

PLAN AND PROFILE OF PROPOSED
WAR INDUSTRIES RELIEF SEWER
(PHASE IV)

-- for --

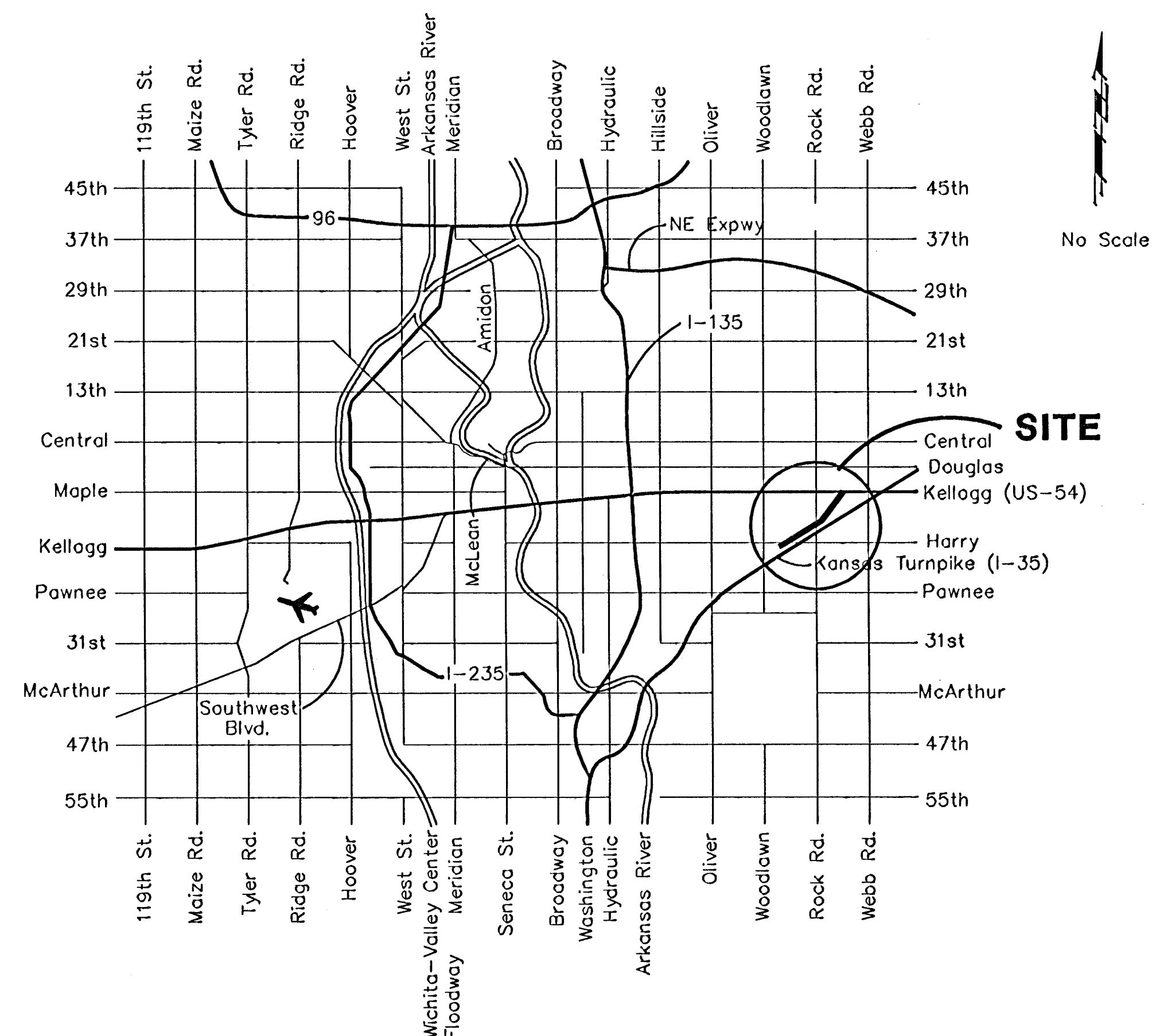
THE CITY OF WICHITA,
SEDGWICK COUNTY, KANSAS
JAMES L. ARMOUR - ACTING CITY ENGINEER
PROJECT NO. 468-83487

O. C. A. NO. 623324

APRIL, 2004

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*Utility Contractors, Inc. - Contractor
Wood, City - Inspector
Released 11/15/05
As-Built
.pdf by JDL 4/7/06*



KEY SHEET

SCALE:
1" = 250'

BENCH MARKS

- BM #1** COW Bench Mark 600'± east of Gouverneur Road Located on the SE Corner of the Gypsum Creek Bridge, 24'± south of Harry Centerline Elevation = 142.97 City Datum
- BM #2** "a" on the South Rim of Existing SS Manhole #5946-006 Located 103.5'± S. of the south line of Lot 4, Block E, Broadmoor Addition, Along the Line of the Rear Lot Line Extended Elevation = 141.42 City Datum
- BM #3** COW Bench Mark Located on the NW Corner of the Rock Road & Gypsum Creek Bridge 34'± west of Rock Road Centerline Elevation = 141.32 City Datum
- BM #4** "a" on Top of Curb Located at the SW end of the Mansfield Cul-D-Sac Adjacent to the NW Corner of Lot 2, Dwayne Addition, Wichita, Sedgewick County, Kansas Elevation = 141.42 City Datum

HORIZONTAL CONTROL POINTS

- CP #127** N-1677648.714 E-1673237.796 #4 Rebar West Bank of Gypsum Creek South of Harry 123.3'± NE to Center of Existing SS/MH 5945-013 37.8'± SE to Edge of Concrete Bike Path 86.9'± West to Light Pole
- CP #128** N-1678126.501 E-1673806.559 C.O.W. Bench Mark Disk Located on the SE Corner of the Harry Street Bridge at Gypsum Creek Approx. 24'± South of Harry Street Centerline.
- CP #168** N-1678139.302 E-1673108.519 NW Corner of the NE 1/4 Sec. 31, TWP 27, R 2E Located at the Intersection of Harry Street & Gouverneur Road.
- CP #173** N-1678186.025 E-1675752.854 NE Corner of the NE 1/4 Sec. 31, TWP 27, R 2E Thimble Located at the Intersection of Harry Street & Rock Road.
- CP #200** N-1678603.503 E-1673916.006 Rebar with Armstrong Survey Cap - NE Property Corner of Lot 2, Spring Lake Addition, Wichita, Sedgewick County, Kansas.
- CP #205** N-1679623.958 E-1674802.323 Found Iron - East Property Line of Lot 2, Block F, Broadmoor Addition, Wichita, Sedgewick County, Kansas. (East Property Corner of House Address 1028 Doreen St. 75'± South to SS/MH 5946-007 63'± West to Centerline Doreen St.
- CP #167** N-1680787.685 E-1673064.619 NW Corner of the SE 1/4 Sec. 30, TWP 27, R 2E Thimble Located at the Intersection of Lincoln Street & Gouverneur Road.
- CP #172** N-1680831.972 E-1675718.600 NE Corner of the SE 1/4 Sec. 30, TWP 27, R 2E Thimble Located at the Intersection of Lincoln Street & Rock Road.
- CP #210** N-1680439.051 E-1676002.352 H/N Nail set in Concrete - SE Property Corner of Lot 1, Langland Addition, Wichita, Sedgewick County, Kansas 12'± SW to Building Corner
- CP #212** N-1680780.574 E-1676546.081 Rebar Set in the West Bank of the Gypsum Creek 67.9'± NW to the SE Property Corner of Lot 10, Block 3, Eastridge Park 2nd Addition, Wichita, KS 69'± NNE to End Section of 24" RCP SWS Outfall 125.8'± West to Face of Apt. Building
- CP #213** N-1681187.546 E-1677032.427 Rebar Set in Conc. Jt. @ the South End of Mansfield Dr. 18.7'± ESE to Center of San. Sewer MH #6046-289 86'± SSW to Center of San. Sewer MH #6046-290 51.3'± SW to Center of Cul-D-Sac
- CP #214** N-1682494.121 E-1677471.364 Rebar Set in Conc. Jt. @ the Intersection of Mansfield Dr. & Indianapolis Street. 26.8'± SE to SE Curb Return of the Intersection. 28.6'± NE to NE Curb Return of the Intersection.
- CP #171** N-1683487.261 E-1675674.325 NW Corner of the NW 1/4 Sec. 29, TWP 27, R 2E Thimble Located at the Intersection of Kellogg (US 54) & Rock Road.
- CP #215** N-1683087.991 E-1677552.089 Found Rebar with P.E.C. Survey Cap - East Property Line P.R.C. Corner of Lot 4, Blk 1, Sharon Ryan Addition, Wichita, Sedgewick County, Kansas 50'± SW to Fire Hydrant 29.9'± SE to Centerline of Mansfield Drive

GENERAL NOTES

- At Least 72 hours prior to beginning excavation (excluding weekends and holidays), the Contractor shall contact Kansas One-Call at (316) 687-2470, to request the local utility companies to mark any existing lines within the project area.
- Utility service lines, poles, valve boxes, gas meters, and etc. 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 location, as shown on the plans, represent the best information obtainable for 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 give all property owners and/or tenants of developed property abutting the project limits a minimum of ten (10) days advance notice prior to start of construction.
- All project waste including trees, foliage, asphalt, concrete, rubble from miscellaneous structures, abandoned pipes, excess excavation & etc. shall be disposed of on site to be provided by the Contractor. These sites shall be approved by the Engineer as 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 if in a flood plain would require a Kansas State Board of Agriculture permit. Any material dumped in waters of the United States or wetlands is subject to U.S. Corps of Engineers permitting regulations. Any material buried or stockpiled beyond approved construction limits would require additional archaeological investigations unless buried in a previously approved borrow location.
- The Contractor shall be responsible for preserving any shown property irons. The Contractor will be required to reestablish any property iron which are damaged or destroyed by his construction operations. Such irons shall be reestablished by a licensed Land Surveyor in accordance with state law.
- The Water Department shall field locate water valves one time during construction when requested by the Contractor. It shall be the Contractor's responsibility to preserve such field locations during the construction process. Water valves, water valve boxes or fire hydrants damaged during construction shall be repaired/replaced by the Contractor at his own expense.
- Prior to bidding the project, each bidder shall visit the site and satisfy himself of surface & subsurface conditions. Each bidder shall also fully inform himself as to the extent of the scope of work to be performed. No Additional compensation shall be granted to the Contractor for items that may have been overlooked during pre-bid site visits.
- Contractor shall be responsible for implementing erosion control methods during construction to prevent unnecessary silt/sediment discharge through downstream properties and/or storm sewer systems. Contractor shall install and maintain erosion controls as directed by the Engineer. These controls may include but not be limited to: hay bales, silt fences, gravel sediment traps, temporary mulching or other controls necessary to inhibit sediment runoff during construction. All costs associated with erosion control shall be bid as "Erosion Control".
- Contractor shall provide positive drainage away from all manhole covers.
- All lawn/turf areas disturbed by construction shall be restored with the same grass/sod as existing. Restoration of disturbed areas shall include, but not limited to, top soil preparation, seeding, mulch, and/or reseeded. All seeding/sodding work shall be in accordance with the City Standard specifications and the City Administrative Regulation No. AR78 which governs cleanup and restoration or replacement following construction. All costs for this work shall be SUBSIDIARY to the lump sum price bid for "Site Restoration".
- 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. Contractor shall use Approved Tree Trimming Methods. Cost for removal and trimming shall be SUBSIDIARY to "R/W Clearing & Site Preparation".
- Contractor is required to maintain continuous flow of sewage in existing mains at all times.
- The Contractor shall restore all ditches, swales, roads shoulders and banks to their original slopes and grades. Where existing entrance pipe, drainage pipe, signs, fences, etc., conflict with the proposed work herein, they shall be removed and replaced for reset unless otherwise indicated on the plans. Replacement of all the aforementioned items, including seeding, fertilizer and mulching shall be SUBSIDIARY to the Lump Sum bid item "Site Restoration".
- The Contractor shall contain his operations to permit traffic through and across construction at existing roadways unless otherwise approved by the Engineer. The Contractor shall erect warning signs, flashing lights, and barricades in compliance with the Manual on Uniform Traffic Control Devices to ensure traffic safety. Road Closures & Detours shall be approved. Traffic Control will not be paid for directly but shall be considered INCIDENTAL to other items in the Project. The Contractor shall limit the extent of the trench to remain open overnight and weekends to less than 50 feet.
- Easements and right-of-ways provided by the owner for the project are shown in the plans. The Contractor shall be responsible for acquisition of any additional temporary easements or right-of-way that he or she desires to use in completing the work.
- Positive drainage shall be provided for all areas on or near spoil areas. Natural drainage ways shall be maintained.
- All construction & material to comply with City of Wichita Specs and Standards.
- All elevations shown are based on City of Wichita datum.
- The Contractor shall seed all areas disturbed by construction activities with temporary rye grass. Rye grass seed shall be planted at a minimum rate of six (6) pounds per one thousand (1,000) square feet. This temporary seeding may be omitted only if other seeding is required in accordance with General Note 10. Temporary seeding or permanent seeding/sodding shall be applied within fourteen (14) days after the area has been disturbed.
- Manholes shall be type "P" manholes. Manholes shall be constructed in accordance with the standard specs and standard detail drawings. Pipes shown to be Abandoned shall be Flushed & Plugged as per City Specs. Abandoning Existing Sewer Pipes shall be INCIDENTAL.
- Where indicated in the plans the Contractor shall install a synthetic load support system to facilitate sewer maintenance equipment access. Synthetic load support shall consist of a perforated Geoweb system as manufactured by Presto Products Company-Appletown WI (1-800-548-3424/PRESTOGEO.Com) or equal. Geoweb sizing shall be as recommended by the manufacturer. Base for the Geoweb system shall be 4" min. gravel (20-1) with Filter Fabric. All voids in the Geoweb material shall be filled with sand. Seed, fertilizer, and mulch shall be applied in accordance with note 10. All costs for this work, including materials, labor, and incidentals shall be paid for at the price bid per square yards for "Synthetic Load Support".

LIST OF UTILITY COMPANIES

Contractor will be required to provide a minimum advance notice of forty-eight (48) hours to utility companies prior to excavation or working adjacent to utilities.

TYPE	OWNER	CONTACT	NUMBER	EMERGENCY NUMBER
Locator Service	Kansas One-Call		687-2470	687-2470
TV	Cox Communications	Mark Henderson	262-4270	262-4270
Electric	Westar Electric Company	Jimmy Washington	261-6315	383-8600
Gas	Aquila Gas Company	Calvin Briggs	941-1608	1-800-303-0357
Gas	Kansas Gas Service	Dean LaFlamme	831-5626	1-888-482-4950
Pipeline	Jayhawk Pipeline Co., LLC		755-0241	1-888-542-9575
Telephone	SBC - Kansas	Bob Alley	268-2245	1-800-870-8390
Water/Sewer	Wichita Water & Sewer	Bill Perkins	268-4555	262-6000
Storm Sewer	Wichita Storm Water Utility	Andy Busada	268-4090	268-4071

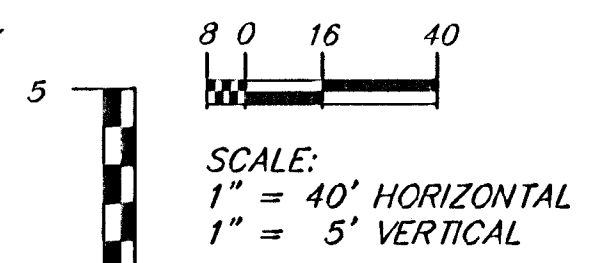
The Contractor shall erect & maintain the appropriate BIKE PATH CLOSED SIGNAGE at Entrance Locations upstream & downstream of Construction Operations. Cost shall be INCIDENTAL to the Project.

It is the Intent of these Plans that the Contractor Preserve Ex. Conc. Bike Path from Sta. 10+27 to Sta. 24+45± during sewer line construction. Any damage to Ex. Bike Path through these limits shall be repaired by the Contractor at no additional expense to the project.

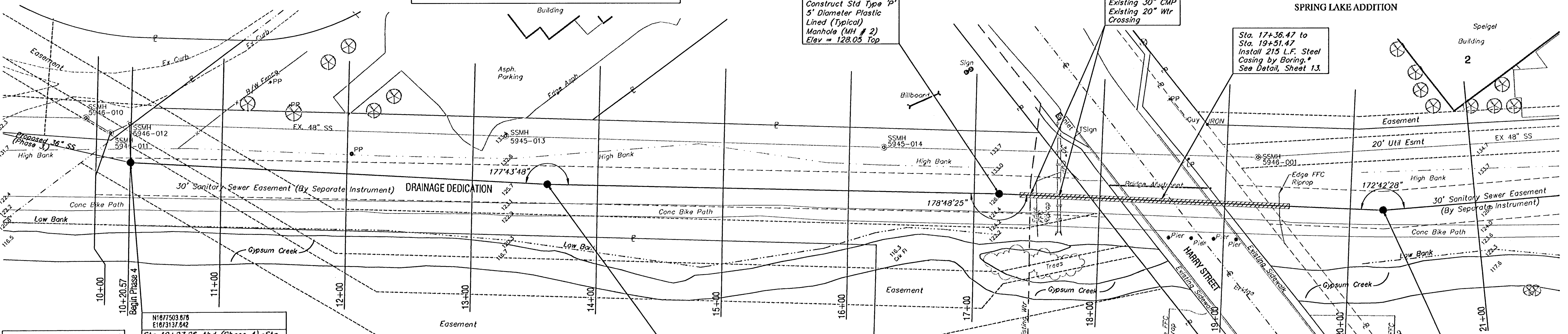
The Vertical Location of the 20" Water Line is NOT verified & is shown from Record Info. Contractor is Strongly Advised to expose this line PRIOR to construction and report any discrepancies to the Engineer.

CAUTION!
Existing 30" CMP
Existing 20" Wtr Crossing

Sta. 17+36.47 to Sta. 19+51.47
Install 215 L.F. Steel Casing by Boring.
See Detail, Sheet 13.



SPRING LAKE ADDITION



Contractor shall verify type of pipe, Flow Line, Stub Location and report his findings to the Engineer. No additional compensation will be made for changes needed based on the As-Constructed conditions of WIS ph 3.

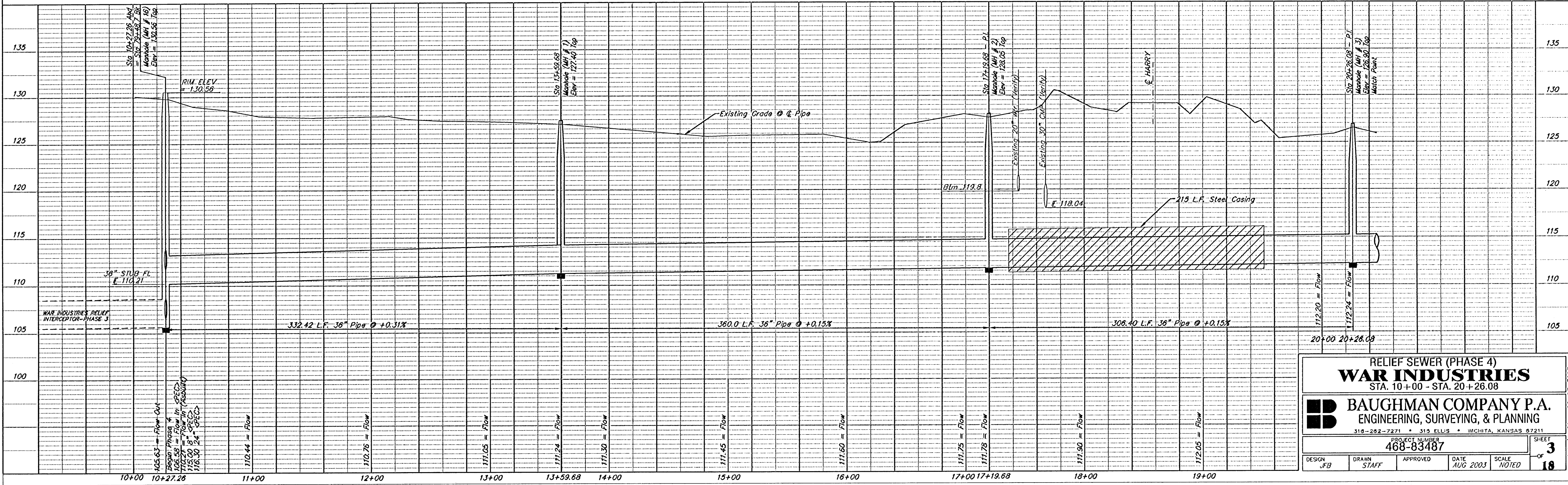
N1877503.878
E1673137.642
Sta 10+27.26 And (Phase 4)=Sta 79+53.4 Bk (Phase 3) Begin Phase 4 Construction. Exist. Outside Drop Manhole. Connect To Existing 36" Stub (MH # 16) (Phase 3) Elev= 130.56 Top

* STEEL CASING SIZES
58" I.D. (Min.) for 36" VCP Sewer Line
52" I.D. (Min.) for 36" DI Sewer Line
50" I.D. (Min.) for 36" RCP Sewer Line
48" I.D. (Min.) for 36" PVC Sewer Line
48" I.D. (Min.) for 36" Hobas Sewer Line

N1877758.432
E1673351.191
Sta 13+59.68
Construct Std Type 'p' 5' Diameter Plastic Lined (Typical) Manhole (MH # 1) Elev = 127.40 Top

Contractor shall install 848.29 L.F. of Sediment Barrier from Sta. 9+87.79 to Sta. 17+51.47 and from Sta. 19+41.47 to Sta. 20+26.08 to protect the Ex. Creek Bank. See Detail Sheet 14.

N1878279.322
E1873168.785
Sta 20+26.08 - P.I.
Construct Std Type 'p' 5' Diameter Plastic Lined (Typical) Manhole (MH # 3) Elev = 126.90 Top Match Point



RELIEF SEWER (PHASE 4)
WAR INDUSTRIES
STA. 10+00 - STA. 20+26.08

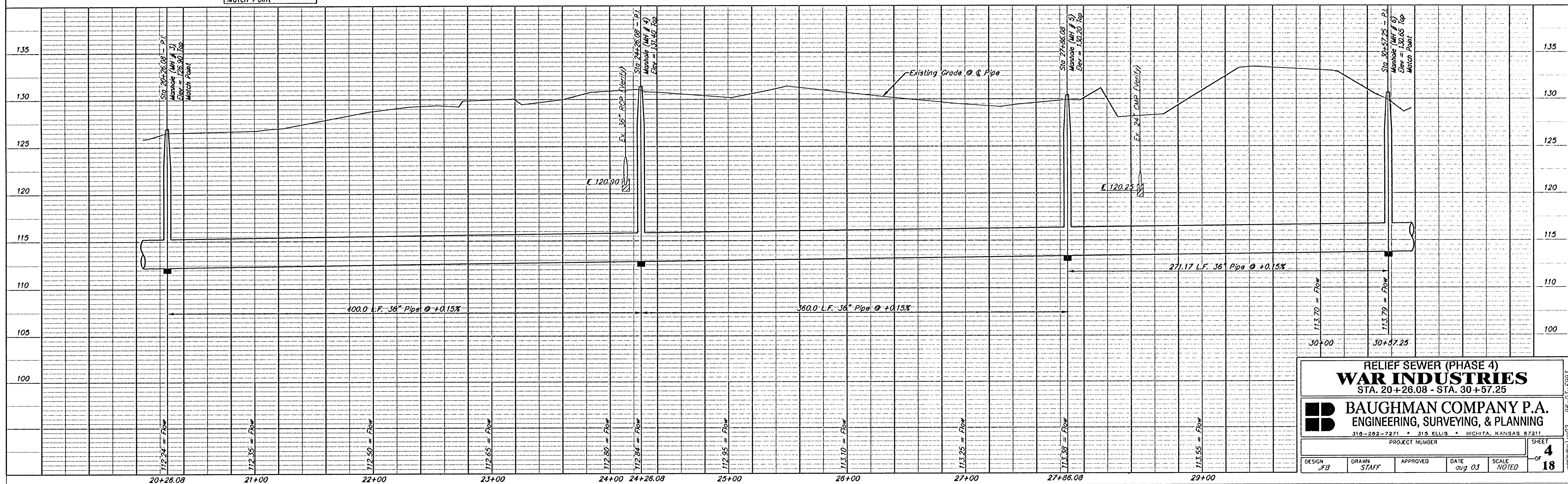
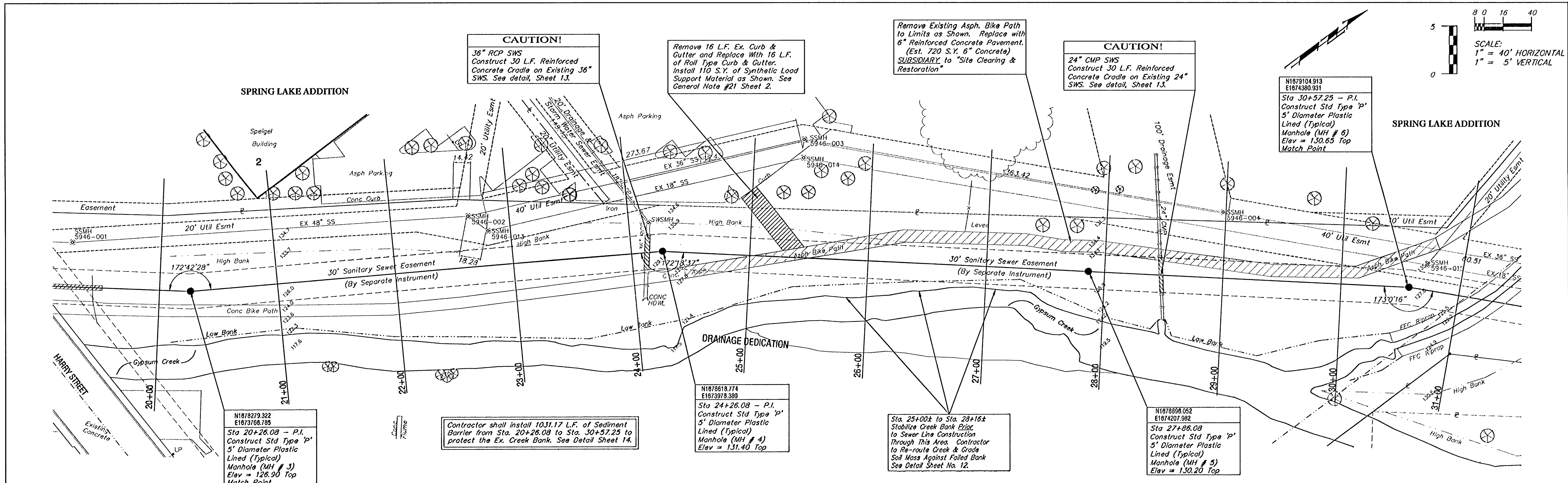
BAUGHMAN COMPANY P.A.
ENGINEERING, SURVEYING, & PLANNING
318-292-7271 • 315 ELLIS • WICHITA, KANSAS 67211

PROJECT NUMBER
468-83487

DESIGN JFB	DRAWN STAFF	APPROVED	DATE AUG 2003	SCALE NOTED
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SHEET
3
OF
18

98-03-4593



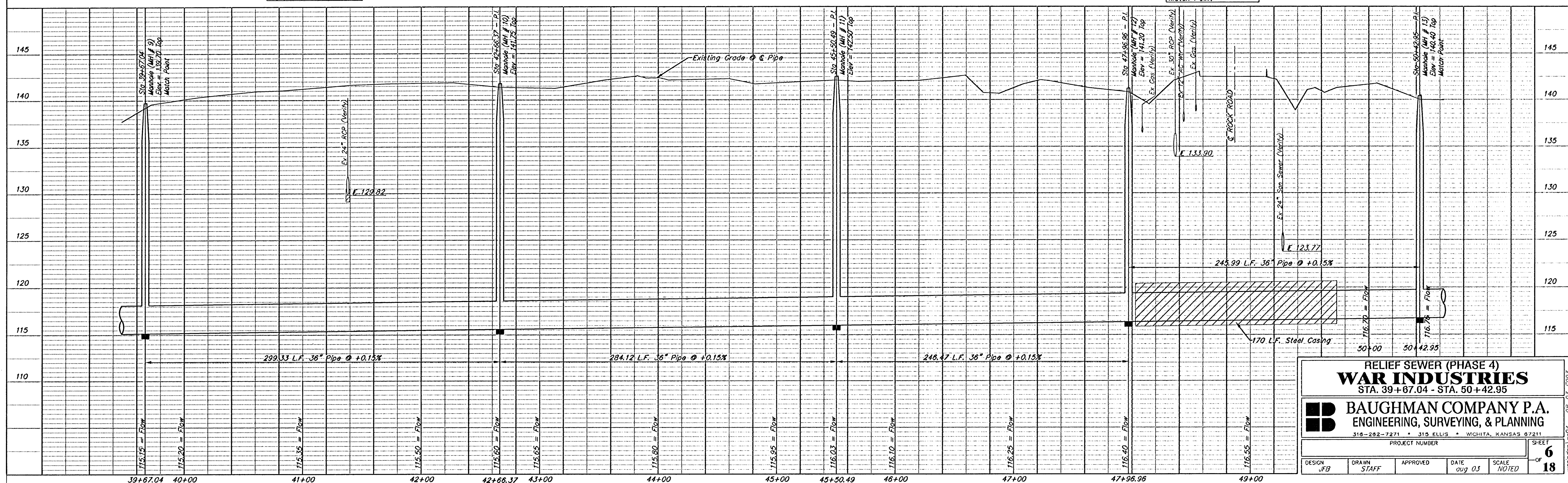
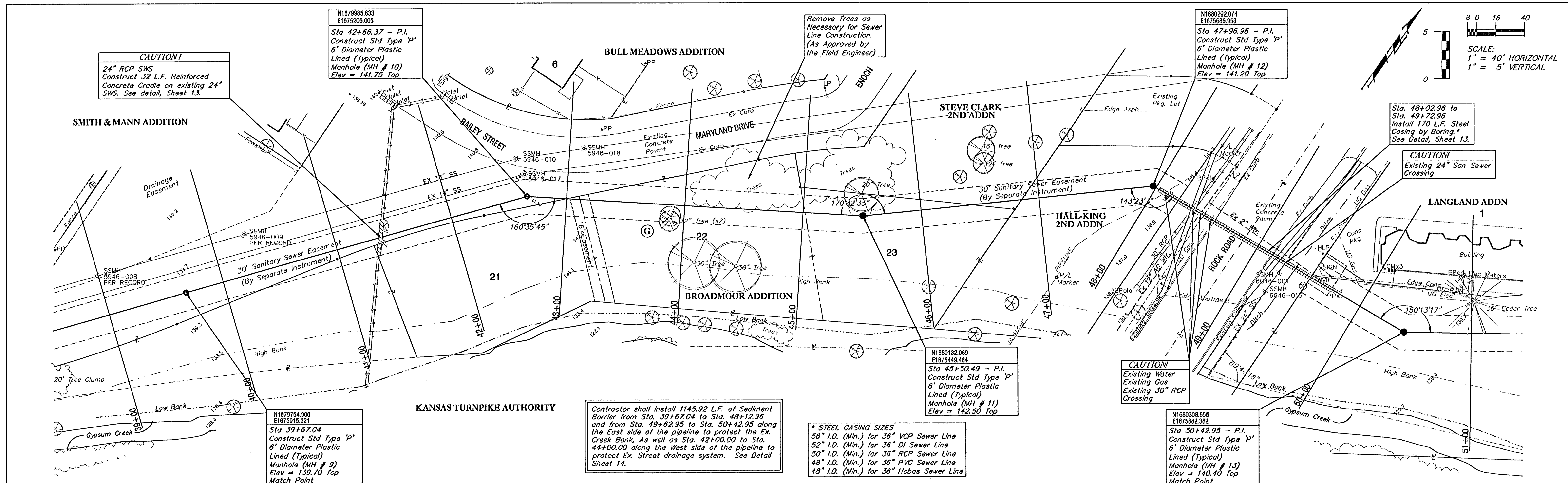
RELIEF SEWER (PHASE 4)
WAR INDUSTRIES
STA. 20+26.08 - STA. 30+57.25

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PROJECT NUMBER: _____ SHEET: **4** OF **18**

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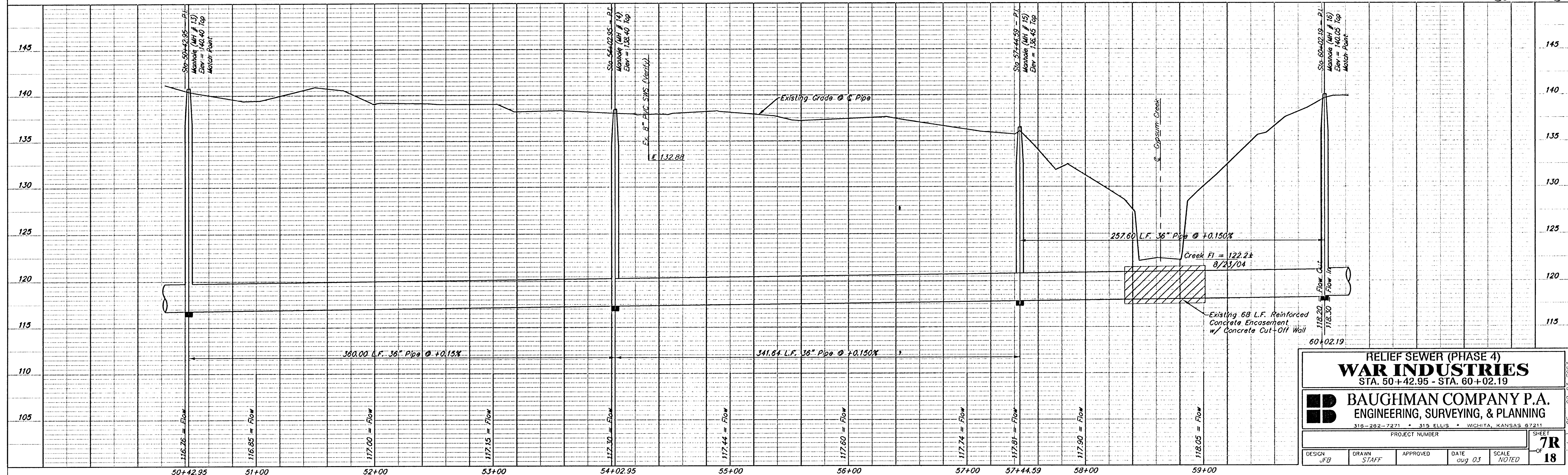
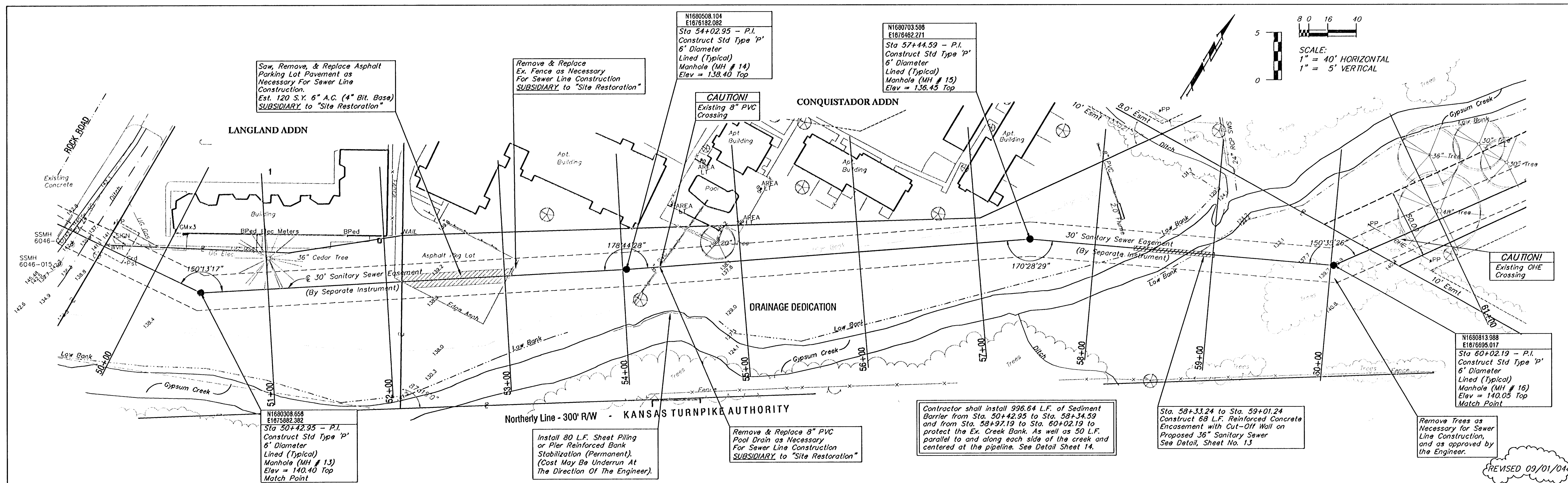


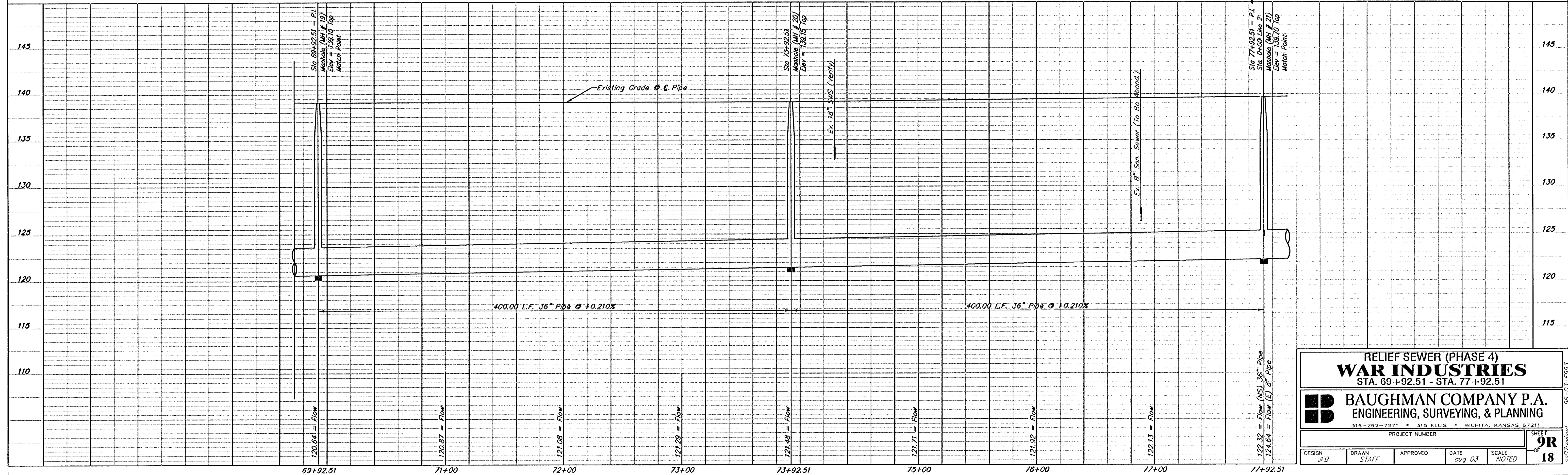
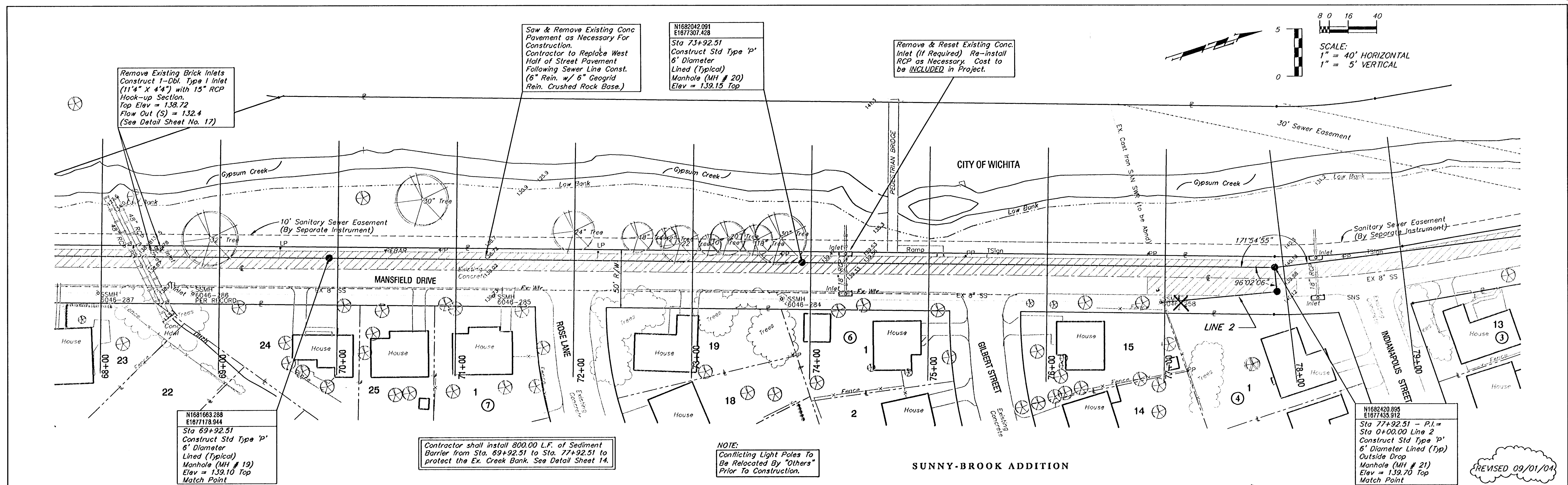
RELIEF SEWER (PHASE 4)
WAR INDUSTRIES
 STA. 39+67.04 - STA. 50+42.95

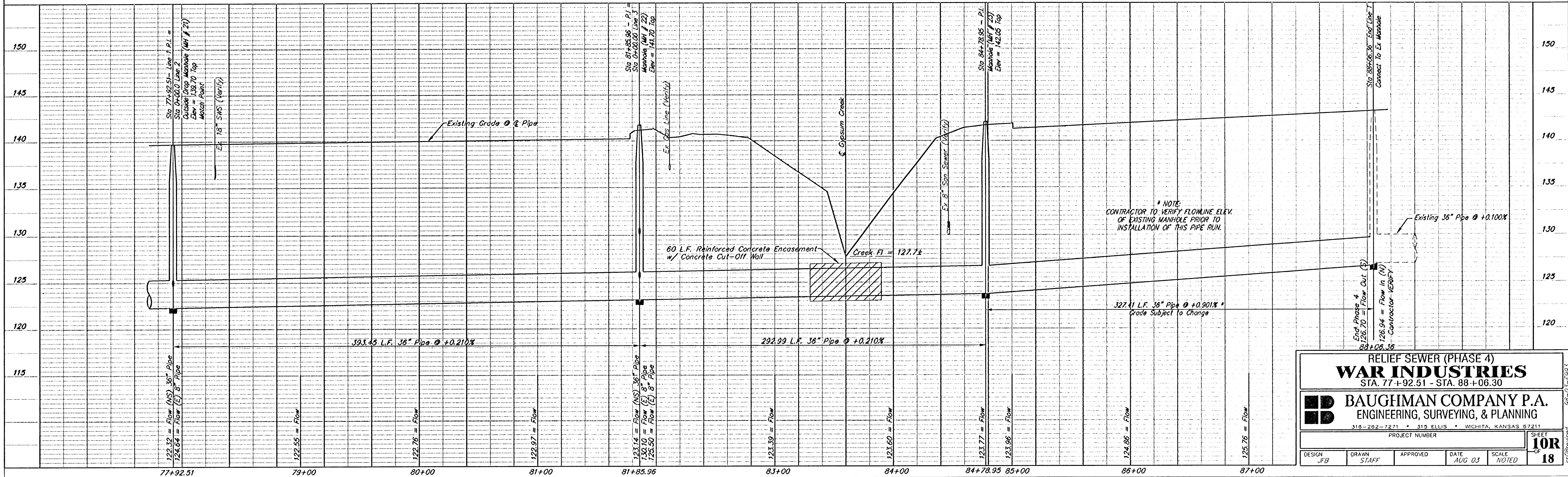
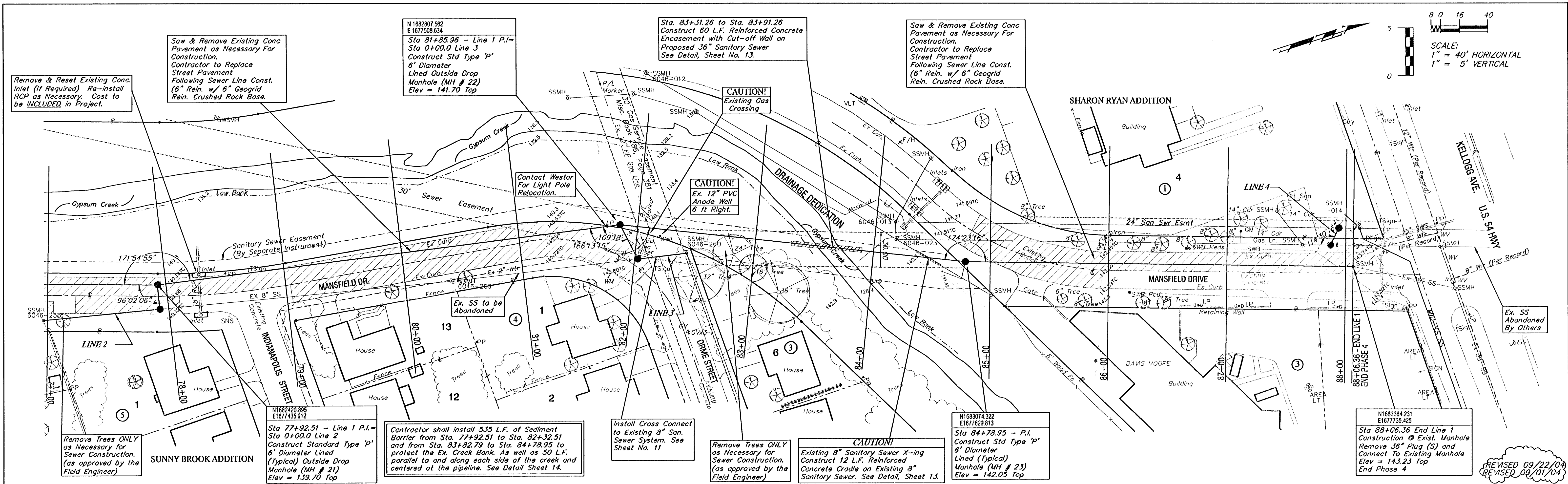
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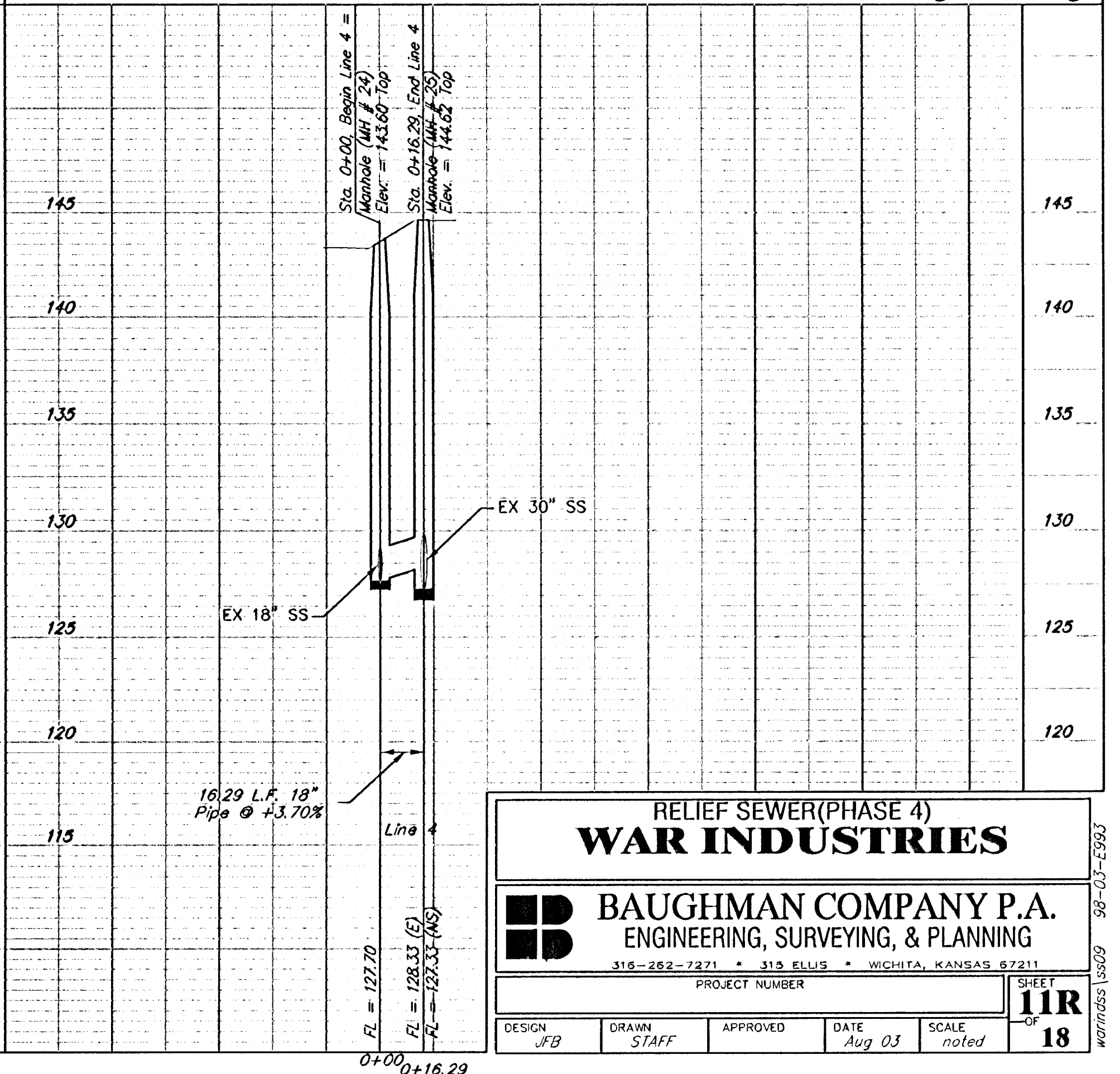
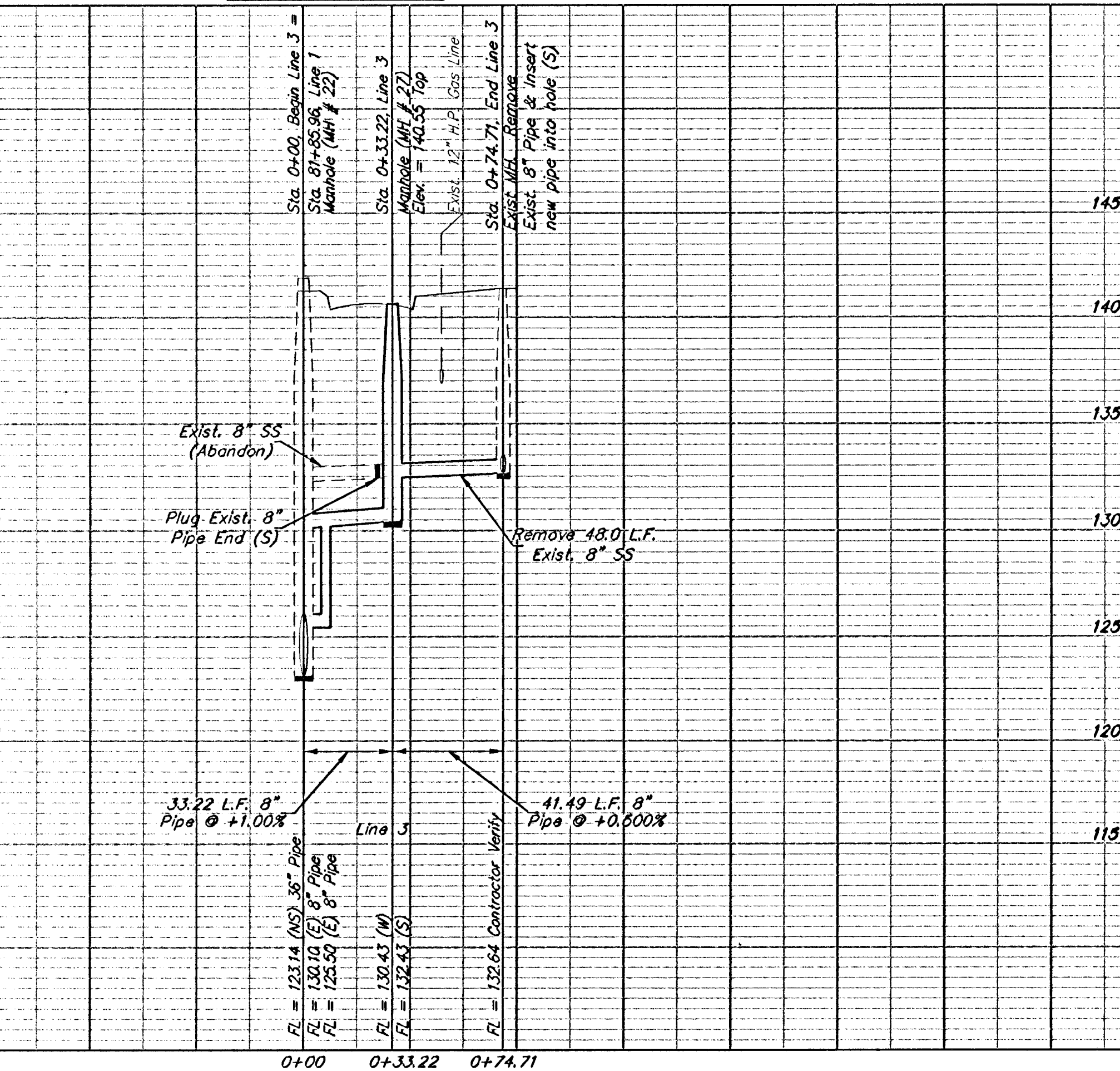
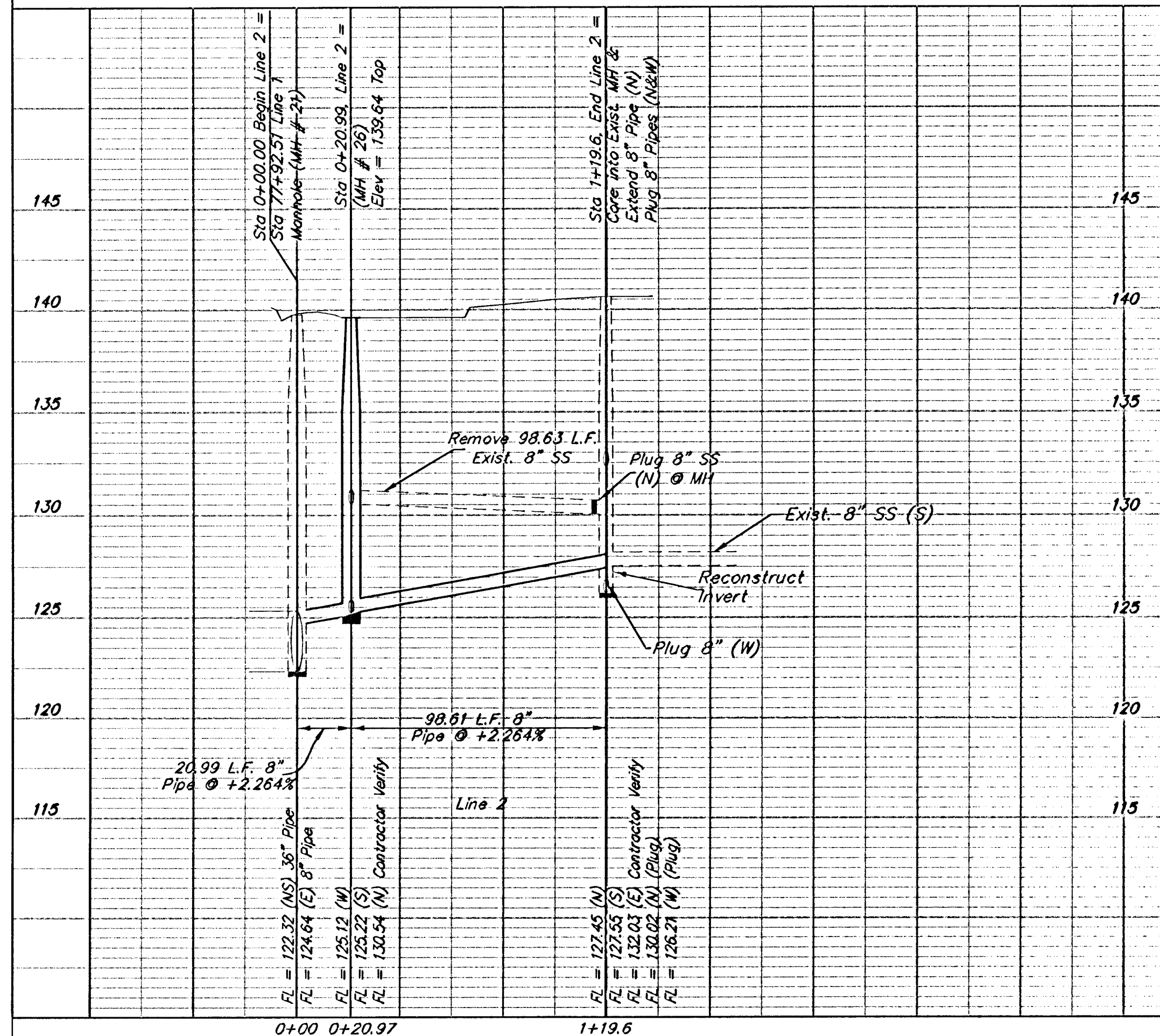
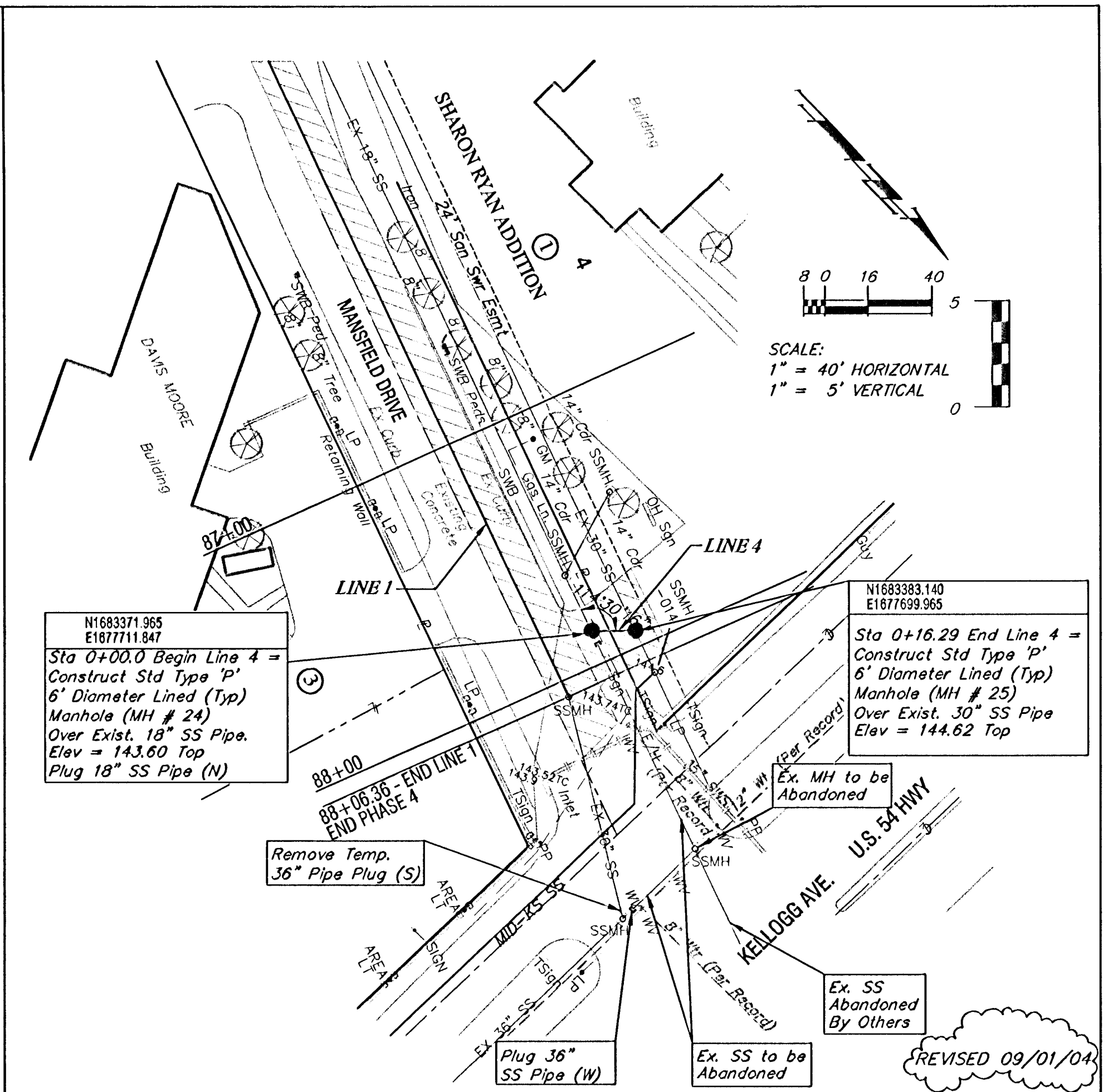
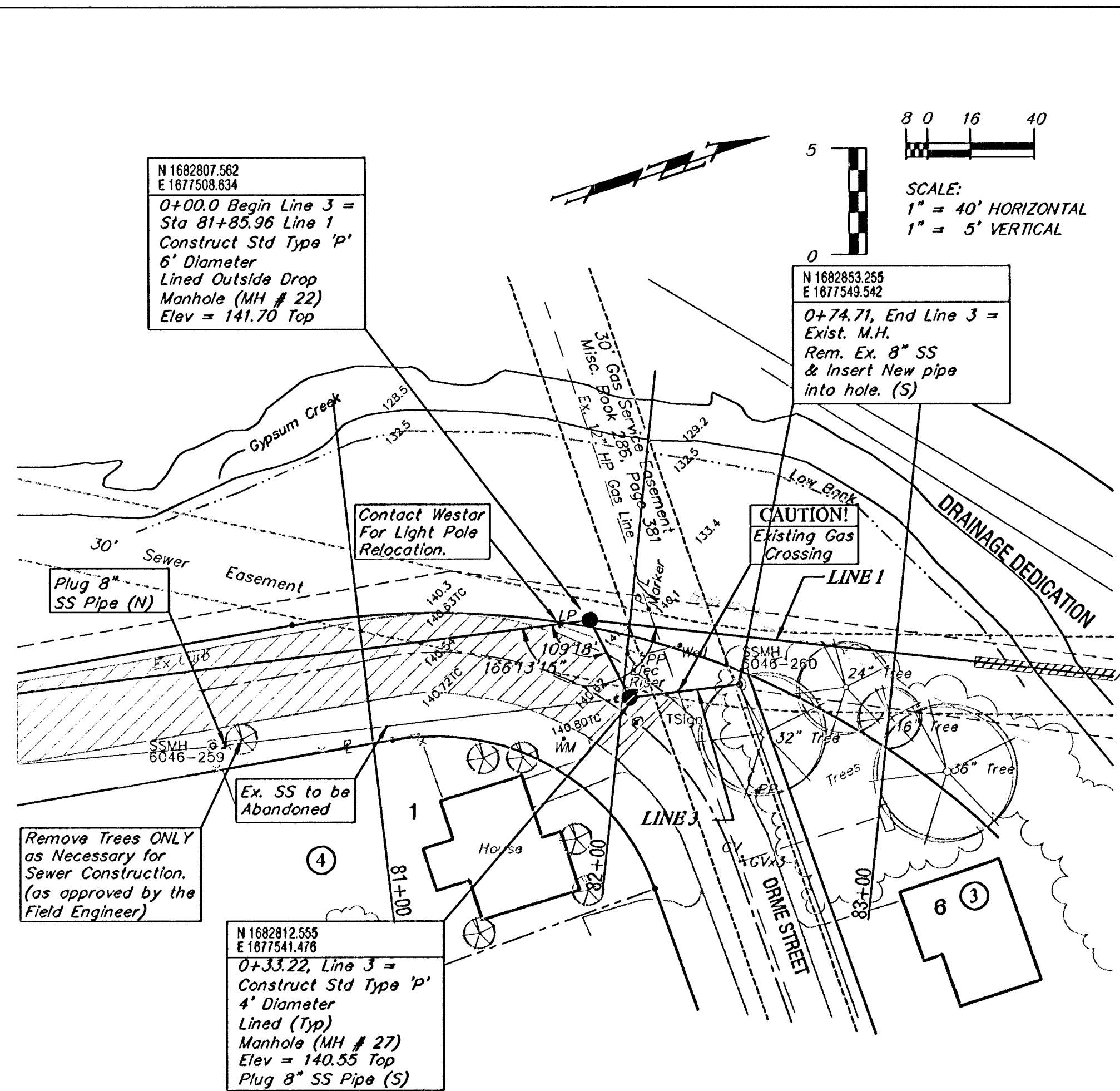
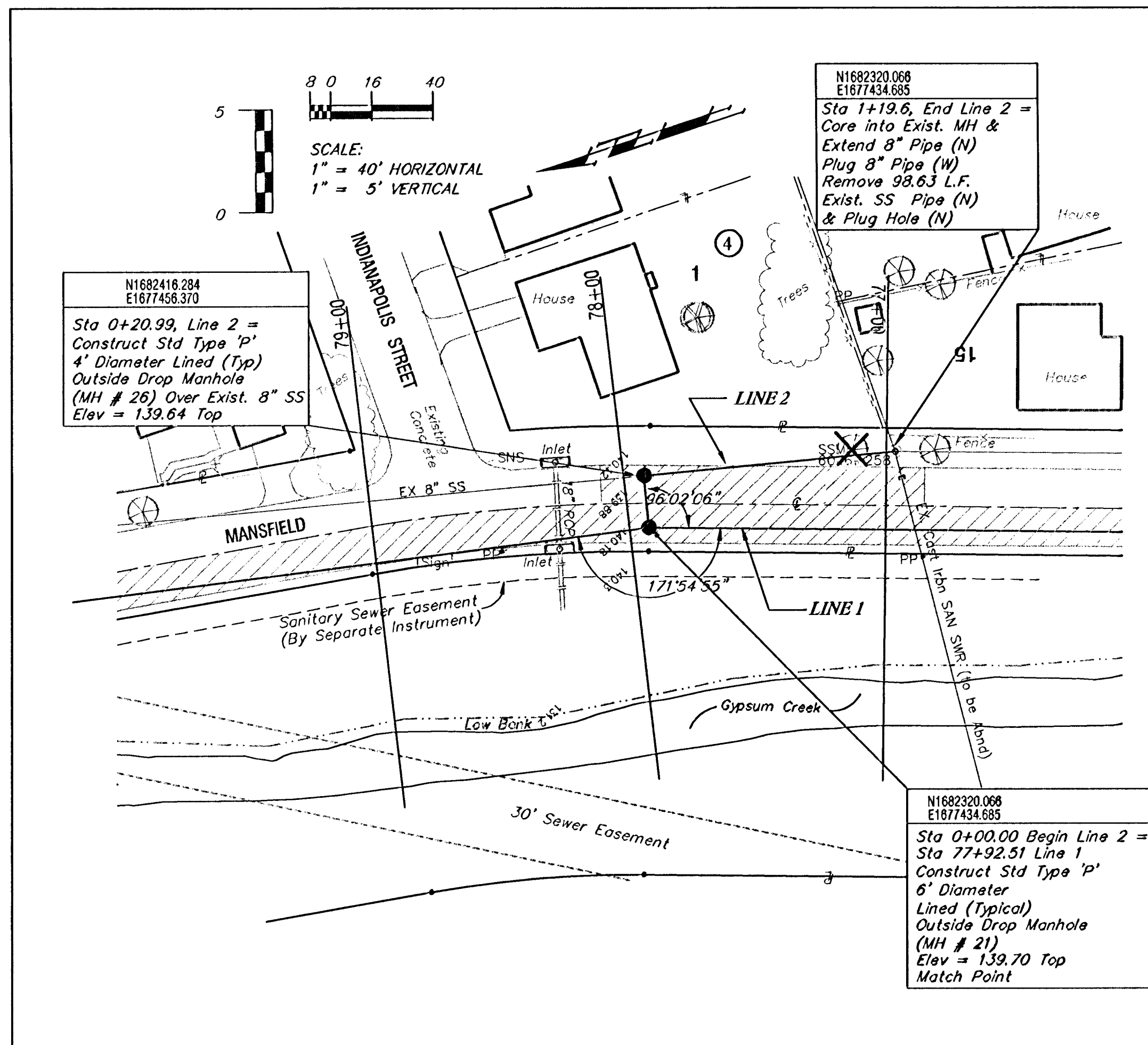
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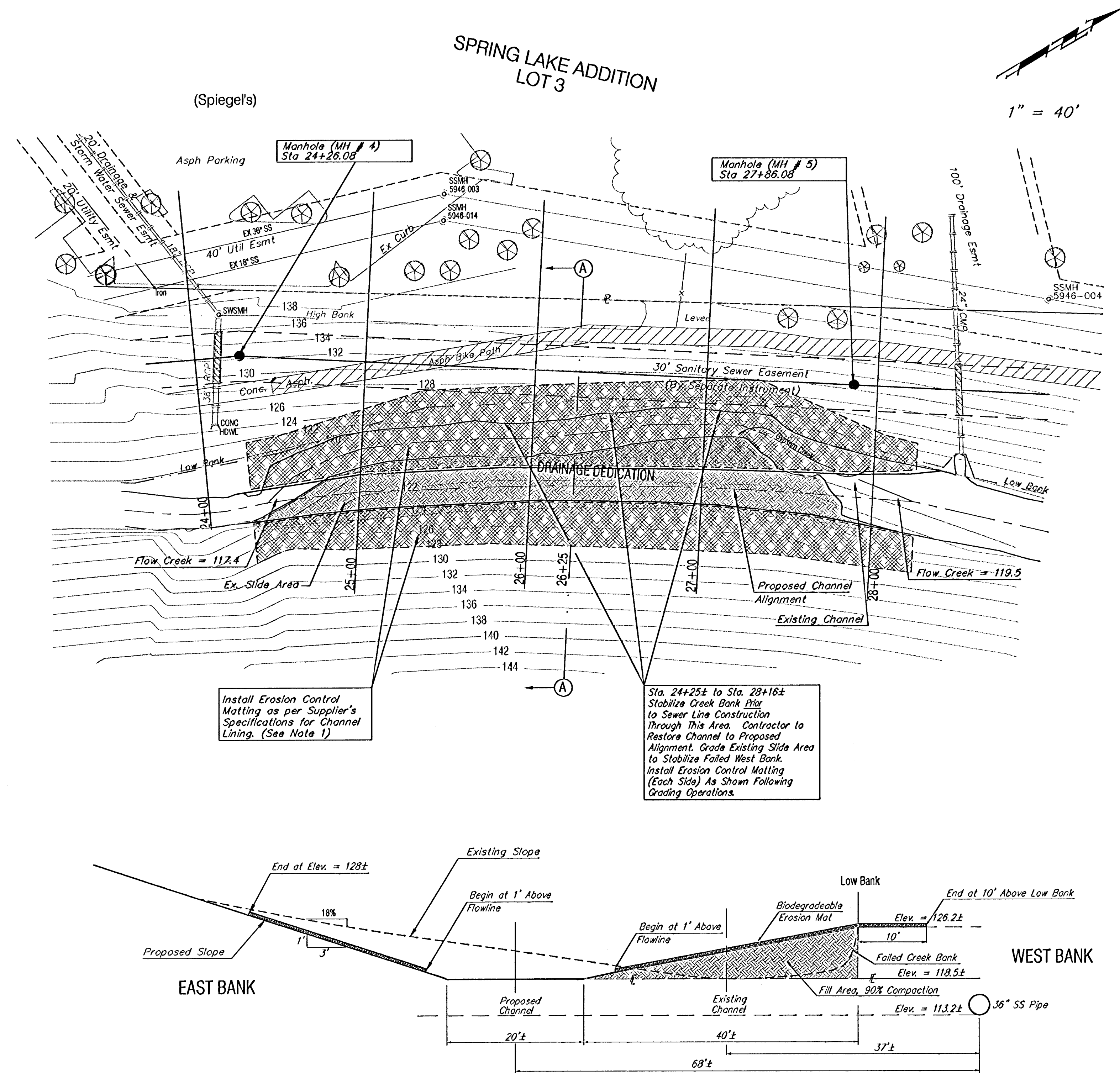




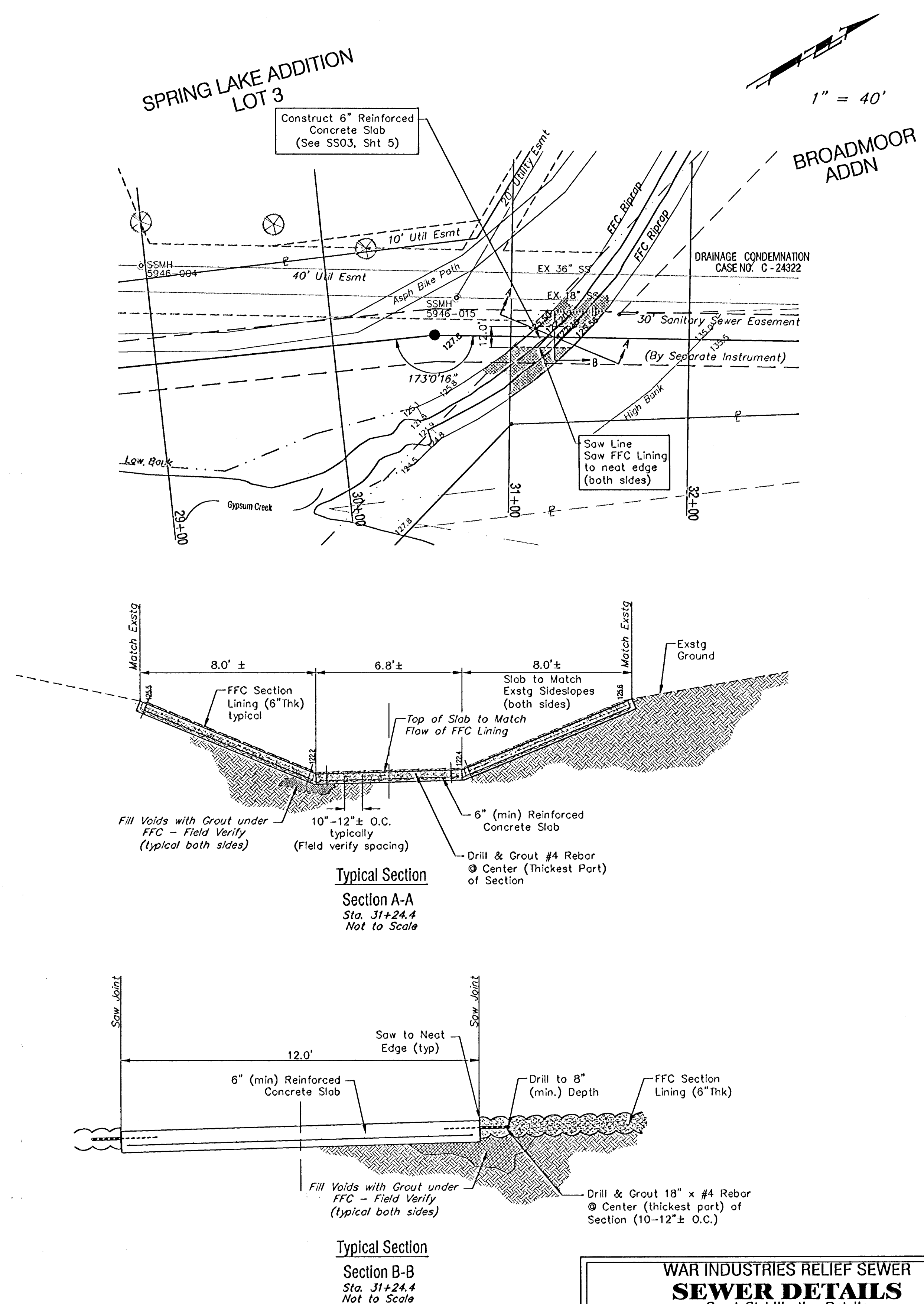




RELIEF SEWER(PHASE 4)
WAR INDUSTRIES
 BAUGHMAN COMPANY P.A.
 ENGINEERING, SURVEYING, & PLANNING
 315-262-7271 • 315 ELLIS • WICHITA, KANSAS 67211
 PROJECT NUMBER
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 SHEET 11R OF 18
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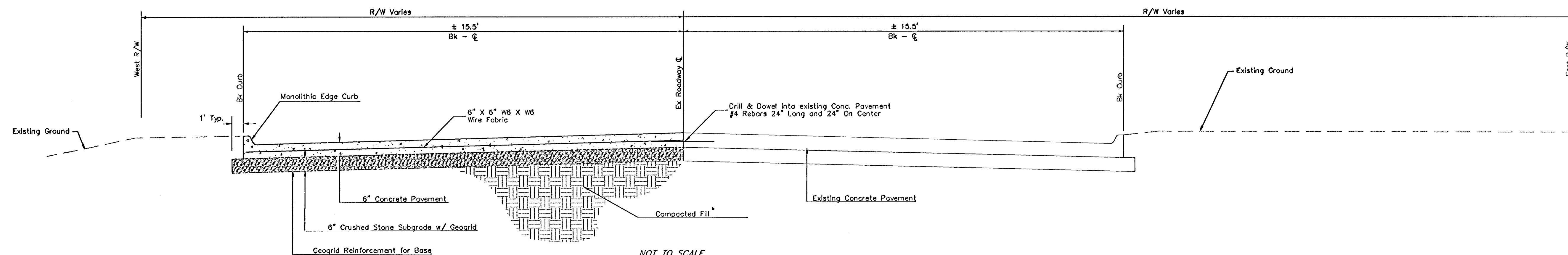


NOTE 1:
The completed channel shall be seeded then lined with erosion control material upon completion of the grading operations. Seed shall be K-31 Fescue applied at the rate of 350# per acre. Erosion control lining shall be North American Green C125 with a staple pattern of 0. Material shall be installed in accordance with the manufacturer's specifications and recommendations.



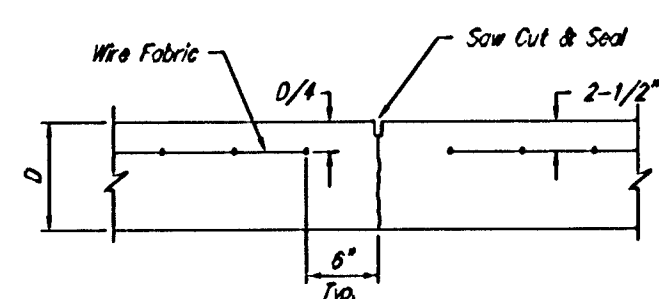
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WAR INDUSTRIES RELIEF SEWER SEWER DETAILS Creek Stabilization Details				
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PROJECT NUMBER				SHEET 12 OF 18
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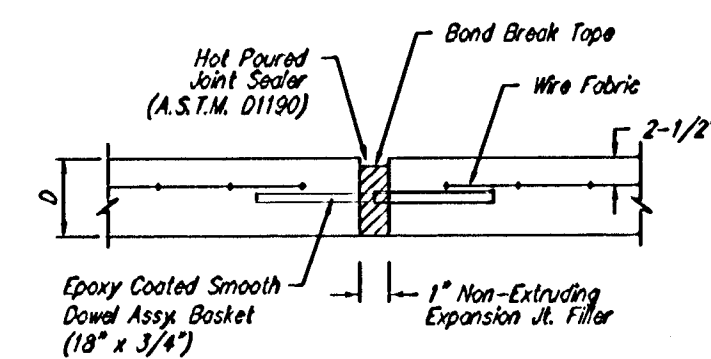


NOT TO SCALE
TYPICAL PAVEMENT REPLACEMENT SECTION
(Mansfield Drive)

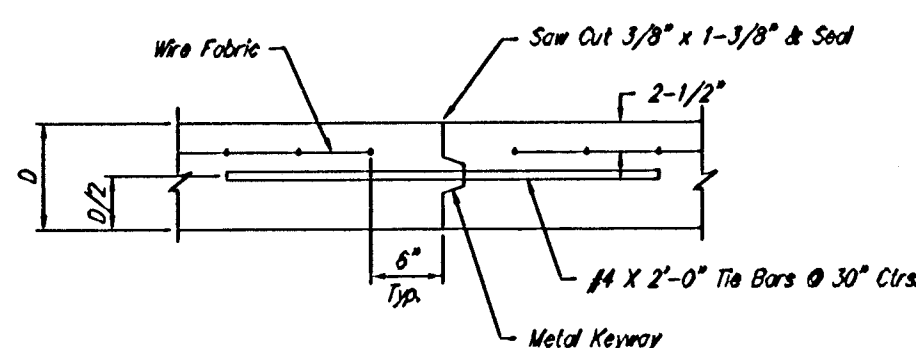
* *Compactive Efforts Along Trench Zone Beneath New Pavement Shall be Tested and/or Approved by the Engineer Prior to Pavement Construction.*



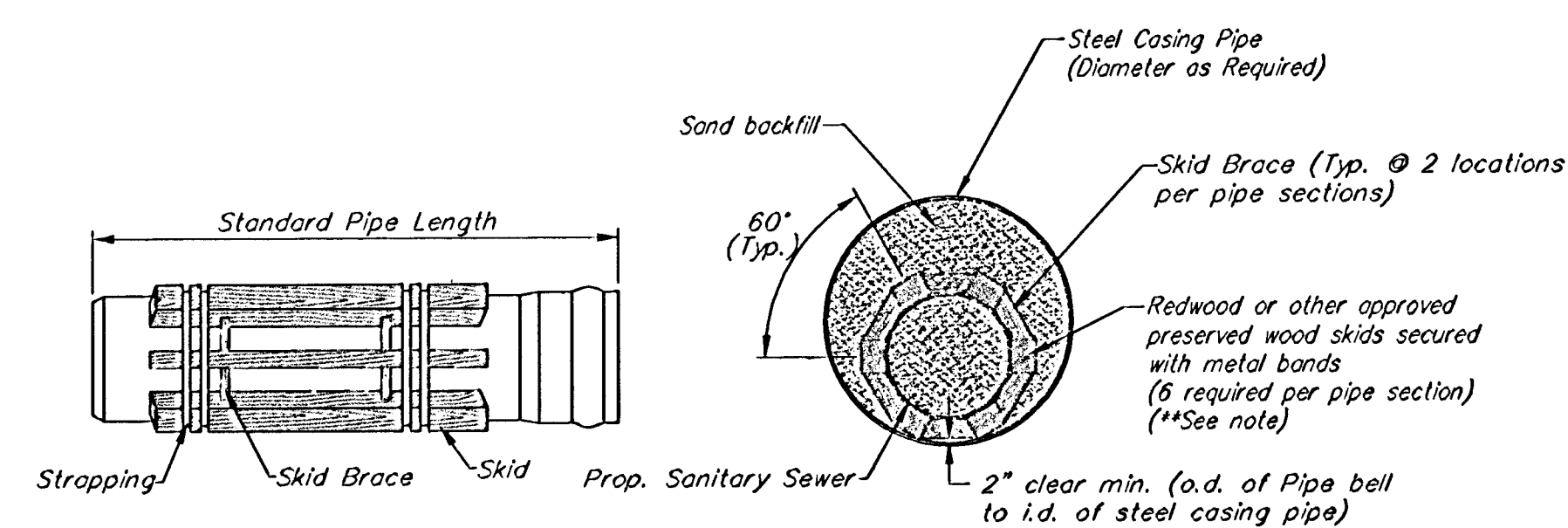
CONTRACTION JOINT DETAIL (C.J.)



EXPANSION JOINT



OPTIONAL LONGITUDINAL JOINT DETAIL (L.J.)
(CONSTRUCTION JOINT)



***Note: Skids shall be secured to the sewer pipe in such a manner to support the weight of the pipe along its full barrel length on the wood skids without any of the weight supported by the pipe bell.*

STEEL ENCASEMENT DETAIL

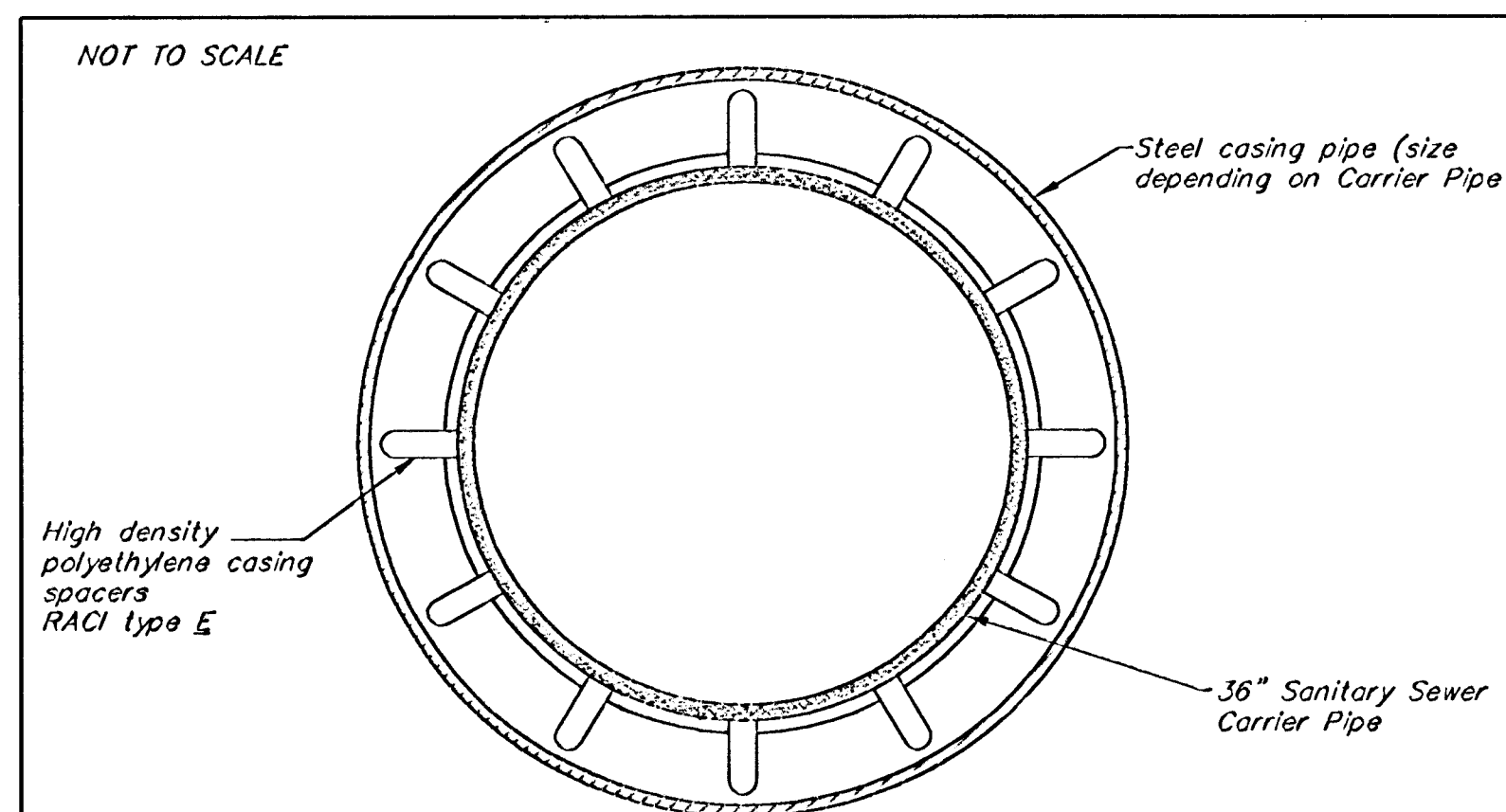
NOT TO SCALE

1. Expansion joints shall have a maximum of 250' spacing.
 2. Expansion joints shall be smooth bond assembly basket type, epoxy coated & greased to prohibit doweling. (Load Transfer)
 3. Geogrid Reinforcement for the rock base shall be Tensor BX1100 as manufactured by the Tensor Corporation, or approved equal. Geogrid fabric shall be INCIDENTAL to the bid item "Reinf. Crushed Rock Base."
 4. The crushed rock base under valley gutters, concrete pavement, and bituminous pavement shall conform to the following limits:

<u>Steve Size</u>	<u>% Passing</u>
2-1/2"	100
3/4"	40-80
No. 4	20-50
No. 40	6-20
No. 200	2-10
- Rock quality shall conform to the requirements specified by the KDOT 1990 Edition Standard Specification, Subsection 1102 for Durability Class
5. Contraction Joints Along New Pavement Shall Match Existing Pavement Joints Where Possible with 15' Max Spacing.

<u>Sieve Size</u>	<u>% Passing</u>
2-1/2"	100
3/4"	40-80
No. 4	20-50
No. 40	6-20
No. 200	2-10

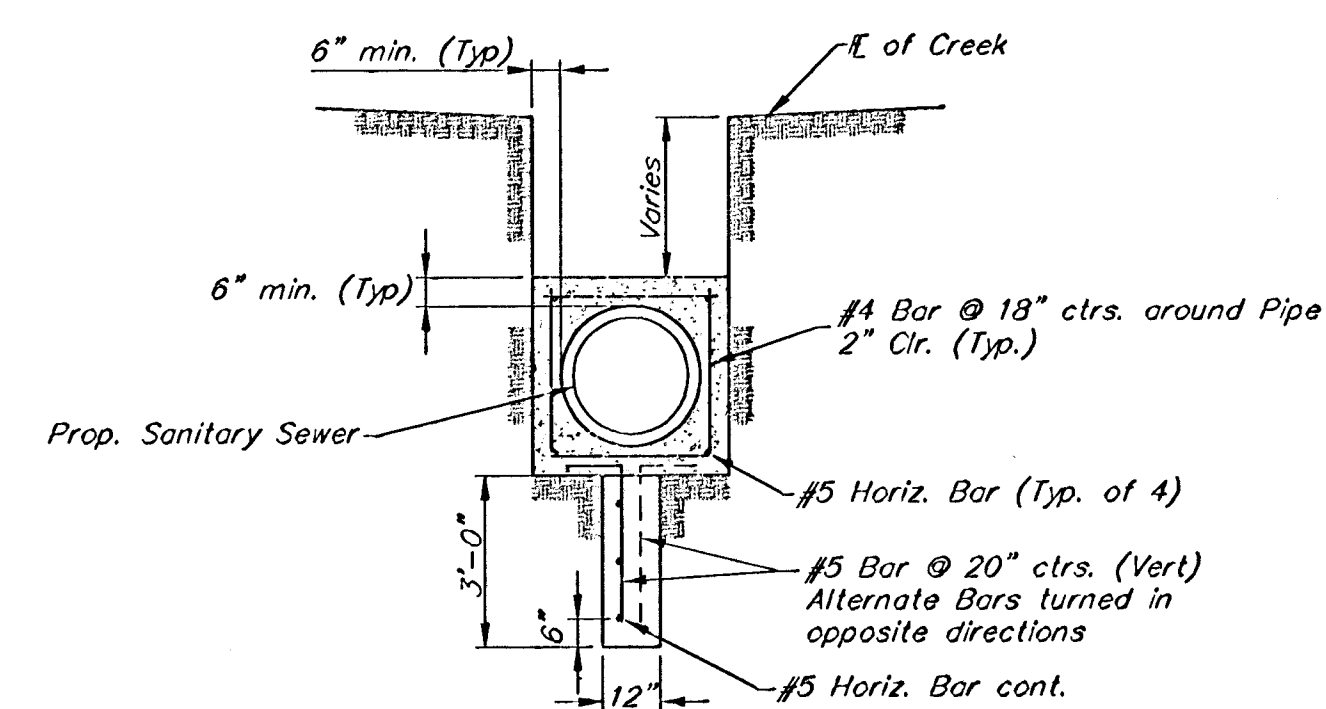
Rock quality shall conform to the requirements specified by the KDOT 1990 Edition Standard Specification, Subsection 1102 for Durability Class 1.



PIPE INSULATOR DETAIL

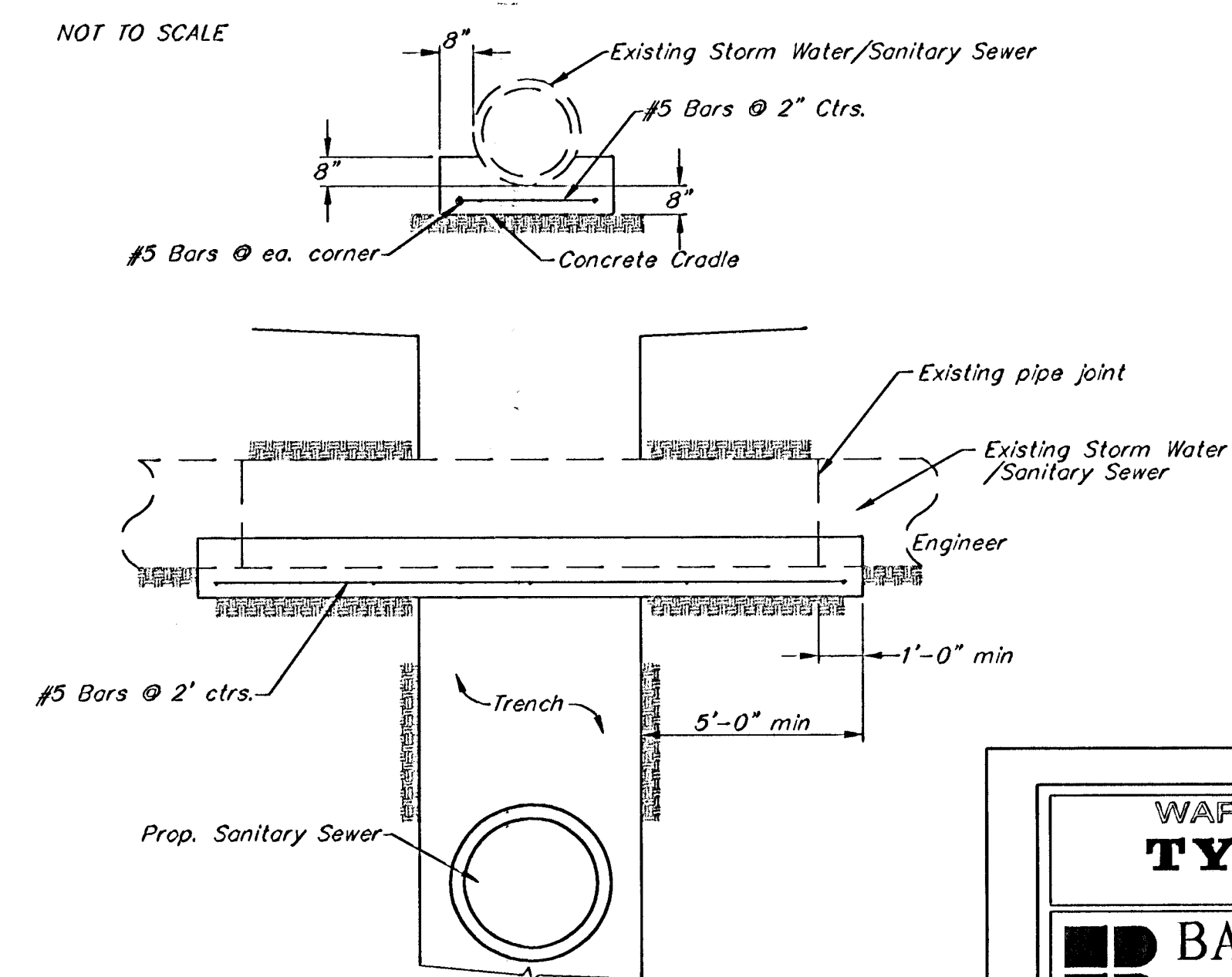
Casing Spacers
Casing Spacers may be used to install the carrier pipe inside the encasement pipe. Casing Spacers should fasten tightly onto the carrier pipe so that when the carrier pipe is being installed the spacers will not move along the pipeline. Casing Spacers shall be doubled installed on each end of the encasement.

Projection-type casing spacers shall be constructed of preformed sections of high density polyethylene. The flexible sections shall be joined together around the pipe to provide a minimum of 16 plastic projections per spacer section. Projection-type casing spacers shall be "RACI" type projection spacers as marketed by Public Works Marketing, Plano, Texas (214) 985-1670; or Engineer pre-approved equal.



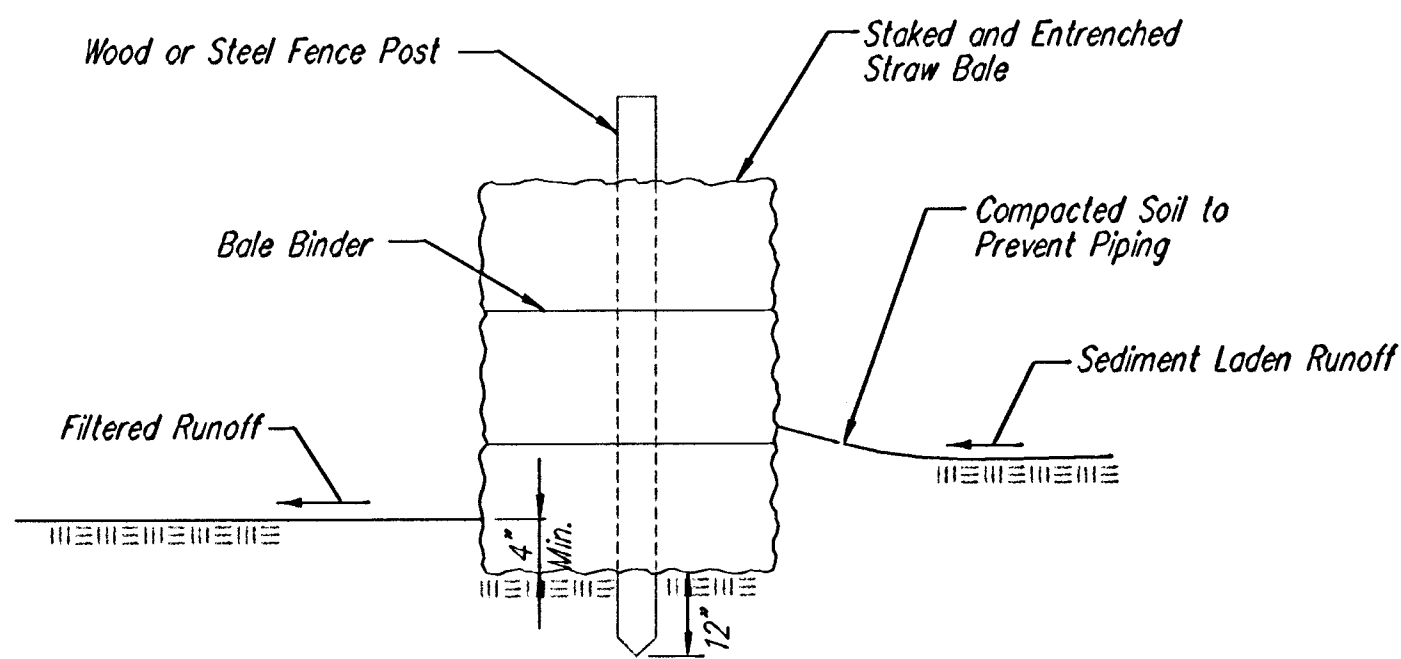
CONCRETE ENCASEMENT W/CUT-OFF WALL DETAIL

NOT TO SCALE



CONCRETE CRADLE DETAIL

Note: Concrete cradle shall terminate a minimum of 1'-0" past an existing pipe joint as shown or if an existing pipe joint is within 5' of the trench wall, the concrete cradle shall extend 5'-0" past the trench wall, unless otherwise directed by the



STRAW BALE BARRIERS

Material Specification:

Bale slope barriers may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Placement:

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment. When practicable, bale slope barriers should be placed along contours to avoid a concentration of flow. Bale slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

Proper installation method:

Excavate a trench the length of the planned slope barrier that is 4" deep and a bale's width wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use. Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the upslope side of the check and compact it. The compacted soil should be no more than 3" to 4" deep.

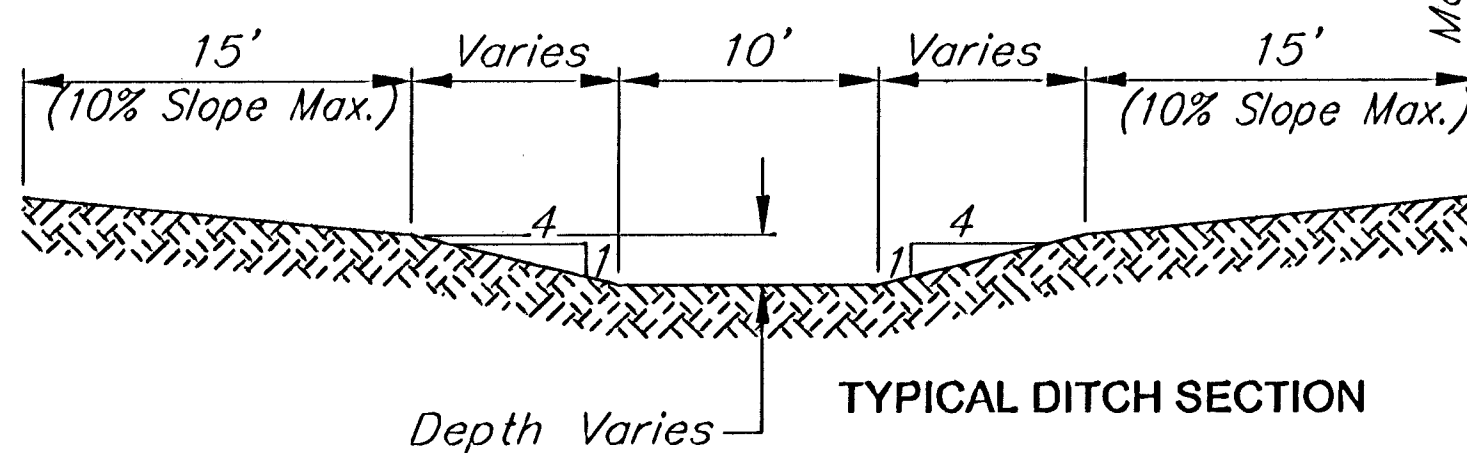
List of common placement/installation mistakes to avoid:

When practicable, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downslope side of the barrier. The scour hole eventually undermines the bales and the barrier fails. Do not place bale slope barriers in areas with shallow soils underlain by rock. If the barrier is not anchored sufficiently, it will wash out. Bale slope barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

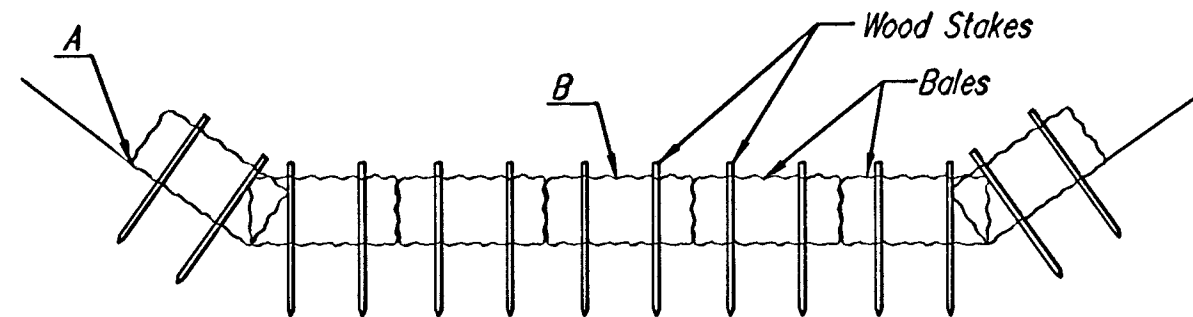
Inspection and Maintenance:

Bale slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Does water flow through spaces between abutting bales?
- Are any bales dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the slope barrier?



NOTE: Point A must be higher than Point B so that water flows over the bales and not around them.



STRAW BALE DITCH CHECKS

Material Specification:

Bale ditch checks may be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Optional: The downstream scour apron should be constructed of a double-netted straw erosion-control blanket at least 6' wide. Optional: The metal landscape staples used to anchor the erosion-control blanket should be at least 8" long.

Placement:

Bale ditch checks should be placed perpendicular to the flowline of the ditch. The ditch check should extend far enough so that the ground level at the ends of the check is higher than the top of the lowest center bale. This prevents water from flowing around the check. Checks should not be placed in ditches where high flows are expected. Rock checks should be used instead. Bales should be placed in ditches with slopes of 6% or less. For slopes steeper than 6%, rock checks should be used. The following table provides check spacing for a given ditch grade:

Ditch grade (%)	Check Spacing (feet)
0.5	200
1.0	200
2.0	100
3.0	65
4.0	50
5.0	40
6.0	30

Proper installation method:

Excavate a trench perpendicular to the ditch flowline that is 4" deep and a bale's width wide. Extend the trench in a straight line along the entire length of the proposed ditch check. Place the soil on the upstream side of the trench—it will be used later. Optional: On the downstream side of the trench, roll out a length of erosion-control blanket (scour apron) equal to the length of the trench. Place the upstream edge of the erosion-control blanket along the bottom upstream edge of the trench. The erosion control blanket should be anchored in the trench with one row of 8" landscape staples placed on 18" centers. The remainder of the erosion-control blanket (the portion that is not lying in the trench) will serve as the downstream scour apron. This section of the blanket should be anchored to the ground with 8" landscape staples placed around the perimeter of the blanket on 18" centers. The remainder of the blanket should be anchored using two evenly spaced rows of 8" landscape staples on 18" centers placed perpendicular to the flowline of the ditch. Place the bales in the trench, making sure that they are butted tightly. Two stakes should be driven through each bale along the centerline of the ditch check, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the upstream side of the check and compact it. The compacted soil should be no more than 3" to 4" deep and extend upstream no more than 24".

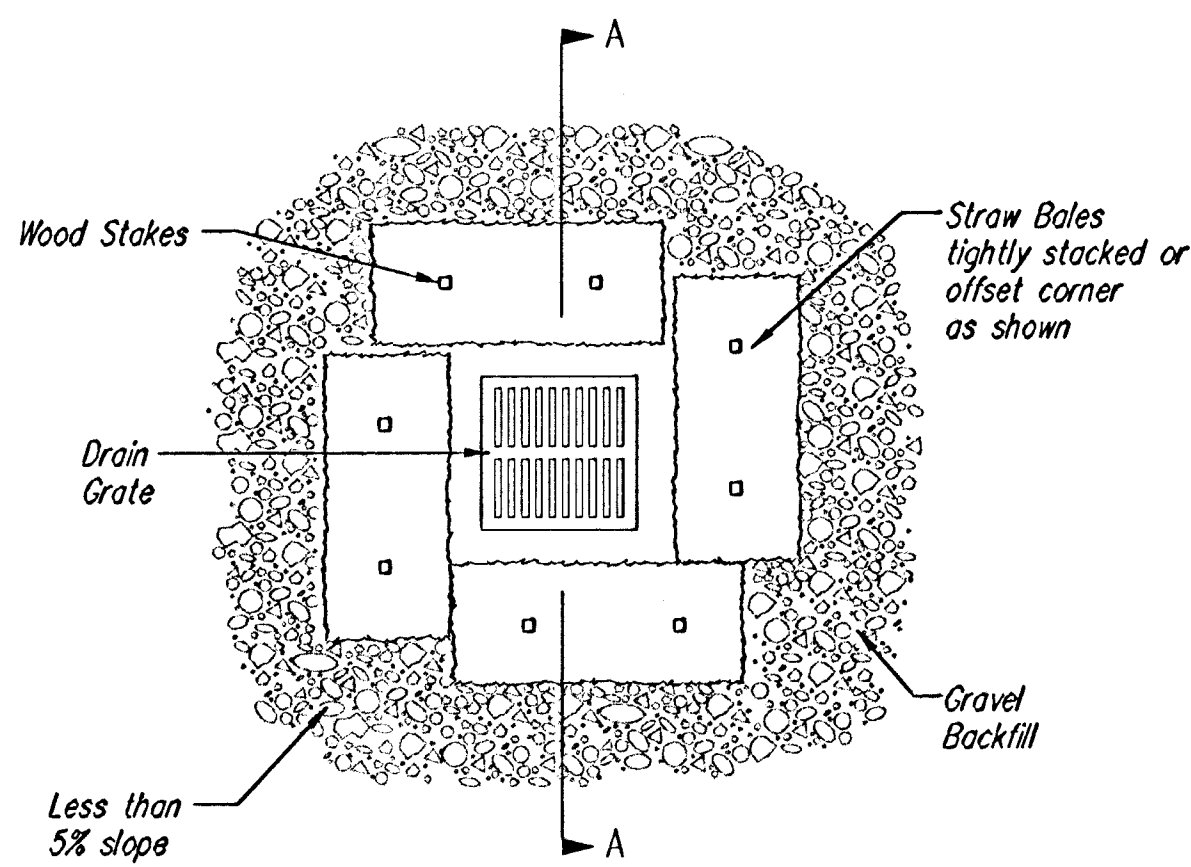
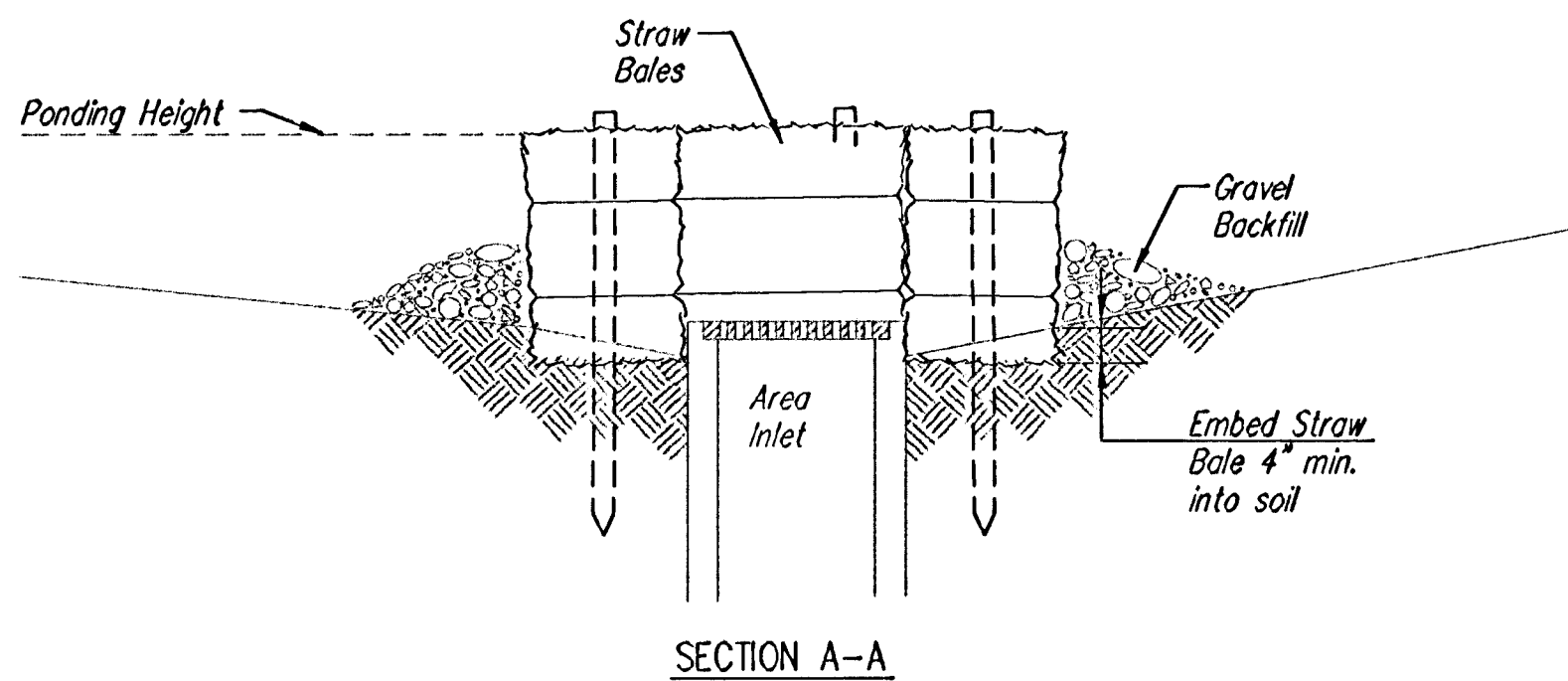
List of common placement/installation mistakes to avoid:

Do not place a bale ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow. Do not place bale ditch checks in ditches that will likely experience high flows. They will not stand up to concentrated flow. Follow prescribed ditch-check spacing guidelines. If spacing guidelines are exceeded, erosion will occur between the ditch checks. Do not allow water to flow around the ditch check. Make sure that the ditch check is long enough so that the ground level at the ends of the check is higher than the top of the lowest center bale. Do not place bale ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out. Bale ditch checks must be dug into the ground. Bales at ground level do not work because they allow water to flow under the check.

Inspection and Maintenance:

Bale ditch checks should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow around the ditch check?
- Does water flow under the ditch check?
- Does water flow through spaces between abutting bales?
- Are any bales and/or scour aprons (optional) dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the ditch check?



STRAW BALE BARRIERS FOR AREA INLETS (INLET PROTECTION)

Material Specification:

Bale area inlet barriers should be constructed of wheat straw, oat straw, prairie hay, or bromegrass hay that is free of weeds declared noxious by the Kansas State Board of Agriculture. The stakes used to anchor the bales should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long.

Placement:

Bale area inlet barriers should be placed directly around the perimeter of a drop inlet. When a bale area inlet barrier is located near an inlet that has steep approach slopes, the storage capacity behind the barrier is drastically reduced. Timely removal of sediment must occur for a barrier to operate properly in this location.

Proper Installation Method:

Excavate a trench around the perimeter of the area inlet that is at least 4" deep by a bale's width wide. Place the bales in the trench, making sure that they are butted tightly. Some bales may need to be shortened to fit into the trench around the area inlet. Two stakes should be driven through each bale, approximately 6" to 8" in from the bale ends. Stakes should be driven at least 12" into the ground. Once all the bales have been installed and anchored, place the excavated soil against the receiving side of the barrier and compact it. The compacted soil should be no more than 3" to 4" deep. Note: When a bale area inlet barrier is placed in a shallow median ditch, make sure that the top of the barrier is not higher than the paved road. In this configuration, water may spread onto the roadway causing a hazardous condition.

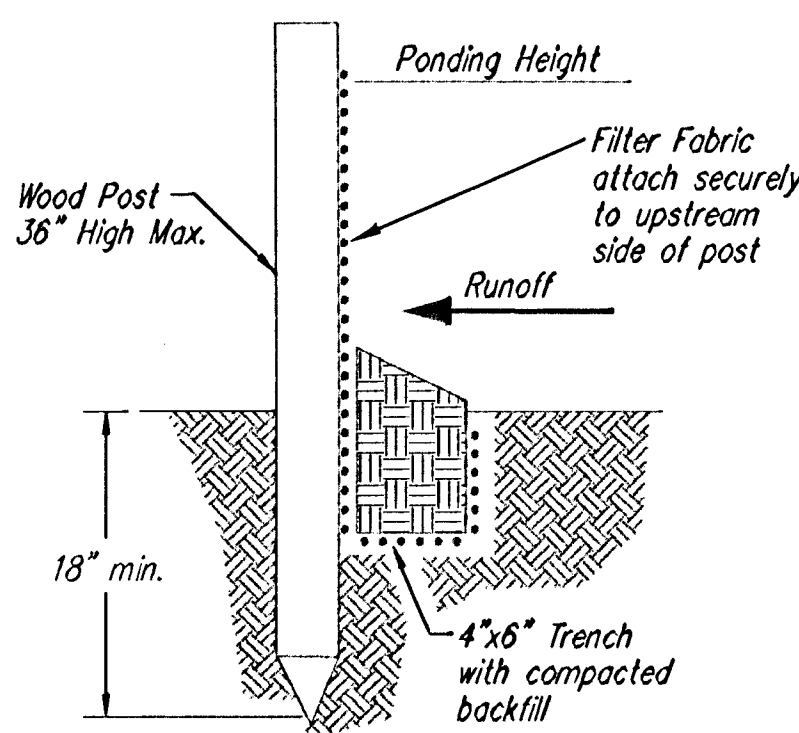
List of common placement installation mistakes to avoid:

Bales should be placed directly against the perimeter of the area inlet. This allows overtopping water to flow directly into the inlet instead of onto nearby soil causing scour. Bale area inlet barriers must be dug into the ground. Bales at ground level do not work because they allow water to flow under the barrier.

Inspection and Maintenance:

Bale area inlet barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Does water flow under the area inlet barrier?
- Does water flow through spaces between abutting bales?
- Are any bales dislodged?
- Are bales decomposing due to age and/or water damage?
- Does sediment need to be removed from behind the area inlet barrier?



SILT FENCE BARRIERS

SILT FENCE BARRIERS

Material Specification:

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The posts used to support the silt fence fabric should be a hardwood material with the following minimum dimensions: 2" square (nominal) by 4' long. Silt fence fabric should be attached to the wooden posts with staples, wire, zip ties, or nails.

Placement:

A slope barrier should be used at the toe of a slope when a ditch does not exist. The slope barrier should be placed on nearly level ground 5' to 10' away from the toe of a slope. The barrier is placed away from the toe of the slope to provide adequate storage for settling out sediment. When practicable, silt fence slope barriers should be placed along contours to avoid a concentration of flow. Silt fence slope barriers can also be placed along right-of-way fence lines to keep sediment from crossing onto adjacent property. When placed in this manner, the slope barrier will not likely follow contours.

Proper installation method:

Excavate a trench the length of the planned slope barrier that is 6" deep by 4" wide. Make sure that the trench is excavated along a single contour. When practicable, slope barriers should be placed along contours to avoid a concentration of flow. Place the soil on the upslope side of the trench for later use. Roll out a continuous length of silt fence fabric on the downslope side of the trench. Place the edge of the fabric in the trench starting at the top upslope edge. Line all three sides of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil and compact. After filling the trench, approximately 24" to 36" of silt-fence fabric should remain exposed. Lay the exposed silt fence upslope of the trench to clear an area for driving in the posts. Just downslope of the trench, drive posts into the ground to a depth of at least 18". Place posts no more than 4' apart. Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

List of common placement/installation mistakes to avoid:

When practicable, do not place silt fence slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. When the flow concentrates, it overtops the barrier and the silt fence slope barrier quickly deteriorates. Do not place silt-fence posts on the upslope side of the silt fence fabric. In this configuration, the force of the water is not restricted by the posts, but only by the staples (wire, zip ties, nails, etc.). The silt fence will rip and fail. Do not place silt fence slope barriers in areas with shallow soils underlain by rock. If the barrier is not sufficiently anchored, it will wash out. Silt fence slope barriers must be dug into the ground—silt fence at ground level does not work because water will flow underneath.

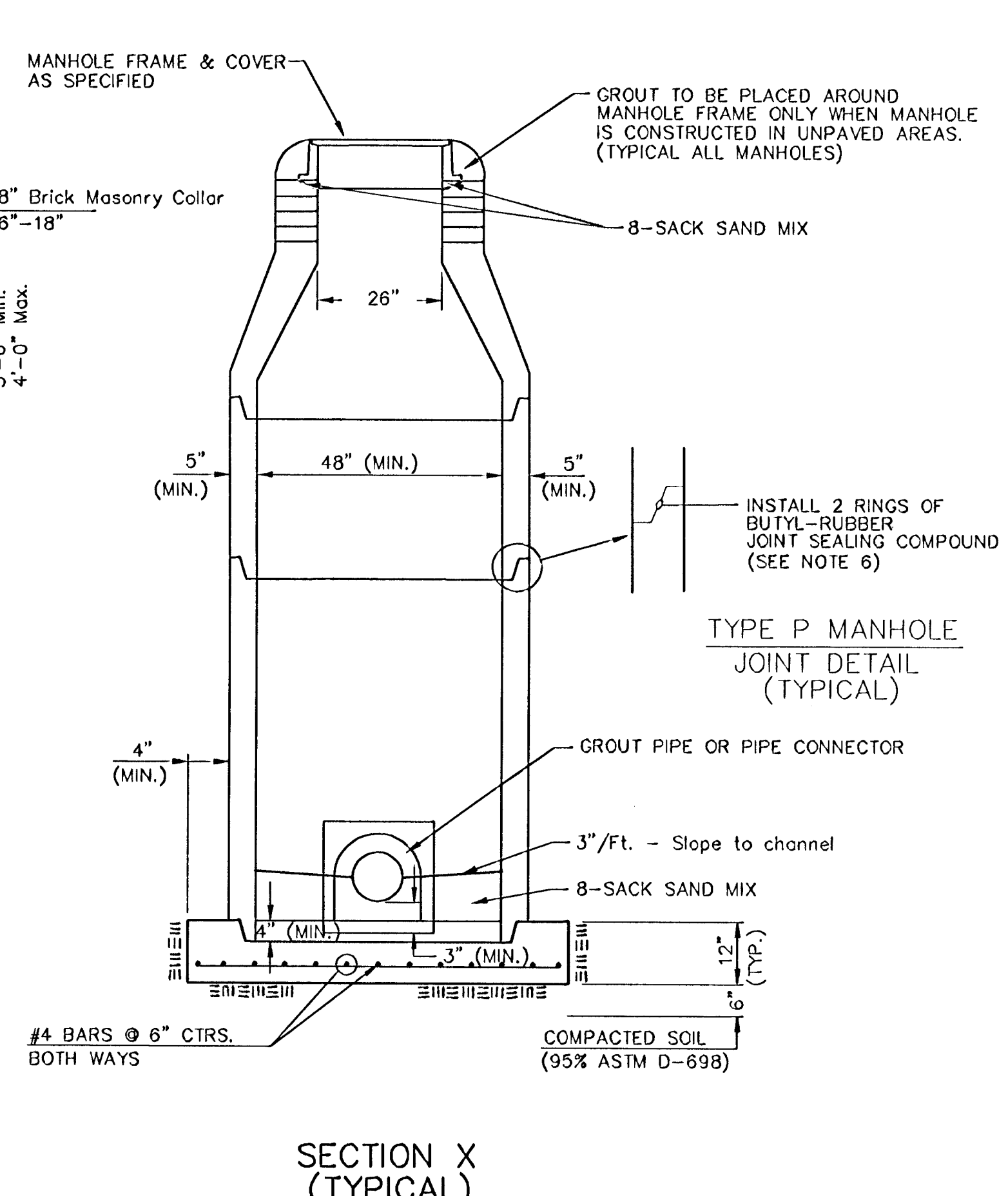
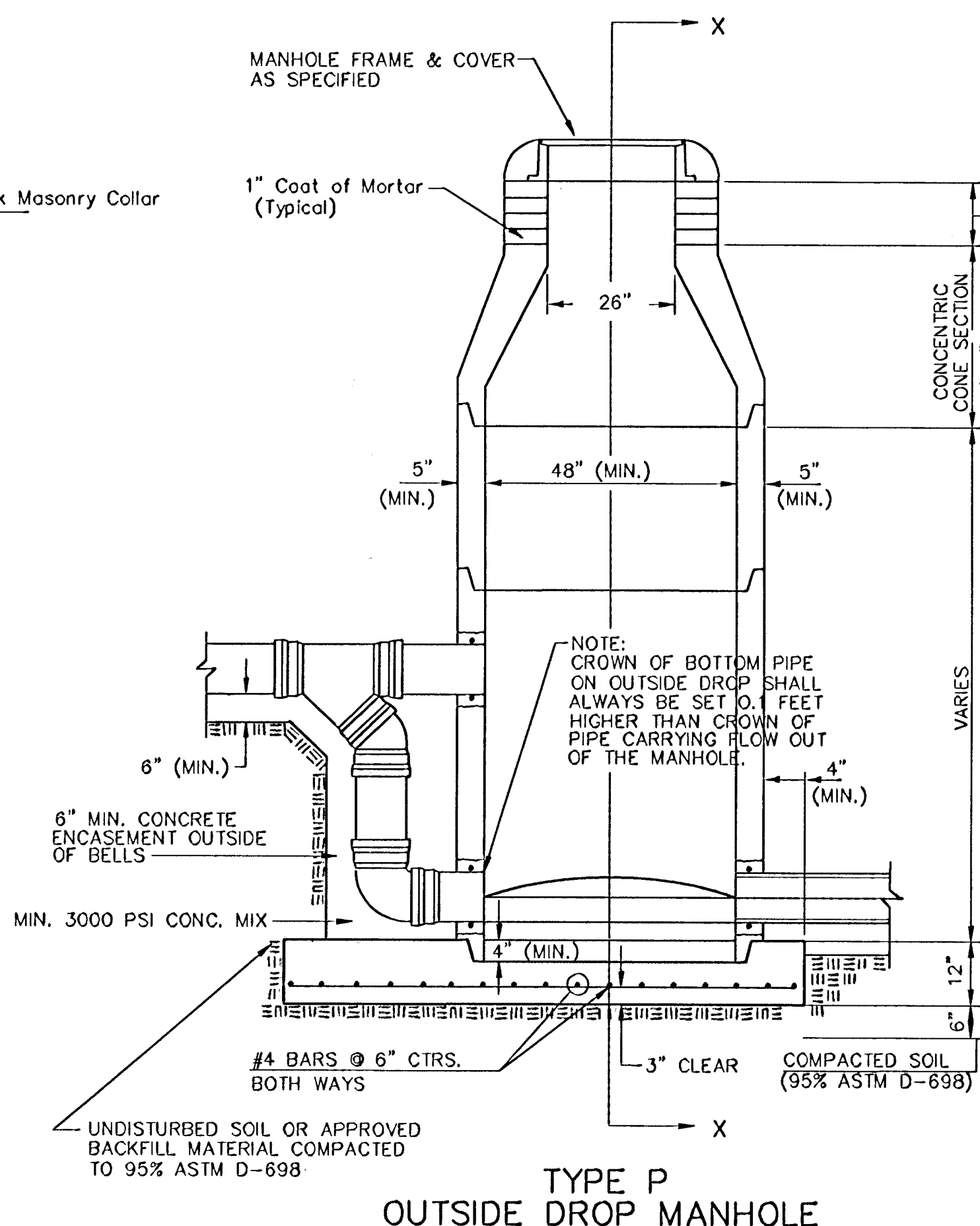
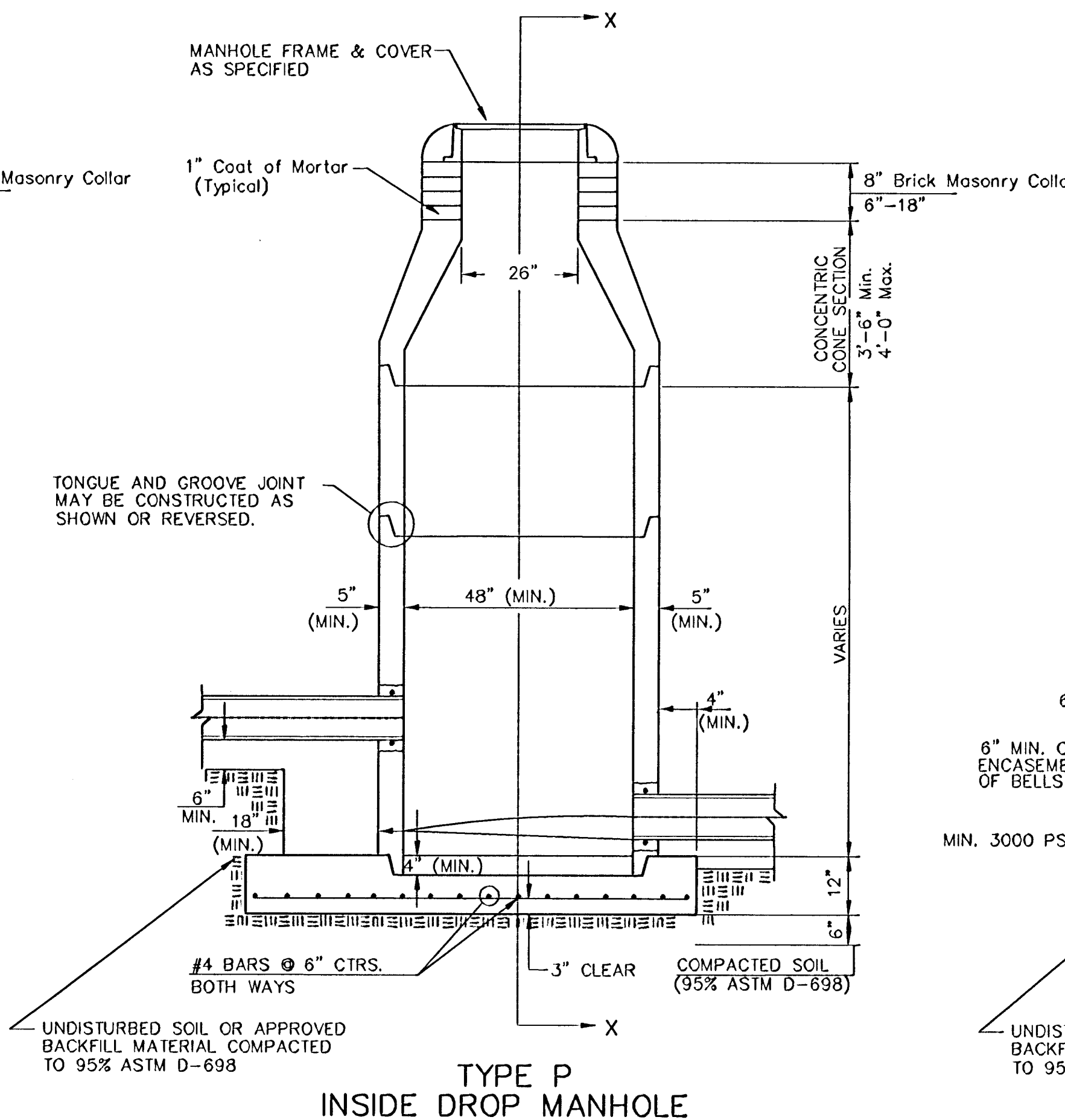
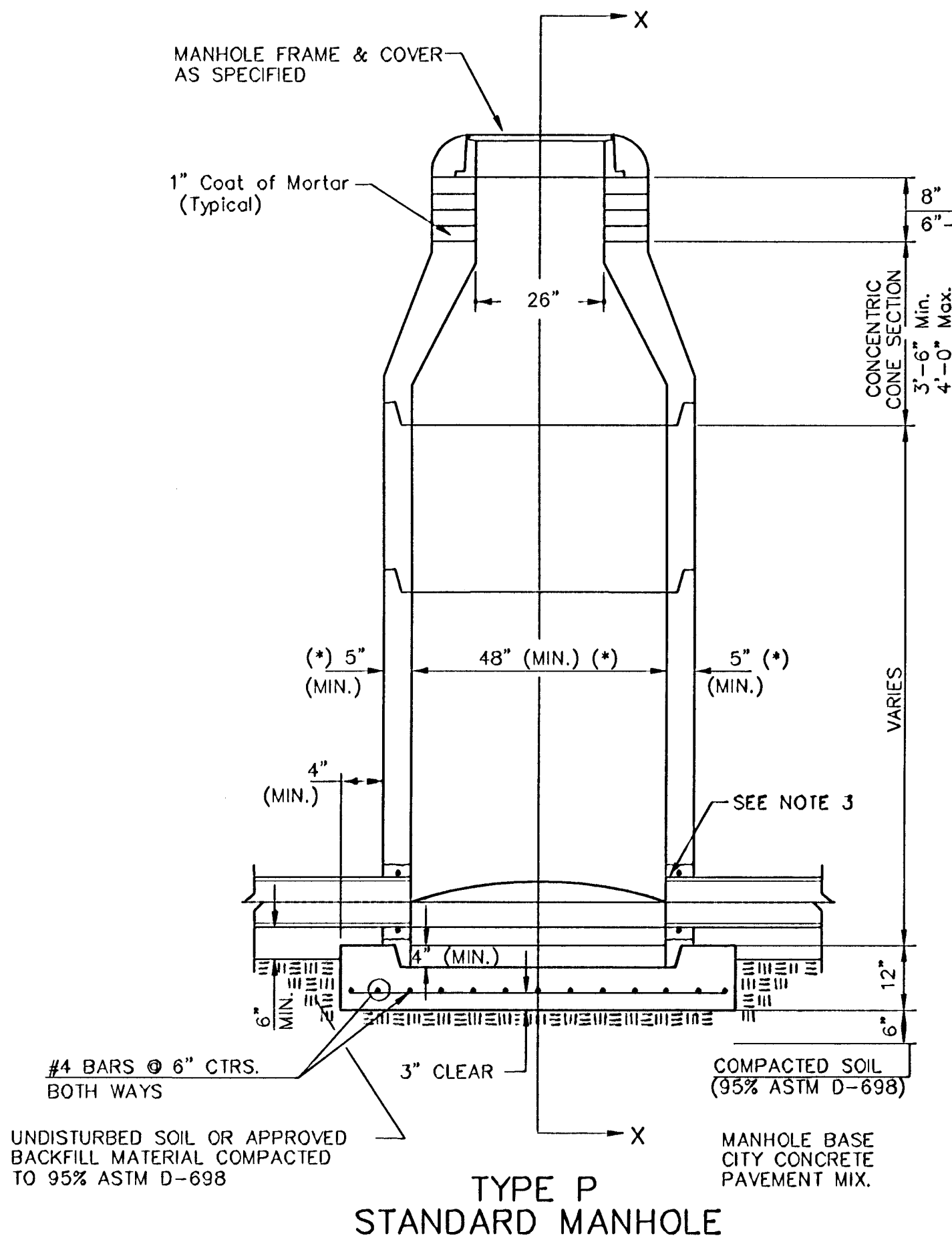
Inspection and Maintenance:

Silt fence slope barriers should be inspected every 7 days and within 24 hours of a rainfall of 1/2" or more. The following is a list of questions that should be addressed during each inspection:

- Are there any points along the slope barrier where water is concentrating?
- Does water flow under the slope barrier?
- Do the silt fences sag excessively?
- Has the silt fence torn or become detached from the posts?
- Does sediment need to be removed from behind the slope barrier?

	SOIL EROSION BMP DETAILS	
	CHRISTOPHER M. CARRIER, P.E. STORM WATER ENGINEER	
	PROJECT NUMBER 472-83370	OCA NO. 765682
	DATE MAY 2001	SHEET 14 of 18

SEWER APPURTENANCES DETAILS



- ### GENERAL NOTES
- #### PRECAST MANHOLE NOTES
1. ALL PRECAST MANHOLE SECTIONS SHALL CONFORM TO THE LATEST REVISIONS OF A.S.T.M. C478 AS MODIFIED BY THE SPECIFICATIONS.
 2. NON-SHRINK GROUT SHALL BE NON-METALLIC TYPE.
 3. APPROVED FLEXIBLE WATERSTOP GASKETS SHALL BE INSTALLED TO JOINTS OF SEWER TO THE MANHOLE WALL WHEN A.B.S. COMPOSITE PIPE OR P.V.C. PIPE IS USED. FOR OTHER TYPES OF PIPE THE SEWER SHALL BE GROUTED IN PLACE WITH NON-SHRINK GROUT. THE SEWER PIPE SHALL BE SUPPORTED WITH CONCRETE ENCASEMENT A MINIMUM OF 3 FEET FROM THE MANHOLE WALL AND TO THE FIRST JOINT FOR V.C.P. SUCH THAT THE JOINT REMAINS FLEXIBLE.
 4. ALL INSIDE SURFACES OF THE CONCRETE MANHOLE WHICH WOULD BE EXPOSED TO SEWER GAS SHALL BE LINED WITH A PLASTIC LINER PER THE CITY OF WICHITA STANDARD SPECIFICATIONS.
 5. EXTERIOR MANHOLE WALLS SHALL BE COATED WITH 1 COAT MOBILARMA 633 BITUMINOUS COATING.
 6. JOINT SEALING COMPOUND SHALL BE KENT SEAL NO. 2 OR APPROVED EQUAL.
 7. PRECAST MANHOLES SHALL BE SET AT LEAST 4 INCHES INTO THE MANHOLE BASE.
 8. TOP OF MANHOLE FLOOR SLAB SHALL BE AT LEAST 3 INCHES BELOW THE OUTLINE OF THE LOW LINE PIPE TO INSURE SUFFICIENT MINIMUM THICKNESS OF SHAPED INVERT.
 9. LIFTING HOLES SHALL BE FILLED WITH NON-SHRINK GROUT AND THE INTERIOR SURFACE COATED AS SPECIFIED.
 10. MORTAR USED IN MASONRY CONSTRUCTION SHALL CONTAIN 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 WITH AIR ENTRAINING ADMIXTURE. MORTAR SHALL BE PLACED AROUND THE MANHOLE RING AS SHOWN ON THE DRAWINGS. CONCRETE MANHOLES ARE CONSTRUCTED IN UNPAVED AREAS. MANHOLES CONSTRUCTED WHERE PIPE SIZES ARE SMALLER THAN 24" SHALL HAVE AN INSIDE DIAMETER OF 4". MANHOLES CONSTRUCTED WHERE PIPE SIZES ARE 24" OR LARGER SHALL HAVE AN INSIDE DIAMETER OF 5". COMPLETED MANHOLE SHALL BE WITHOUT LEAKS AND WATER TIGHT.

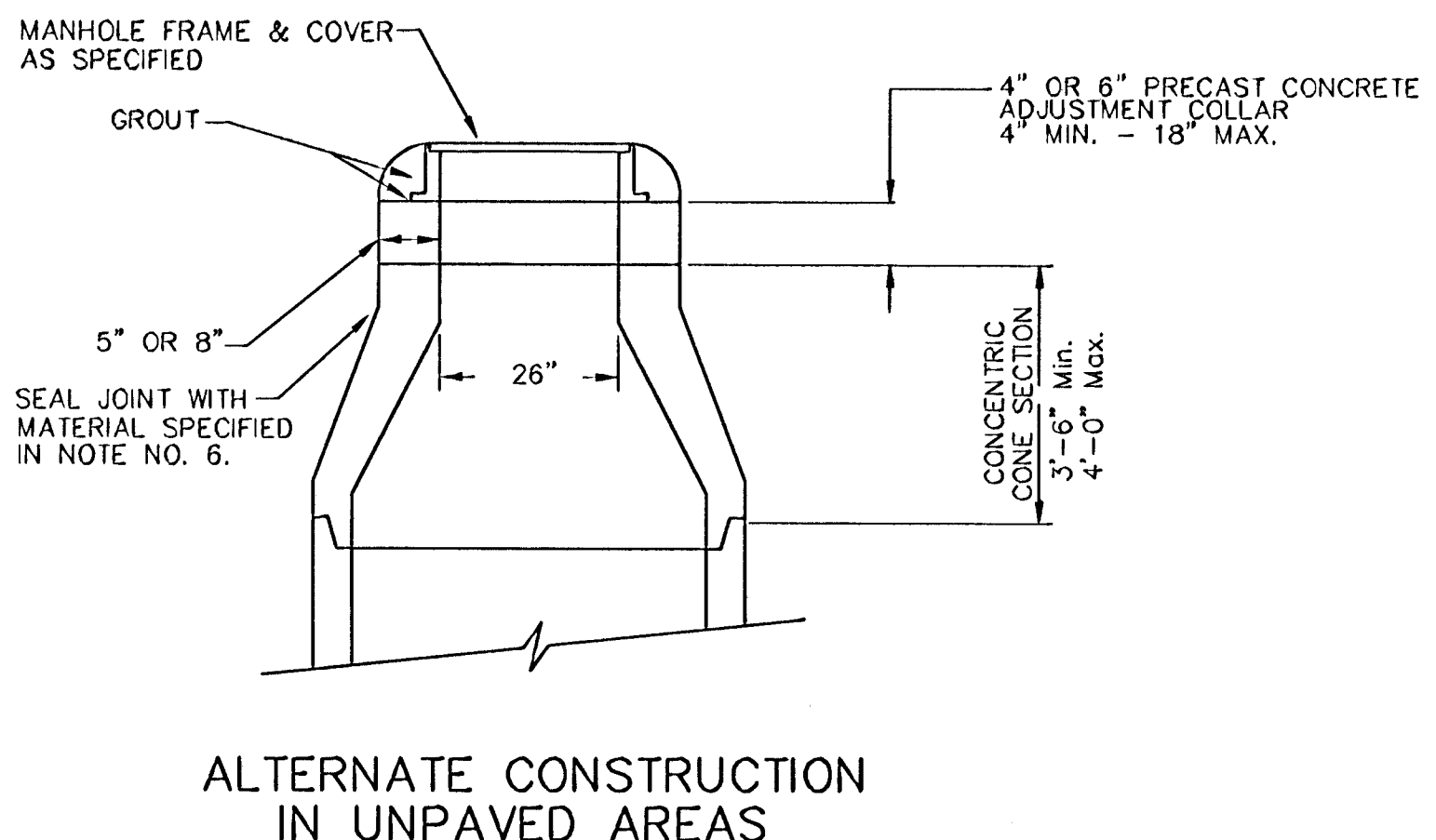
11. REINFORCING STEEL SHALL BE INSTALLED IN THE MANHOLE BASES AND SHALL CONSIST OF NO. 4 BARS PLACED ON 6" CENTERS IN BOTH DIRECTIONS. THE MANHOLE BASE REINFORCEMENT SHALL BE PLACED AT LEAST 1" ABOVE THE BOTTOM OF THE MANHOLE BASE. ALL COSTS FOR FURNISHING AND INSTALLING REINFORCING STEEL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.
12. OPENINGS SHALL BE CUT INTO THE MANHOLE WALL WHEN OUTSIDE DROPS ARE CONSTRUCTED ON EXISTING MANHOLES. SUCH OPENINGS CUT INTO EXISTING MANHOLES SHALL BE REINFORCED WITH PRACTICE FACETATE 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 NON-SHRINK GROUT FOR 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. THE WORK, INCLUDING MODIFICATION OF MANHOLE FLOOR, SHALL BE PAID FOR AT THE UNIT PRICE BID FOR OUTSIDE DROP STACK CONSTRUCTED ON EXISTING MANHOLE.
13. THE FLOORS OF ALL MANHOLES SHALL BE SHAPED WITH FLOW CHANNELS SUCH THAT ALL MANHOLES SHALL 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 OUTSIDE DROPS. MANHOLE FLOORS SHALL BE SHAPED TO FORM SLOPE TOWARD 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 LAYING THROUGH MANHOLES SHALL HAVE THE TOP HALF REMOVED TO NEW LINES FOR FLOW INSIDE DIAMETER OF THE MANHOLE. MANHOLE FLOORS SHALL THEN BE SHAPED AROUND THE BOTTOM HALF OF THE PIPE WHICH FORMS THE FLOW CHANNEL.
14. PIPES INSTALLED WITHIN THE EXCAVATION MADE FOR THE MANHOLE SHALL BE CRADLED WITH CONCRETE TO THE LIMITS OF THE MANHOLE EXCAVATION. WHEN CLAY PIPE IS USED, THE CRADLE SHALL EXTEND TO THE FIRST JOINT OUTSIDE THE MANHOLE. THE CRADLE SHALL BE TERMINATED AT THE CLAY PIPE JOINT IN A MANNER WHICH WILL MAINTAIN THE STABILITY OF THE JOINT. JOINTS OF THE MANHOLE EXCAVATION OR TO CLAY PIPE JOINTS ADJACENT TO MANHOLE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE MANHOLE.

15. MANHOLE COVER CASTINGS AND MANHOLE FRAME CASTINGS SHALL CONFORM TO THE REQUIREMENTS AS INDICATED IN THE STANDARD SPECIFICATIONS AND AS SHOWN IN THE STANDARD DETAIL DRAWING.
16. THE VERTICAL DROP IN INSIDE DROP MANHOLES SHALL NOT EXCEED 2' FOR INFLOWING PIPES SIZED 12" OR SMALLER AND 2' FOR INFLOWING PIPES LARGER THAN 12". THE CROWNS OF INFLOWING PIPES SHALL NEVER BE SET LOWER THAN THE CROWN OF THE OUTFLOWING PIPE.
17. 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.
18. 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 TOP OF PIPE-CAST CONCRETE SPACERS FOR MANHOLE TOP ADJUSTMENT IS ALSO ALLOWED.

SPECIAL PROJECT NOTES

- TYPE P MANHOLES HAVING A 5' INSIDE DIAMETER BARREL SHALL HAVE 6" THICK (MIN) REINFORCED CONCRETE WALLS.
- TYPE P MANHOLES HAVING A 6' INSIDE DIAMETER BARREL SHALL HAVE 7" THICK (MIN) REINFORCED CONCRETE WALLS.

PRECAST MANHOLE BASES SHALL HAVE A MINIMUM THICKNESS OF 12" AND SHALL EXTEND A MINIMUM OF 12" BEYOND THE OUTSIDE WALL OF THE MANHOLE BARREL.



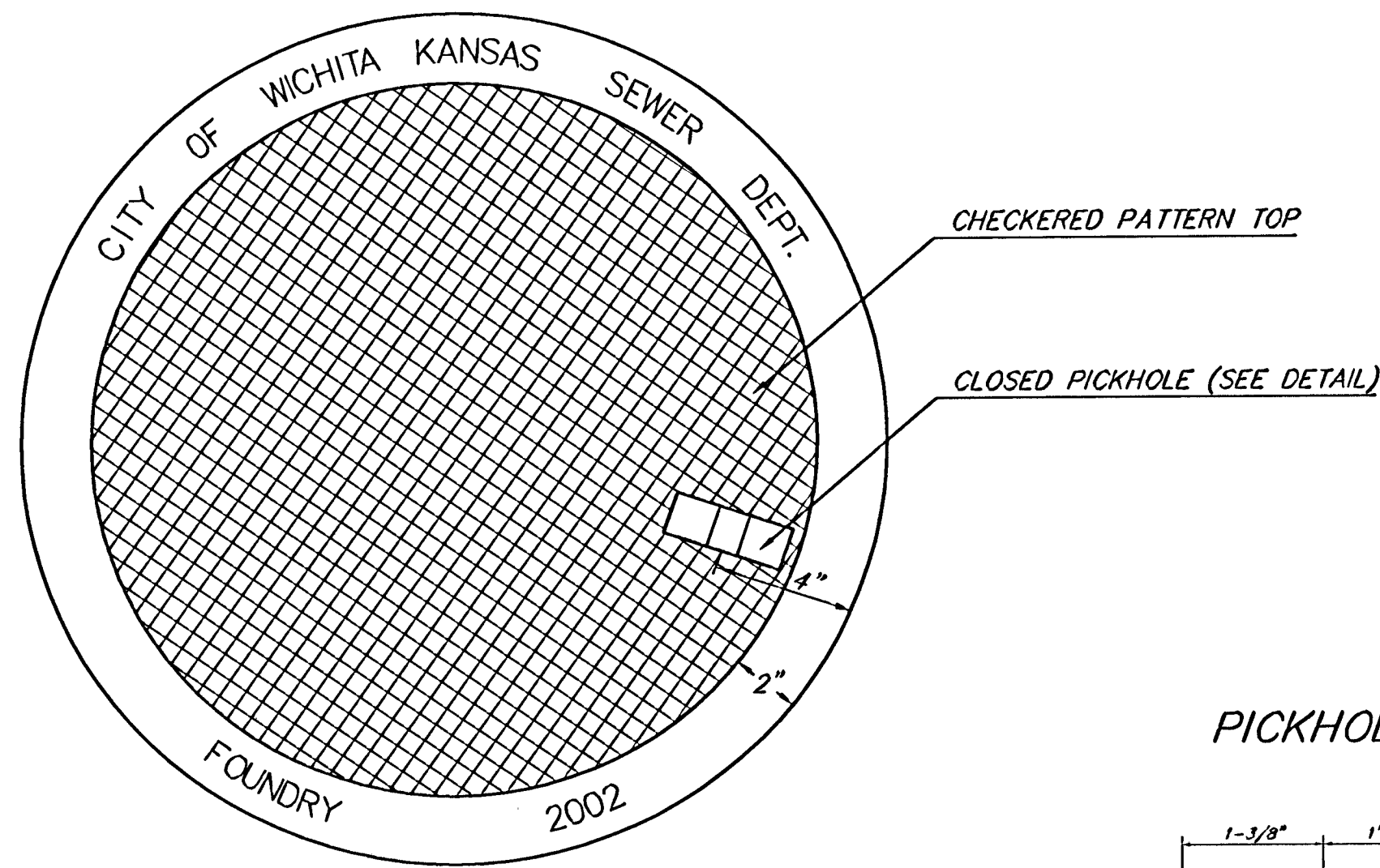
ALTERNATE CONSTRUCTION IN UNPAVED AREAS

CITY OF WICHITA			
STD. MANHOLE DETAILS			
WAR INDUSTRIES SEWER - PHASE 4			
 BAUGHMAN COMPANY P.A. ENGINEERING, SURVEYING, & PLANNING			
316-292-7271 • 315 ELLIS • WICHITA, KANSAS 67211			
PROJECT NUMBER			SHEET
			15 OF 18
DESIGN <i>SLAFF</i>	DRAWN <i>SLAFF</i>	APPROVED	DATE <i>8/20/03</i>
			SCALE <i>1"=10'</i>

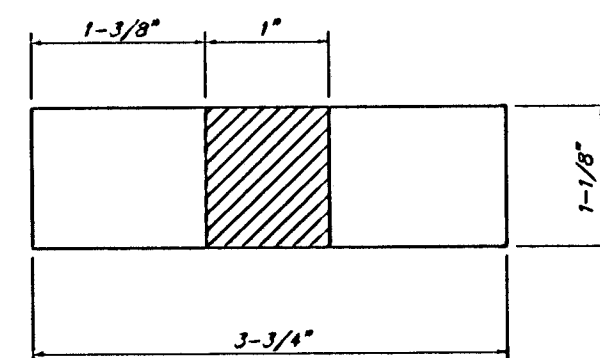
MANHOLE FRAME AND COVER DETAIL

ADOPTED AS STANDARD DESIGN BY
CITY OF WICHITA, KANSAS

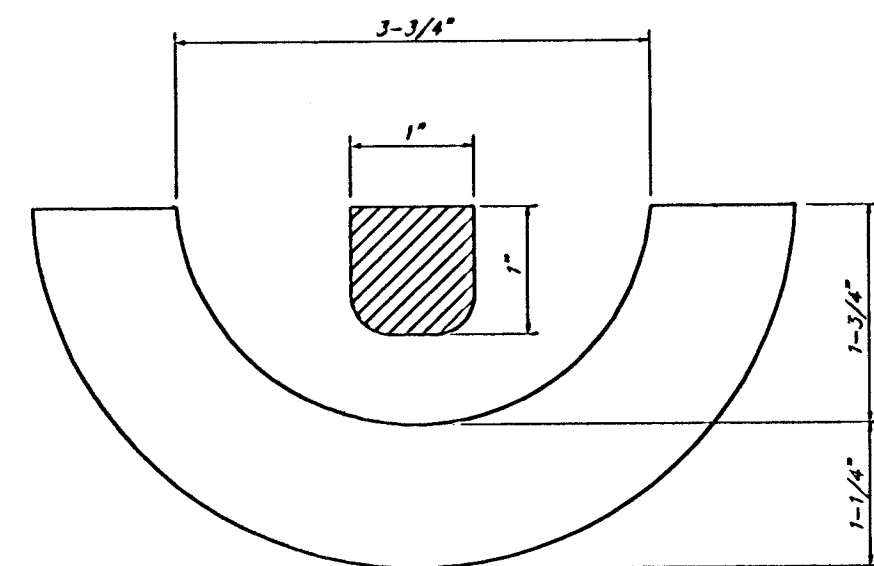
MANHOLE COVER
Weight = 180 Lbs.



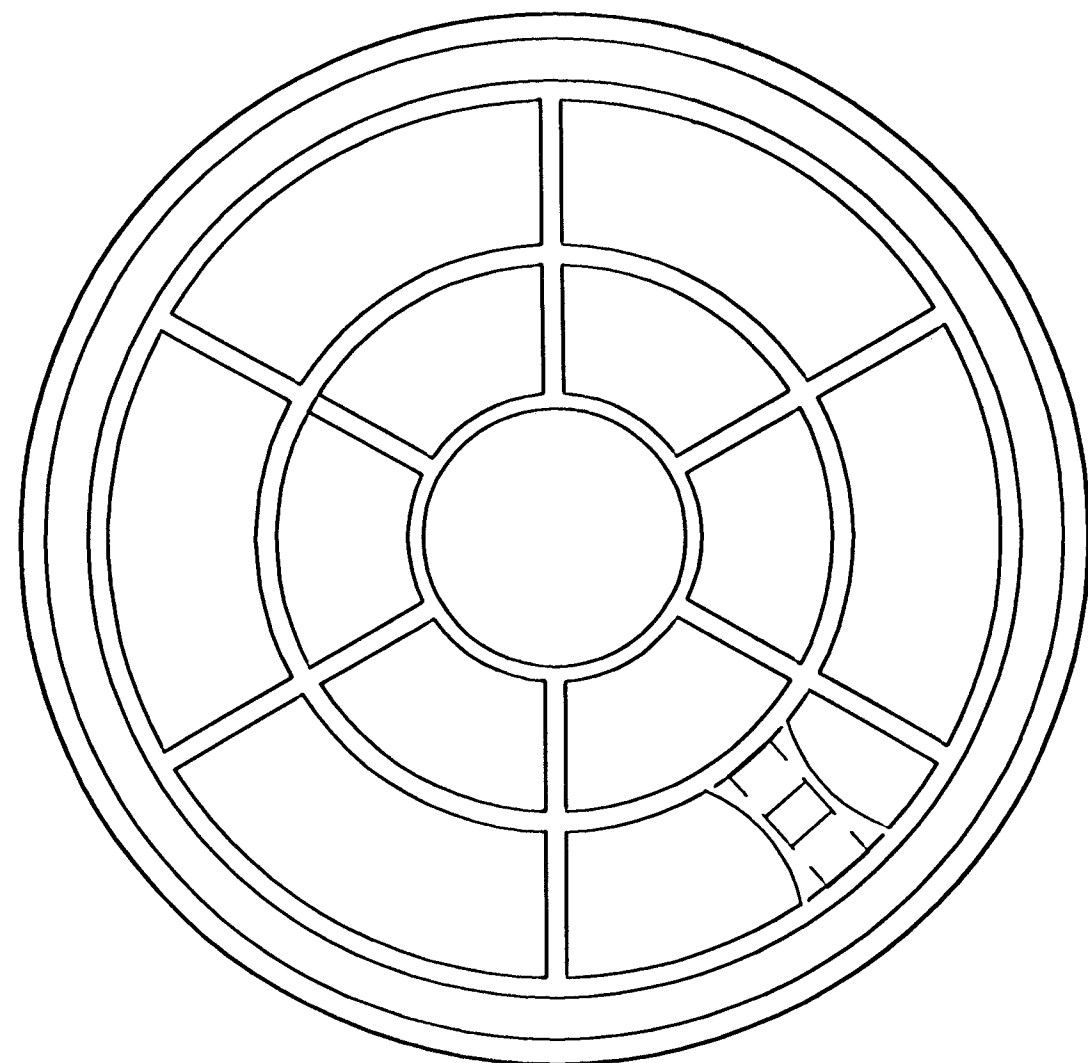
TOP VIEW



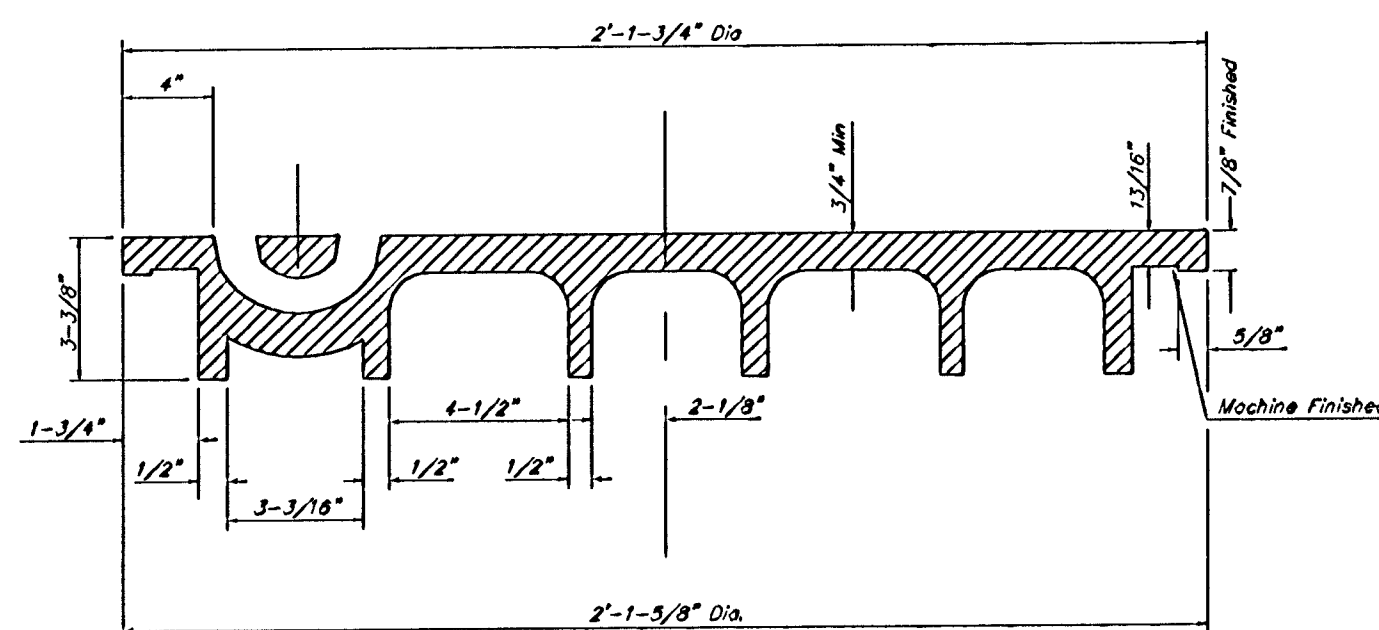
TOP VIEW



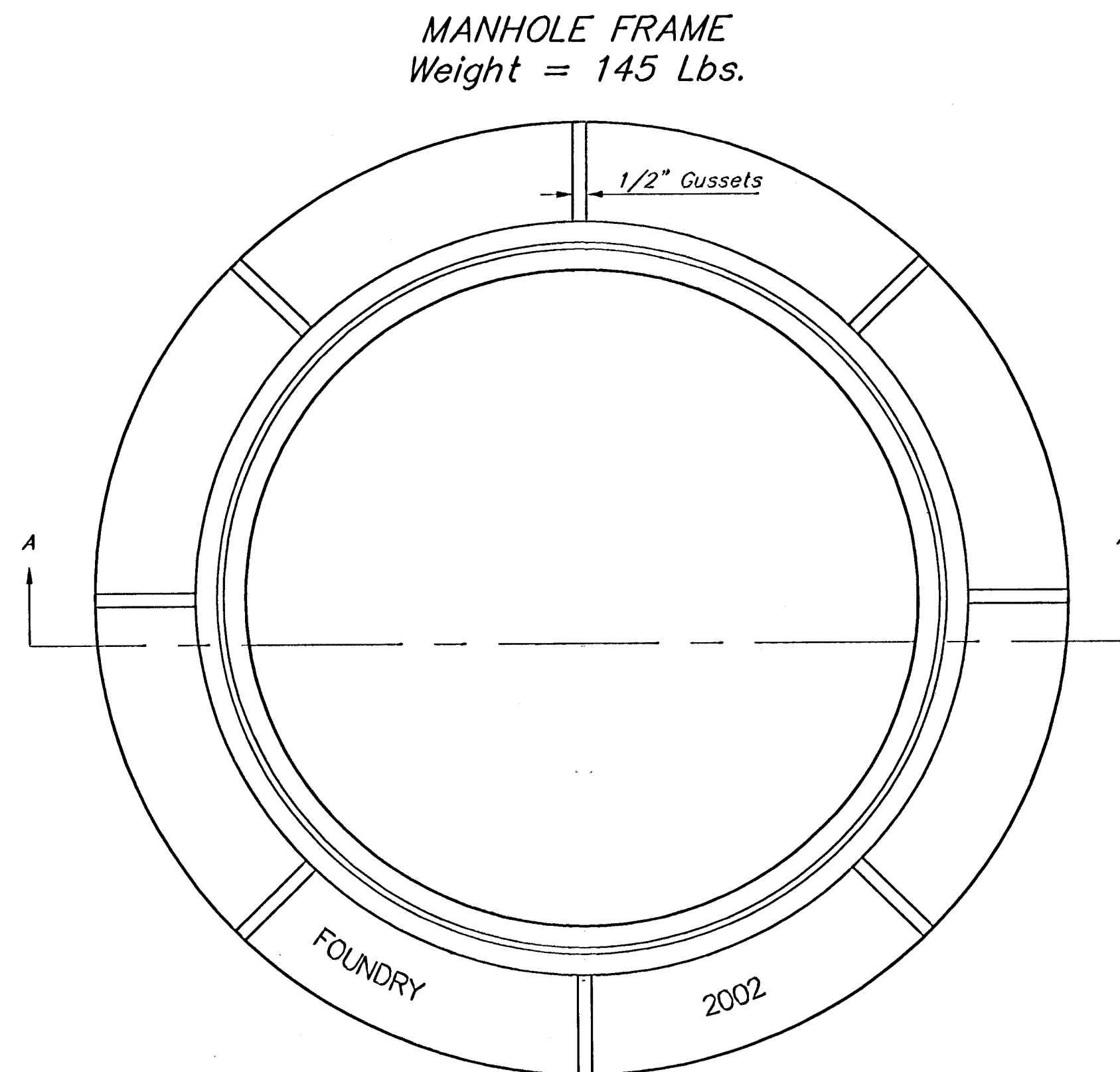
SECTION VIEW



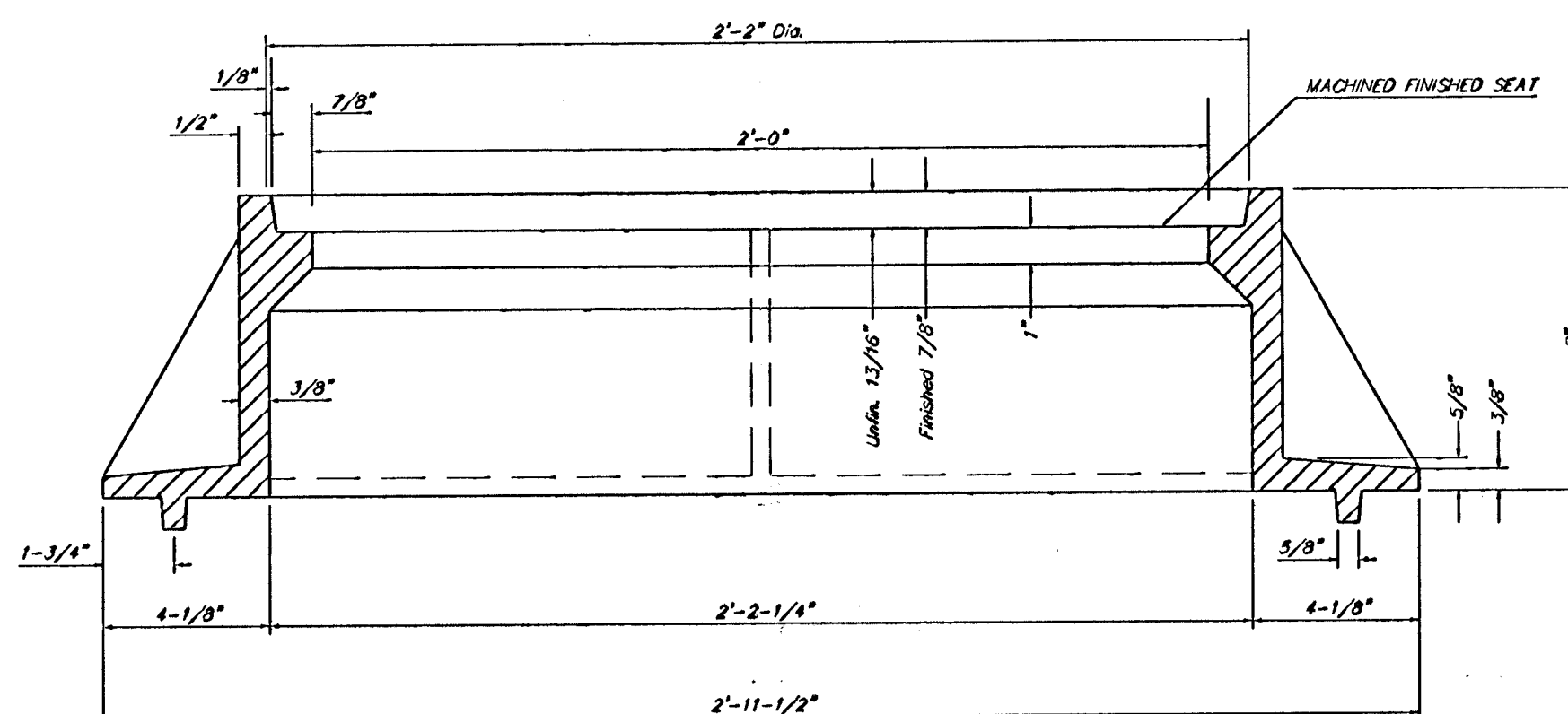
BOTTOM VIEW



SECTION VIEW



TOP VIEW



SECTION A-A

GENERAL NOTES

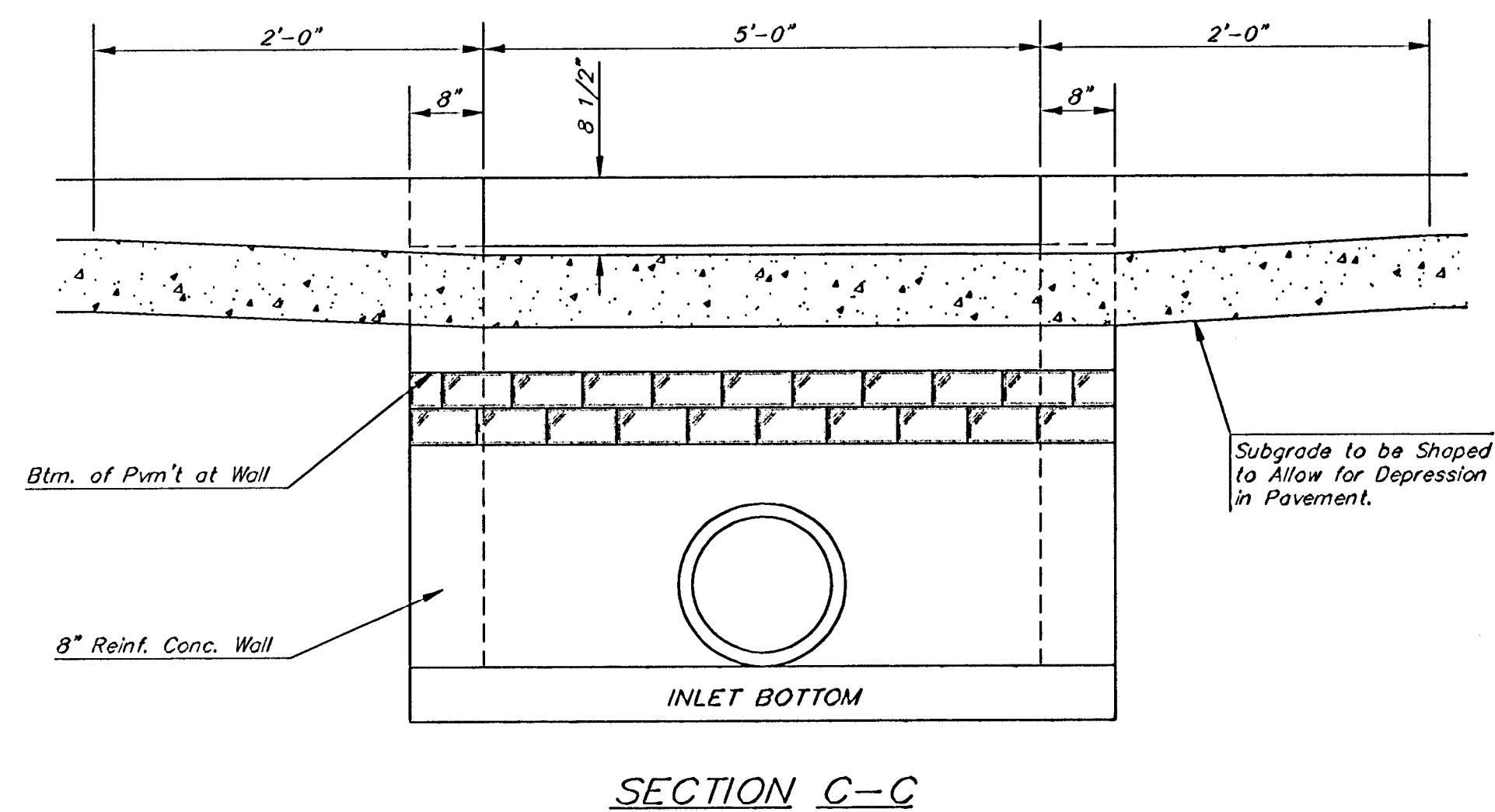
MANHOLE CASTINGS SHALL BE MANUFACTURED USING GOOD QUALITY GRAY IRON CONFORMING TO CLASS 30 OF A.S.T.M. DESIGNATION A-48. DIMENSIONS AND WEIGHTS SHOWN ON THE DETAILED DRAWINGS SHALL BE CONSIDERED AS MINIMUM REQUIREMENTS AND ANY DEVIATIONS FROM THE DIMENSIONS SHOWN MUST BE SPECIFICALLY APPROVED. THE FINISHED CASTINGS SHALL BE OF UNIFORM QUALITY, FREE FROM BLOWHOLES, POROSITY, HARD SPOTS, SHRINKAGE DISTORTIONS OR OTHER DEFECTS.

MANHOLE CASTINGS SHALL BE COATED WITH AN ASPHALT PAINT RESULTING IN A SMOOTH, TOUGH AND TENACIOUS COATING WHICH IS NOT BRITTLE OR TACKY.

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.

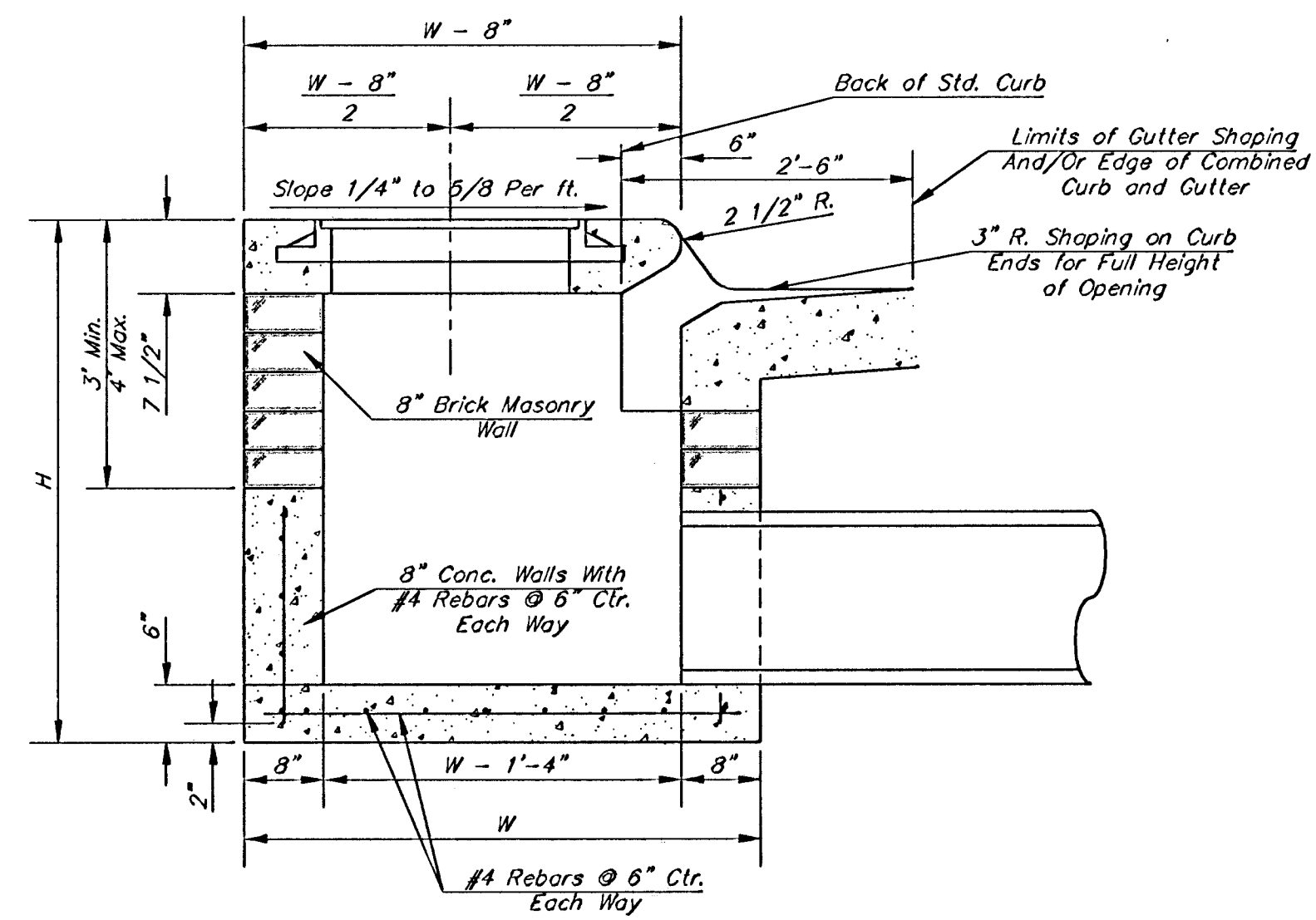
THE OUTSIDE CIRCUMFERENCE OF THE VERTICAL FACE OF THE COVER AND THE INSIDE CIRCUMFERENCE OF THE VERTICAL FACE IN THE FRAME RECESS SHALL BE MANUFACTURED TO TOLERANCES SUCH THAT THE CLEARANCE BETWEEN THE COVER AND FRAME WILL NOT EXCEED 1/8" AT ANY POINT AROUND THE CIRCUMFERENCE OF THE COVER. THE SEATING SURFACES BETWEEN THE COVER AND FRAME SHALL BE MACHINED SUCH AS THESE SURFACES SHALL MAKE FULL CONTACT FOR THEIR FULL CIRCUMFERENCE TO PRECLUDE THE COVER FROM ROCKING IN THE FRAME.

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 IN A CHECKERED PATTERN DESIGN AS INDICATED ON THE DRAWINGS. SMOOTH 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.

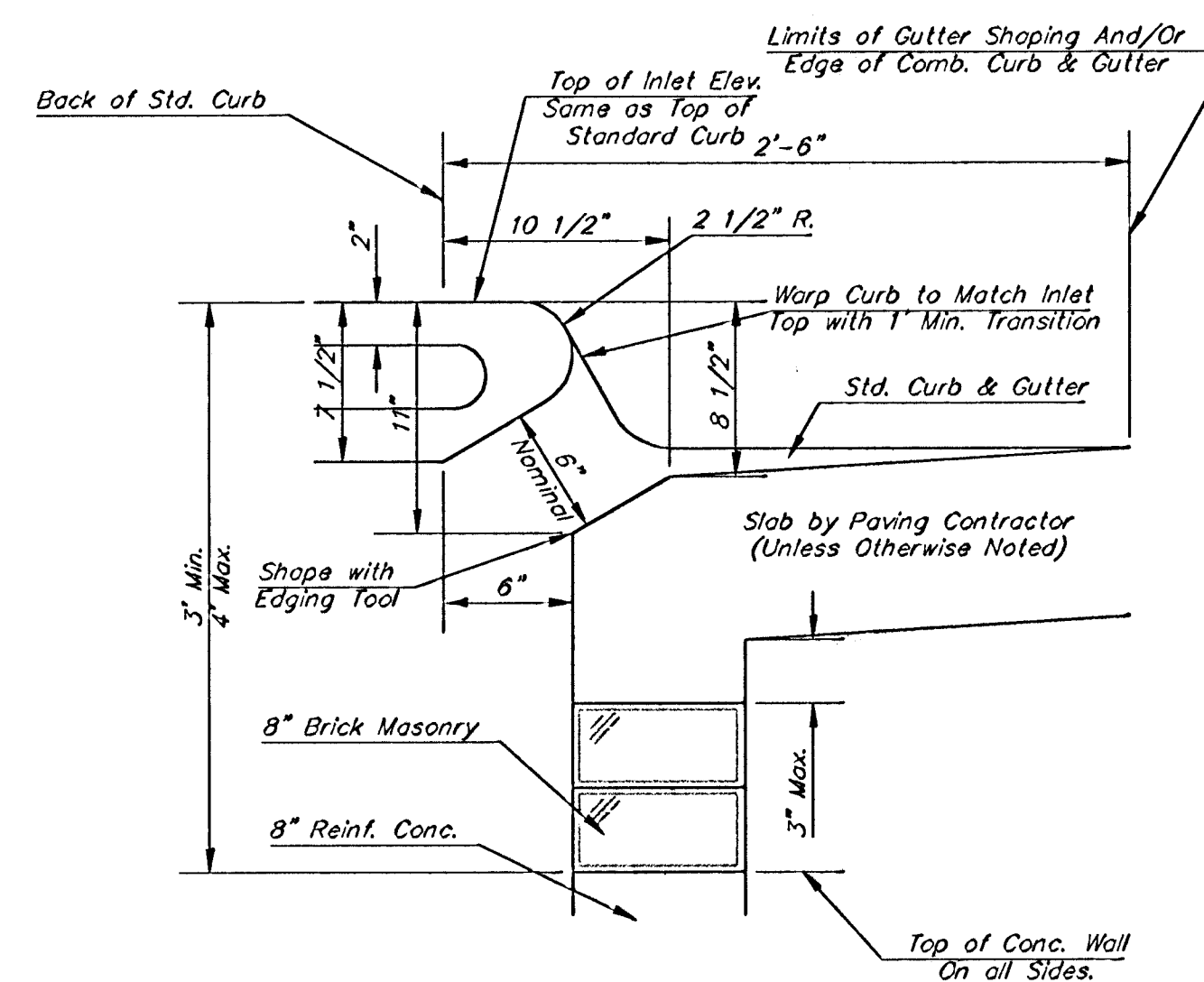


Notes:

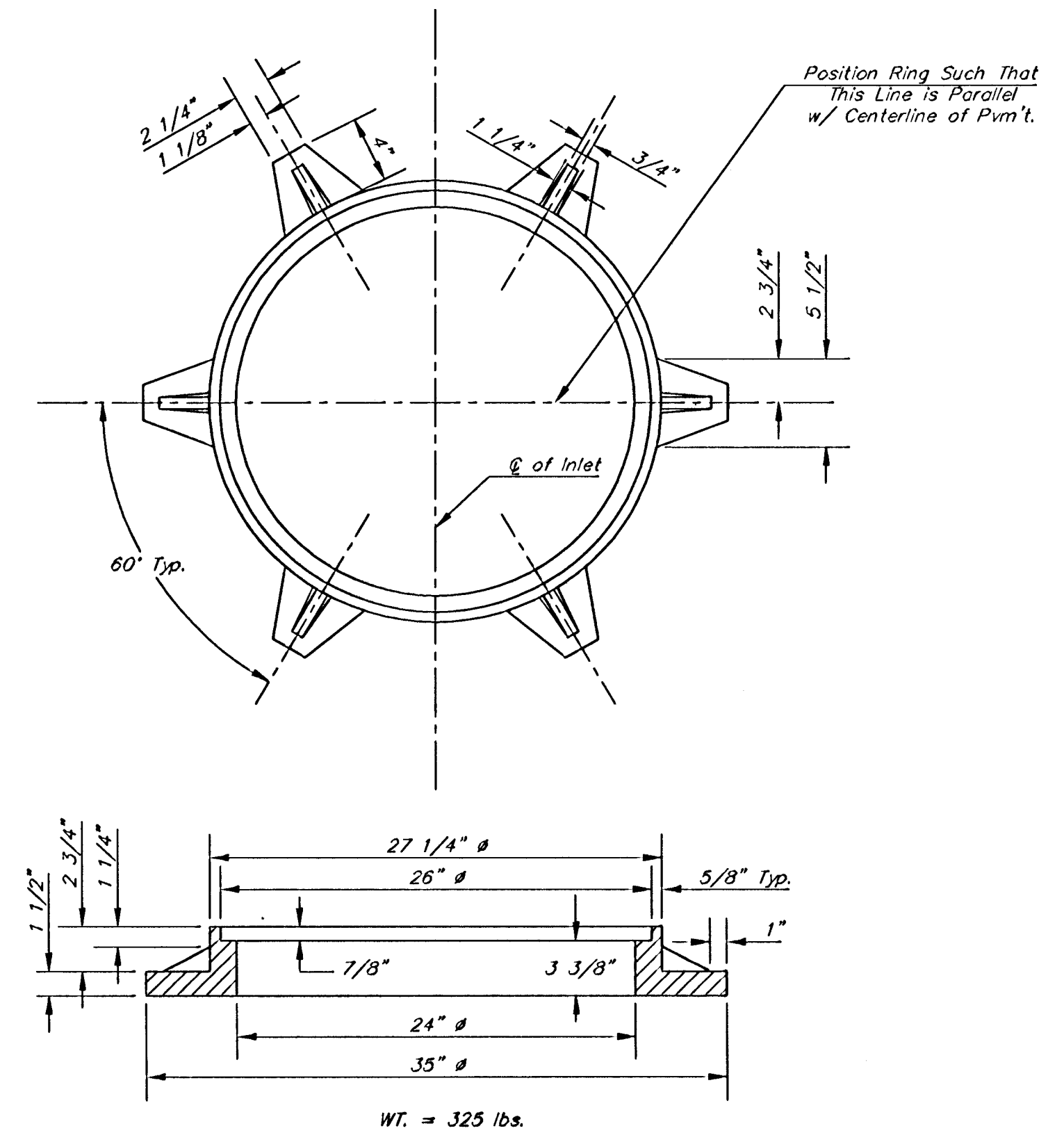
1. Inlet Top Reinforcing shall be Spaced on 6" Max. Centers. Inlet Lids shall be Notched out as Indicated to Facilitate Construction of Curb.
2. b₃ Bar to be Field Bent to Clear Inlet Frame.



SECTION A-A



SECTION B-B



MANHOLE RING AND COVER

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

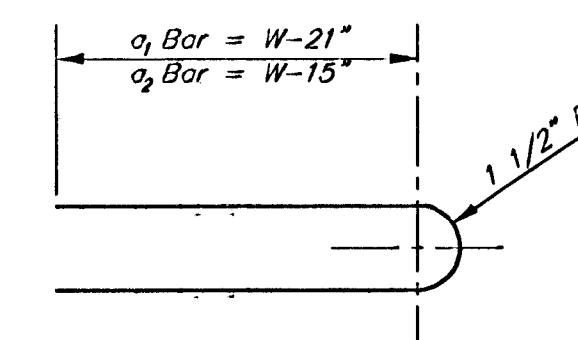
GENERAL NOTES

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

BAR	a ₁	a ₂	a ₃	b ₁					b ₂	b ₃	b ₄	Wt. Lbs.
				#4-4"	#5-5-4"	#6-6-4"	#7-7-4"	#8-8-4"				
NUMBER	4	4	2	1	3	5	7	9	6	1	1	
SIZE	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#6	
LENGTH	W=4'-4"	5'-7"	6'-2"	4'-0"	6'-1"	-	-	-	1'-9"	6'-2"	4'-8"	60±
	W=5'-4"	7'-2"	8'-7"	5'-0"	-	6'-1"	-	-	1'-9"	6'-2"	4'-8"	81±
	W=6'-4"	9'-2"	10'-7"	6'-0"	-	-	6'-1"	-	1'-9"	6'-2"	4'-8"	101±
	W=7'-4"	11'-2"	12'-7"	7'-0"	-	-	-	6'-1"	1'-9"	6'-2"	4'-8"	121±
	W=8'-4"	13'-2"	14'-7"	8'-0"	-	-	-	-	6'-1"	1'-9"	6'-2"	141±

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

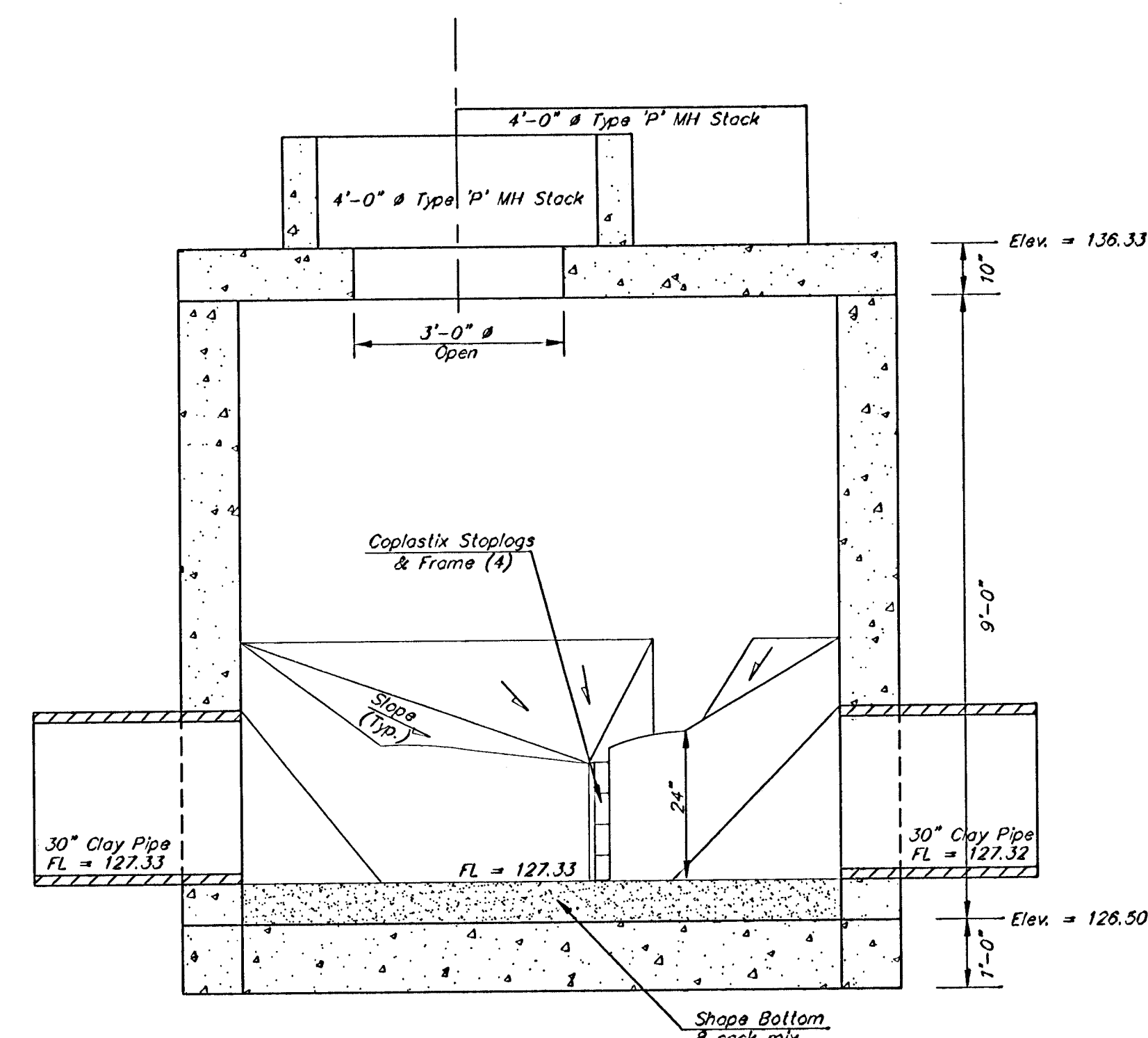
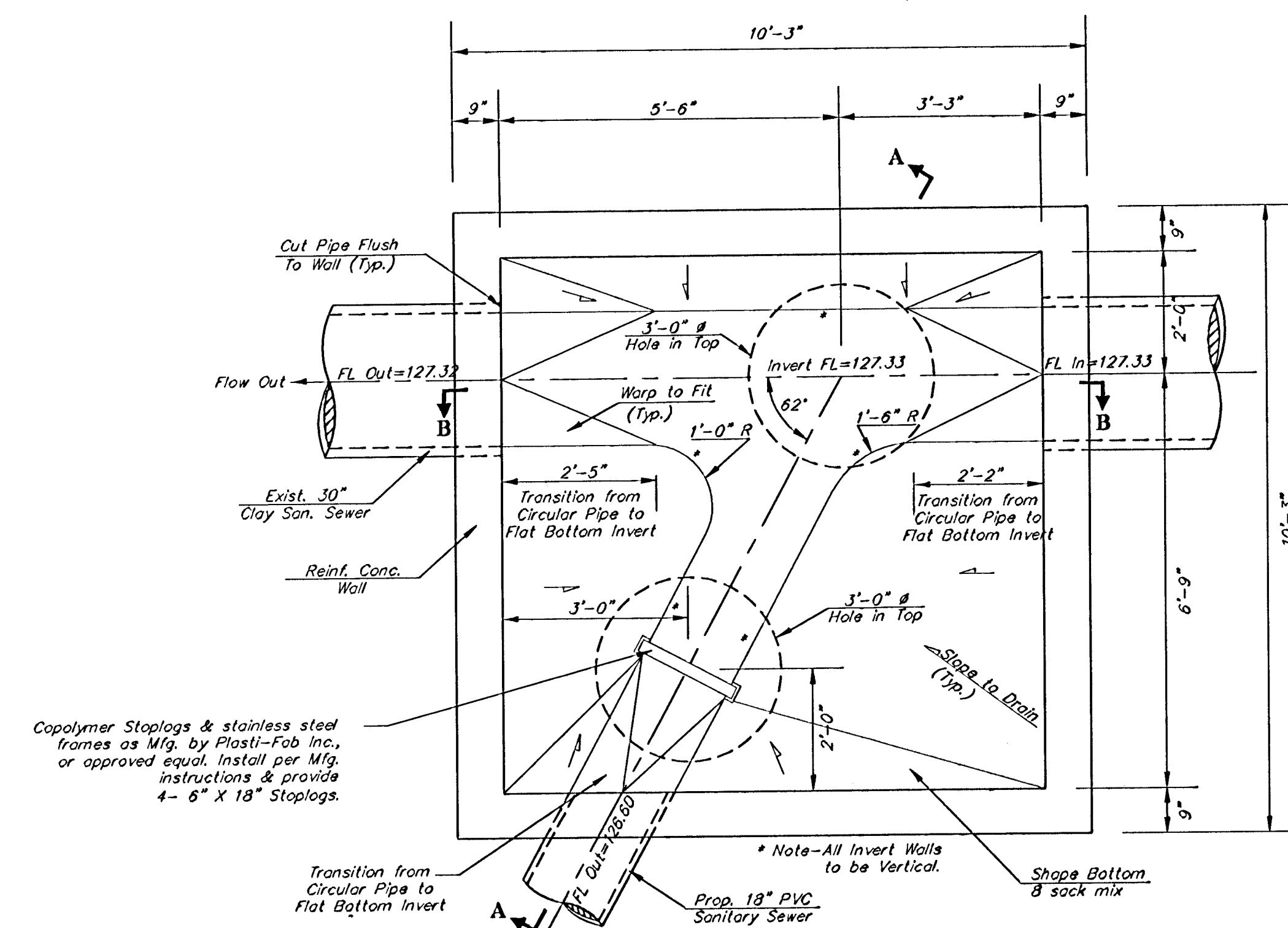
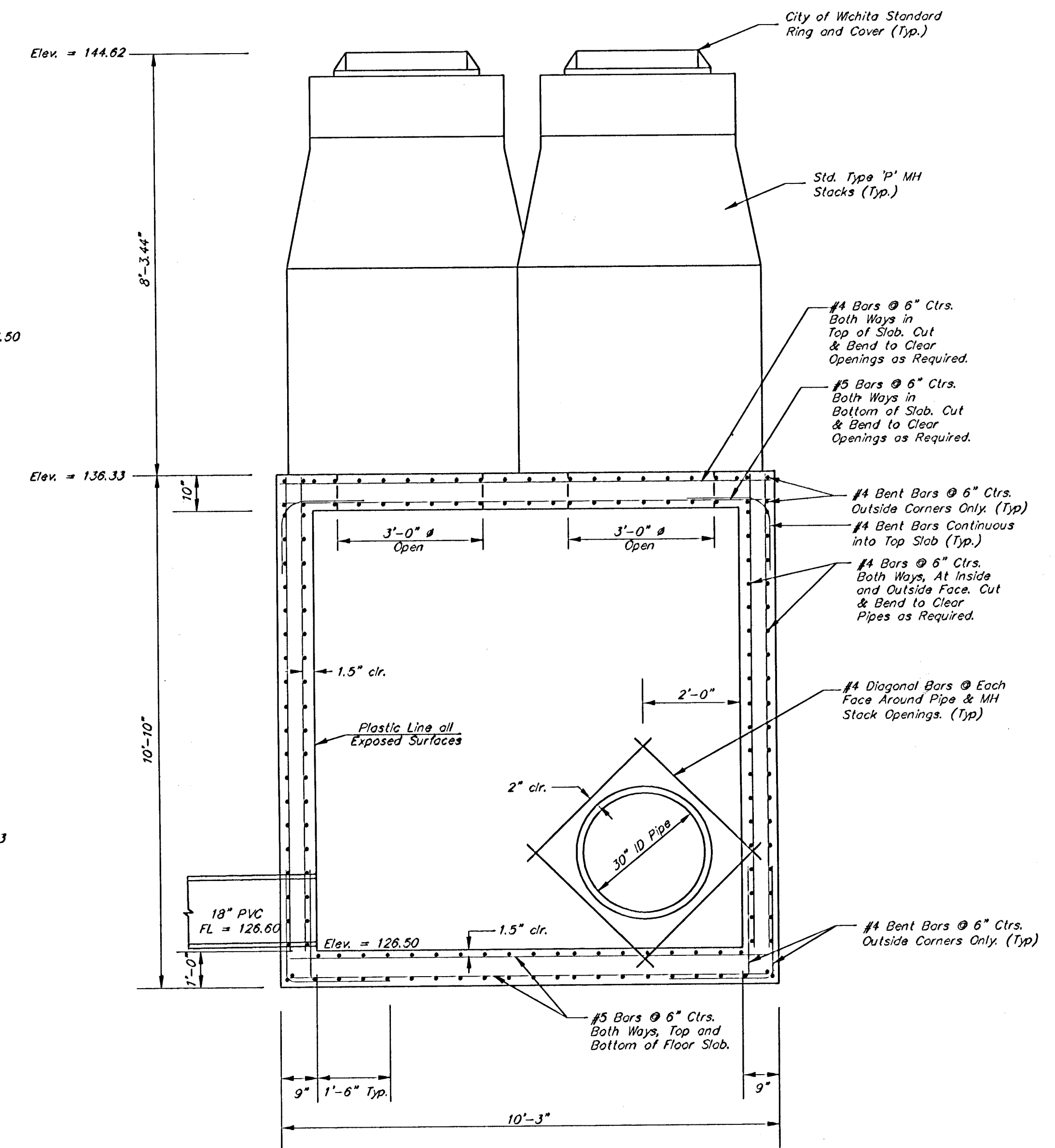
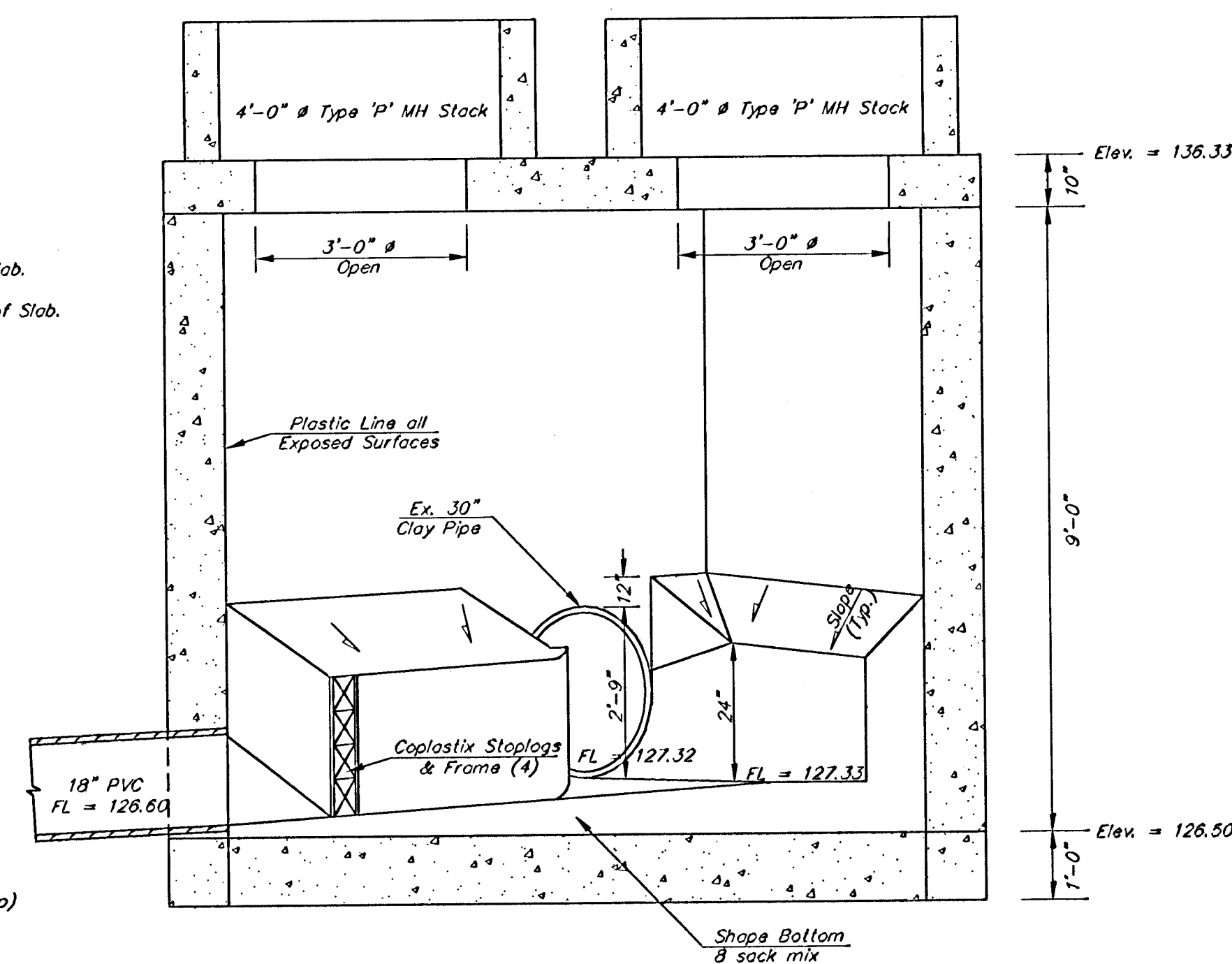
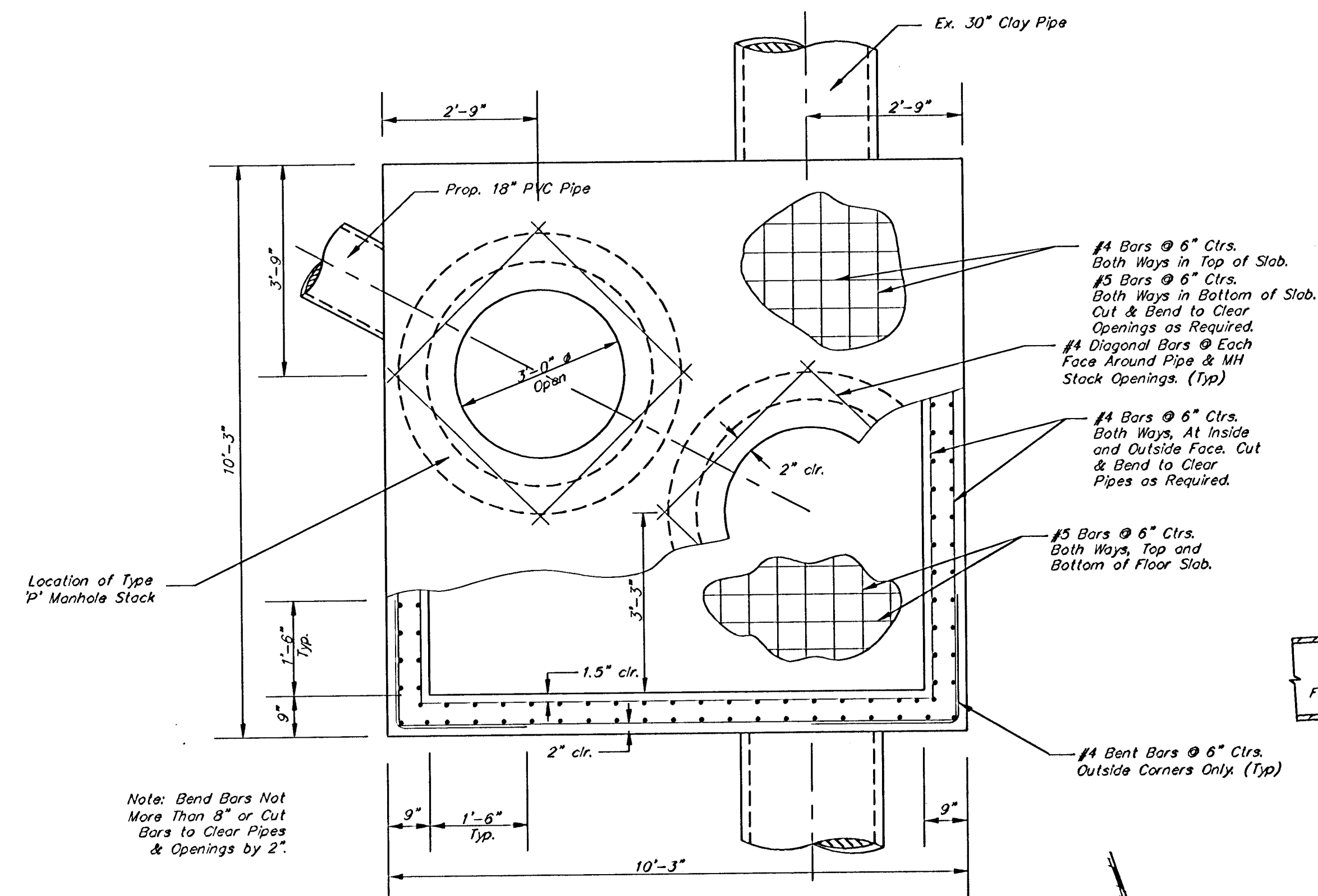
STANDARD CURB INLET PRECAST TOPS			
W	PRE-CAST TOP SIZE	PIPE SIZE	CU. YD. CONC.
4'-4"	3'-8" 6'-4" 7 1/2"	21" & SMALLER	0.39±
5'-4"	4'-8" 6'-4" 7 1/2"	24" & 30"	0.51±
6'-4"	5'-8" 6'-4" 7 1/2"	36" & 42"	0.64±
7'-4"	6'-8" 6'-4" 7 1/2"	48" & 54"	0.77±
8'-4"	7'-8" 6'-4" 7 1/2"	60" & 66"	0.90±



BENDING DIAGRAM

CITY OF WICHITA, KANSAS			
TYPE 1 CURB INLET			
INLET OPENING = 6"X6"-0"			
 BAUGHMAN COMPANY P.A. ENGINEERING, SURVEYING, & PLANNING 315-202-7271 • 315 ELLIS • WICHITA, KANSAS 67211			
PROJECT NUMBER			
DESIGN	DRAWN	APPROVED	DATE
J.W.K.	T.A.H.	[Signature]	04/20/03
			SCALE
			1/8" = 1'-0"

1307



- Contractor To Provide Shop Drawings to Engineer for Review Prior to Construction.
- Contractor To Provide 3 Additional 2" X 18" Stoplogs to the Wichita Water and Sewer Dept.

Sanitary Sewer Details				
DIVERTER STRUCTURE				
WAR INDUSTRIES SEWER - PHASE 4				
BAUGHMAN COMPANY P.A.				
ENGINEERING, SURVEYING, & PLANNING				
315-202-7271 • 315 ELLIS • WICHITA, KANSAS 67211				
PROJECT NUMBER				
DESIGN	DRAWN	APPROVED	DATE	SCALE
AK	STAFF		AUG 03	NONE
				SHEET
				18
				OF
				18

14-00-01-15