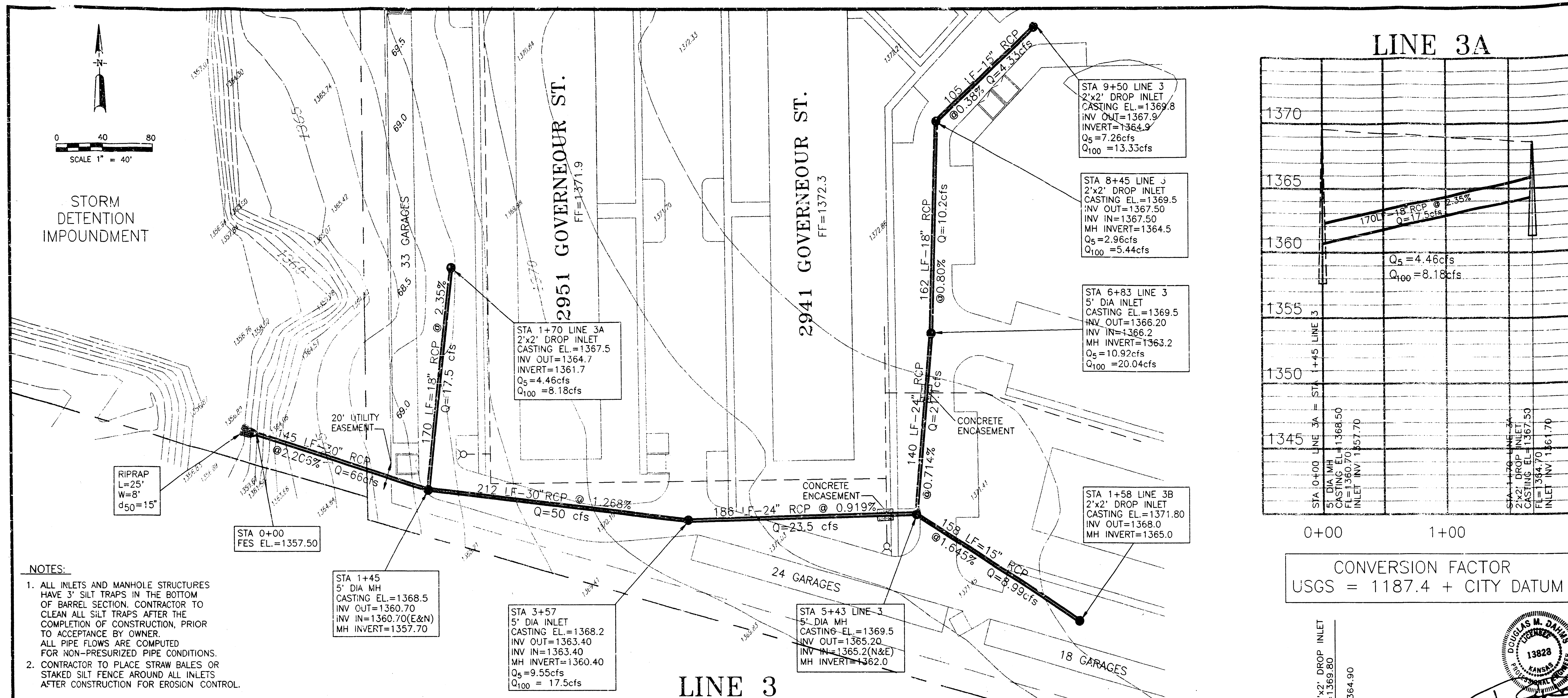
REVISED: 5-8-90 JNJ

DROP INLET DETAILS

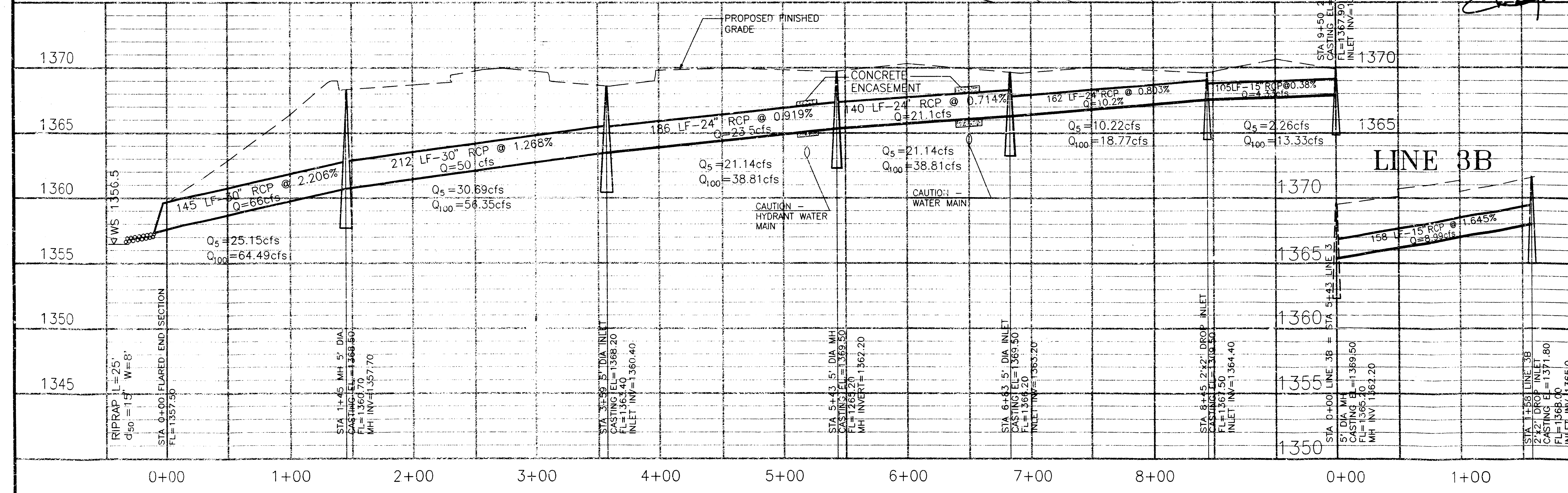
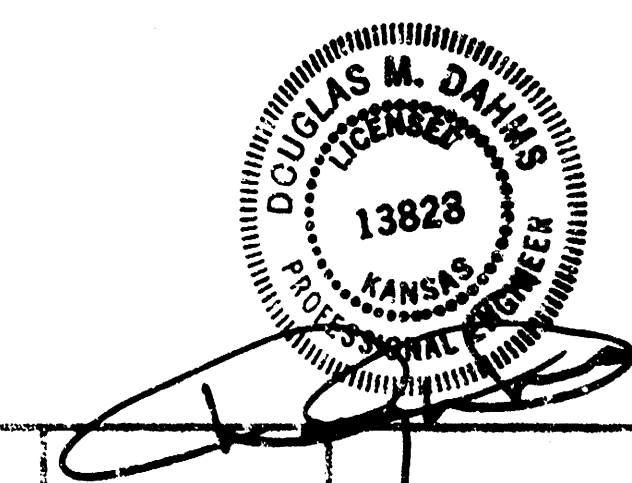
CITY OF WICHITA, KANSAS

Design	C.O.W.	Checked by		Checked by	
Drawn by		Date		Date	
					Job No.





CONVERSION FACTOR
USGS = 1187.4 + CITY DATUM



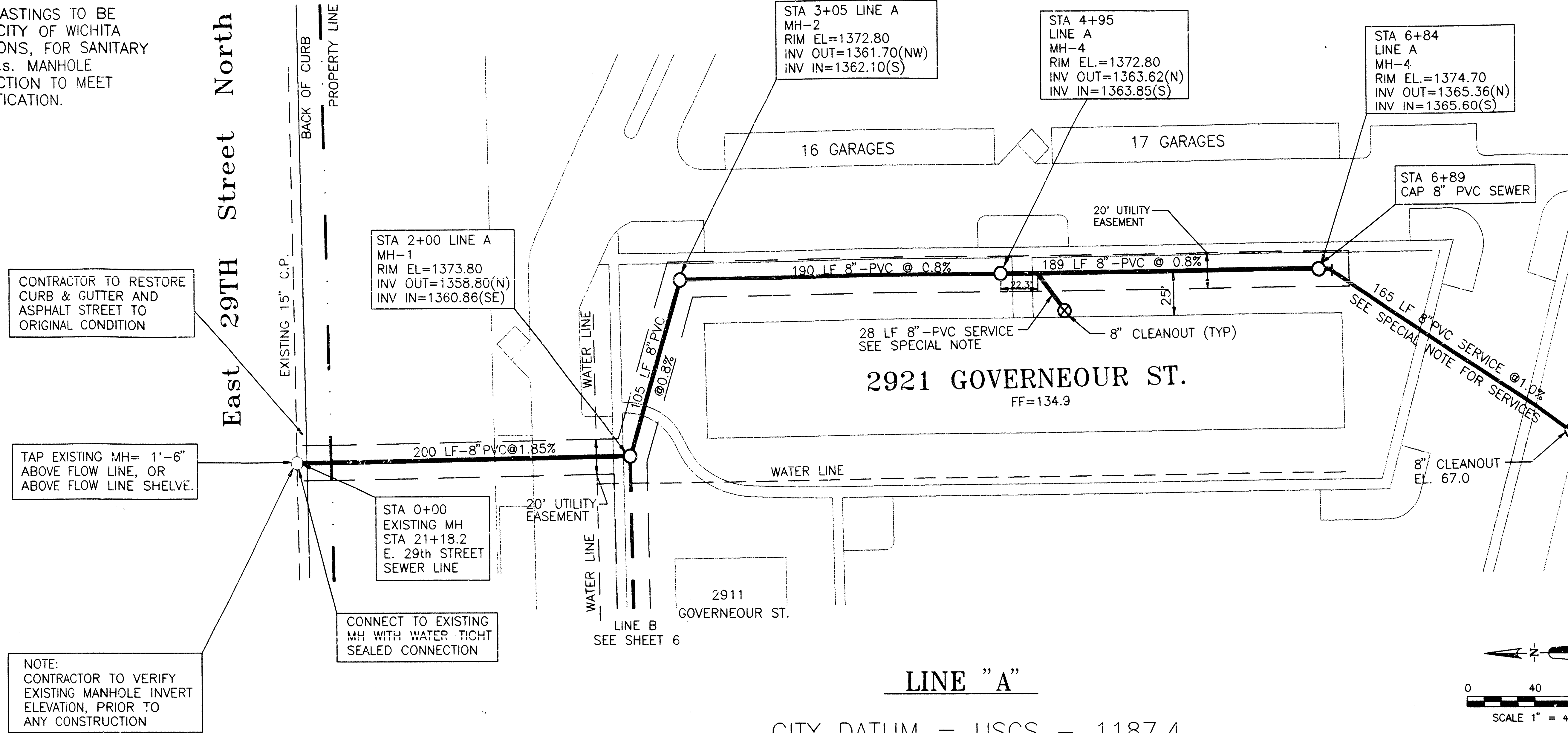
LOT 1, BLOCK 1
PEPPERWOOD LAKES
741 PPS (607861)

Douglas M. Dahms P.E.
ENGINEERING
CONSULTANTS
6368 Holman Ct. Arvada, Col. 80004

STORM
SEWER
PLAN
SHEET 4

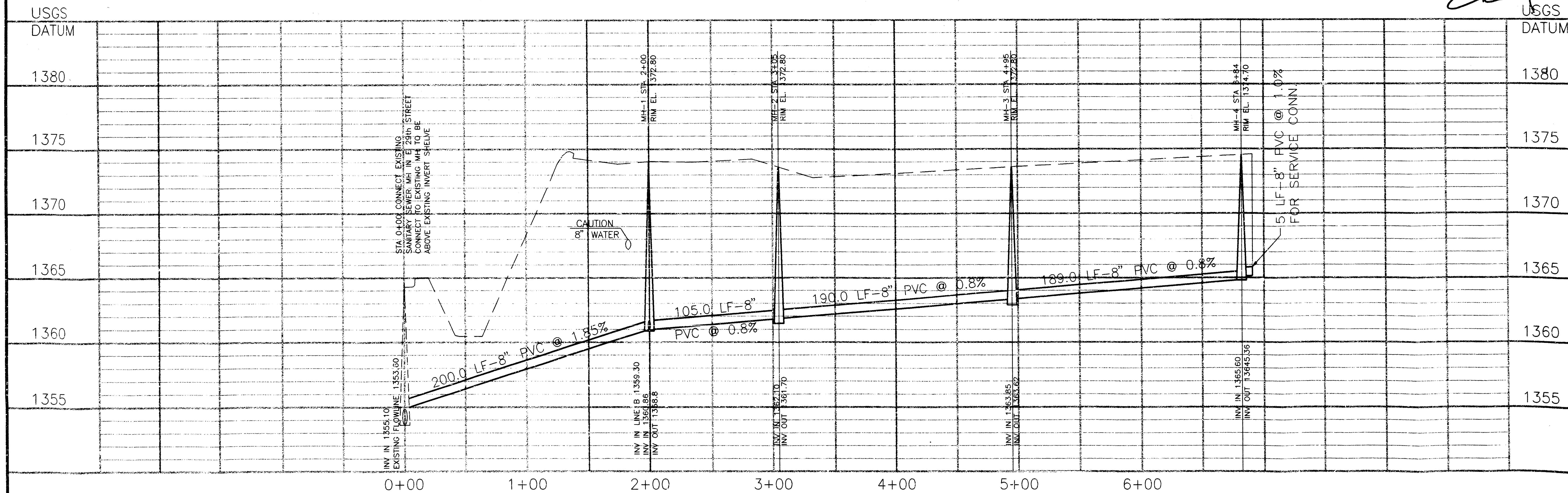
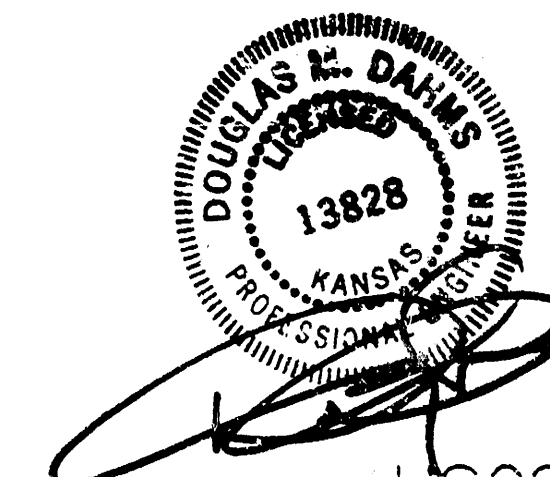
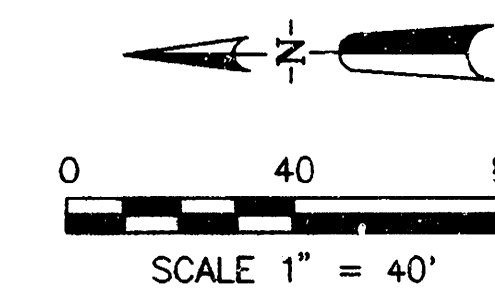
DATE:
SEPT, 1997

NOTE: MANHOLE CASTINGS TO BE STANDARD CITY OF WICHITA SPECIFICATIONS, FOR SANITARY SEWER M.H.s. MANHOLE BARREL SECTION TO MEET CITY SPECIFICATION.



LINE "A"

CITY DATUM = USGS - 1187.4

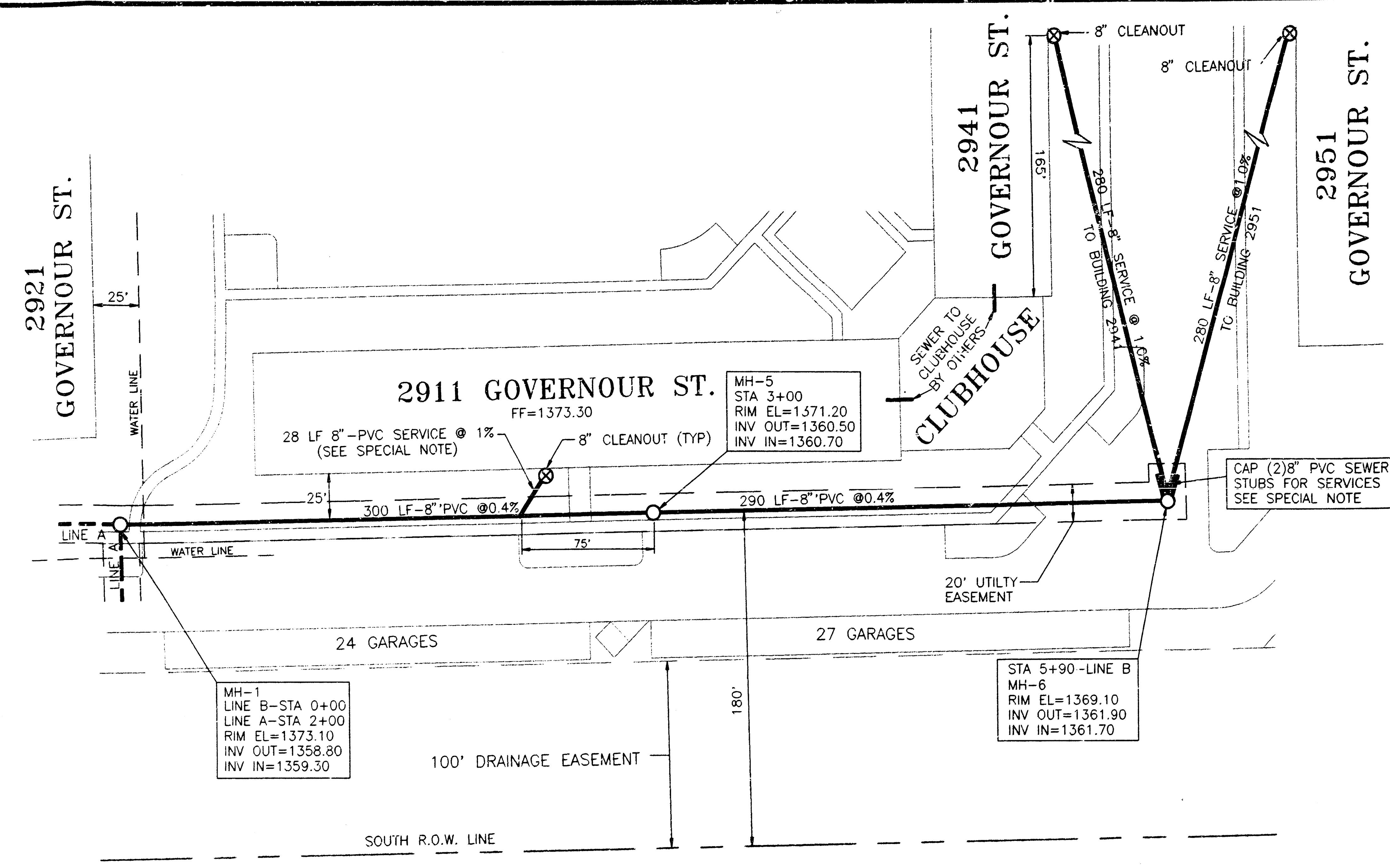
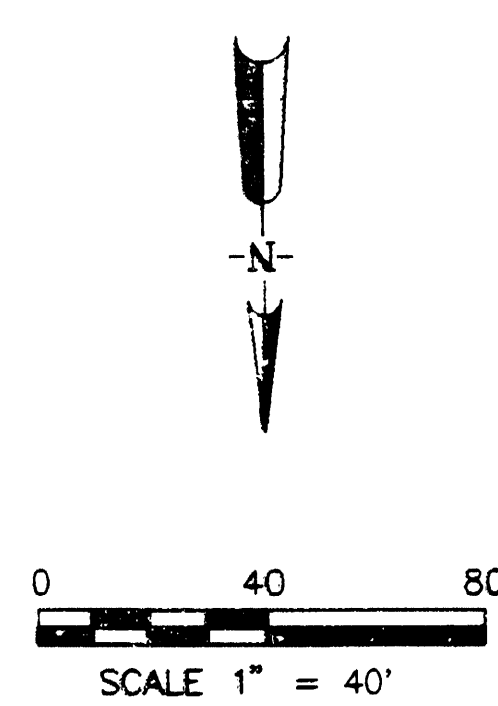


LOT 1, BLOCK 1
PEPPERWOOD LAKES
741 PPS (607861)

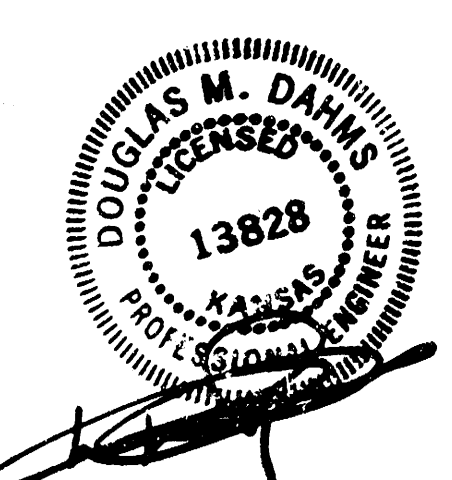
Douglas M. Dahms P.E.
ENGINEERING
CONSULTANTS
6368 Holman Ct. Arvada Col. 80004

SANITARY
SEWER
PLAN
SHEET 5

DATE:
AUG, 1997

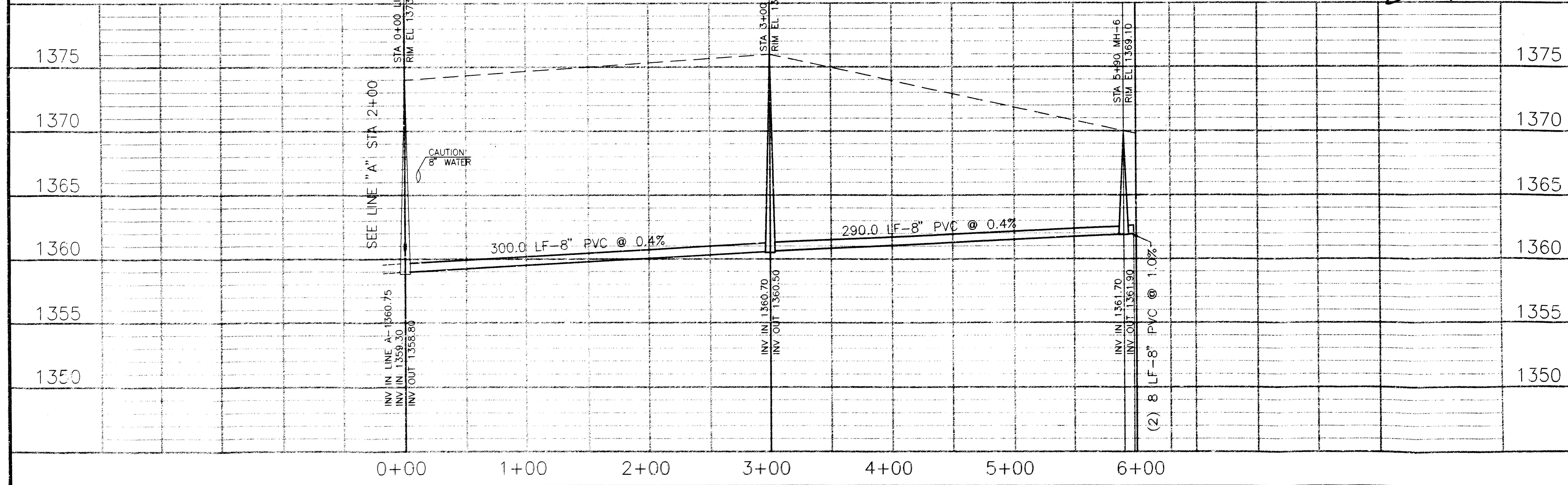


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USGS DATUM

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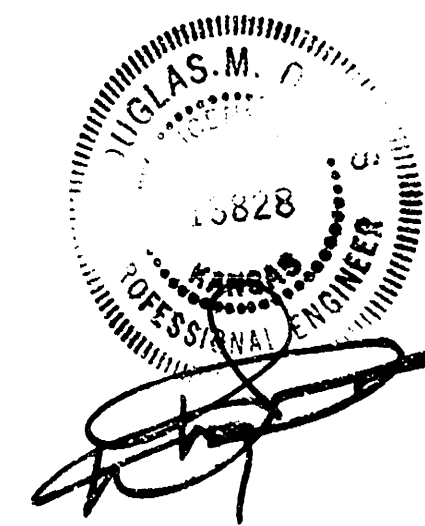
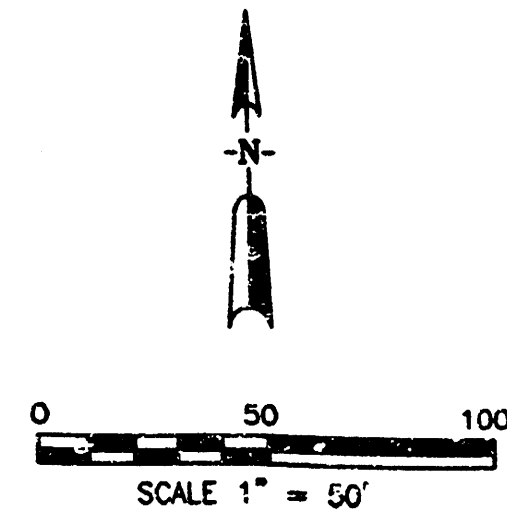
Douglas M. Dahms P.E.
ENGINEERING CONSULTANTS
6368 Holman Ct. Arvada, Col. 80004

SANITARY SEWER PLAN

SHEET 6

DATE: SEPT, 1997

LOT 1, BLOCK 1
PEPPERWOOD LAKES
741 PPS (607861)



Douglas M Dahms P.E.
ENGINEERING
CONSULTANTS
6368 Holman Ct. Arvada Col. 80004

LOT 1, BLOCK 1
PEPPERWOOD LAKES
741 PPS (607861)

SITE
PLAN

SHEET 7

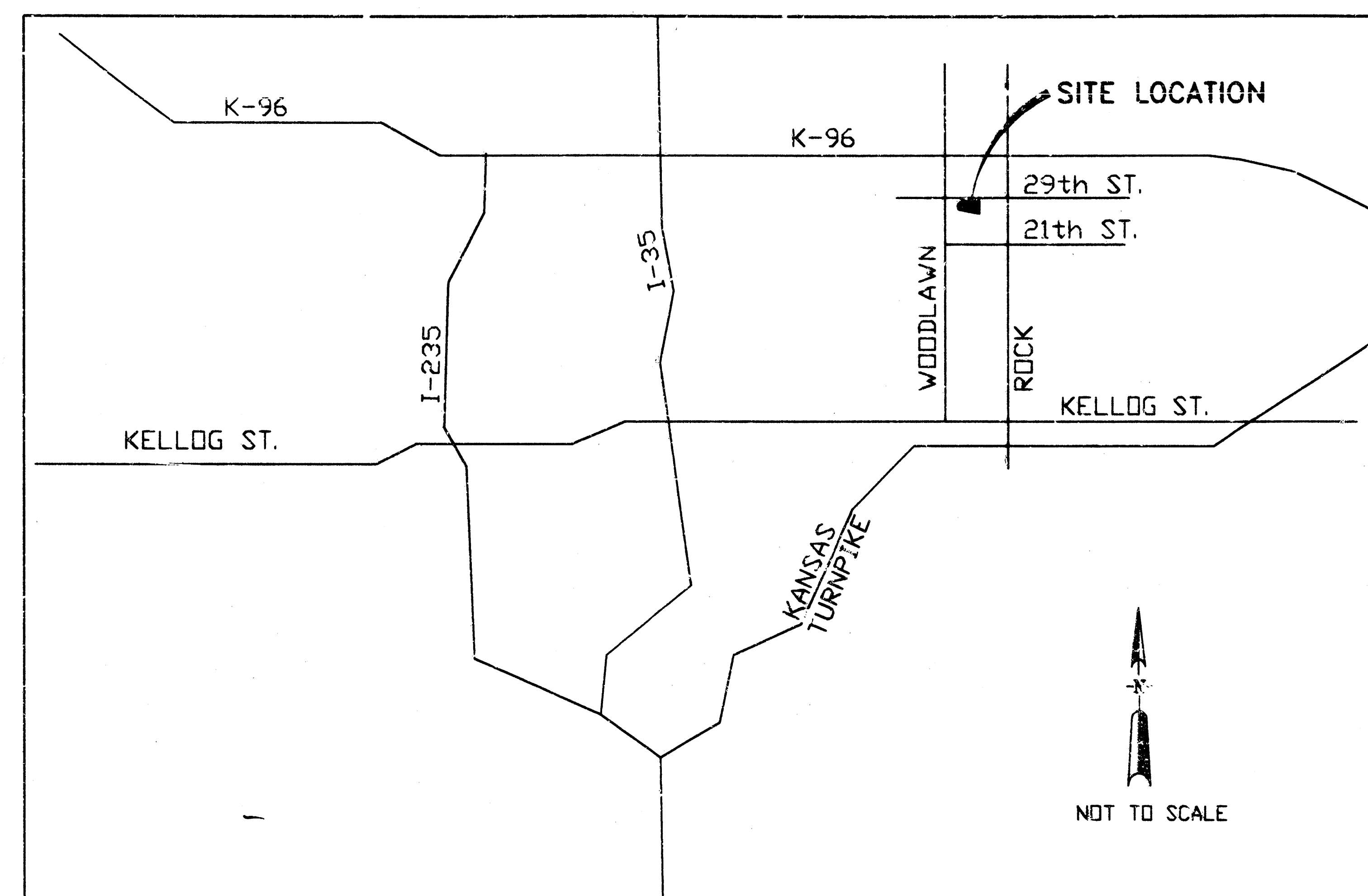
DATE:
SEPT, 1997

**AS BUILT
CONSTRUCTION PLANS FOR
STORM WATER SEWER
TO SERVE
LOT 1, BLOCK 1, PEPPERWOOD LAKES
IN
THE CITY OF WICHITA,
SEDGWICK COUNTY, KANSAS
MICHAEL E. LINDEBAK, P.E. - CITY ENGINEER**

741PPW

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KG&E 264-1141
KANEB 262-1408
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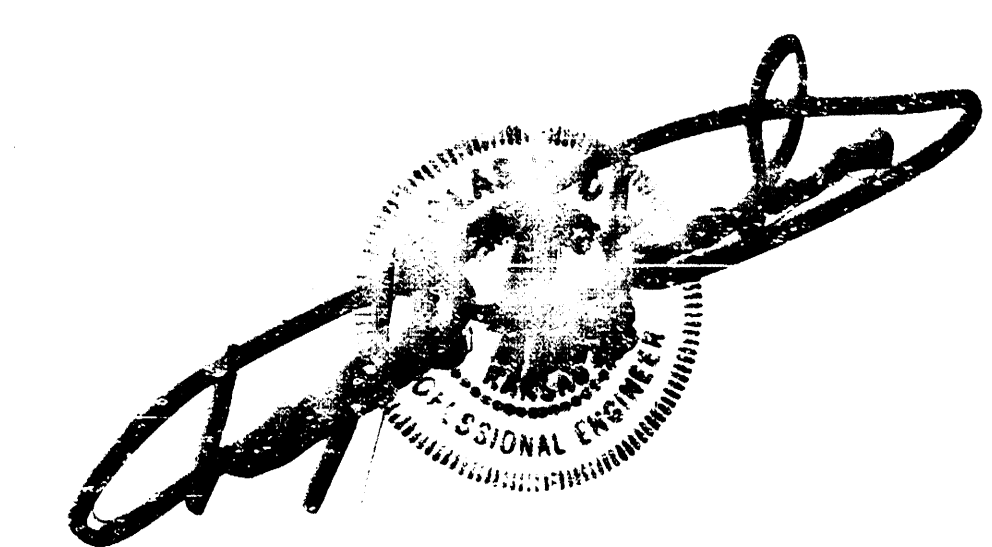


BENCHMARK

City of Wichita Benchmark
N.W. Corner RCBC, 100'±
South of 29th, on Gouverneur St.
DLK 2-93, El.=1370.86 msl
(183.45 City)

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- SHEET 4 STORM WATER SEWER
- ~~SHEET 5 SANITARY SEWER~~
- ~~SHEET 6 SANITARY SEWER~~
- ~~SHEET 7 SITE PLAN~~



CITY OF WICHITA PROJECT NO. 741-PPW (607861)

SEPTEMBER 1997

**PLANS PREPARED BY
DOUGLAS M. DAHMS P.E.
ARVADA, COLO.**

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APPROVED AS NOTED
BY CITY ENGINEER OF WICHITA

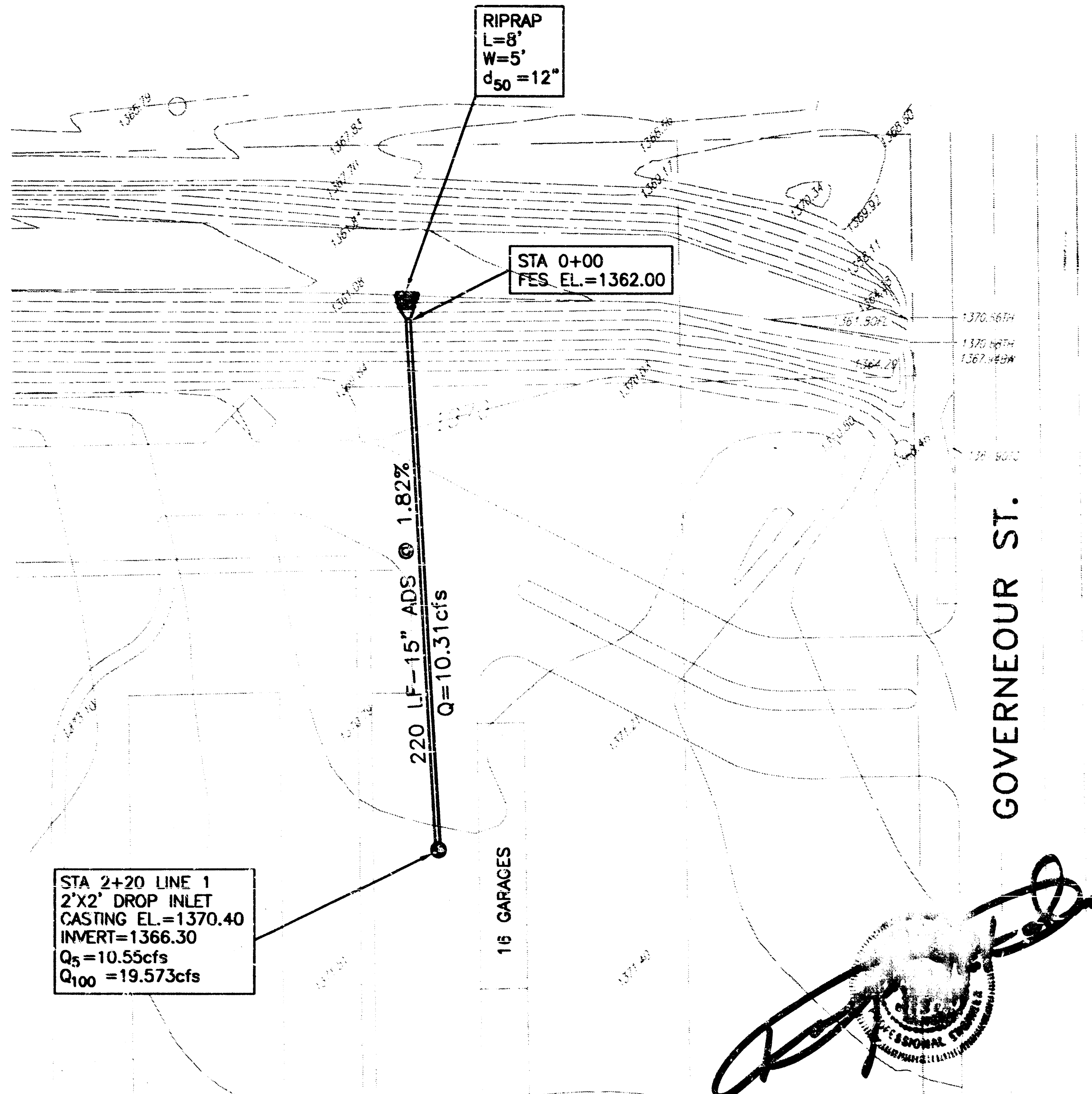
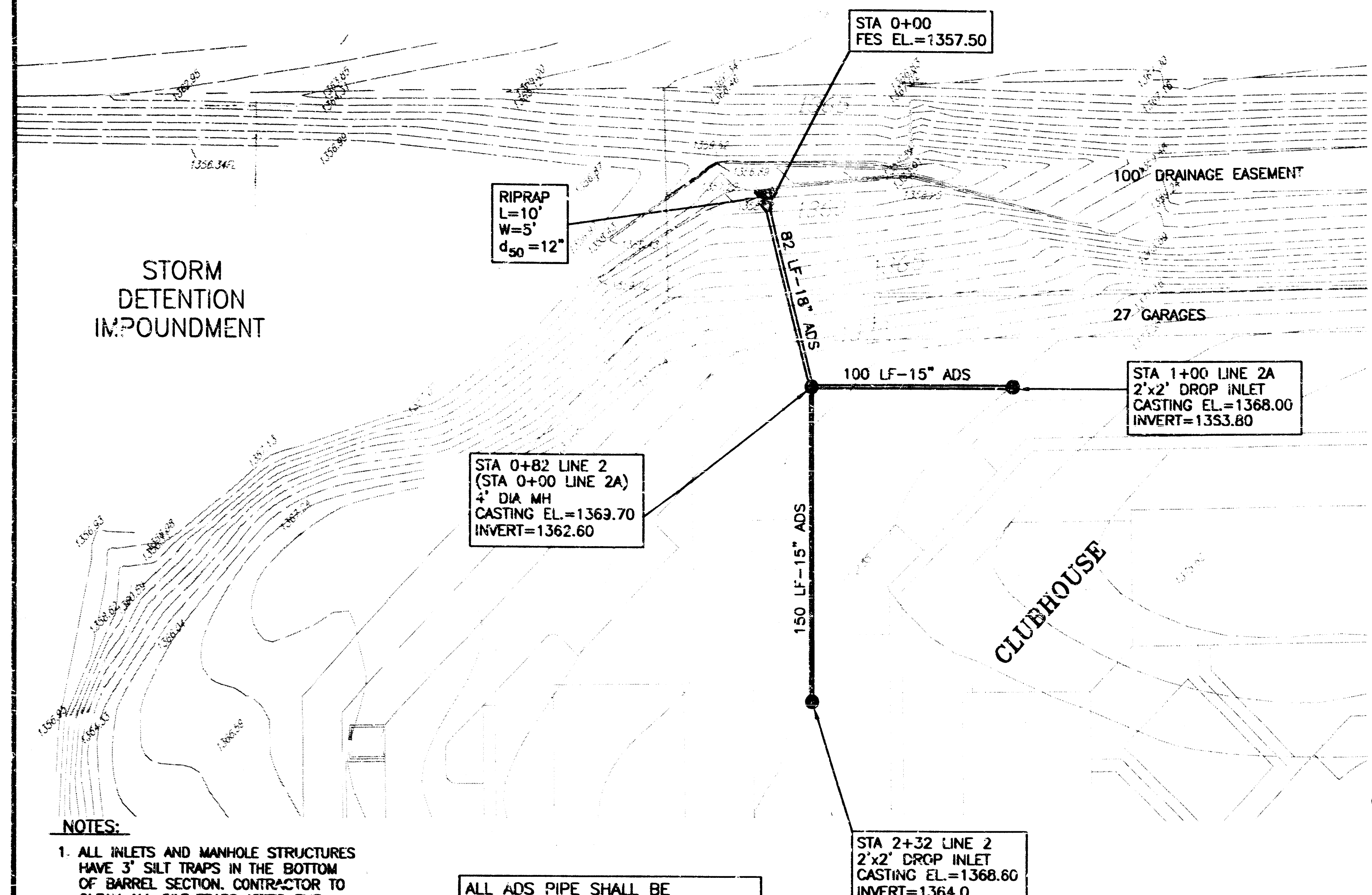
Sanitary Sewers _____

Storm Sewers _____

NOTE TO CONTRACTORS

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).

As Built - 4/98

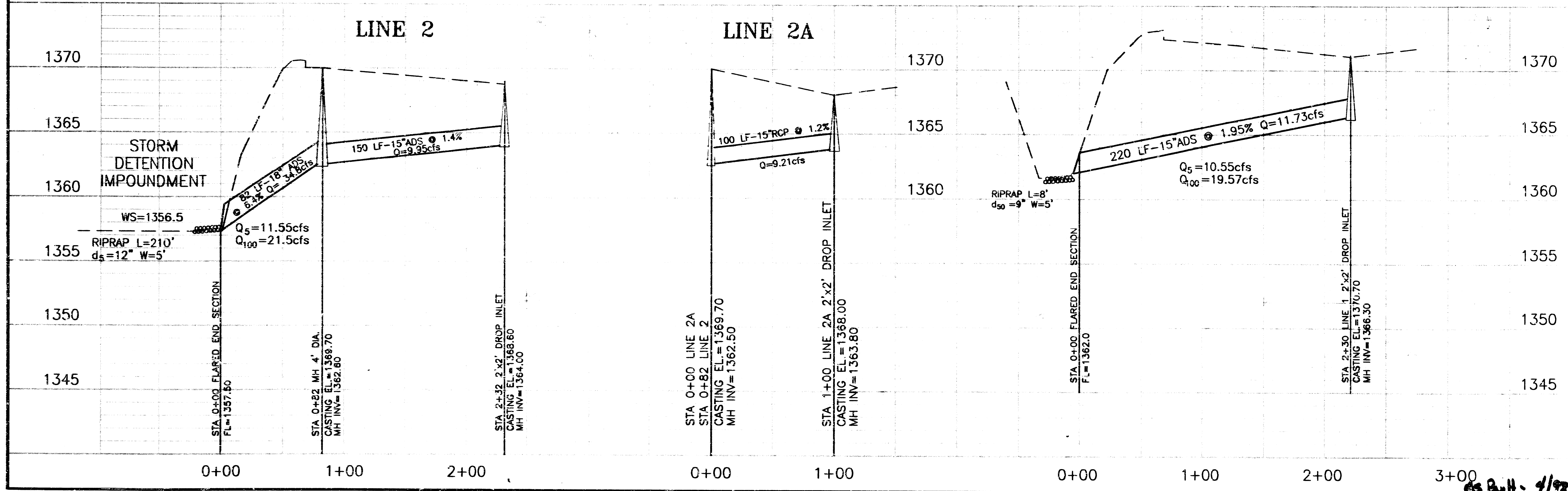


- NOTES:
1. ALL INLETS AND MANHOLE STRUCTURES HAVE 3" SILT TRAPS IN THE BOTTOM OF BARREL SECTION. CONTRACTOR TO CLEAN ALL SILT TRAPS AFTER THE COMPLETION OF CONSTRUCTION, PRIOR TO ACCEPTANCE BY OWNER. ALL PIPE FLOWS ARE COMPUTED FOR NON-PRESURIZED PIPE CONDITIONS.
 2. CONTRACTOR TO PLACE STRAW BALES OR STAKED SILT FENCE AROUND ALL INLETS AFTER CONSTRUCTION FOR EROSION CONTROL.

ALL ADS PIPE SHALL BE DOUBLED WALL WITH $n=0.010$ AND SHALL MEET CITY OF WICHITA STANDARD SPECIFICATIONS.

CONVERSION FACTOR
USGS = 1187.4 + CITY DATUM

AS BUILT



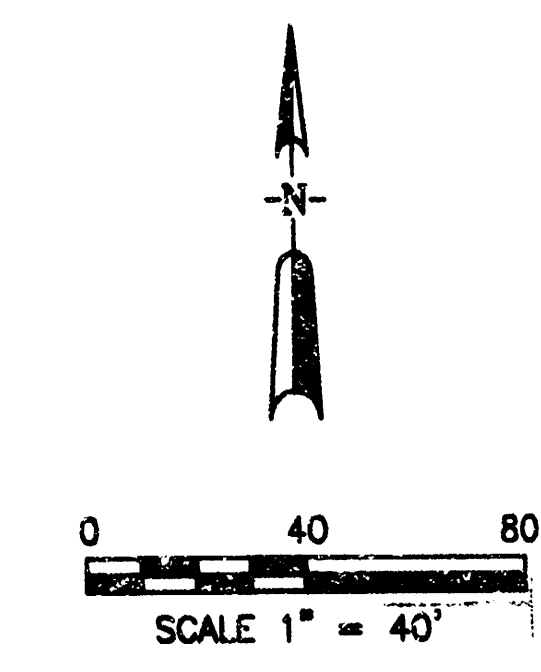
LOT 1, BLOCK 1
PEPPERWOOD LAKES
741 PPS (607861)

Douglas M. Dahms P.E.
ENGINEERING
CONSULTANTS
6368 Holman Ct. Arvada, CO. 80004

STORM
SEWER
PLAN
SHEET 3

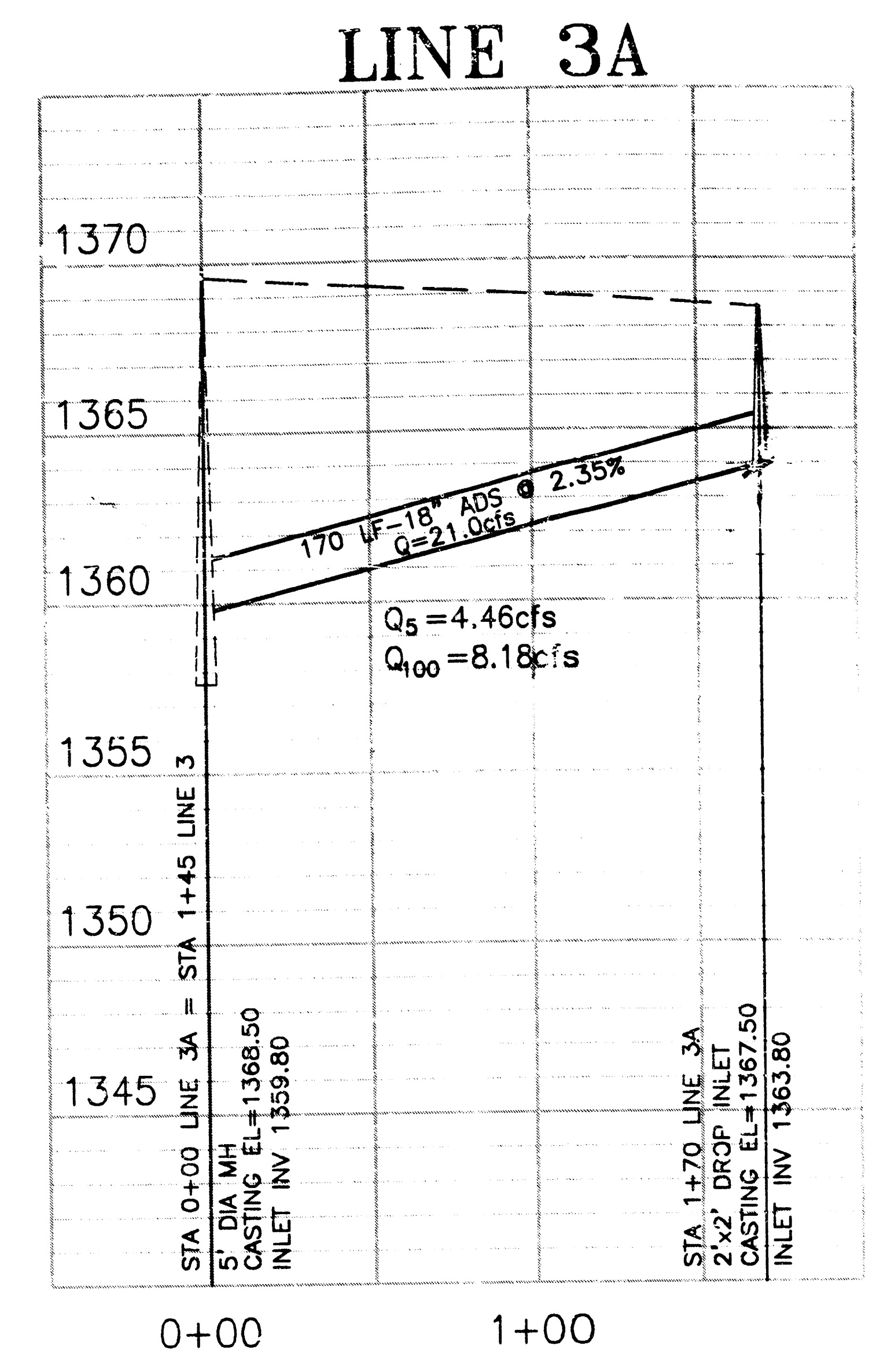
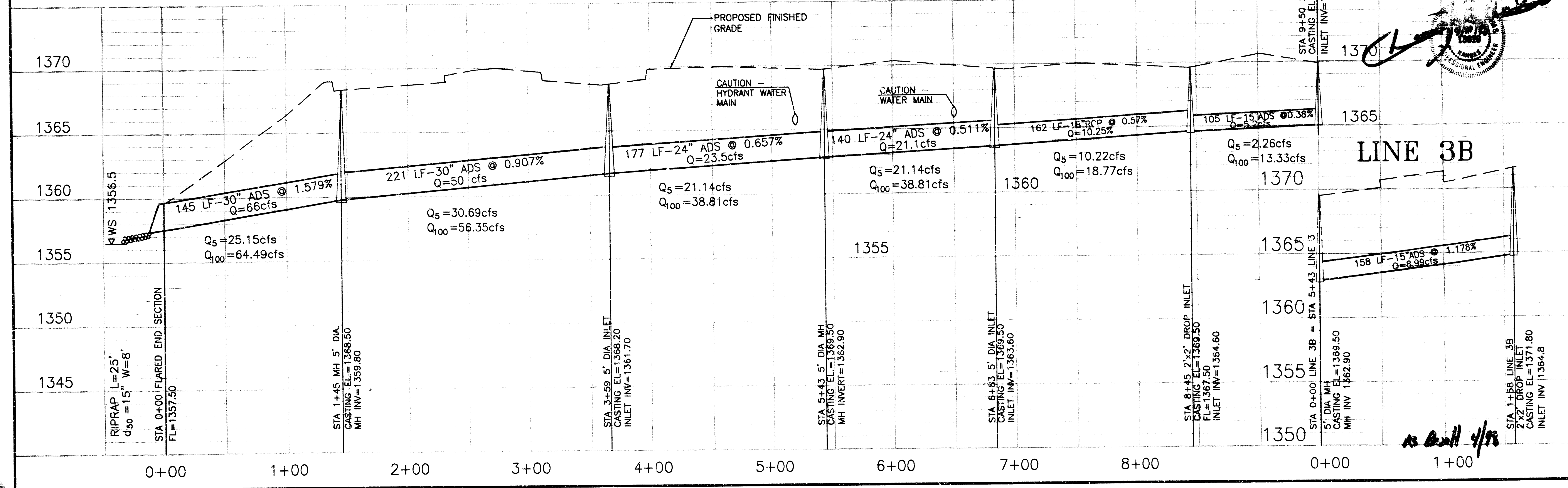
DATE:
SEPT, 1997

AS BUILT - 9/97



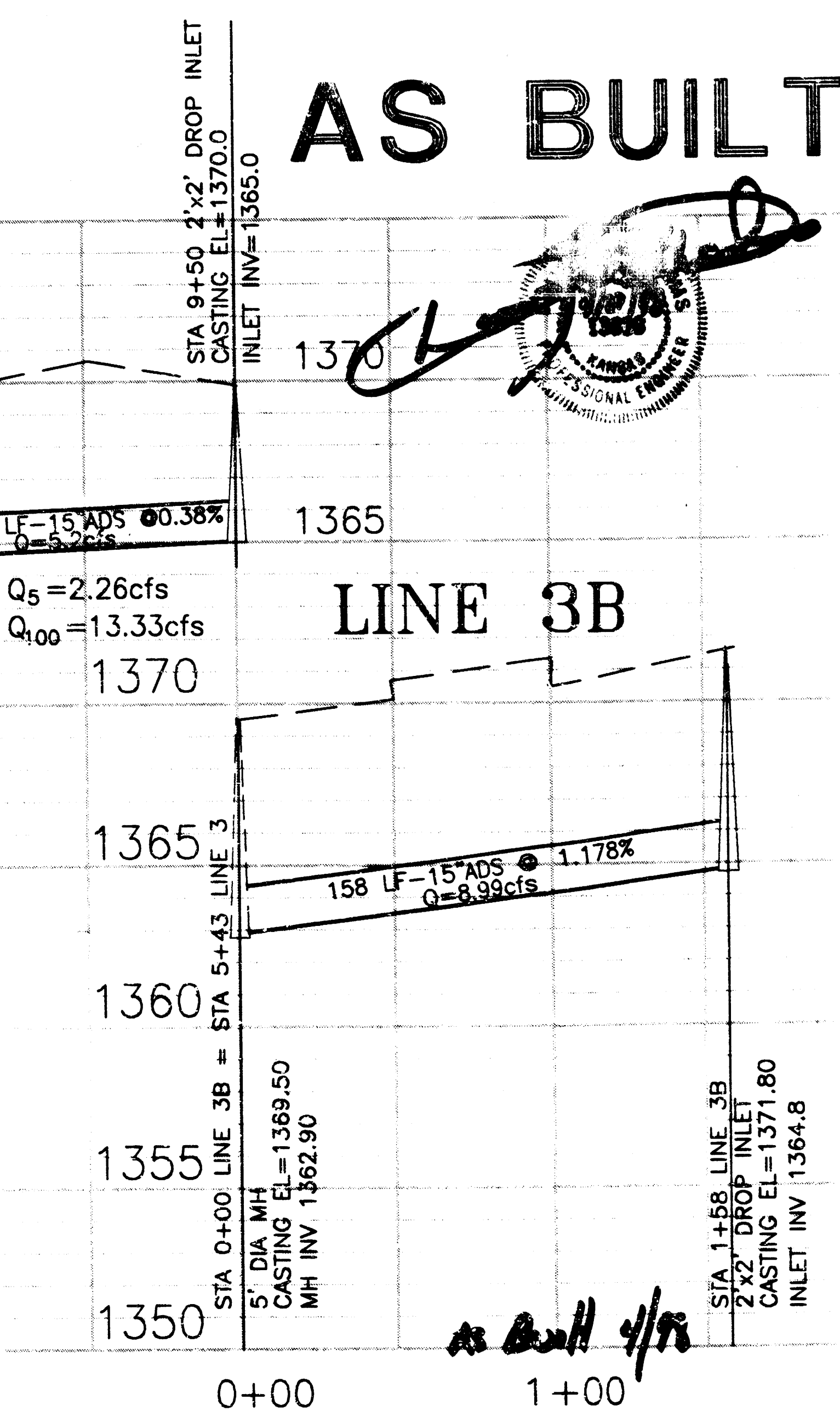
STORM
DETENTION
IMPOUNDMENT

- NOTES:
1. ALL INLETS AND MANHOLE STRUCTURES HAVE 3" SILT TRAPS IN THE BOTTOM OF BARREL SECTION. CONTRACTOR TO CLEAN ALL SILT TRAPS AFTER THE COMPLETION OF CONSTRUCTION, PRIOR TO ACCEPTANCE BY OWNER. ALL PIPE FLOWS ARE COMPUTED FOR NON-PRESURIZED PIPE CONDITIONS.
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CONVERSION FACTOR
USGS = 1187.4 + CITY DATUM

AS BUILT



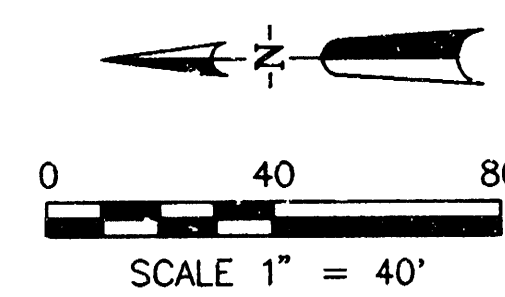
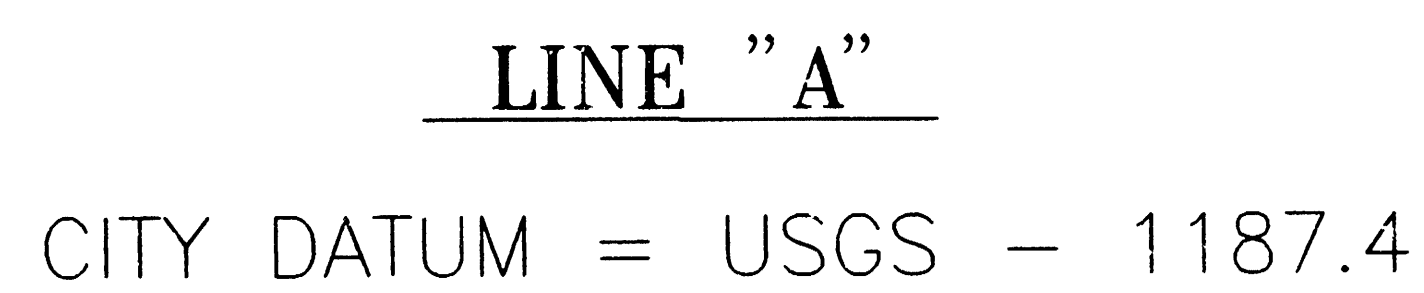
LOT 1, BLOCK 1
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ENGINEERING
CONSULTANTS
6368 Holman Ct. Arvada Col. 80004

STORM
SEWER
PLAN
SHEET 4

DATE:
SEPT, 1997

NOTE:
CONTRACTOR TO VERIFY
EXISTING MANHOLE INVERT
ELEVATION, PRIOR TO
ANY CONSTRUCTION

[illegible]

AS BUILT: 12/02/97

SANITARY
SEWER
PLAN

SHEET 5

Douglas M. Dahms P.E.
**ENGINEERING
CONSULTANTS**
 6368 Holman Ct. Arvada Col. 80004

DATE:
AUG, 1997

I:\MAP\1997\97112\DWG10-24\SAN40-1 Tue Dec 02 12:42:27 1997

SANITARY
SEWER
PLAN

DATE:
SEPT, 1997

LOT 1, BLOCK 1
PEPPERWOOD LAKES
741 PPS (607861)

6368 Holman Ct. Arvada Col. 80004