

# PRIVATE SANITARY SEWER EXTENSION

TO SERVE  
**WICHITA MID-CONTINENT AIRPORT**

PRIVATE PROJECT NO. 1910 PPS (607861)

**CITY OF WICHITA, KANSAS**

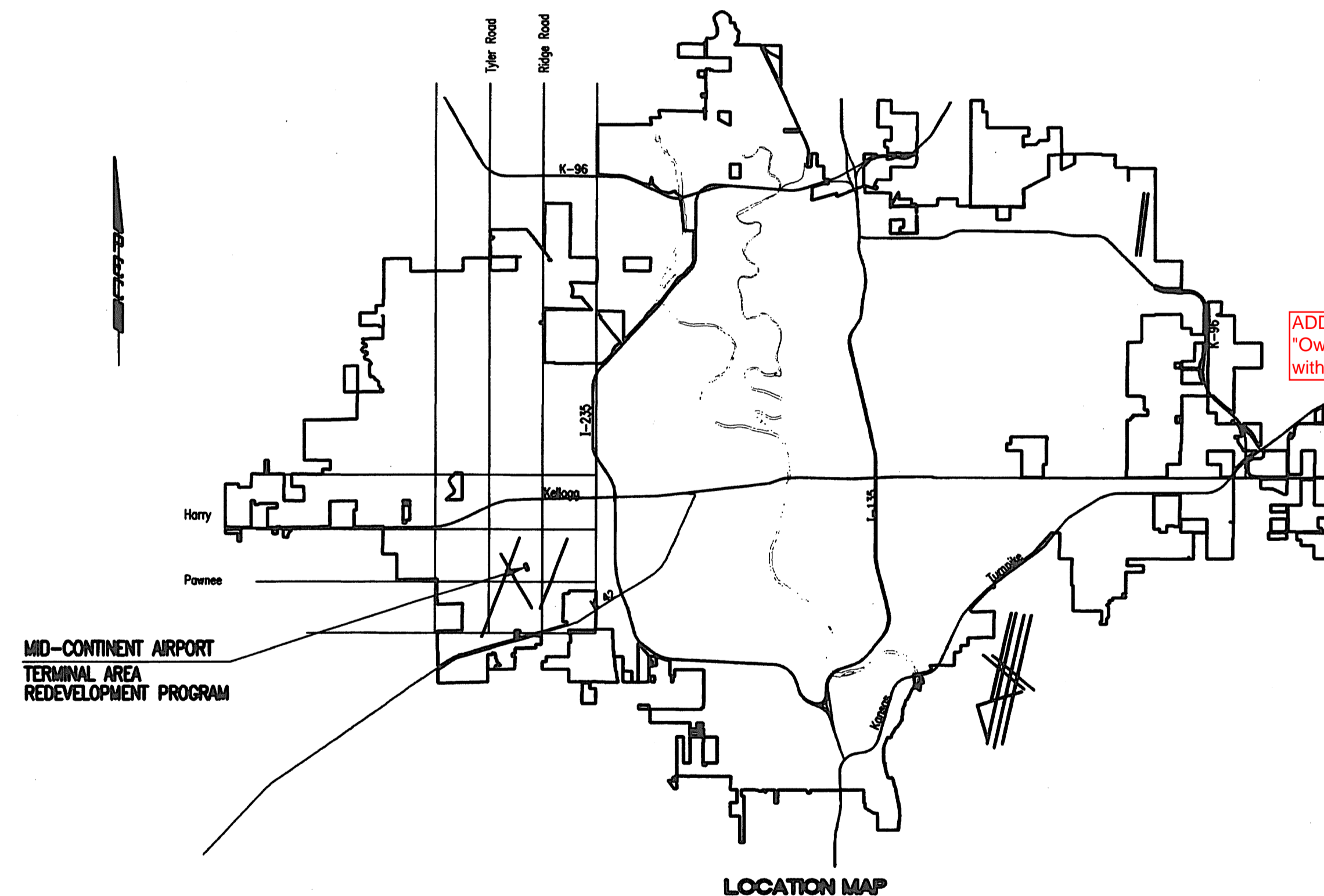
**JAMES L. ARMOUR, P.E. - CITY ENGINEER**

**AS BUILT PLANS**  
 Contractor: Dondlinger  
 Inspector: Lyle Powers, Baughman Co.  
 pdf's by: KEK, 1/21/10

Release Date: 02/12/2010  
 : APRosas 02/12/2010

**INDEX OF SHEETS**

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ADD #3 Replace "Owner/Developer" with "Contractor"

APPROVED AS NOTED  
 By CITY ENGINEER OF WICHITA

Sanitary Sewers Shawn Miller 6-5-09

Storm Sewers \_\_\_\_\_

Driveway Approaches \_\_\_\_\_

Paving \_\_\_\_\_

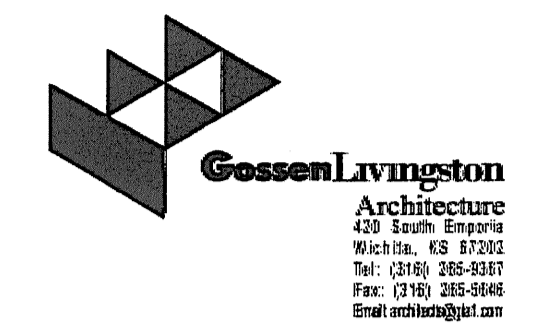
**NOTE TO CONTRACTOR**

INSPECTION AND TESTING FOR THIS PROJECT IS TO BE PROVIDED BY A LICENSED CONSULTING ENGINEERING FIRM CONTRACTED BY 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 UNTIL SUCH INSPECTION IS ARRANGED FOR AND REQUIRED BONDS HAVE BEEN SUBMITTED TO AND APPROVED BY THE CITY NOR SHALL ANY WORK BE COMMENCED IN DEDICATED EASEMENTS OR PUBLIC RIGHT-OF-WAY WITHOUT WRITTEN AUTHORIZATION BY THE CITY ENGINEER. IMPROVEMENTS PERFORMED UNDER THIS PROJECT SHALL NOT BE ACCEPTED BY THE CITY UNTIL ALL APPLICABLE DOCUMENTATION HAS BEEN SUBMITTED TO THE CITY ENGINEER. THIS MAY INCLUDE: RECORD DRAWINGS, INSPECTION LOGS, TEST DOCUMENTATION, TV TAPES, AND A CERTIFICATE OF COMPLETION. THE ABOVE SHALL BE PERFORMED BY THE CONSULTING FIRM CONTRACTED TO INSPECT THIS PROJECT.

**JUNE 2009**  
 PLANS PREPARED BY  
**PROFESSIONAL ENGINEERING CONSULTANTS, P.A.**  
 ENGINEERS  
 WICHITA, KANSAS



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**WICHITA MID-CONTINENT AIRPORT**  
 Air Capital Terminal 3  
**PACKAGE # 3**  
**LANDSIDE UTILITIES PHASE I & MID-CONTINENT DRIVE RELOCATION**



ISSUE: BID SET

DATE: JUNE 8, 2009  
 HNTB PROJECT NO.: 34912  
 CLIENT PROJECT NO.: 06481

DRAWN BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 APPROVED BY: \_\_\_\_\_

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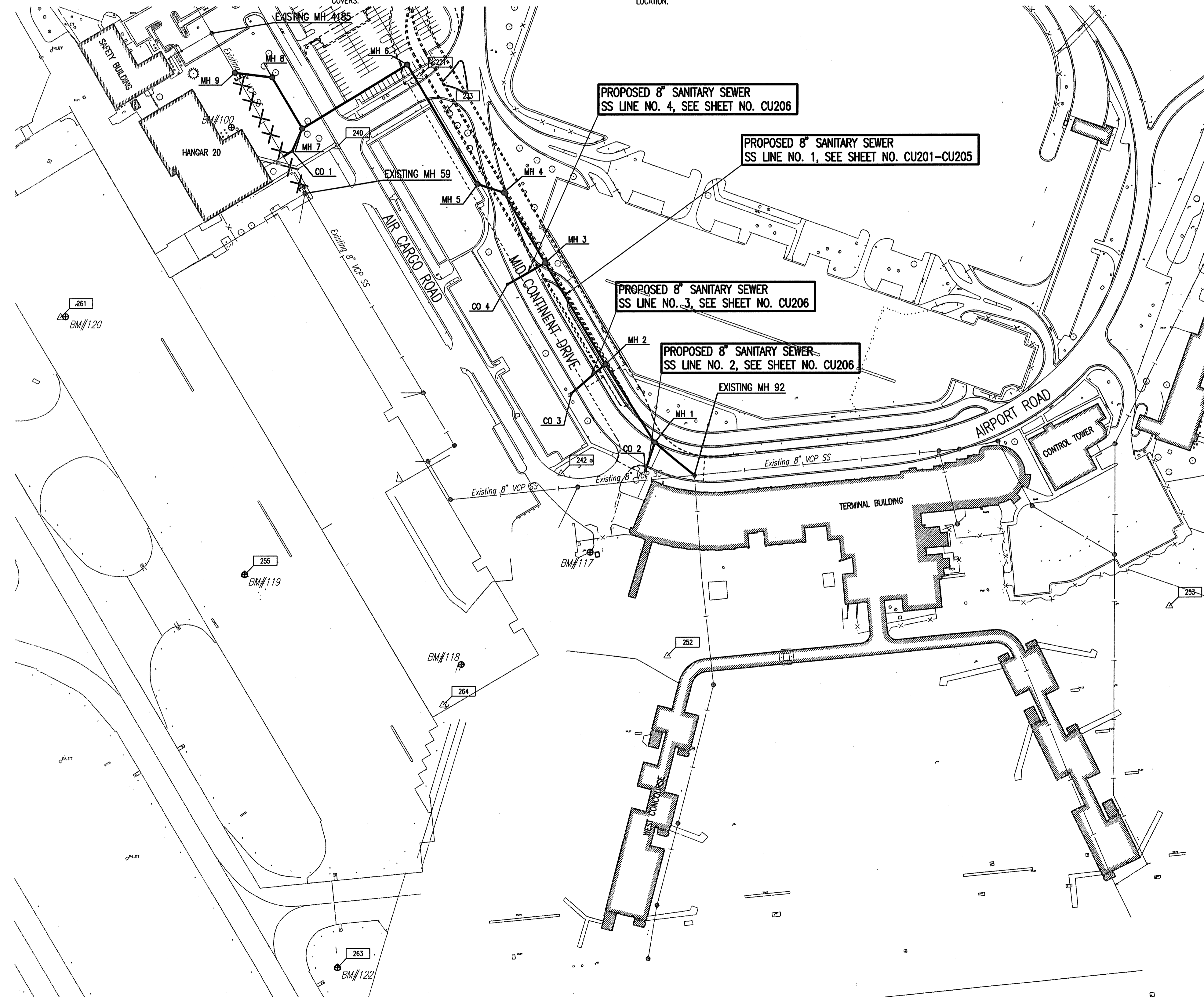
**SANITARY SEWER TITLE SHEET**

**CU101**

GENERAL NOTES

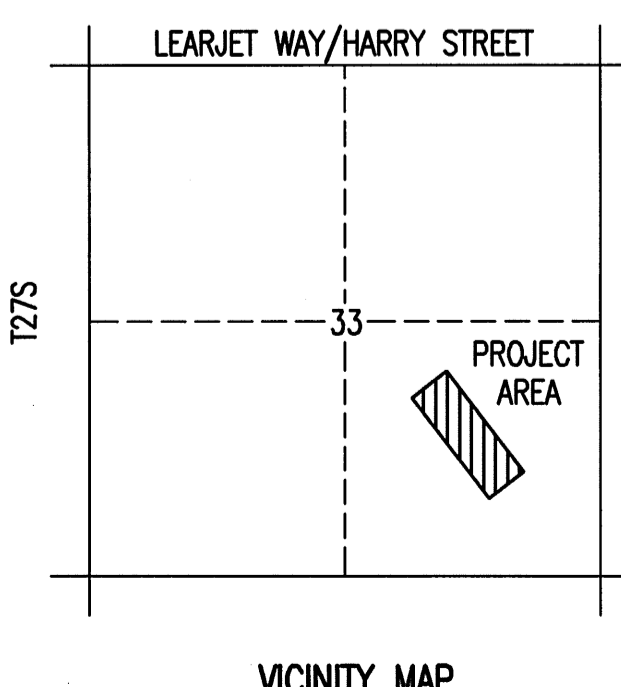
- ALL CONSTRUCTION AND MATERIALS TO COMPLY WITH CITY OF WICHITA SPECIFICATIONS AND STANDARDS.
- ALL ELEVATIONS SHOWN ARE U.S.G.S.
- THE CONTRACTOR SHALL LIMIT THE EXTENT OF TRENCH TO REMAIN OPEN OVERNIGHT AND WEEKENDS TO LESS THAN 50 FEET. ALL OPEN TRENCHES SHALL BE PROTECTED WITH PEDESTRIAN FENCE. SEE SHEET GC301.
- AT LEAST 72 HOURS PRIOR TO BEGINNING EXCAVATION (EXCLUDING WEEKENDS AND HOLIDAYS), THE CONTRACTOR SHALL CONTACT MID-CONTINENT AIRPORT UTILITY CONTACT JOHN OSWALD AT (316) 946-4715 AND THE KANSAS ONE-CALL SYSTEM, A UTILITY LOCATION SERVICE, AT (316) 687-2470 TO REQUEST THE LOCAL UTILITY COMPANIES MARK ANY EXISTING LINES WITHIN THE PROJECT AREA.
- UNDERGROUND UTILITY SERVICE LINES AND OVERHEAD UTILITY POLE LINES ARE TO BE ADJUSTED AS NECESSARY BY OTHERS PRIOR TO CONSTRUCTION UNLESS THE PLANS SPECIFICALLY CALL FOR THEIR ADJUSTMENT BY THE CONTRACTOR OR UNLESS THE PLANS SPECIFICALLY IDENTIFY A UTILITY TO BE ADJUSTED BY ITS OWNER DURING CONSTRUCTION. EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS, REPRESENT THE BEST INFORMATION OBTAINABLE FOR THE DESIGN. THE CONTRACTOR WILL BE REQUIRED TO WORK AROUND EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WHICH DO NOT CONFLICT WITH PROPOSED CONSTRUCTION.
- 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. ALL COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO THE OTHER RELATED ITEMS OF WORK.
- CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM ALL MANHOLE COVERS.
- MANHOLES SHALL BE TYPE "P" MANHOLES. MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THE STANDARD DETAIL DRAWINGS.
- RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES INCLUDING ANY TREES REMOVED AND TREE TRIMMINGS SHALL BE DISPOSED ON SITES PROVIDED BY THE CONTRACTOR. APPROVED EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF AT THE SOUTH STORAGE YARD LOCATED OFF OF K-42 HIGHWAY. THESE SITES SHALL ALSO BE APPROVED BY THE ENGINEER AS TO SUITABILITY, APPEARANCE, AND SITE LOCATION. LOCATIONS THAT, IN THE OPINION OF THE ENGINEER, WILL LEAVE AN UNSIGHTLY APPEARANCE WILL NOT BE APPROVED. ALL DISPOSAL SITES MUST BE APPROVED BY THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN WILL REQUIRE A KANSAS STATE BOARD OF AGRICULTURE PERMIT. ANY MATERIAL DUMPED IN WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORPUS OF ENGINEERS PERMITTING REGULATIONS. ANY MATERIAL BURIED OR STOCKPILED BEYOND APPROVED CONSTRUCTION LIMITS MAY REQUIRE ARCHAEOLOGICAL INVESTIGATIONS UNLESS BURIED IN A PREVIOUSLY APPROVED DISPOSAL LOCATION.
- ALL LAWN/TURF AREAS DISTURBED BY CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE RESTORED WITH THE SAME GRASS/SOD AS EXISTING. RESTORATION OF DISTURBED AREAS SHALL INCLUDE, BUT NOT BE LIMITED TO, TOP SOIL PREPARATION, SEEDING, MULCH, AND/OR RESEEDING. ALL SEEDING/SODDING WORK SHALL BE IN ACCORDANCE WITH THE CITY OF WICHITA STANDARD SPECIFICATIONS AND THE CITY OF WICHITA ADMINISTRATIVE REGULATION NO. AR6.5 WHICH GOVERNS CLEANUP AND RESTORATION OR REPLACEMENT FOLLOWING CONSTRUCTION. ALL COSTS FOR THIS WORK SHALL BE SUBSIDIARY TO OTHER RELATED ITEMS OF WORK.

- THE CONTRACTOR SHALL AVOID REMOVAL OR TRIMMING OF ANY TREES OR SHRUBS WHERE POSSIBLE. WHERE THE CONTRACTOR BELIEVES THE REMOVAL OR TRIMMING IS UNAVOIDABLE, HE SHALL COORDINATE SUCH WORK WITH THE ENGINEER. COSTS FOR TREE/SHRUB REMOVAL AND TRIMMING REGARDLESS OF SIZE SHALL BE CONSIDERED SUBSIDIARY TO OTHER RELATED ITEMS OF WORK.
- THE CONTRACTOR SHALL PREVENT ANY CONSTRUCTION DEBRIS FROM ENTERING THE EXISTING SANITARY SEWER DURING CONSTRUCTION.
- THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY ADJUTING THE CONSTRUCTION OF THIS PROJECT A MINIMUM OF TEN (10) DAYS ADVANCE NOTICE PRIOR TO START OF CONSTRUCTION.
- CONTRACTOR IS REQUIRED TO MAINTAIN CONTINUOUS FLOW OF SEWAGE IN EXISTING MAINS AT ALL TIMES.
- THE CONTRACTOR SHALL NOT BURY MANHOLES THAT HAVE RIM ELEVATIONS WHICH ARE LOWER THAN EXISTING GROUND AT THE MANHOLE. THE GROUND AROUND SUCH MANHOLES AND ALONG THE SEWER ALIGNMENT SHALL BE BACKFILLED TO THE APPROXIMATE ELEVATION OF THE PROPOSED GROUND ELEVATION SHOWN ON THE PLAN/PROFILE SHEETS. THE CONTRACTOR SHALL PROVIDE DRAINAGE AWAY FROM THESE MANHOLES AND SEWER LINES BY CONSTRUCTION OF TEMPORARY DITCHES OR SLOPING THE GROUND AS REQUIRED. ALL COSTS FOR THIS WORK SHALL BE CONSIDERED SUBSIDIARY TO OTHER RELATED ITEMS OF WORK.
- THE CONTRACTOR SHALL PROVIDE MOUNDING EARTH AT MANHOLES AND CLEANOUTS THAT HAVE TOP ELEVATIONS GREATER THAN 1 FOOT ABOVE EXISTING GRADE, AS SHOWN ON THE PLANS. COSTS FOR MOUNDING SHALL BE CONSIDERED SUBSIDIARY TO OTHER RELATED ITEMS OF WORK.
- INTERURBAN TRAFFIC GENERATED OUTSIDE THE PROJECT AREA AND LOCAL BUSINESS OR RESIDENTIAL TRAFFIC GENERATED WITHIN THE PROJECT AREA ARE TO BE CARRIED THROUGH CONSTRUCTION AS FURTHER PROMULGATED BY PROJECT SPECIAL PROVISIONS. THE CONTRACTOR SHALL UTILIZE BARRICADES, SIGNS, GUARDS, AND FLAGMEN IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
- WHERE INDICATED IN THE PLANS, THE SANITARY SEWER EXCAVATION SHALL BE SAND FILLED AND FLUSHED (JETTED AND VIBRATED) WITH WATER PER THE REQUIREMENTS LISTED IN THE STANDARD SPECIFICATIONS FOR THE CITY OF WICHITA, UNLESS FLOWABLE FILL OR OTHER IMPROVED BACKFILL MATERIAL IS OTHERWISE SPECIFIED. WHERE PIPE BACKFILL IS SHOWN TO BE JETTED SAND BACKFILL UP TO A MANHOLE OR CLEAN OUT, THE BACKFILL OF ALL EXCAVATED AREAS TO BE BACKFILLED SHALL INCLUDE THIS TYPE OF BACKFILL. ALL COSTS FOR SAND FILLING AND FLUSHING SHALL BE CONSIDERED SUBSIDIARY TO OTHER RELATED ITEMS OF WORK.
- THE CONTRACTOR SHALL INSTALL AND/OR MAINTAIN EROSION CONTROL METHODS AS SPECIFIED ON SHEETS CU303-CU305. THE FOLLOWING QUANTITIES ARE ESTIMATED, AND SHOULD BE CONSIDERED THE MINIMUM EFFORT REQUIRED. THE GENERAL LOCATION OF THE REQUIRED EROSION CONTROL IS ILLUSTRATED ON THE PLANS. THE SANITARY SEWER CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE EROSION CONTROL SHOWN THROUGH THE COMPLETION OF THIS PROJECT. INSTALLATION OF THESE BMP'S DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF ABATING SOIL EROSION.  
INLET PROTECTION = 4  
SILT FENCE BARRIER 0 L.F.  
CONSTRUCTION ENTRANCE 1 EA.
- ALL MANHOLE TOPS TO BE INSTALLED IN PAVED AREAS SHALL BE SET FLUSH WITH PROPOSED PAVEMENT ELEVATIONS. ADD #3 "Earth adjacent to manholes set in grassed areas shall be sloped away from manhole top at 10% to match grade."
- PAVEMENT REMOVAL AND REPLACEMENT, REGARDLESS OF TYPE SHALL BE REPLACED IN ACCORDANCE WITH PLAN DETAILS. SEE SHEET CP501 FOR DETAILS. SEE SHEETS CD100 AND CD105 FOR PAVEMENT REMOVAL AND REPLACEMENT.



**LEGEND**

EXISTING SANITARY SEWER	—
PROPOSED SANITARY SEWER	—
EXISTING SANITARY SEWER w/MANHOLE	—
PROPOSED SANITARY SEWER w/MANHOLE	—
EXISTING SANITARY SEWER w/CLEANOUT	—
PROPOSED SANITARY SEWER w/CLEANOUT	—
ABANDONED/PLUG FOR FUTURE TERMINAL	—X—



SCALE: 1" = 100'

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**MID-CONTINENT AIRPORT**  
 Air Capital Terminal 3  
**PACKAGE # 3**  
**LANDSIDE UTILITIES PHASE I & MID-CONTINENT DRIVE RELOCATION**

**DARWIN R. CROW**  
 LICENSED PROFESSIONAL ENGINEER  
 14896  
 6-2-09  
 KANSAS

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**SANITARY SEWER KEY MAP AND GENERAL NOTES**

**CU102**

CITY OF WICHITA PROJECT NO. 1910 PPS (607861)

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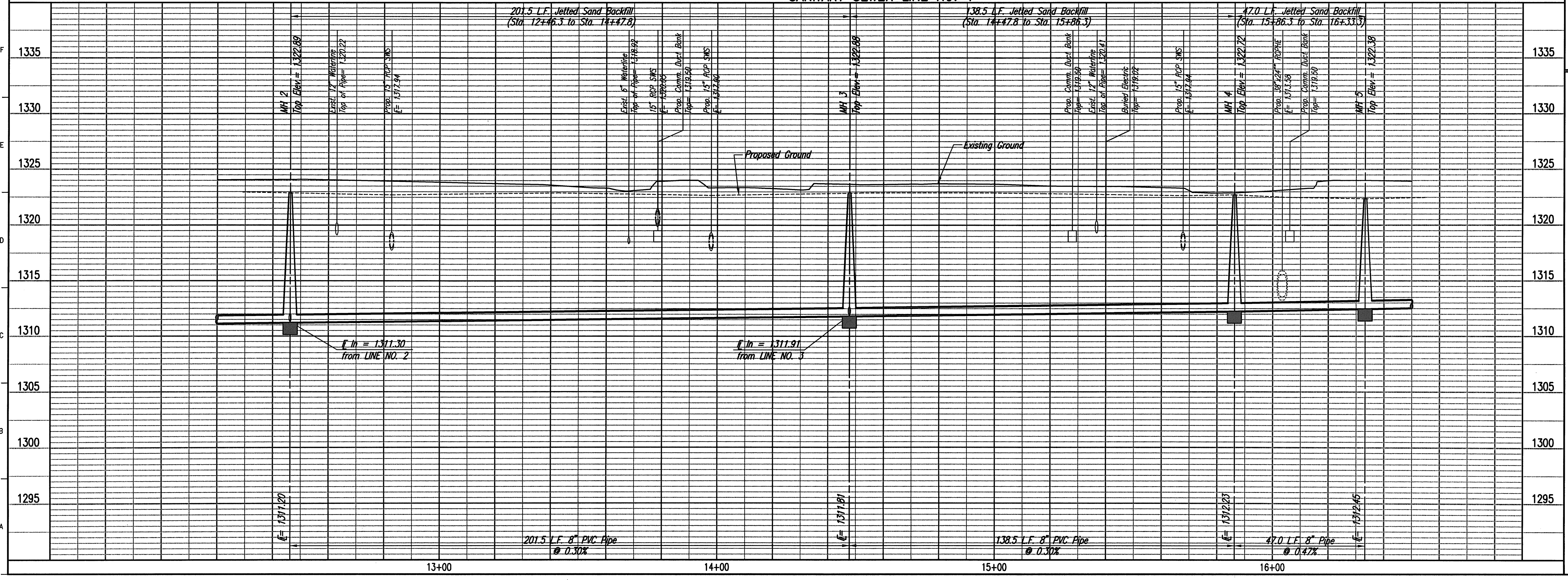
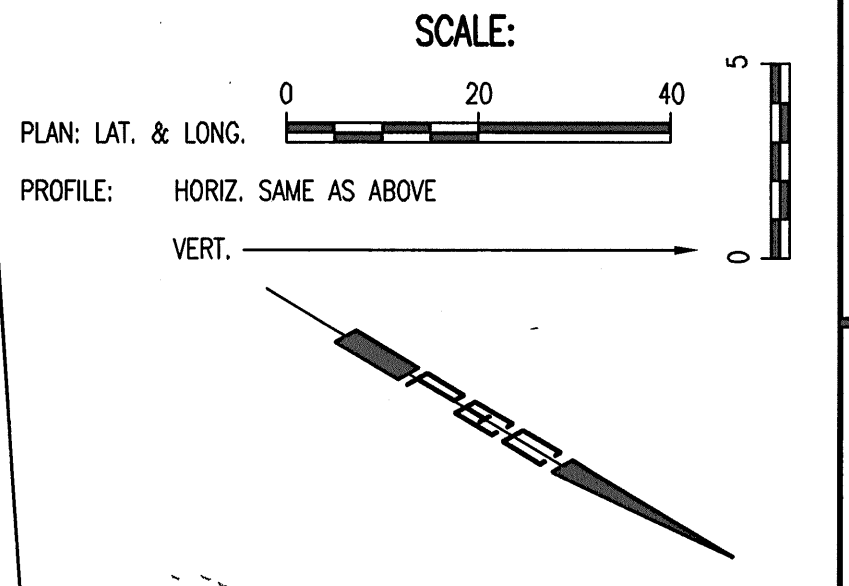
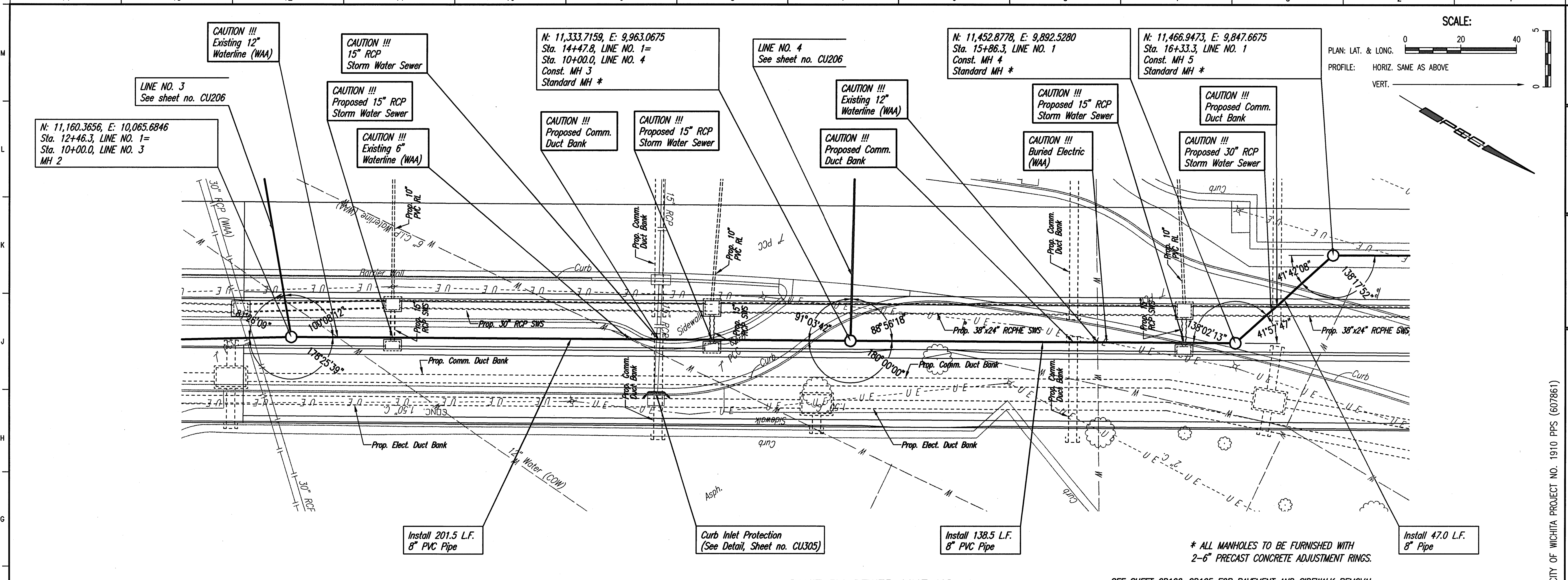
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PROFILE	CHECKED	DATE
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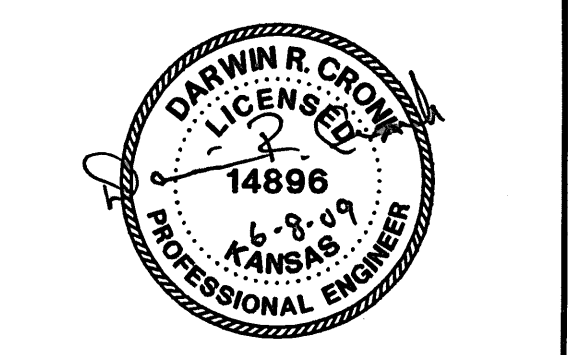
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**MID-CONTINENT AIRPORT**  
 Air Capital Terminal 3  
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CITY OF WICHITA PROJECT NO. 1910 PPS (607861)



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**SANITARY SEWER LINE NO. 1**  
 STA. 12+46.3 TO 16+33.3

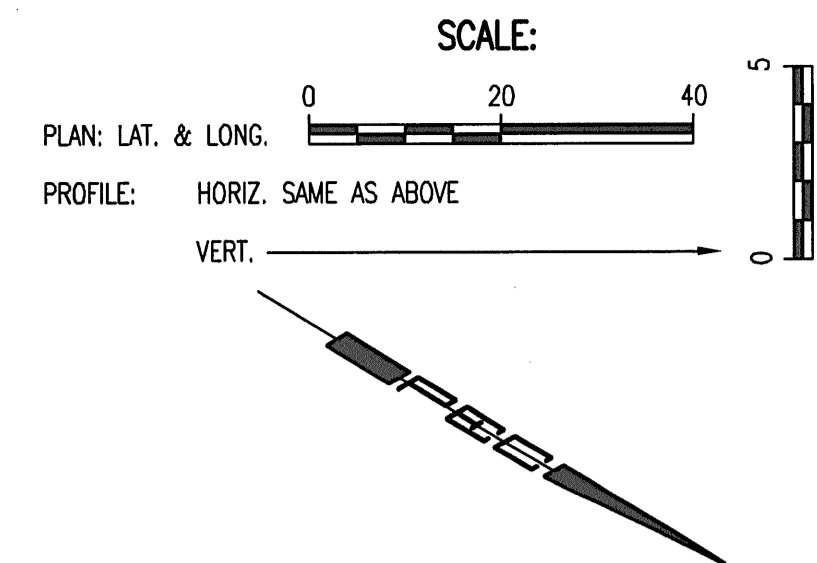
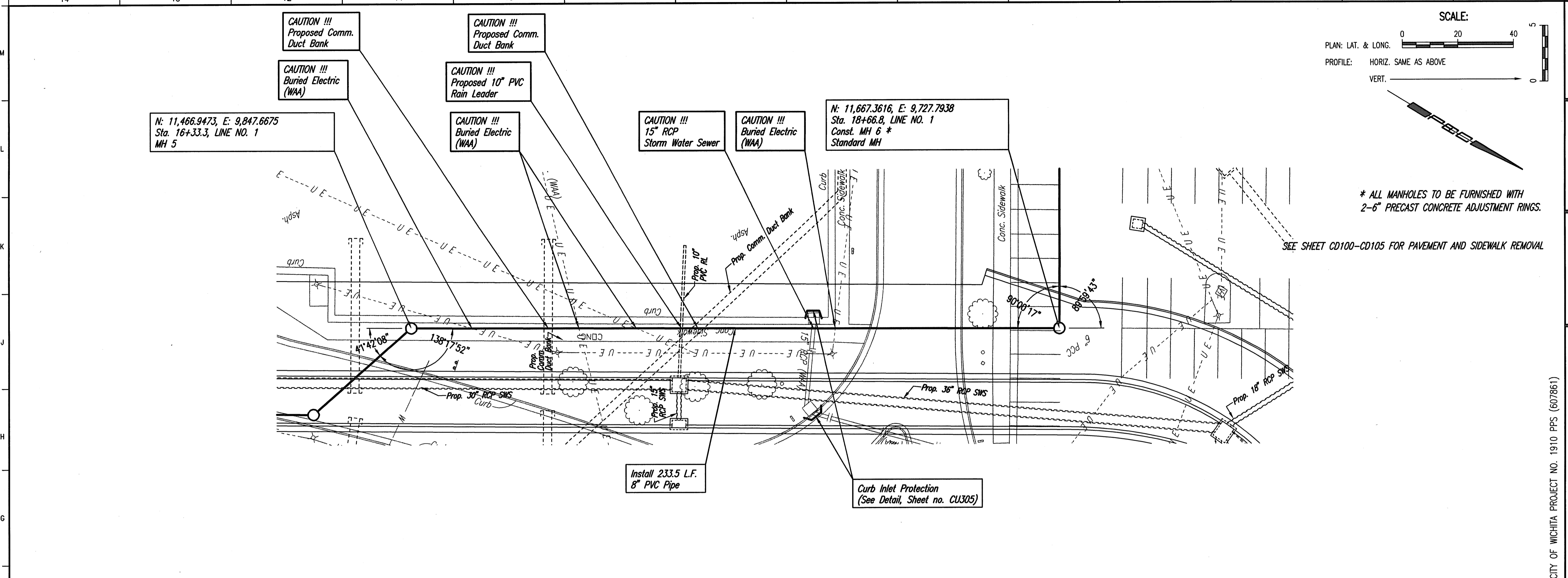
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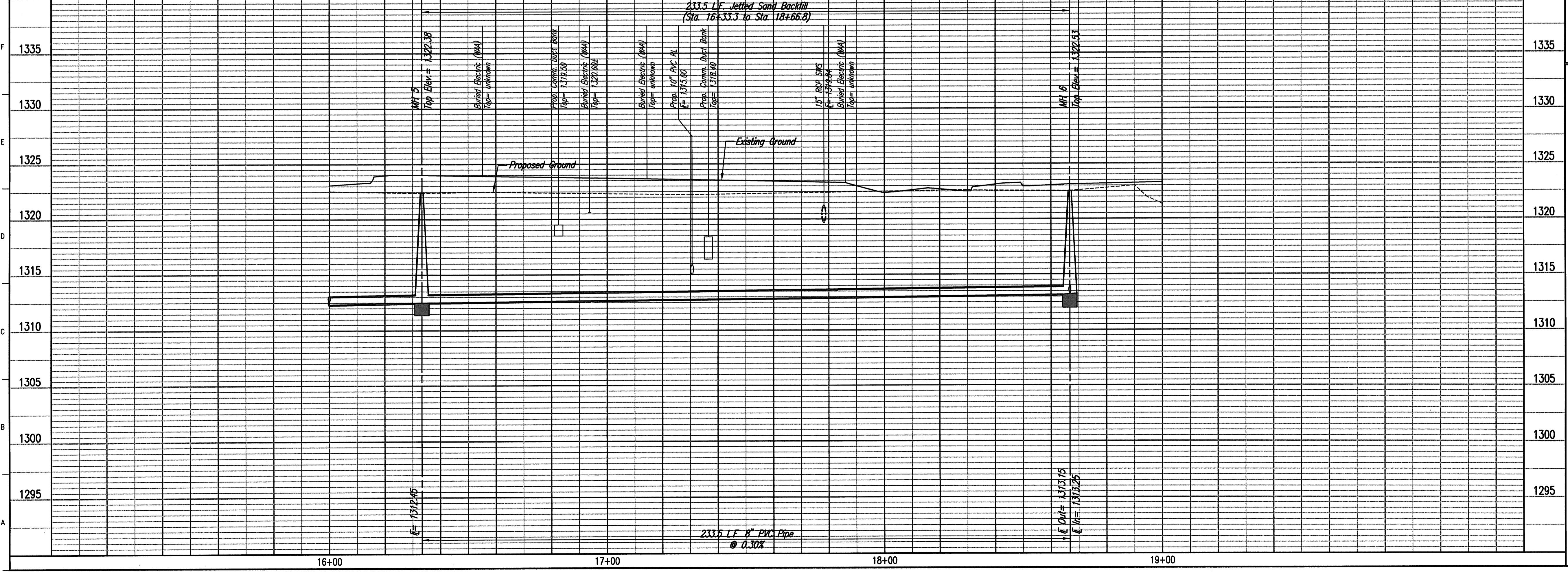
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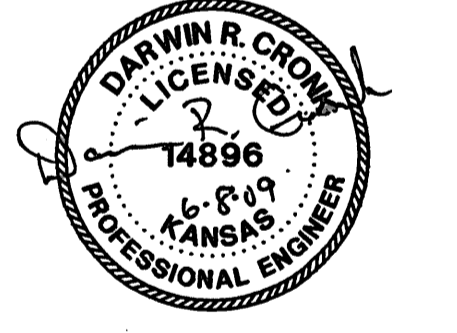
\* ALL MANHOLES TO BE FURNISHED WITH 2-6" PRECAST CONCRETE ADJUSTMENT RINGS.  
 SEE SHEET CD100-CD105 FOR PAVEMENT AND SIDEWALK REMOVAL

**SANITARY SEWER LINE NO. 1**



CITY OF WICHITA, PROJECT NO. 1910 PPS (607861)

**WICHITA**  
**MID-CONTINENT AIRPORT**  
 Air Capital Terminal 3  
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**LANDSIDE UTILITIES PHASE I &**  
**MID-CONTINENT DRIVE RELOCATION**



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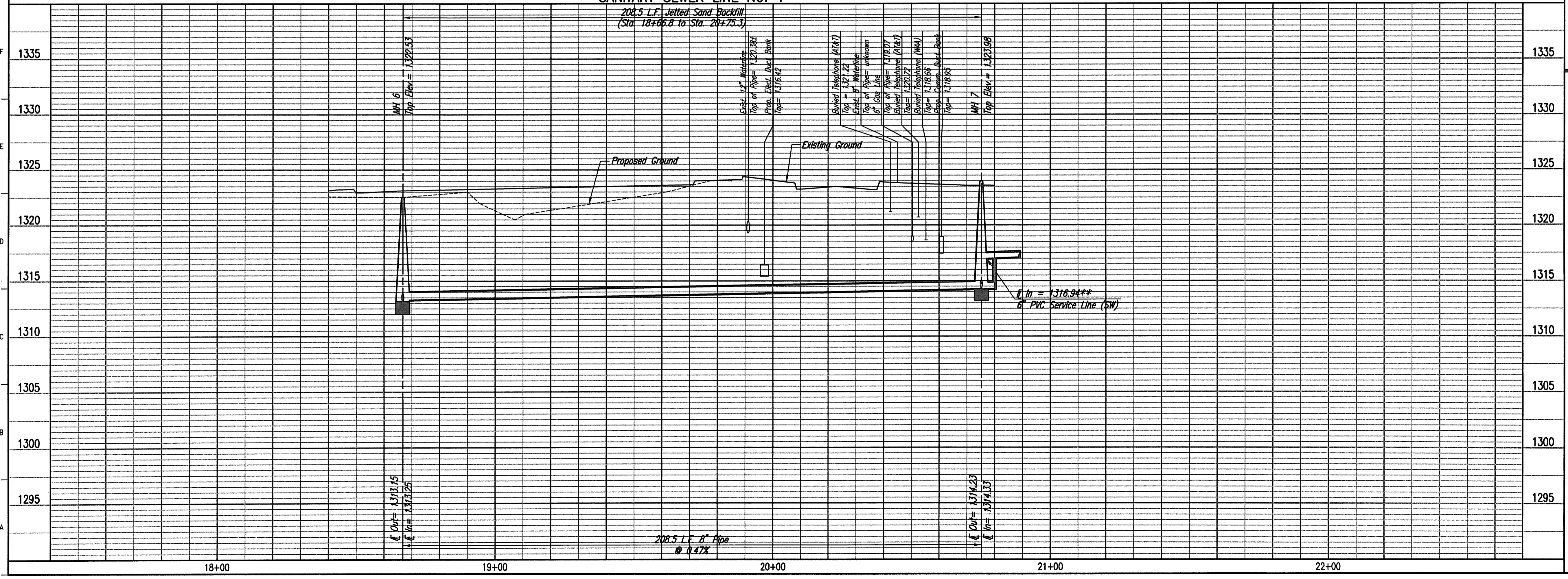
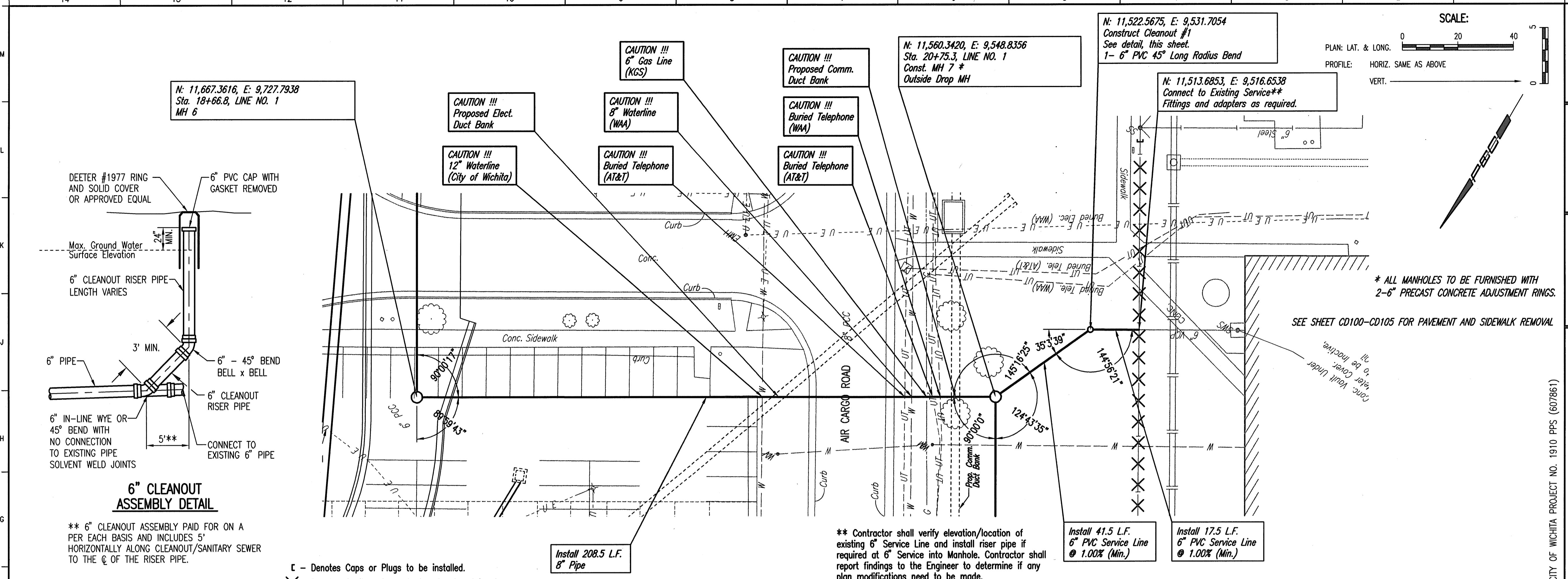
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**SANITARY SEWER LINE NO. 1**  
 STA. 16+33.3 TO 18+66.8  
**CU203**

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**SANITARY SEWER LINE NO. 1**  
 STA. 18+66.8 TO 20+75.3

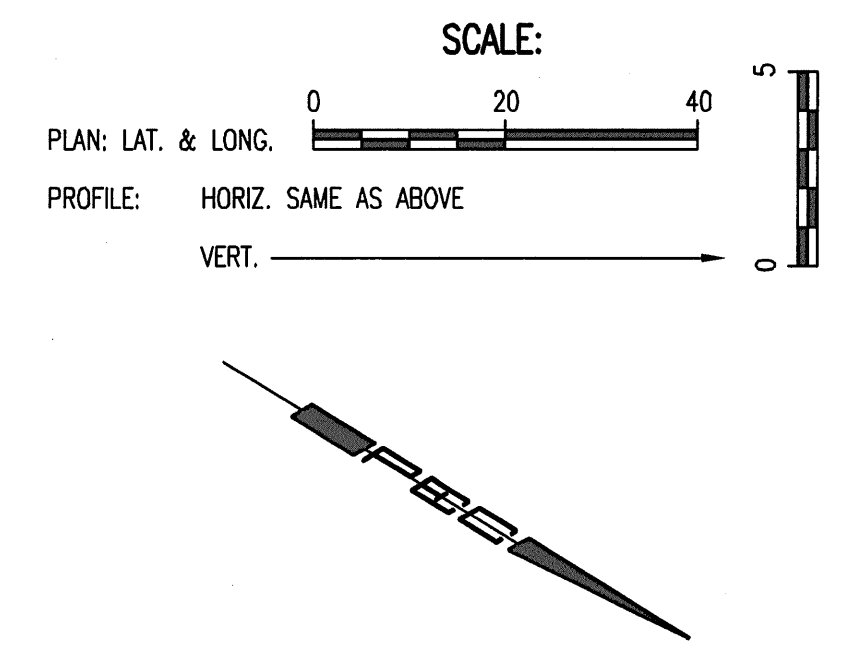
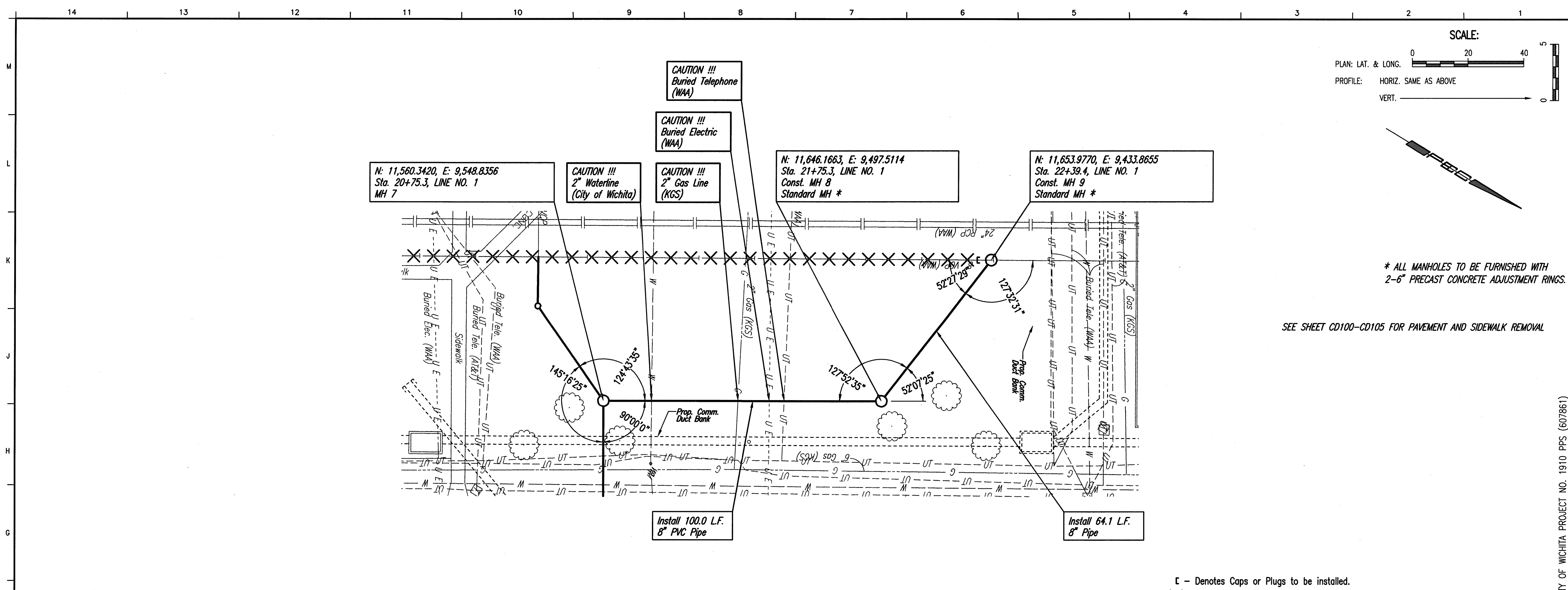
**CU204**

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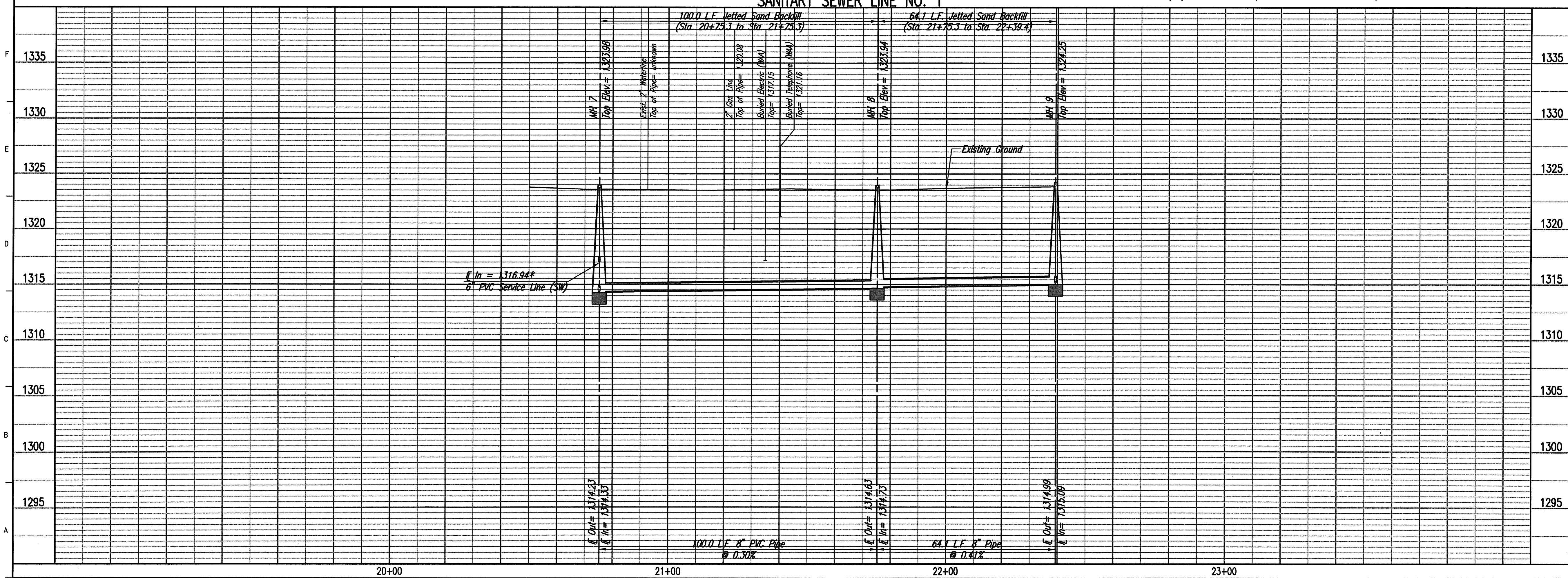


\* ALL MANHOLES TO BE FURNISHED WITH 2-6" PRECAST CONCRETE ADJUSTMENT RINGS.

SEE SHEET CD100-CD105 FOR PAVEMENT AND SIDEWALK REMOVAL

E - Denotes Caps or Plugs to be installed.  
 X - Denotes Sanitary Sewer to be abandoned in place.

**SANITARY SEWER LINE NO. 1**



CITY OF WICHITA PROJECT NO. 1910 PPS (607861)

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**LANDSIDE UTILITIES PHASE I &**  
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 STA. 20+75.3 TO 22+39.4

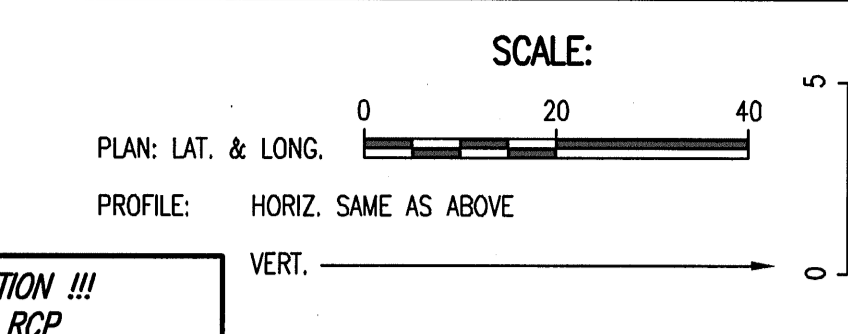
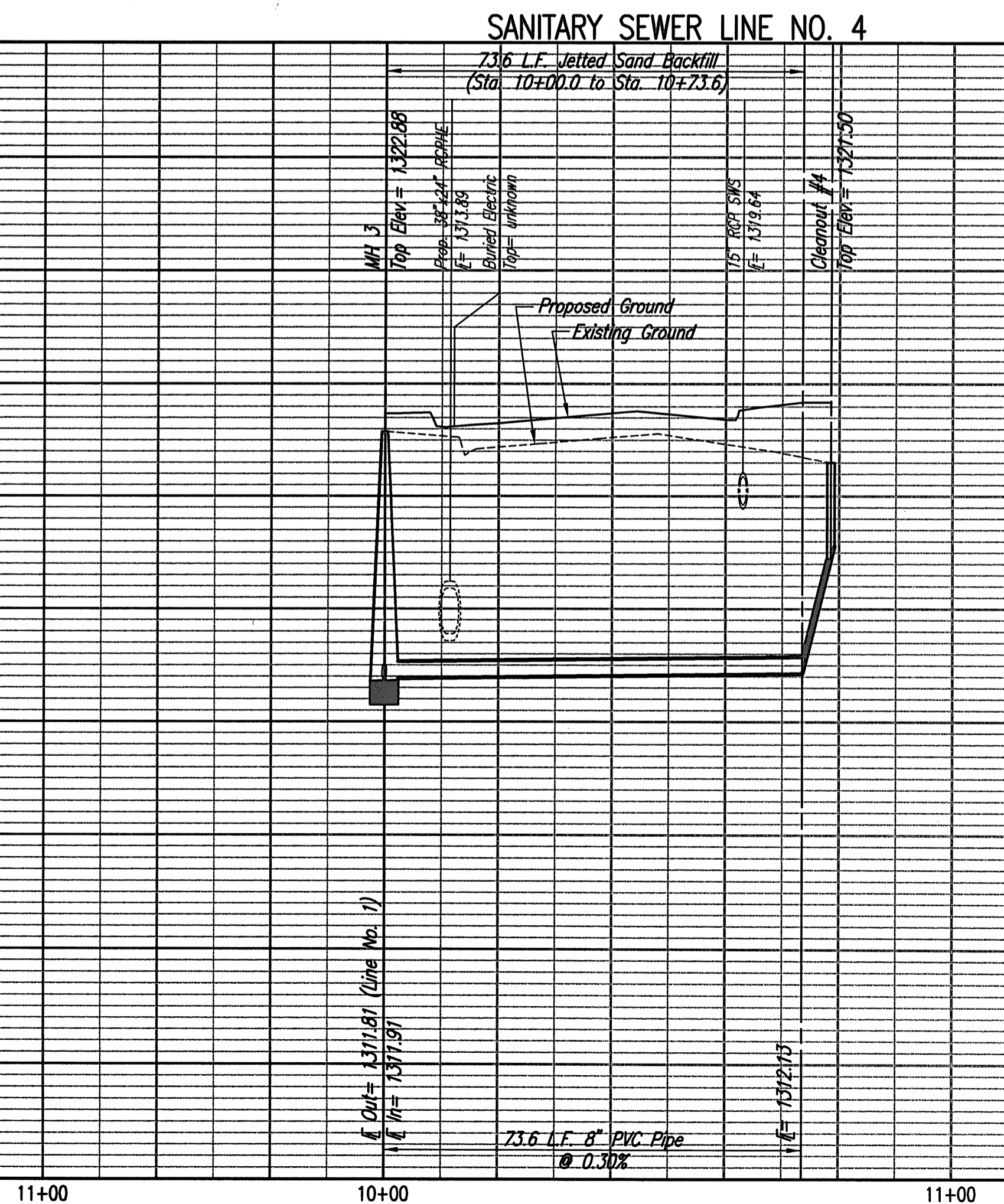
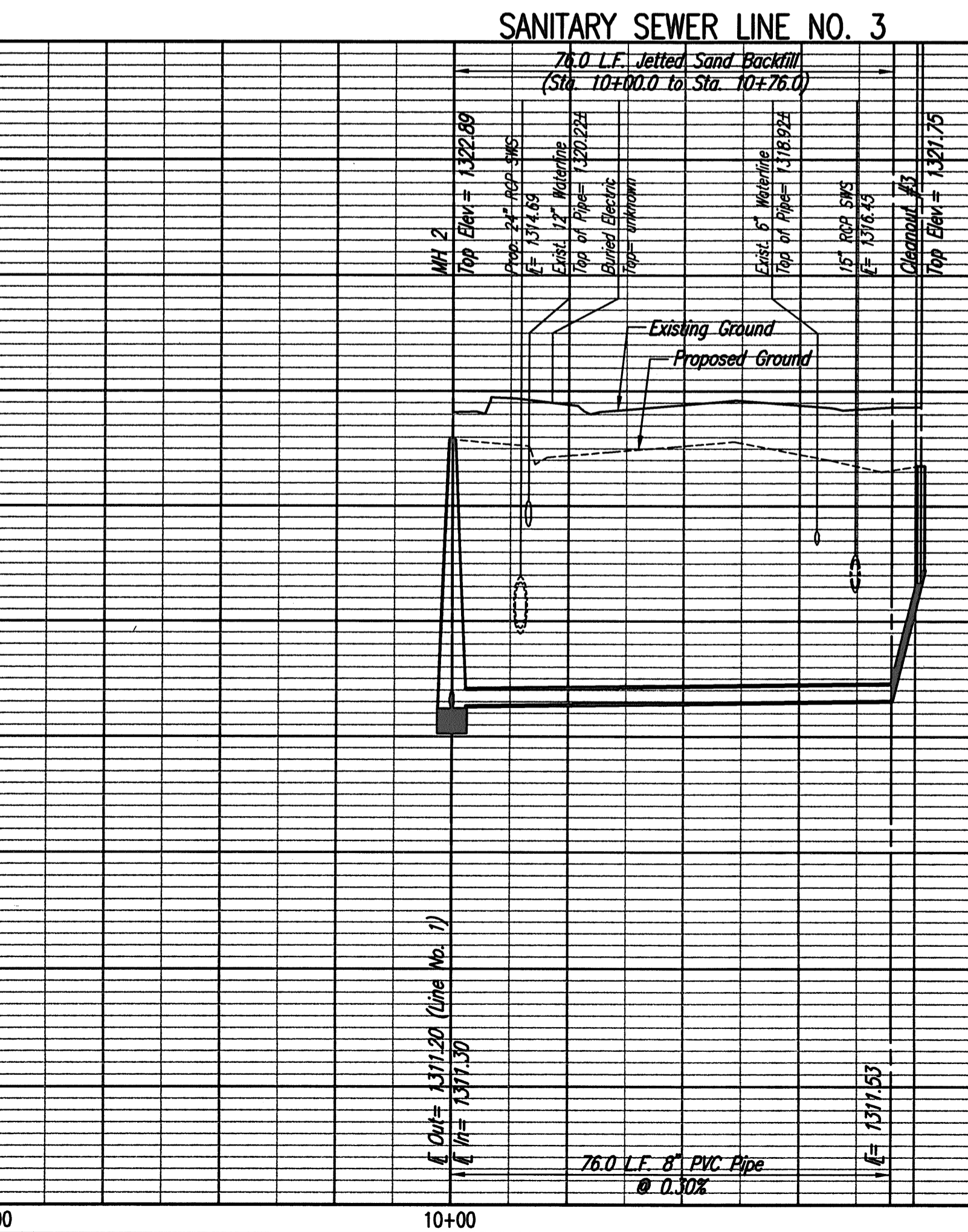
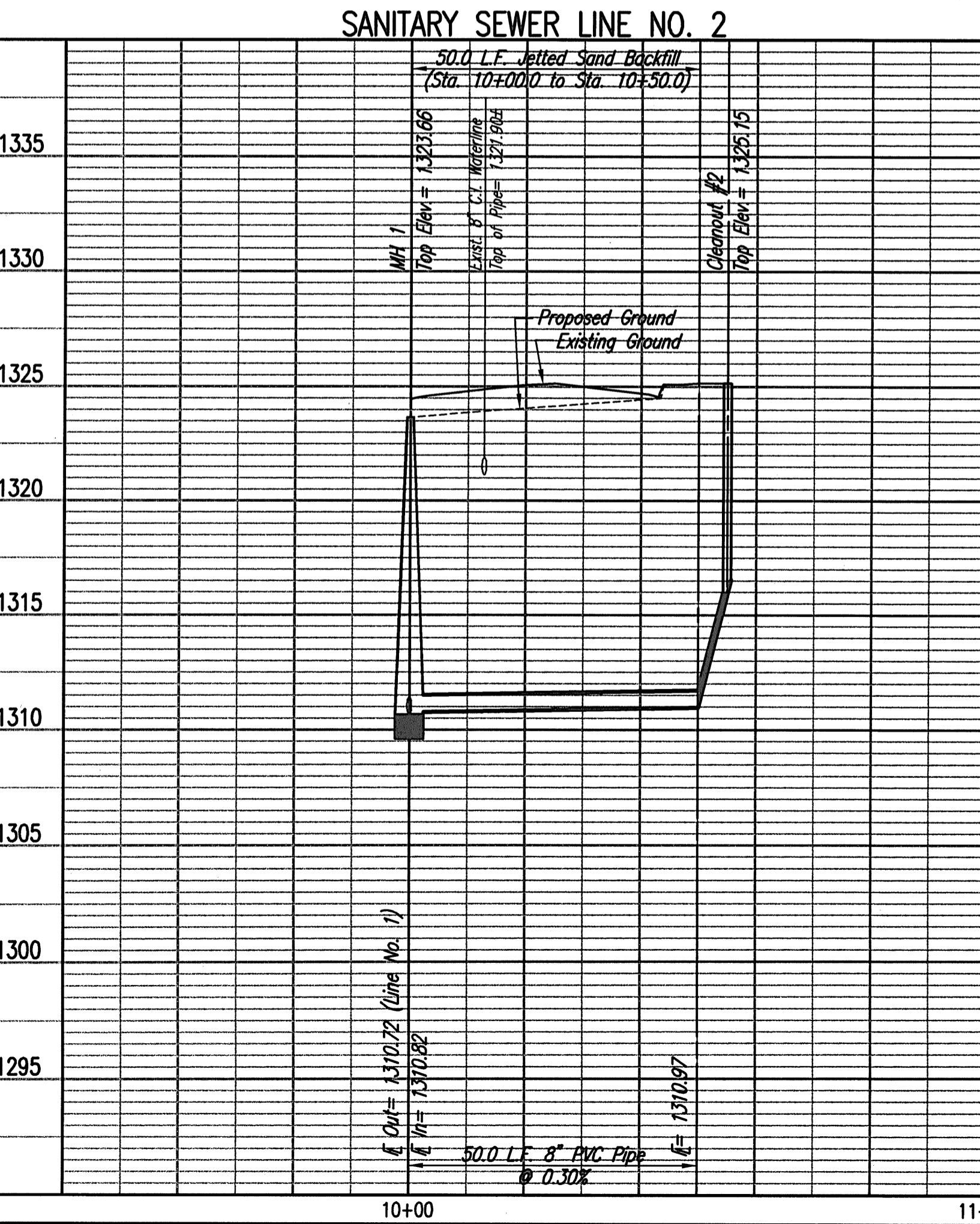
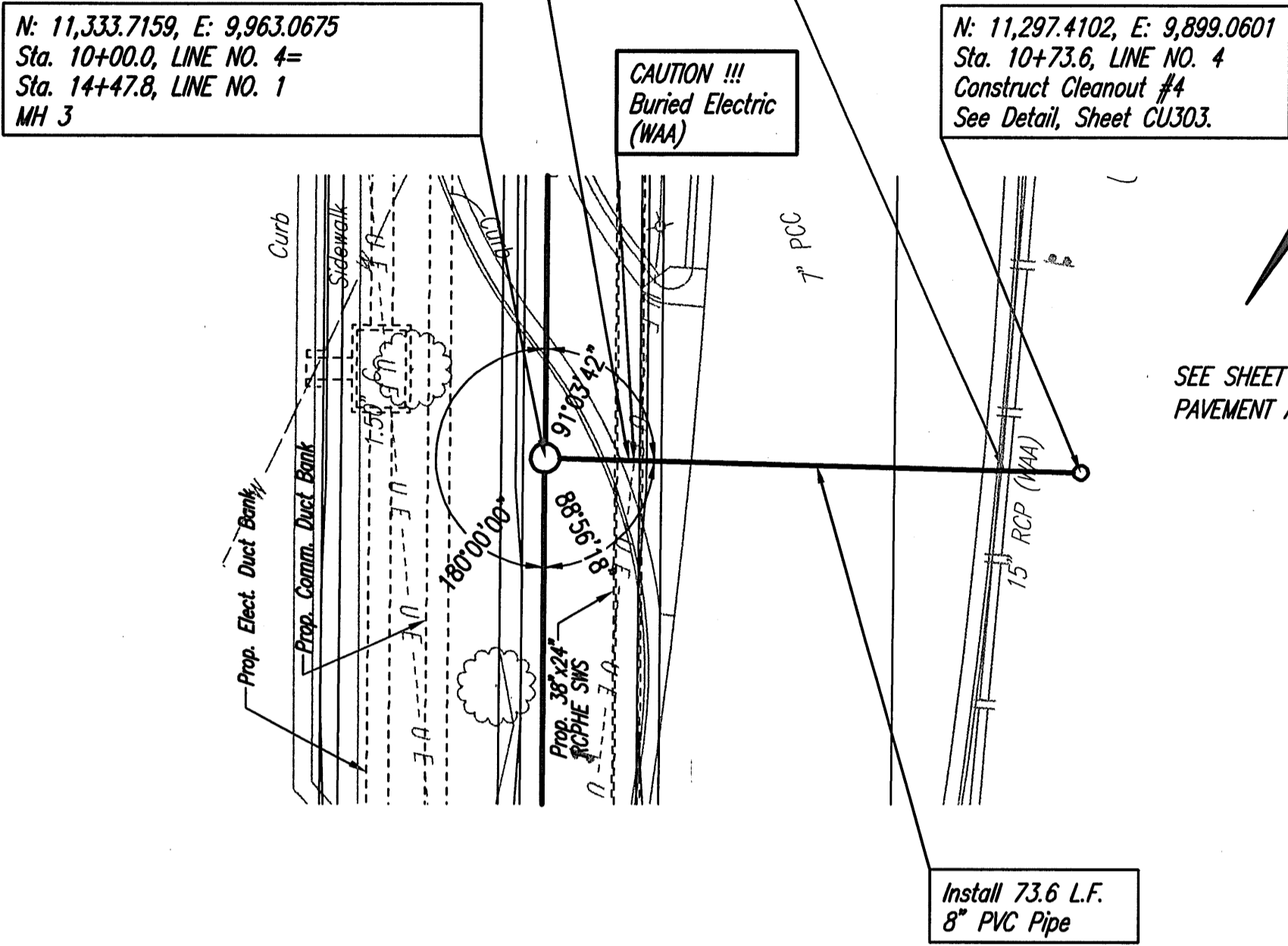
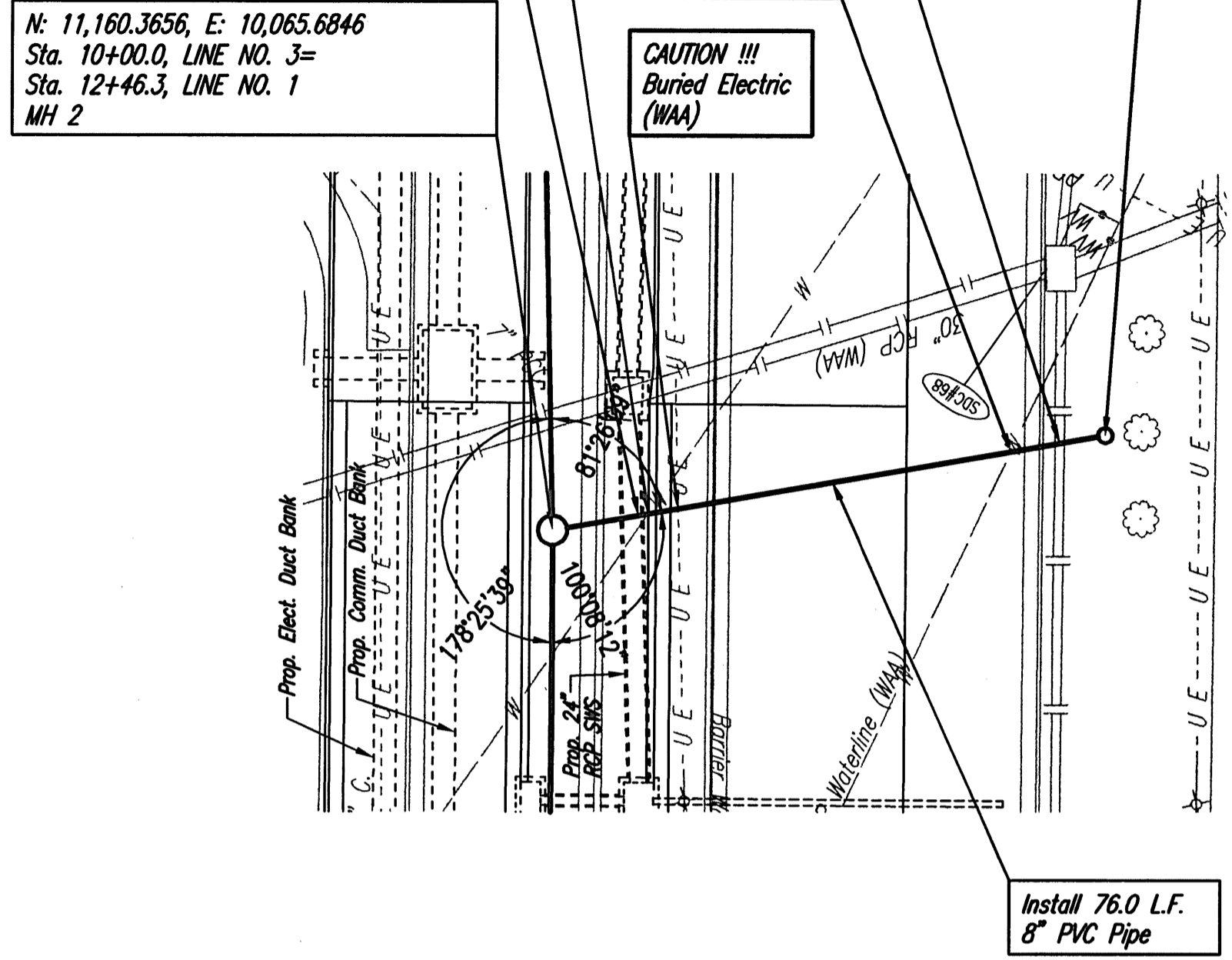
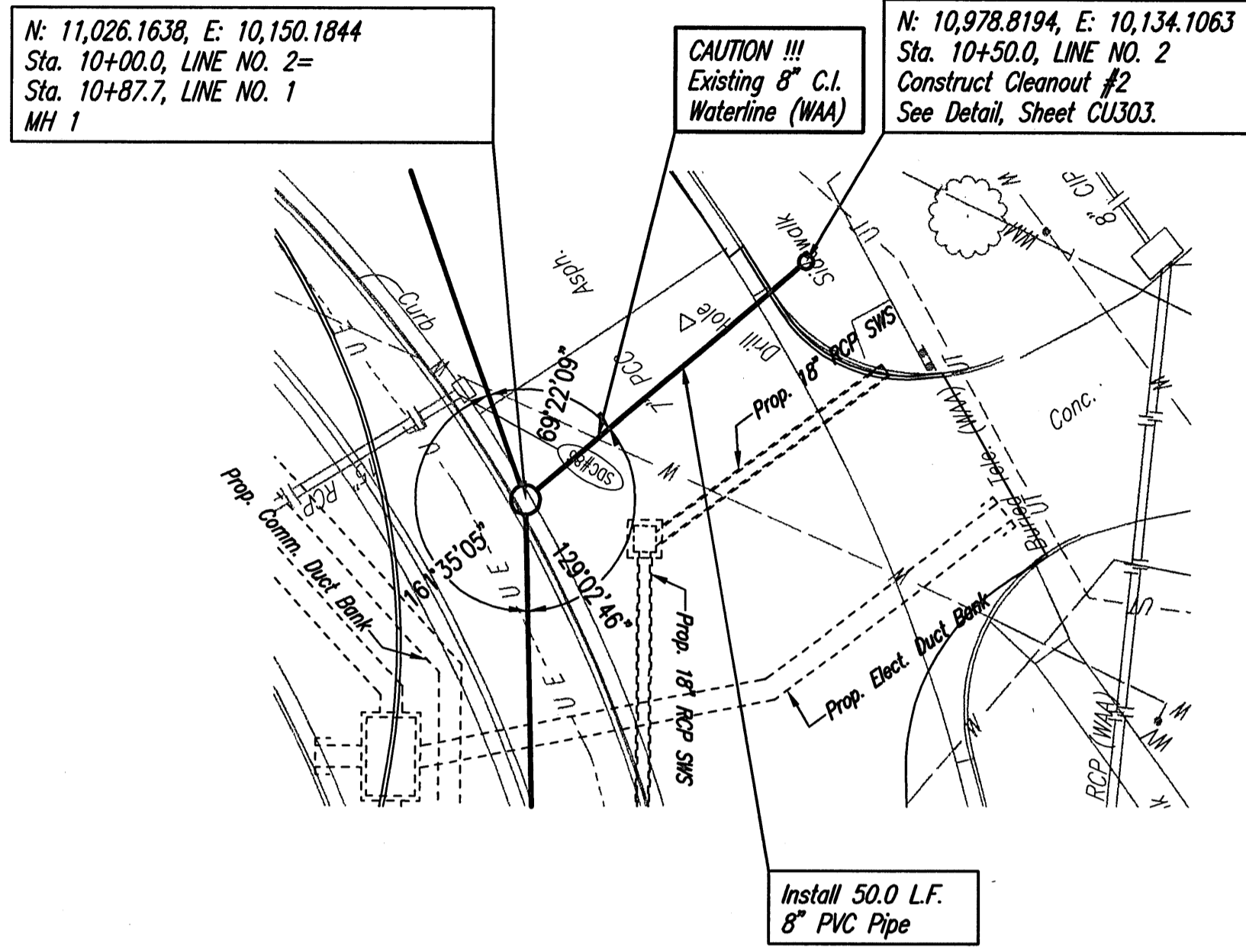
**CU205**

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PLAN	CHECKED	DATE
	CHECKED	

PROFILE	CHECKED	DATE
	CHECKED	

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SEE SHEET CD100-CD105 FOR PAVEMENT AND SIDEWALK REMOVAL

CITY OF WICHITA PROJECT NO. 1910 PPS (607861)

**HNTB**  
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 The HNTB Companies  
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 Kansas City, Missouri 64105  
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**GossenLivingston**  
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**Professional Engineering Consultants, P.A.**  
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**MID-CONTINENT AIRPORT**  
 Air Capital Terminal 3  
 PACKAGE # 3  
 LANDSIDE UTILITIES PHASE I &  
 MID-CONTINENT DRIVE RELOCATION

DARWIN R. CROWL  
 LICENSED PROFESSIONAL ENGINEER  
 14896  
 8-09  
 KANSAS

ISSUE: BID SET

DATE: JUNE 8, 2009  
 HNTB PROJECT NO.: 34912  
 CLIENT PROJECT NO.: 06481  
 DRAWN BY:  
 CHECKED BY:  
 APPROVED BY:

REVISION	DATE	DESCRIPTION
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△		
△		

SANITARY SEWER LINE NO. 2, LINE NO. 3 AND LINE NO. 4

**CU206**

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# SEWER APPURTENANCES DETAILS

## ADOPTED AS STANDARD DESIGN BY CITY OF WICHITA, KS AUGUST 2007

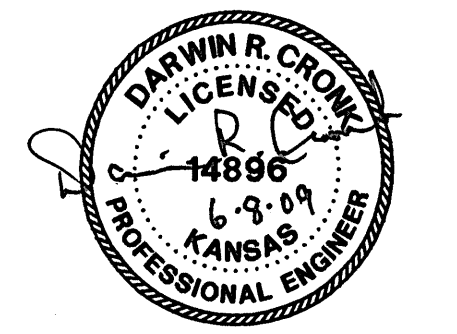


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**WICHITA**  
**MID-CONTINENT AIRPORT**  
Air Capital Terminal 3  
**PACKAGE # 3**  
**LANDSIDE UTILITIES PHASE I &**  
**MID-CONTINENT DRIVE RELOCATION**



ISSUE: BID SET

DATE: JUNE 8, 2009

HNTB PROJECT NO.: 34912

CLIENT PROJECT NO.: 06481

DRAWN BY:

CHECKED BY:

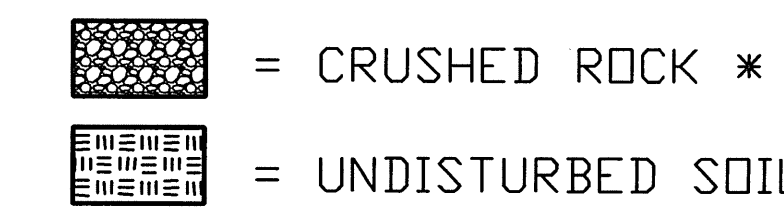
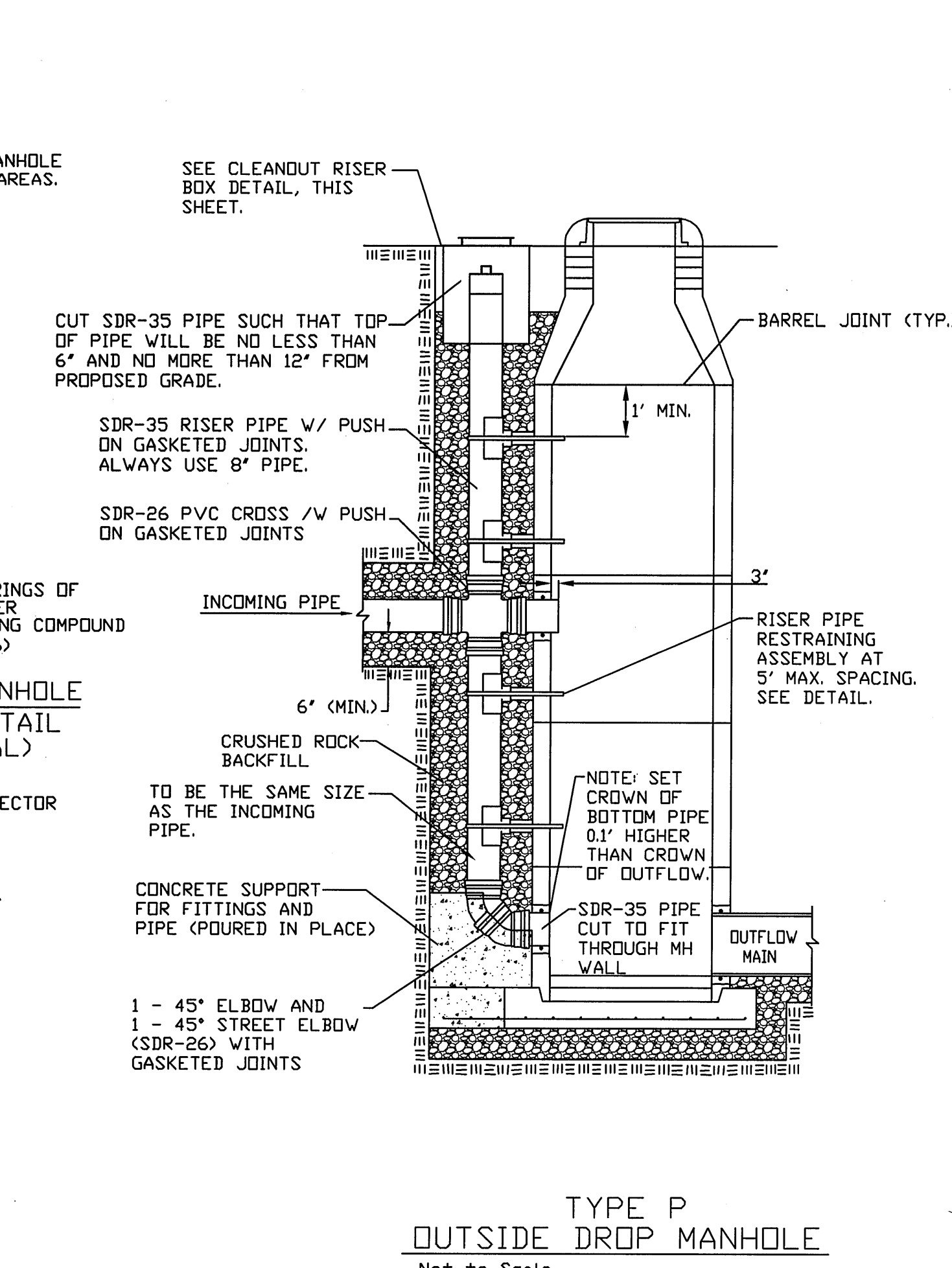
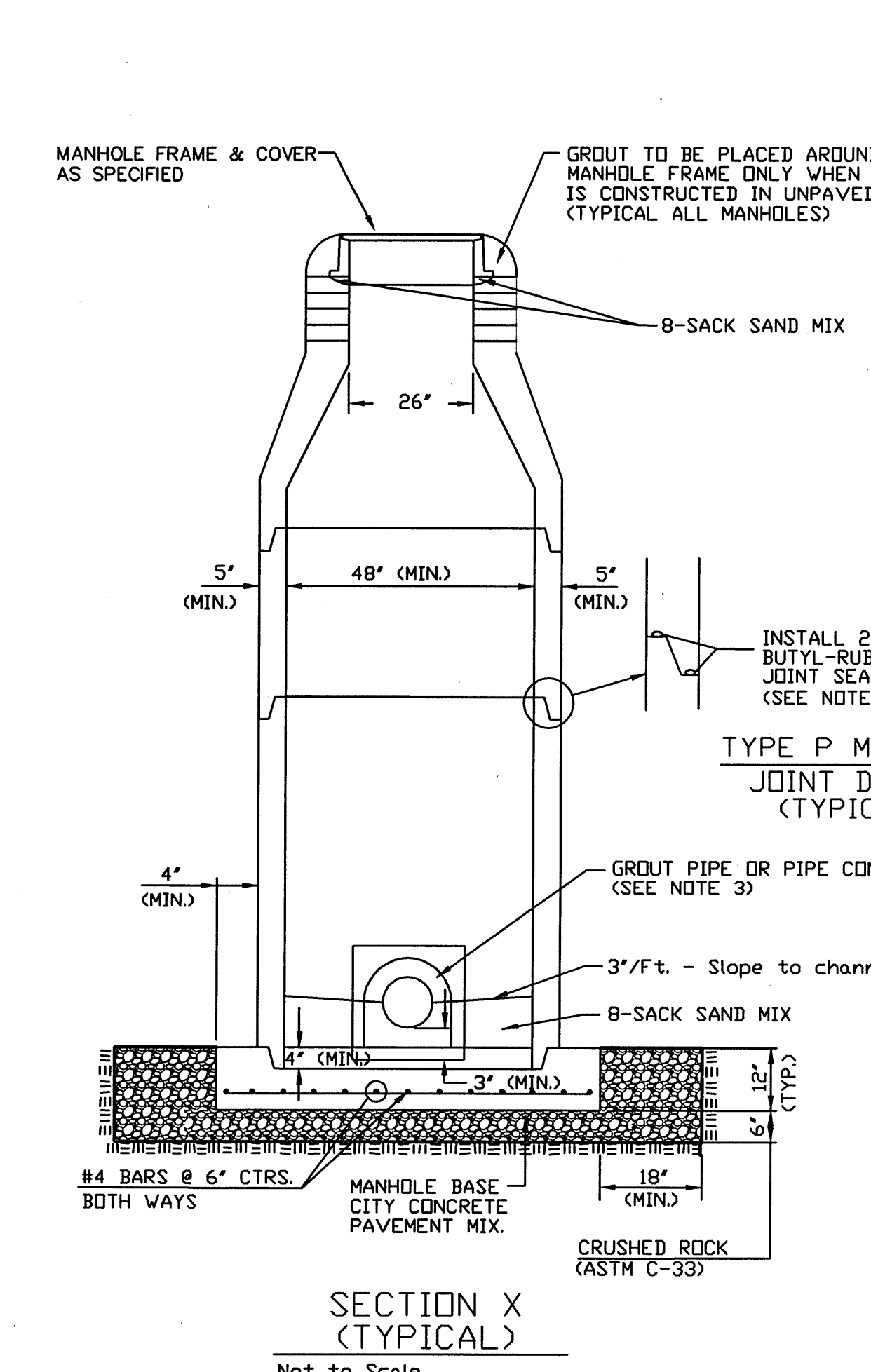
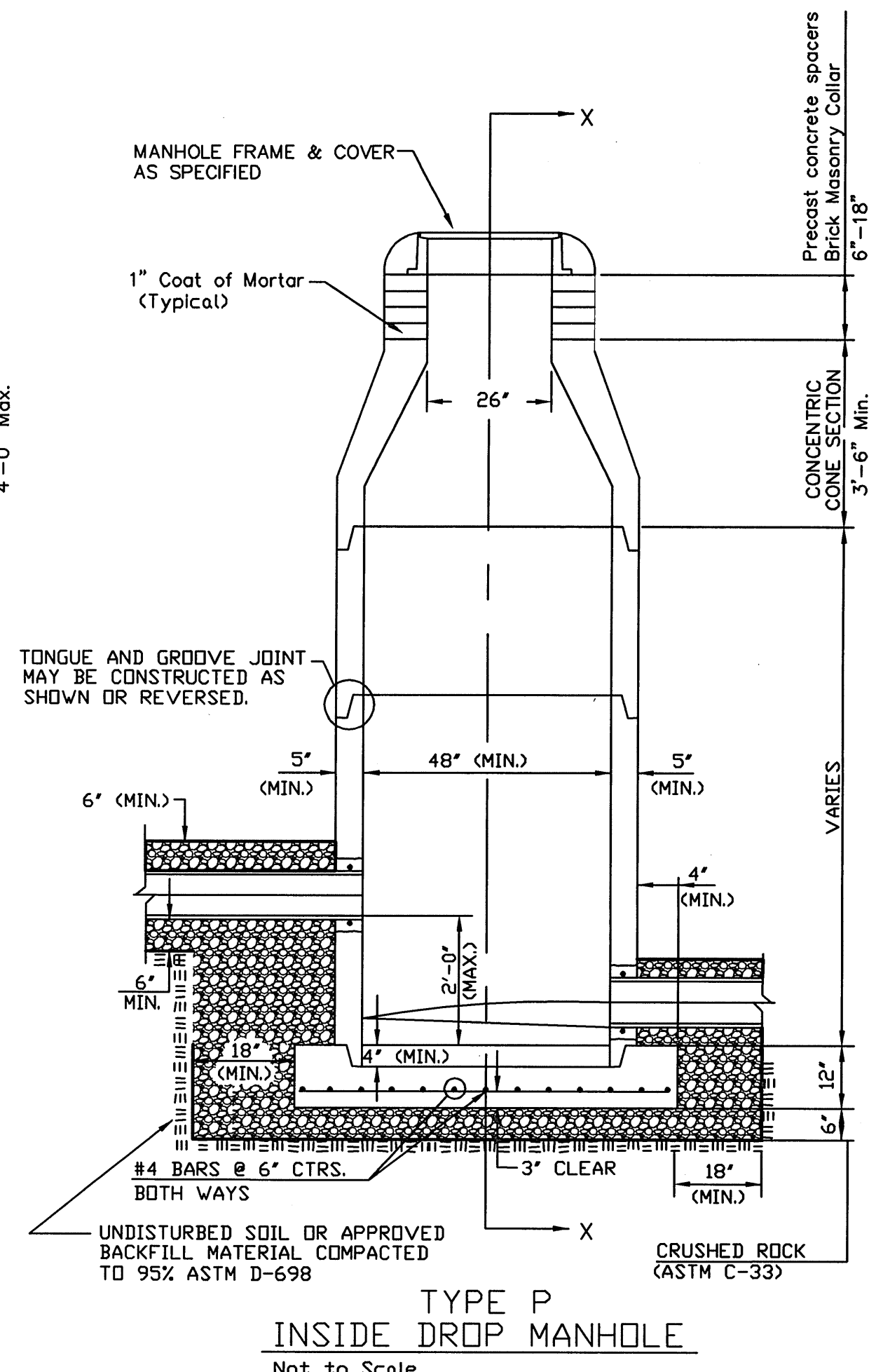
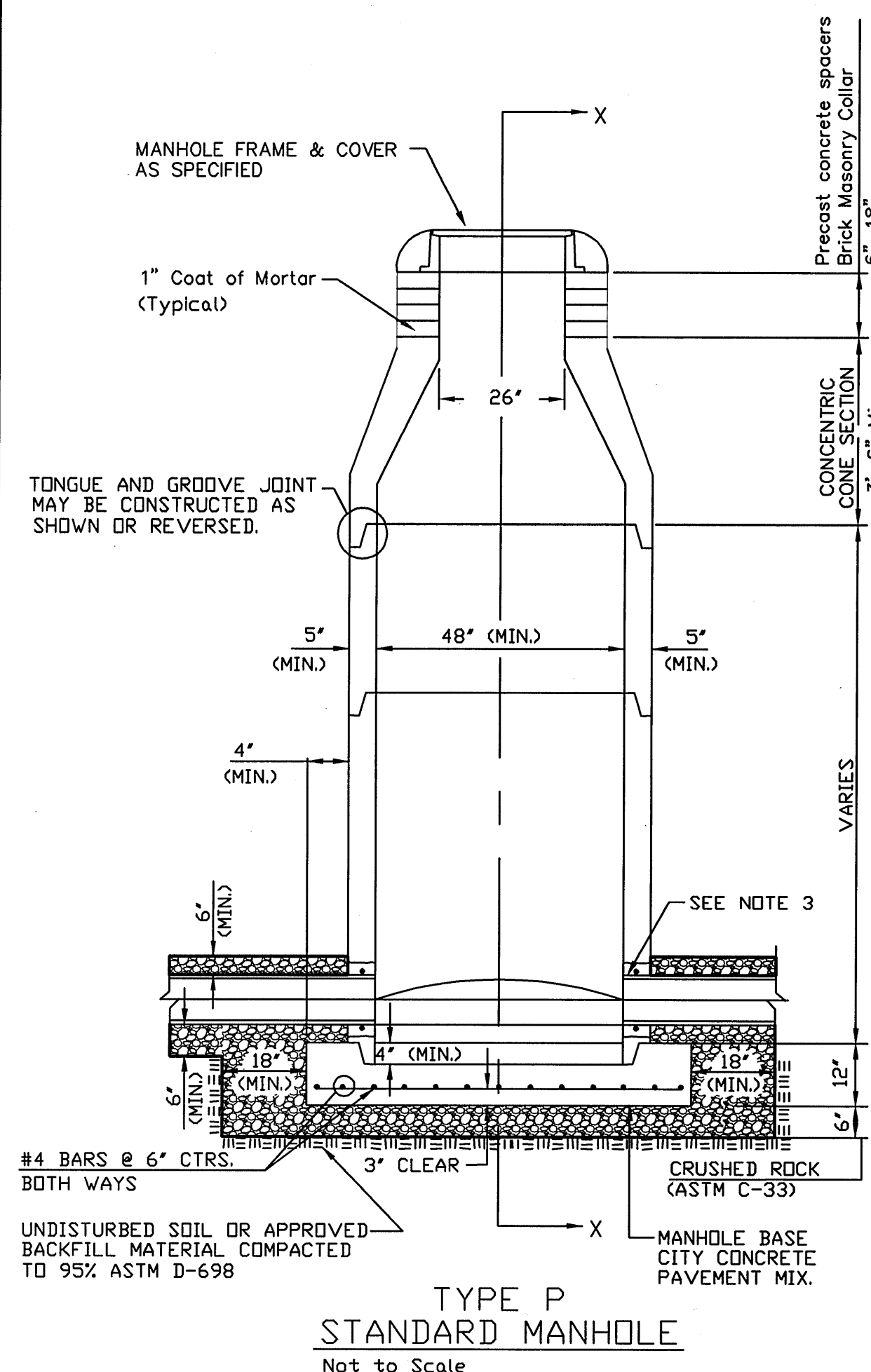
APPROVED BY:

REVISION	DATE	DESCRIPTION

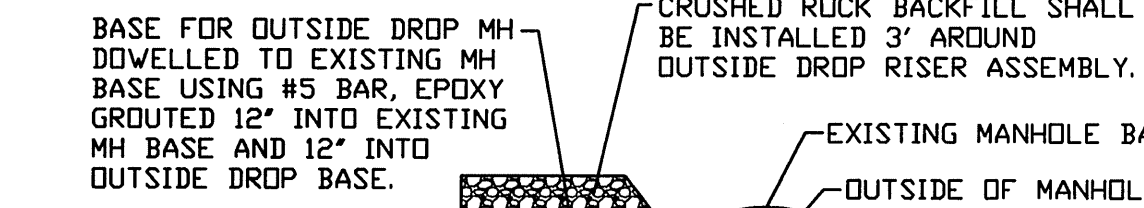
**STANDARD TYPE 'P' MANHOLES DETAILS**

**CU301**

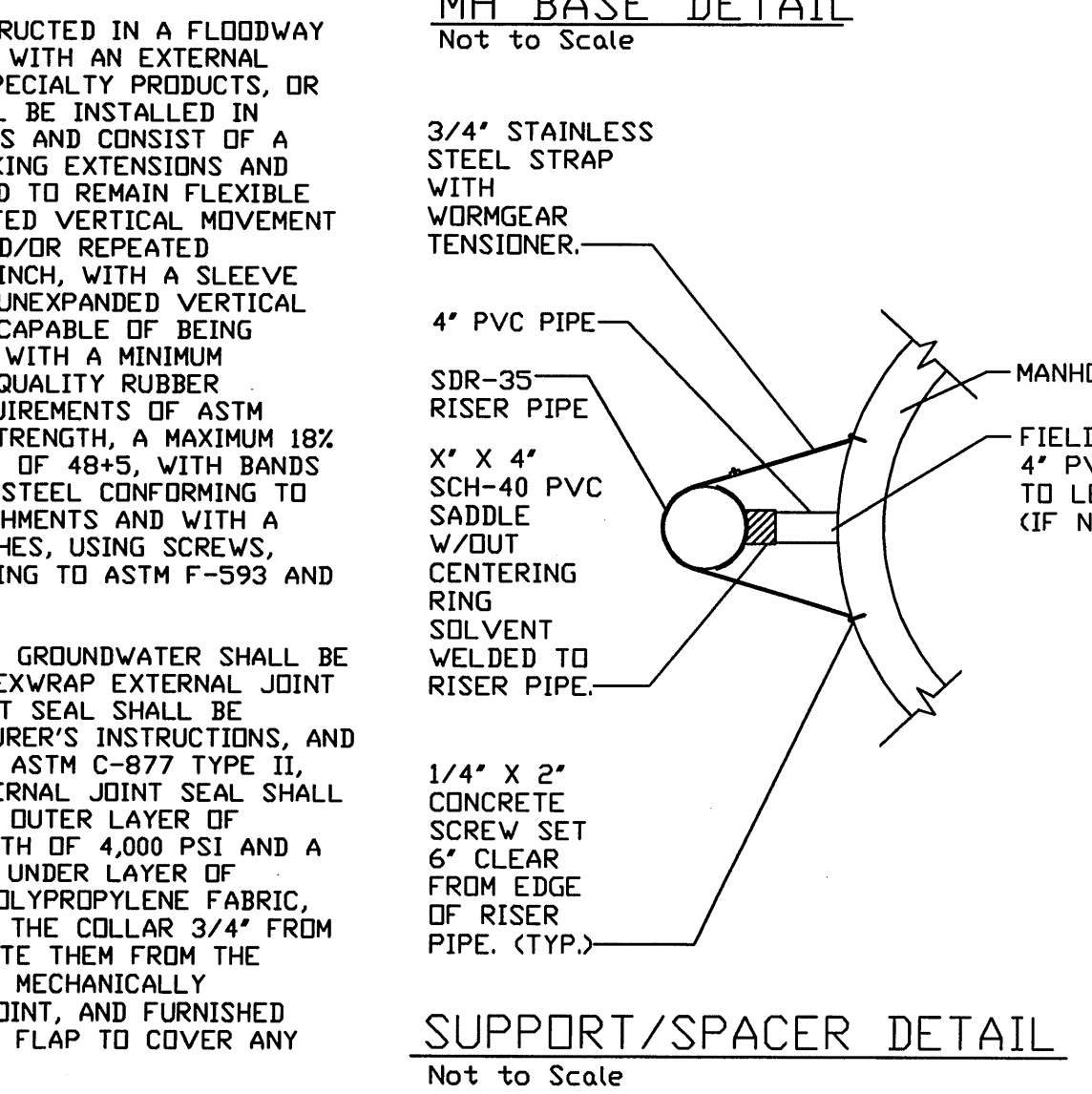
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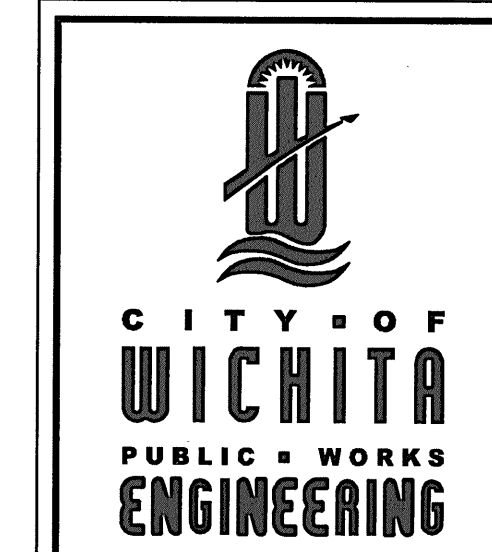
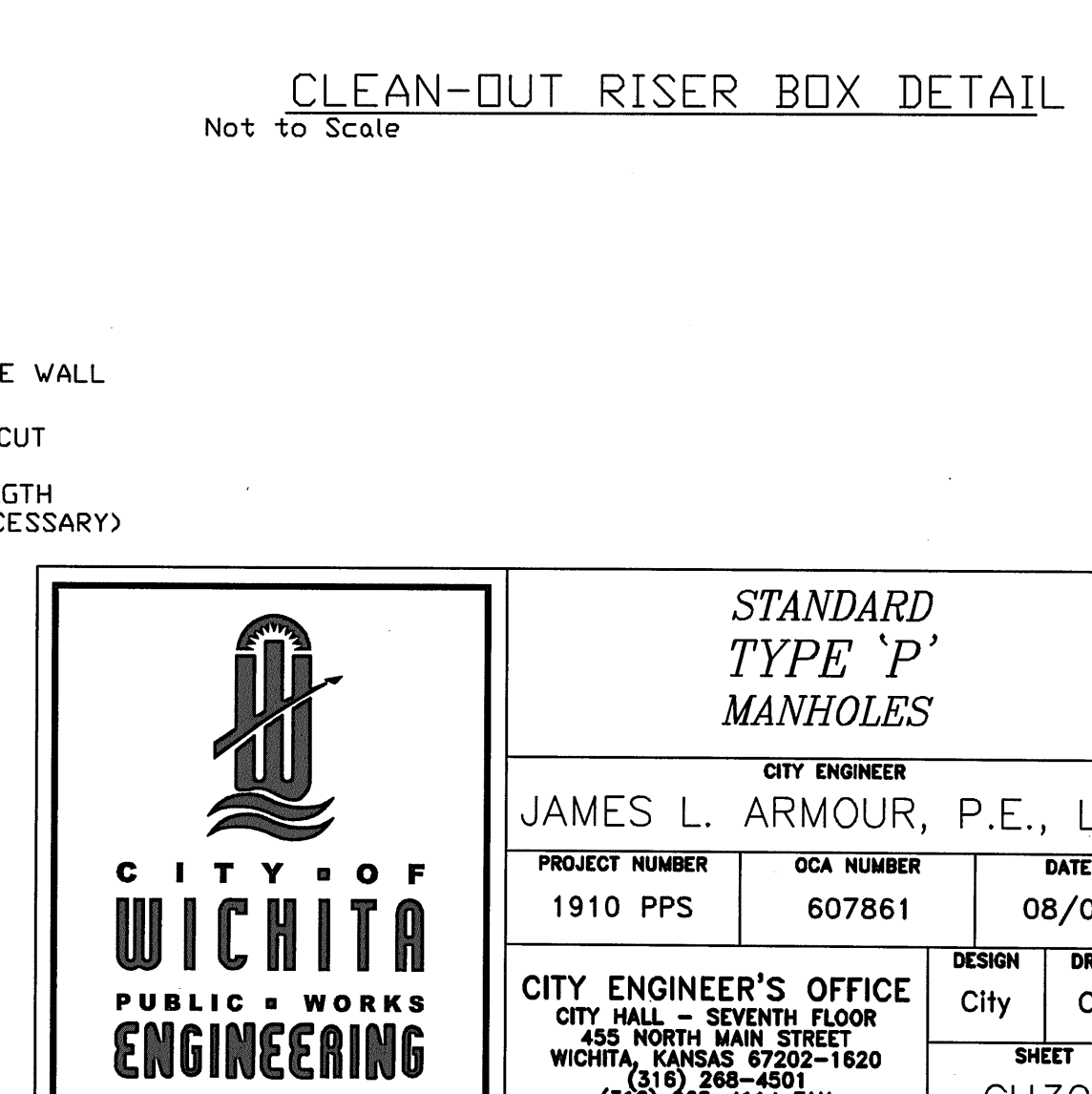
\*CRUSHED ROCK USED FOR ENCASEMENT AND BEDDING SHALL CONFORM TO ASTM C-33, GRADATION NO. 67, AND SHALL MEET ALL REQUIREMENTS FOR PORTLAND CEMENT CONCRETE PAVEMENT COARSE AGGREGATE, SECTION 406.2, CITY OF WICHITA STANDARD SPECIFICATIONS. ALL CRUSHED ROCK FOR BEDDING AND ENCASEMENT SHALL EXTEND TO THE LIMITS OF THE MANHOLE EXCAVATION.



BASE FOR OUTSIDE DROP MH DOWNELED TO EXISTING MH BASE USING #5 BAR, EPOXY GROUTED 12" INTO EXISTING MH BASE AND 12" INTO OUTSIDE DROP BASE.



CRUSHED ROCK BACKFILL SHALL BE INSTALLED 3" AROUND OUTSIDE DROP RISER ASSEMBLY.



**JAMES L. ARMOUR, P.E., L.S.**  
CITY ENGINEER

PROJECT NUMBER	OCA NUMBER	DATE
1910 PPS	607861	08/07

CITY ENGINEER'S OFFICE  
CITY HALL - SEVENTH FLOOR  
455 NORTH MAIN STREET  
WICHITA, KANSAS 67202-1620  
(316) 268-4501  
(316) 268-4114 FAX

DESIGN	DRAWN
City	City

SHEET  
CU301

- PRECAST MANHOLE GENERAL 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 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 CRUSHED ROCK 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 PER SECTION 804.4 OF STANDARD SPECIFICATIONS.
  - EXTERIOR MANHOLE WALLS SHALL BE COATED PER SECTION 804.4 OF STANDARD SPECIFICATIONS.
  - JOINT SEALING COMPOUND SHALL BE PER 804.4 OF STANDARD SPECIFICATIONS.
  - 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 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. 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.
  - WALL THICKNESS SHALL BE 1" GREATER THAN MANHOLE DIAMETER IN FEET.

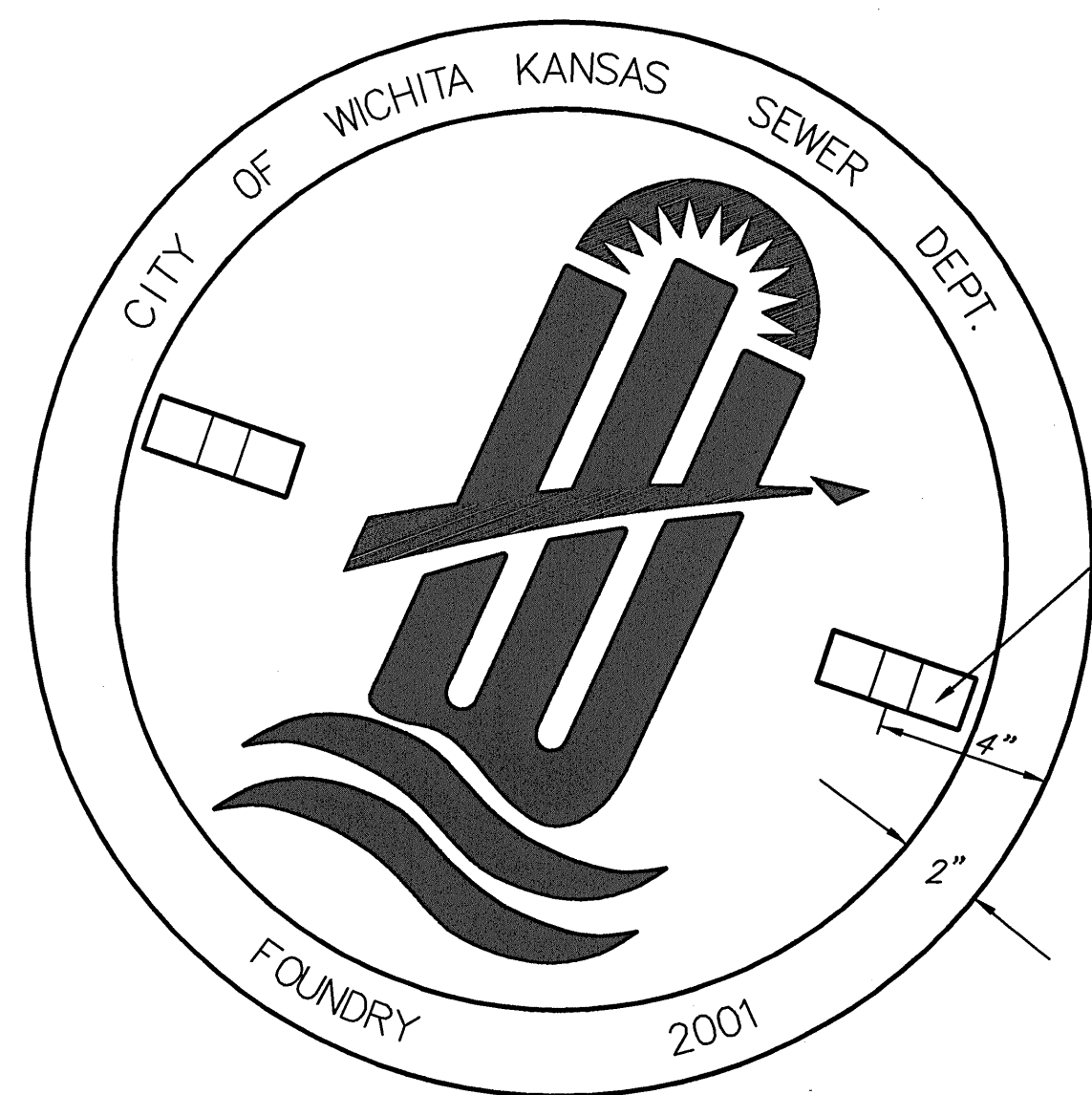
- OPENINGS SHALL BE CORE DRILLED INTO THE MANHOLE WALL WHEN OUTSIDE DROPS ARE CONSTRUCTED ON EXISTING MANHOLES. SUCH OPENINGS DRILLED INTO EXISTING MANHOLES SHALL BE AS SMALL AS PRACTICAL TO FACILITATE INSTALLING AND GROUTING THE NEW PIPE IN PLACE. WATERSTOP GASKETS SHALL BE USED WITH P.V.C. PIPE. THE 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.
- 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' REGARDLESS OF PIPE SIZE. 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.
- 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.
- THE FULL DIAMETER OF THE MANHOLE SHALL EXTEND THE ENTIRE DEPTH OF THE MANHOLE TO THE CONE SECTION. NO REDUCTION IN MANHOLE DIAMETER WILL BE ALLOWED.
- REFER TO PLANS FOR SIZE OF OUTSIDE DROP RISER, SADDLES AND CROSS.

- FRAMES AND CHIMNEYS OF ALL MANHOLES CONSTRUCTED IN A FLOODWAY OR UNDER A PAVED SURFACE SHALL BE SEALED WITH AN EXTERNAL CHIMNEY SEAL, AS MANUFACTURED BY CRETEX SPECIALTY PRODUCTS, OR PRE-APPROVED EQUAL. THE CHIMNEY SEAL SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND CONSIST OF A FLEXIBLE EXTERNAL RUBBER SLEEVE, INTERLOCKING EXTENSIONS AND STAINLESS STEEL COMPRESSION BANDS, DESIGNED TO REMAIN FLEXIBLE THROUGHOUT A 25 YEAR LIFE, ALLOWING REPEATED VERTICAL MOVEMENT OF THE FRAME OF NOT LESS THAN 2 INCHES AND/OR REPEATED HORIZONTAL MOVEMENT OF NOT LESS THAN 1/2 INCH, WITH A SLEEVE PORTION THAT IS CORRUGATED WITH A MINIMUM UNEXPANDED VERTICAL HEIGHT OF EITHER 6 INCHES OR 9 INCHES AND CAPABLE OF BEING MECHANICALLY LOCKED TO THE MANHOLE FRAME, WITH A MINIMUM THICKNESS OF 3/16 INCHES MADE FROM A HIGH QUALITY RUBBER COMPOUND CONFORMING TO THE APPLICABLE REQUIREMENTS OF ASTM C-923, WITH A MINIMUM OF 1500 PSI TENSILE STRENGTH, A MAXIMUM 18% COMPRESSION SET AND A HARDNESS (DURMETER) OF 48+5, WITH BANDS INTEGRALLY FORMED FROM 16 GAUGE STAINLESS STEEL CONFORMING TO ASTM A-240, TYPE 304, WITH NO WELDED ATTACHMENTS AND WITH A MINIMUM ADJUSTMENT RANGE OF 2 DIAMETER INCHES, USING SCREWS, BOLTS AND NUTS OF STAINLESS STEEL CONFORMING TO ASTM F-593 AND 594, TYPE 304.
- ALL MANHOLE SECTION JOINTS THAT WILL BE IN GROUNDWATER SHALL BE WRAPPED WITH AN EXTERNAL JOINT SEAL, CRETEXWRAP EXTERNAL JOINT SEAL, OR PRE-APPROVED EQUAL. EXTERNAL JOINT SEAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, AND SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C-877 TYPE II, AND HAVE PASSED THE ASTM C-1244 TEST. EXTERNAL JOINT SEAL SHALL CONSIST OF A COLLAR 9" TO 18" WIDE WITH AN OUTER LAYER OF POLYETHYLENE WITH A MINIMUM TENSILE STRENGTH OF 4,000 PSI AND A MINIMUM TENSILE RESISTANCE OF 1500 PSI, AND AN UNDER LAYER OF RUBBERIZED MASTIC REINFORCED WITH WOVEN POLYPROPYLENE FABRIC, WITH TWO 5/8" STEEL STRAPS LOCATED WITHIN THE COLLAR 3/4" FROM EACH EDGE AND CONFINED IN TUBES THAT ISOLATE THEM FROM THE MASTIC AND ALLOW THEM TO SLIP FREELY WHEN MECHANICALLY TIGHTENED AND LOCKED AROUND THE MANHOLE JOINT, AND FURNISHED WITH A MINIMUM OF 6" OVERLAP AND A CLOSING FLAP TO COVER ANY REMAINING EXPOSED STRAP.

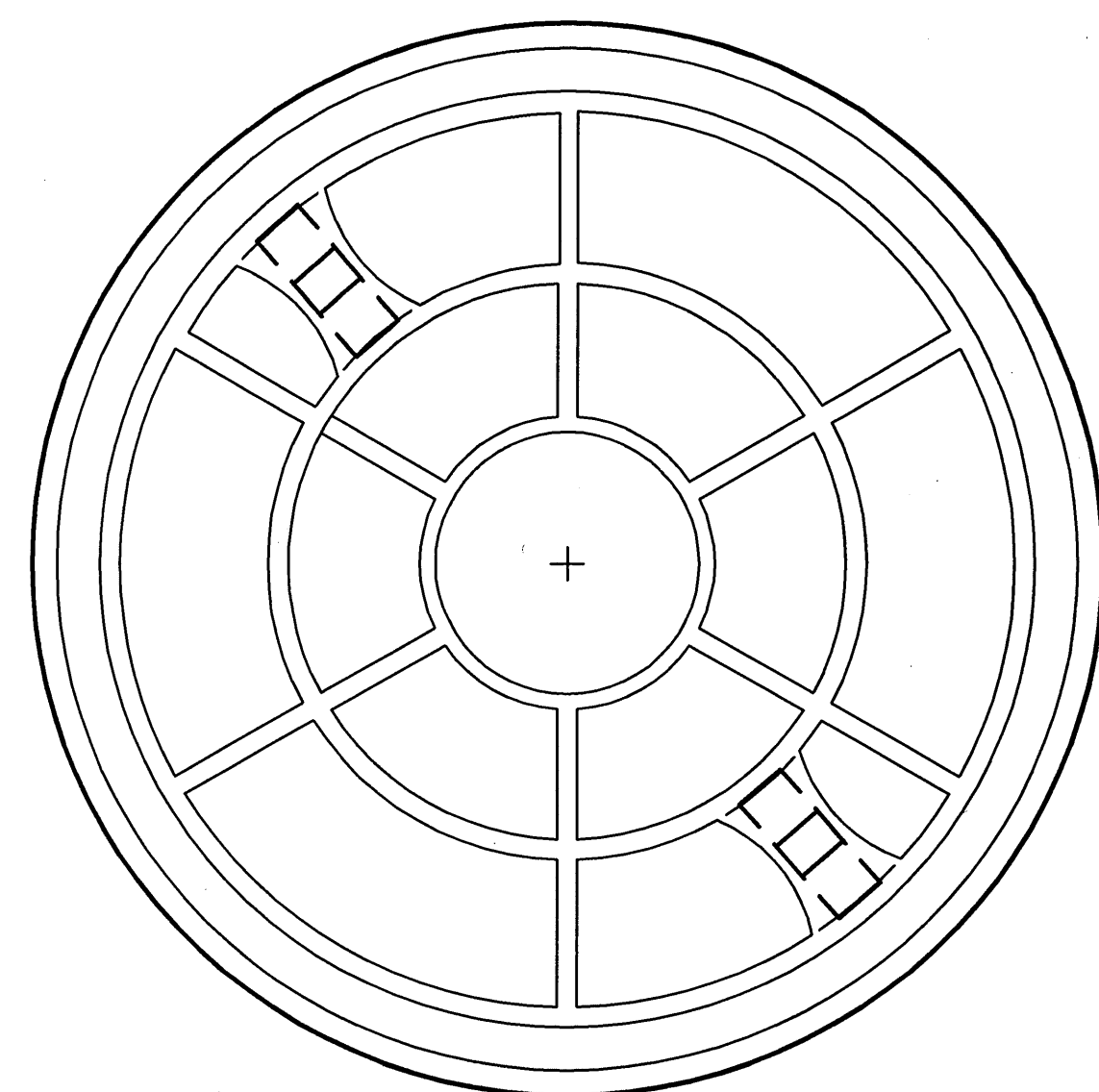
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MANHOLE COVER

Weight = 180 Lbs.



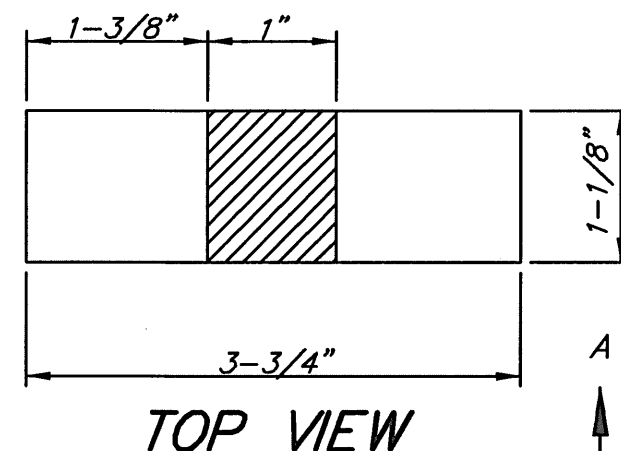
TOP VIEW



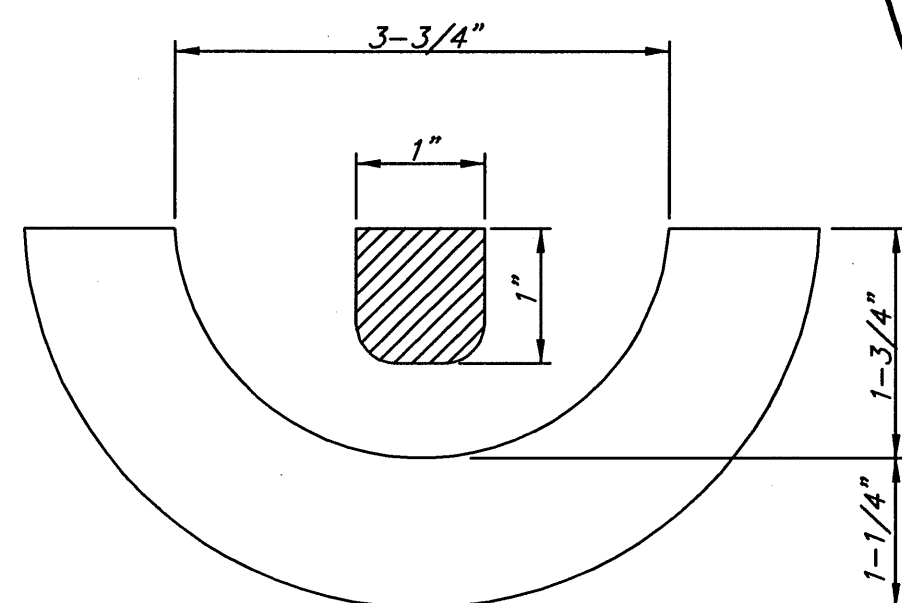
BOTTOM VIEW

CLOSED PICKHOLE (SEE DETAIL)

PICKHOLE DETAIL

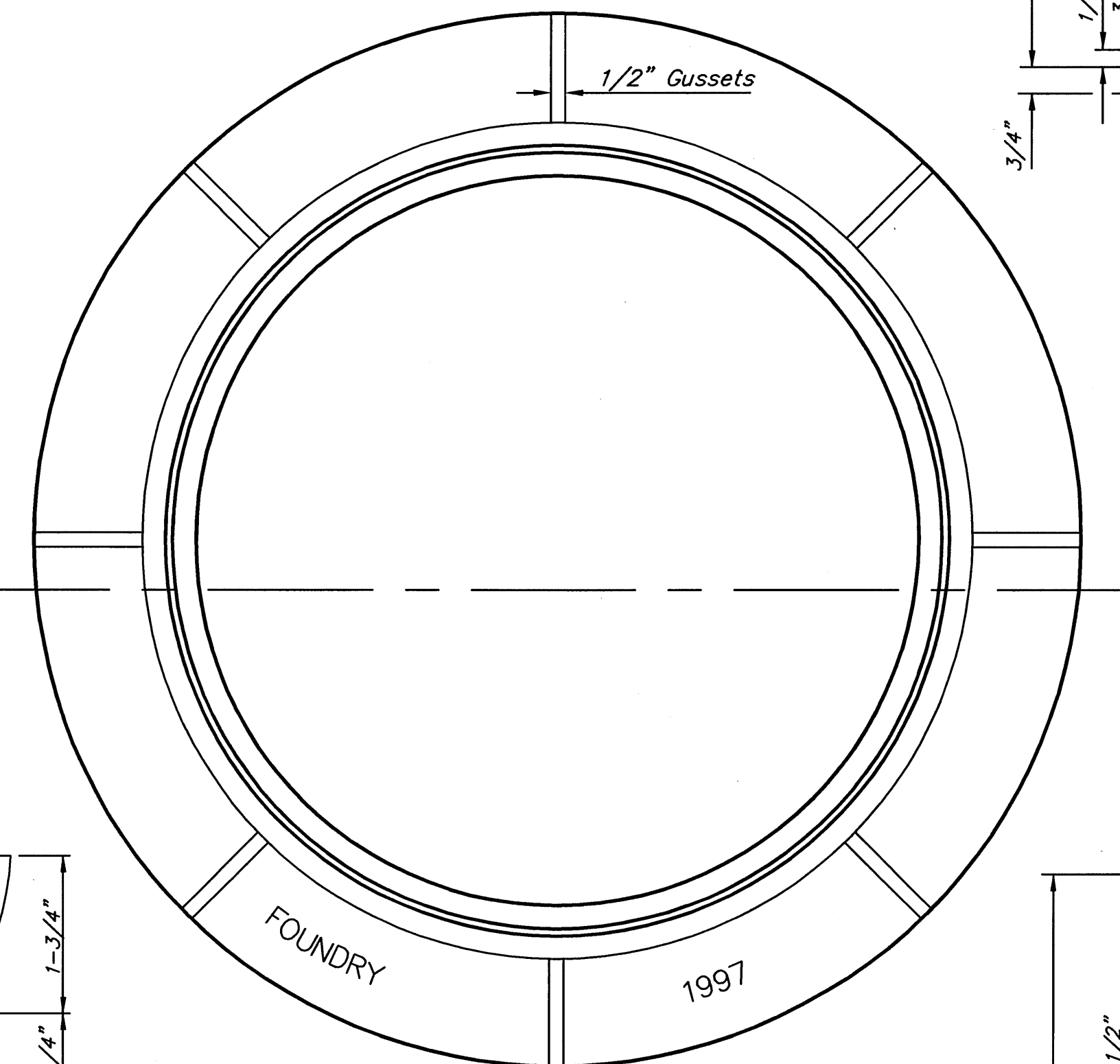


TOP VIEW



SECTION VIEW

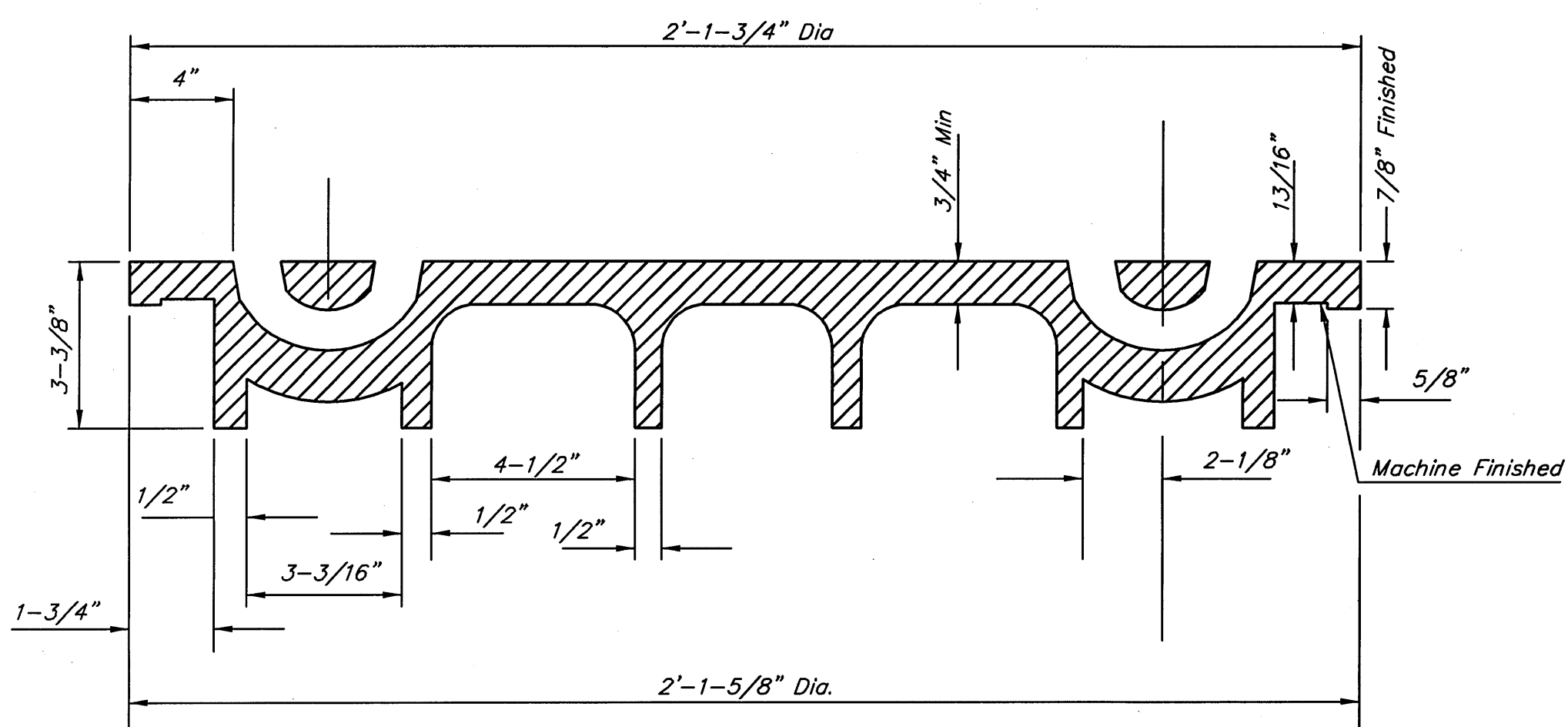
MANHOLE FRAME  
Weight = 240 Lbs.



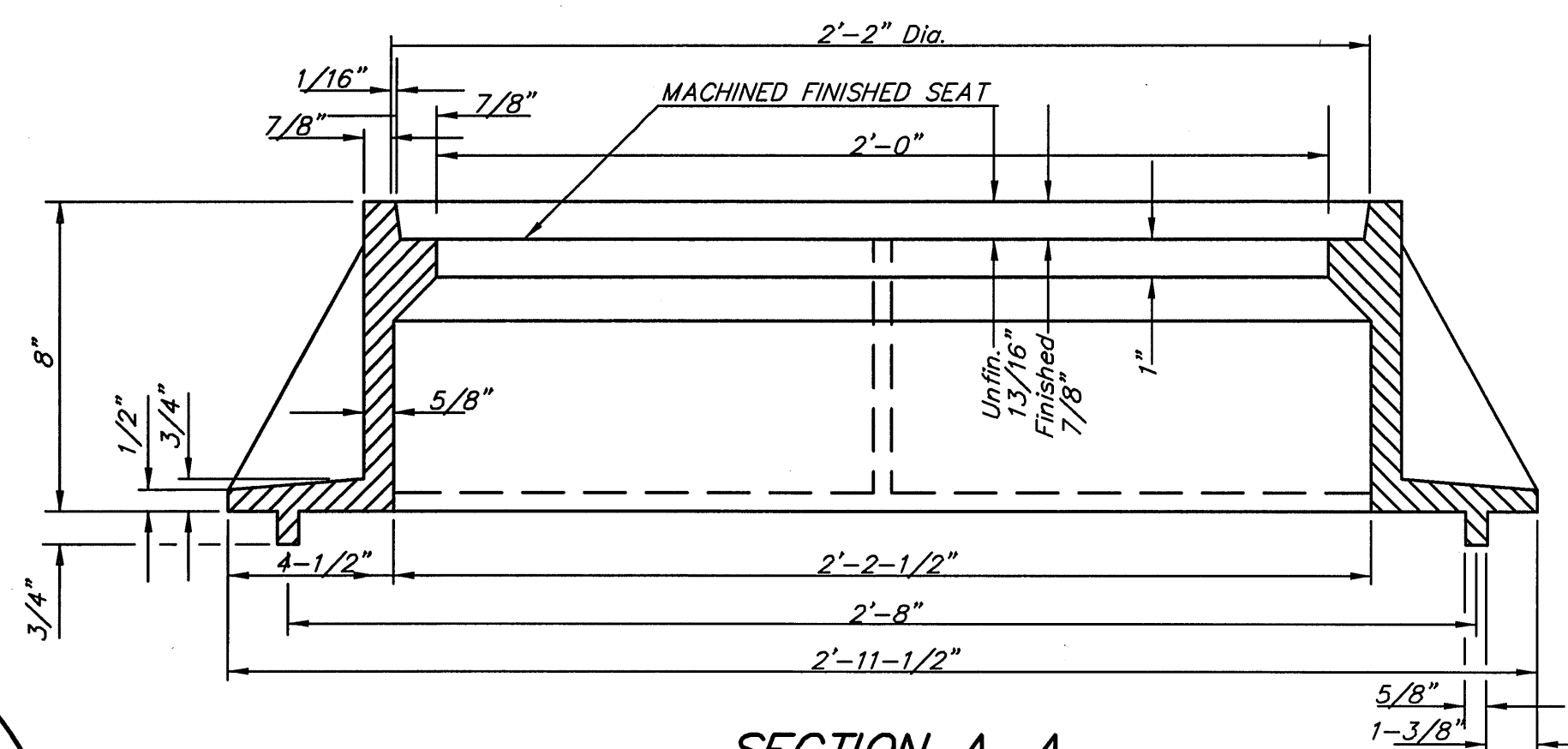
TOP VIEW

GENERAL NOTES

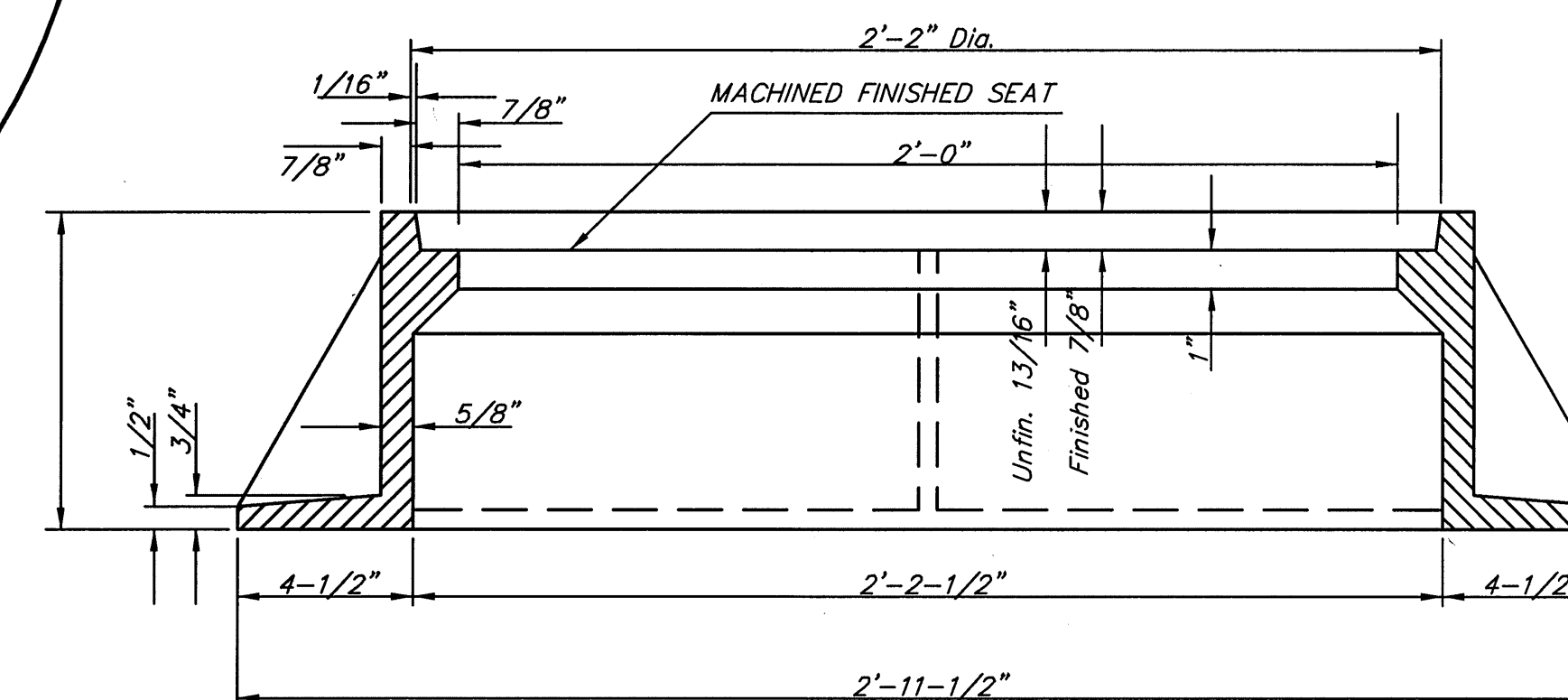
1. MANHOLE CASTINGS SHALL BE MANUFACTURED USING GOOD QUALITY GRAY IRON CONFORMING TO CLASS 30 OF A.S.T.M. DESIGNATION A-48. DIMENSIONS AND WEIGHTS SHOWN ON THE DETAILED DRAWINGS SHALL BE CONSIDERED AS MINIMUM REQUIREMENTS AND ANY DEVIATIONS FROM THE DIMENSIONS SHOWN MUST BE SPECIFICALLY APPROVED. THE FINISHED CASTINGS SHALL BE OF UNIFORM QUALITY, FREE FROM BLOWHOLES, POROSITY, HARD SPOTS, SHRINKAGE DISTORTIONS OR OTHER DEFECTS.
2. MANHOLE CASTINGS SHALL WEIGH A MINIMUM OF 180 POUNDS ON THE SOLID COVER AND 240 POUNDS ON THE MANHOLE RING. THIS IS A TOTAL OF 420 POUNDS ON A RING AND COVER SET. CASTINGS WEIGHING LESS THAN THE MINIMUM SPECIFICATIONS WILL NOT BE ACCEPTED.
3. MANHOLE CASTINGS SHALL BE MANUFACTURED SUCH THAT A COVER MANUFACTURED BY ANY ONE FOUNDRY WILL FIT INTERCHANGEABLY INTO A FRAME MANUFACTURED BY ANOTHER FOUNDRY AND STILL MEET ALLOWABLE CLEARANCES AND NON-ROCKING REQUIREMENTS. THIS WILL REQUIRE MANUFACTURING OF THE MATCHING FACES ON THE COVER AND THE FRAME TO CLOSE TOLERANCES.
4. THE OUTSIDE CIRCUMFERENCE OF THE VERTICAL FACE OF THE COVER AND THE INSIDE CIRCUMFERENCE OF THE VERTICAL FACE IN THE FRAME RECESS SHALL BE MANUFACTURED TO TOLERANCES SUCH THAT THE CLEARANCE BETWEEN THE COVER AND FRAME WILL NOT EXCEED 1/8" AT ANY POINT AROUND THE CIRCUMFERENCE OF THE COVER. THE SEATING SURFACES BETWEEN THE COVER AND FRAME SHALL BE MACHINED SUCH THAT THESE SEATING SURFACES SHALL MAKE FULL CONTACT FOR THEIR FULL CIRCUMFERENCE TO PRECLUDE THE COVER FROM ROCKING IN THE FRAME.
5. THE MANHOLE FRAME AND COVER SHALL BE MARKED WITH LETTERING INDICATING THE NAME OF THE MANUFACTURER AND THE YEAR WHEN THE COVER OR FRAME WAS CAST. THE COVER SHALL BE FURTHER IDENTIFIED WITH REGARDS TO OWNERSHIP USING LETTERS AT LEAST 1 INCH IN HEIGHT. THIS IDENTIFICATION SHALL BE "CITY OF WICHITA SEWER DEPARTMENT". THE WORD DEPARTMENT MAY BE ABBREVIATED. THE TEXTURE OF THE TOP SURFACE OF THE COVER SHALL BE MANUFACTURED WITH THE CITY OF WICHITA LOGO AS INDICATED ON THE DRAWINGS. SMOOTH BLOCKOUTS SHALL BE UTILIZED TO HIGHLIGHT THE LETTERING ON THE COVER SURFACE. THE TOTAL AREA OF SMOOTH SURFACE BLOCKOUT SHALL NOT EXCEED THE AREA AS INDICATED ON THE DRAWING. POSITIONING OF SMOOTH BLOCKOUTS AND LETTERING MAY VARY FROM THAT SHOWN ON THE DETAILED DRAWING.



SECTION VIEW



SECTION A-A  
MUD RING



SECTION A-A

HNTB

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The HNTB Companies  
715 Kirk Drive  
Kansas City, Missouri 64105  
(816) 472-1201 Fax (816) 472-0663

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MID-CONTINENT AIRPORT  
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LANDSIDE UTILITIES PHASE I &  
MID-CONTINENT DRIVE RELOCATION



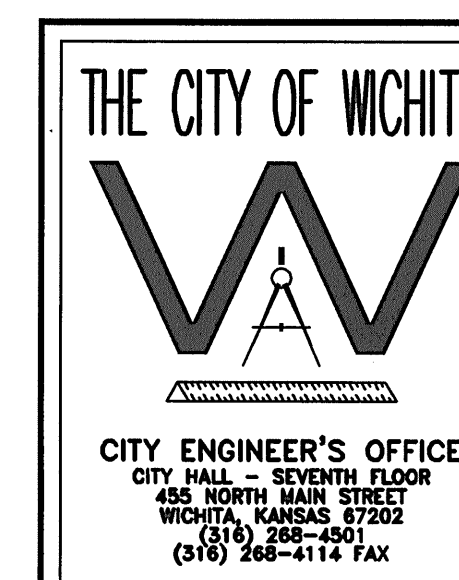
ISSUE: BID SET

DATE:	JUNE 8, 2009	
HNTB PROJECT NO.:	34912	
CLIENT PROJECT NO.:	06481	
DRAWN BY:		
CHECKED BY:		
APPROVED BY:		
REVISION	DATE	DESCRIPTION
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SANITARY SEWER  
MANHOLE FRAME  
AND COVER DETAIL

CU302

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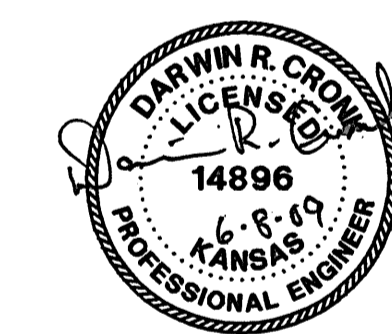
MANHOLE FRAME  
AND COVER

JAMES L. ARMOUR, P.E. - CITY ENGINEER

PROJECT NUMBER 468-1910 PPS OCA NO. 607861

DATE MAR 96 SHEET CU302

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ISSUE: BID SET

DATE: JUNE 8, 2009

HNTB PROJECT NO.: 34912

CLIENT PROJECT NO.: 06481

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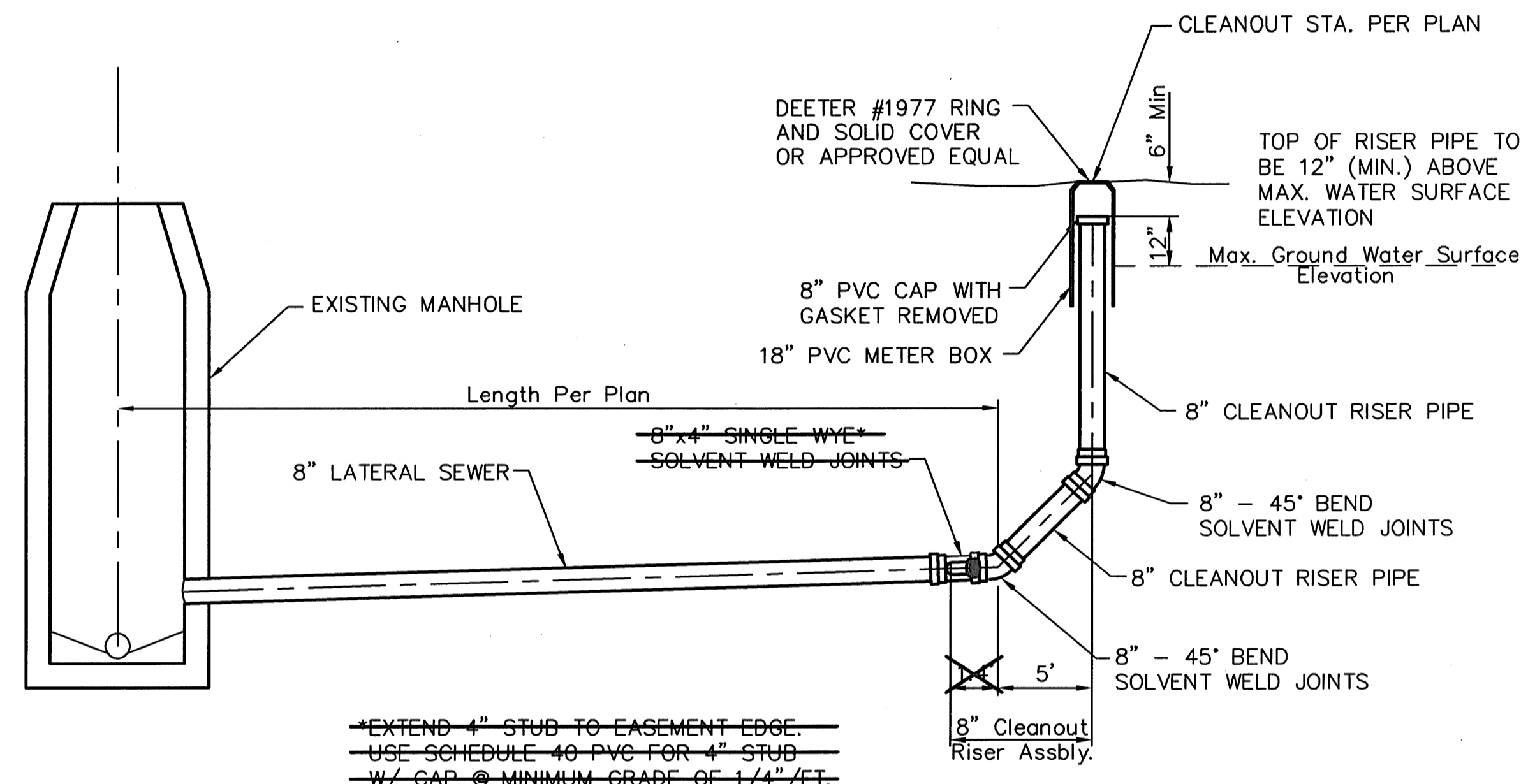
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REVISION	DATE	DESCRIPTION
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SANITARY SEWER  
8" CLEANOUT RISER  
ASSEMBLY DETAIL

**CU303**



**8" CLEANOUT RISER ASSEMBLY DETAIL**

**THE CITY OF WICHITA**

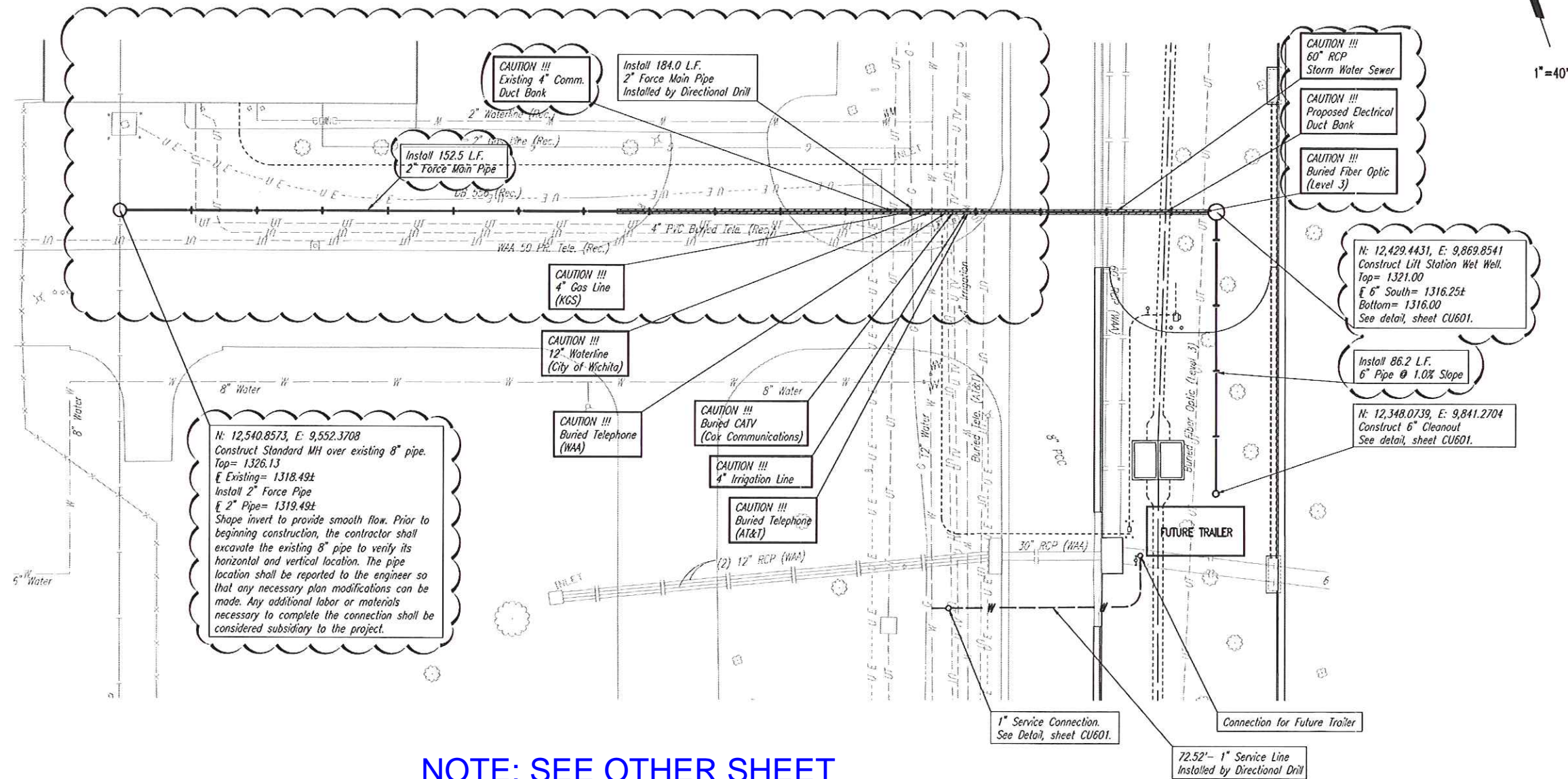
**CITY ENGINEER'S OFFICE**  
405 NORTH MAIN STREET  
WICHITA, KANSAS 67202  
(316) 268-4501  
(316) 268-4114 FAX

**8" CLEANOUT RISER ASSEMBLY DETAIL**

JAMES L. ARMOUR, P.E. - CITY ENGINEER

PROJECT NUMBER	OCA NO.
1910 PPS	607861
DATE	SHEET CU303
MAR 96	

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 C:\2006\06481\003\PACKAGE 3 LANDSIDE UTIL



N: 12,540.8573, E: 9,552.3708  
Construct Standard MH over existing 8" pipe.  
Top= 1326.13  
Existing= 1318.49±  
Install 2" Force Pipe  
2" Pipe= 1319.49±  
Shape invert to provide smooth flow. Prior to beginning construction, the contractor shall excavate the existing 8" pipe to verify its horizontal and vertical location. The pipe location shall be reported to the engineer so that any necessary plan modifications can be made. Any additional labor or materials necessary to complete the connection shall be considered subsidiary to the project.

**NOTE: SEE OTHER SHEET**

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 File: CU600A.dwg  
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 Title: LANDSIDE UTILITIES AND LOOP ROAD ADDENDUM 06481-003-CU600-VEL INSP UTIL  
 Path: C:\2009\06481\003\PACKAGE 3 LANDSIDE UTILITIES

**HNTB**

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303 S. TOFFKA • WICHITA, KANSAS 67207  
316-262-2691 • FAX 316-262-3003  
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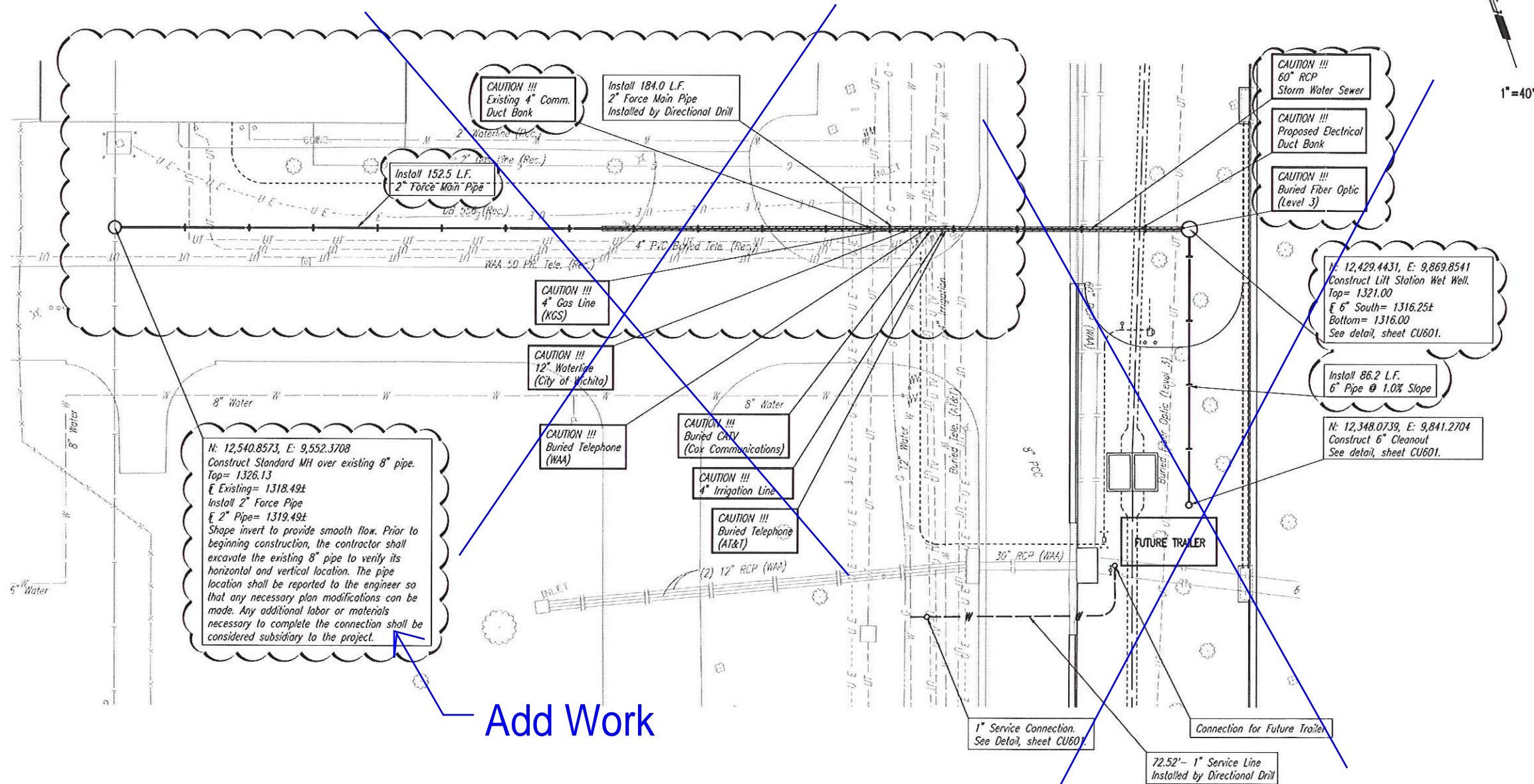
**MID-CONTINENT AIRPORT**  
Air Capital Terminal 3  
LANDSIDE UTILITIES PHASE I &  
MID-CONTINENT DRIVE RELOCATION

DATE: JULY 8, 2009  
HNTB PROJECT NO.: 34912  
CLIENT PROJECT NO.: 06178  
ADDENDUM NO.: 3  
REFERENCE SHEET:

VEHICLE INSPECTION  
AREA UTILITY  
SERVICES PLAN

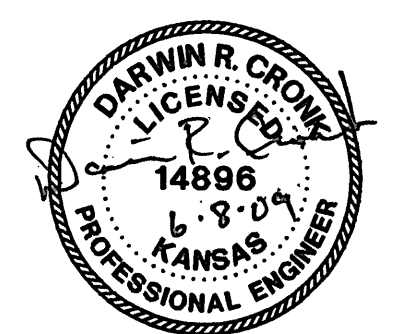
**CU600A**

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**Add Work**

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CU600A (0481) (03) PACKAGE 3 LANDSIDE UTILITIES AND LOOP ROAD/ADDITIONAL (0481-003-CU600-VEL) INSP UTIL



ISSUE: BID SET

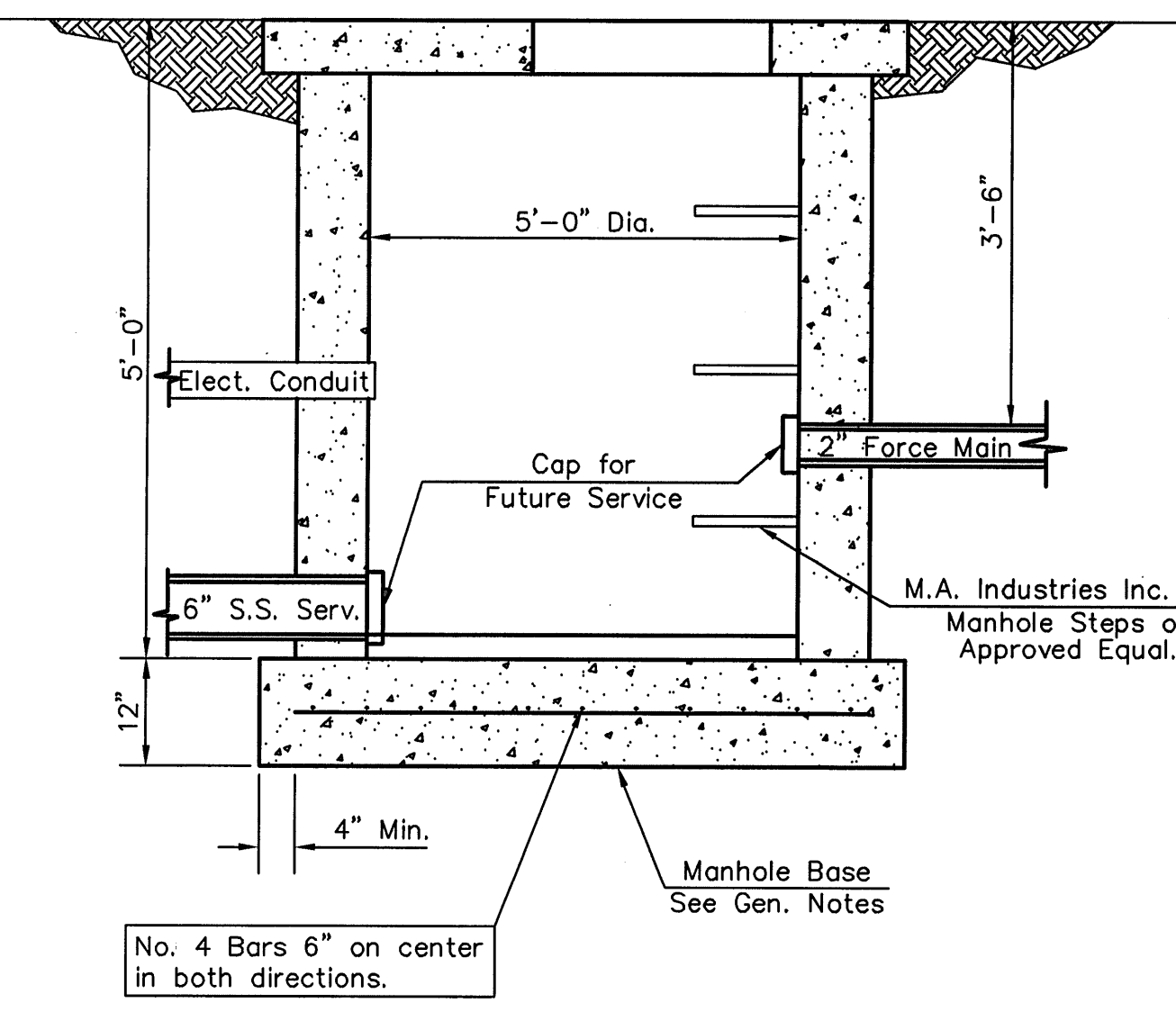
DATE: JUNE 8, 2009  
HNTB PROJECT NO.: 34912  
CLIENT PROJECT NO.: 06481

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APPROVED BY: \_\_\_\_\_

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MISCELLANEOUS  
UTILITY SERVICE  
DETAILS

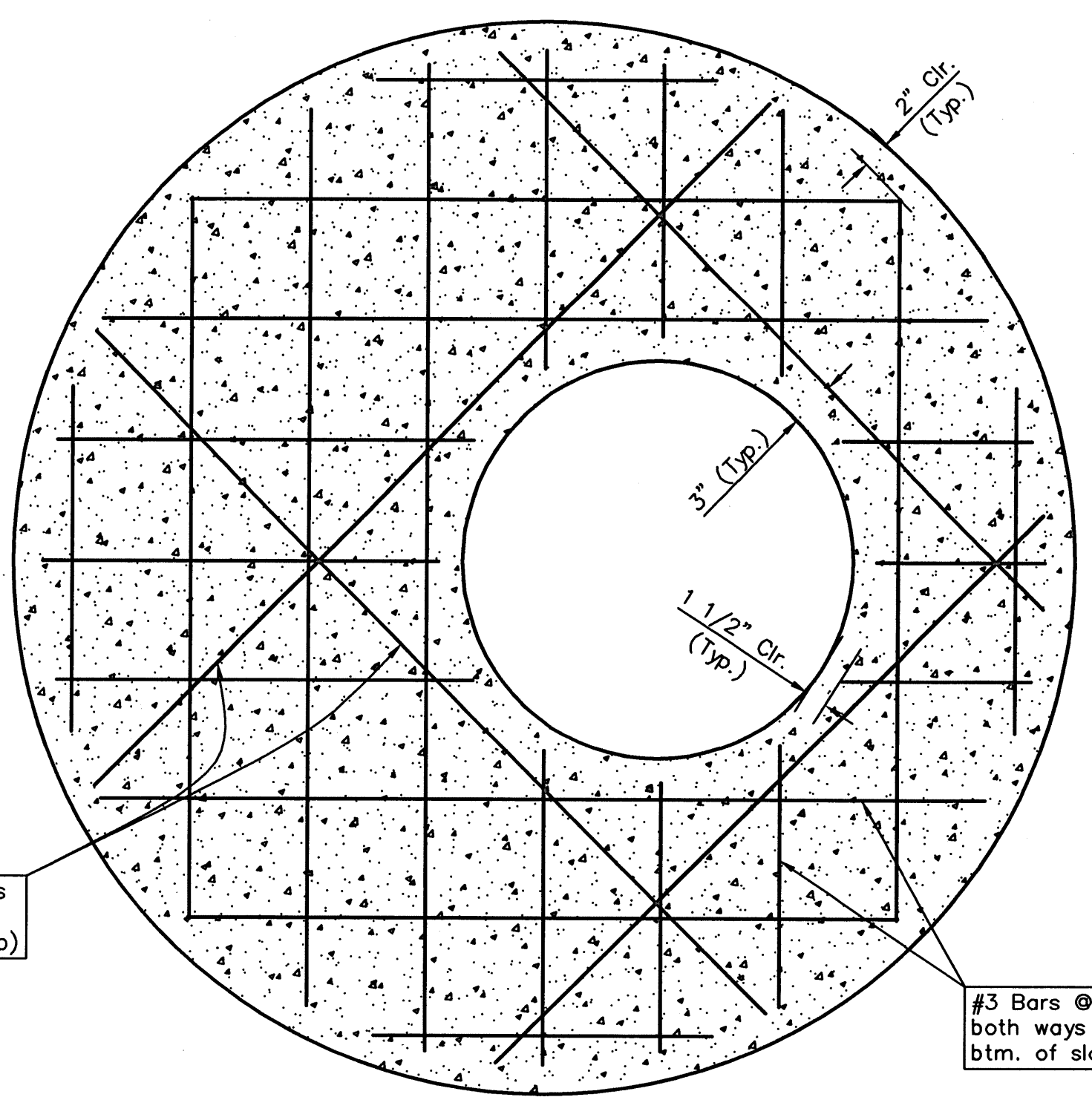
## CU601



### LIFT STATION WET WELL

#### GENERAL NOTES

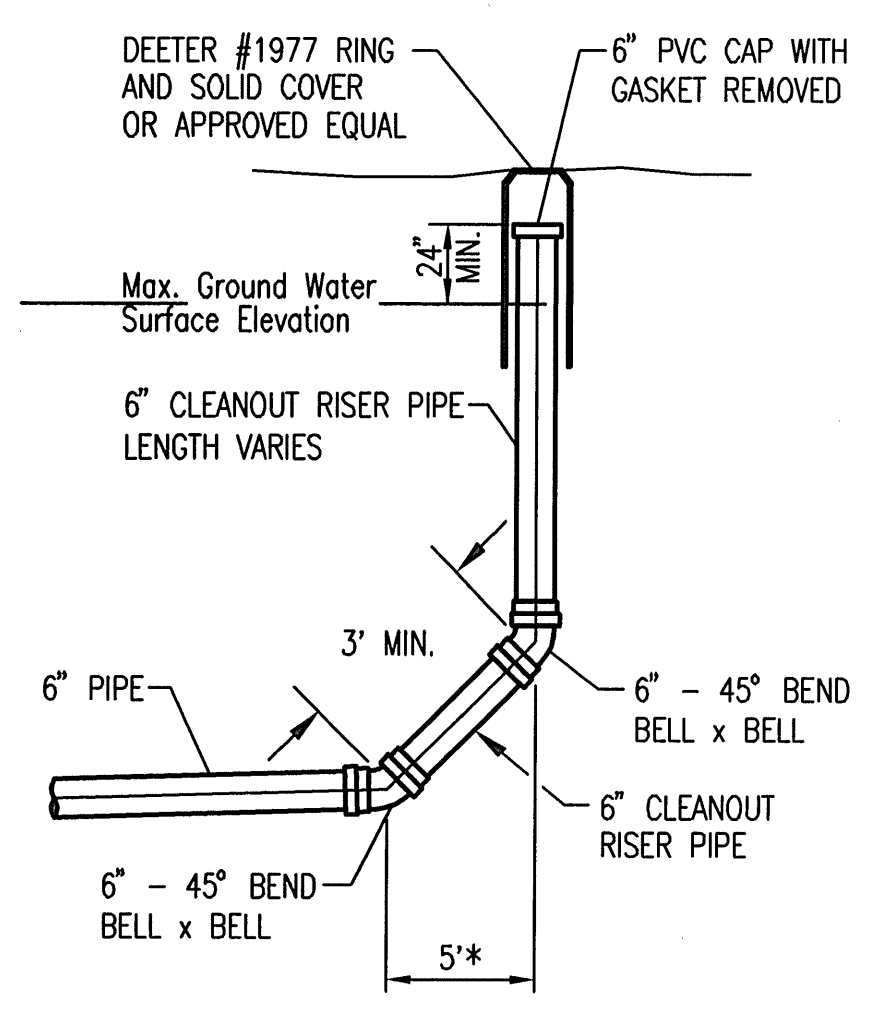
1. Wet Well construction shall meet all of the requirements of the City of Wichita requirements for a 5' Diameter Shallow Type P Manhole with Flat Top.
2. Concrete used in manhole bases shall conform to the requirements of concrete for concrete pavement construction as specified in the city standard paving specifications using city concrete cement 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. Completed manhole shall be without leaks and water tight.
3. 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 6" 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.
4. 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. 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.
5. 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.
6. 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 drawings.
7. The crowns of inflowing pipes shall never be set lower than the crown of the outflowing pipe.



### PLAN

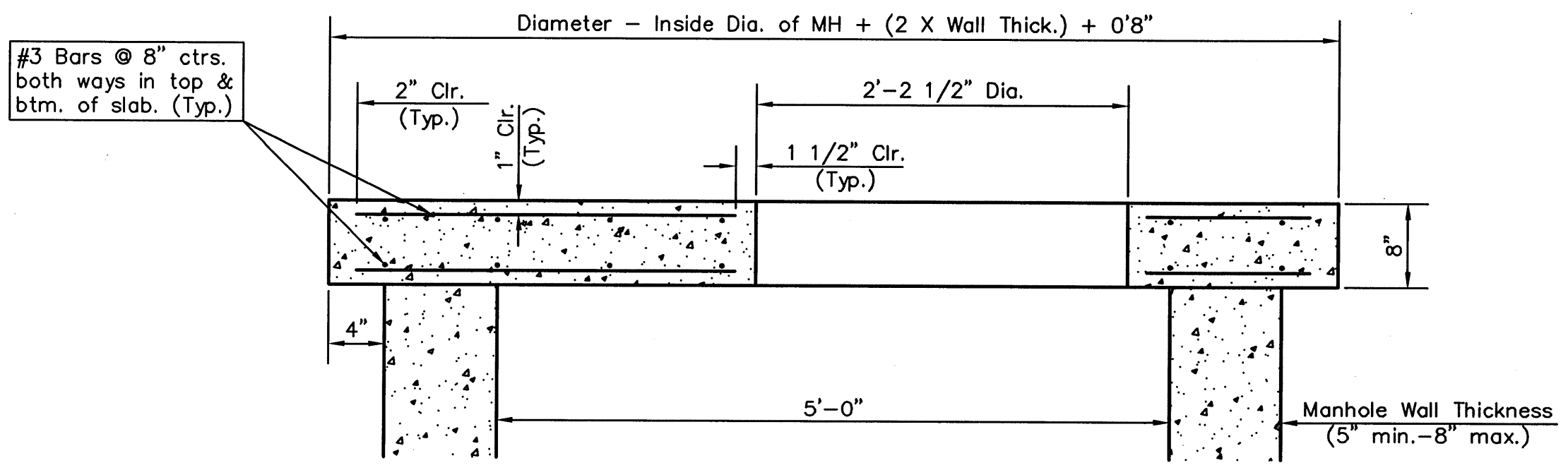
4 - #4 Diagonal bars to reinforce opening (top and btm. of slab)

#3 Bars @ 8" ctrs. both ways in top & btm. of slab. (Typ.)

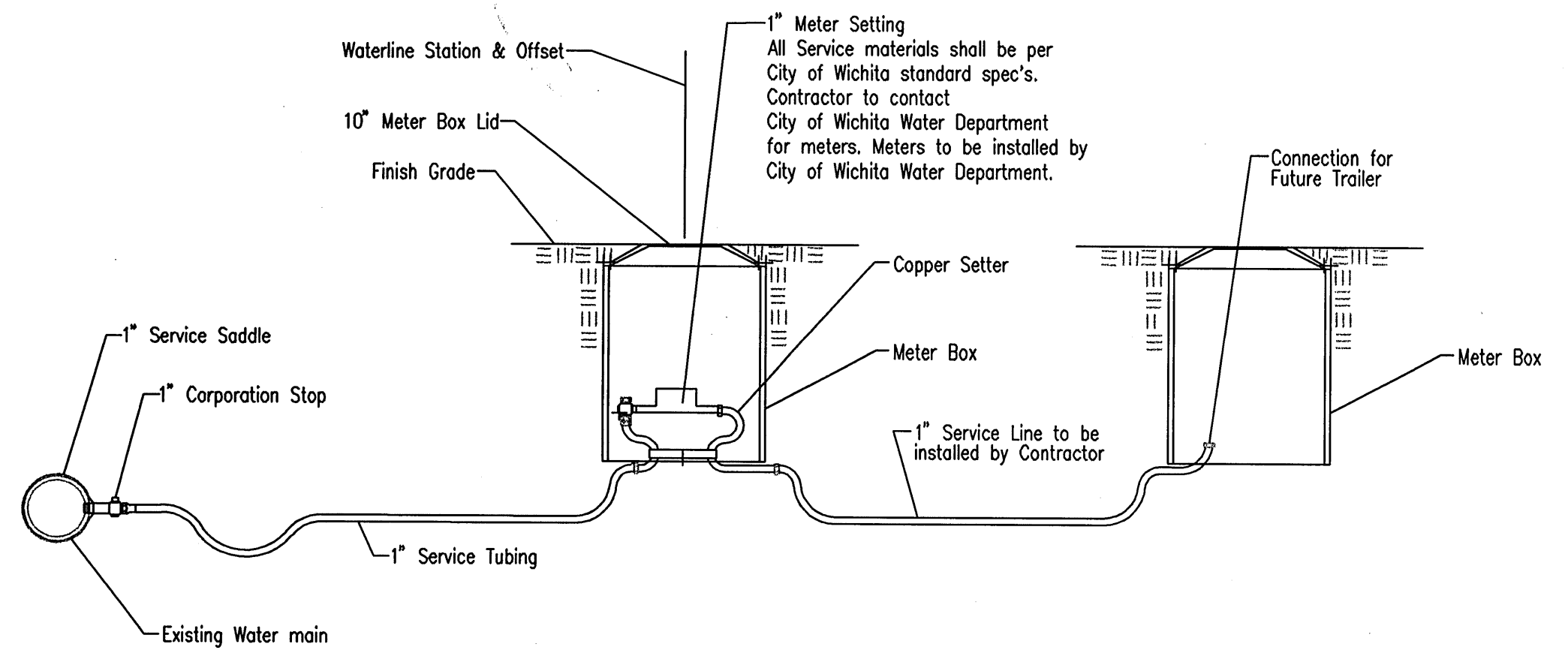


### 6" CLEANOUT ASSEMBLY DETAIL

\* 6" CLEANOUT ASSEMBLY PAID FOR ON A PER EACH BASIS AND INCLUDES 5' HORIZONTALLY ALONG CLEANOUT/SANITARY SEWER TO THE C. OF THE RISER PIPE.



### SECTION A-A FLAT CONCRETE SLAB DETAILS



### 1" SERVICE CONNECTION DETAIL

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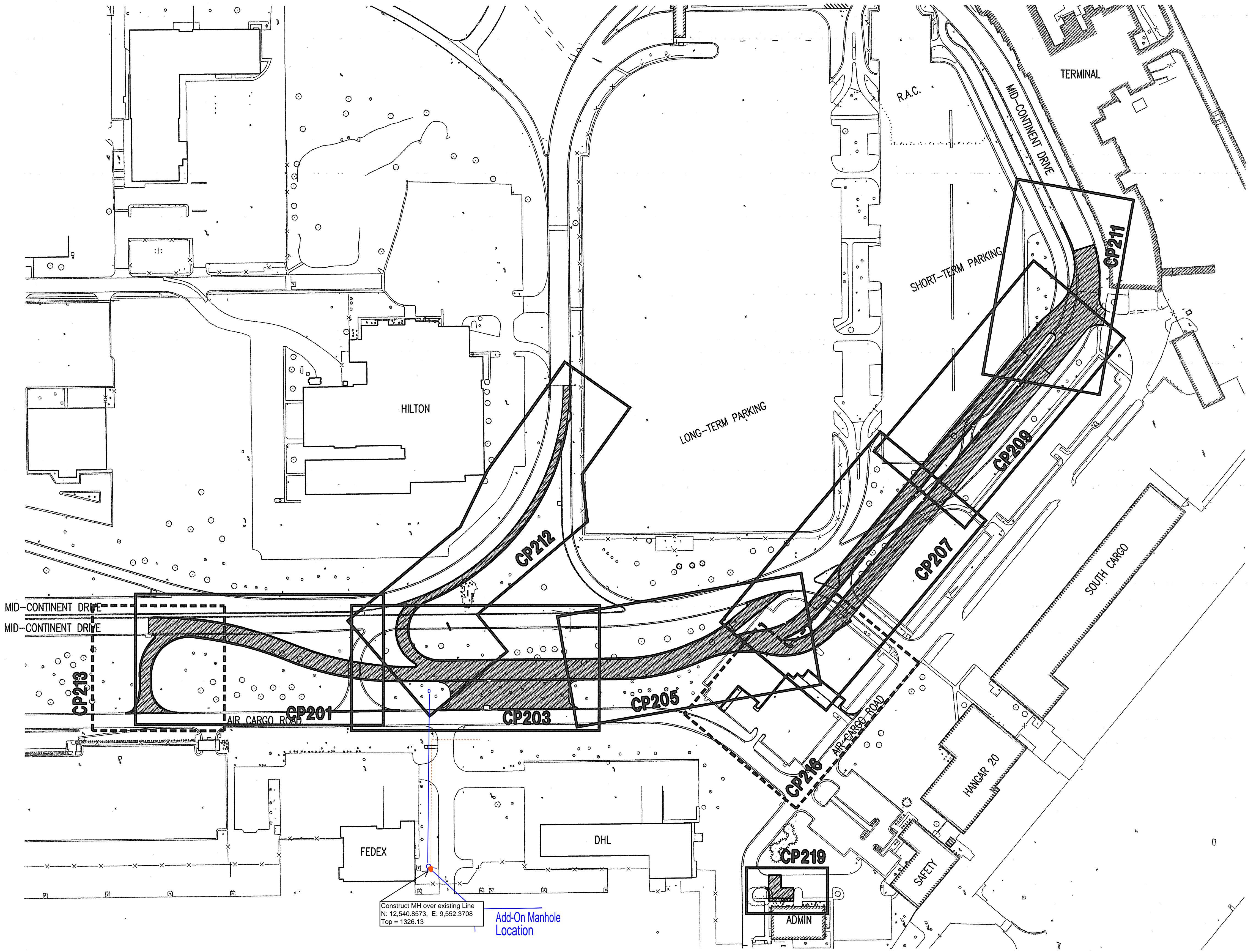
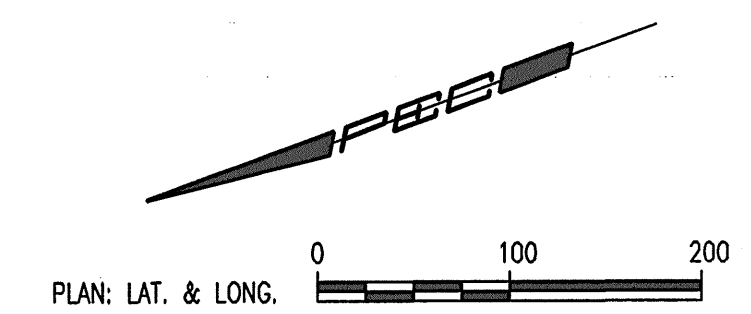
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HNTB PROJECT NO.: 34912  
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APPROVED BY:

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MID-CONTINENT DRIVE RELOCATION-SHEET INDEX

**CP200**

PROPOSED PAVEMENT CONSTRUCTION



Construct MH over existing Line  
N: 12,540.8573, E: 9,552.3708  
Top = 1326.13  
Add-On Manhole Location

Saved: 05-28-2009 10:16:22 AM by DAR  
 Plot Scale: 1"=100'-00" (08-08-2009 8:35:27 AM by MCL)  
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CLIENT PROJECT NO.: 06481

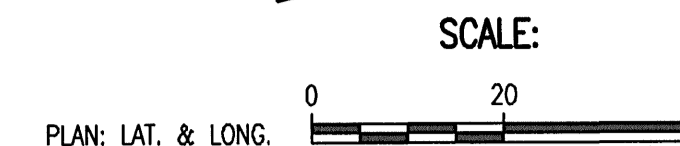
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**VEHICLE INSPECTION AREA PLAN AND PAVING PLAN**

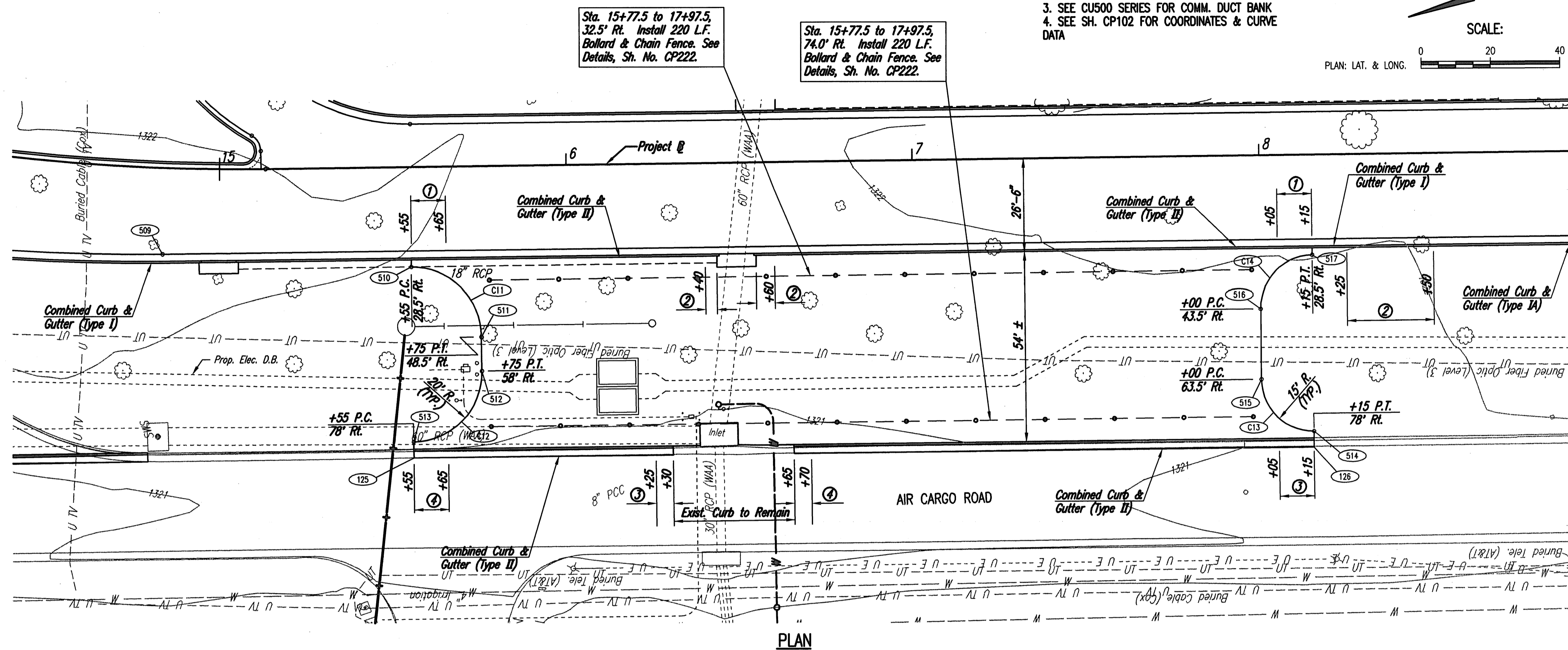
## CP215

1. SEE SH. NO. CD102 FOR DEMOLITION PLAN
2. SEE CU400 SERIES FOR ELEC. DUCT BANK
3. SEE CU500 SERIES FOR COMM. DUCT BANK
4. SEE SH. CP102 FOR COORDINATES & CURVE DATA



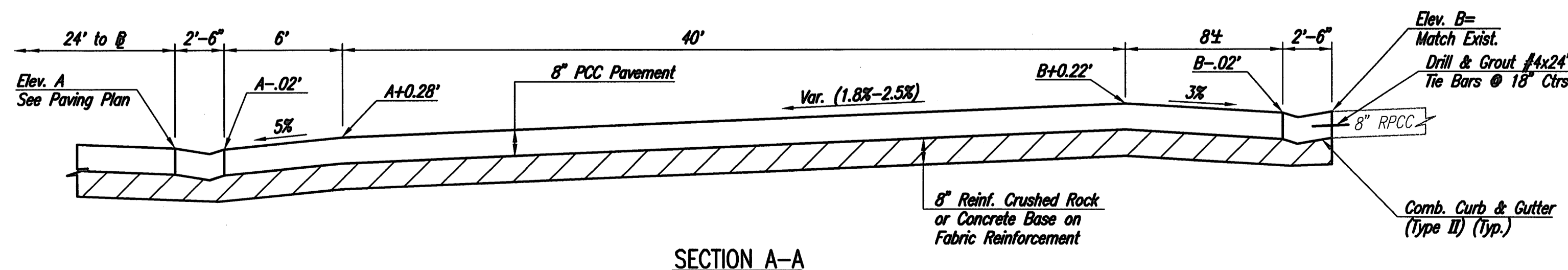
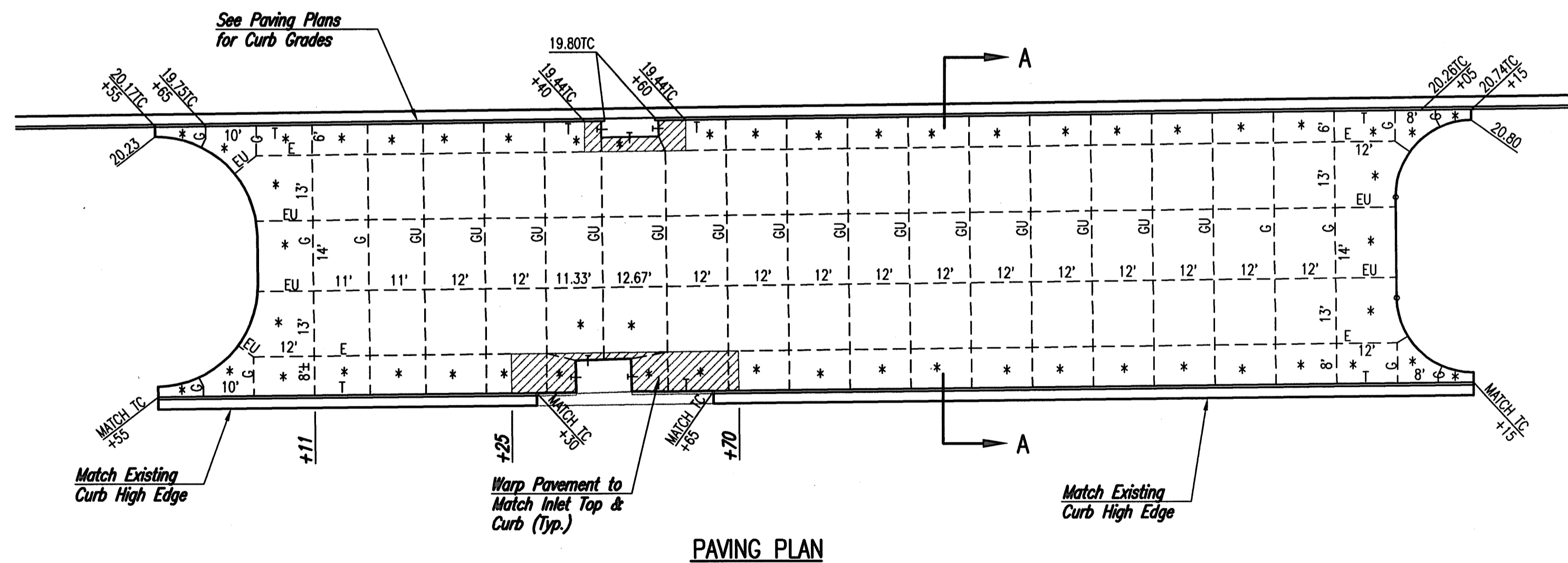
### LEGEND

- ① TRANSITION FROM COMB. C & G (TYPE I) TO COMB. C & G (TYPE II)
- ② TRANSITION FROM COMB. C & G (TYPE II) TO MATCH INLET TOP
- ③ TRANSITION FROM COMB. C & G (TYPE II) TO MATCH EXISTING CURB (TYPE I)
- ④ TRANSITION FROM MATCH EXISTING CURB (TYPE I) TO COMB. C & G (TYPE II)



### LEGEND

- \* - INDICATES PANEL TO BE REINFORCED
- TC - TOP CURB



SECTION A-A