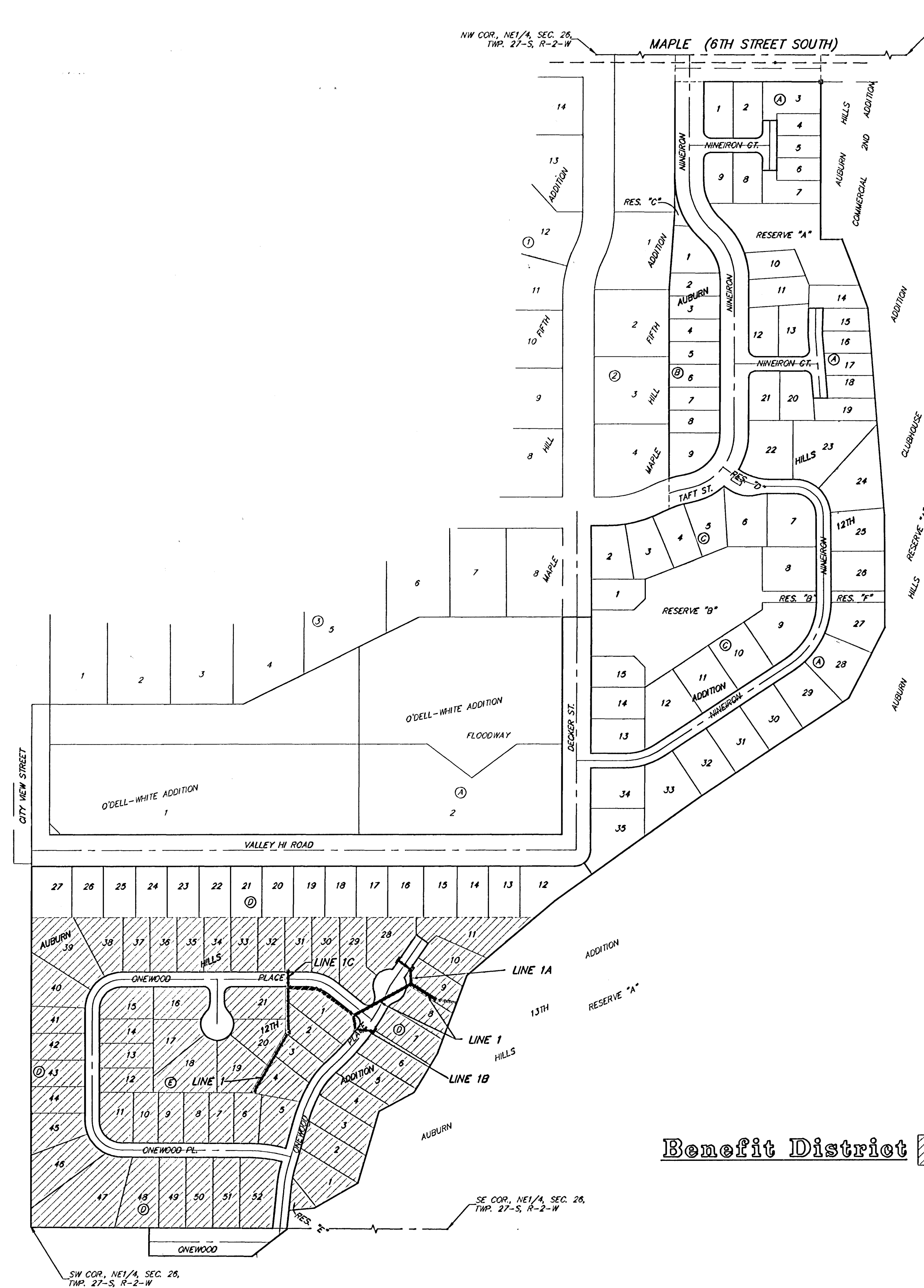




# STORM WATER SEWER #545

to serve

## AUBURN HILLS 12TH ADDITION

### PHASE II

CITY OF WICHITA, KANSAS

Michael E. Lindebak, P.E. City Engineer

Project Number

**468-83181**

O.C.A. Number  
**751314**

#### GENERAL NOTES:

- Contractor will be required to provide notice to utility companies a minimum of twenty-four (24) hours prior to any excavation, as follows:  
 Kansas One-Call 687-2470  
 The Contractor must notify the following in case of an emergency:  
 Cox Communications 262-0661  
 Kansas Gas Service 383-8600  
 Westar Energy 383-8600  
 Peoples Gas Company 942-8350  
 Southwestern Bell Telephone Company 1-800-344-7233  
 City of Wichita Water Dept. 268-4908  
 City of Wichita Traffic Engineering 269-4446
- Contractor shall not start work on the project until the project inspector is assigned to the project and is present on the site. Any work done without inspection will be required to be uncovered for inspection.
- 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. Existing utilities and their locations, as shown on the plans, represent the best information obtainable for design. Location information has been obtained from the various utility companies and is either from company record drawings or company-provided field locations. The Contractor will be required to work around existing utilities 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 directly abutting the construction of this project a minimum of ten (10) days notice prior to start of 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 law.
- All areas disturbed by construction operations shall be seeded with Rye Grass at a rate of 300 lbs./ac. in accordance with city specifications.
- Trees and shrubs in public right-of-way which are in direct conflict with proposed new construction shall be removed by the Contractor with the Engineer's approval. Trees and shrubs which are not in direct conflict with proposed new construction shall be saved and protected from damage.
- Massgrading to be completed with this project.
- Temporary Construction Entrance to be constructed at Engineer's request. See Detail, Sheet 3.

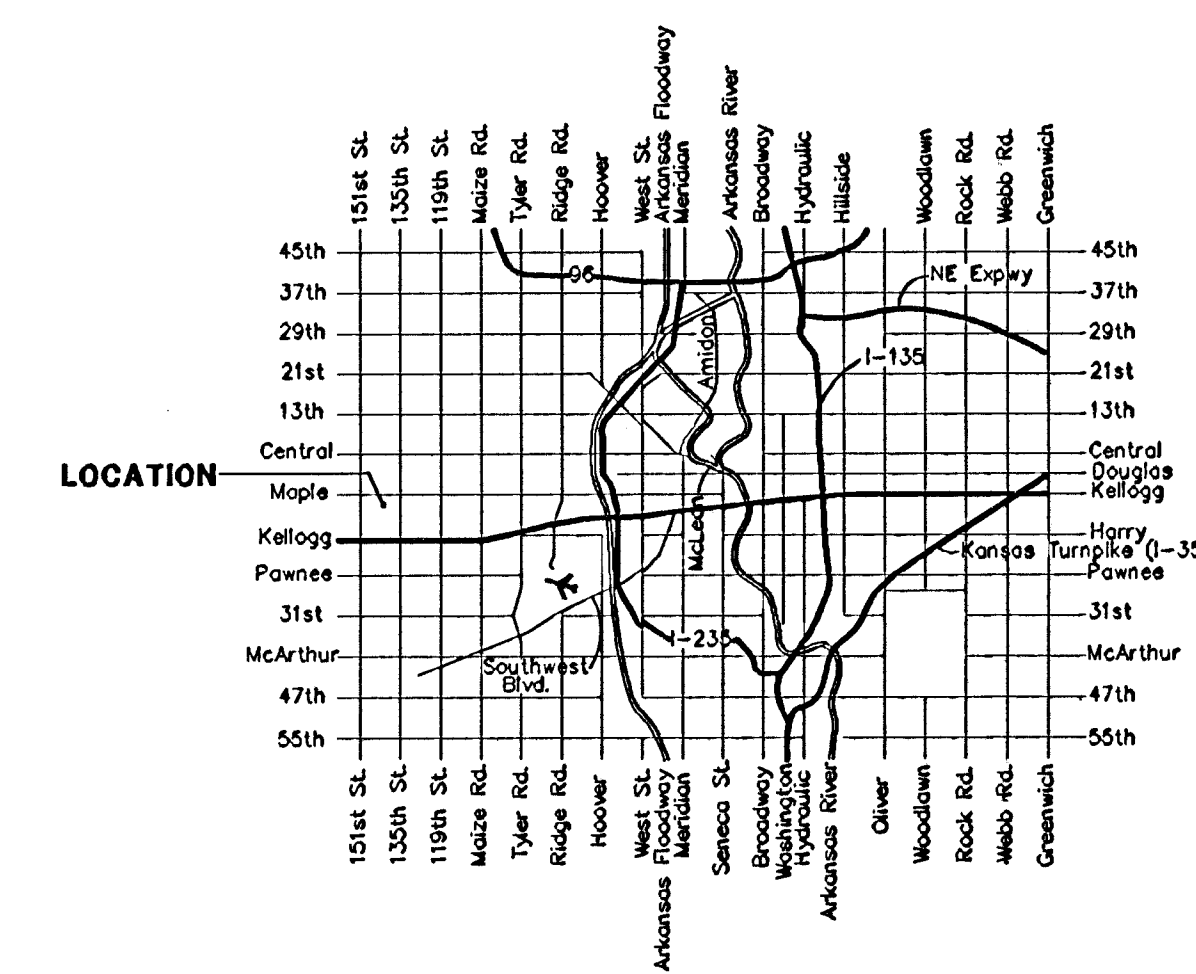
#### Sheet Index

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| Line 1                           | 2-3 |
| Line 1A, 1B, & 1C                | 4   |
| Massgrading                      | 5   |
| Erosion Control BMP Detail Sheet | 6-7 |
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| Type 1A-Double Curb Inlet Detail | 9   |
| Special Yard Inlet Detail        | 10  |
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#### Benchmarks

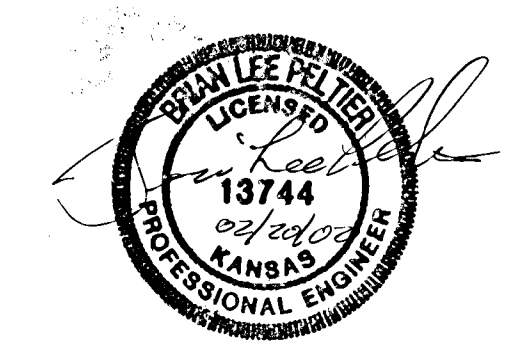
BM #1: Small RR spike on south face of PP at NW corner of Maple & Nineiron. Elev. = 175.59 (City Datum)

BM #2: "X" on top of CMP at NW corner of Decker & Taft. Elev. = 179.00 (City Datum)



Vicinity Map

Benefit District



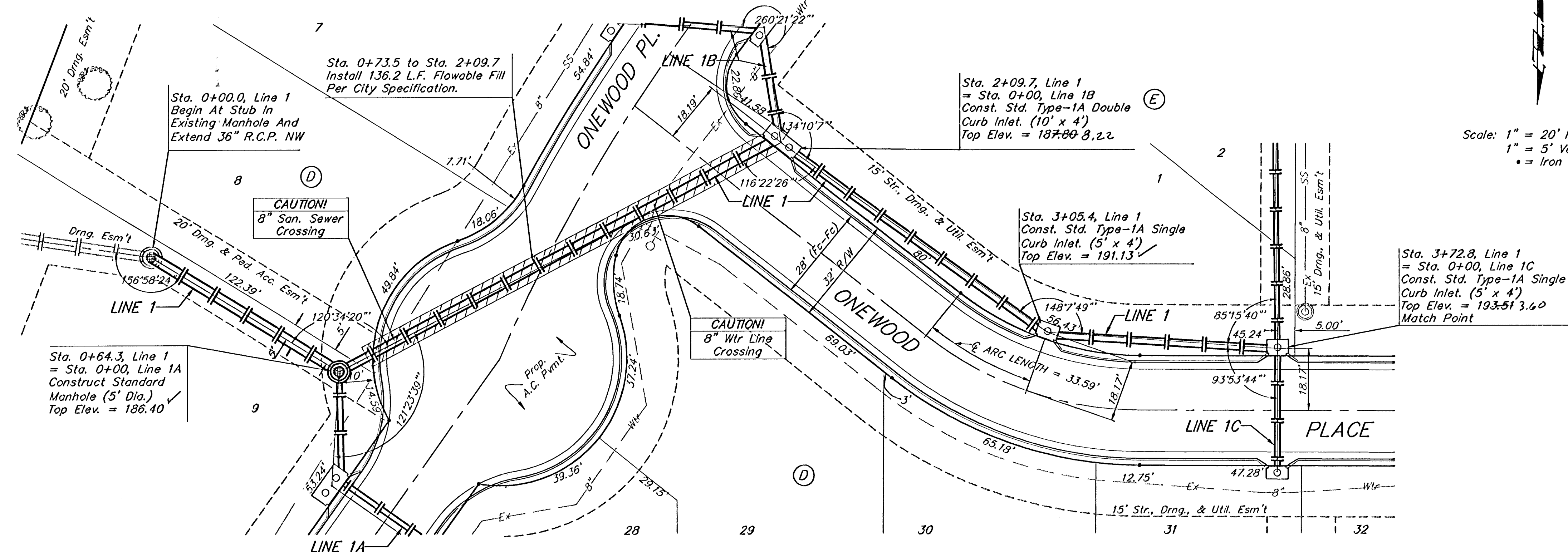
As Built 7/02 KK

**BENCHMARKS**  
BM #1: Small RR spike on south face of RP at NW corner of Maple & Nineiron.  
Elev. = 175.59 (City Datum)

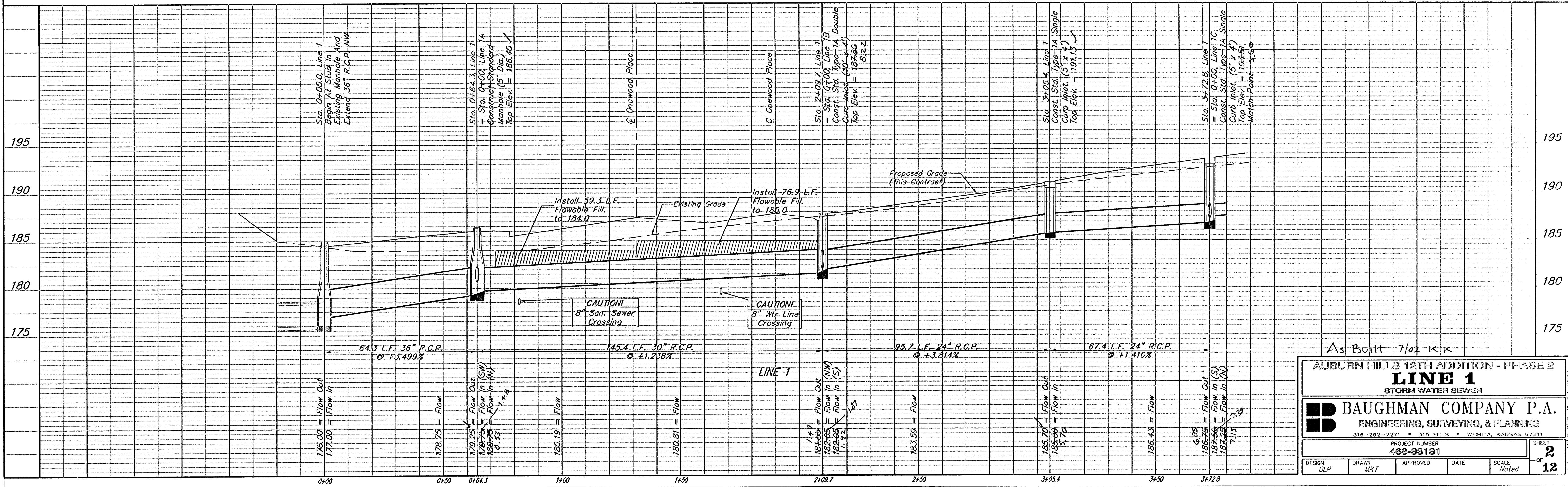
BM #2: "X" on top of CMP at NW corner of Decker & Taft.  
Elev. = 179.00 (City Datum)

AUBURN HILLS 12TH ADDITION

Scale: 1" = 20' Horizontal  
1" = 5' Vertical  
• = Iron



AUBURN HILLS 12TH ADDITION



As Built 7/02 K K

AUBURN HILLS 12TH ADDITION - PHASE 2  
**LINE 1**  
STORM WATER SEWER

**BAUGHMAN COMPANY P.A.**  
ENGINEERING, SURVEYING, & PLANNING  
315-262-7271 • 315 ELLIS • MOHITA, KANSAS 67211

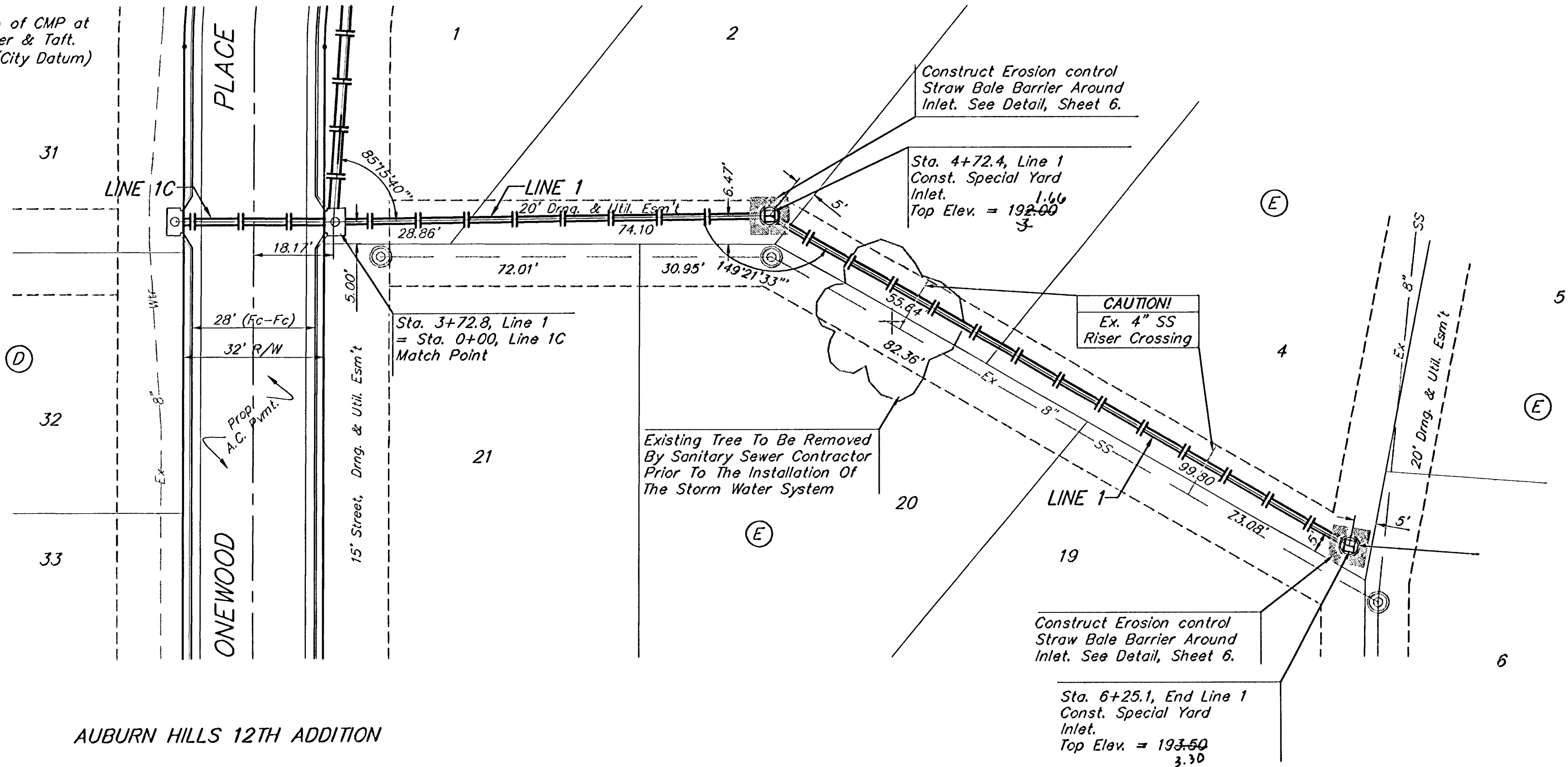
PROJECT NUMBER  
**488-83181**

DESIGN BLP DRAWN MKT APPROVED DATE SCALE Noted

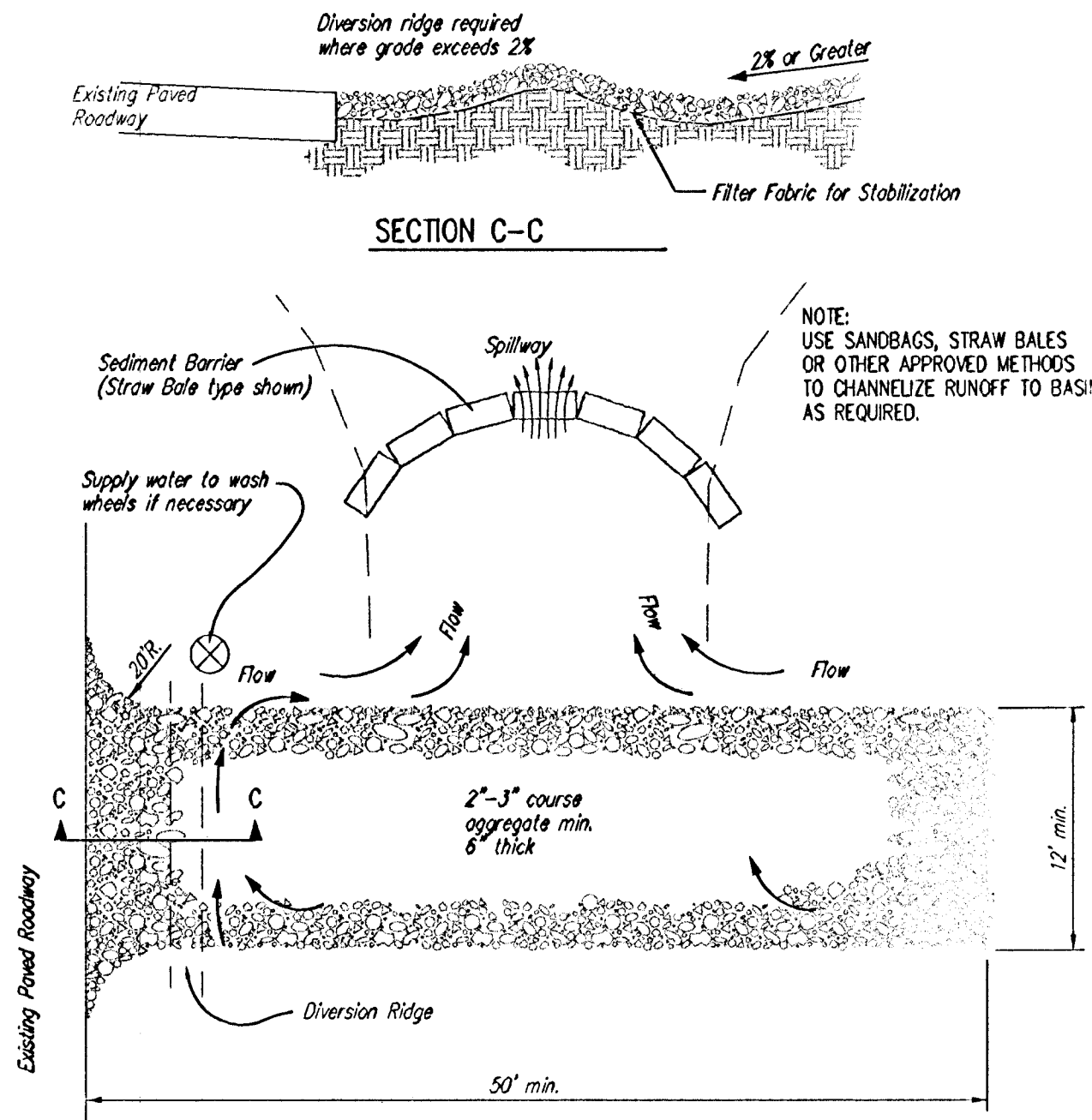
SHEET  
OF **2**  
12

BENCHMARKS  
BM #1: Small RR spike on  
south face of PP at NW  
corner of Maple & Nineiron.  
Elev. = 175.59 (City Datum)

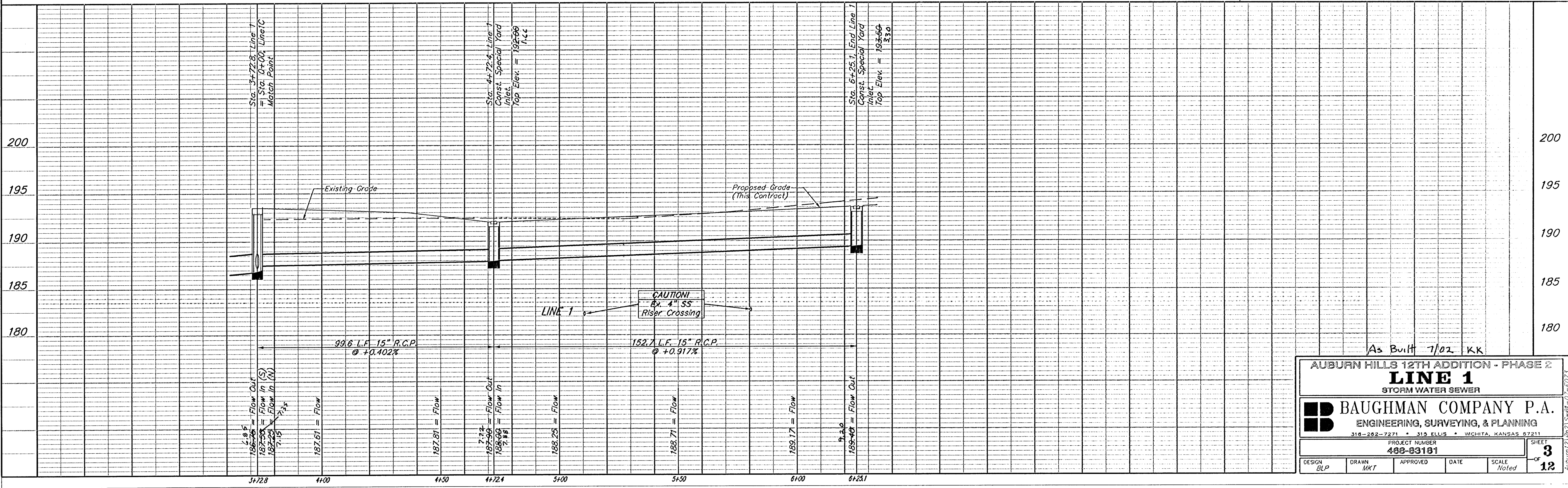
BM #2: "X" on top of CMP at  
NW corner of Decker & Taft.  
Elev. = 179.00 (City Datum)



Scale: 1" = 20' Horizontal  
1" = 5' Vertical  
• = Iron



- NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
  2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
  3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN, AS SHOWN ABOVE.
  4. DRIVE ENTRANCES ONTO RESIDENTIAL LOTS WILL NOT BE REQUIRED TO HAVE THE SEDIMENT BARRIER SHOWN, BUT WHEEL WASHING MAY BE REQUIRED IF STABILIZED ENTRANCE IS NOT SUFFICIENT TO KEEP MUD FROM BEING TRACKED ONTO ADJACENT STREET. ENTRANCE SHALL EXTEND FROM BACK OF CURB TO DWELLING.



As Built 7/02 KK

AUBURN HILLS 12TH ADDITION - PHASE 2  
**LINE 1**  
STORM WATER SEWER

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

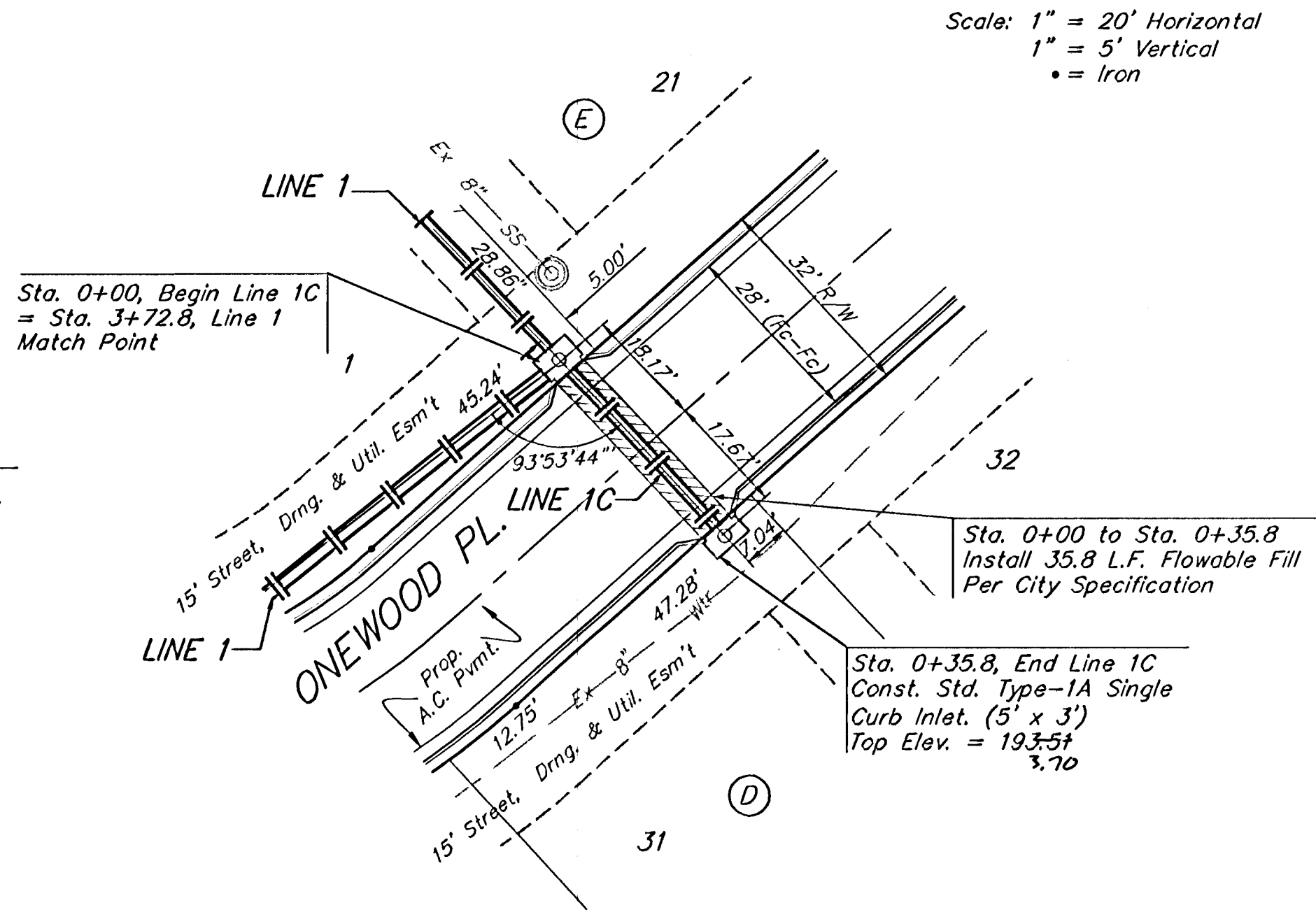
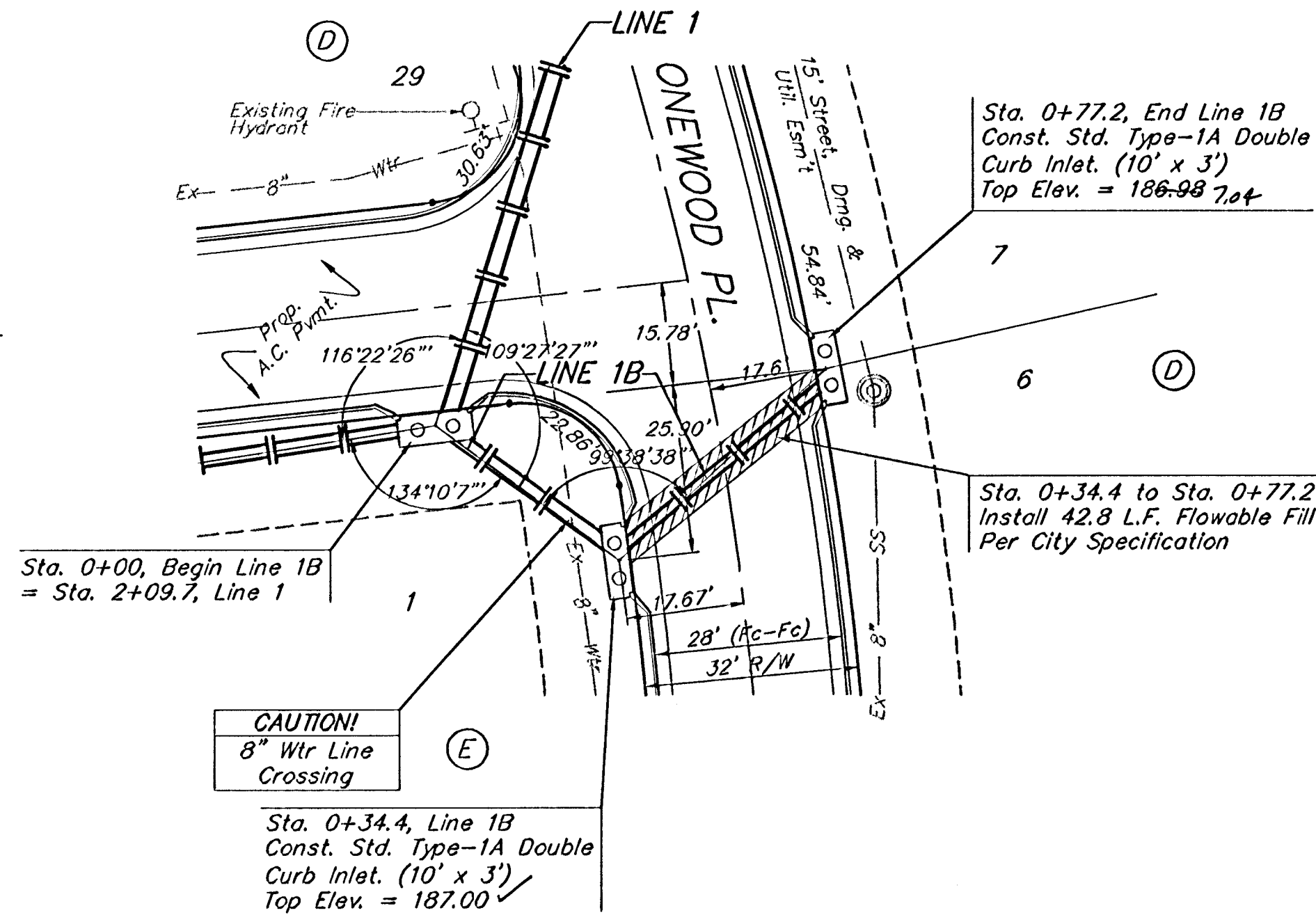
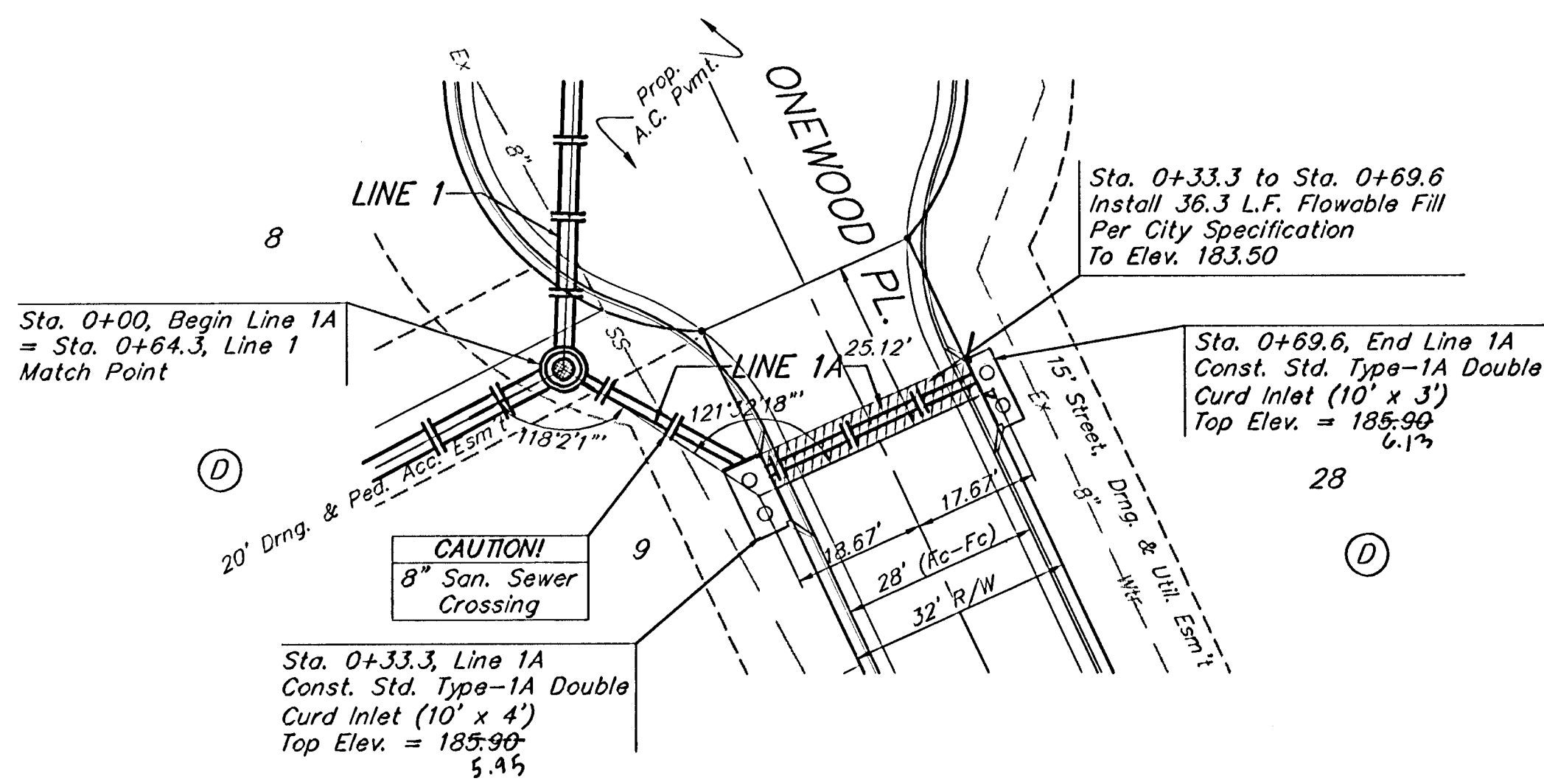
PROJECT NUMBER  
**488-89181**

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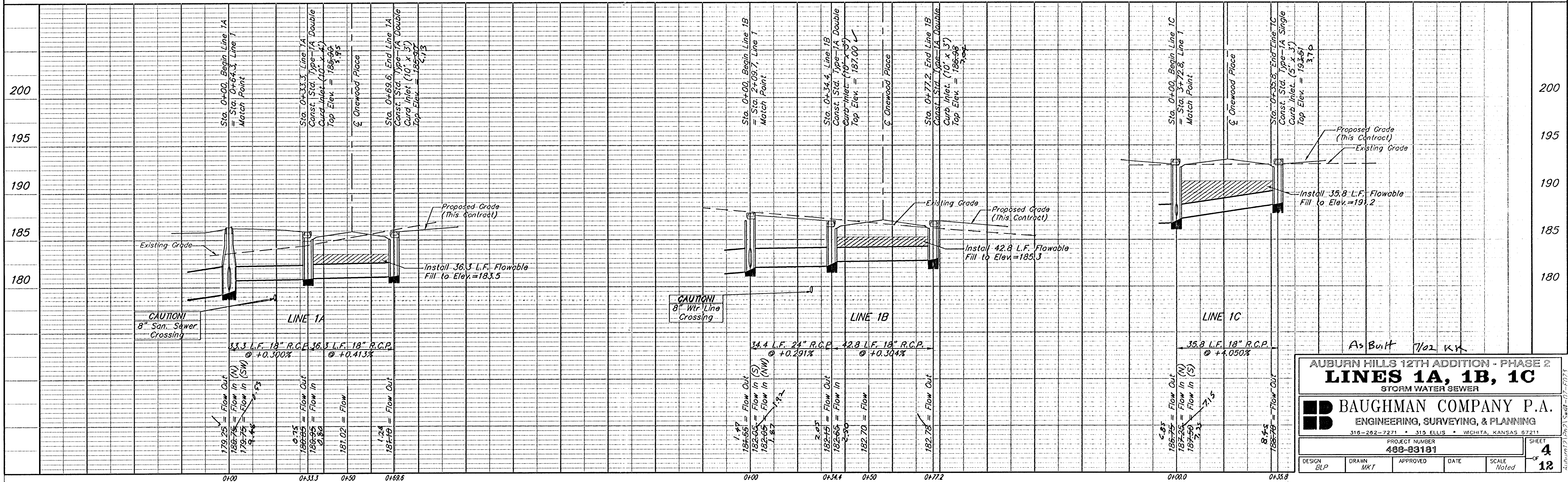
SHEET  
**3**  
OF  
**12**

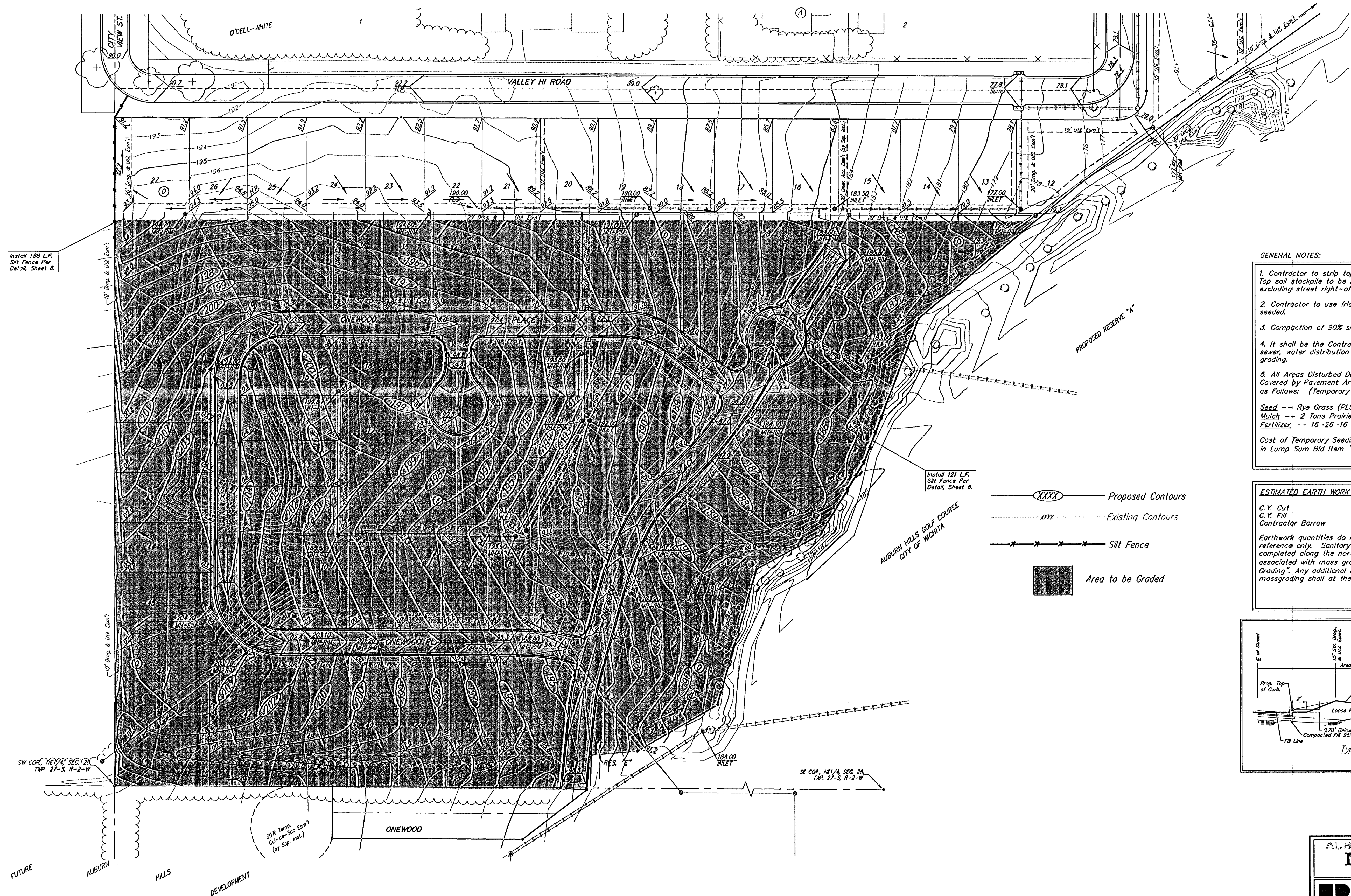
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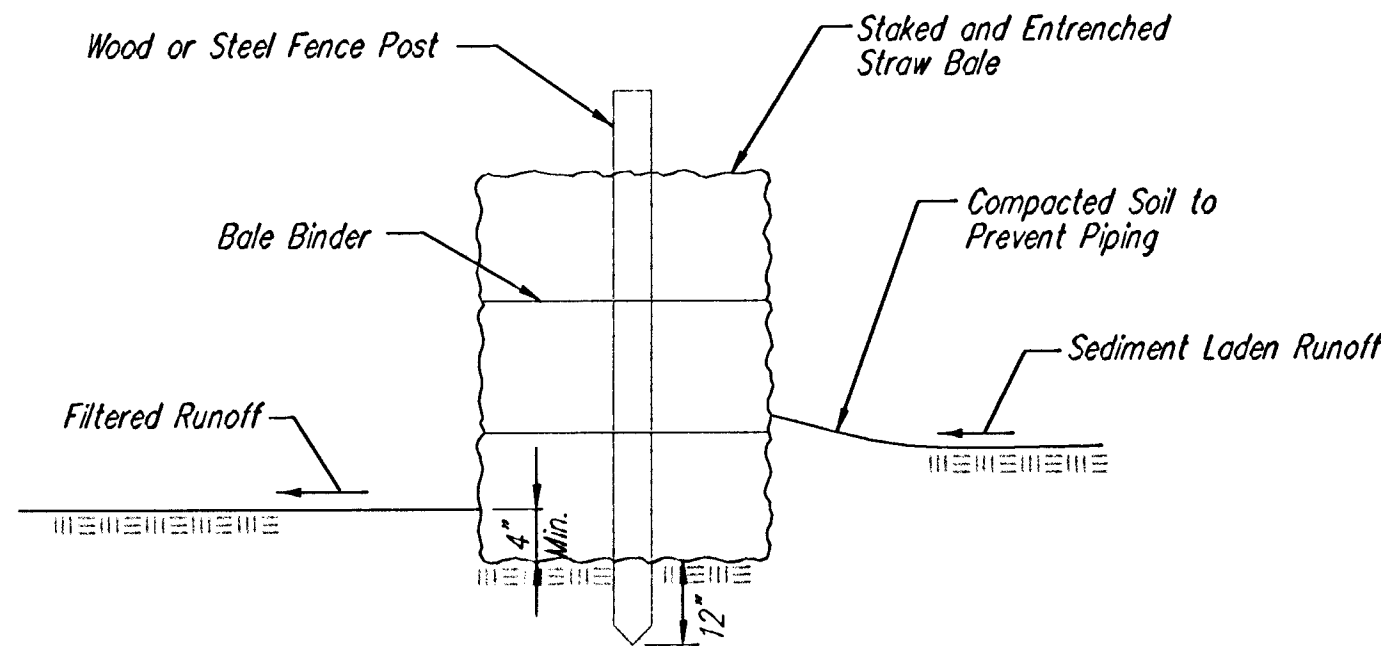
BM #2: "X" on top of CMP at  
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Elev. = 179.00 (City Datum)



AUBURN HILLS 12TH ADDITION







### 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:

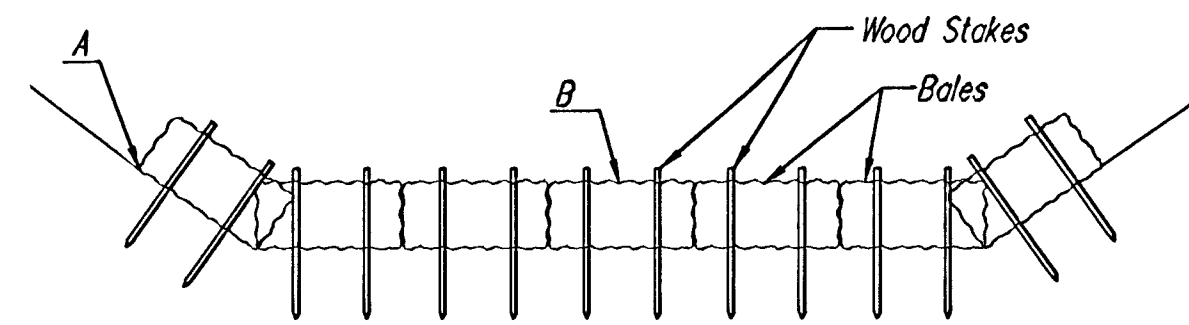
Are there any points along the slope barrier where water is concentrating?  
Does water flow under the slope barrier?  
Does water flow through spaces between abutting bales?  
Are any bales dislodged?  
Are bales decomposing due to age and/or water damage?  
Does sediment need to be removed from behind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

#### \* FOR INFORMATION ONLY

2 EA. AREA INLET FILTERS  
309 L.F. SILT FENCE

\* TO BE PAID FOR AS THE LUMP SUM  
BID ITEM "EROSION CONTROL BMP'S"

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".

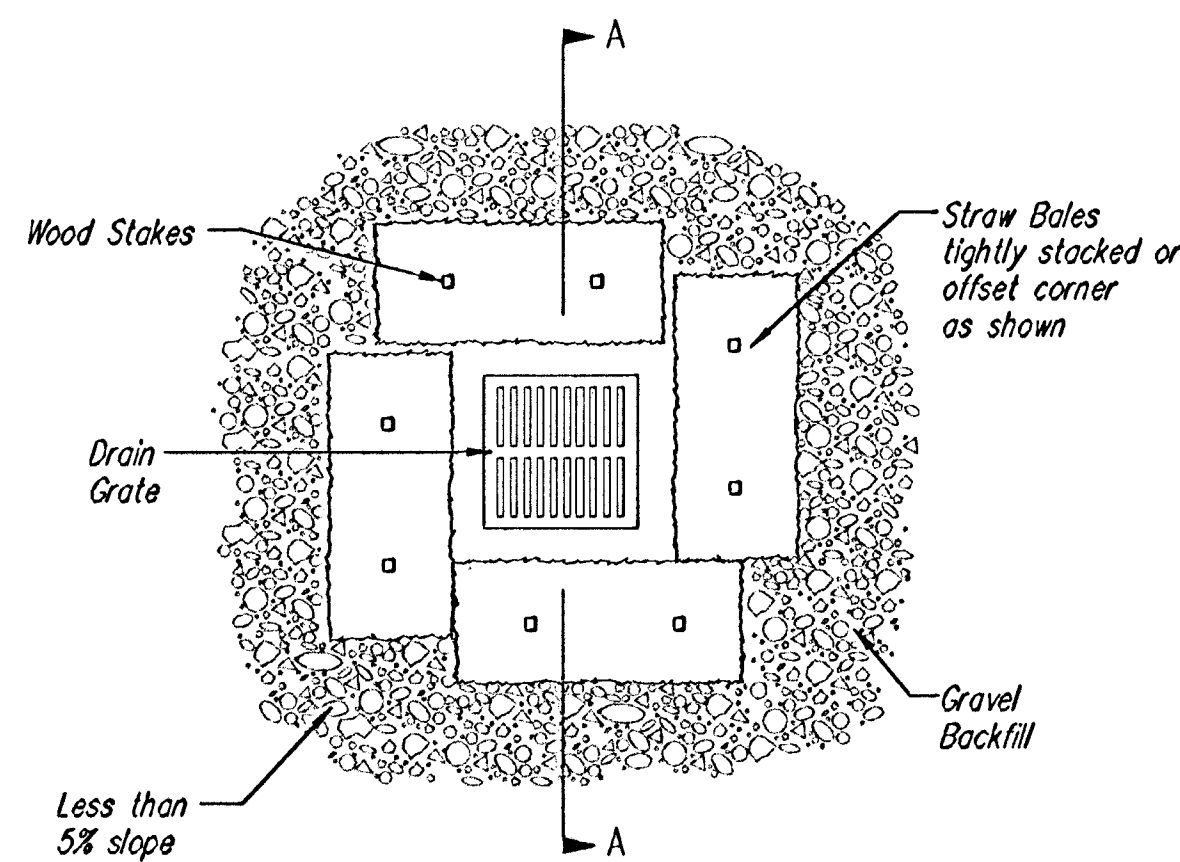
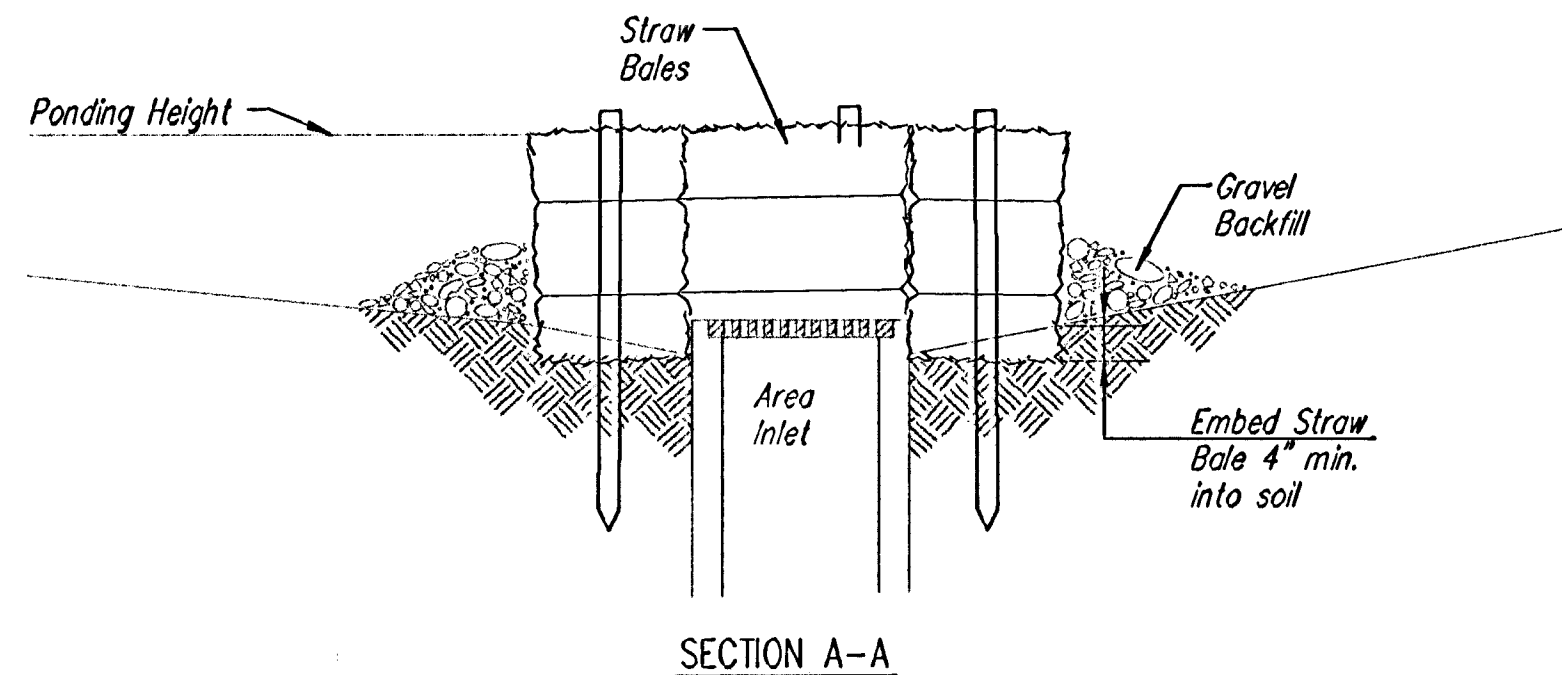
#### List of common placement/installation mistakes to avoid:

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.

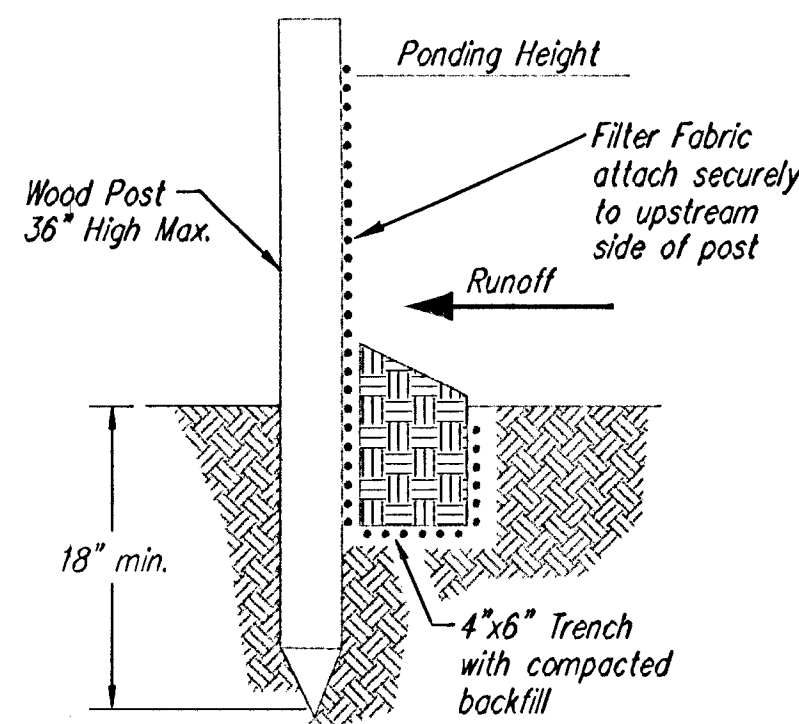
#### List of common placement/installation mistakes to avoid:

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.

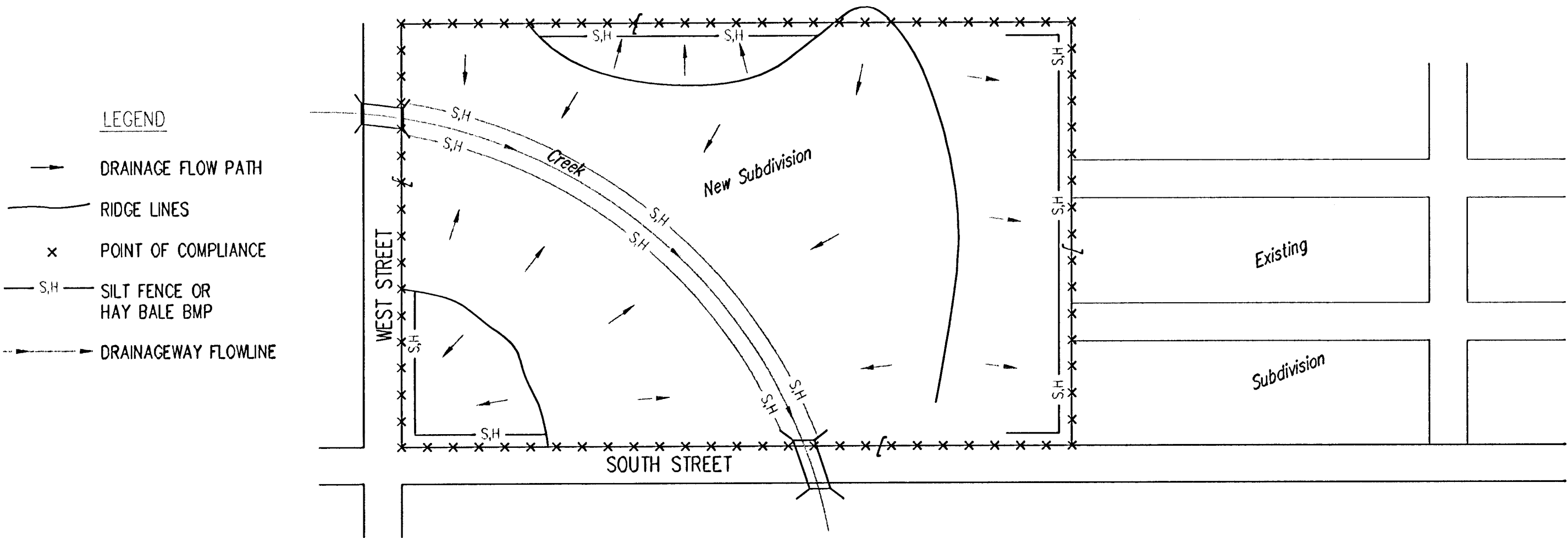
#### Inspection and Maintenance:

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?

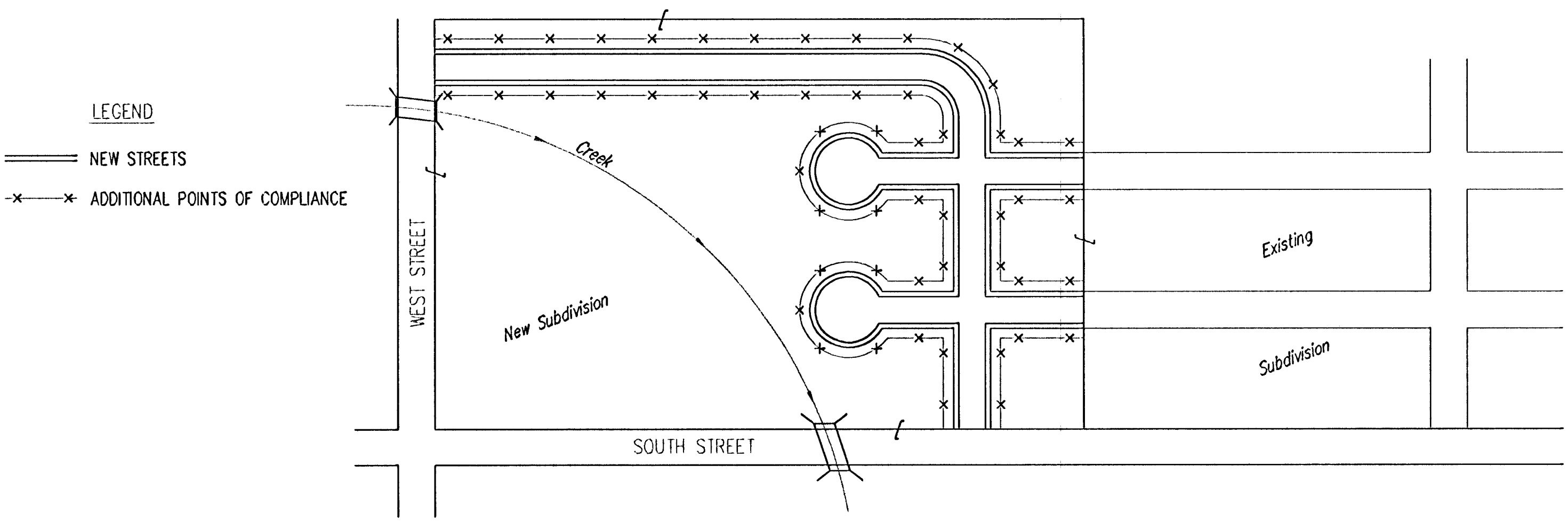
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|  | <b>SOIL EROSION<br/>BMP DETAILS</b>                  |                   |
|                                                                                       | CHRISTOPHER M. CARRIER, P.E.<br>STORM WATER ENGINEER |                   |
|                                                                                       | PROJECT NUMBER<br>468-83181                          | CCA NO.<br>751314 |
|                                                                                       | DATE<br>MAY 2001                                     | SHEET 6 OF 12     |

PHASE 1 – INITIAL EARTHWORK AND UTILITIES (EXCEPT STORM SEWER)



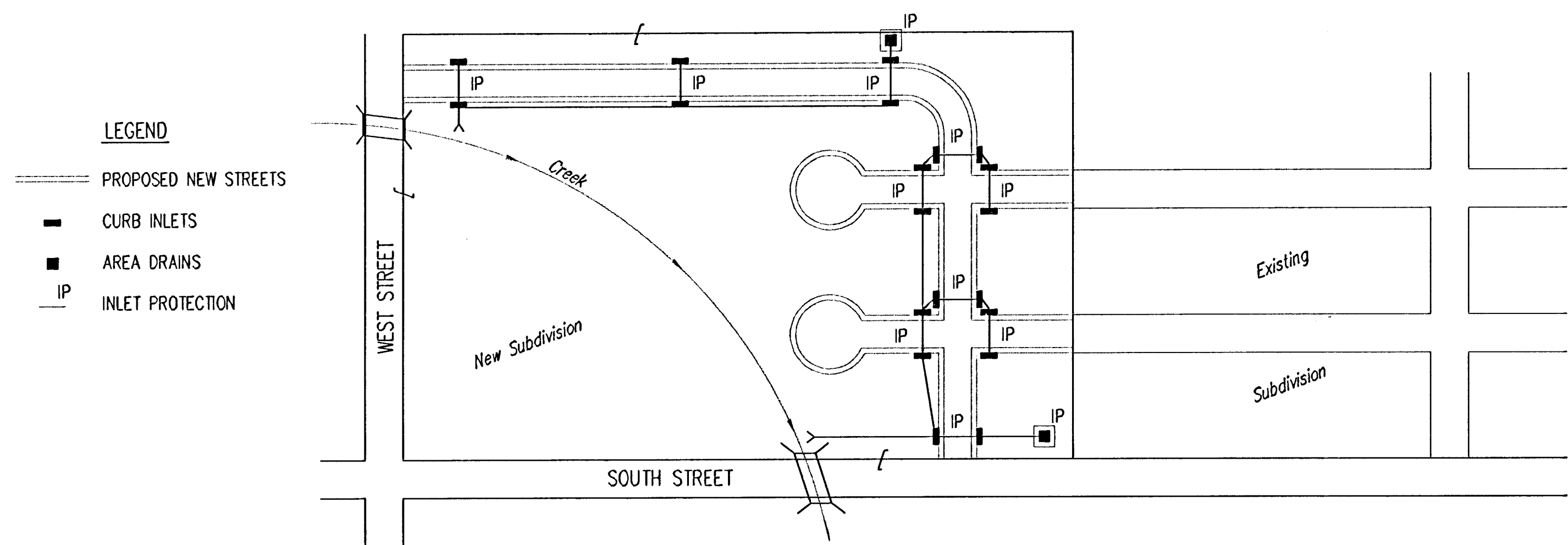
1. DURING THIS PHASE OF SUBDIVISION CONSTRUCTION, THE POINTS OF COMPLIANCE ARE THE PERIMETER BOUNDARIES AND ANY DRAINAGE WAYS OR STORM SEWERS DRAINING THROUGH OR FROM THE SITE. SHOULD LAKES BE CONSTRUCTED WITHIN THE SUBDIVISION THAT WILL DISCHARGE DURING STORMS, THEY ARE ALSO A POINT OF COMPLIANCE.
2. HAYBALES OR SILT FENCE MUST BE CONSTRUCTED ALONG THE PROPERTY LINE WHERE ON SITE WATER CAN DRAIN OFF THE PROPERTY. THESE BMP'S WILL ALSO BE INSTALLED ALONG ANY DRAINAGE DITCH OR LAKE THAT CAN DISCHARGE.
3. SHOULD SILT OR SEDIMENT ENTER THE DITCHES OR CUTTERLINES ON THE ADJACENT BOUNDARY STREETS, APPROPRIATE BMP'S WILL BE PLACED WITHIN THE SUBDIVISION TO PREVENT THIS.
4. ANY MUD TRACKED ONTO ADJACENT STREETS WILL BE REMOVED AT THE END OF EACH WORK DAY.
5. CONTRACTORS WORKING WITHIN THE SITE WILL NOT BE REQUIRED TO USE INDIVIDUAL BMP'S AS LONG AS THOSE SPECIFIED ABOVE ARE IN PLACE AND EFFECTIVE. CONTRACTORS WORKING ON THE BOUNDARY LINE STREETS OR ON ADJACENT PROPERTIES TO EXTEND UTILITIES ARE EXPECTED TO USE BMP'S AT THEIR WORK LOCATIONS, AS NEEDED.
6. UTILIZE STABILIZED CONSTRUCTION ENTRANCE AT ENTRANCE AND EXIT ONTO ANY EXISTING PUBLIC STREETS.
7. THE SUBDIVISION DEVELOPER (OWNER) SHALL INSTALL AND MAINTAIN THE ON-SITE BMP'S.

PHASE 3 – STREET CONSTRUCTION



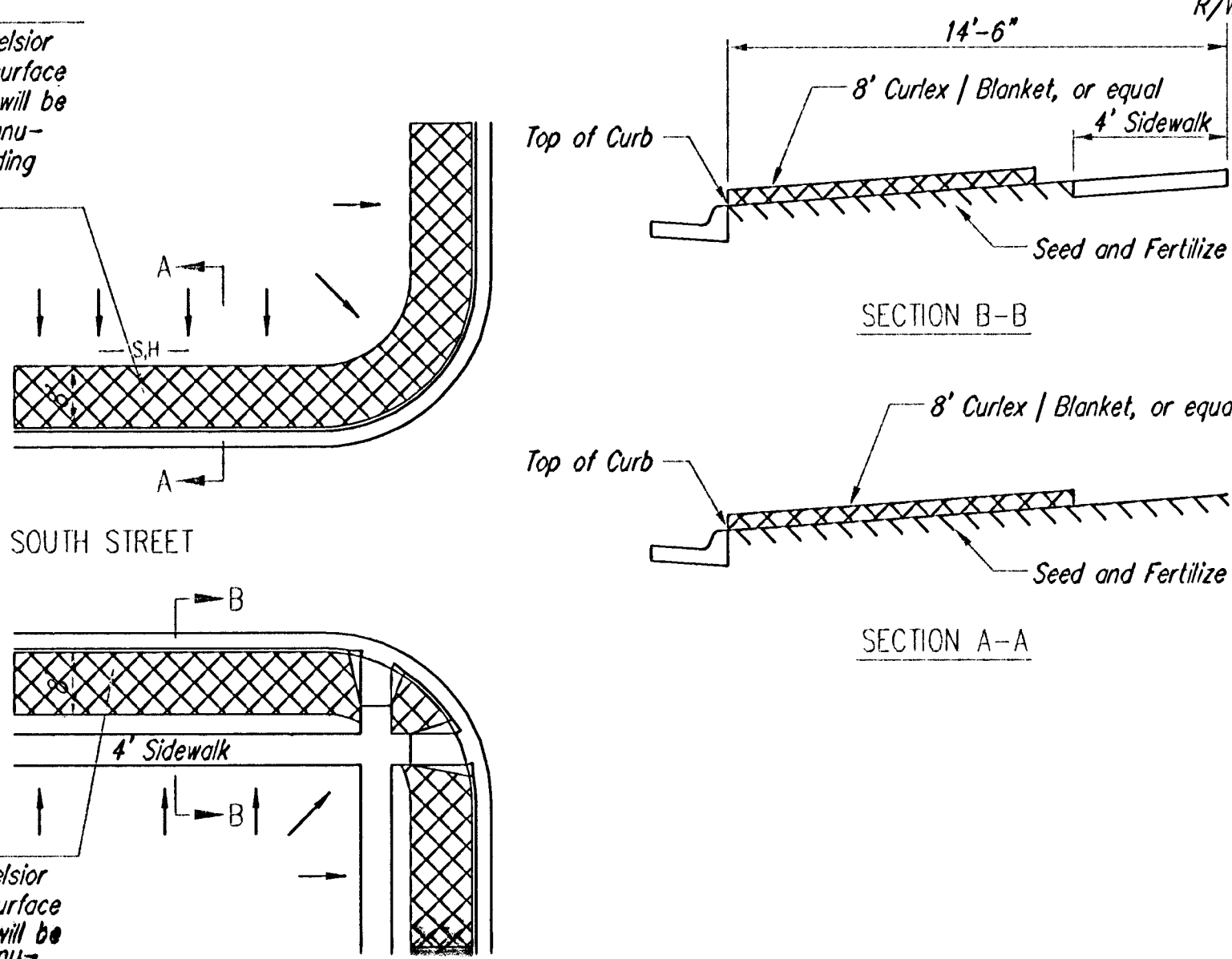
1. DURING THIS PHASE OF SUBDIVISION CONSTRUCTION, NEW STREETS ARE INSTALLED. ALL BMP'S INSTALLED DURING PHASE 1 AND 2 MUST STILL BE MAINTAINED. THE POINT OF COMPLIANCE NOW SHIFTS TO THE BACK OF CURB ALONG EACH STREET.
2. CURB OPENING INLET PROTECTION:  
A. SUMP AREAS – INLET PROTECTION SHALL BE PROVIDED WHEN STREET SUBGRADE WORK IS COMPLETED.  
B. NON-SUMP LOCATIONS – PROVIDE INLET PROTECTION AS SOON AS BASE COURSE ASPHALT IS INSTALLED, BEFORE THE SURFACE COURSE LIFT.
3. BMP'S WILL BE REQUIRED BACK OF CURB WHEREVER WATER CAN FLOW OVER THE CURB AND THE CURB HAS BEEN BACKFILLED TO WITHIN 3" OR LESS OF THE TOP OF CURB (SEE CURB BACKFILL DETAIL). FOR CURBS NOT YET ENTIRELY BACKFILLED (3" OR MORE BELOW TOP OF CURB), BMP'S WILL BE REQUIRED AT POINTS WHERE WATER BREAKS OVER CURB WHICH COULD RESULT IN THE PLACEMENT OF SEDIMENT IN THE GUTTER.
4. SEE DETAIL THIS SHEET ON BACK OF CURB PROTECTION.
5. THE BACK OF CURB PROTECTION SPECIFIED ON THIS PLAN MAY HAVE TO BE SUPPLEMENTED WITH HAYBALE OR SILT FENCE BMP'S AT LOCATIONS WHERE CONCENTRATED FLOW RESULTS IN SEDIMENT BEING CARRIED OVER THE EXCELSIOR MATS.
6. THE STREET CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING BACK OF CURB BMP'S.
7. THE INDIVIDUAL LOT OWNERS WILL BE RESPONSIBLE FOR MAINTAINING THE BACK OF CURB BMP'S IN FRONT OF THEIR LOTS UNTIL SUCH TIME AS ADJACENT DISTURBED EARTH IS STABILIZED WITH GRASS OR SOD.

PHASE 2 – INSTALLATION OF STORM SEWER

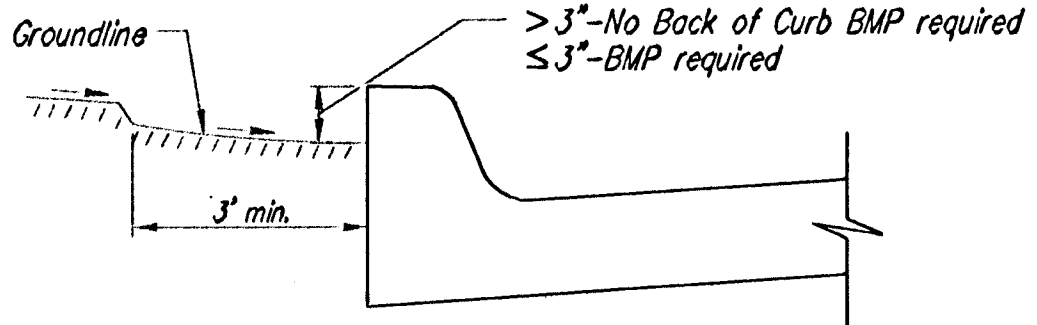


1. DURING THIS PHASE OF SUBDIVISION DEVELOPMENT, ALL BMP'S REQUIRED IN PHASE 1 SHALL REMAIN IN PLACE AND BE MAINTAINED.
2. AS NEW STORM SEWERS, WITH INLETS, ARE INSTALLED, THE STORM SEWERS MUST NOW BE PROTECTED SO ALL NEW INLETS BECOME POINTS OF COMPLIANCE.
3. AREA DRAINS – AS SOON AS WATER CAN FLOW INTO THESE DRAINS, HAYBALE OR SILT FENCE PROTECTION WILL BE INSTALLED AROUND THEM.
4. CURB OPENING INLETS – AS SOON AS WATER CAN FLOW INTO THESE DRAINS, INLET PROTECTION BMP'S MUST BE INSTALLED. SEE PHASE 3 – STREET CONSTRUCTION.
5. THE STORM SEWER CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING THESE BMP'S. IF WATER CANNOT FLOW INTO CURB INLETS UNTIL STREET CONSTRUCTION IS COMPLETE, THEN STREET CONTRACTOR WILL INSTALL INLET PROTECTION.
6. THE SUBDIVISION DEVELOPER WILL MAINTAIN THESE BMP'S ONCE INSTALLED.
7. ONCE ALL DISTURBED GROUND DRAINING TO AN INLET HAS BEEN RESTABILIZED WITH GRASS OR SOD, THE SUBDIVISION DEVELOPER WILL BE RESPONSIBLE FOR PERMANENTLY REMOVING THE INLET PROTECTION.

BMP-Install 8' wide Curlex / Excelsior Blanket, or equal, on prepared surface back of curb. Edge of blanket will be at back of curb. Install per manufacturer's recommendation, including staples.



BACK OF CURB PROTECTION DETAIL



CURB BACKFILL DETAIL

GENERAL NOTES:

1. THE INTENT OF ALL BEST MANAGEMENT PRACTICES (B.M.P.'S) IS TO PREVENT ERODED SOIL FROM ENTERING DITCHES, STORM SEWERS, OR ANY OTHER DRAINAGE FEATURE.
2. THIS SHEET IS INTENDED TO PROVIDE GUIDELINES AS TO WHAT TYPE OF BMP'S WILL BE INSTALLED DURING THE CONSTRUCTION PROCESS. CONTRACTORS ARE EXPECTED TO BID PROJECTS ACCORDINGLY.
3. BMP'S SHALL BE MAINTAINED DURING THE CONSTRUCTION PROCESS TO REMAIN EFFECTIVE. MAINTENANCE SHALL BE AS INDICATED ON THE BMP DETAIL SHEETS.
4. PERSONS DESTROYING BMP'S SHALL BE RESPONSIBLE FOR IMMEDIATELY REPAIRING THEM OR INSTALLING SUITABLE REPLACEMENT BMP'S.
5. THE DEVELOPMENT OF ANY SUBDIVISION THAT DISTURBS 5 ACRES OR MORE WILL REQUIRE A FEDERAL/STATE NPDES STORMWATER PERMIT. THE PREPARATION OF A STORMWATER POLLUTION PREVENTION PLAN IS REQUIRED. EROSION CONTROL BMP'S ARE REQUIRED. THE DETAILS SHOWN ON THIS SHEET ARE THE MINIMUM STANDARDS TO BE SHOWN ON POLLUTION PREVENTION PLAN.
6. FOR SUBDIVISIONS SMALLER THAN 5 ACRES, SOIL EROSION BMP'S ARE REQUIRED. ALSO, DEVELOPERS AND CONTRACTORS ARE ENCOURAGED TO DEVELOP POLLUTION PREVENTION PLANS FOR EACH PROJECT PRIOR TO CONSTRUCTION.
7. FAILURE TO USE AND MAINTAIN BMP'S IS A VIOLATION OF SECTION 16.32 OF THE CITY CODE AND WILL SUBJECT THE SUBDIVISION DEVELOPER AND CONTRACTORS TO THE PENALTIES PROVIDED THEREIN.
8. THE APPLICATION OF BMP'S SHOWN ON THIS SHEET IS FOR SITUATIONS NORMALLY ENCOUNTERED. FROM TIME TO TIME, SITUATIONS WILL ARISE THAT MAY REQUIRE A DIFFERENT BMP OTHER THAN THAT SHOWN. BMP'S, OTHER THAN THOSE SHOWN, MAY BE UTILIZED SO LONG AS THEY ARE EFFECTIVE AND MAINTAINED.
9. A STABILIZED EARTH SURFACE IS DEFINED AS ONE THAT IS HARD SURFACED WITH CONCRETE, ASPHALT, OR THE LIKE, OR ONE ON WHICH 70% OF THE GRASS HAS GERMINATED ON THE ENTIRE SURFACE.

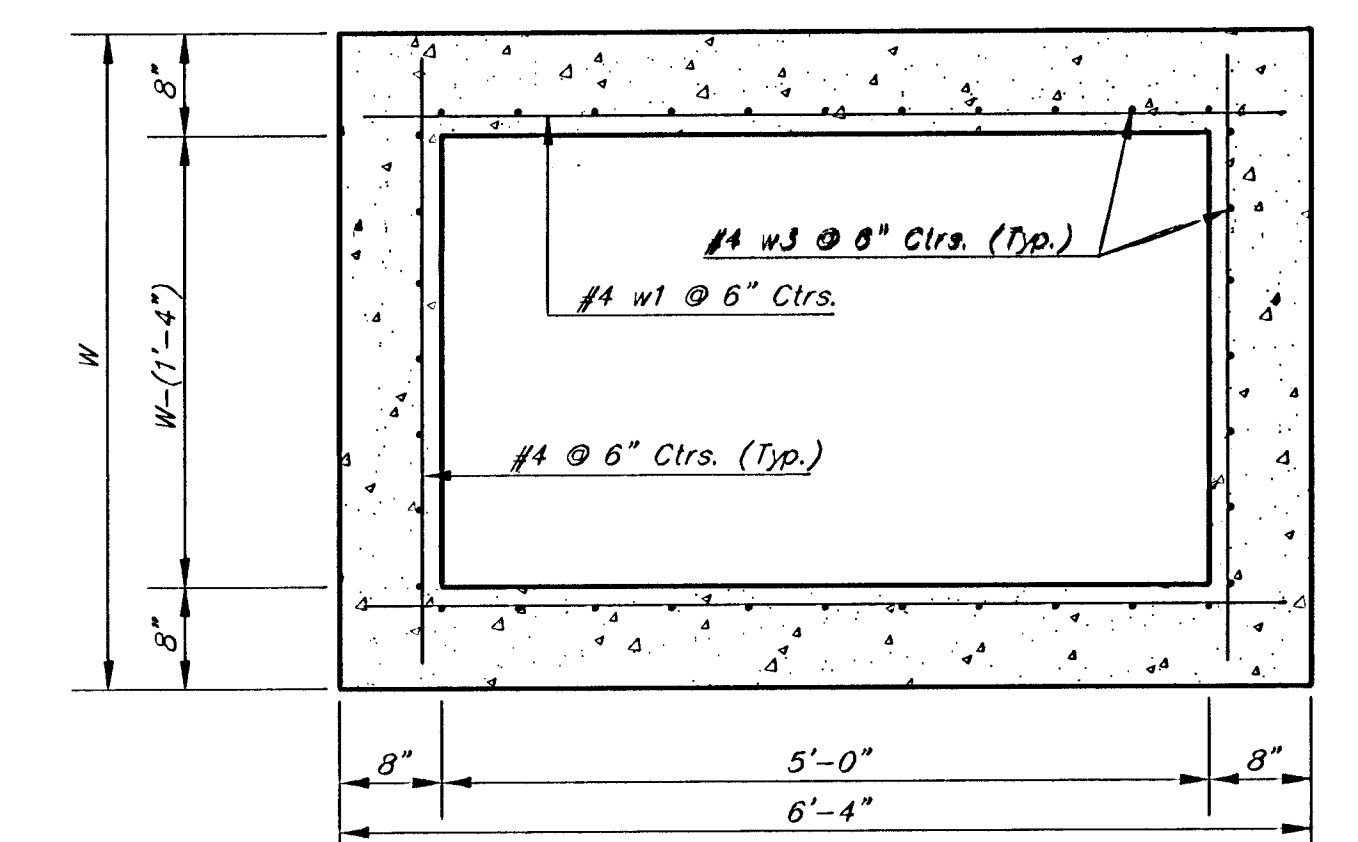
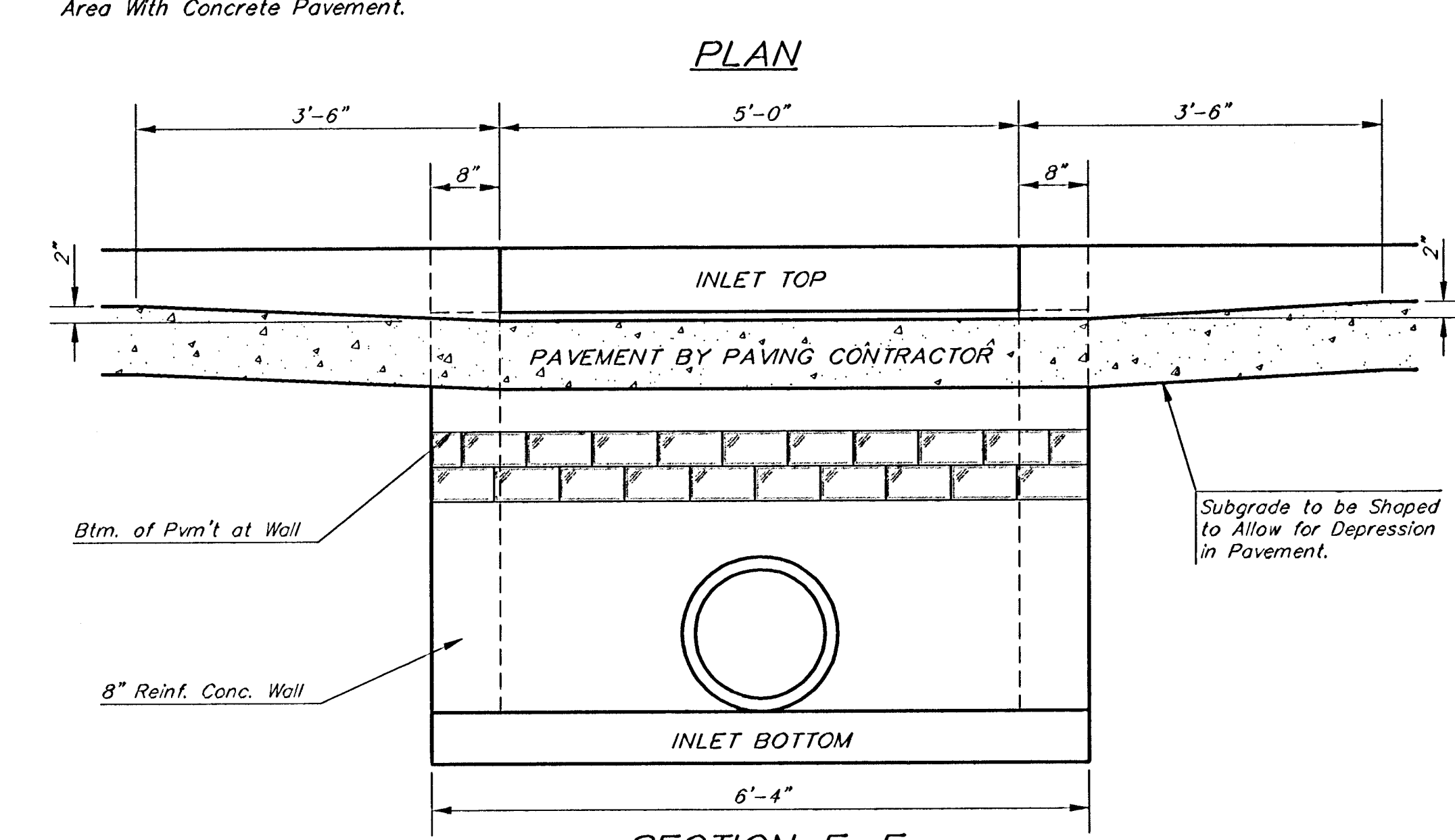
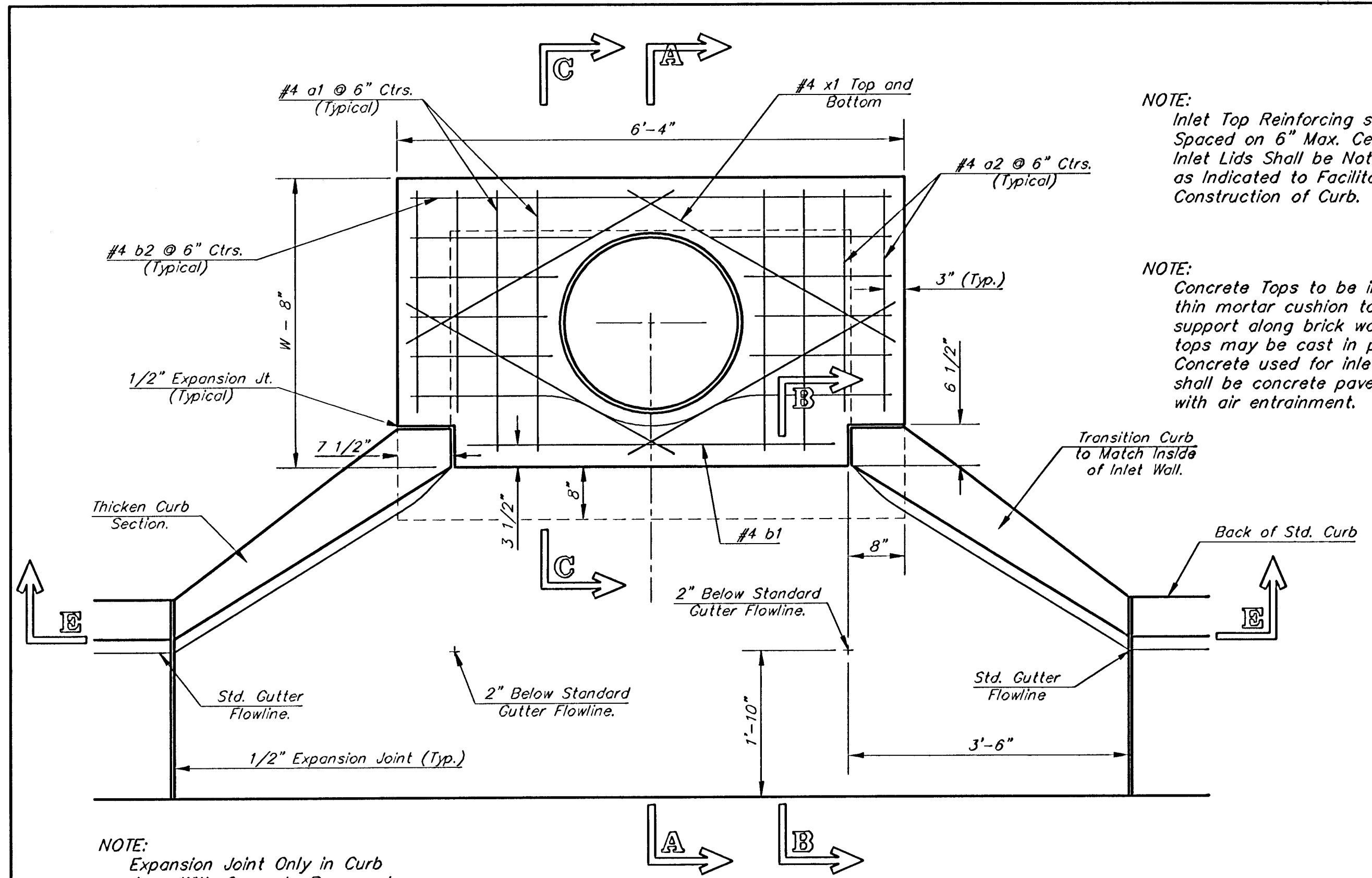


SOIL EROSION BMP'S  
SUBDIVISION  
DEVELOPMENT  
PROCESS

CHRISTOPHER M. CARRIER, P.E.  
STORM WATER ENGINEER

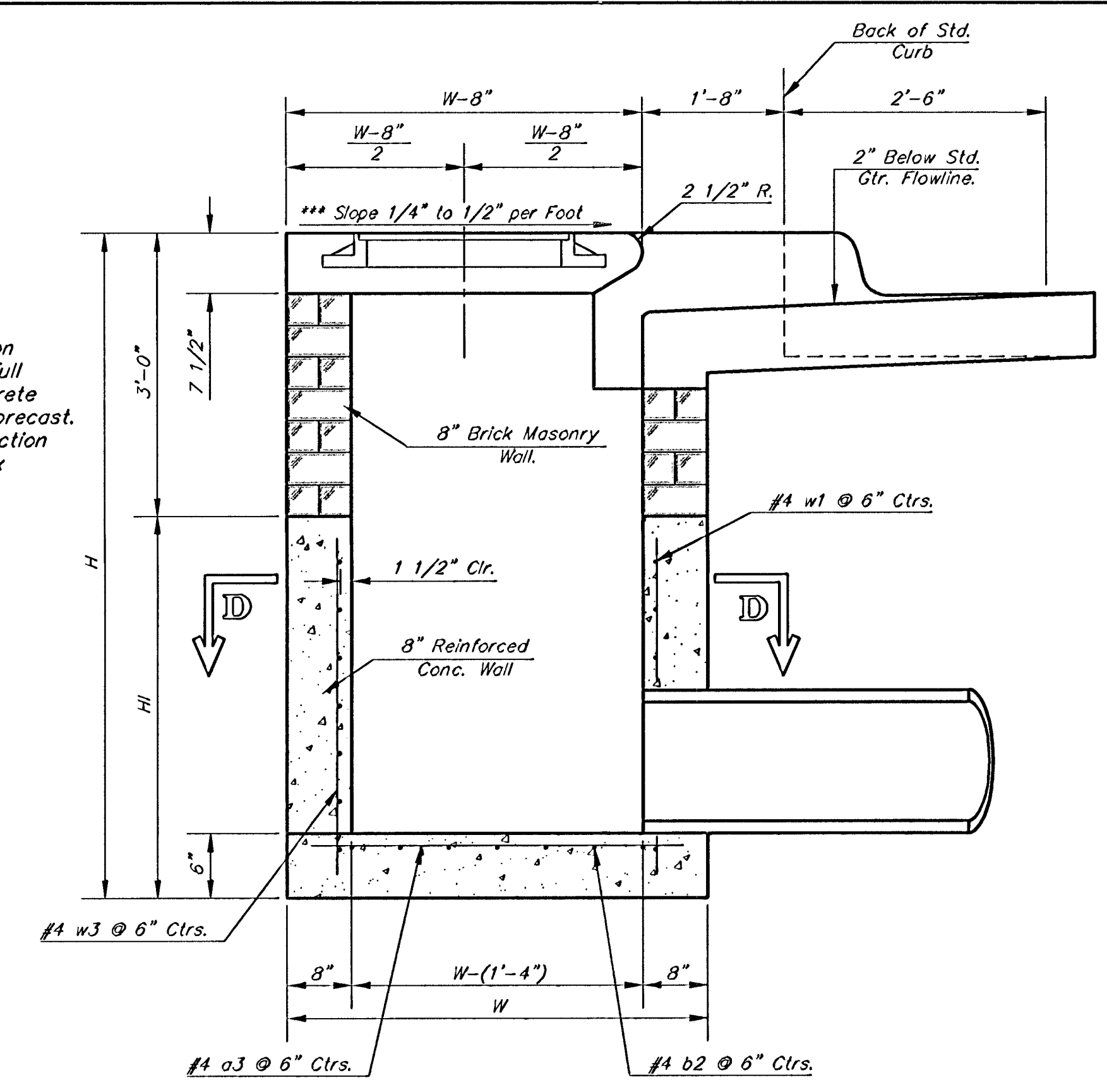
PROJECT NUMBER 468-83181 OCA NO. 751314

DATE FEB 2002 SHEET 7 OF 12



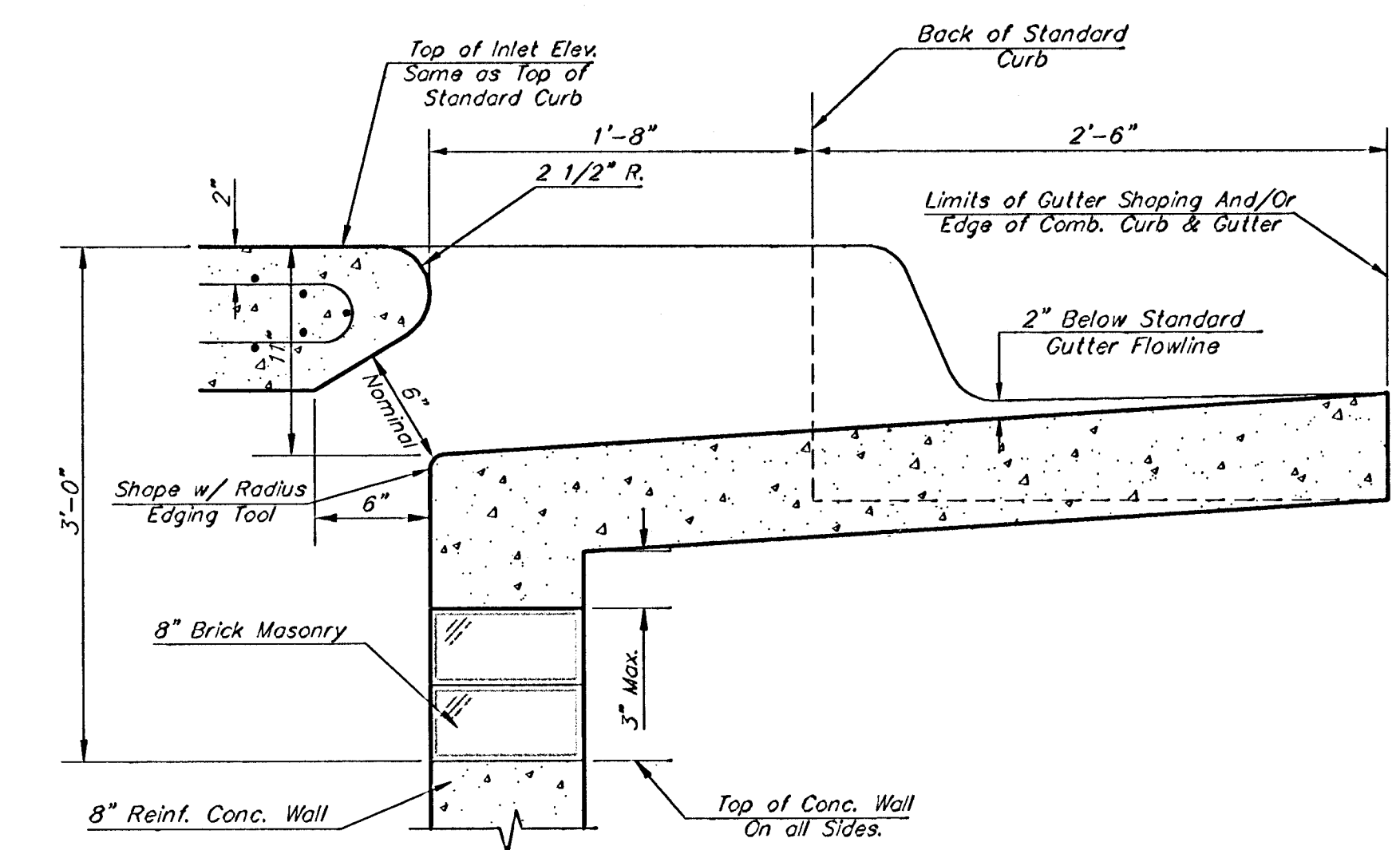
NOTE: Inlet Top Reinforcing shall be Spaced on 6" Max. Centers. Inlet Lids Shall be Notched Out as Indicated to Facilitate Construction of Curb.

NOTE: Concrete Tops to be installed on thin mortar cushion to insure full support along brick walls. Concrete tops may be cast in place or precast. Concrete used for inlet construction shall be concrete pavement mix with air entrainment.

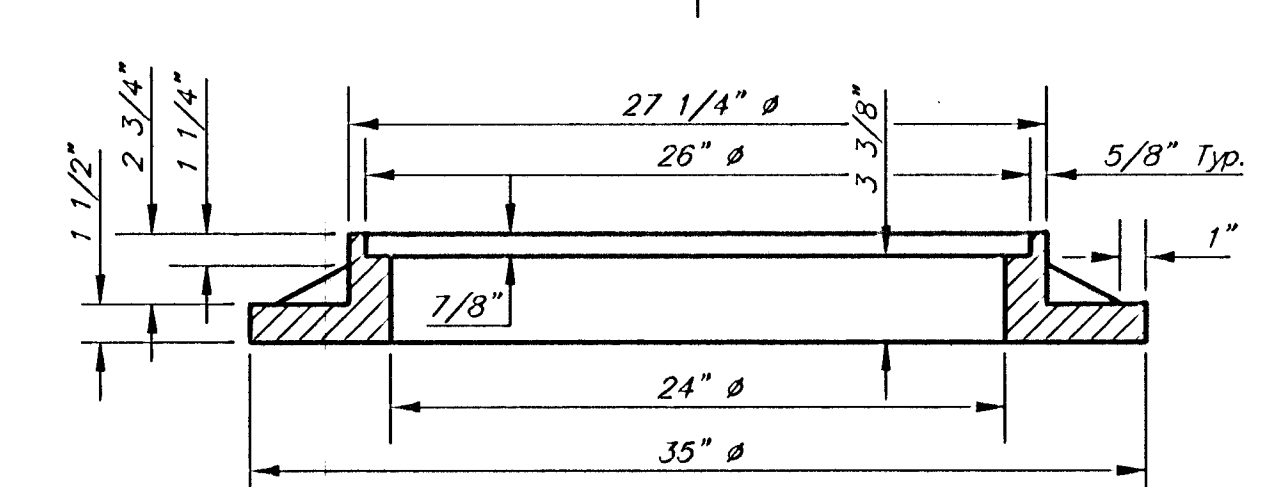
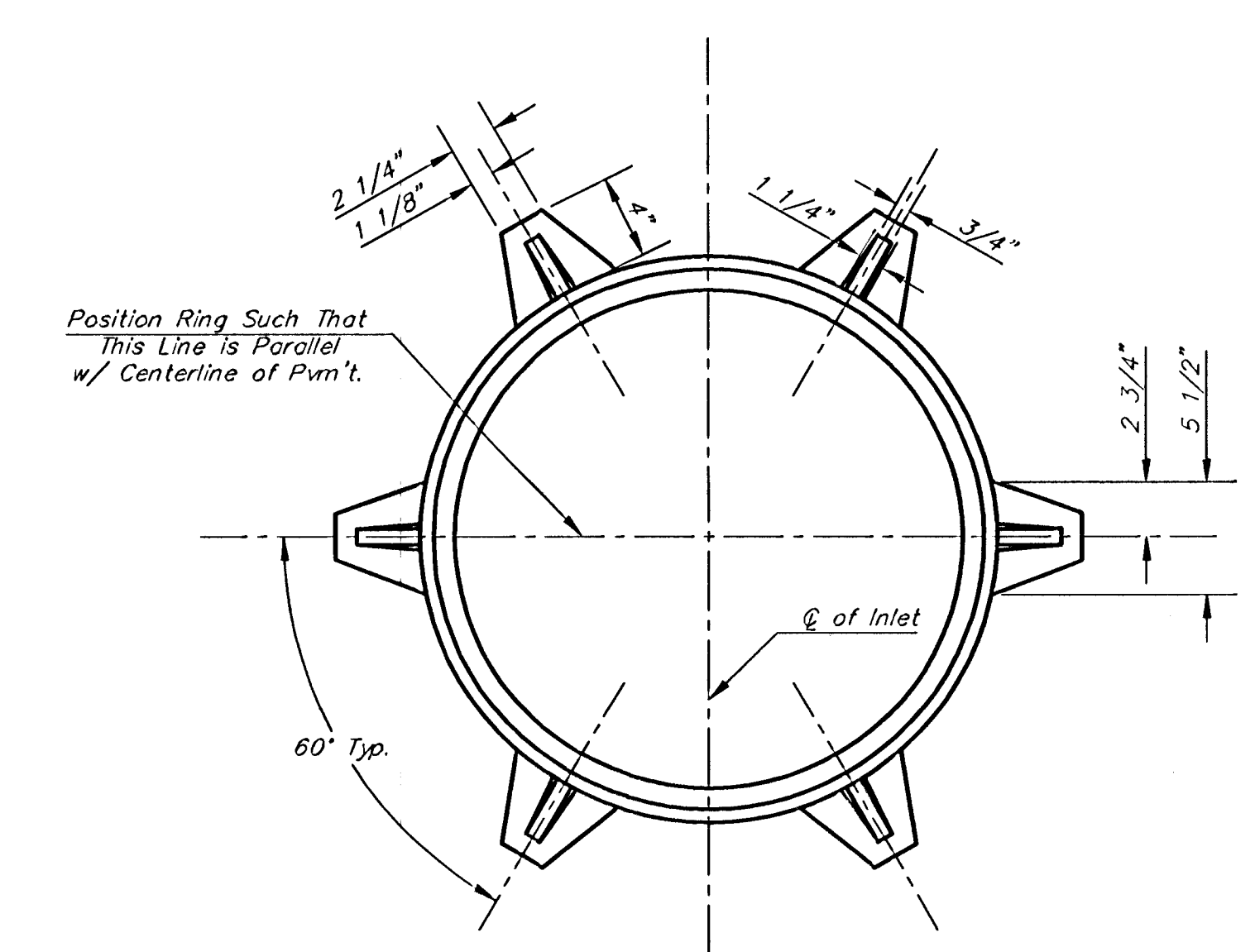


SECTION A-A

\*\*\*NOTE: Slope of Inlet tops to Match Sidewalk or Parking Slopes within Limits Indicated.



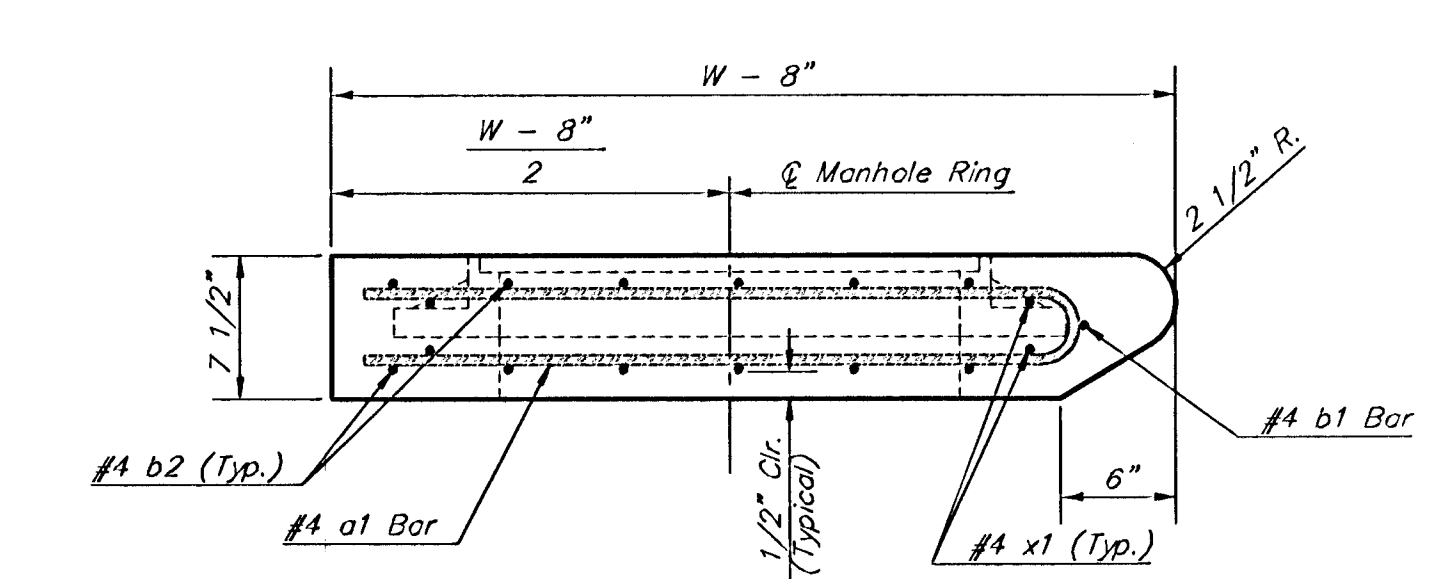
SECTION B-B



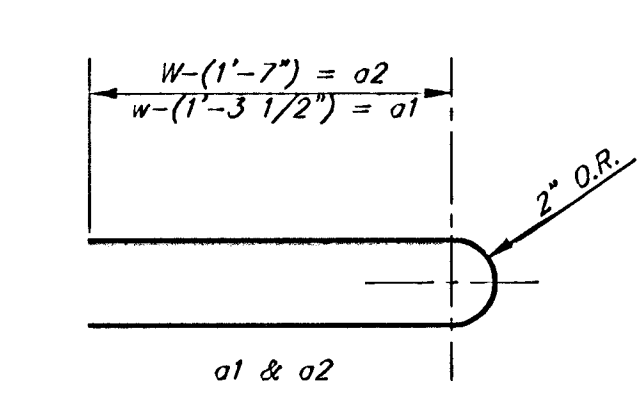
MANHOLE RING AND COVER

Weight = 180 Lbs.

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



SECTION C-C



BENDING DIAGRAM

| PRECAST SLAB AND FLOOR REINFORCING |      |     |        |     |        |     |        |     |        |     |        |
|------------------------------------|------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| MARK                               | SIZE | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH |
| a1                                 | #4   | 6   | 6'-7"  | 6   | 8'-7"  | 6   | 10'-7" | 6   | 12'-7" | 6   | 14'-7" |
| a2                                 | #4   | 4   | 6'-0"  | 4   | 8'-0"  | 4   | 10'-0" | 4   | 12'-0" | 4   | 14'-0" |
| a3                                 | #4   | 13  | 4'-1"  | 13  | 5'-1"  | 13  | 6'-1"  | 13  | 7'-1"  | 13  | 8'-1"  |
| b1                                 | #4   | 1   | 4'-9"  | 1   | 4'-9"  | 1   | 4'-9"  | 1   | 4'-9"  | 1   | 4'-9"  |
| b2                                 | #4   | 23  | 6'-1"  | 29  | 6'-1"  | 35  | 6'-1"  | 41  | 6'-1"  | 47  | 6'-1"  |
| w1                                 | #4   | 8   | 3'-10" | 8   | 4'-2"  | 8   | 4'-6"  | 8   | 4'-10" | 8   | 5'-2"  |

WALL REINFORCING

| MARK | SIZE | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH |
|------|------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| w1   | #4   | 1   | 6'-1"  | 1   | 6'-1"  | 1   | 6'-1"  | 1   | 6'-1"  | 1   | 6'-1"  |
| w2   | #4   | 1   | 4'-1"  | 1   | 5'-1"  | 1   | 6'-1"  | 1   | 7'-1"  | 1   | 8'-1"  |
| w3   | #4   | 32  | 2      | 36  | 2      | 40  | 2      | 44  | 2      | 48  | 2      |

\* Field Bend or Cut Reinforcing as Required for Clearance.  
 ① 1 (H - 12") (H - 21") Rounded down to nearest 0.5"  
 ② H - 3"

| W     | PRE-CAST TOP SIZE      | PIPE SIZE     | CU. YD. CONC. |
|-------|------------------------|---------------|---------------|
| 4'-4" | 3'-8" x 6'-4" x 7 1/2" | 21" & SMALLER | 0.38±         |
| 5'-4" | 4'-8" x 6'-4" x 7 1/2" | 24" & 30"     | 0.51±         |
| 6'-4" | 5'-8" x 6'-4" x 7 1/2" | 36" & 42"     | 0.64±         |
| 7'-4" | 6'-8" x 6'-4" x 7 1/2" | 48" & 54"     | 0.77±         |
| 8'-4" | 7'-8" x 6'-4" x 7 1/2" | 60" & 66"     | 0.90±         |

Revised - Feb. 16, 1989

CITY OF WICHITA STANDARD TYPE 1A

**Curb Inlet Details**

INLET OPENING = 6" X 5'-0"

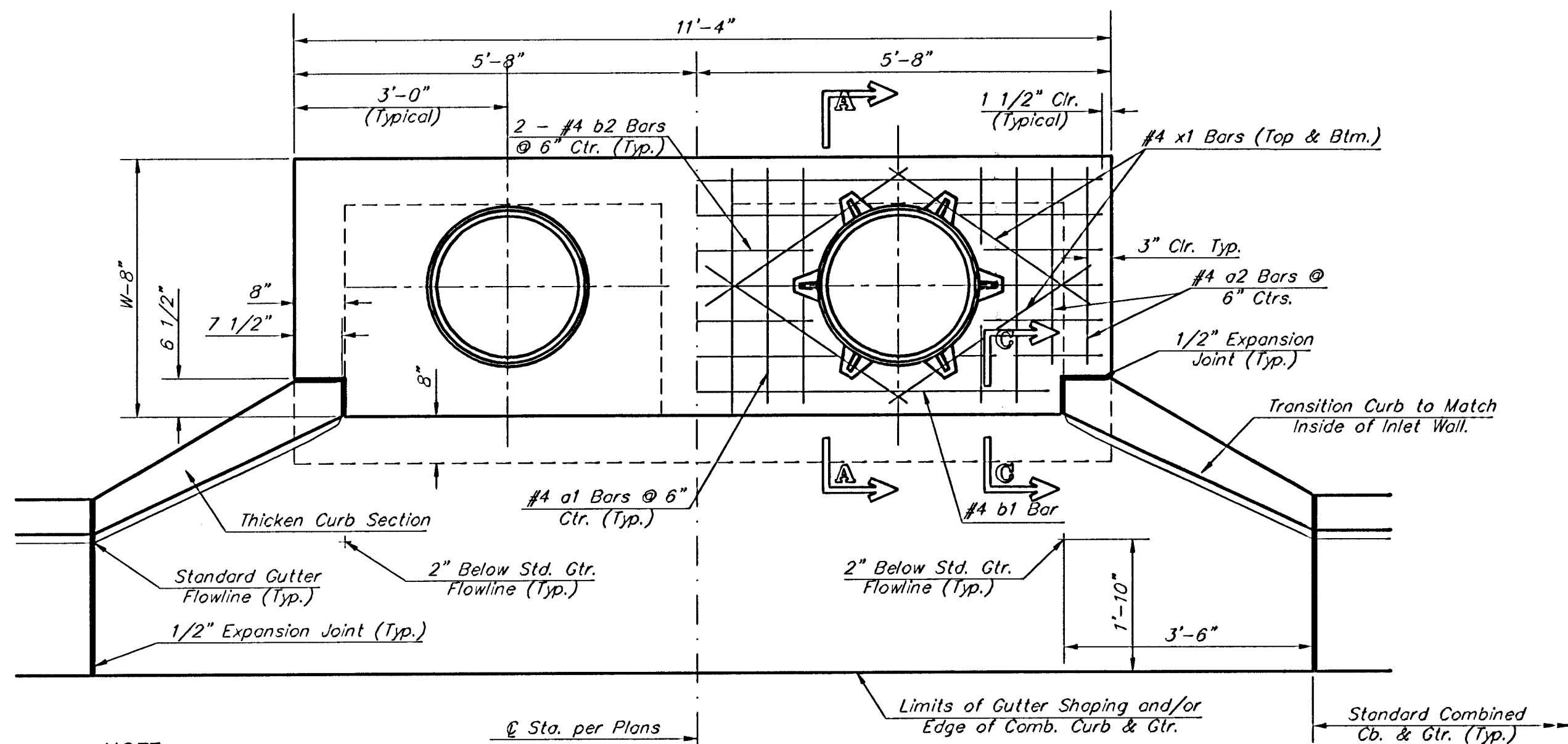
BAUGHMAN COMPANY P.A.

ENGINEERING, SURVEYING, & PLANNING

315-282-7271 • 315 ELLIS • WICHITA, KANSAS 67211

PROJECT NUMBER  
488-83181

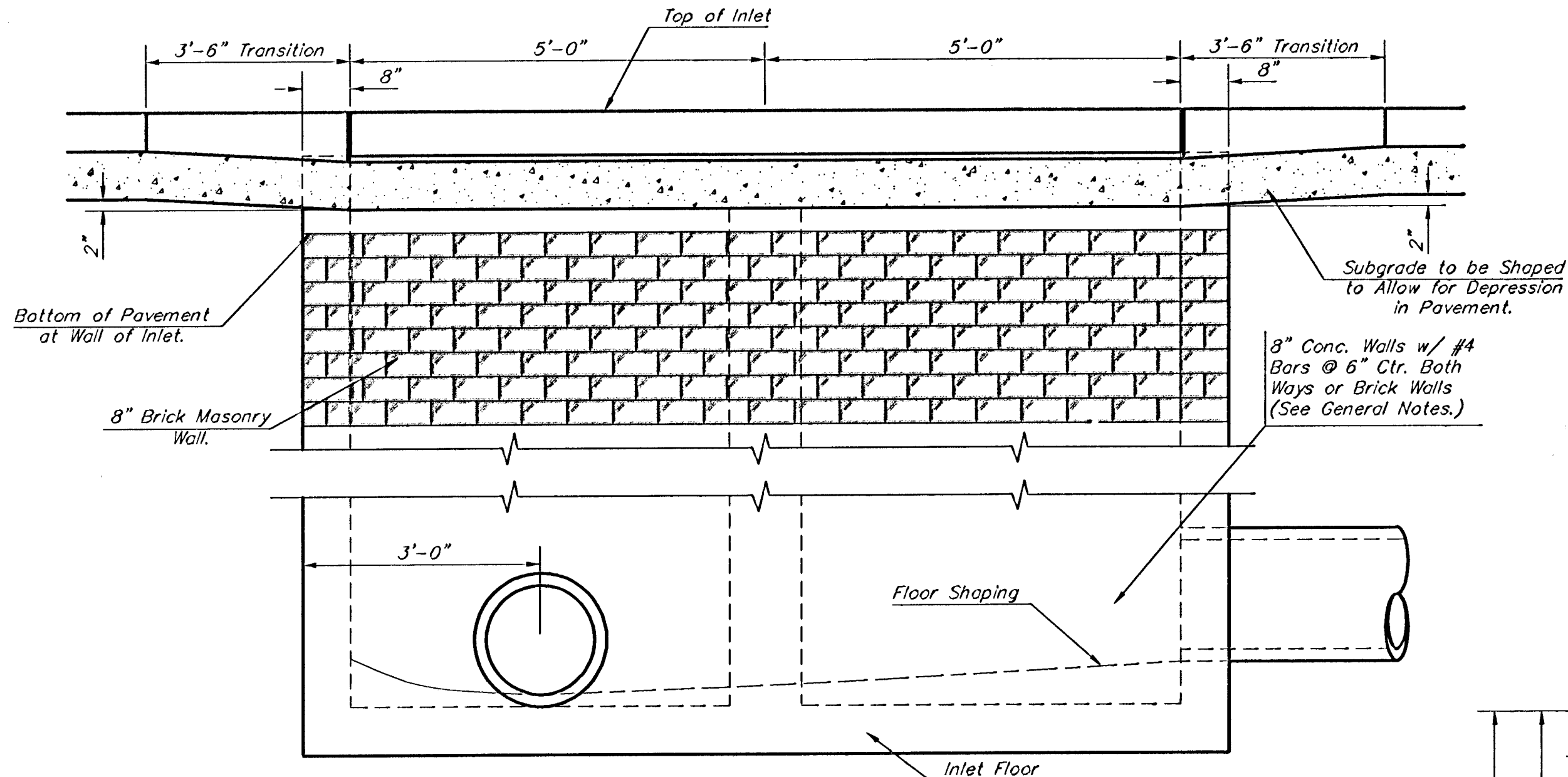
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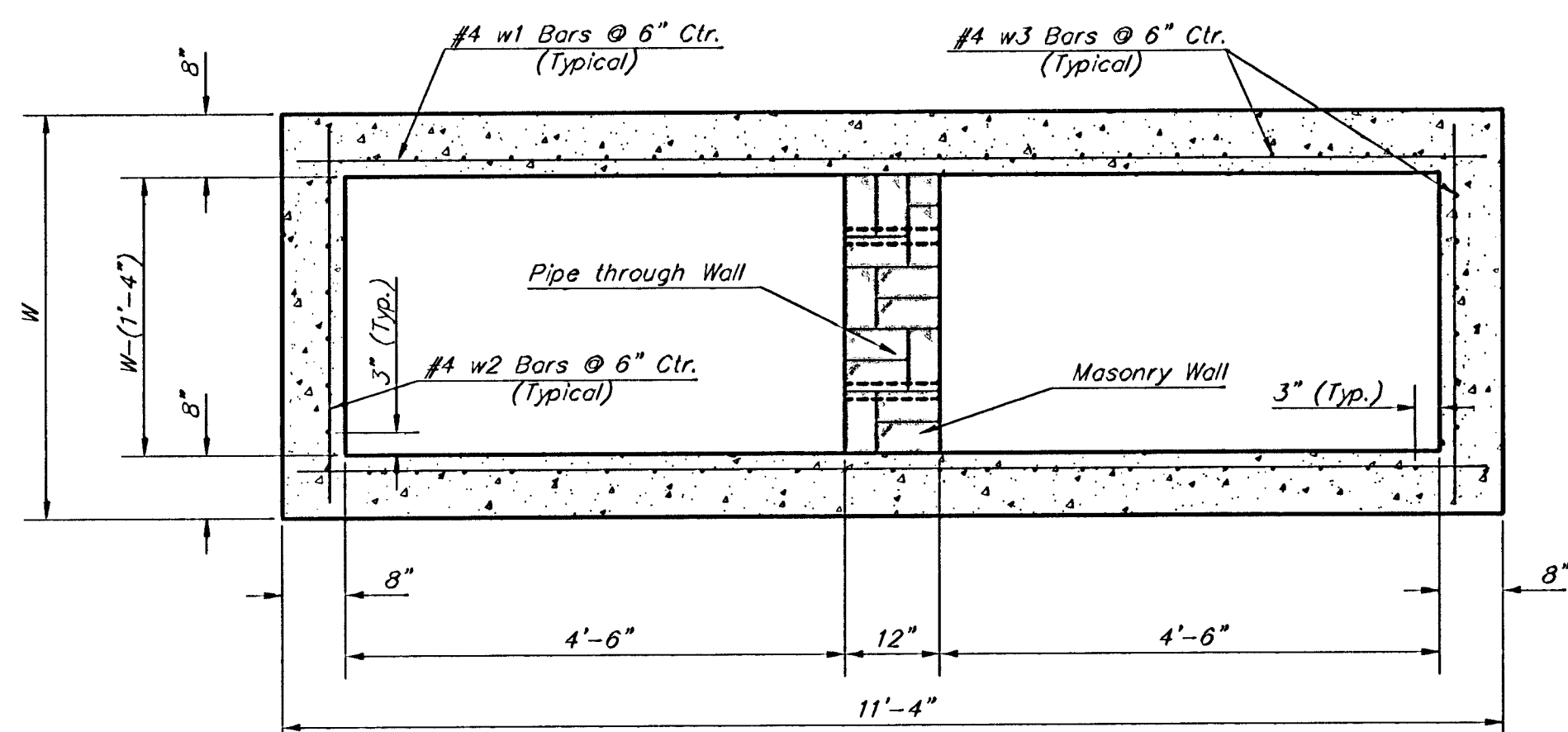
NOTE:  
Expansion Joint Only in Curb Area with Concrete Pavement.

### PLAN

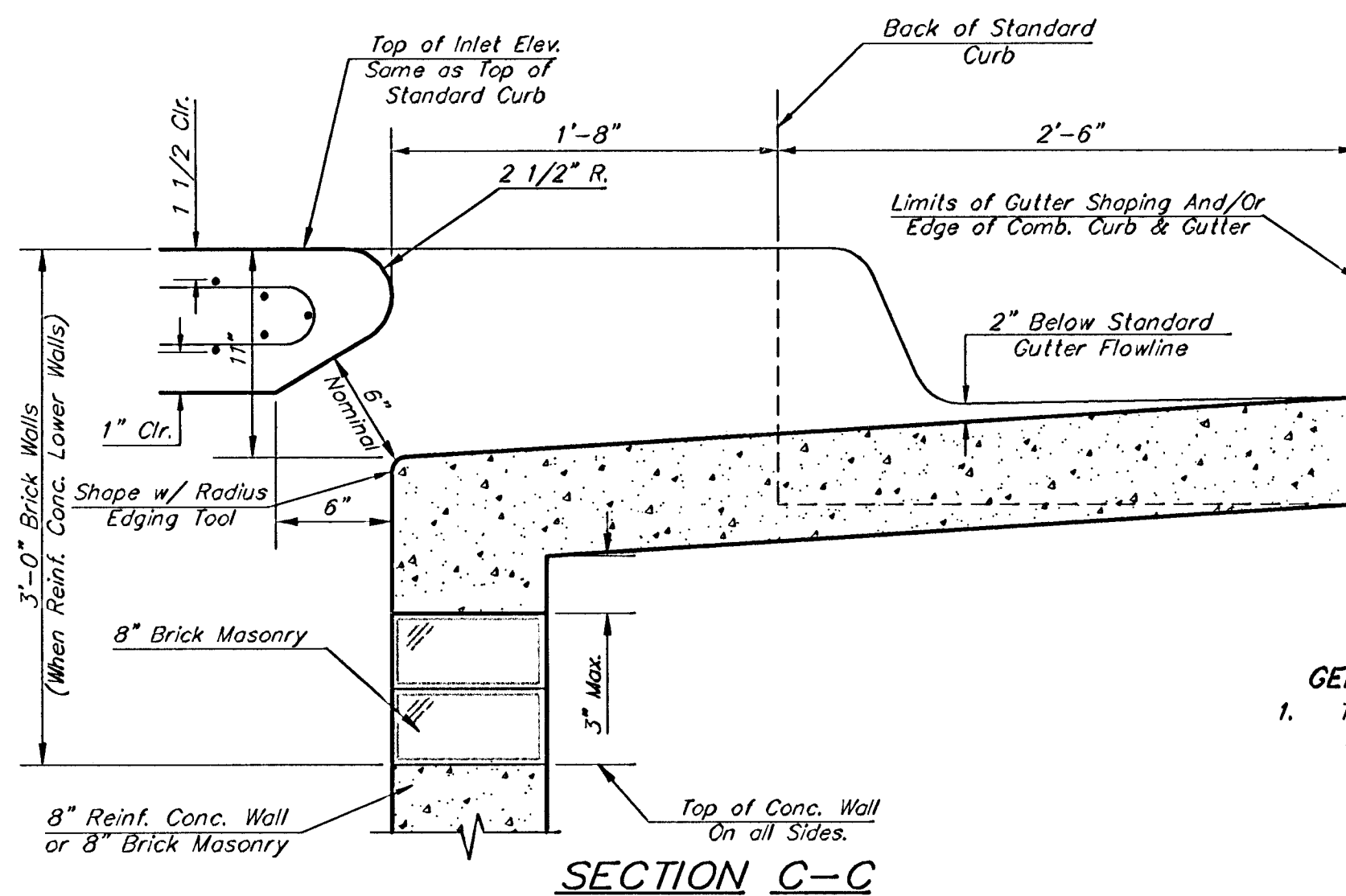
\*Left Side Shown Without Slab Reinforcing,  
Right Side Shown With Slab Reinforcing



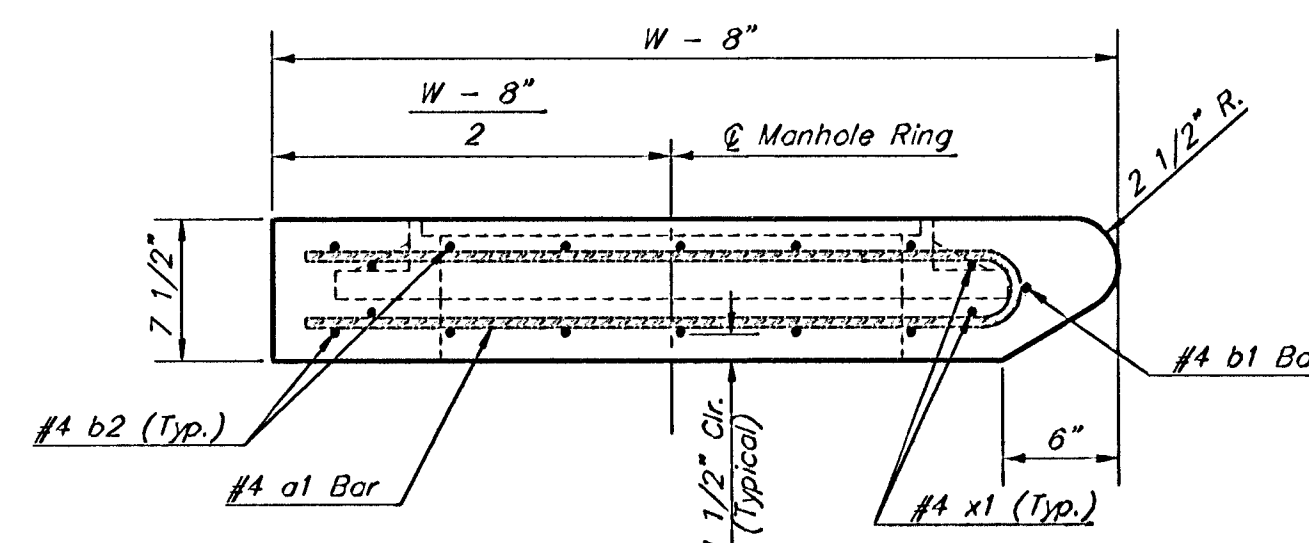
### ELEVATION



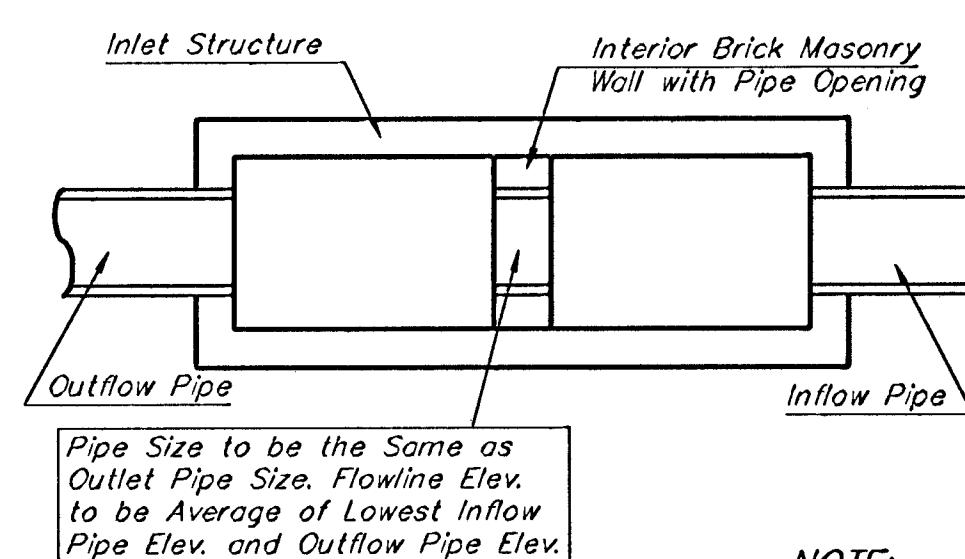
### SECTION B-B



### SECTION C-C

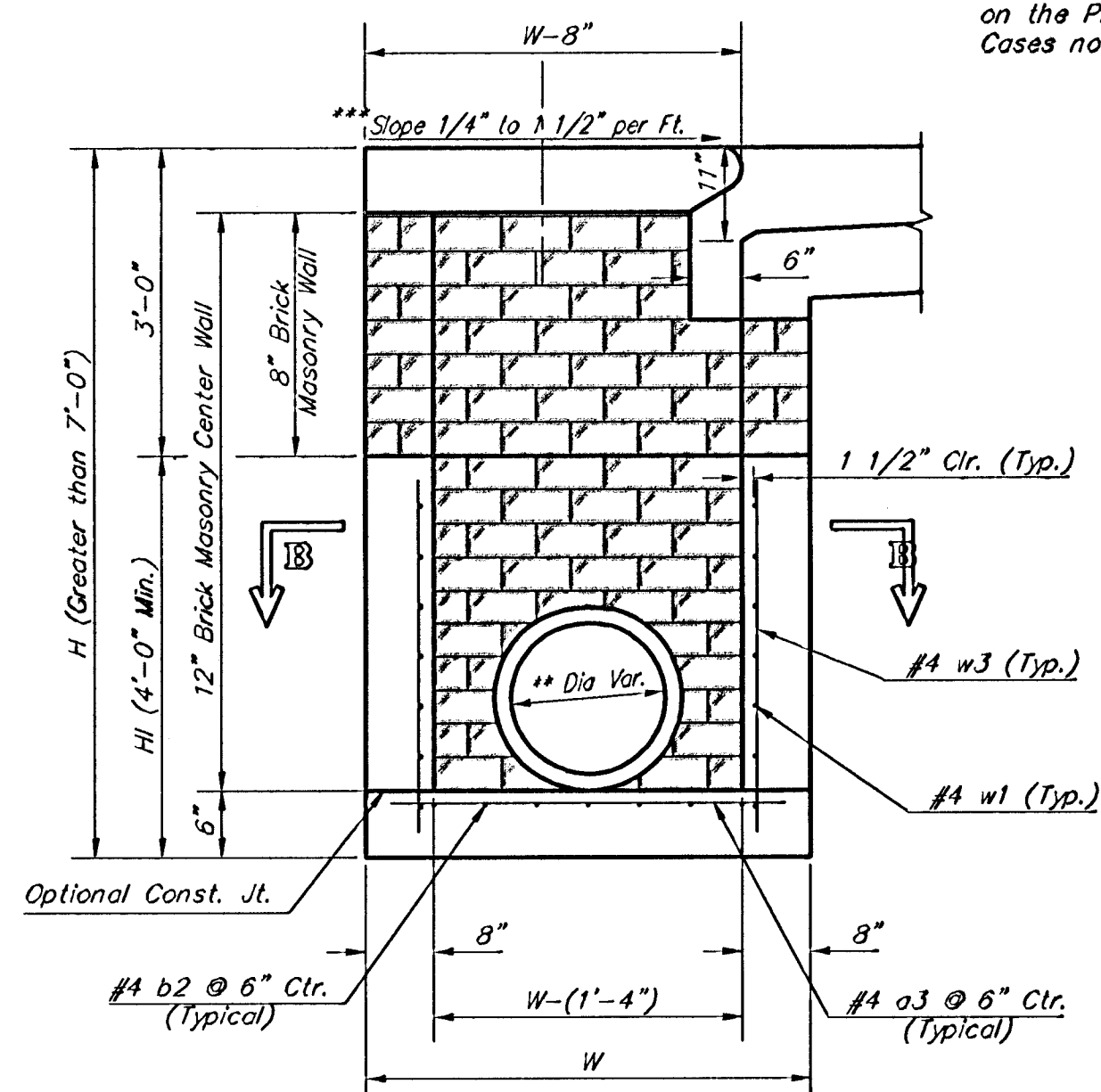


### SECTION A-A

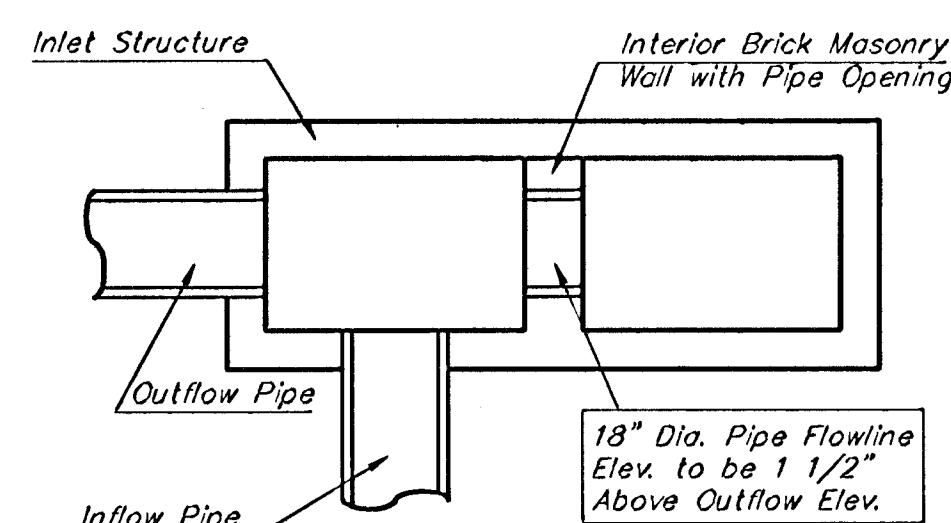


### CASE I

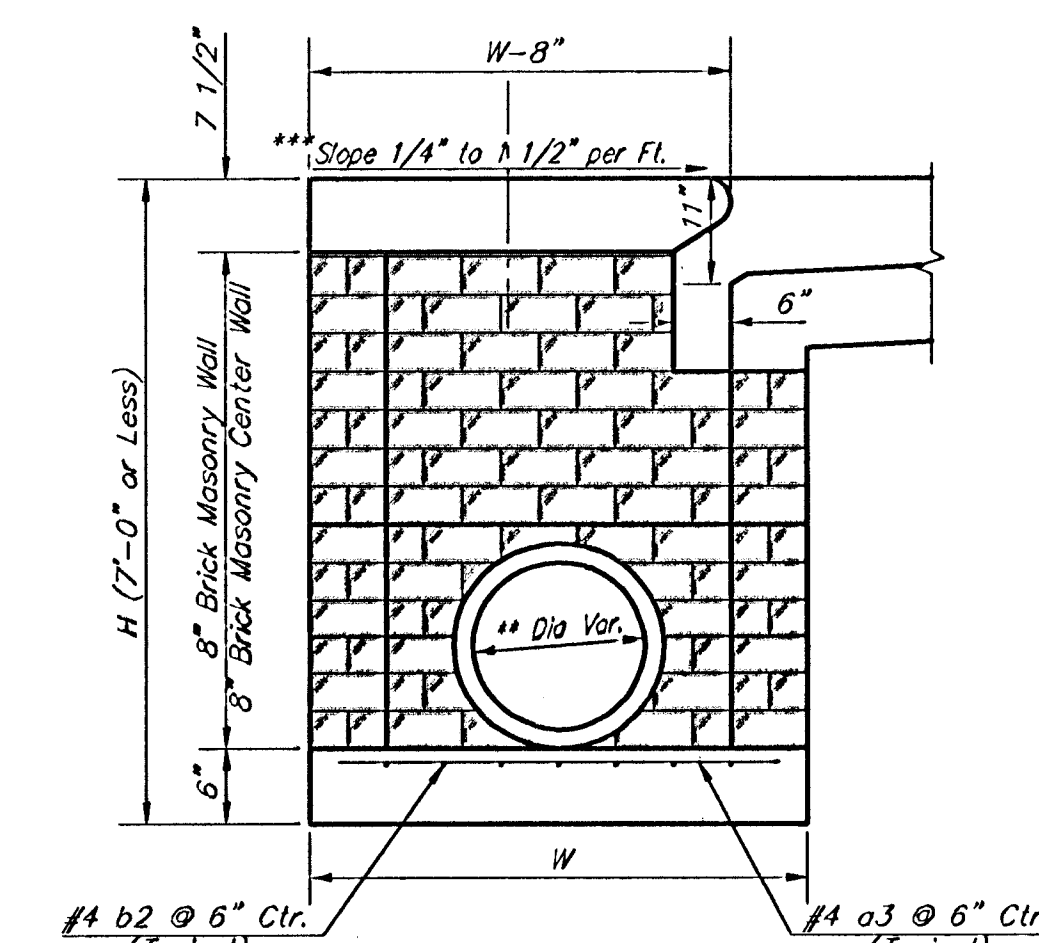
NOTE:  
Center Wall Pipe Size shall be as Specified in Inlet Construction Notes on the Plan/Profile Sheets for those Cases not Shown Here.



### TYPICAL INLET SECTION AT CENTER WALL (Reinforced Concrete Walls)



### CASE II



### TYPICAL INLET SECTION AT CENTER WALL (Masonry Walls)

#### NOTES:

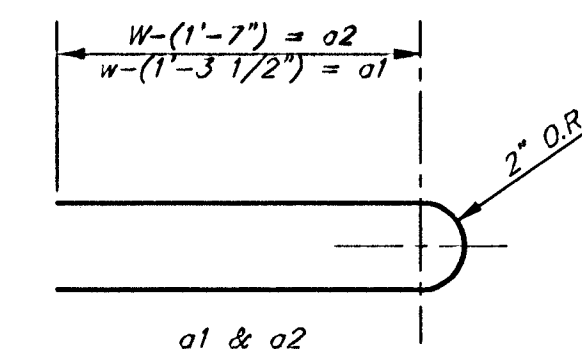
- \*\* A center wall opening shall be provided by means of a section of reinforced concrete pipe. See Case I and Case II above.
- \*\*\* Slope of inlet tops to match sidewalk of parking slopes within limits indicated

| PRECAST SLAB AND FLOOR REINFORCING |      |           |        |           |        |           |        |           |        |           |        |
|------------------------------------|------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| MARK                               | SIZE | W = 4'-4" |        | W = 5'-4" |        | W = 6'-4" |        | W = 7'-4" |        | W = 8'-4" |        |
|                                    |      | NO.       | LENGTH | NO.       | LENGTH | NO.       | LENGTH | NO.       | LENGTH | NO.       | LENGTH |
| * a1                               | #4   | 13        | 6'-7"  | 13        | 8'-7"  | 13        | 10'-7" | 13        | 12'-7" | 13        | 14'-7" |
| a2                                 | #4   | 4         | 6'-0"  | 4         | 8'-0"  | 4         | 10'-0" | 4         | 12'-0" | 4         | 14'-0" |
| o3                                 | #4   | 23        | 4'-1"  | 23        | 5'-1"  | 23        | 6'-1"  | 23        | 7'-1"  | 23        | 8'-1"  |
| b1                                 | #4   | 1         | 9'-9"  | 1         | 9'-9"  | 1         | 9'-9"  | 1         | 9'-9"  | 1         | 9'-9"  |
| * b2                               | #4   | 23        | 11'-1" | 29        | 11'-1" | 35        | 11'-1" | 41        | 11'-1" | 47        | 11'-1" |
| x1                                 | #4   | 16        | 3'-10" | 16        | 4'-2"  | 16        | 4'-6"  | 16        | 4'-10" | 16        | 5'-2"  |
| WALL REINFORCING                   |      |           |        |           |        |           |        |           |        |           |        |
| MARK                               | SIZE | W = 4'-4" |        | W = 5'-4" |        | W = 6'-4" |        | W = 7'-4" |        | W = 8'-4" |        |
|                                    |      | NO.       | LENGTH | NO.       | LENGTH | NO.       | LENGTH | NO.       | LENGTH | NO.       | LENGTH |
| w1                                 | #4   | 1         | 11'-1" | 1         | 11'-1" | 1         | 11'-1" | 1         | 11'-1" | 1         | 11'-1" |
| w2                                 | #4   | 1         | 4'-1"  | 1         | 5'-1"  | 1         | 6'-1"  | 1         | 7'-1"  | 1         | 8'-1"  |
| w3                                 | #4   | 52        | 2      | 56        | 2      | 60        | 2      | 64        | 2      | 68        | 2      |

\* Field Band or Cut Reinforcing as Required for Clearance.  
① 4 (H - 12") (H - 21") Rounded down to nearest 0.5"  
② H - 3"

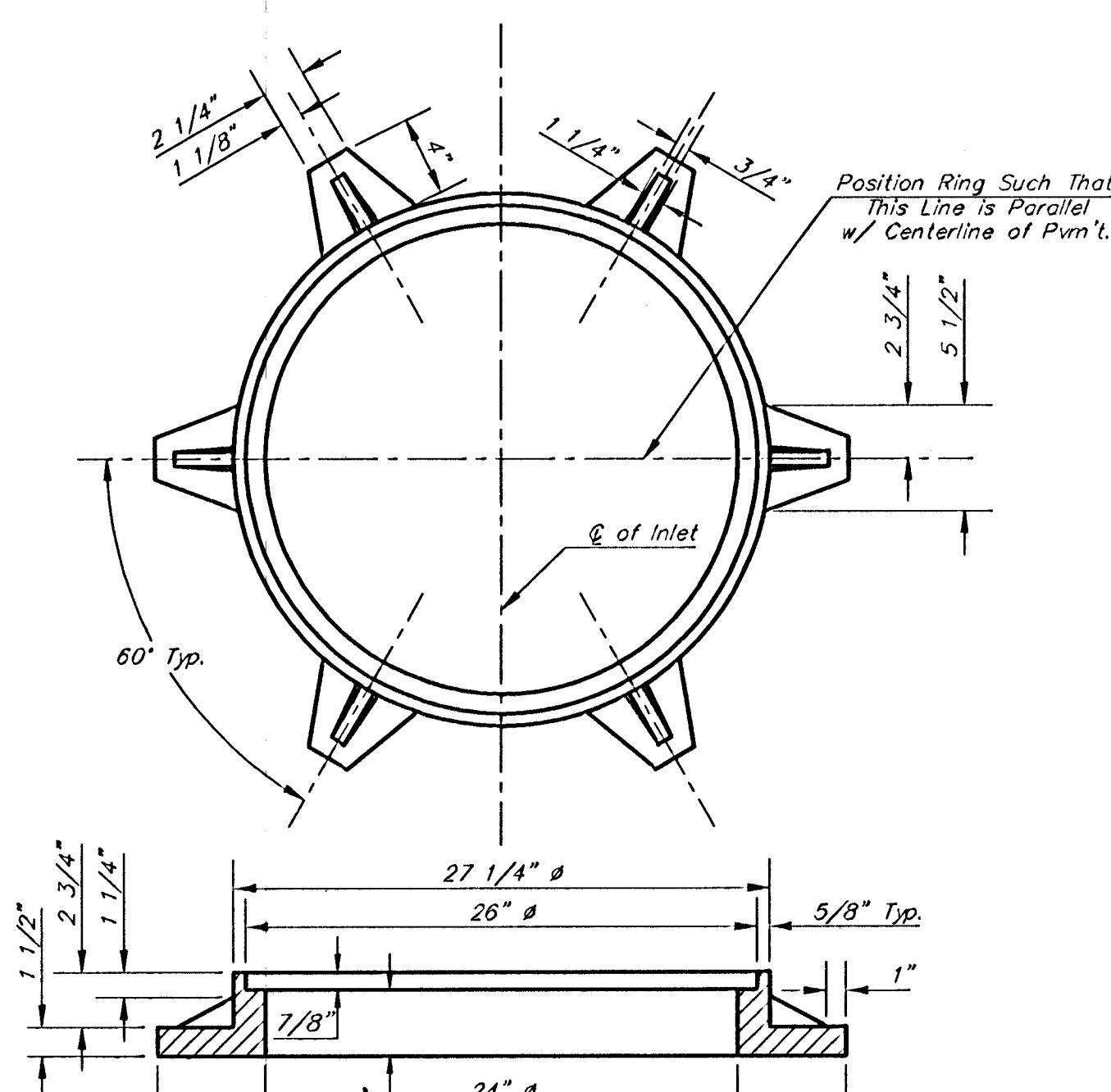
#### GENERAL NOTES:

- The contractor shall be required to construct 8" brick masonry walls between the concrete inlet base and top on this inlet when W=6'-4" or less and H=7'-0" or less. When W is greater than 6'-4" and H is less than 7'-0" the outside inlet walls below the brick stack shall be reinforced concrete construction and the center wall shall be of masonry construction as shown for the masonry wall option.
- Inlet invert shall be shaped with 8 sack sand mix concrete to create flow channels and to increase hydraulic efficiency such that the inlet will be self cleaning between all inlet and/or outlet pipes.
- Concrete tops to be installed on thin mortar cushion to insure full support along brick walls. Concrete tops may be cast in place or precast. Concrete used for inlet construction shall be concrete pavement mix.
- Inlet top reinforcing shall be spaced on 6" max. center. Inlet lids shall be notched out as indicated to facilitate construction of curb. Bars in inlet top to be field bent or cut to clear manhole ring.
- The ends of all pipes installed in inlets shall be cut off flush with the inside face of the inlet wall.



### BENDING DIAGRAM

| W     | PRE-CAST TOP SIZE   | PIPE SIZE     | CU. YD. CONC. |
|-------|---------------------|---------------|---------------|
| 4'-4" | 3'-8" 11'-4" 7 1/2" | 21" & SMALLER | 0.83±         |
| 5'-4" | 4'-8" 11'-4" 7 1/2" | 24" & 30"     | 1.09±         |
| 6'-4" | 5'-8" 11'-4" 7 1/2" | 36" & 42"     | 1.35±         |
| 7'-4" | 6'-8" 11'-4" 7 1/2" | 48" & 54"     | 1.61±         |
| 8'-4" | 7'-8" 11'-4" 7 1/2" | 60" & 66"     | 1.87±         |



### MANHOLE RING AND COVER

Weight = 180 lbs.

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

Revised - Feb. 16, 1989

### CITY OF WICHITA STANDARD TYPE 1A Curb Inlet Details

INLET OPENING = 8" X 10'-0"

### BAUGHMAN COMPANY P.A. ENGINEERING, SURVEYING, & PLANNING

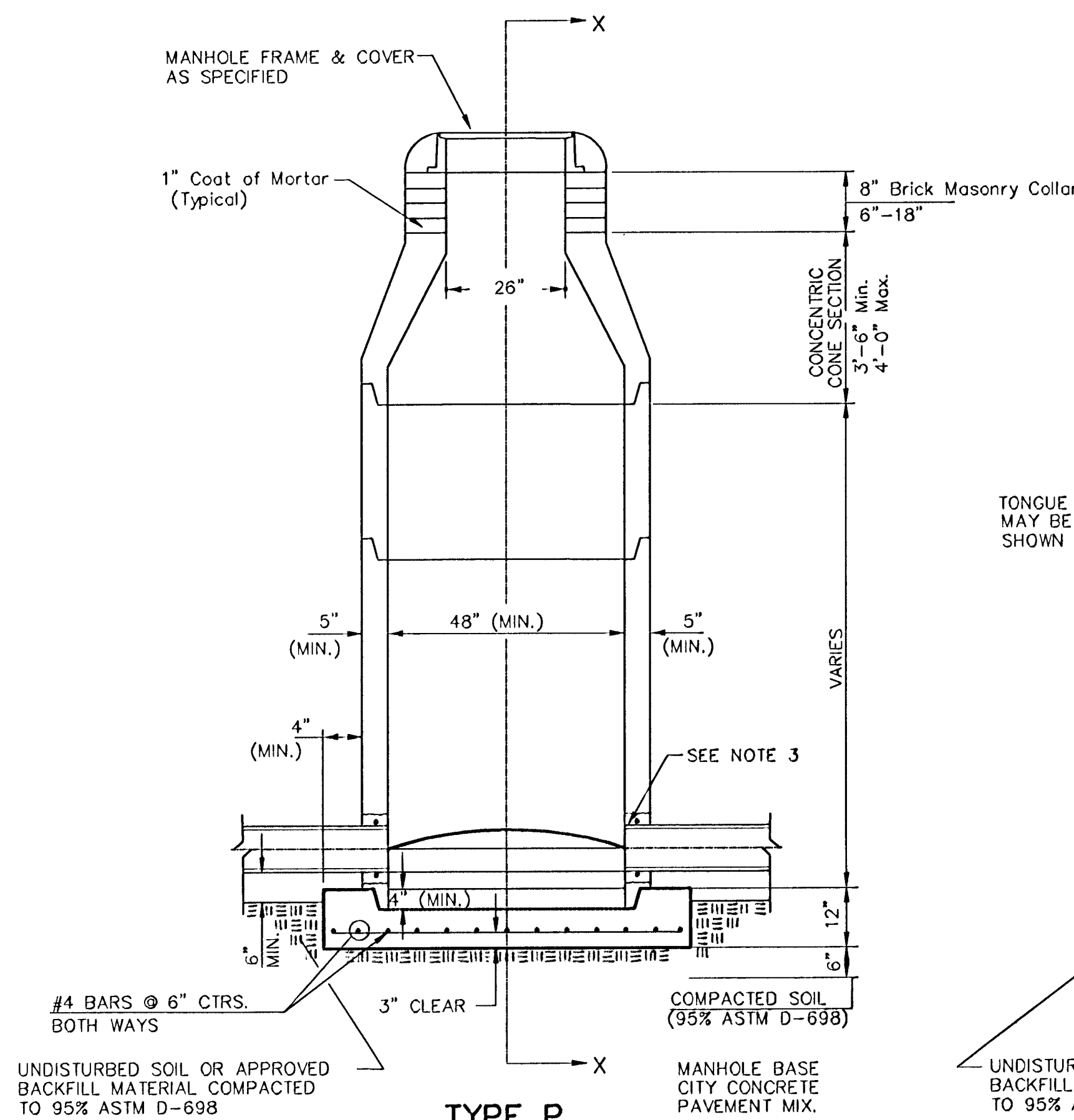
318-262-7271 • 315 ELLIS • WICHITA, KANSAS 67211

| DESIGN | DRAWN | APPROVED | DATE    | SCALE | SHEET |
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|        | Staff |          | 2/20/02 | NONE  | 9     |
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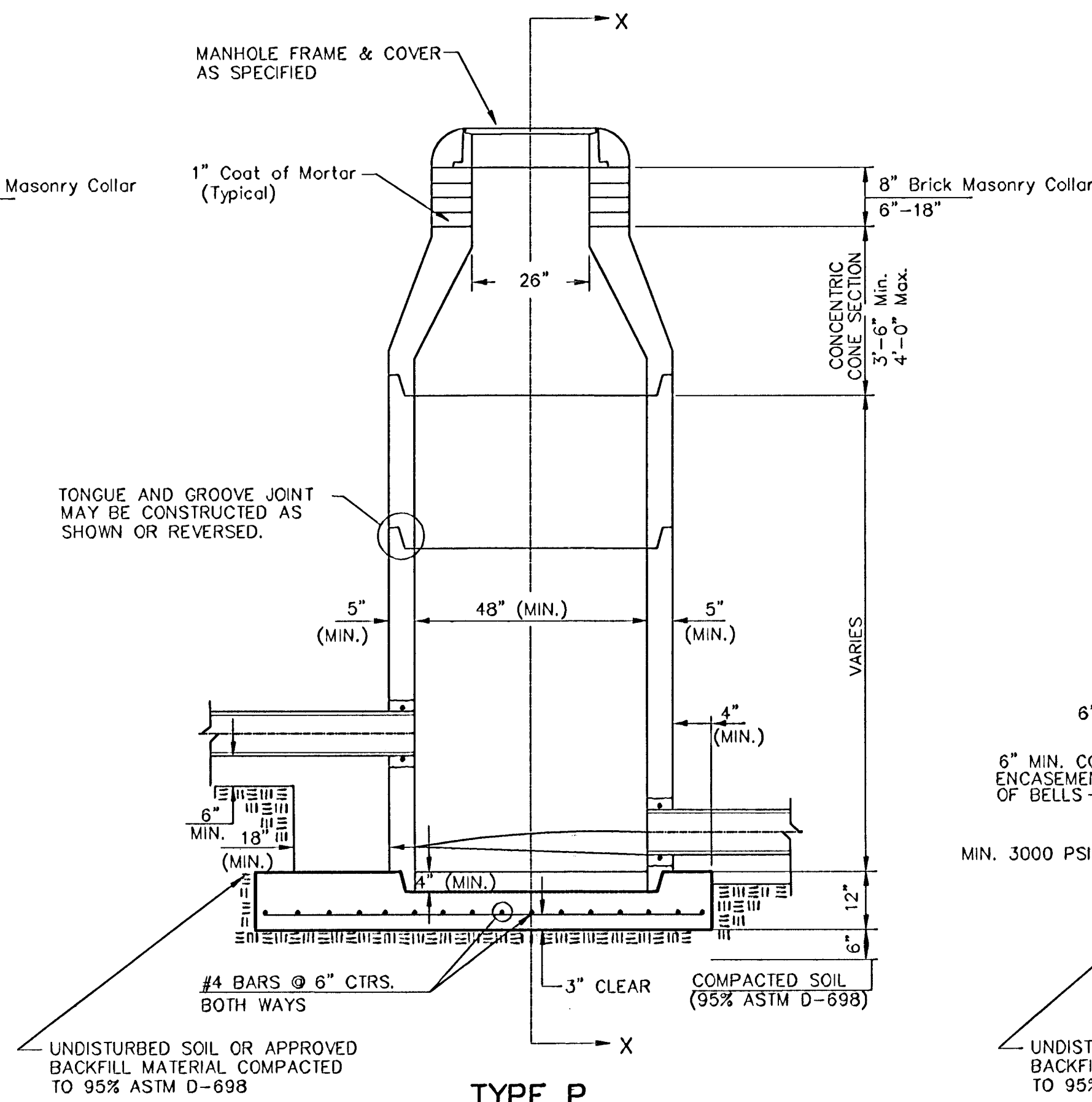
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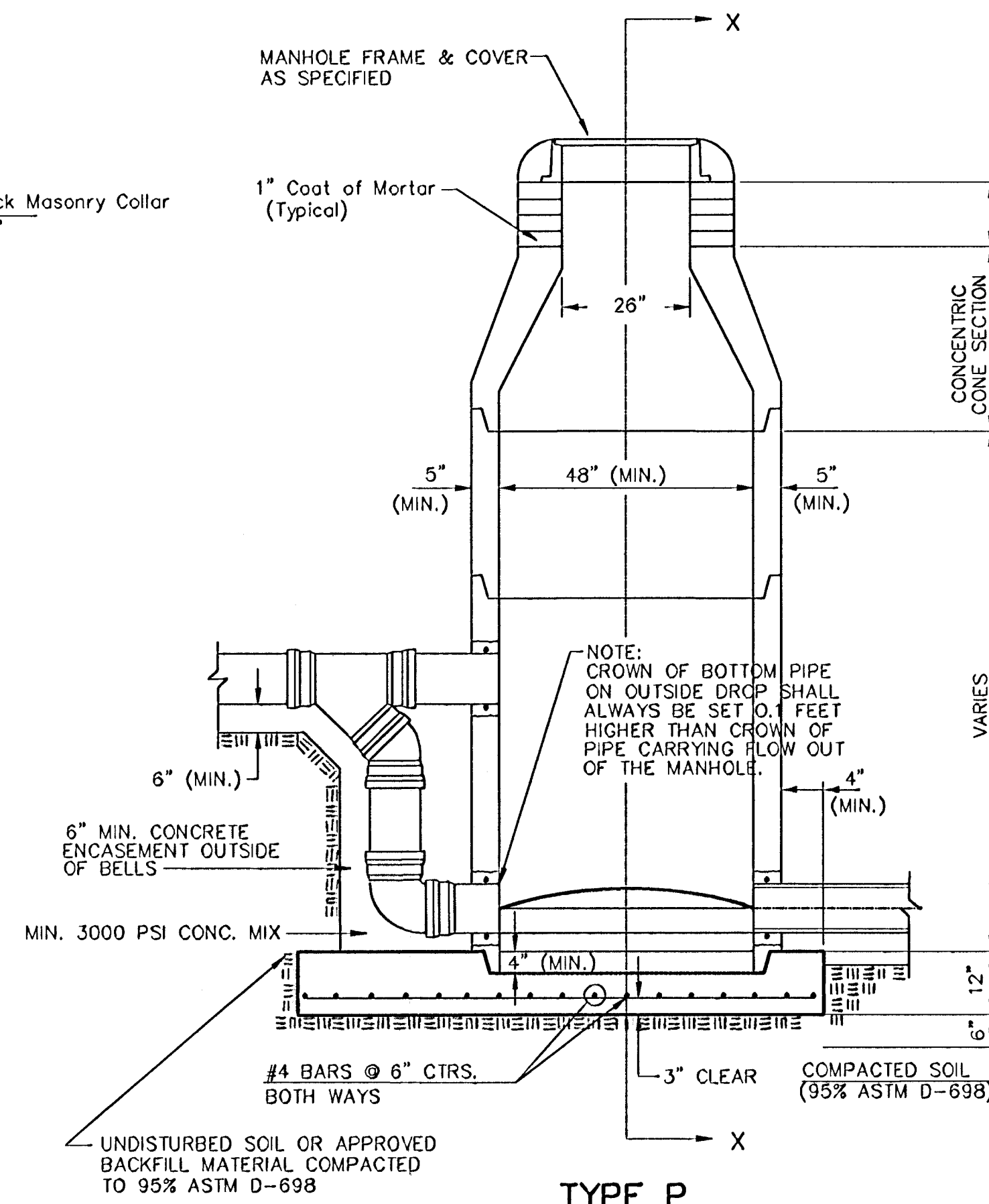
# SEWER APPURTENANCES DETAILS



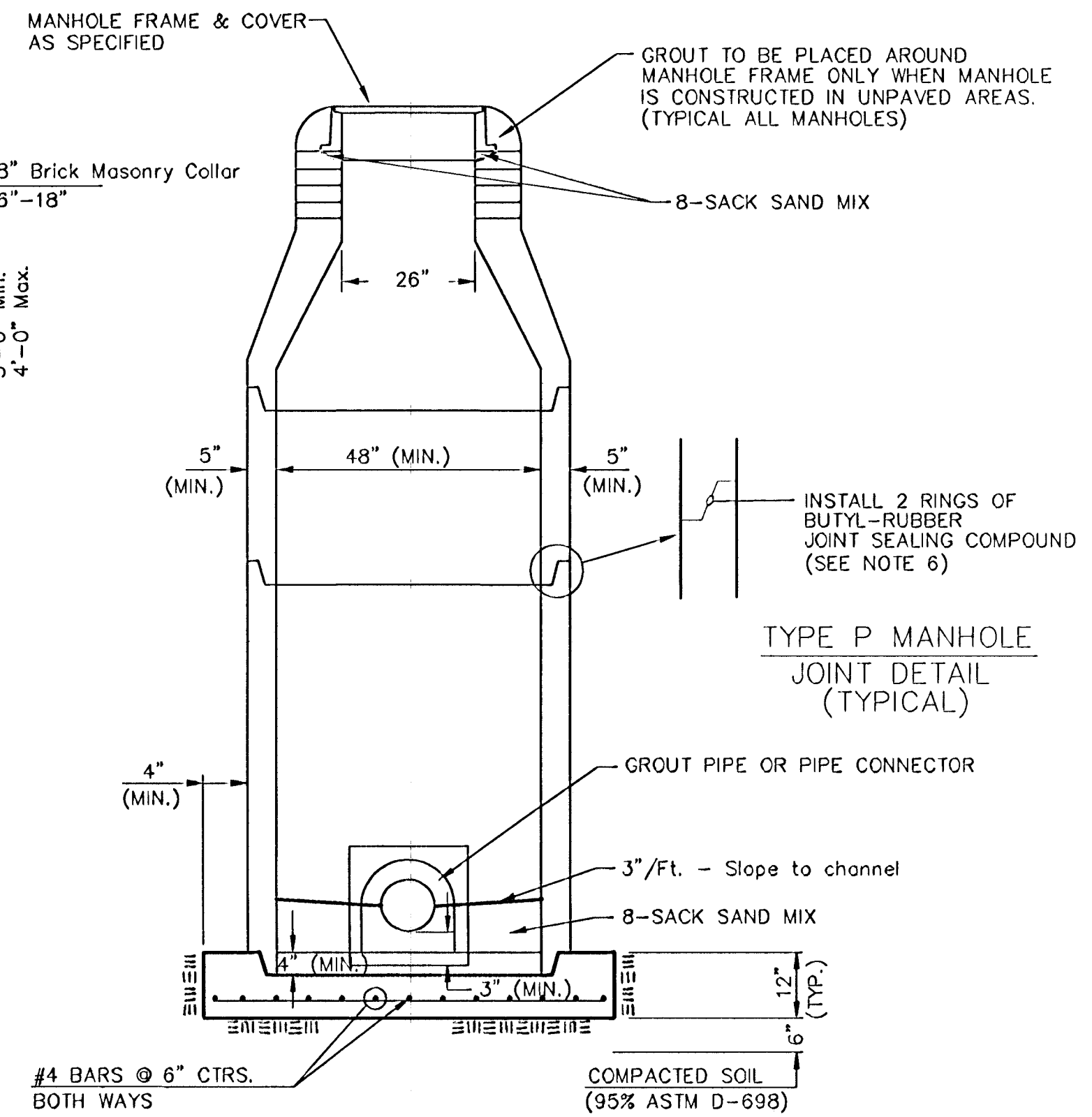
TYPE P  
STANDARD MANHOLE



TYPE P  
INSIDE DROP MANHOLE



TYPE P  
OUTSIDE DROP MANHOLE



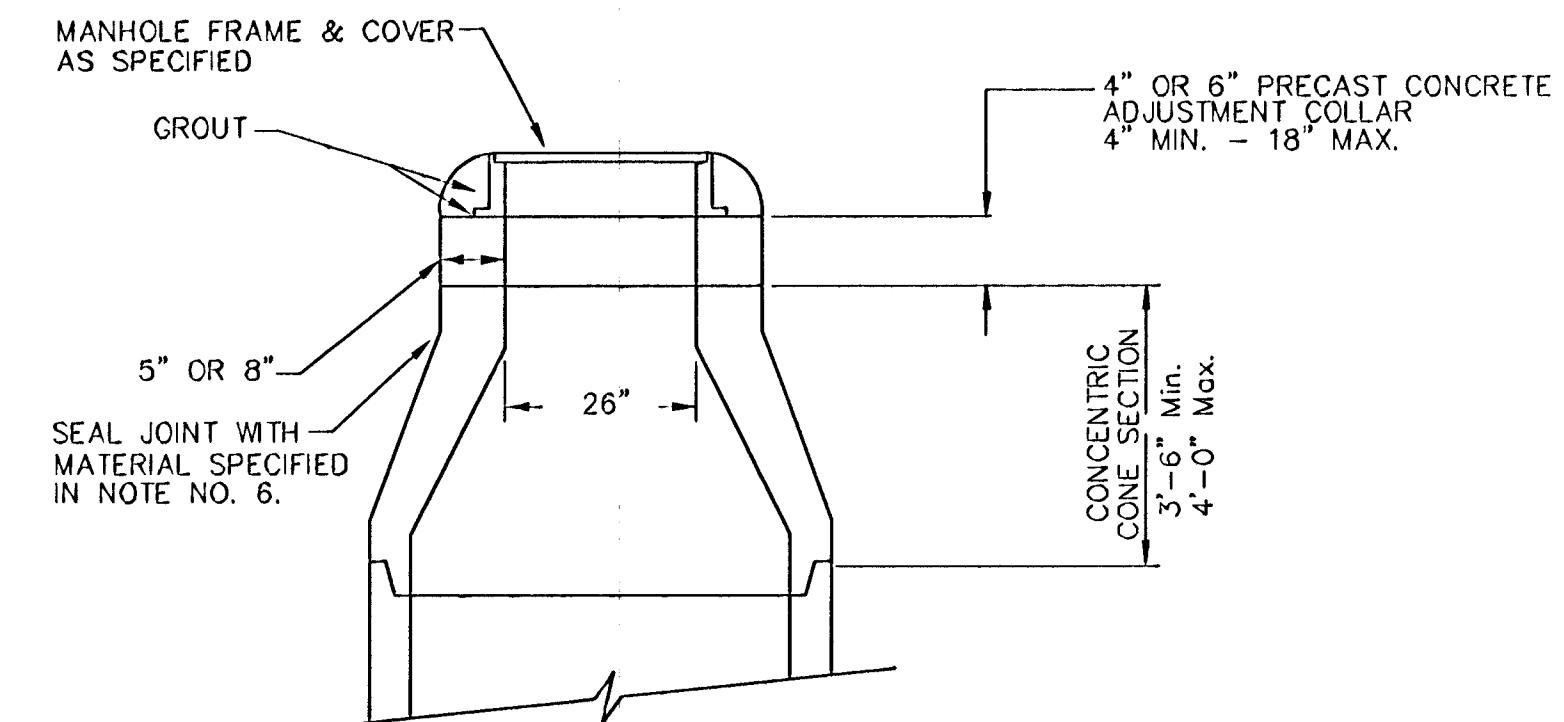
SECTION X  
(TYPICAL)

## GENERAL NOTES PRECAST MANHOLE NOTES

1. ALL PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO THE LATEST REVISIONS OF A.S.T.M. C478 AS MODIFIED BY THE SPECIFICATIONS.
2. NON-SHRINK GROUT SHALL BE NON-METALLIC TYPE.
3. APPROVED FLEXIBLE WATERSTOP GASKETS SHALL BE INSTALLED TO JOIN THE SEWER TO THE MANHOLE WALL WHEN A.B.S. COMPOSITE PIPE OR P.V.C. PIPE IS USED. FOR OTHER TYPES OF PIPE THE 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 COATED WITH 2 COATS TNEC SERIES 66 HI-BUILD EPOXOLINE, DRY THICKNESS OF 8 MILS (MIN.)
5. EXTERIOR MANHOLE WALLS SHALL BE COATED WITH 1 COAT MOBILARMA 633 BITUMINOUS COATING.
6. JOINT SEALING COMPOUND SHALL BE KENT SEAL NO. 2 OR APPROVED EQUAL.
7. PRECAST MANHOLES SHALL BE SET AT LEAST 4 INCHES INTO THE MANHOLE BASE.
8. TOP OF MANHOLE FLOOR SLAB SHALL BE AT LEAST 3 INCHES BELOW THE FLOW LINE OF THE OUTLET PIPE 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 WITHOUT AIR ENTRAINING ADMIXTURE. MORTAR SHALL BE PLACED AROUND THE MANHOLE RING AS SHOWN ON THE DRAWINGS WHEN MANHOLES ARE CONSTRUCTED IN UNPAVED AREAS. MANHOLES CONSTRUCTED 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 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.
12. OPENINGS SHALL BE CUT INTO THE MANHOLE WALL WHEN OUTSIDE DROPS ARE CONSTRUCTED ON EXISTING MANHOLES. SUCH OPENINGS CUT INTO EXISTING MANHOLES SHALL BE AS SMALL AS PRACTICAL TO FACILITATE 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 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.
13. 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.
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 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.

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. ALL MANHOLE DIAMETERS WILL BE 4" UNLESS INDICATED OTHERWISE.
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 USE OF PRE-CAST CONCRETE SPACERS FOR MANHOLE TOP ADJUSTMENT IS ALSO ALLOWED.



ALTERNATE CONSTRUCTION  
IN UNPAVED AREAS

## STD. MANHOLE DETAILS SEWER APPURTENANCES

**BAUGHMAN COMPANY P.A.**  
ENGINEERING, SURVEYING, & PLANNING  
316-262-7271 • 315 ELLIS • WICHITA, KANSAS 67211

|                 |                |          |                 |               |                         |
|-----------------|----------------|----------|-----------------|---------------|-------------------------|
| DESIGN<br>STAFF | DRAWN<br>STAFF | APPROVED | DATE<br>2/20/02 | SCALE<br>NONE | SHEET<br>11<br>OF<br>12 |
|-----------------|----------------|----------|-----------------|---------------|-------------------------|

**WICHITA, SEDGWICK COUNTY, KANSAS**

| MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES | LOT            | BLOCK | ELEVATION  |
|----------------------------------------------------------------------|----------------|-------|------------|
|                                                                      |                |       | CITY DATUM |
|                                                                      | 7,8,9,10,11,14 | A     | 169.5      |
|                                                                      | 1-15           | C     | 172.8      |

BENCH MARKS:  
CITY DISC = 34.3' E. & 3.3' N. OF  
S.W. CORNER OF N.W. 1/4, SEC. 20,  
T-27-S, R-2-W  
ELEV. = 136.63 CITY DATUM  
1344.03 M.S.L.

CITY DISC = 135TH ST. W. & MAPLE,  
30' N. & 15' E. OF BOTH.  
ELEV. = 150.20 CITY DATUM  
1337.60 M.S.L.

NOTE: A MASTER GRADING PLAN FOR DRAINAGE HAS BEEN DEVELOPED FOR THIS SUBDIVISION AND IS ON FILE WITH THE CITY OF MOHICA, KANSAS. ALL DRAINAGE EASEMENTS, RIGHTS-OF-WAY OR RESERVES SHALL REMAIN AT ESTABLISHED GRADES OR AS MODIFIED WITH THE APPROVAL OF THE CITY ENGINEER OF THE CITY OF MOHICA, KANSAS. NO OBSTRUCTIONS WHICH WOULD PREVENT THE FLOW OF THIS DRAINAGE SYSTEM SHALL BE ALLOWED.

