


ROOKER ADDITION
SANITARY SEWER RELOCATION
CITY OF LAWRENCE PROJECT NUMBER 16S006

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ISSUE DATE:	OCTOBER 27, 2016
REVISIONS:	DECEMBER 5, 2016

PROFESSIONAL ENGINEER	
	
JOHN DEAN GROB, P.E.	

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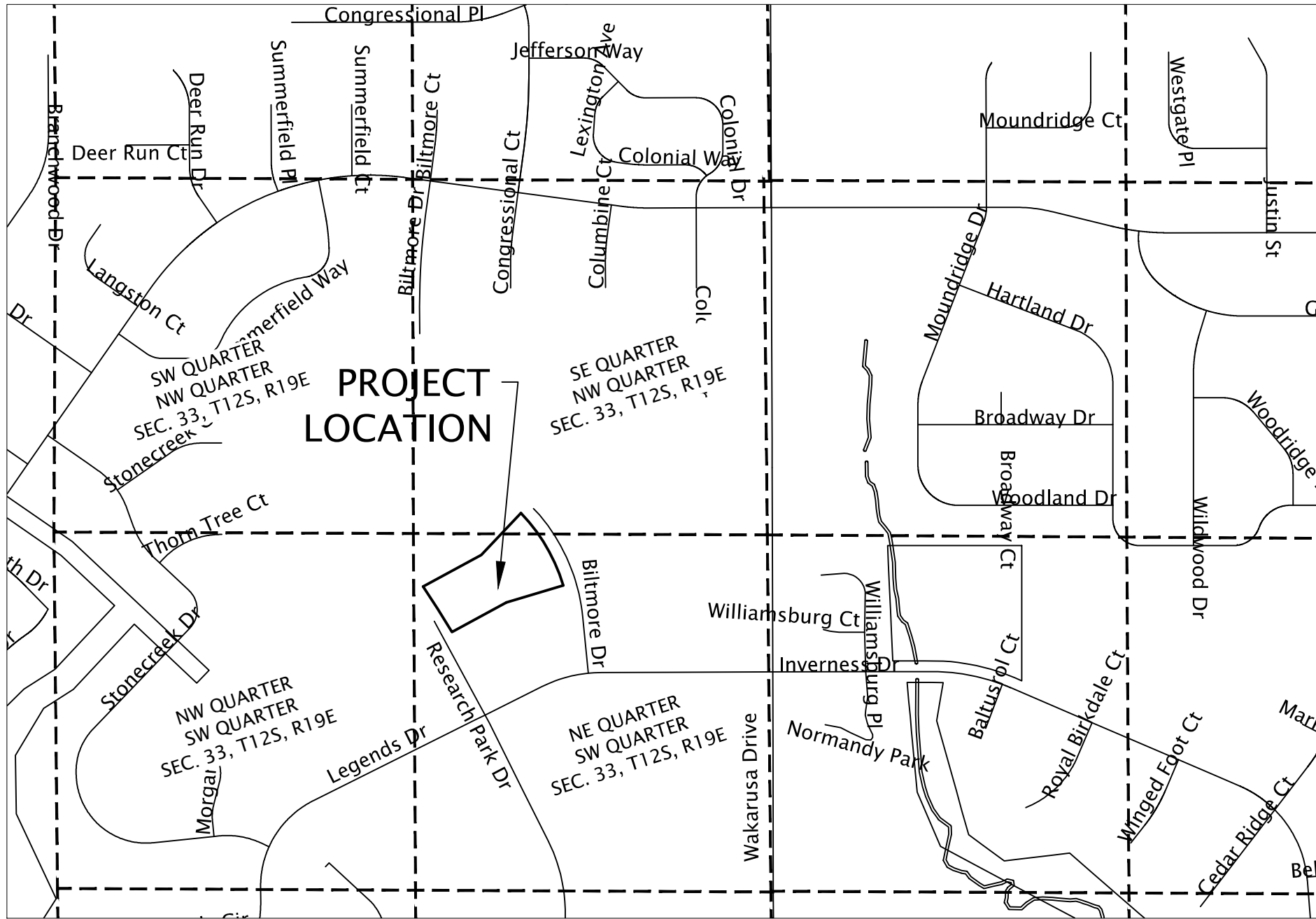
CITY OF LAWRENCE, KANSAS RELEASED FOR CONSTRUCTION	
DEPARTMENT OF UTILITIES	DATE
THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH THE CITY OF LAWRENCE'S DESIGN GUIDELINES AND STORM WATER DRAINAGE STANDARDS. THE UTILITIES ENGINEER'S REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THESE STANDARDS. THE CITY DID NOT VERIFY AND IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, ELEVATION, AND QUANTITIES. THE CITY OF LAWRENCE SHALL BE HELD HARMLESS FOR ERRORS AND OMISSIONS AS STATED HEREIN. THE DESIGN ENGINEER IS RESPONSIBLE FOR COMPLYING WITH ALL CITY STANDARDS AND GENERALLY ACCEPTED ENGINEERING DESIGN STANDARDS AND PRINCIPLES, INCLUDING ITEMS WHICH MAY HAVE INADVERTENTLY BEEN OVERLOOKED DURING THE CITY'S REVIEW. THESE PLANS ARE ACCEPTED FOR ONE YEAR FROM THE DATE OF APPROVAL, AFTER WHICH THEY BECOME VOID UNLESS CONSTRUCTION HAS BEEN COMPLETED AND APPROVED.	

KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT RELEASED FOR CONSTRUCTION	
KDHE REPRESENTATIVE	DATE
THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH THE CITY OF LAWRENCE'S DESIGN GUIDELINES AND KDHE STANDARDS. THE KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT'S REVIEW IS ONLY FOR GENERAL CONFORMANCE WITH THESE STANDARDS. THE KDHE DID NOT VERIFY AND IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, ELEVATION, AND QUANTITIES. KDHE SHALL BE HELD HARMLESS FOR ERRORS AND OMISSIONS AS STATED HEREIN. THE DESIGN ENGINEER IS RESPONSIBLE FOR COMPLYING WITH ALL CITY STANDARDS AND GENERALLY ACCEPTED ENGINEERING DESIGN STANDARDS AND PRINCIPLES, INCLUDING ITEMS WHICH MAY HAVE INADVERTENTLY BEEN OVERLOOKED DURING KDHE'S REVIEW. THESE PLANS ARE ACCEPTED FOR ONE YEAR FROM THE DATE OF APPROVAL, AFTER WHICH THEY BECOME VOID UNLESS CONSTRUCTION HAS BEEN COMPLETED AND APPROVED.	

OWNER/DEVELOPER: LP LAWRENCE, LLC Attention: Nathan Anderson 445 Bishop Street, NW, Suite 100 Atlanta, Georgia 30318 PH (678) 987-6672 CELL (770) 365-9623 EMAIL: nathananderson@rookerco.com
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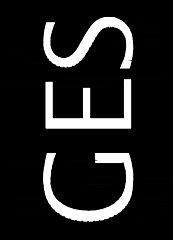
City of Lawrence
KANSAS



SCALE: 1" = 500'

PROJECT LOCATION: NE QUARTER, SW
QUARTER, SECTION 33, T12S, R19E

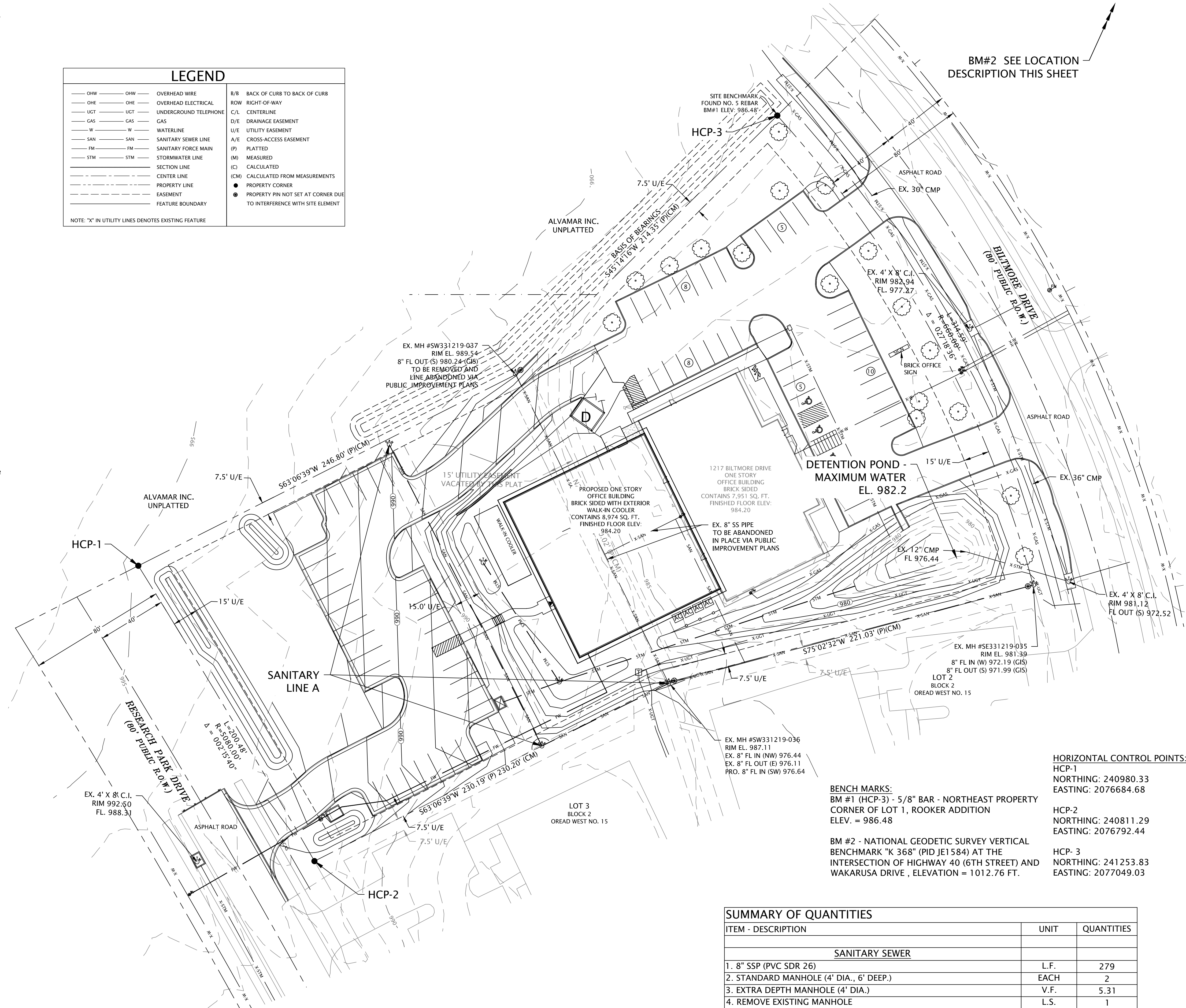
Date: December 5, 2016
Rooker Addition Sanitary Sewer Relocation City Project #16S006
GROB ENGINEERING SERVICES, LLC



NOTES - GENERAL AND SANITARY SEWER

- These plans are initially approved for one (1) year, after which they automatically become void and must be updated and reapproved by the City before any construction will be permitted.
- The City of Lawrence plan review is only for general conformance with City of Lawrence Design Criteria and City code. The City of Lawrence is not responsible for the accuracy or adequacy of the design. The City of Lawrence through the approval of this document assumes no responsibility other than stated above for the completeness and/or accuracy.
- The contractor shall have one (1) signed copy of the plans (approved by the City of Lawrence) with a state approval stamp on the title sheet and one (1) copy of the current Construction and Material Specifications for sanitary sewers on-site at all times during construction.
- The City of Lawrence Technical Specifications, latest edition, and City of Lawrence Construction and Materials Specifications Section 2500 - Sanitary Sewer (8"-18" Mains), latest edition, shall govern construction of this project. The standard specifications, Kansas Department of Transportation Road and Bridge Specifications, latest edition, or State of Kansas Department of Health and Environment Minimum Standards of Design For Water Pollution Control Facilities, and shall govern for all items of work shown on these plans unless otherwise noted.
- Contractor shall not be allowed to work Sundays. Holiday or Saturday work shall be as approved by the Department of Utilities.
- The utility information shown herein is based on the best information available to the Engineer at the time of design; however, all utilities actually existing may not be shown. The contractor shall confirm that all utilities have been located by the respective utility owner prior to any project excavation work. The contractor shall verify all utility depths and locations prior to construction. Key locations, as noted, shall be located vertically and horizontally by utility owner and/or utility owner shall be present onsite for location prior to excavation. The contractor shall coordinate any utility conflicts with the respective utility company. The contractor shall protect existing utilities at all times. Relocation of existing utilities by the contractor must be coordinated with and approved by the utility owner, the City of Lawrence, and the engineer. Utilities damaged through the negligence of the Contractor to obtain the location of same shall be repaired and replaced by the contractor at no additional expense to the project.
- Contractor shall call 1-800-DIG-SAFE prior to any project excavation.
- Where existing utilities and service lines are to be encountered, the Owner thereof shall be notified by the Contractor at least 48 hours in advance of performing any work in the vicinity.
- Relocation of any water line, sewer line or service line thereof required for the construction of the project shall be the responsibility of the Contractor and shall be at his expense.
- Contractor shall maintain drainage during construction and is responsible for any dewatering necessary for construction.
- All signing, barricades and drums utilized in traffic control shall be provided, erected, and maintained by the Contractor. Traffic control shall be in conformance with the Manual of Uniform Traffic Control Devices (MUTCD), latest edition.
- All water required for the construction of this project shall be purchased from the City of Lawrence Utilities Department through the use of a fire hydrant water meter. Meters can be obtained from the Utility Department for a nominal deposit, refundable upon return of the meter.
- The construction staking is to be provided by the contractor. Survey stakes, benchmarks, and property pins destroyed by the contractor shall be replaced by the contractor at the contractors expense.
- All areas disturbed during construction shall be fertilized, seeded, and mulched by the contractor in accordance with current City of Lawrence standard specifications.
- All surface features like structures, fences, pavement, and other improvements disturbed by construction activities shall be restored by the Contractor to original condition.
- When blasting is permitted by Lawrence-Douglas County Fire and Medical Services, the Contractor shall use the utmost care to protect life and property. The Contractor shall comply with all laws, ordinances, and applicable safety code requirements and regulations relative to the handling, storage and use of explosives and protection of life and property, and he shall be responsible for all damage thereto caused by his or his subcontractor's operations.
- The Contractor shall provide insurance as required by the General Provisions and Covenants and Special Project Specifications before performing any blasting. The governing agency shall be notified at least 24 hours before blasting operations begin.
- In areas to be graded for streets and storm improvements, all exposed manholes shall be backfilled to within 1' of the top of rim at a 3:1 (horizontal:vertical) maximum slope. Backfill to be replaced per City specifications. All manholes shall be graded to drain away from manholes.
- The Contractor shall install and properly maintain a mechanical plug at all connection points with existing lines until such time that the new line is tested and approved.
- During the period within one year from the date of final acceptance by the City, the City shall perform a video inspection on the sanitary sewer line installed under these plans. Per resolution number 5644, or latest update, an inspection fee is required for this service. The contractor is responsible for making any necessary repairs arising out of defective workmanship or materials as determined from the video inspection.
- Inspection services are to be paid by the developer.
- The sanitary sewer shall be installed by a qualified contractor. If required by the City, the contractor shall provide adequate documentation that he/she is qualified to perform sanitary sewer construction work.
- During the period of one year from the date of final acceptance by the City, the contractor is responsible for making any necessary repairs arising out of defective workmanship or materials. This includes, but is not limited to, trench settlement including removing and replacing sidewalk, street, driveways and entrance walks constructed since the project was accepted by the City. Representatives from the City and the contractor shall conduct an inspection of this project 11 months after the project has been accepted by the City to determine what repairs need to be made.
- All sewer lines shall be backfilled to maintain a minimum of 30" permanent cover. All sewer lines that will not have a minimum of 30" of cover shall be encased in concrete or otherwise protected to a condition acceptable to the City.
- All sanitary sewer trench backfill shall be compacted in accordance with the City of Lawrence specification unless otherwise noted. All sanitary sewers crossing proposed streets shall be backfilled to an elevation within one foot of the subgrade of the pavement and to a point at least two feet beyond the back of curb or two feet back of sidewalk with flowable mortar conforming to City specifications. All structures placed within street right-of-way shall be backfilled around the perimeter up to the subgrade of the pavement with flowable mortar.
- All sanitary sewer lengths shown on plans and profiles are from center of structure to center of structure. The sanitary manhole inlet and outlet flowline elevations shown on the drawings are the elevations if the pipes continued to the center of the manhole. The manhole inlet and outlet flowline actual elevation at the manhole wall shall be calculated by multiplying half of the manhole diameter times the slope of the inlet or outlet pipe, thus giving the elevation difference between manhole center and the inside face of the manhole. Manhole inverts shall be uniformly graded from inlet pipes to outlet pipes.
- Contractor shall obtain a City Work in Right-of-Way Permit prior to construction within the right-of-way.
- The contractor shall not be allowed to interrupt sanitary sewer service at any time. A detailed sequence of construction including time frames shall be submitted for review and requires the Utilities Engineer's approval prior to construction.
- If sanitary sewer overflow occurs, the contractor is responsible for meeting KDHE requirements. Contractor to immediately notify The Department of Utilities Collections Systems Supervisor. Sanitary Sewer overflows include any wastewater not contained and properly disposed.
- The contractor shall confine construction operations to within the site boundary, utility easements, temporary construction easements, or rights-of-way as shown on the plans.
- The contractor shall be solely responsible for the safety of the construction workers and the public.
- The contractor shall notify all landowners in writing at least one (1) week prior to any construction activities which would take place adjacent to their property. Individual detailed notices of access restrictions shall be hand delivered 48 hours prior to construction.
- The contractor shall document the original conditions of the adjacent properties' structures and land prior to construction by dated digital photographs.
- Trees, shrubs, plants, irrigation systems, and any other vegetation shall be protected to the greatest extent possible. Any trees or shrubs damaged shall be replaced in kind. Any damage to private irrigation systems shall be repaired to the satisfaction of the property owner by the Contractor at his expense.
- The price bid per lineal foot of "8" Sanitary Sewer Pipe" shall include pipe material, trenching, aggregate bedding and backfill, trench backfill (not including flowable mortar), and all other labor, equipment, and incidentals necessary to complete the work. All trench excavation shall be unclassified. Contractor shall satisfy himself as to the actual soil conditions that exist at the project prior to submitting a price to perform the outlined work. All rock excavation and offsite disposal of excess rock excavated as part of this work shall be performed by the contractor at his expense.
- All clearing, grubbing, and tree removal necessary to accomplish this project shall be performed by the contractor under the lump sum price bid for "Clearing, Grubbing, and Tree removal". The removal of all curbs, pavements, and other undesirable material shall be considered subsidiary to the bid item Clearing, Grubbing, and Tree Removal. All clearing debris shall be disposed of by the contractor off-site in accordance with the City of Lawrence, Kansas regulations. All clearing shall be performed with the intent to preserve as many trees and foliage as feasibly possible. Trees labeled with an "X" are to be removed. Trees labeled with an "S" and those not labeled are to be saved.

LEGEND			
— OHW ——— OHW ———	OVERHEAD WIRE	B/B	BACK OF CURB TO BACK OF CURB
— OHE ——— OHE ———	OVERHEAD ELECTRICAL	ROW	RIGHT-OF-WAY
— UGT ——— UGT ———	UNDERGROUND TELEPHONE	C/L	CENTERLINE
— GAS ——— GAS ———	GAS	D/E	DRAINAGE EASEMENT
— W ——— W ———	WATERLINE	U/E	UTILITY EASEMENT
— SAN ——— SAN ———	SANITARY SEWER LINE	A/E	CROSS ACCESS EASEMENT
— FM ——— FM ———	SANITARY FORCE MAIN	(P)	PLATTED
— STM ——— STM ———	STORMWATER LINE	(M)	MEASURED
— — — — —	SECTION LINE	(C)	CALCULATED
— — — — —	CENTER LINE	(CM)	CALCULATED FROM MEASUREMENTS
— — — — —	PROPERTY LINE	●	PROPERTY CORNER
— — — — —	EASEMENT	●	PROPERTY PIN NOT SET AT CORNER DUE TO INTERFERENCE WITH SITE ELEMENT
— — — — —	FEATURE BOUNDARY		
NOTE: "X" IN UTILITY LINES DENOTES EXISTING FEATURE			



BM#2 SEE LOCATION
DESCRIPTION THIS SHEET

BENCH MARKS:
BM #1 (HCP-3) - 5/8" BAR - NORTHEAST PROPERTY
CORNER OF LOT 1, ROOKER ADDITION
ELEV. = 986.48

BM #2 - NATIONAL GEODETIC SURVEY VERTICAL
BENCHMARK "K 368" (PID J1584) AT THE
INTERSECTION OF HIGHWAY 40 (6TH STREET) AND
WAKARUSA DRIVE, ELEVATION = 1012.76 FT.

HORIZONTAL CONTROL POINTS:
HCP-1
NORTHING: 240980.33
EASTING: 2076684.68

HCP-2
NORTHING: 240811.29
EASTING: 2076792.44

HCP-3
NORTHING: 241253.83
EASTING: 2077049.03

SUMMARY OF QUANTITIES		
ITEM - DESCRIPTION	UNIT	QUANTITIES
SANITARY SEWER		
1. 8" SSP (PVC SDR 26)	L.F.	279
2. STANDARD MANHOLE (4' DIA., 6' DEEP.)	EACH	2
3. EXTRA DEPTH MANHOLE (4' DIA.)	V.F.	5.31
4. REMOVE EXISTING MANHOLE	L.S.	1
5. GROUT FILL OLD LINE AND ABANDON IN PLACE AFTER NEW LINE APP.	L.S.	1
5. CONNECT TO EXISTING MANHOLE AND REBUILD INVERT	L.S.	1
6. SEED, FERTILIZE, AND MULCH	L.S.	1
7. EROSION CONTROL	L.S.	1
8. CONSTRUCTION STAKING	L.S.	1
8. CLEARING AND GRUBBING	L.S.	1
9. MOBILIZATION	L.S.	1
10. TESTING	L.S.	1
11. DEMOBILIZATION	L.S.	1

GES

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ROOKER ADDITION
SANITARY SEWER RELOCATION
CITY OF LAWRENCE
PROJECT NO. 165006

DESIGNED BY
JDG

CHECKED BY
JDG

ISSUE DATE
OCTOBER 27, 2016

REVISIONS
DECEMBER 5, 2016

SHEET
2
6

**ROOKER ADDITION
SANITARY SEWER RELOCATION
CITY OF LAWRENCE
PROJECT NO. 16S006**

DESIGNED BY

JDG

CHECKED BY

JDG

ISSUE DATE

OCTOBER 27, 2016

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SHEET

3

6

8



ROOKER ADDITION PLAT

ROOKER ADDITION
SANITARY SEWER RELOCATION
CITY OF LAWRENCE
PROJECT NO. 16S006

DESIGNED BY
JDG

CHECKED BY
JDG

ISSUE DATE
OCTOBER 27, 2016

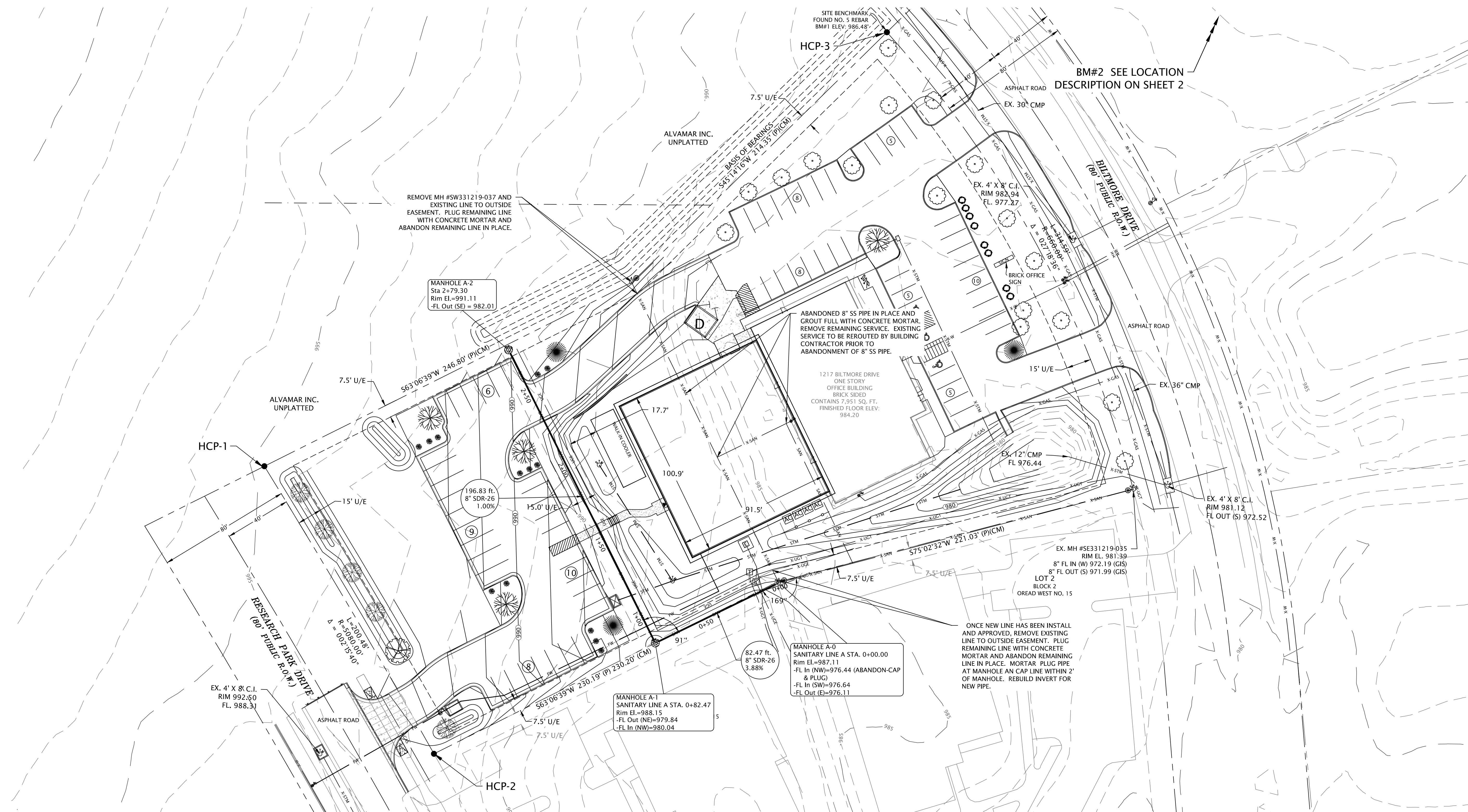
REVISIONS
DECEMBER 5, 2016

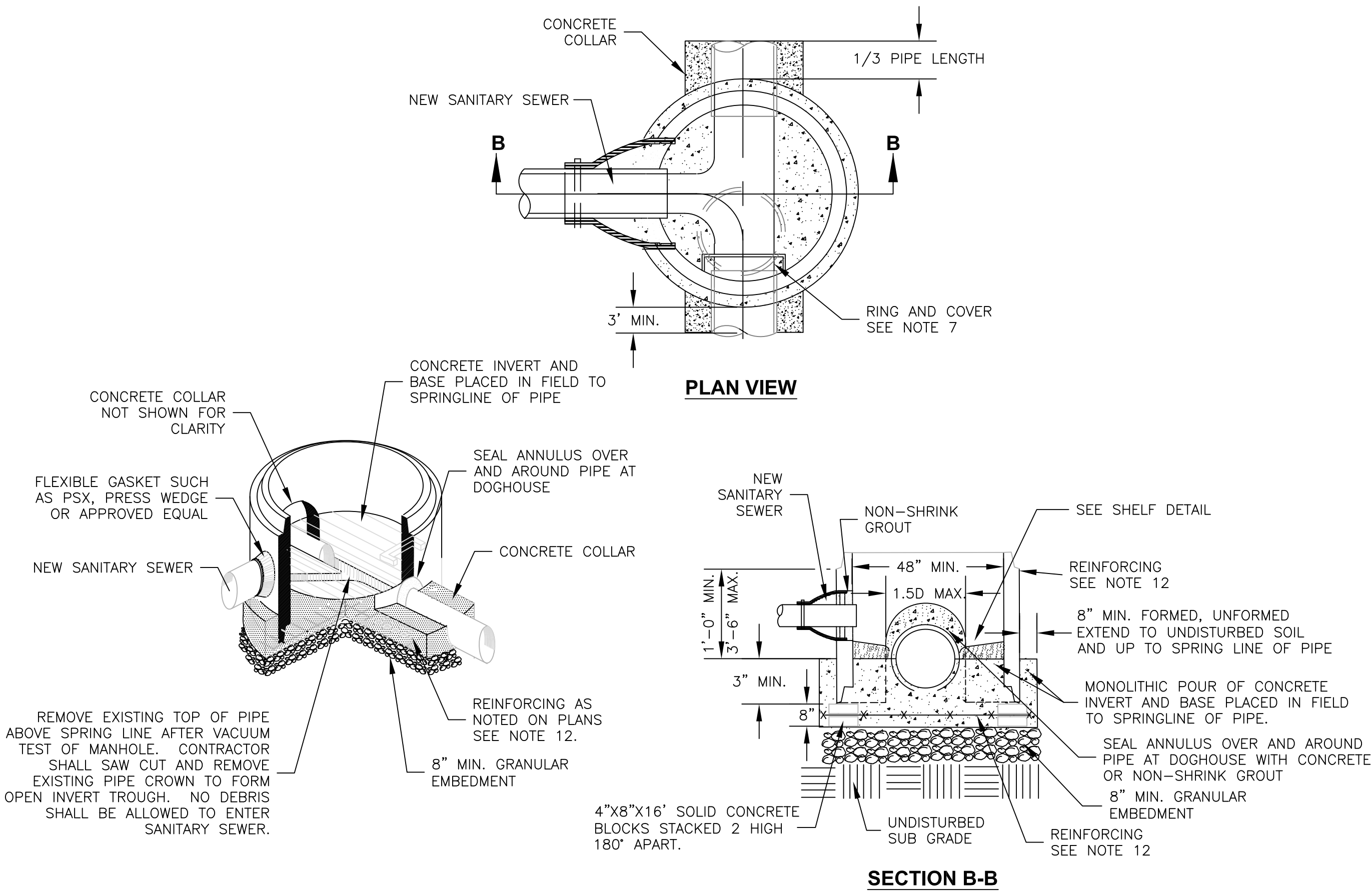
HCP-1
NORTHING: 240980.33
EASTING: 2076684.68

HCP-2
NORTHING: 240811.29
EASTING: 2076792.44

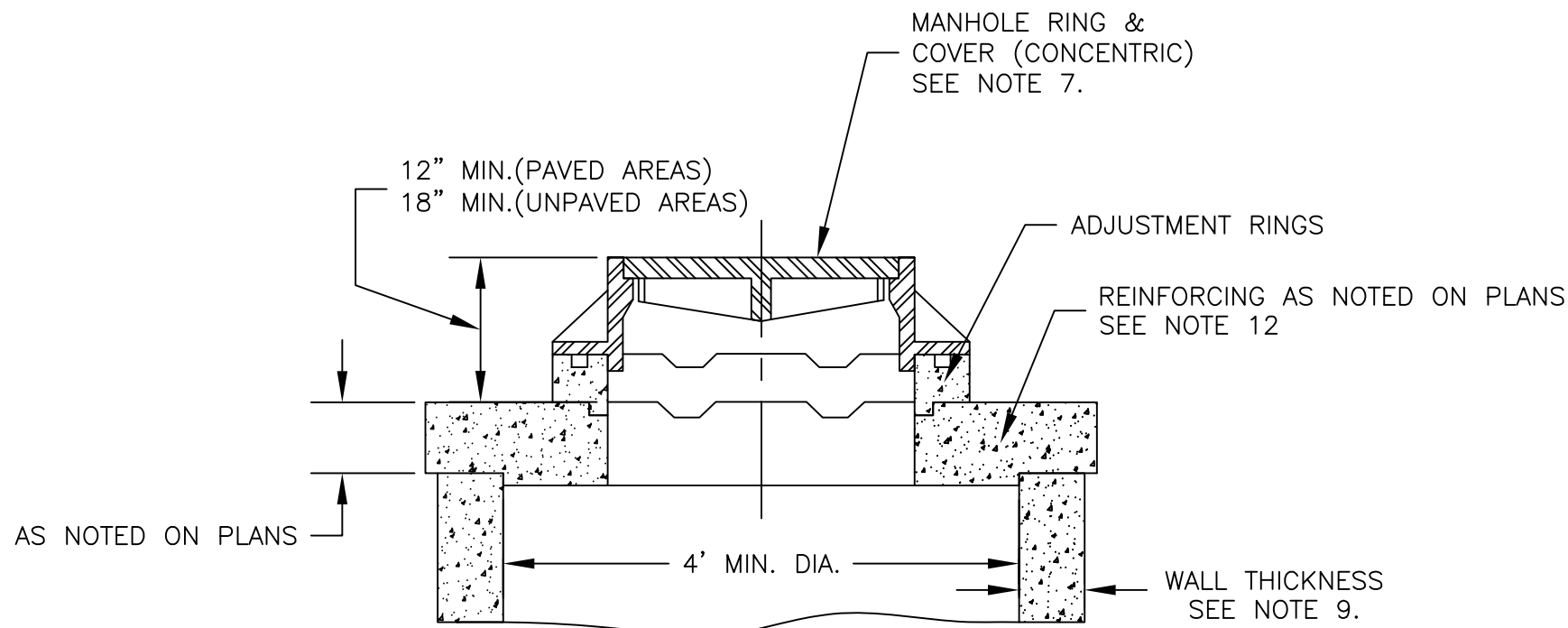
HCP-3
NORTHING: 241253.83
EASTING: 2077049.03

SHEET
4
6

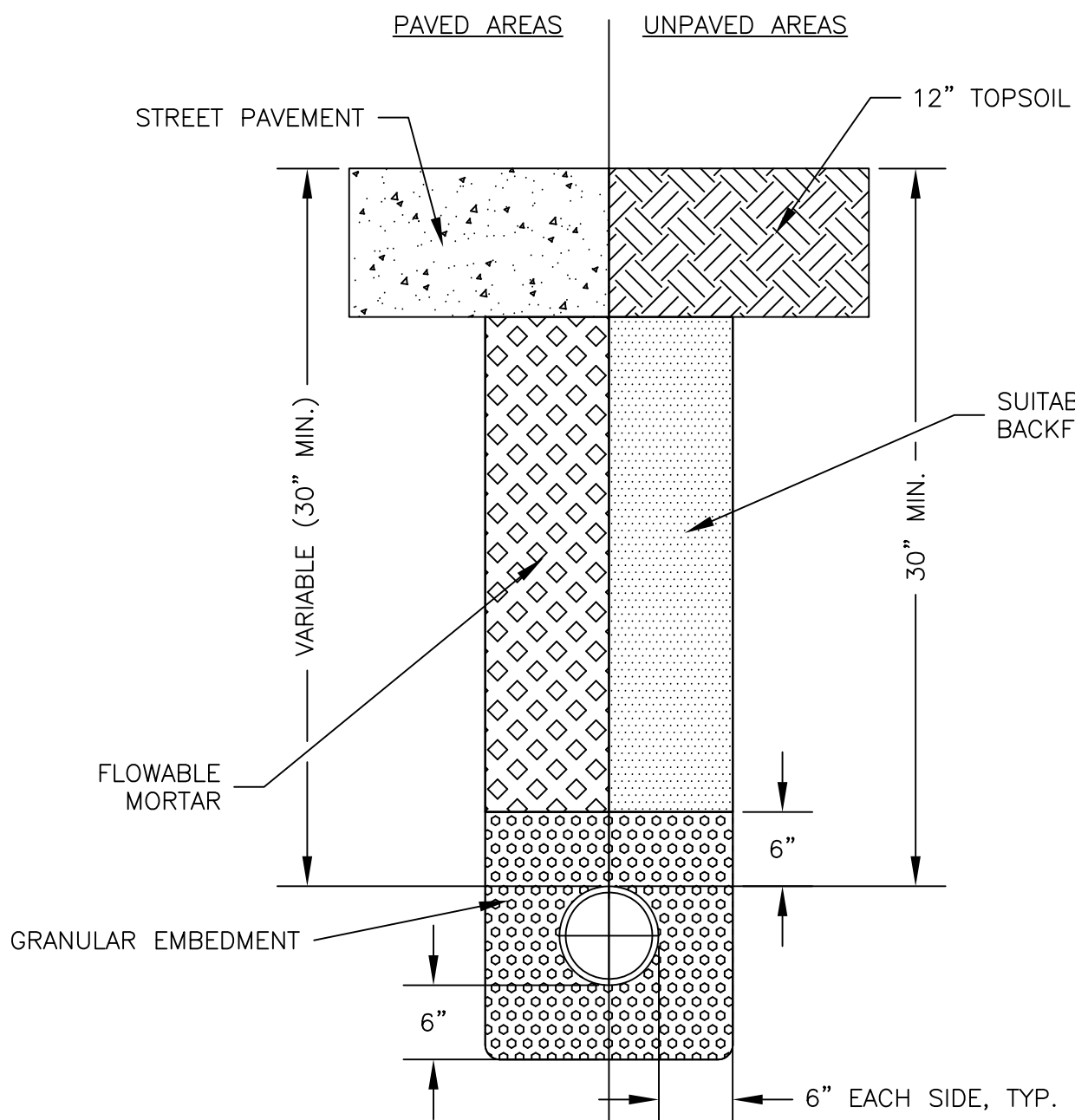




STANDARD DOGHOUSE MANHOLE
N.T.S.



STANDARD PRECAST MANHOLE (SHALLOW TYPE)
N.T.S.



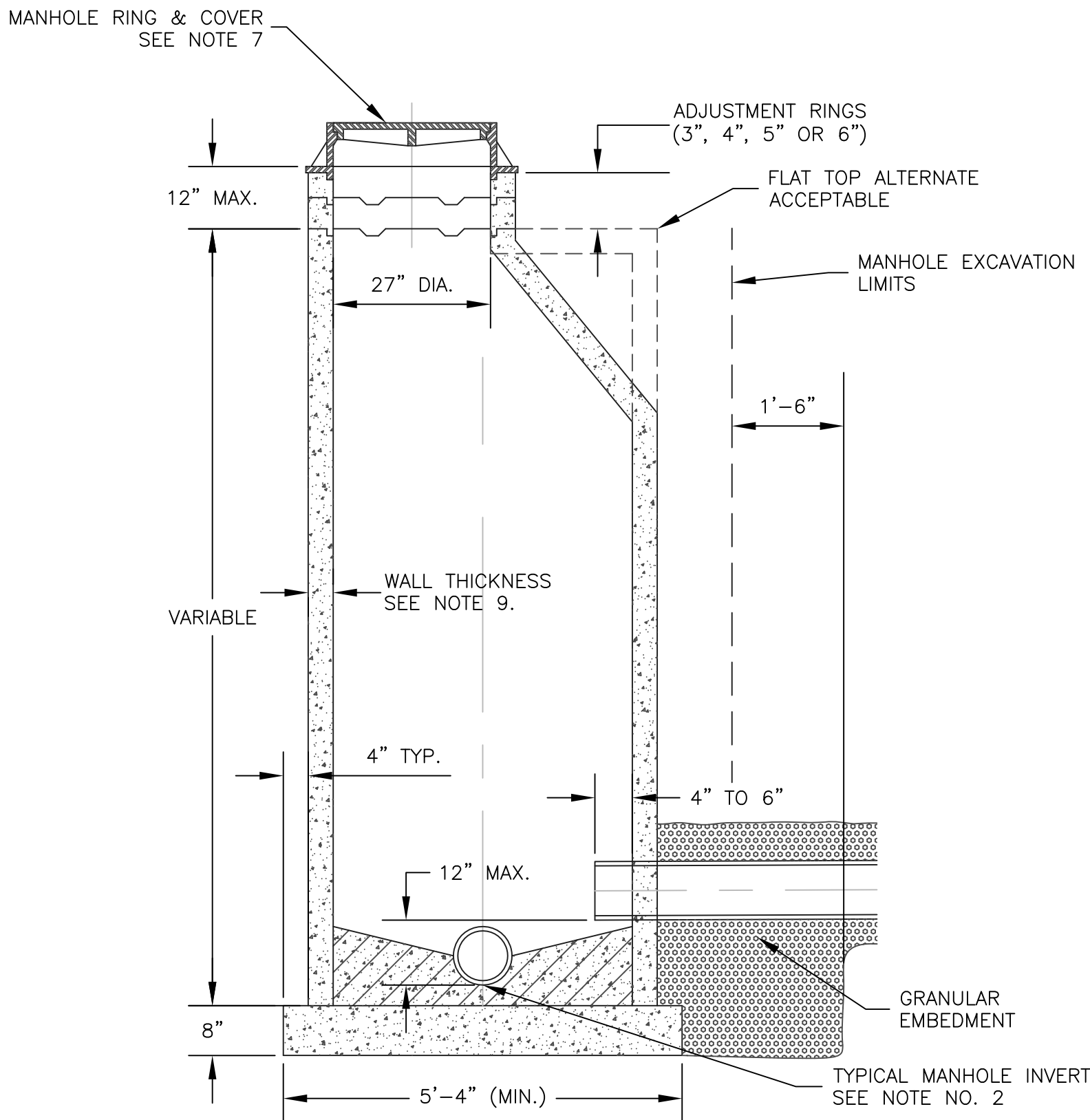
SANITARY SEWER TRENCH DETAILS
N.T.S.

NOTES

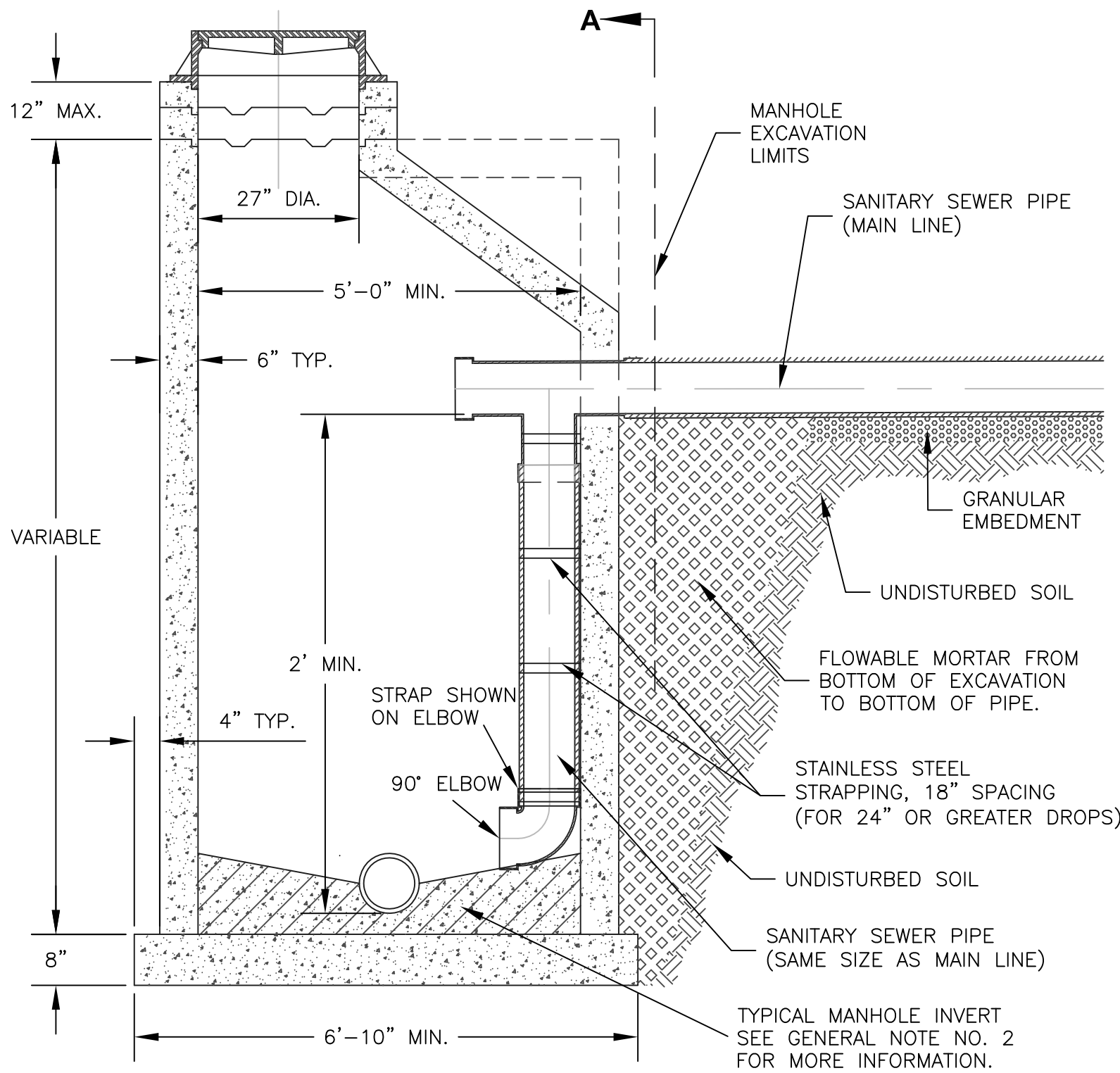
1. PRECAST MANHOLES SHALL CONFORM TO ASTM C-478 AND THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT MINIMUM STANDARDS OF DESIGN.
2. PIPE(S) SHALL BE TEMPORARILY PLUGGED PRIOR TO FORMING INVERTS. INVERTS SHALL BE FORMED WITH KDOT CLASS A CONCRETE.
3. STANDARD DEPTH MANHOLE IS 6'-0". LESSER DEPTH TO BE PAID FOR AS STANDARD 6'-0" MANHOLE.
4. GRANULAR EMBEDMENT SHALL BE PLACED FROM THE OUTSIDE FACE OF THE MANHOLE TO A DISTANCE OF 18" BEYOND THE LIMITS OF EXCAVATION FOR THE MANHOLE, AS SHOWN.
5. COMPRESSION TYPE PIPE TO MANHOLE CONNECTIONS SHALL BE A-LOK, MANHOLE PIPE CONNECTORS, OR APPROVED EQUAL.
6. D.I.P., V.C.P., OR TRUSS PIPE TO PIPE CONNECTIONS SHALL BE FERNCO RUBBER GASKET COUPLING OR APPROVED EQUAL.
7. MANHOLE RINGS AND LIDS SHALL BE CLAY & BAILEY NO. 2032, NEENAH NO. R-1736, GCI CASTINGS NO. SM-2401, DEETER FOUNDRY NO. 1048, OR APPROVED EQUAL. ALL MANHOLE LIDS SHALL BE ALIGNED OVER INVERT OUT OF MANHOLE.
8. BEFORE FINAL ACCEPTANCE OF THE PROJECT, A 2"x4" PIECE OF LUMBER, 6'-0" TO 8'-0" TALL, OR A STEEL FENCE POST, 5'-0" TO 6'-0" TALL, SHALL BE PLACED ADJACENT TO EACH MANHOLE, IN ORDER TO LOCATE THESE STRUCTURES FOR CONTRACTORS DURING FUTURE DEVELOPMENT.
9. THE WALL THICKNESS FOR MANHOLES UNDER 16'-0" DEEP SHALL BE 1/12 OF THE INTERNAL SHELL DIAMETER, OR 4", WHICHEVER IS GREATER. THE WALL THICKNESS FOR MANHOLES 16'-0" DEEP OR GREATER SHALL BE 1/12 OF THE INTERNAL SHELL DIAMETER PLUS 1" OR 5", WHICHEVER IS GREATER.
10. IF THE SANITARY SEWER PIPE HAS A DEFLECTION IN IT, SUCH PIPE SHALL BE ROTATED SO THAT THE DEFLECTION IS ON IT'S SIDE.
11. ANY SANITARY SEWER PIPE FOUND TO HAVE MORE THAN A 5% DEFLECTION WILL BE REJECTED.
12. ALL REINFORCING SHALL BE AS NOTED ON PLANS AND/OR SHOP DRAWINGS AND SHALL CONFORM TO CITY OF LAWRENCE UTILITIES DEPARTMENT SPECIFICATIONS FOR SANITARY SEWER, SECTION 2510.3.6.

SHEET 5 OF 6

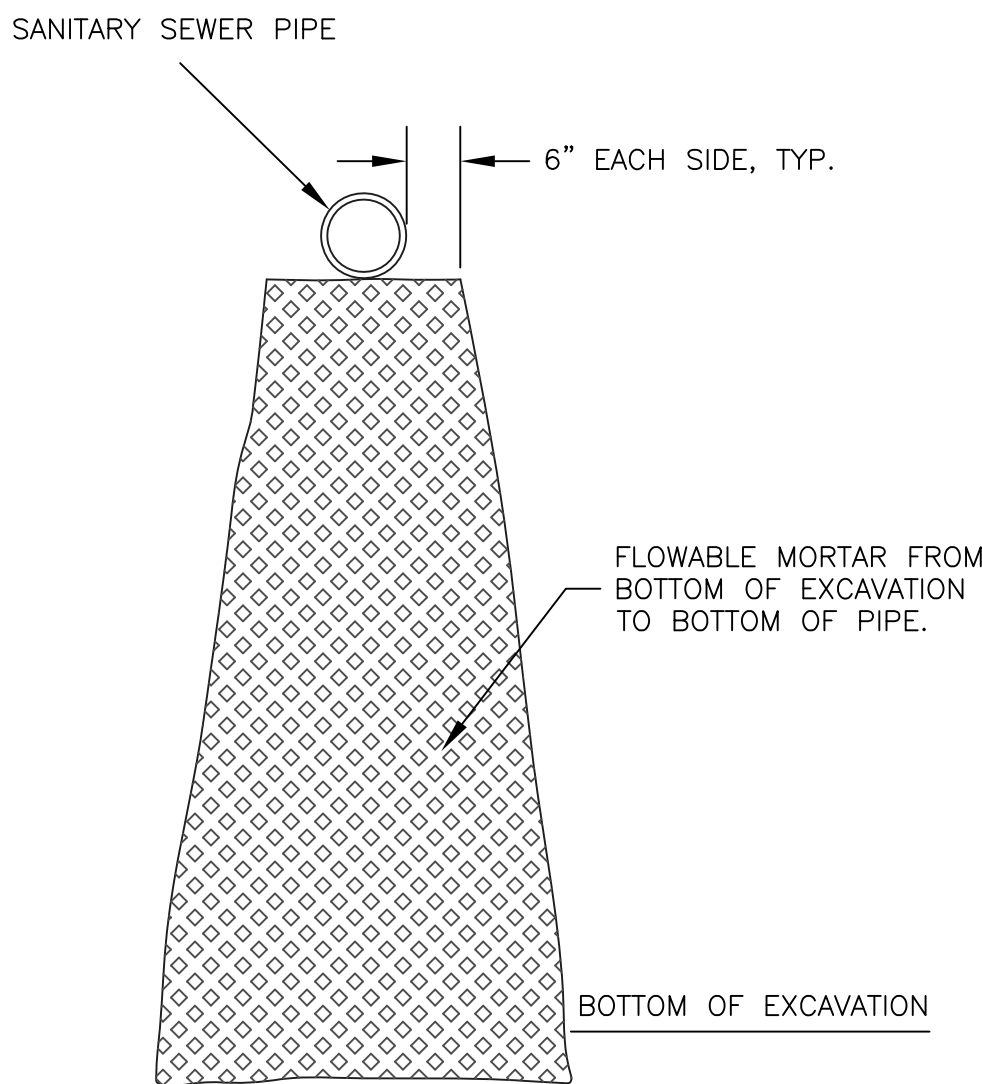
SHEET 1 OF 2



STANDARD PRECAST MANHOLE (ECCENTRIC CONE)
N.T.S.



STANDARD DROP MANHOLE SECTION (FOR 8" OR 10" MAINS ONLY)
N.T.S.



SECTION A-A

BY	DATE	REVISION
JDS	12/2010	UPDATE TO DIMENSIONS ON DROP MANHOLE AND TYPICAL TRENCH DETAIL
JDS	12/2011	REVISE REFERENCE TO CA-5 AND CM-H TO GRANULAR EMBEDMENT

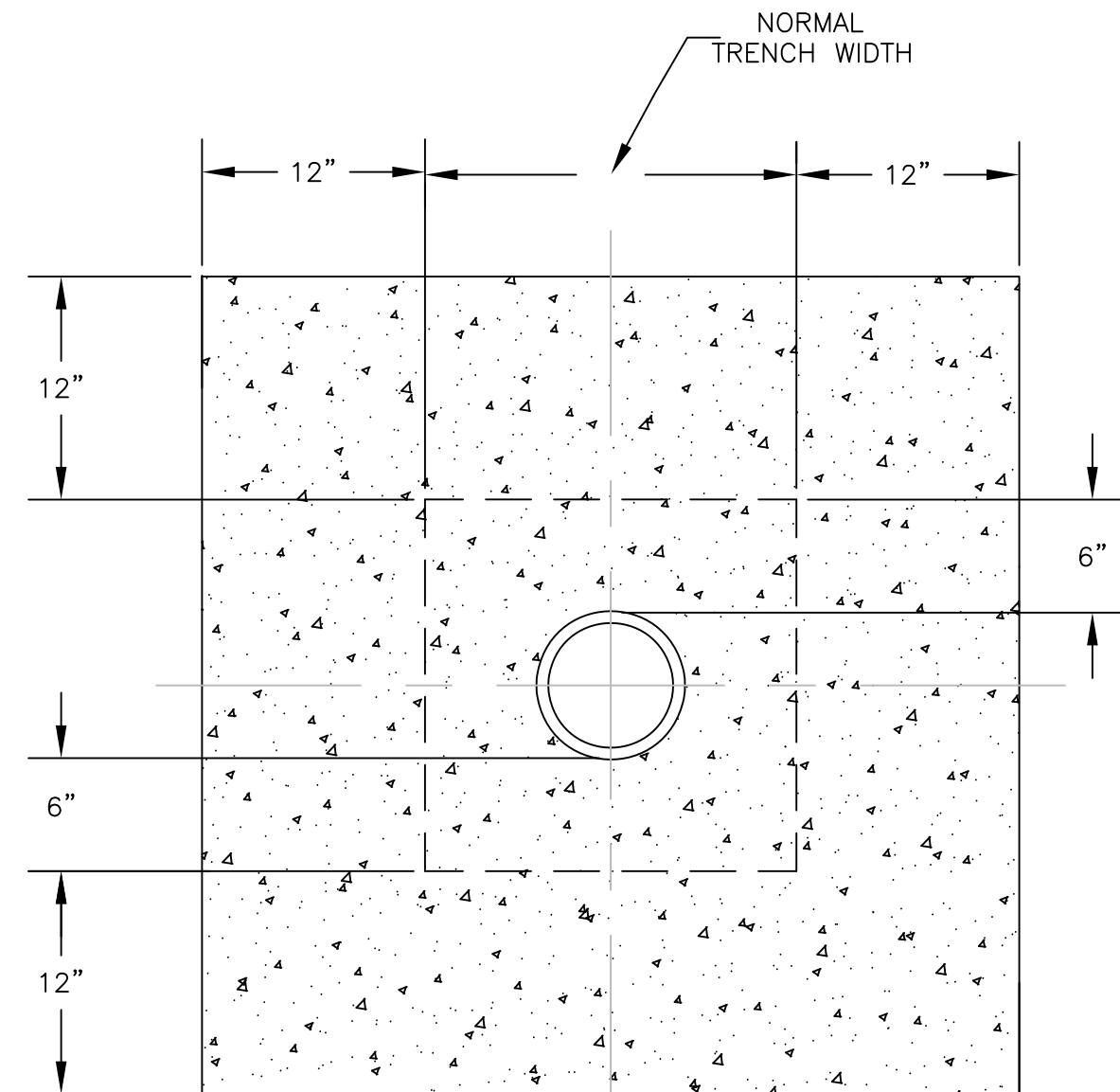


City of Lawrence
UTILITIES

STANDARD SANITARY
DETAILS-GRAVITY

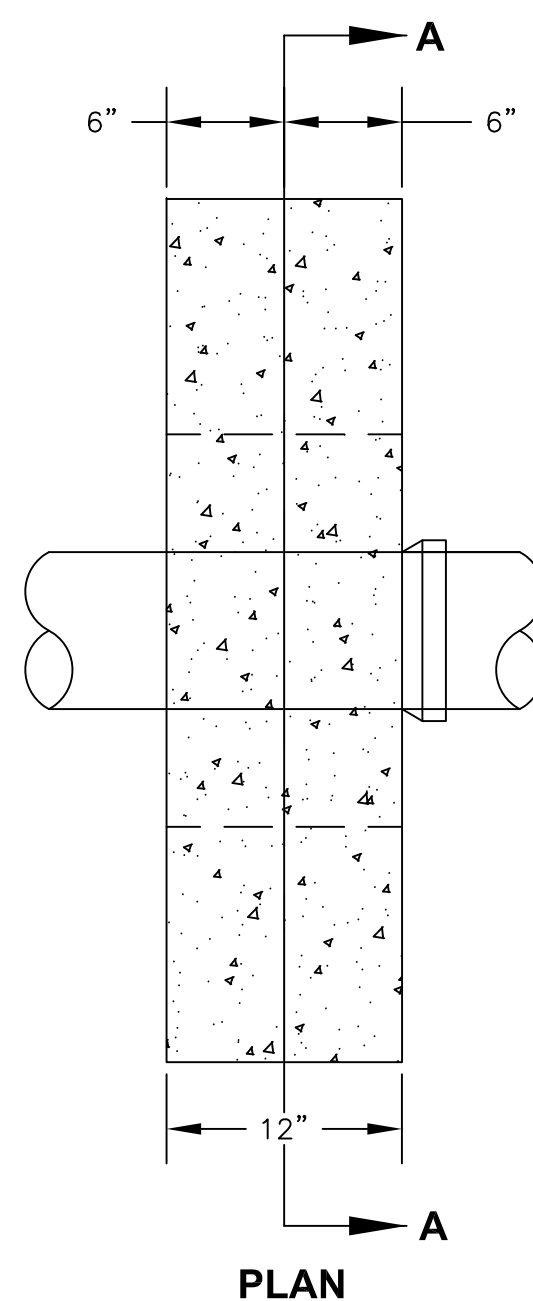
JOHN SHUTAK
UTILITIES ENGINEER

DAVID L. CORLISS
CITY MANAGER

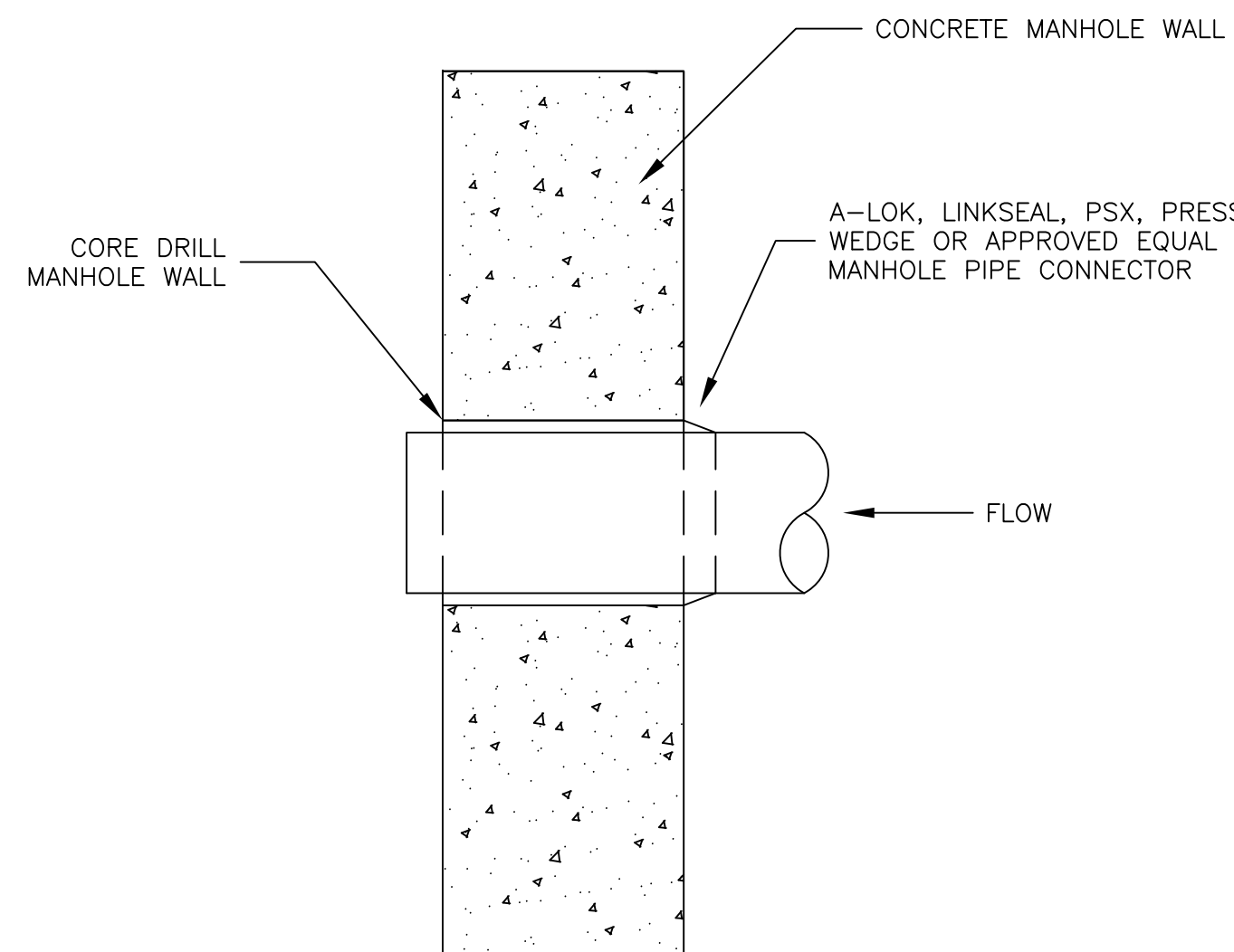


SECTION A-A

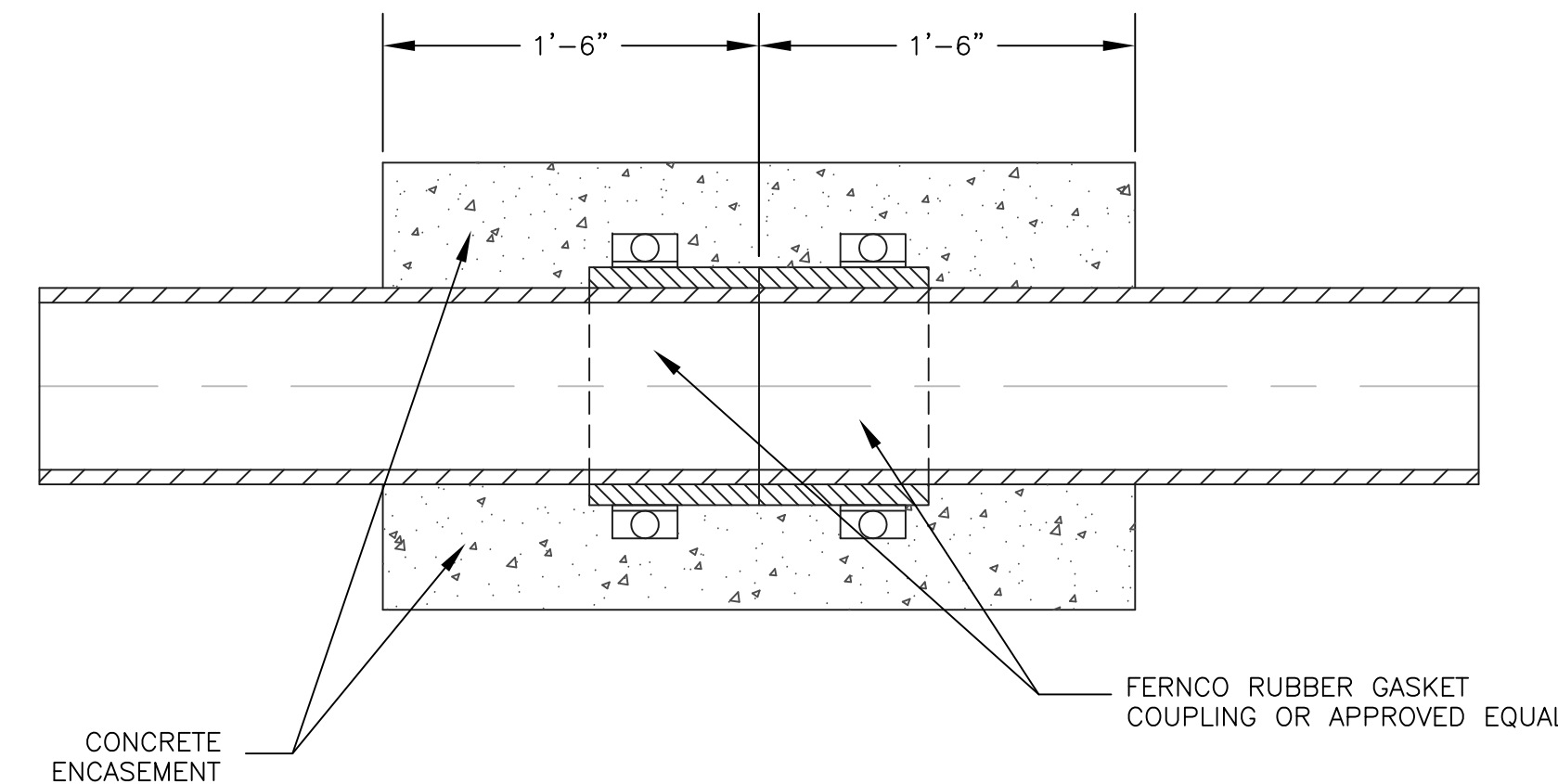
CONCRETE COLLAR DETAIL
N.T.S.



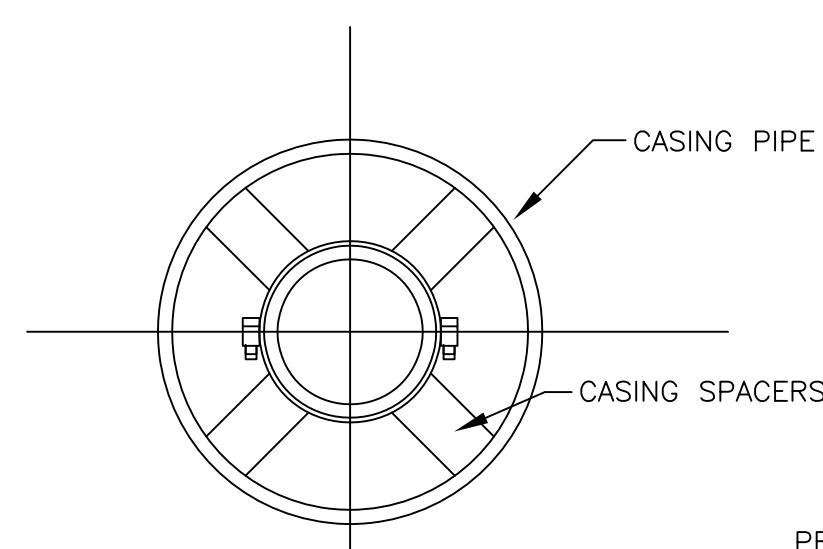
PLAN



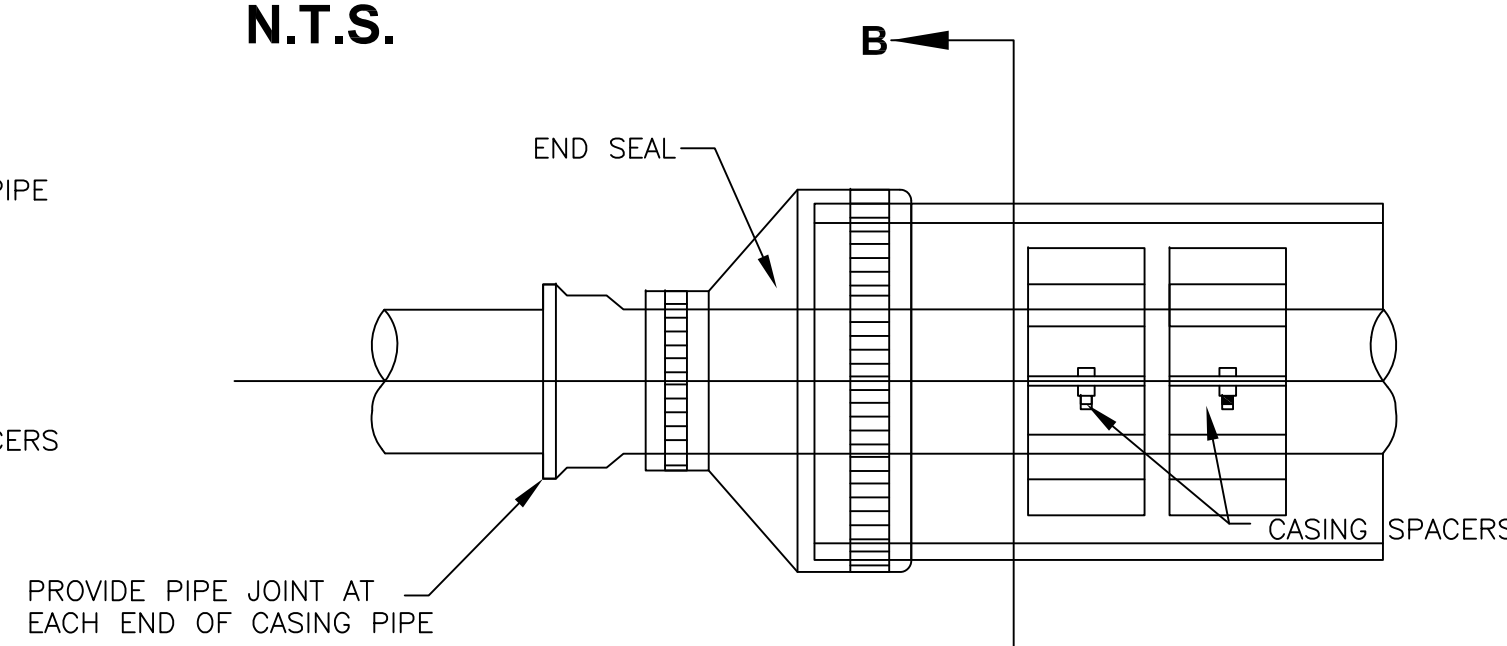
CONNECTION TO EXISTING MANHOLE
N.T.S.



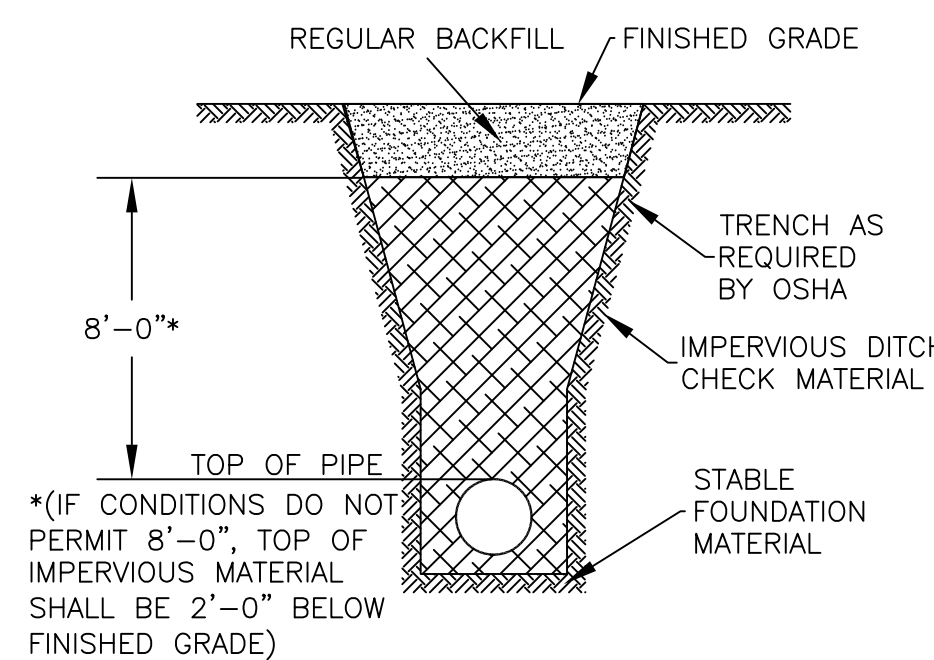
D.I.P., V.C.P. OR TRUSS PIPE CONNECTION
(FOR REPAIRS ONLY)
N.T.S.



SECTION B-B

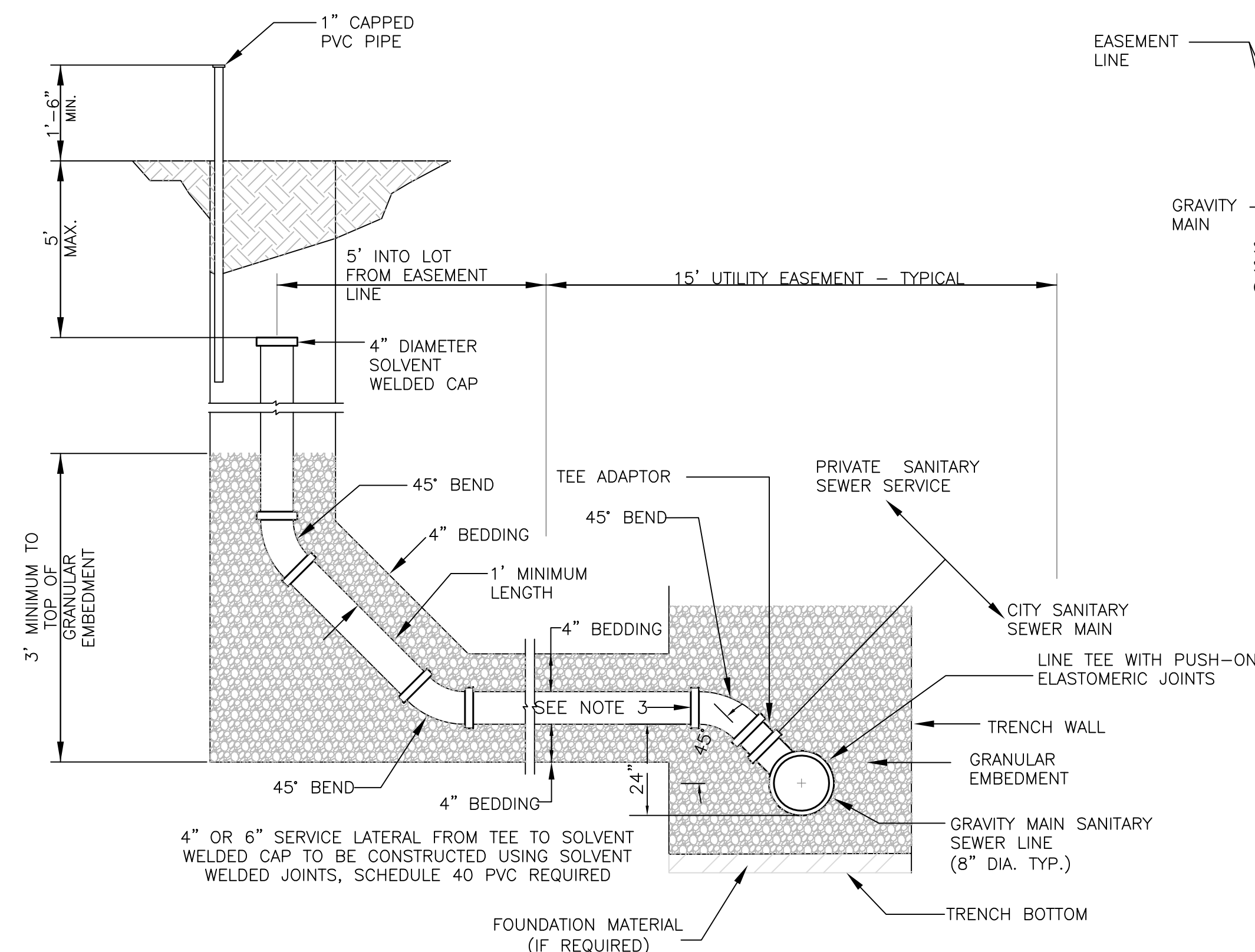


CASING PIPE DETAIL
N.T.S.

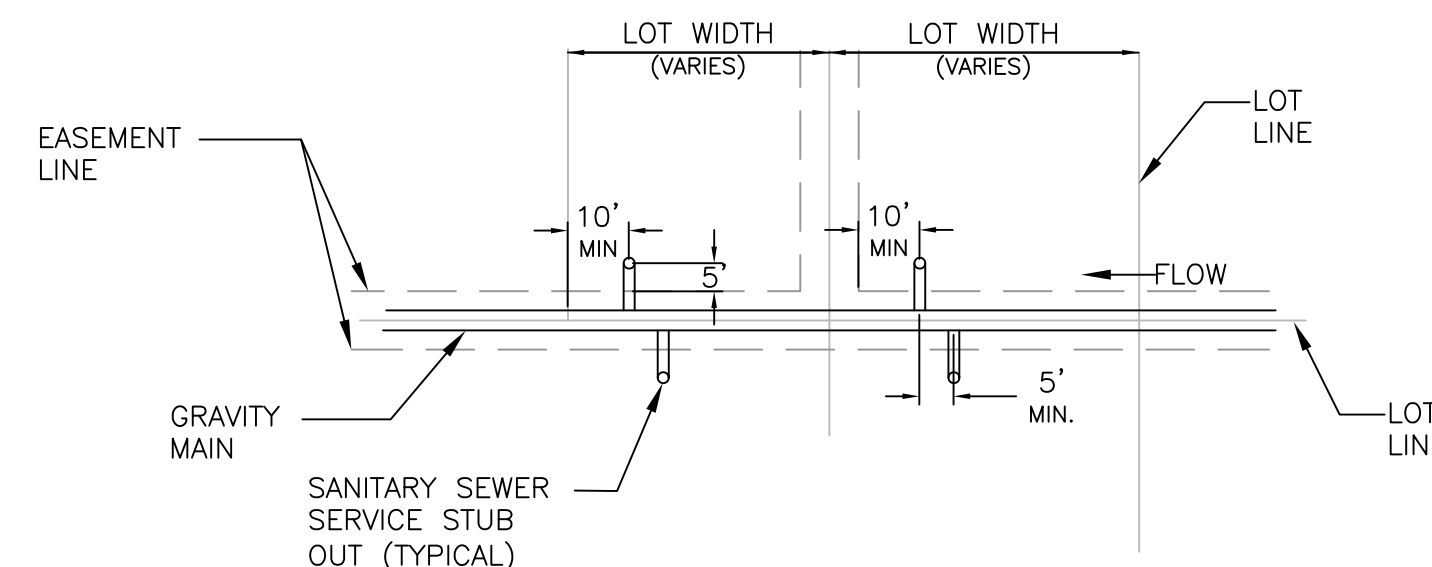


- NOTES: 1. IMPERVIOUS DITCH CHECKS SHALL BE PLACED WHERE SHOWN ON THE PLANS. LENGTHS SHALL BE A MINIMUM OF 10 LF. FLOWABLE FILL IS REQUIRED FOR PVC PIPE. FOR OTHER PIPE TYPES, CLAY MATERIAL OR FLOWABLE FILL MAY BE USED AT THE CONTRACTOR'S OPTION. FLOWABLE FILL MATERIAL SHALL CONSIST OF A PORTLAND CEMENT GROUT HAVING A MINIMUM TWENTY-EIGHT (28) DAY COMPREHENSIVE STRENGTH OF FIVE HUNDRED POUNDS PER SQUARE INCH (500 PSI). ORGANIC MATERIAL SHALL BE SELECT CLAY MATERIAL SEPARATED FROM EXCAVATED MATERIALS, FREE OF CLODS, CLUMPS, DEBRIS, ORGANIC MATERIAL, AND STONES, COMPACTED SO AS TO OBTAIN 90% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE PLUS OR MINUS 2%, AS DETERMINED BY ASTM D698.
2. REGULAR BACKFILL (ABOVE DITCH CHECK) SHALL BE FREE OF DEBRIS, ORGANIC MATERIALS AND STONES LARGER THAN 12".

IMPERVIOUS DITCH CHECK
N.T.S.

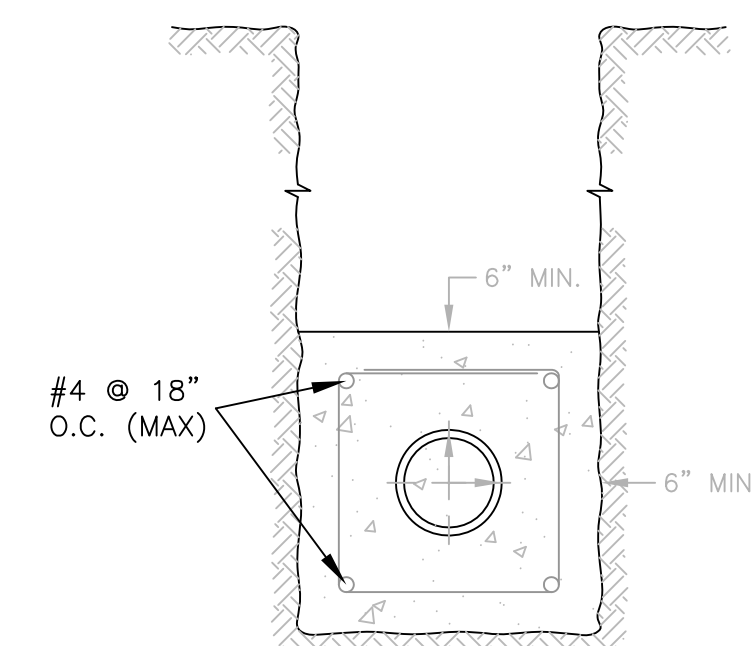


SANITARY SEWER SERVICE
CONNECTION STUB OUT
N.T.S.



PLAN VIEW OF
SANITARY SEWER SERVICE
CONNECTION STUB OUT LOCATIONS
BACK LOT LINE EXAMPLE SHOWN

- GENERAL NOTES:
- SERVICE TEE SHALL BE INSTALLED SO THAT SERVICE CONNECTION IS AT LEAST 45° FROM HORIZONTAL.
 - SOLVENT WELDED CONNECTIONS ARE REQUIRED FOR THE ENTIRE SERVICE CONNECTION FROM THE TEE TO THE CAP.
 - MINIMUM GRADE FOR SERVICE LATERAL IS 1.00% FOR SIX (6) INCH AND 2.00% FOR FOUR (4) INCH SERVICE LINES.
 - LOCATION OF TEE CONNECTION BY STATION AND HORIZONTAL LENGTH OF STUB OUT TO BE NOTED ON CONSTRUCTION DRAWINGS OF SANITARY SEWER MAIN CONSTRUCTION.



CONCRETE ENCASEMENT DETAIL
N.T.S.

SHEET 6 OF 6

SHEET 2 OF 2

BY	DATE	REVISION



STANDARD SANITARY
DETAILS—GRAVITY

JOHN SHUTAK
UTILITIES ENGINEER

DAVID L. CORLISS
CITY MANAGER