

GENERAL NOTES:

1. 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 262-4270
Kansas Gas Service 1-888-482-4950
Westor Energy 383-8650
Aquila Energy 1-800-303-0357
Southwestern Bell 268-2245
City of Wichita Water Dept. 268-4563
City of Wichita Sewer Maint. 268-4024
City of Wichita Storm Sewer Maint. 268-4090
City of Wichita Traffic Maint. 268-4034
Conoco Pipeline Co. 1-800-231-2551
Williams Pipeline Co. 529-6600
Phillips Pipeline Co. 1-800-766-8230

2. Utility service lines, poles, valve boxes, meters, and etcetera 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.

3. Rubble from the removal of miscellaneous structures and excess excavation which is to be wasted shall be disposed of on sites to be provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance on site location. Locations, in the opinion of the Engineer, will leave an unsightly appearance will not be approved. All disposal sites must be approved by the Kansas Department of Health and Environment. Material either stockpiled or disposed of in a flood plain 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.

4. 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.

5. The Contractor shall give all property owners and/or tenants of developed property abutting the construction of this project a minimum of ten (10) days advance notice prior to start of construction.

6. The Contractor shall be responsible for preserving property irons. The Contractor will be required to re-establish any property irons which are damaged or destroyed by his construction operations. Such irons shall be re-established by a licensed land surveyor in accordance with state laws.

7. All areas disturbed by construction shall be seeded as indicated on Pond Plan.

8. All existing and proposed erosion control measures including silt fencing, erosion control mat, straw bales, inlet barriers, and const. entrance shall be maintained throughout construction by the contractor and until project is accepted by the City of Wichita. The on-site engineer shall complete weekly reports on the status of erosion control measures. The contractor shall be required to comply with maintenance and/or replacement of erosion control measures as determined by the on-site engineer until project is accepted by City of Wichita. Maintenance and/or replacement of erosion control measures to be paid by L.S. bid item "Erosion Control BMP's."

9. All excess excavation shall remain on-site and shall be stockpiled or spread at a location determined by the engineer.

10. At conclusion of construction, an as-built survey will be completed by the engineer. The contractor will be required to finish and smooth grade all locations as necessary that are not within $\pm 0.2'$ of plan grade. The contractor shall include all costs associated with the regrading and/or remediation in the bid item "Mass Grading."

11. The developer for this project is Jay W. Russell, (316)722-2417.

SHADOW WOODS ADDITION - PHASE III & V

STORM WATER DRAIN #201

to serve

CITY OF WICHITA, KANSAS

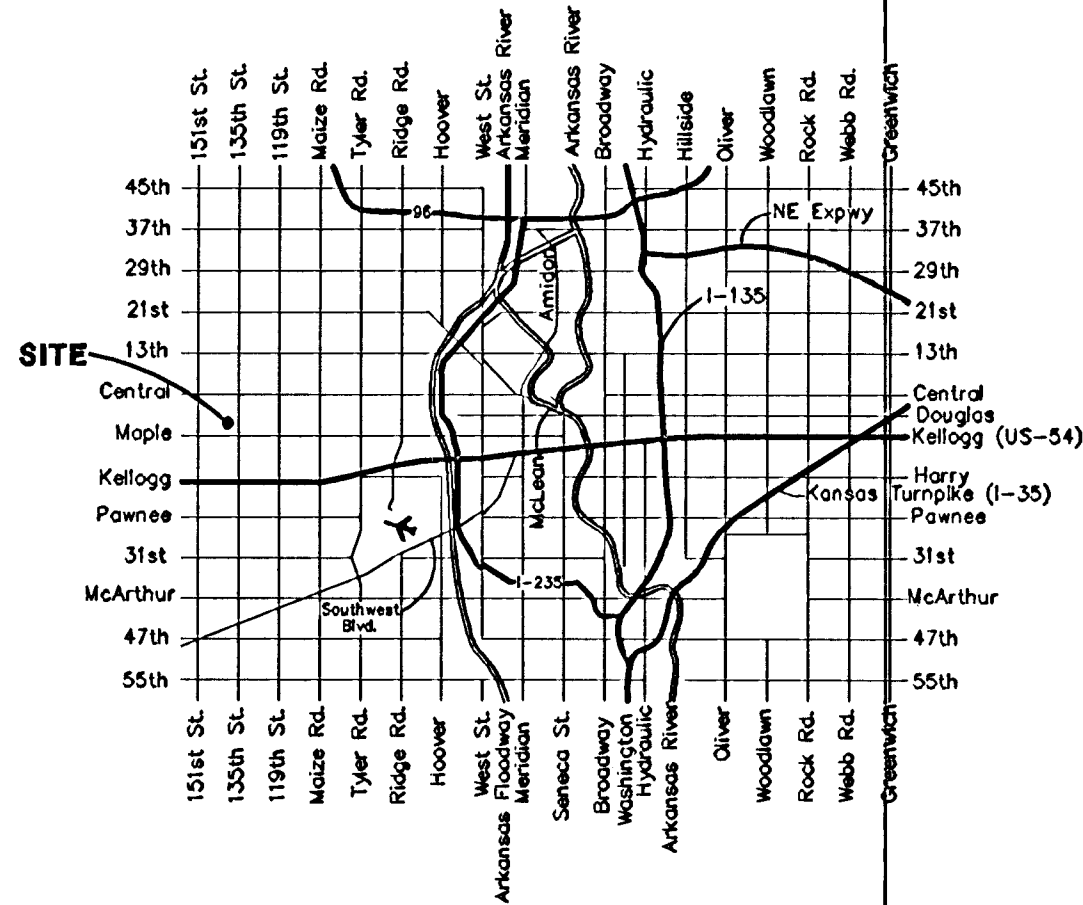
James L. Armour, P.E. City Engineer

Project Number

468-83598

O.C.A. Number

751400



BENCHMARKS:
BM #1: Small RR spike in west face of PP, east side of 135th St. W, east of SE corner of Lot 1, Block A, Shadow Woods Addition.
Elev. = 159.37 (City Datum)

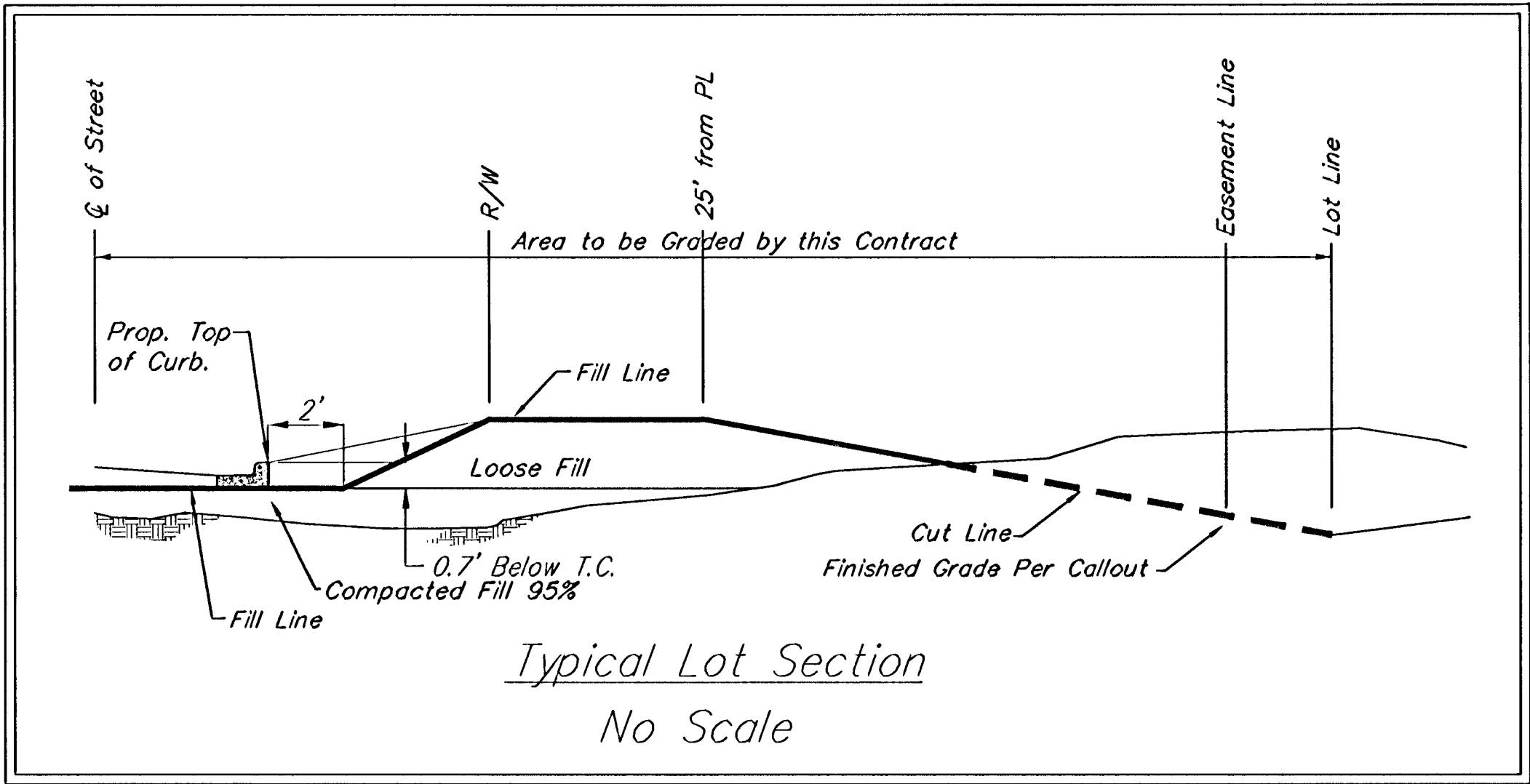
BM #2: C.O.W. disc at west end of NW return adjacent to fire hydrant at Cavit & Decker, adjacent to SE corner of Lot 24, Block A, Shadow Woods Addition.
Elev. = 187.31 (City Datum)

BM #3: C.O.W. disc at west end of SW return adjacent to fire hydrant at Cavit & Burton, adjacent to E corner of Lot 24, Block C, Shadow Woods Addition.
Elev. = 193.19 (City Datum)

Stockpile on NW side of Texas Cir. to remain. Excess earthwork from mass grading shall be stockpiled to the SW of existing stockpile, out of easements & R/W.

Install 744 L.F. silt fence per detail, sheet 12.

Scale: 1" = 60'



EARTH WORK TOTALS

	C.Y. Excavation	C.Y. Fill
Mass Grading	13,321	30,650
Pond Construction	33,060	338
Total	46,381	30,988

Stockpile excess material on-site at a location determined by the Engineer out of easements and right-of-way. Earthwork quantities are for reference only. All cost associated with mass grading shall be incidental to lump sum bid item "Mass Grading".

- Contractor to strip top 3" of soil within Res. "C" and street R/W before mass grading and stockpile. Top soil stockpile to be redistributed over Reserve "C" above water surface.
- Compaction of 95% shall be obtained in all street R/W's, 90% in all other areas.
- Only trees within the street R/W or Res. "C" may be removed if necessary for grading. All other trees shall be protected from damage.
- All areas disturbed by construction (except within street R/W) shall be seeded as indicated on Pond Plan.

EROSION CONTROL PLAN LEGEND

(Installation Details Found in the Silt Fence Plan)

- LIGHT STONE RIP-RAP
- DROP INLET PROTECTION
- CURB INLET PROTECTION
- STRAW BALE BARRIERS
- SILT FENCING
- EARTH DIKES

EROSION CONTROL MEASURE	UNITS	QUANTITY
SILT FENCE	L.F.	744
RIPRAP	S.Y.	SEE PLAN
DROP INLET BARRIER	EA.	3
CURB INLET BARRIER	EA.	0
STRAW BALE DITCH CHECK	EA.	14
EARTHEN DIKES	L.F.	530
CURLEX	S.Y.	0
POND E.C. BLANKET	S.Y.	3360
Construction Entrance	EA.	1

QUANTITIES ARE FOR INFORMATION ONLY!
CONTRACTOR SHALL VERIFY QUANTITIES PER
FINAL BID QUANTITY SHEET.

- Existing Grade
- Proposed Grade
- Silt Fence

Area to be graded

SHADOW WOODS ADD. PH. III
MASS GRADING PLAN
WICHITA, KANSAS

Baughman Company, P.A. 315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

PROJECT NUMBER
460-83598

DESIGN
AEG

REVISIONS

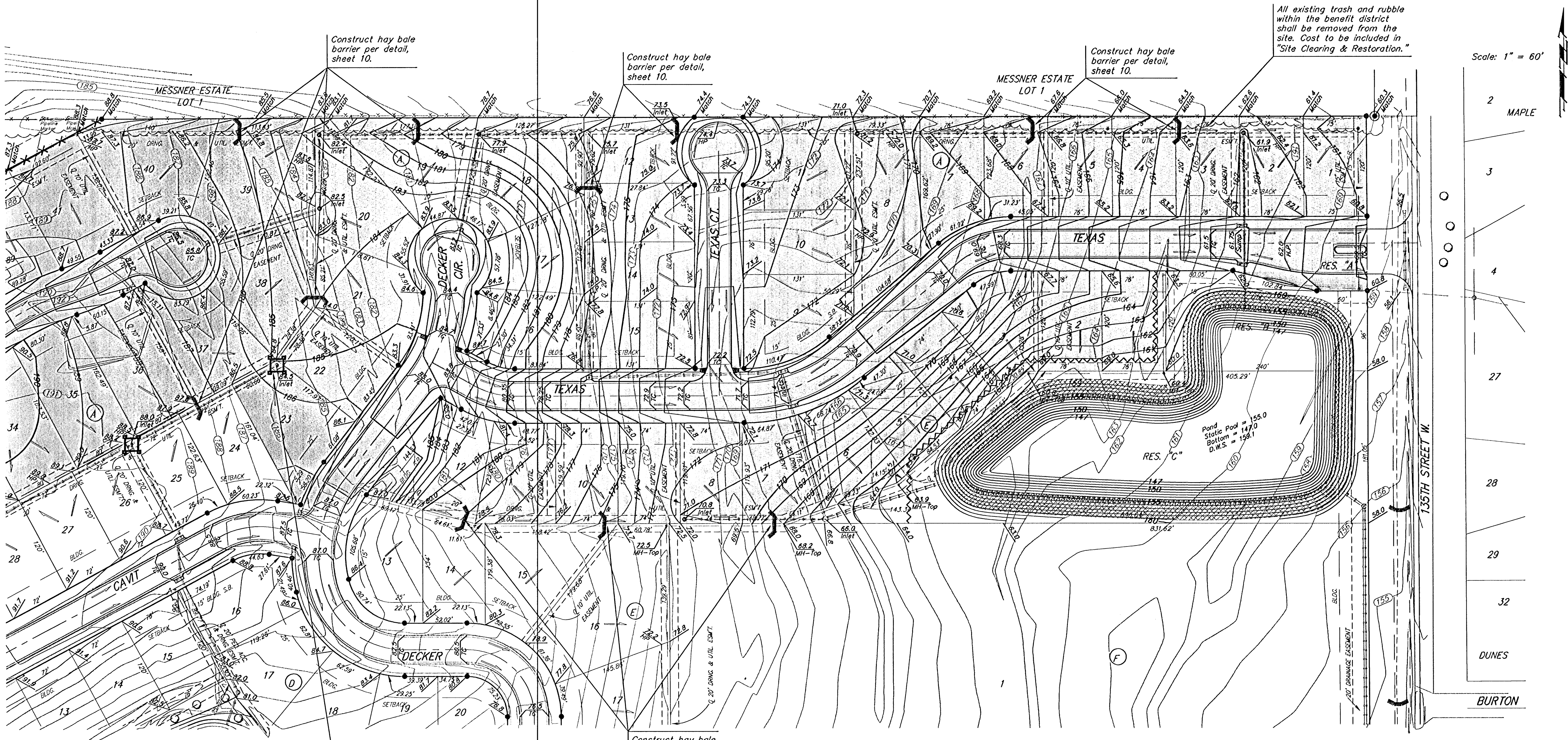
DRAWN
TMS

DATE
07/05

SCALE
Noted

SHEET
2 OF 14

ShadowWoods\Ph3\Mass1



Scale: 1" = 60'



- 2 MAPLE
- 3
- 4
- 27
- 28
- 29
- 32
- DUNES
- BURTON

BENCHMARKS:
BM #1: Small RR spike in west face of PP, east side of 135th St. W., east of SE corner of Lot 1, Block A, Shadow Woods Addition. Elev. = 159.37 (City Datum)

BM #2: C.O.W. disc at west end of NW return adjacent to fire hydrant at Covit & Decker, adjacent to SE corner of Lot 24, Block A, Shadow Woods Addition. Elev. = 187.31 (City Datum)

BM #3: C.O.W. disc at west end of SW return adjacent to fire hydrant at Covit & Burton, adjacent to E corner of Lot 24, Block C, Shadow Woods Addition. Elev. = 193.19 (City Datum)

- (185)— Existing Grade
- 185— Proposed Grade
- XXXXXX Silt Fence

Area to be graded



SHADOW WOODS ADD. PH. III
MASS GRADING PLAN
WICHITA, KANSAS

Baughman Company, P.A. 315 Ella St. Wichita, KS 67211 P 3162627271 F 3162620149	
ENGINEERING SURVEYING PLANNING LANDSCAPE ARCHITECTURE	
PROJECT NUMBER 468-83598	DESIGN AEO
REVISIONS	DRAWN TMS
	APPROVED DATE 07/05
	SCALE Noted
	SHEET 3 OF 14

ShadowWoods\Ph3\Map2

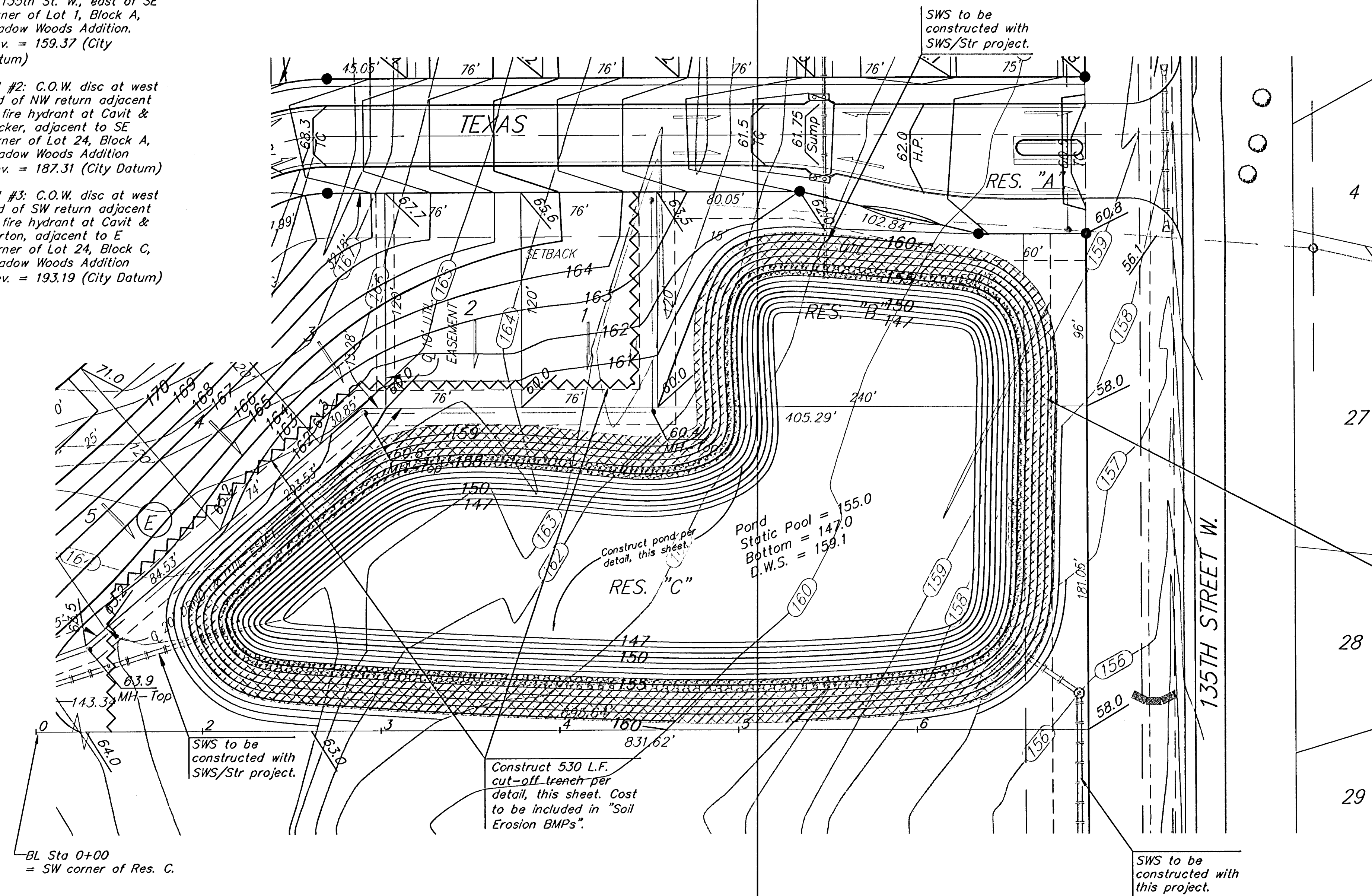
ShadowWoods\Ph3\Map2

BENCHMARKS:
BM #1: Small RR spike in west face of PP, east side of 135th St. W., east of SE corner of Lot 1, Block A, Shadow Woods Addition. Elev. = 159.37 (City Datum)

BM #2: C.O.W. disc at west end of NW return adjacent to fire hydrant at Cavit & Decker, adjacent to SE corner of Lot 24, Block A, Shadow Woods Addition. Elev. = 187.31 (City Datum)

BM #3: C.O.W. disc at west end of SW return adjacent to fire hydrant at Cavit & Burton, adjacent to E corner of Lot 24, Block C, Shadow Woods Addition. Elev. = 193.19 (City Datum)

Scale: 1" = 40'



NOTES:

- Pond bottom and sideslopes below static pool elevation shall be over-excavated 1' and a 1' clay liner shall be compacted to 95% std. density. The plasticity index (P.I.) shall be at least 30. The compaction and P.I. shall be verified during construction. P.I. determination and compaction testing shall be arranged by the contractor at the request of the inspector. Cost shall be incidental to "Site Clearing & Restoration". Cost of over-excavation to install Clay Liner shall be incidental to bid item, "Excavation."
- Any excess excavation shall be stockpiled on-site at an area indicated by the Engineer out of easements and R/W. Area will be staked by Engineer. Additional area will be staked out if needed.
- All of Reserve "C" above the static water surface shall be seeded and mulched as follows: (Permanent Seeding)
SEED -- Kansas Premium Fescue Blend; 8#/1000 Sq. Ft.
FERTILIZER -- 12-24-12 Ratio at 350 Lbs./Ac.
MULCH -- 2 Tons Prairie Hay / Acre
All other disturbed areas not in street R/W are to be seeded as follows: (Temporary seeding)
SEED -- Rye grass (PLS)--5#/1000 Sq. Ft.
- Install Erosion Control Mat as shown.
- Contractor to strip top 3" of soil within Res. "C" and street R/W before mass grading and stockpile. Top soil stockpile to be redistributed over Reserve "C" above water elevation prior to seeding.
- Compaction of 95% shall be obtained in all street R/Ws, 90% in all other areas.
- All excess excavation shall remain on-site and be spread or stockpiled at a location determined by the engineer.

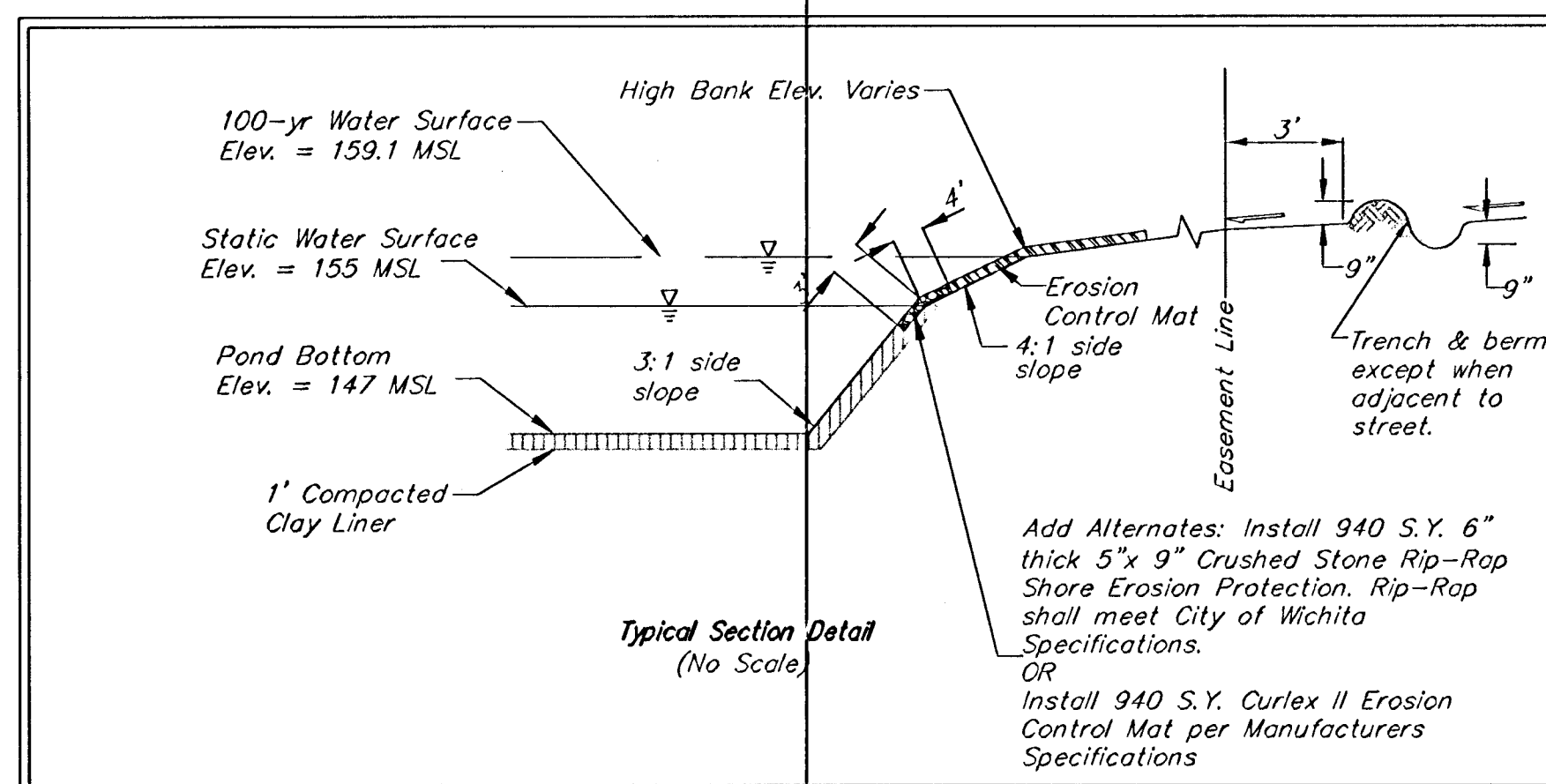
Install 2,810 S.Y. Curlex II Erosion Control Mat, or approved equal. Erosion control mat shall be installed and anchored per manufacturer's specifications. Note: This quantity does not include excess material necessary for overlap and anchoring.

EARTH WORK TOTALS

	C.Y. Cut	C.Y. Fill
Mass Grading	13,321	30,650
Pond Construction	33,060	338
Total Earthwork	46,381	30,988

Earthwork quantities do not include correction factors and are for reference only. All cost associated with mass grading shall be included in the bid item "Mass Grading".

185 Existing Grade
185 Proposed Grade
Silt Fence
Trench & Berm



SHADOW WOODS ADD. PH. III
POND PLAN
WICHITA, KANSAS

Baughman Company, P.A. 315 Ellis St. Wichita, KS 67211 P 3162637271 F 3162620149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

PROJECT NUMBER
468-83398

DESIGN
AEG
APPROVED

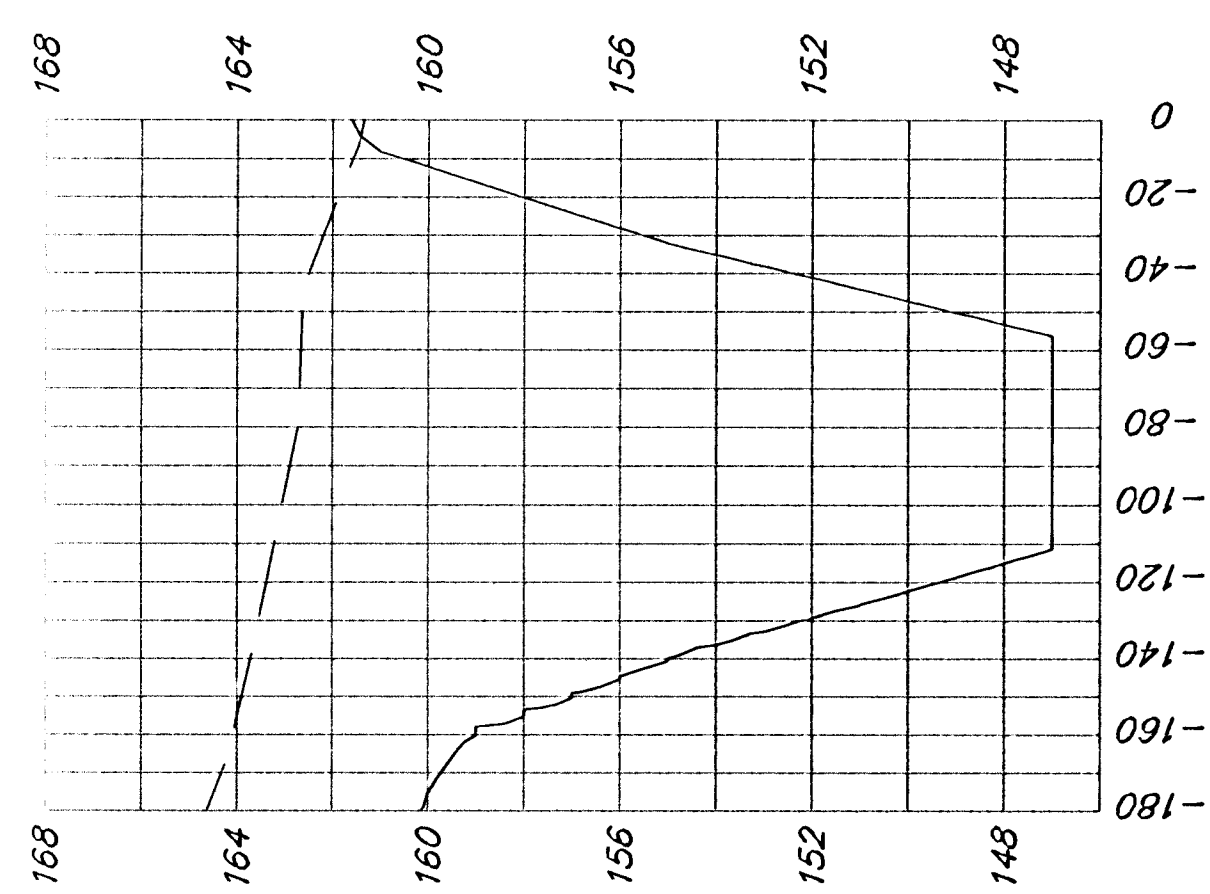
DRAWN
TMS
DATE
07/05

SCALE
Noted
SHEET

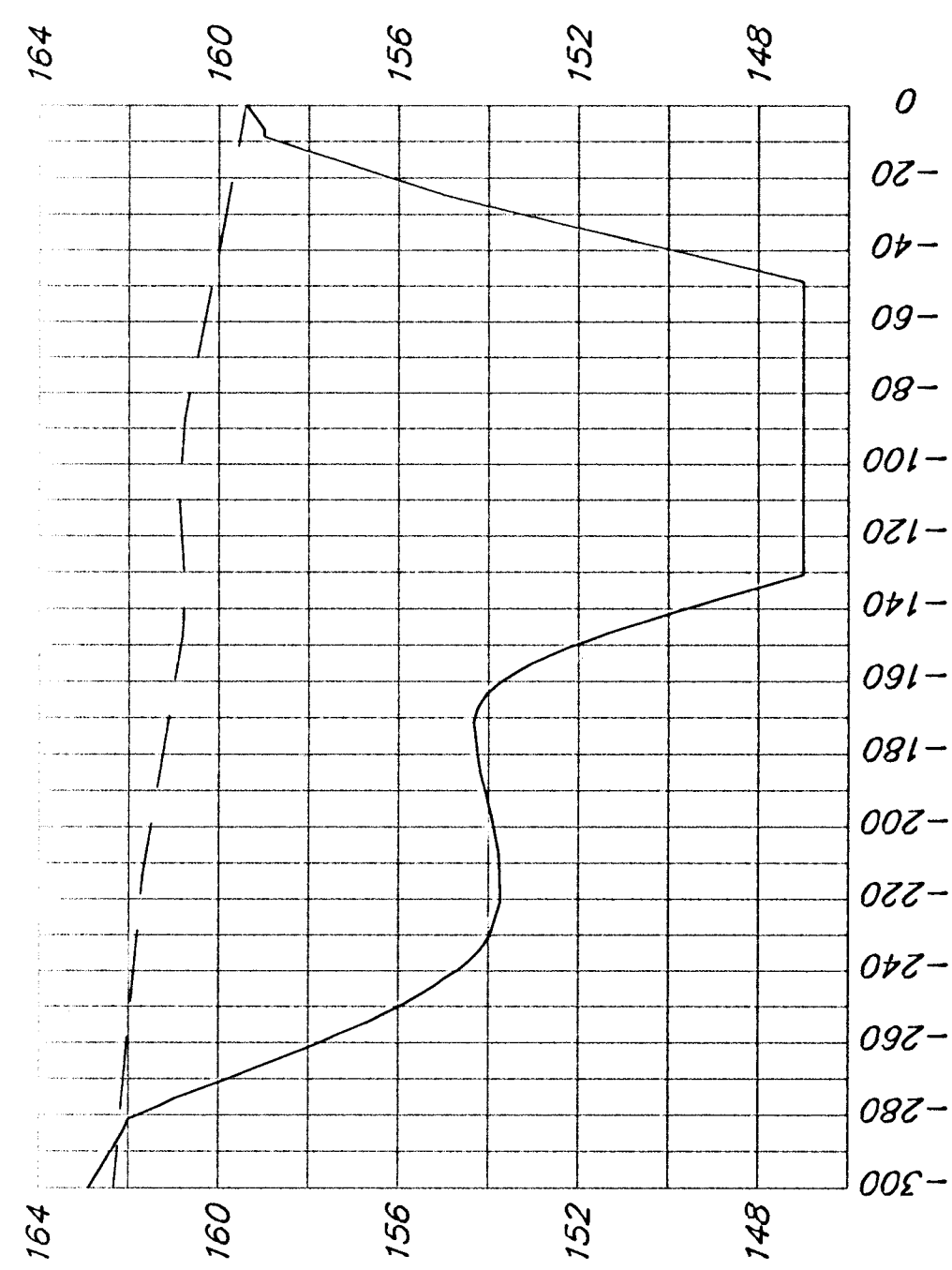
4 OF 14

Shadow Woods PH3 Pond

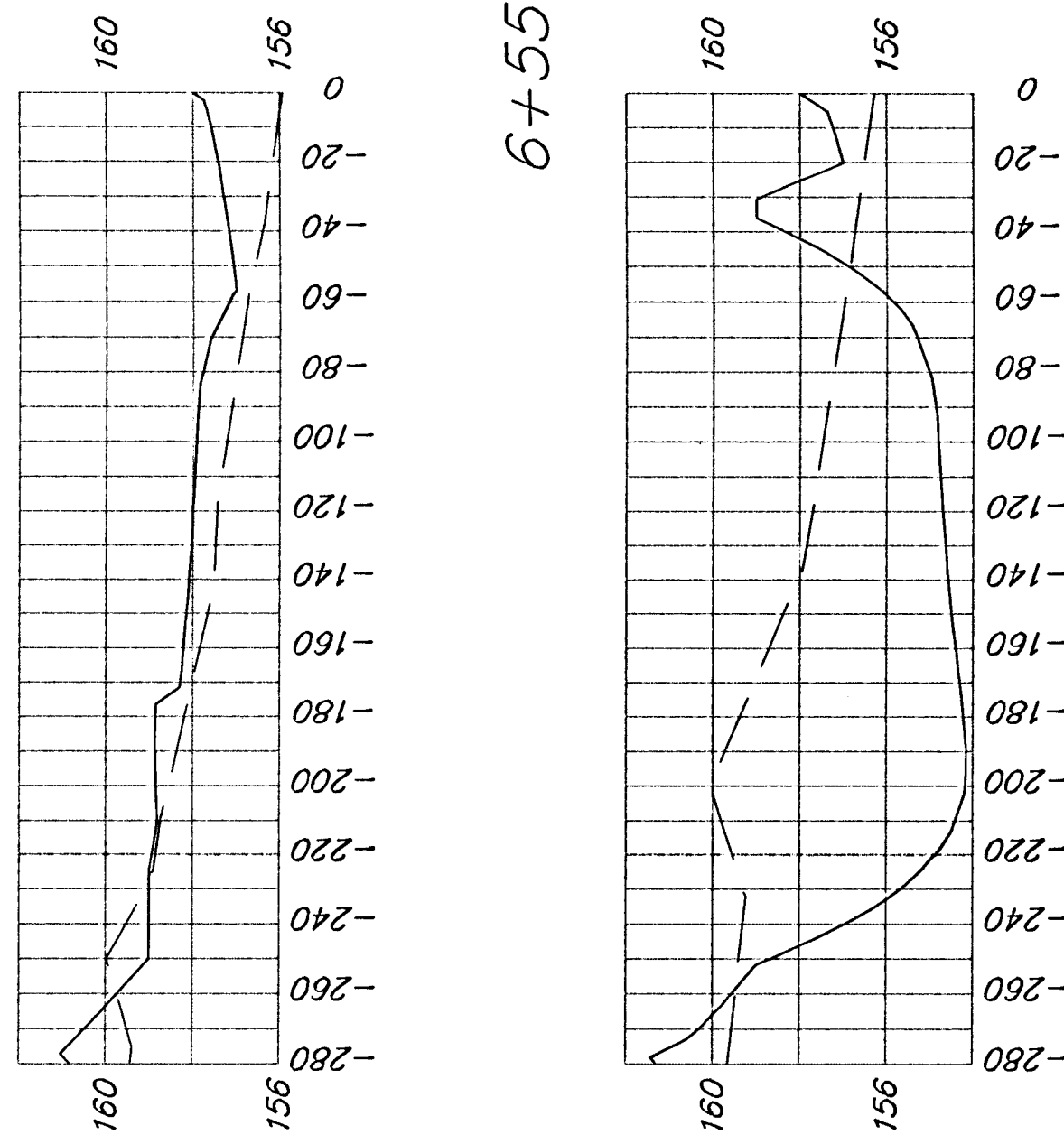
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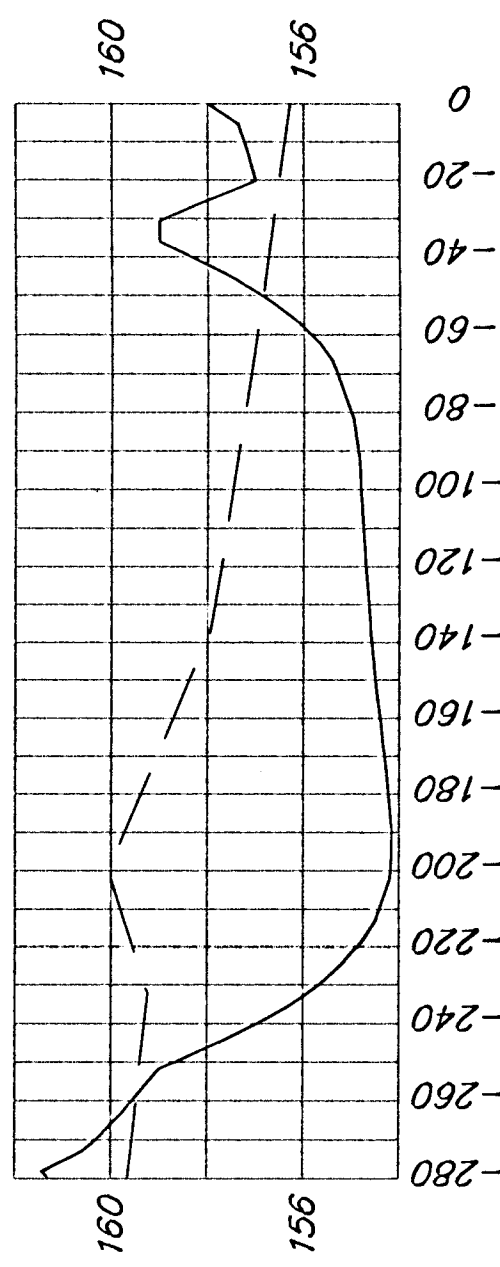
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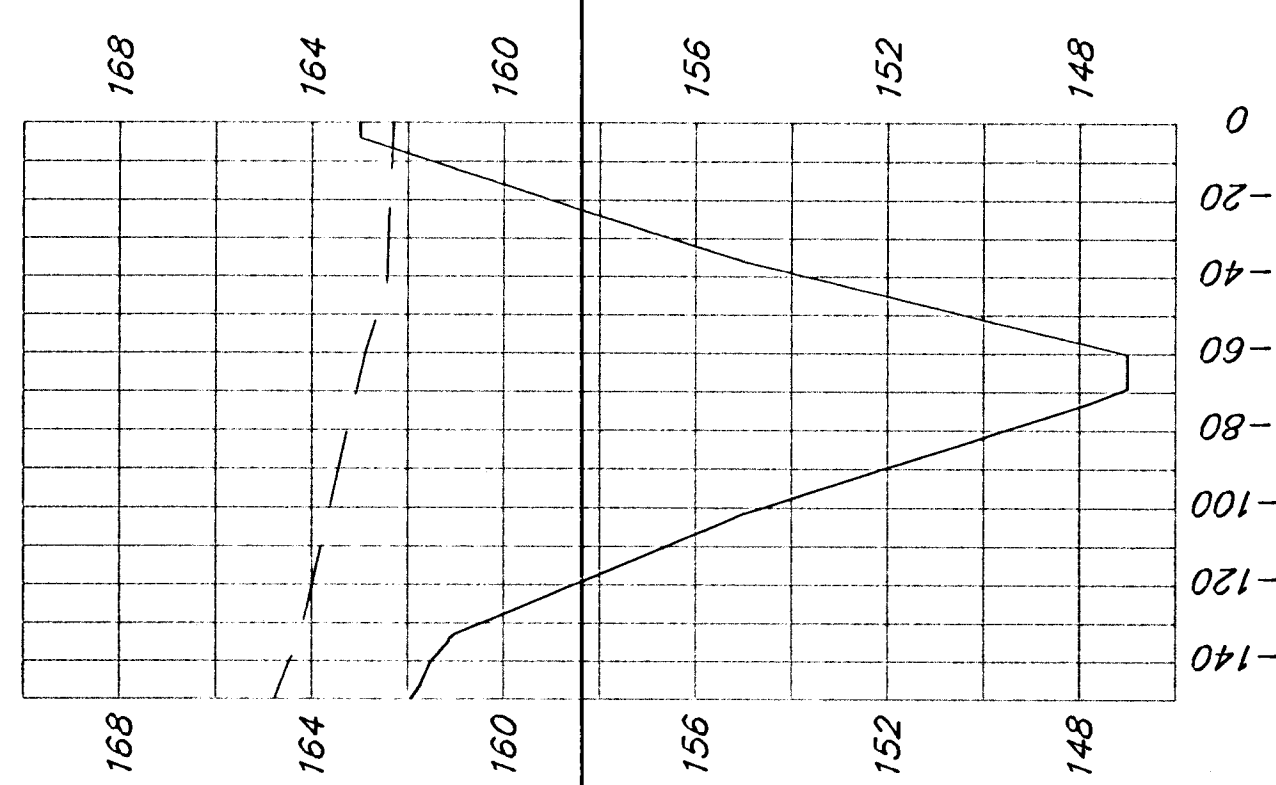
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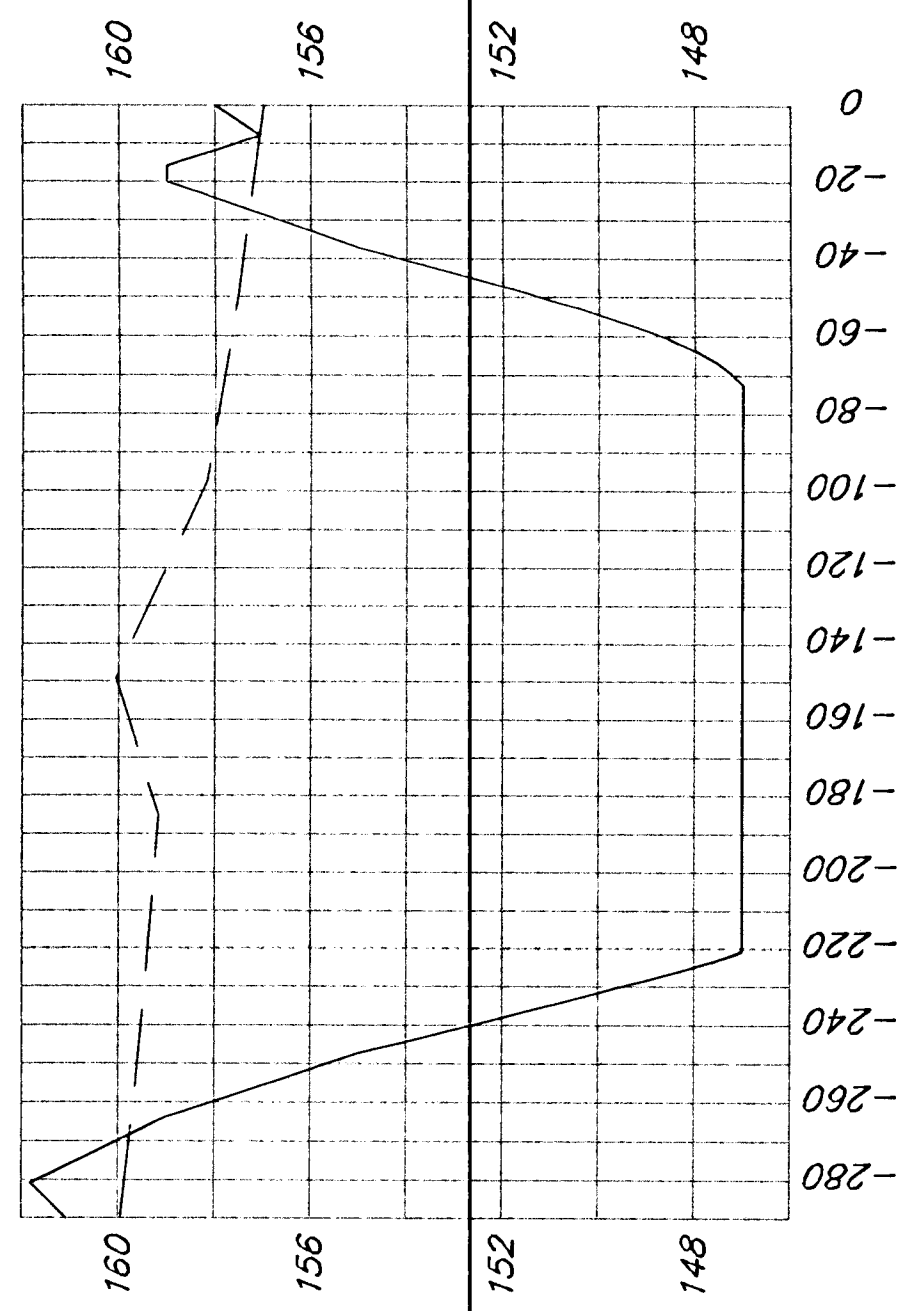
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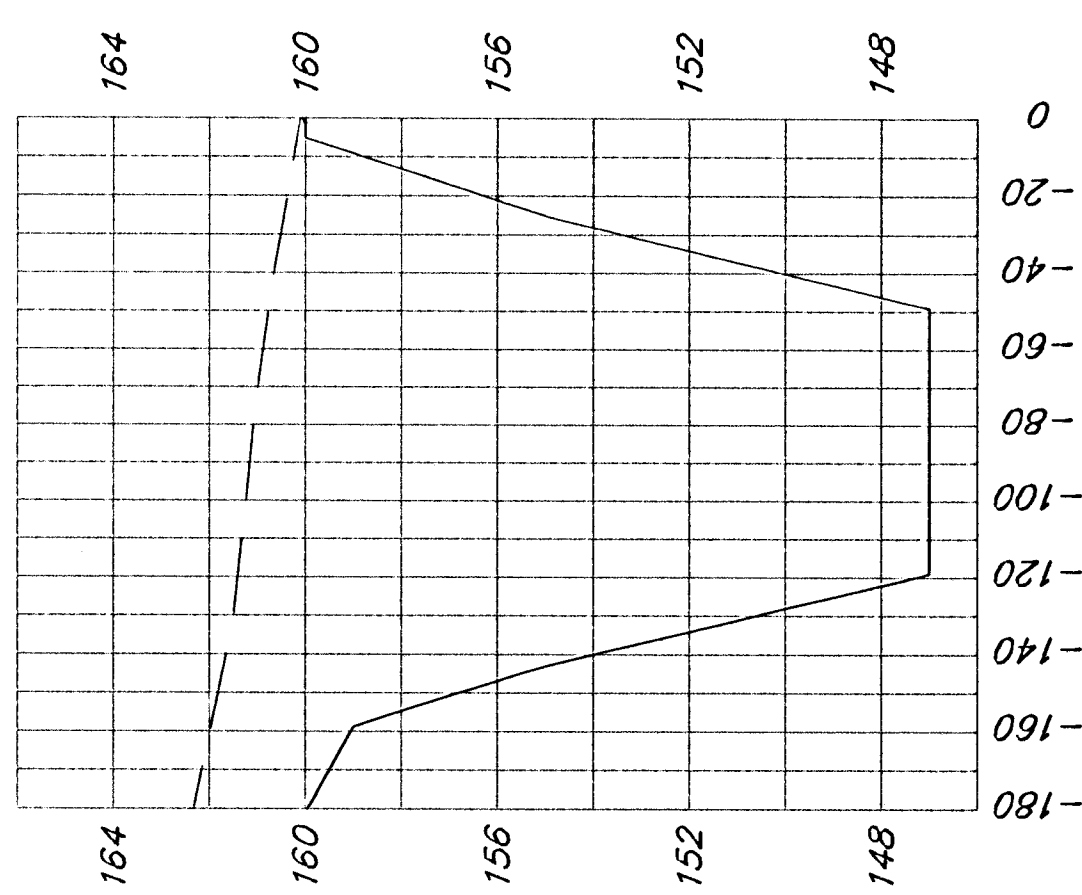
2+50



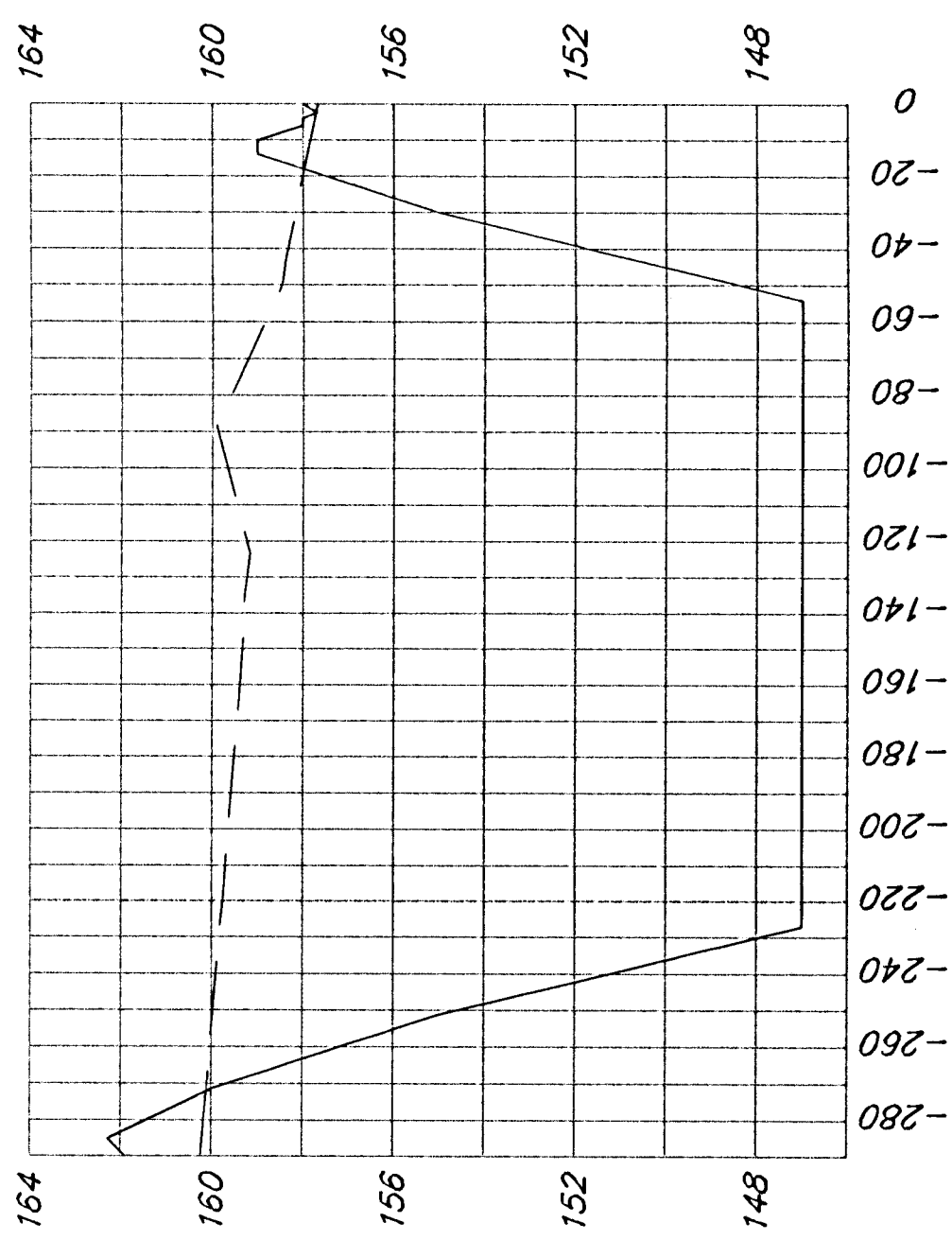
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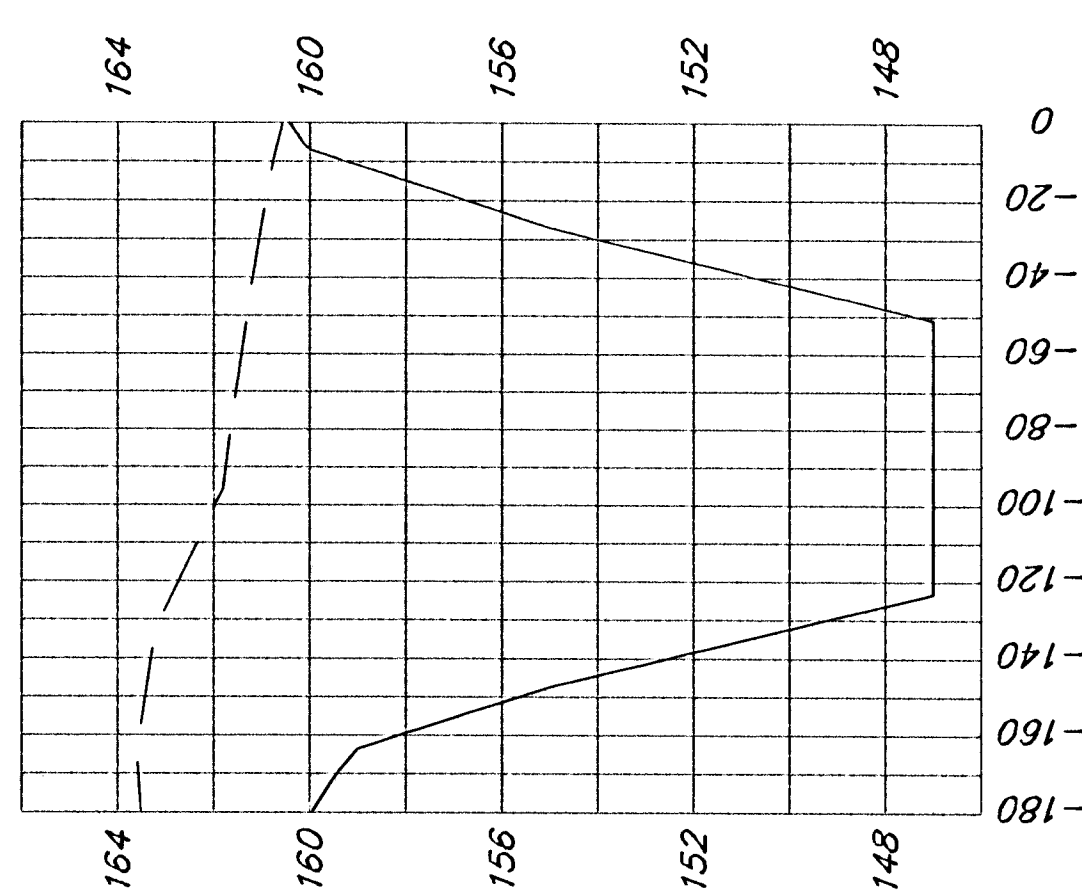
4+50



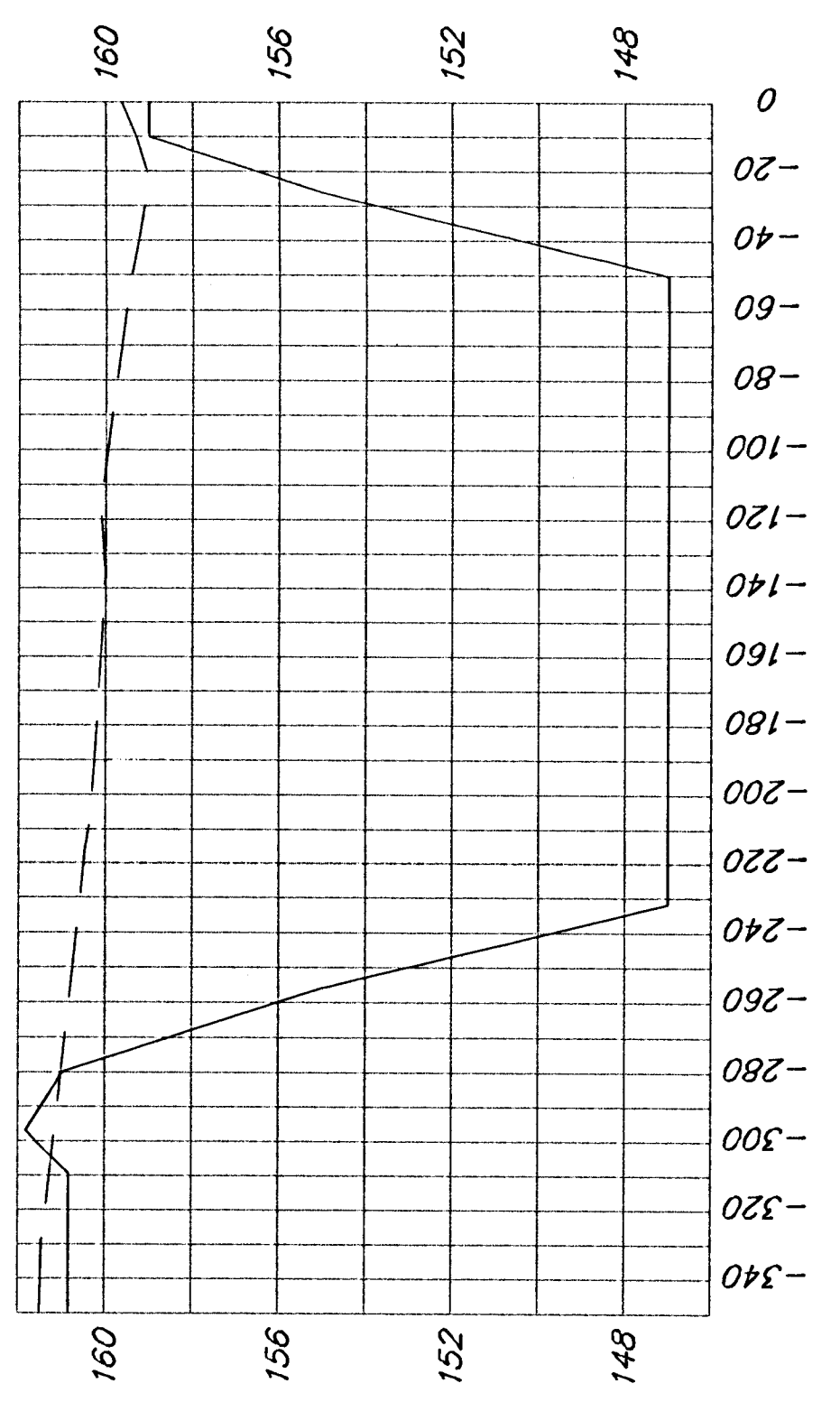
6+00



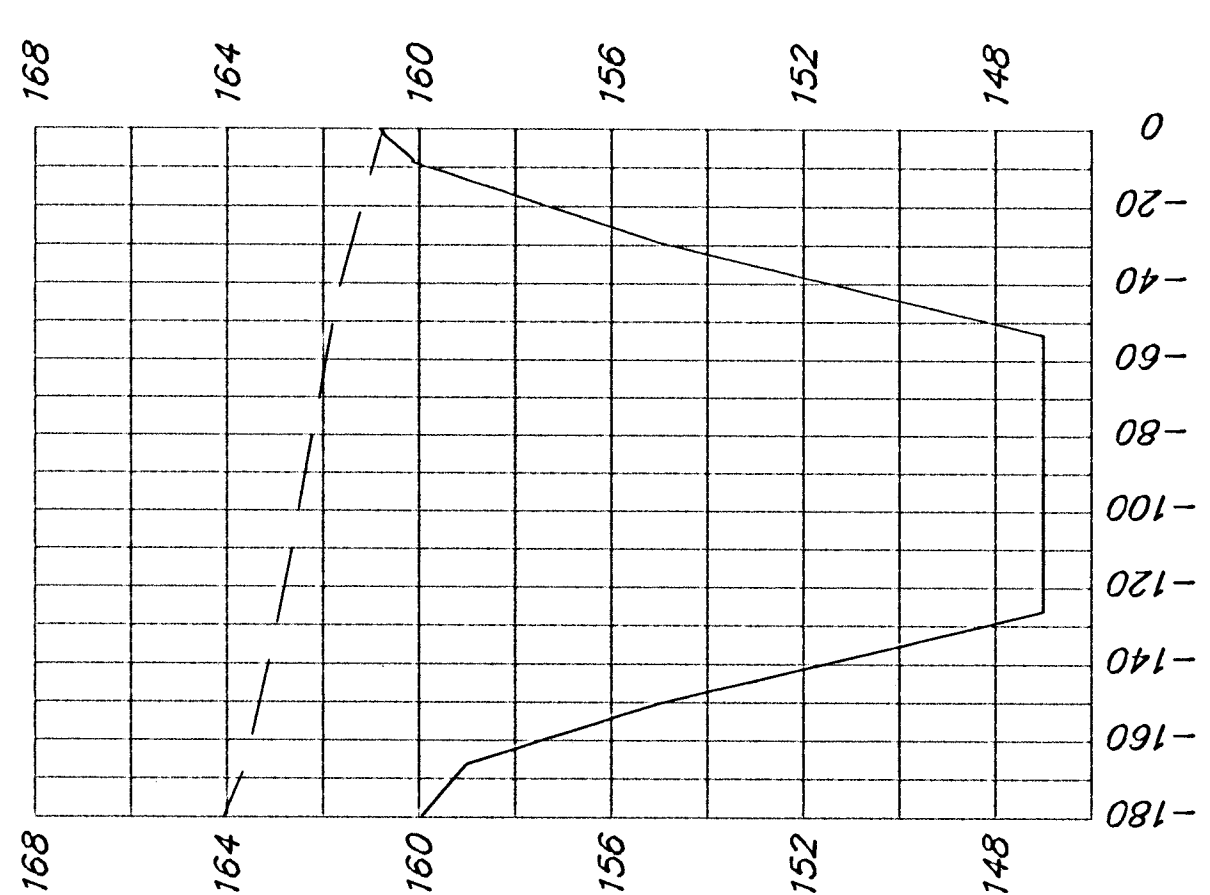
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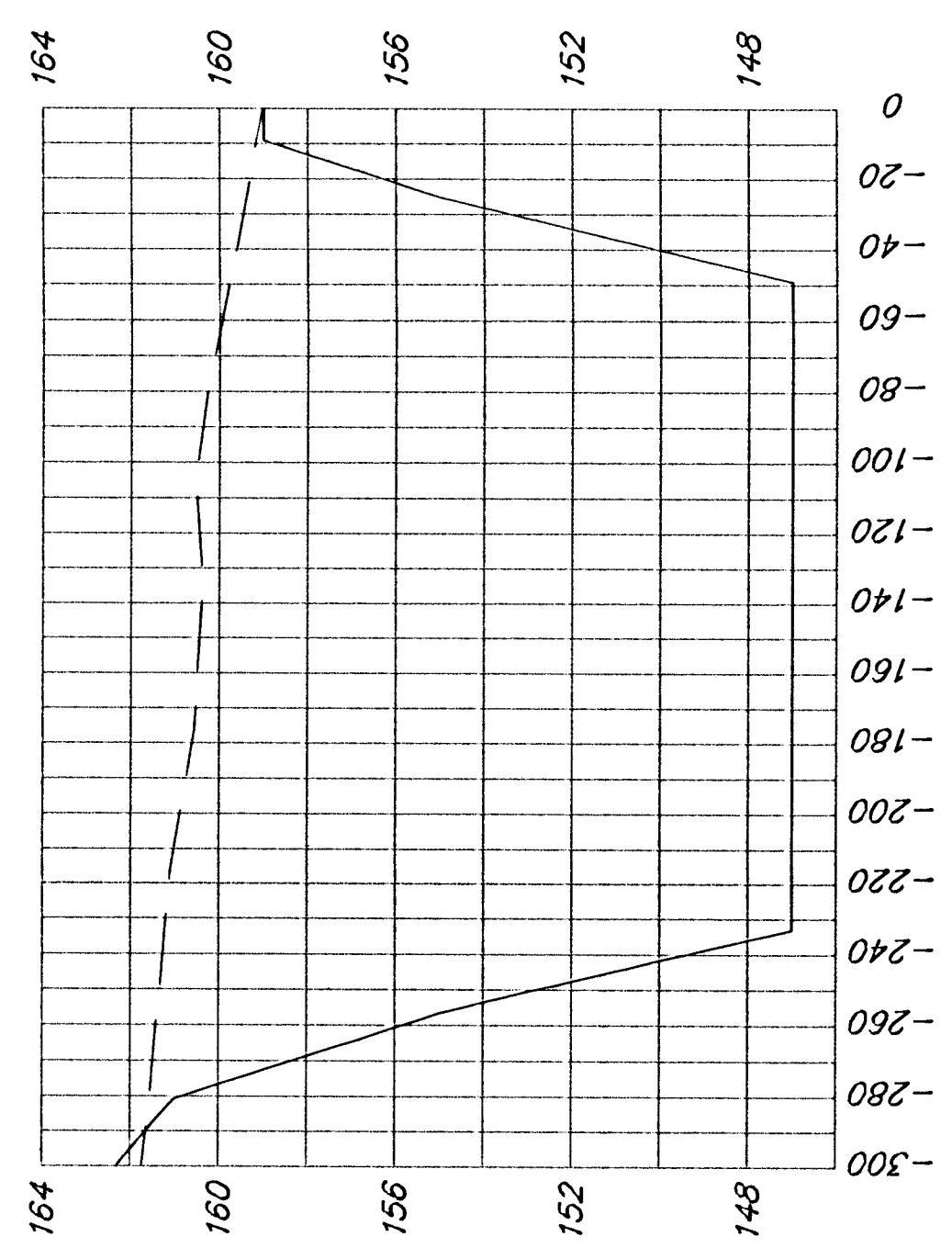
5+50



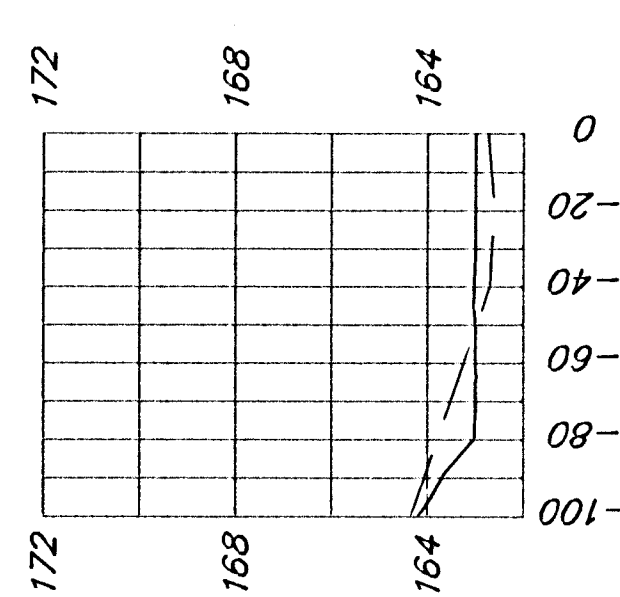
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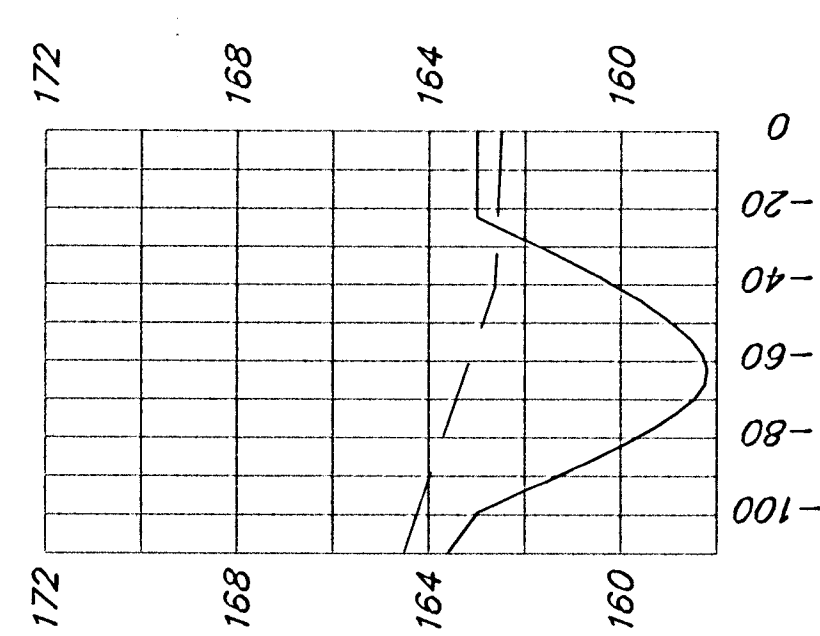
5+25



1+80



2+00



BENCHMARKS:
BM #1: Small RR spike in west face of PP, east side of 135th St. W, east of SE corner of Lot 1, Block A, Shadow Woods Addition. Elev. = 159.37 (City Datum)

BM #2: C.O.W. disc at west end of NW return adjacent to fire hydrant at Cavit & Decker, adjacent to SE corner of Lot 24, Block A, Shadow Woods Addition. Elev. = 187.31 (City Datum)

BM #3: C.O.W. disc at west end of SW return adjacent to fire hydrant at Cavit & Burton, adjacent to E corner of Lot 24, Block C, Shadow Woods Addition. Elev. = 193.19 (City Datum)

RIVERSIDE HEALTH
SYSTEM ADDITION

Sta 0+07.0, Line 1
Begin construction of 30" SWS w/ end section and 29.3 S.Y. light stone rip-rap. Contractor shall adjust end section as necessary to match existing slope.

Sta 0+50.2, Line 1
Construct special shallow manhole (5' dia.) Top Elev. = 154.40

SHADOW WOODS
ADDITION

LINE 1

20' DRAINAGE EASEMENT

Sta 4+53.7, Line 1
Construct std. shallow manhole (5' dia.) Top Elev. = 156.40

Sta 5+00.0, End Line 1
1 - Special RC headwall 29.3 S.Y. light stone rip-rap.

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

Pond Information
Static Pool = 155.0
Bottom = 147.0
D.W.S. = 153.1

CAUTION!
Ex. 6" plastic Aquila gas line crossing. Depth unknown. Coordinate with Aquila Gas Company.

Construct hay bale barrier per detail, sheet 10.

CAUTION!
Ex. 6" plastic Aquila gas line crossing. Depth unknown. Contractor to verify depth & location of existing gas line prior to construction. Coordinate with Aquila Gas Company.

Sta 0+07.0, Line 1
Begin construction of 30" SWS w/ end section and 29.3 S.Y. light stone rip-rap. Contractor shall adjust end section as necessary to match existing slope.

Sta 0+50.2, Line 1
Construct special shallow manhole (5' dia.) Top Elev. = 154.40

Sta 4+53.7, Line 1
Construct std. shallow manhole (5' dia.) Top Elev. = 156.40

Sta 5+00.0, End Line 1
1 - Special RC headwall 29.3 S.Y. light stone rip-rap

Existing Grade
= Proposed Grade

Proposed Grade

Static Pool = 155.0

Ex. RCBC
150.13 = Flow

43.2 L.F. 30" RCP
@ +0.208%

103.5 L.F. 24" RCP
@ +0.201%

46.1 L.F. 24" RCP
@ +0.804%

150.25 = Flow

150.24 = Flow Out (SE)
150.14 = Flow In (W)

150.54 = Flow

150.64 = Flow

150.74 = Flow

150.84 = Flow

150.94 = Flow

151.04 = Flow

151.14 = Flow

151.25 = Flow Out (S)
151.15 = Flow In (NW)

SHADOW WOODS ADD. PH. III
LINE 1
STORM WATER DRAIN IMPROVEMENTS

Baughman
Baughman Company, P.A. 315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

PROJECT NUMBER
468-83598

DESIGN
AEG

REVISIONS

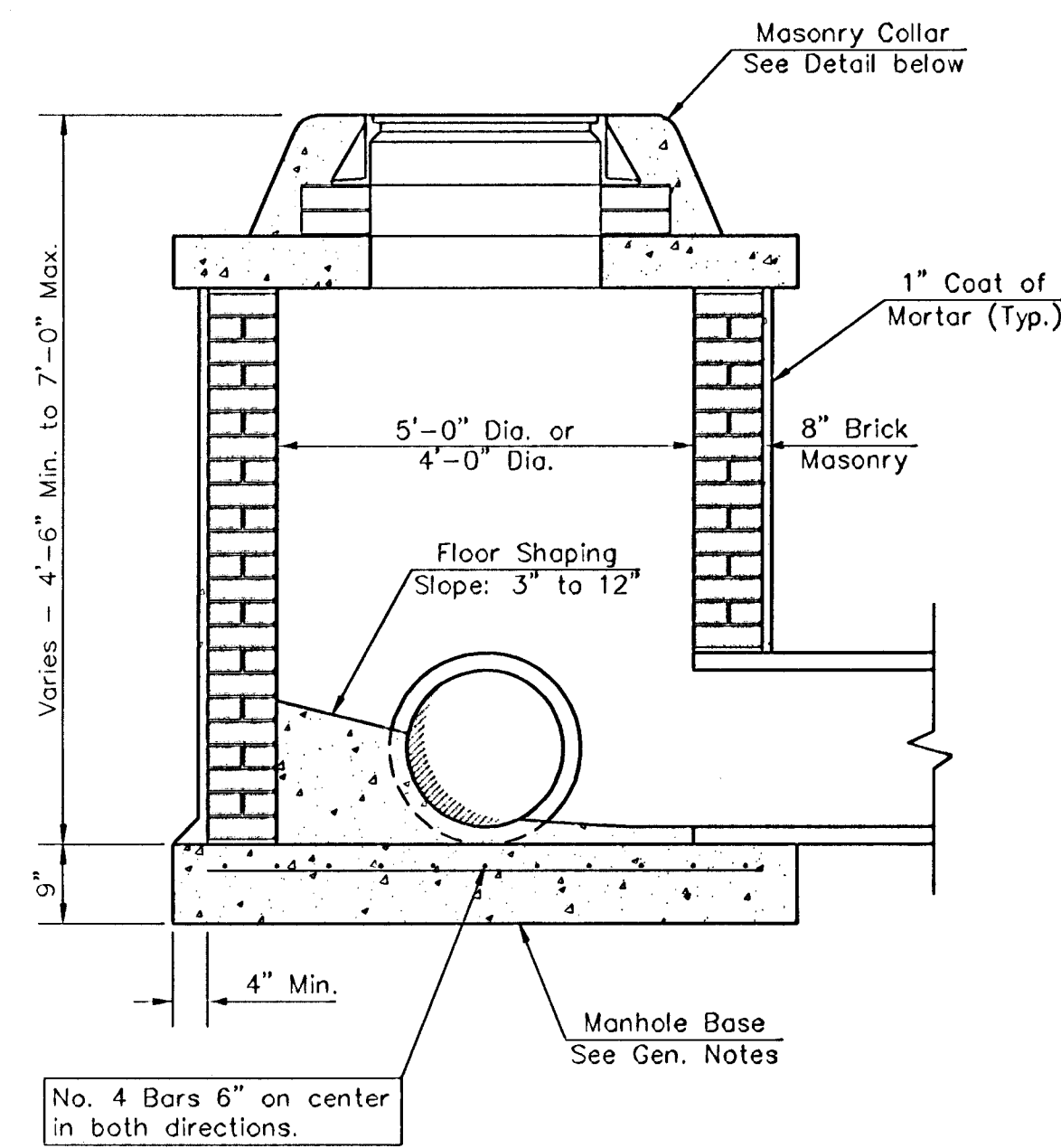
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APPROVED
DATE
07/05

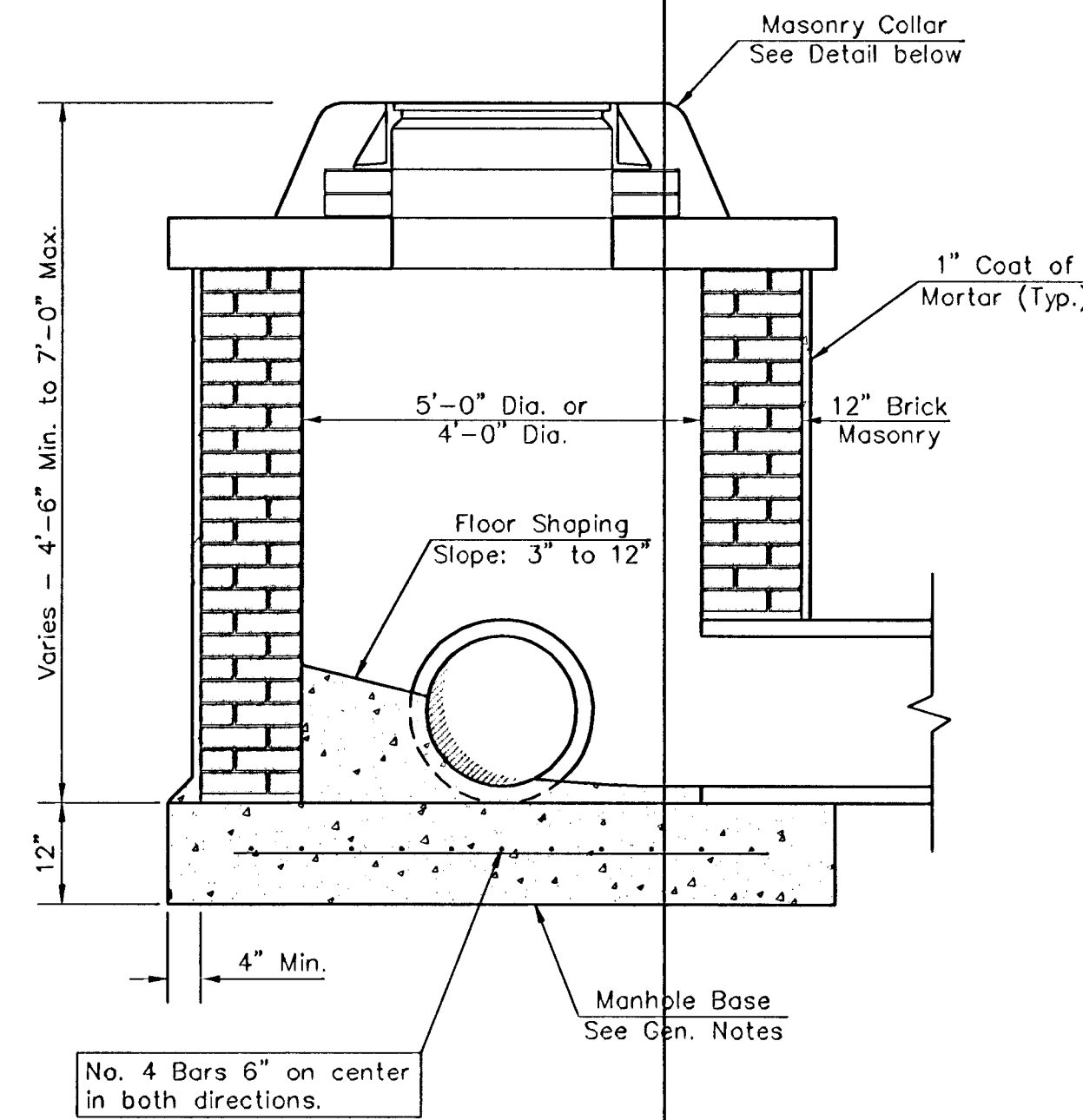
SCALE
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SHEET
6 OF 14

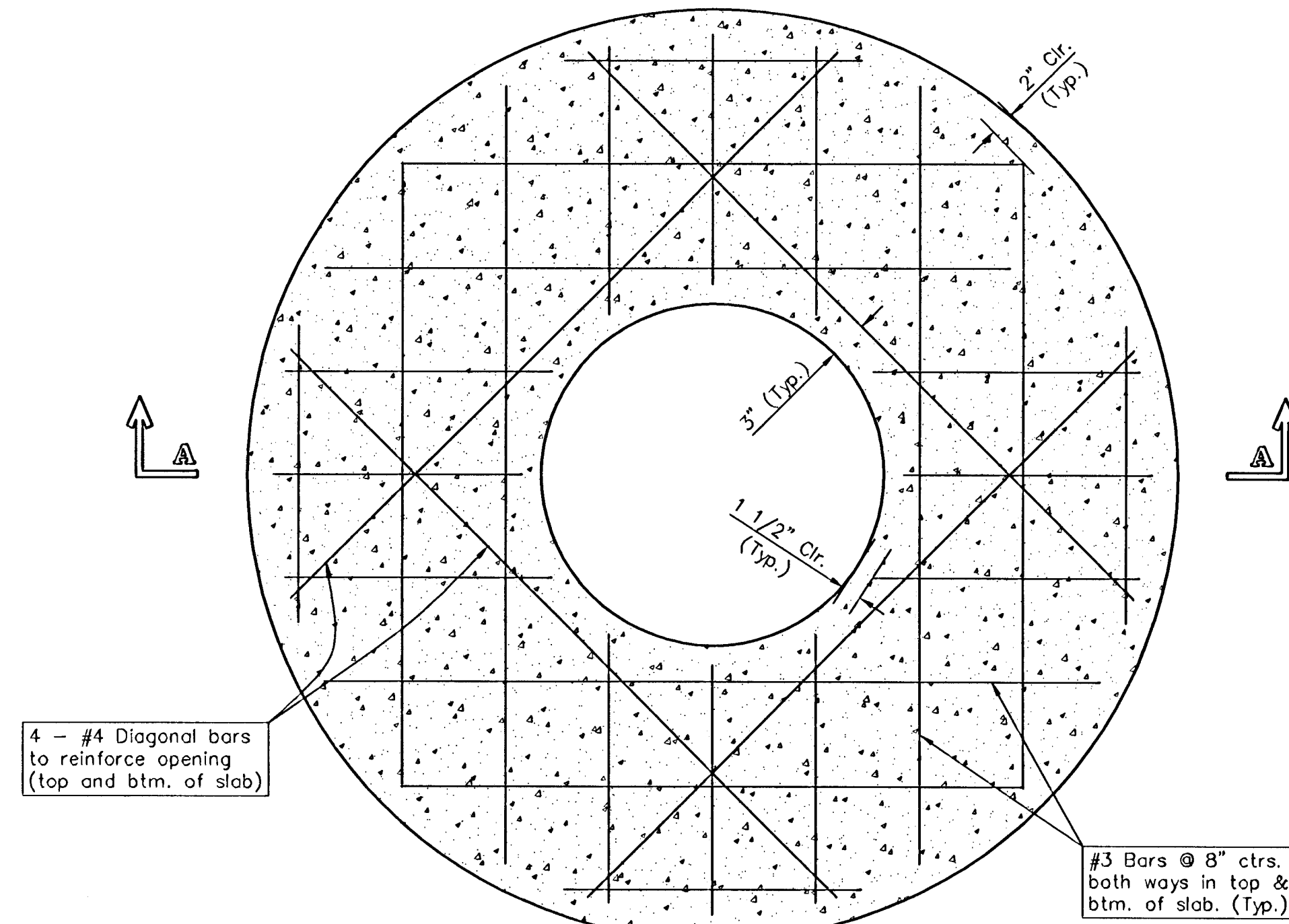
Shadow Woods\Phase3\SWDraws1



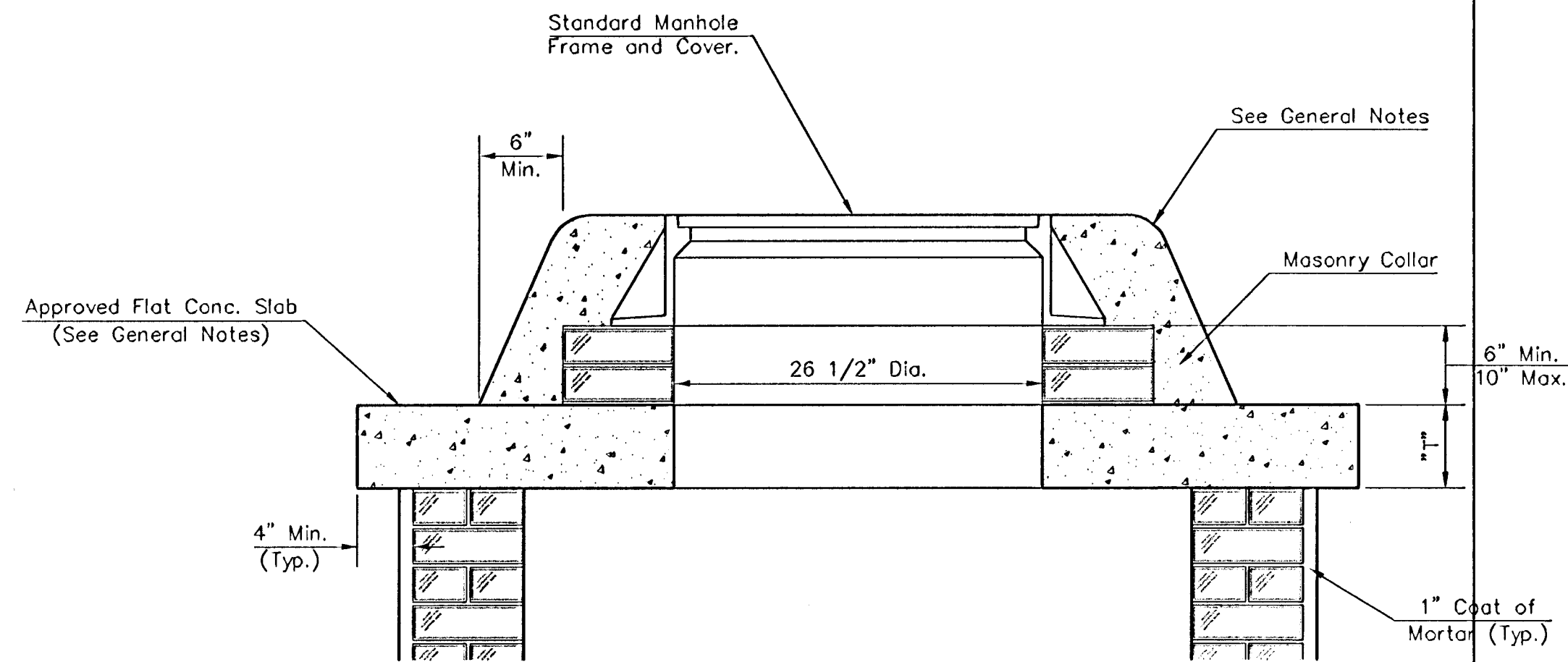
SHALLOW TYPE "A" MANHOLE



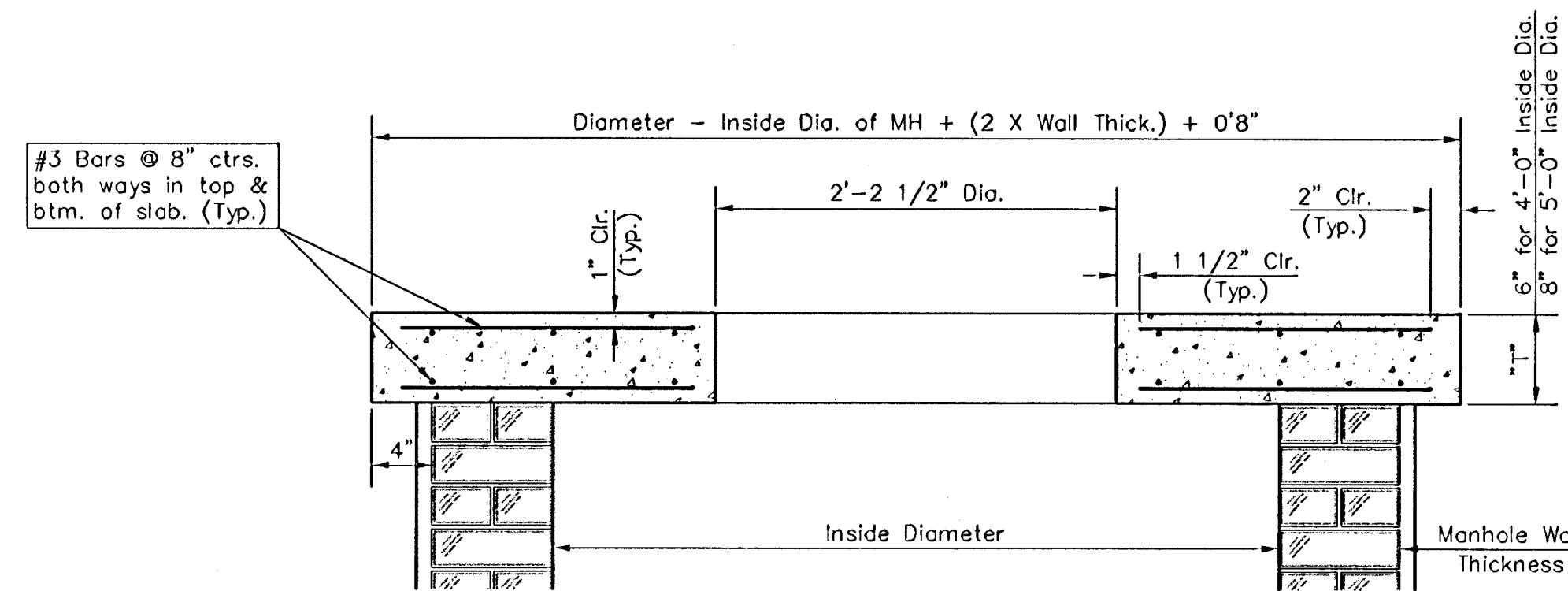
SHALLOW TYPE "B" MANHOLE



PLAN

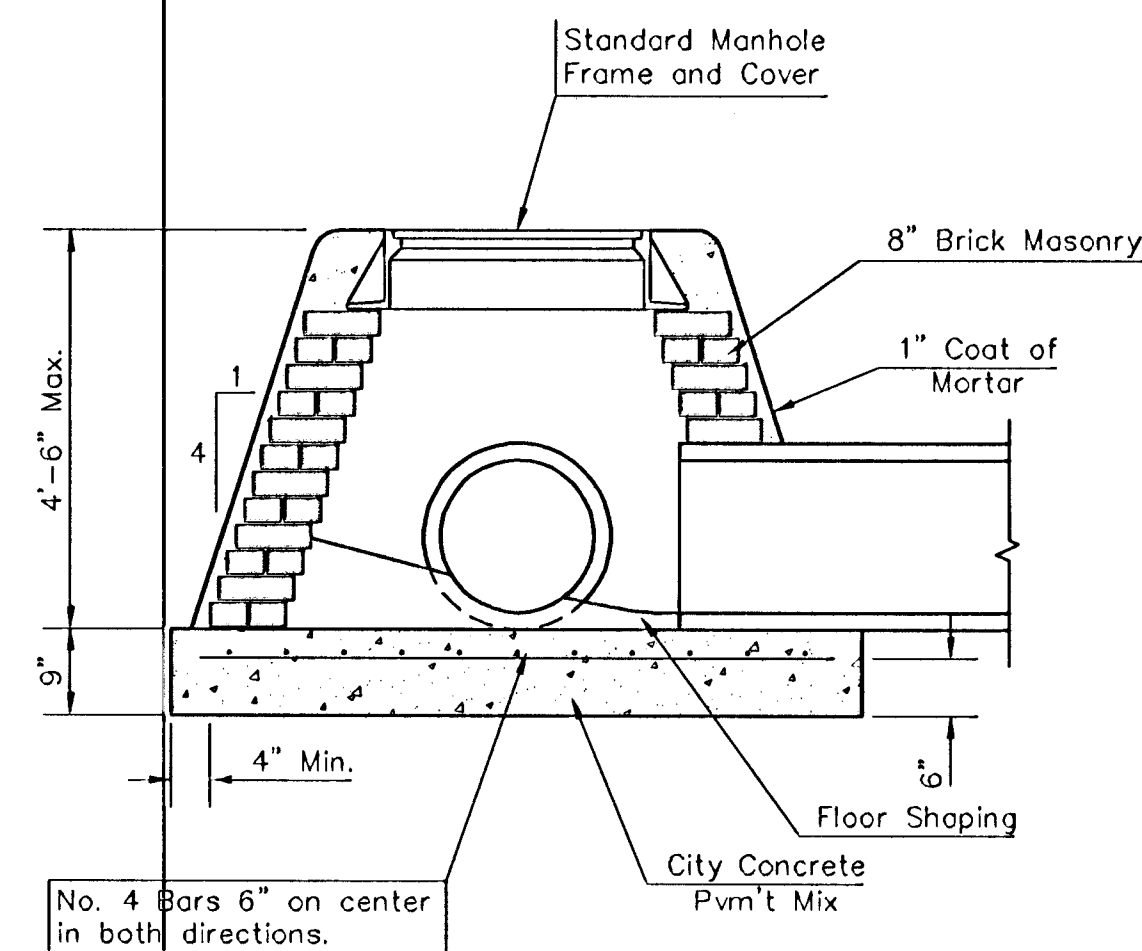


MASONRY COLLAR DETAIL

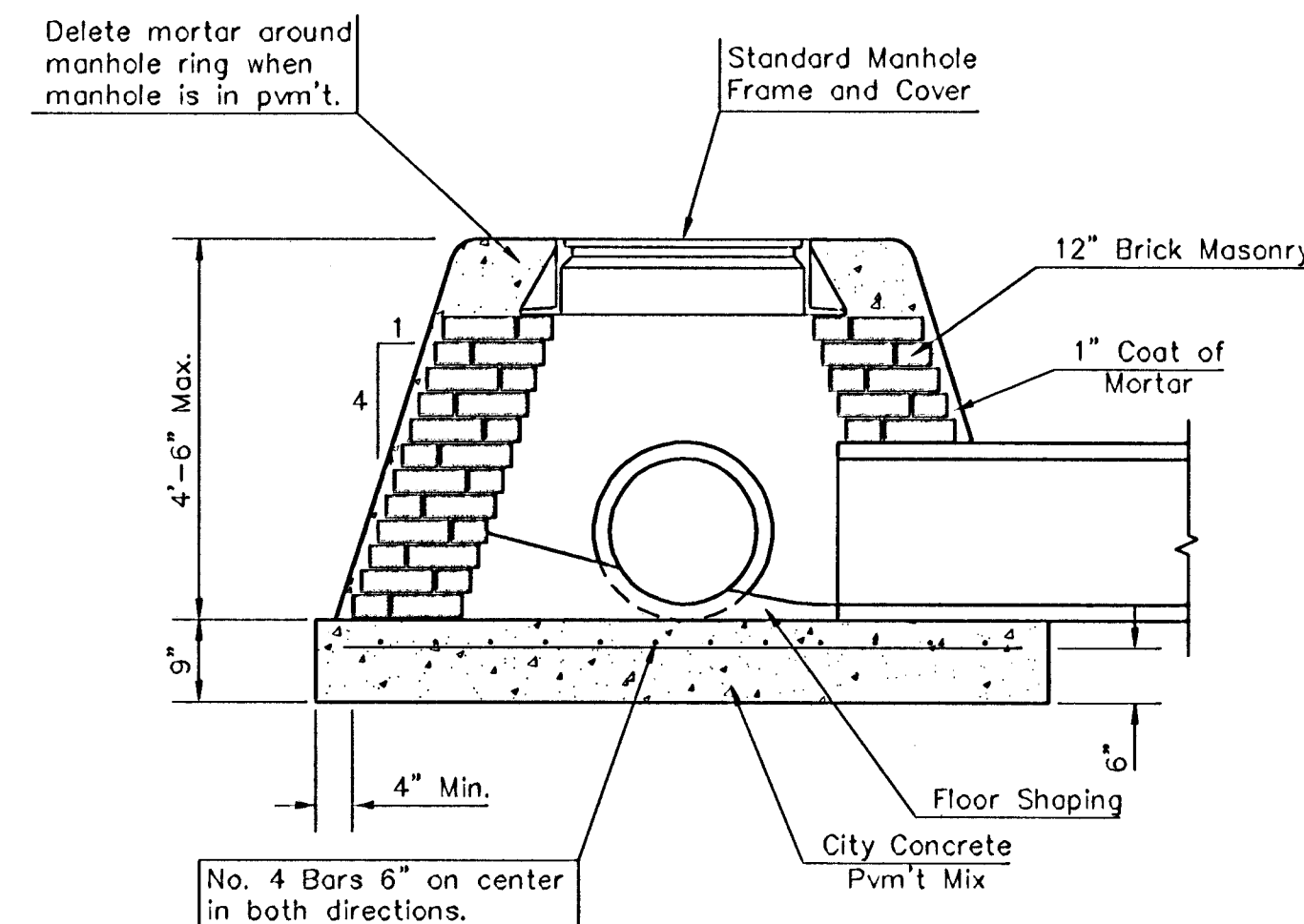


SECTION A-A

FLAT CONCRETE SLAB DETAILS



SPECIAL SHALLOW TYPE "A" MANHOLE



SPECIAL SHALLOW TYPE "B" MANHOLE

GENERAL NOTES

- 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 cement mix without air entraining admixture. Mortar shall be placed around the manhole ring as shown on the drawings when manholes are constructed in unpaved areas. Type "A" shallow manholes can be used on sewers when the manhole is not located within public street pavement. Manholes constructed where pipe sizes are smaller than 24" shall have an inside diameter of 4'. Manholes constructed where pipe sizes are 24" or larger shall have an inside diameter of 5'. Completed manhole shall be without leaks and water tight.
- Reinforcing steel shall be installed in the manhole bases and shall consist of no. 4 bars placed on 6" centers in both directions. The manhole base reinforcement shall be placed 6" above the bottom of the manhole base. All costs for furnishing and installing reinforcing steel shall be included in the unit price bid for the manhole.
- The floors of all manholes shall be shaped with flow channels such that the manholes will be self cleaning and free of areas where solids could be deposited as sewage flows through the manhole from all inlet pipes to the outlet pipe. Flow channels shall be formed to match the bottom halves of the inflowing pipes and the outflowing pipe as shown by the drawings. Manhole floors shall have slopes of 3 inches per foot in the areas outside of the flow channels sloped toward the flow channels. Pipes laid through manholes shall have the top half removed to neat lines for the full inside diameter of the manhole. Manhole floors shall then be shaped around the bottom half of the pipe which forms the flow channel.
- Pipes installed within the excavation made for the manhole shall be cradled with concrete to the limits of the manhole excavation. When clay pipe is used, the cradle shall extend to the first joint outside the manhole. The cradle shall be terminated at the clay pipe joint in a manner which will maintain the flexibility of the joint. Cost of cradle within manhole excavation or to clay pipe joints adjacent to manhole shall be included in the unit price bid for the manhole.
- Manhole cover castings and manhole frame castings shall conform to the requirements as indicated in the standard specifications and as shown in the standard detail drawings.
- The crowns of inflowing pipes shall never be set lower than the crown of the outflowing pipe.
- Standard shallow manholes type "A" and "B" shall be paid for at the unit price bid per each for the type and diameter indicated. Standard special shallow manholes type "A" and "B" shall be paid for at the unit price bid per each for the type indicated. All standard shallow manhole diameters will be 4' unless indicated otherwise.
- All brick used in manhole construction shall meet Grade SW of ASTM C652 or C62-87.

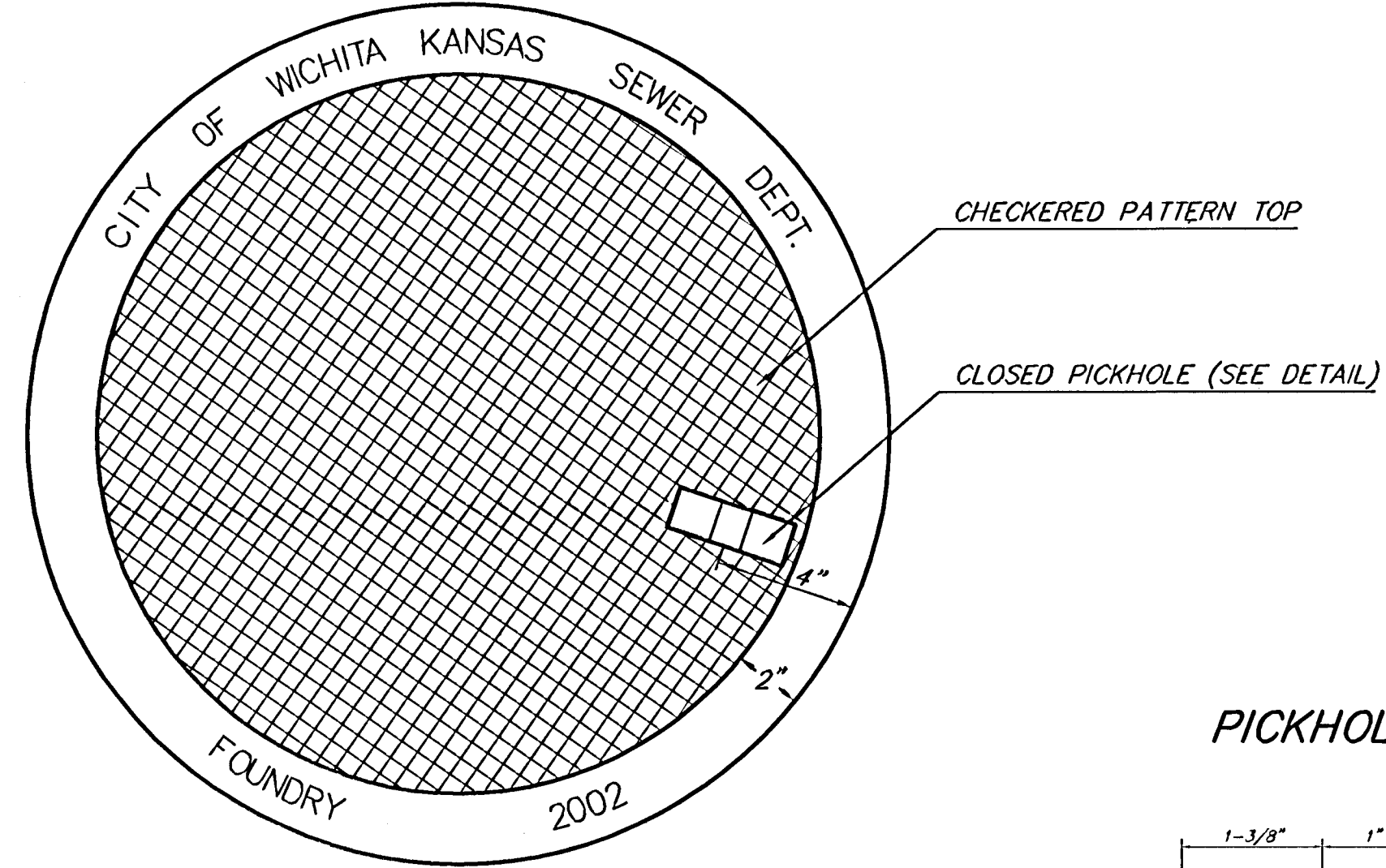
		CITY OF WICHITA, KANSAS	
Std. Manhole Detail TYPE "A" AND TYPE "B"			
Baughman Company, P.A. 315 11th St. Wichita, KS 67211 F 316263-7271 F 316262-0149 ENGINEERING SURVEYING PLANNING LANDSCAPE ARCHITECTURE			
PROJECT NUMBER		DESIGN	DRAWN
REVISIONS		C.O.W.	STAFF
		APPROVED	DATE
		SCALE	06/05
		NONE	
		SHEET	
			7 OF 14
\ShwMH			

MANHOLE FRAME AND COVER DETAIL

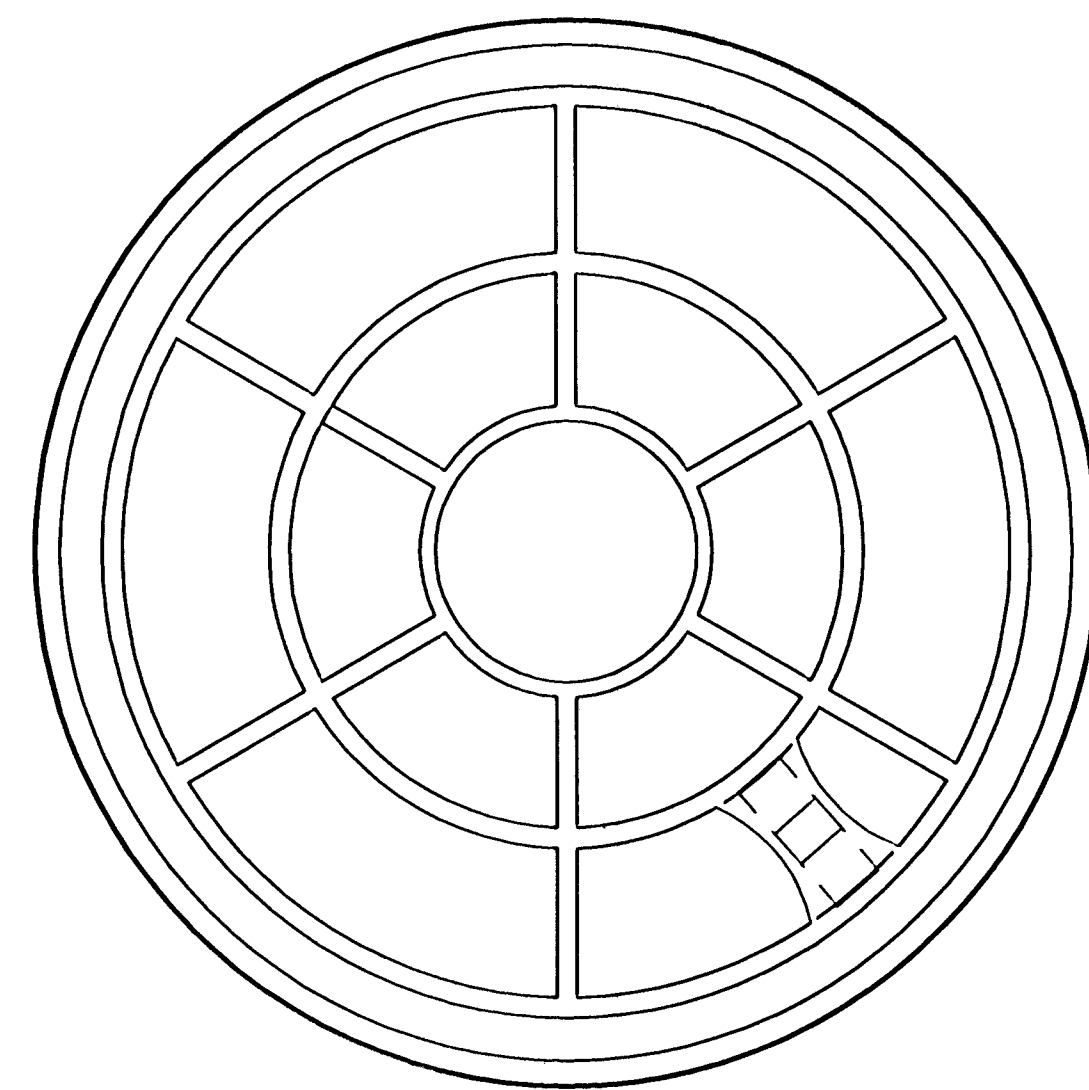
ADOPTED AS STANDARD DESIGN BY
CITY OF WICHITA, KANSAS

MANHOLE COVER

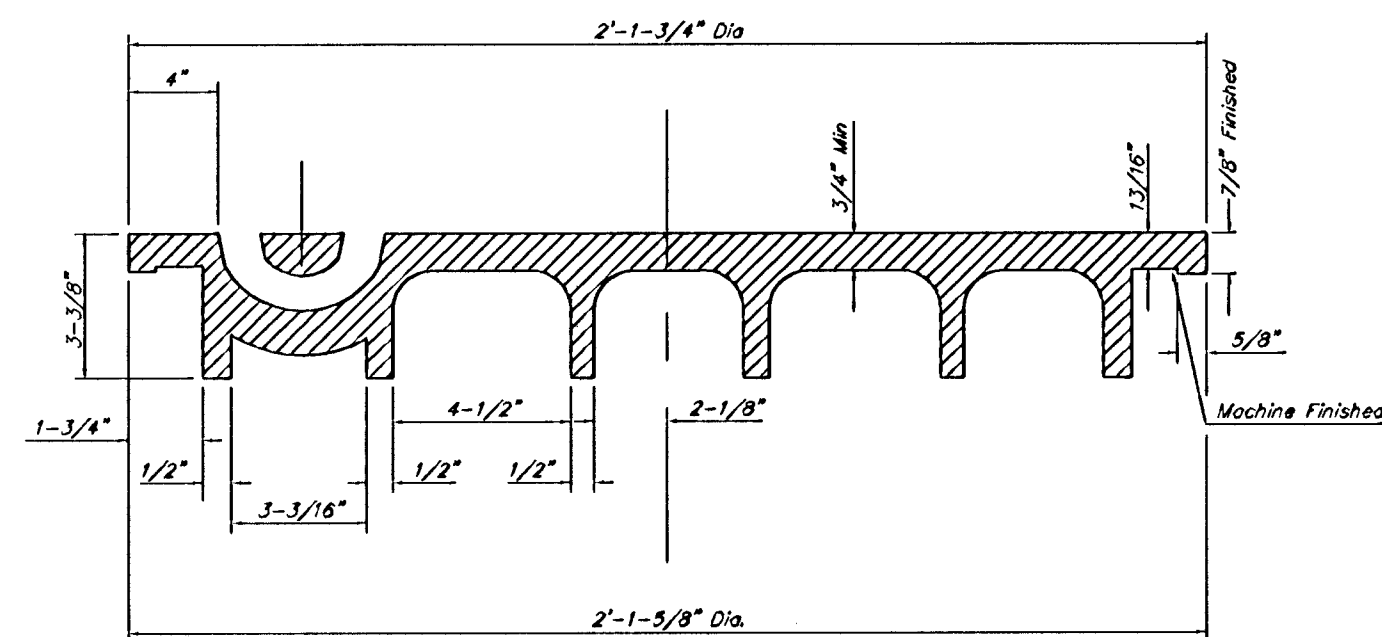
Weight = 180 Lbs.



TOP VIEW

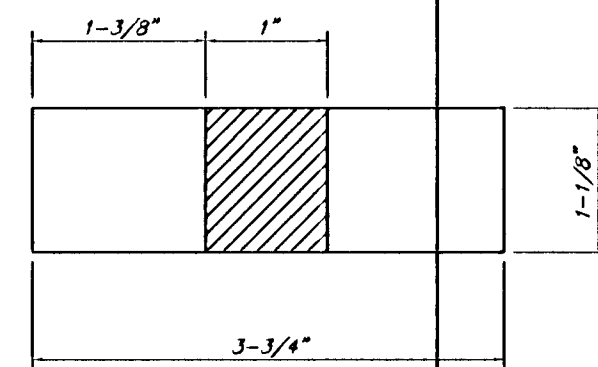


BOTTOM VIEW

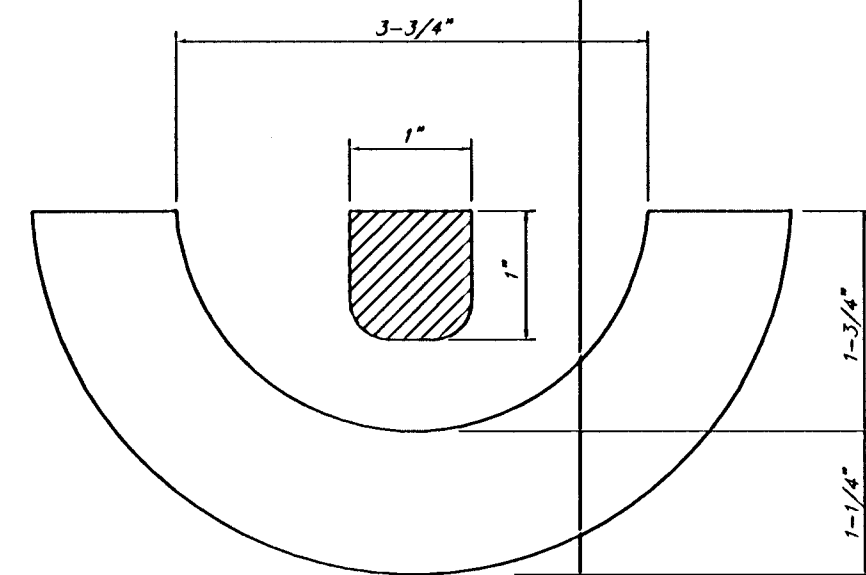


SECTION VIEW

PICKHOLE DETAIL

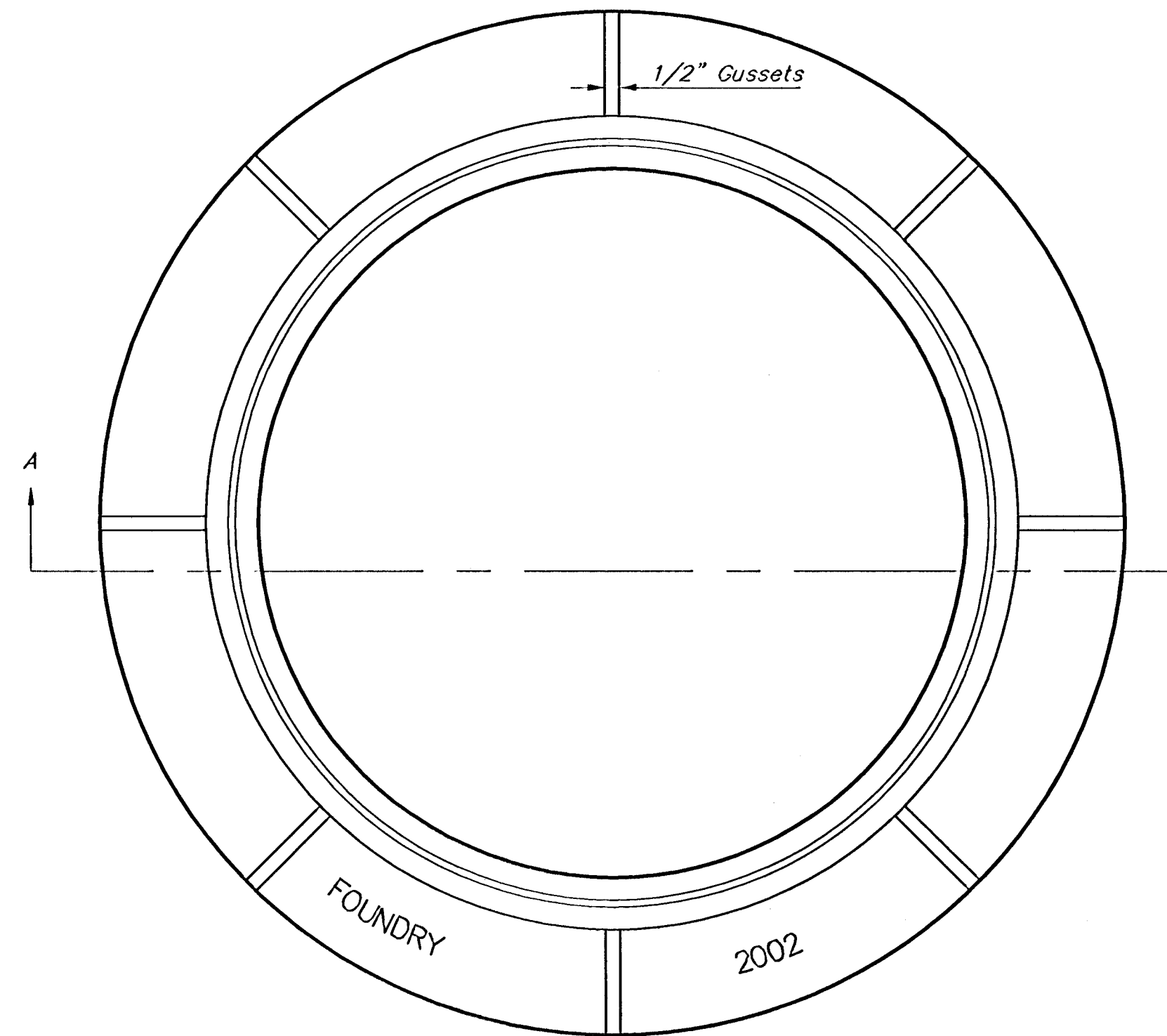


TOP VIEW

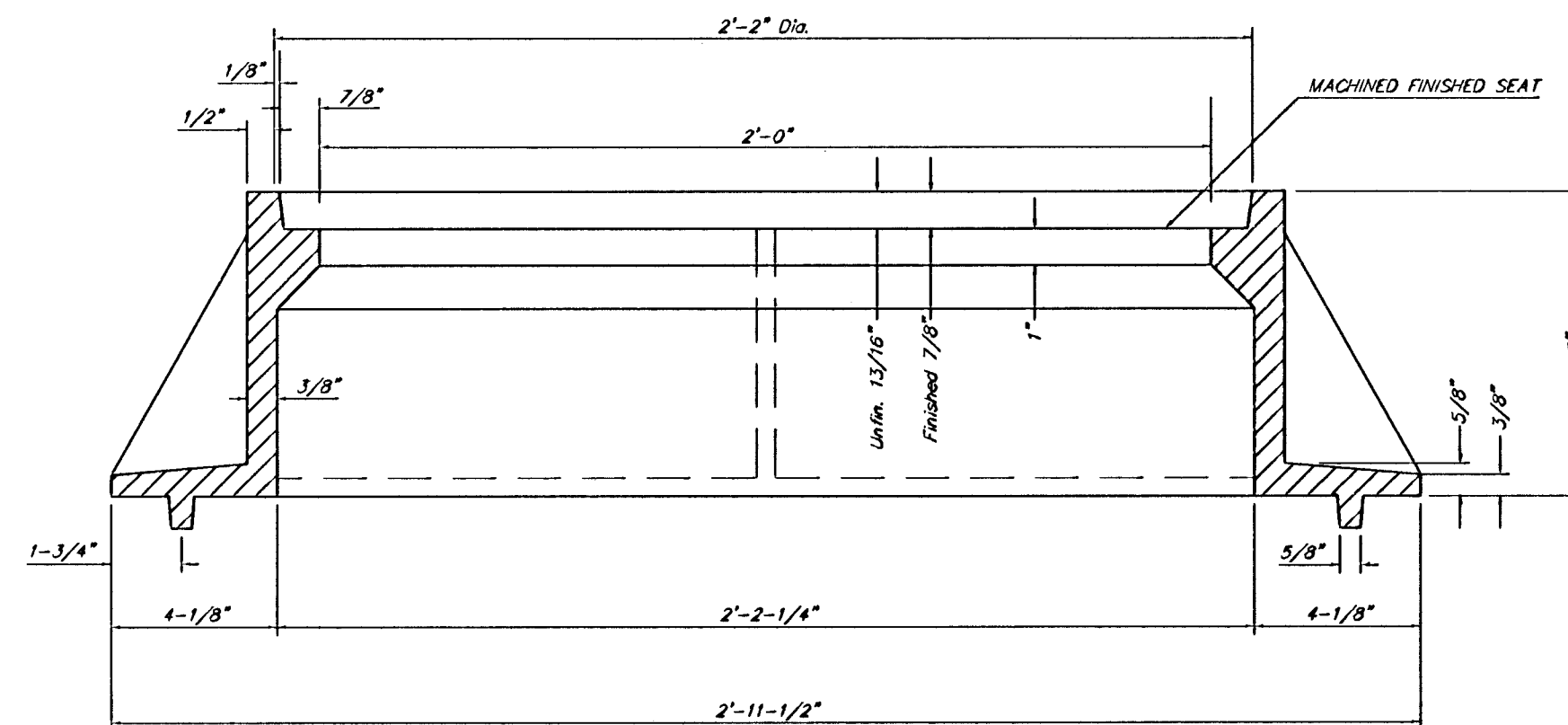


SECTION VIEW

MANHOLE FRAME
Weight = 145 Lbs.



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.

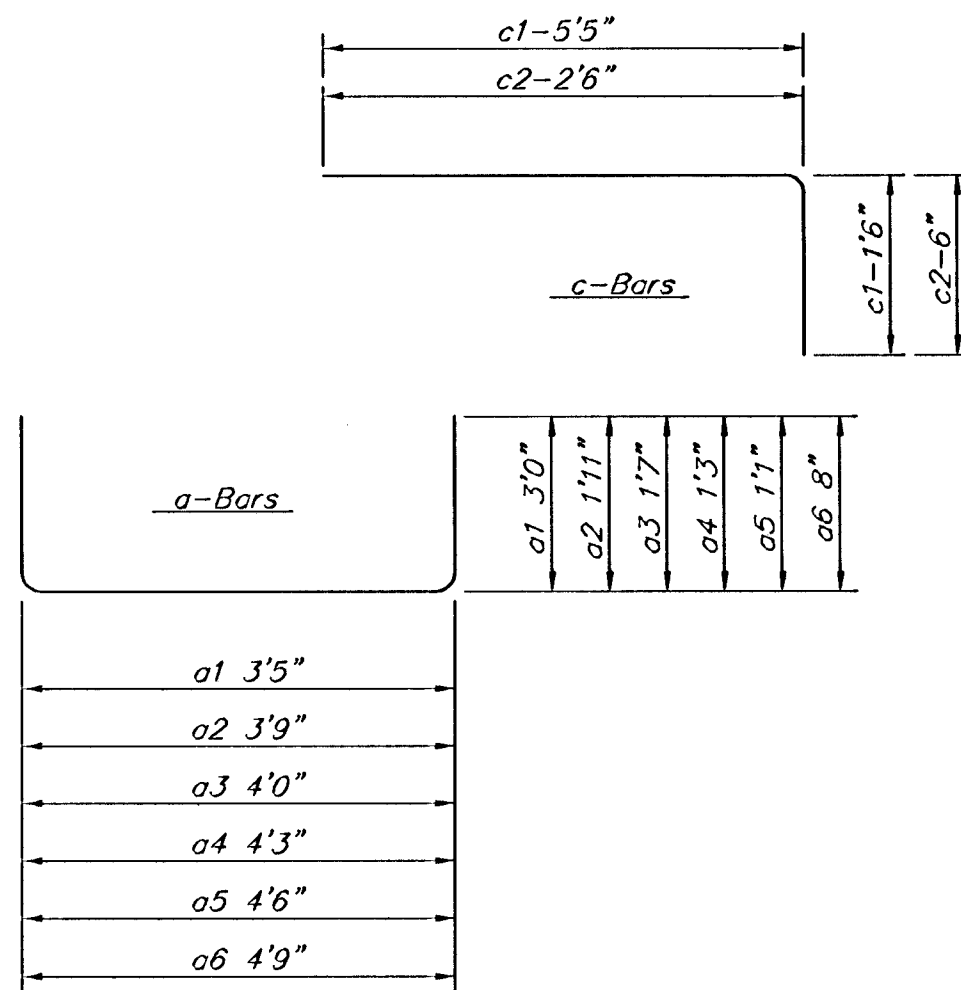
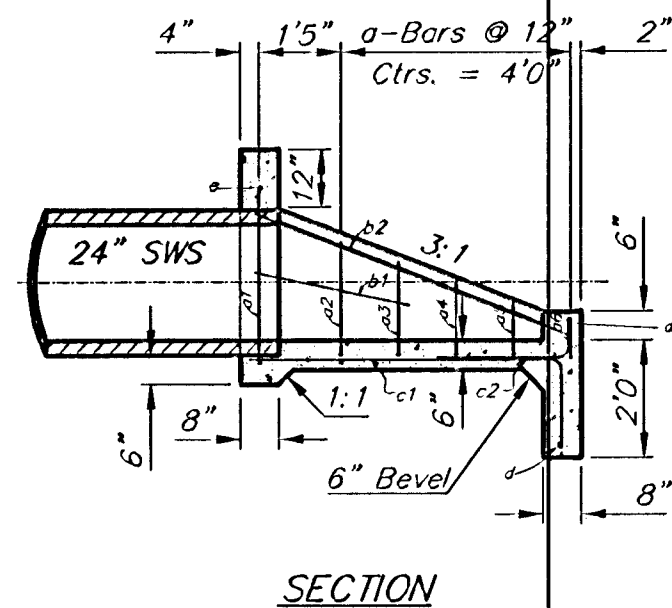
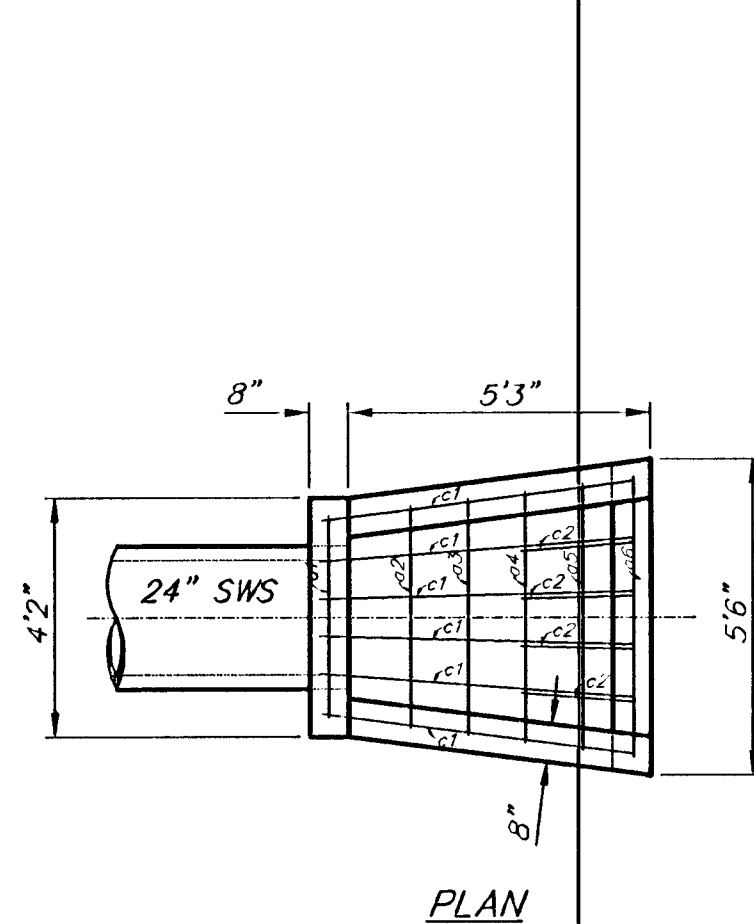
MANHOLE CASTINGS SHALL BE COATED WITH AN ASPHALT PAINT RESULTING IN A SMOOTH, TOUGH AND TENACIOUS COATING WHICH IS NOT BRITTLE OR TACKY.

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 SURFACE OF THE COVER SHALL BE MANUFACTURED IN A MANNER THAT PAYS ATTENTION AS INDICATED IN THE DRAWINGS. SMOOTH BLOCKOUTS SHALL BE UTILIZED TO HIGHLIGHT THE LETTERING ON THE COVER SURFACE. THE TOTAL AREA OF SMOOTH SURFACE BLOCKOUT SHALL NOT EXCEED THE AREA AS INDICATED ON THE DRAWING. POSITIONING OF SMOOTH BLOCKOUTS AND LETTERING MAY VARY FROM THAT SHOWN ON THE DETAILED DRAWING.

 Baughman ENGINEERING	MANHOLE FRAME AND COVER DETAIL ADOPTED AS STANDARD DESIGN BY CITY OF WICHITA, KANSAS										
Baughman Company, P.A. 315 15th St. Wichita, KS 67211 316-262-0149 316-262-0149 ENGINEERING SURVEYING PLANNING LANDSCAPE ARCHITECTURE											
PROJECT NUMBER	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">DESIGN STAFF</td> <td style="width: 50%; padding: 5px;">DRAWN STAFF</td> </tr> <tr> <td style="padding: 5px;">APPROVED</td> <td style="padding: 5px;">DATE</td> </tr> <tr> <td style="padding: 5px;">SCALE</td> <td style="padding: 5px;">06/05</td> </tr> <tr> <td style="padding: 5px;">NONE</td> <td></td> </tr> <tr> <td style="padding: 5px;">SHEET</td> <td></td> </tr> </table>	DESIGN STAFF	DRAWN STAFF	APPROVED	DATE	SCALE	06/05	NONE		SHEET	
DESIGN STAFF	DRAWN STAFF										
APPROVED	DATE										
SCALE	06/05										
NONE											
SHEET											
REVISIONS											



REBAR SCHEDULE				
Bar	Shape	No.	Length	Weight
a1		1	9'5"	6.29
a2		1	7'7"	5.07
a3		1	7'2"	4.79
a4		1	6'9"	4.51
a5		1	6'4"	4.23
a6		1	6'1"	4.06
b1		2	2'9"	3.67
b2		2	5'10"	7.79
c1		6	6'11"	27.72
c2		4	3'0"	8.02
d		2	5'0"	6.74
e		1	3'10"	2.56
Total Rebar			85.45 Lbs.	
Concrete			1.45 C.Y.	

A Deduction in Concrete Quantities Has Been Made
for Pipe Openings Through the Headwall
* Field Bend or Cut Reinforcing as Required for Clearance.
All Concrete Reinforcement to be #4 Rebar
All Rebar to Have Min. of 1 1/2" Conc. Cover

SPECIAL HEADWALL FOR 24" RCP

GENERAL NOTES

- ALL PIPES SHALL BE FLUSH CUT PRIOR TO BEING CAST INTO CONCRETE HEADWALL.
- CONCRETE USED IN HEADWALL CONSTRUCTION SHALL BE SAME AS PER CITY STANDARD PAVING MIX EXCEPT THAT IT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI.
- ALL EXPOSED EDGES SHALL BE BEVELED 1/2" .
- REINFORCING STEEL SHALL COMPLY TO A.S.T.M. DESIGNATION A615 GRADE 60. ALL DIMENSIONS RELATIVE TO REINFORCING STEEL ARE TO CENTERLINE OF BAR UNLESS OTHERWISE NOTED.
- THE "REIN. CONC. HEADWALL" SHALL BE PAID FOR AT THE UNIT PRICE BID PER EACH IN PLACE WHICH SHALL INCLUDE ALL LABOR, MATERIALS, EXCAVATION, CONCRETE, REINFORCING STEEL AND ALL OTHER INCIDENTAL ITEMS NECESSARY TO COMPLETE THE WORK. MATERIAL QUANTITIES SHOWN ARE FOR INFORMATION ONLY.



HEADWALL DETAIL

Baughman Company, P.A. 315 Elm St., Woburn, MA 01801 P: 315/363-7071 F: 315/363-0149
ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

PROJECT NUMBER
468-83598

DESIGN
BLP/DMV

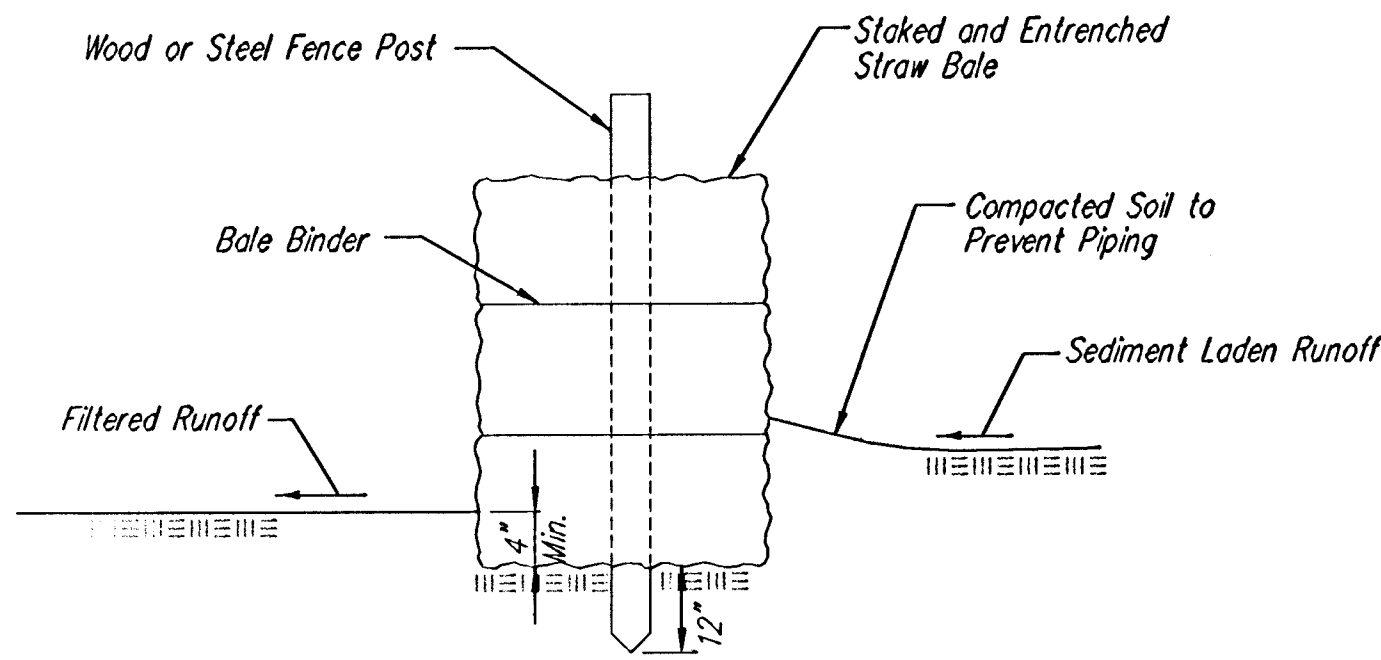
APPROVED
DATE
07/05

REVISIONS

SCALE
Noted

SHEET
9 OF 14

Headwall2



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:

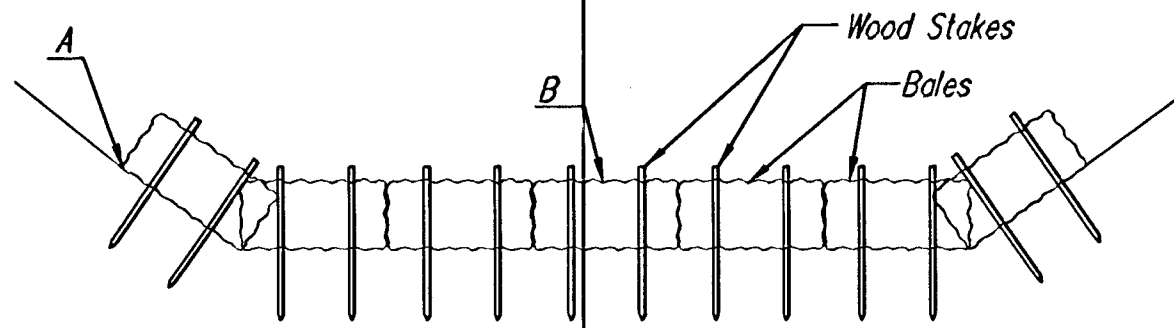
When practicable, do not place bale slope barriers across contours. Slope barriers should be placed along contours to avoid a concentration of flow. Concentrated flow over a slope barrier creates a scour hole on the downslope side of the barrier. The scour hole eventually undermines the bales and the 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".

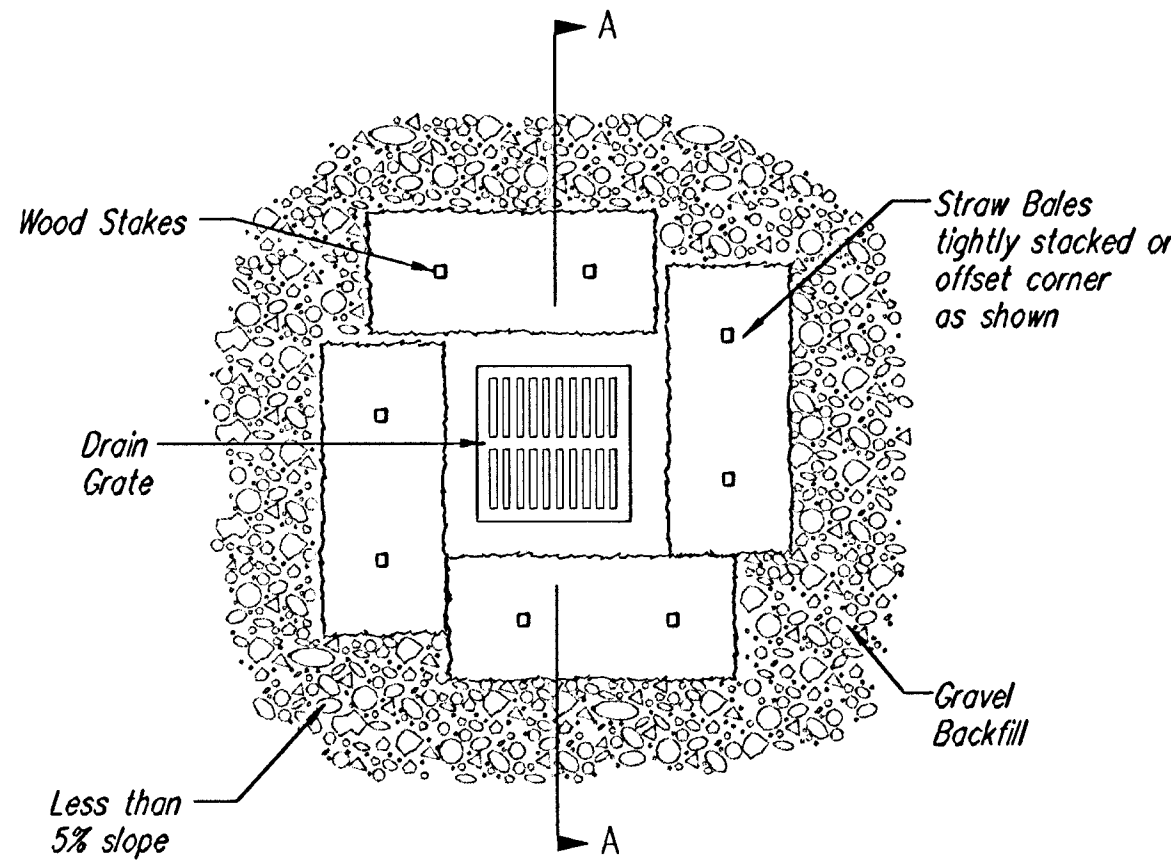
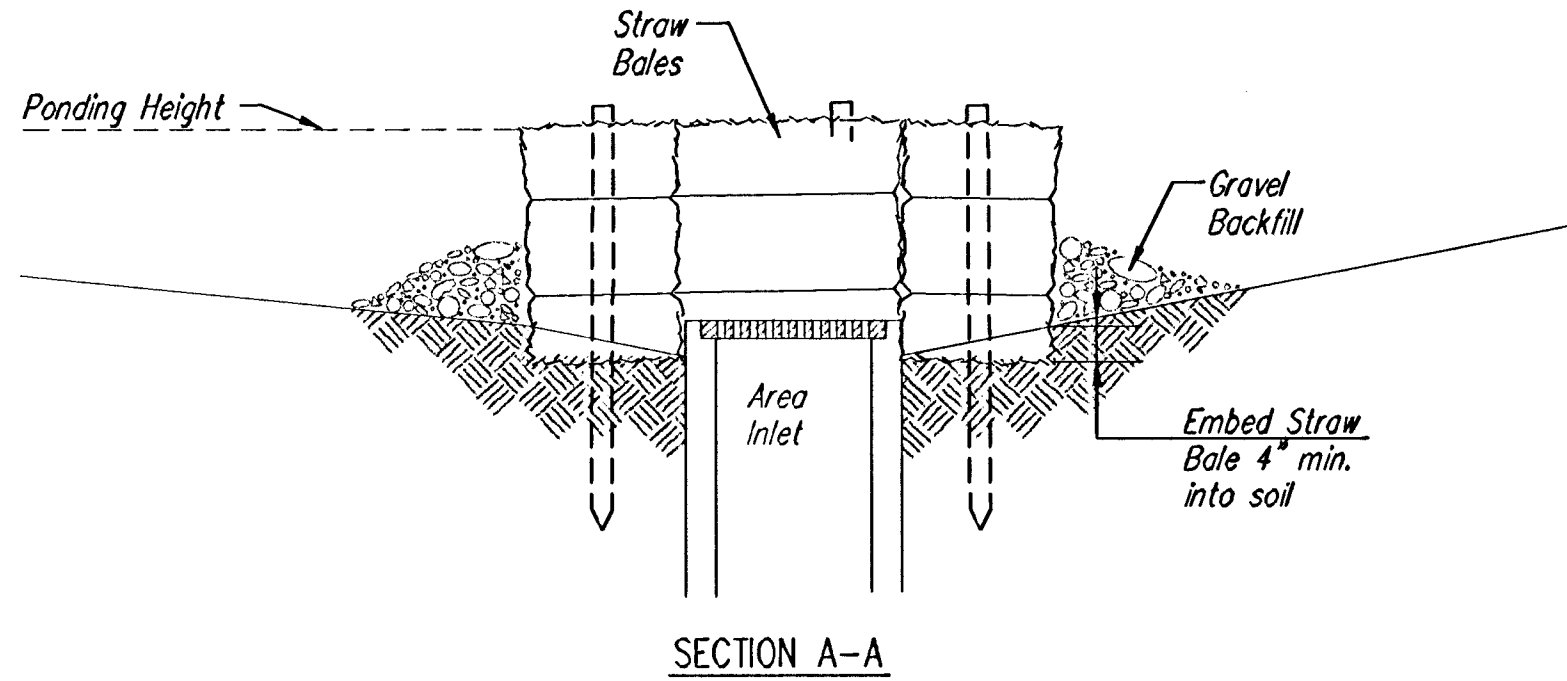
List of common placement/installation mistakes to avoid:

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.

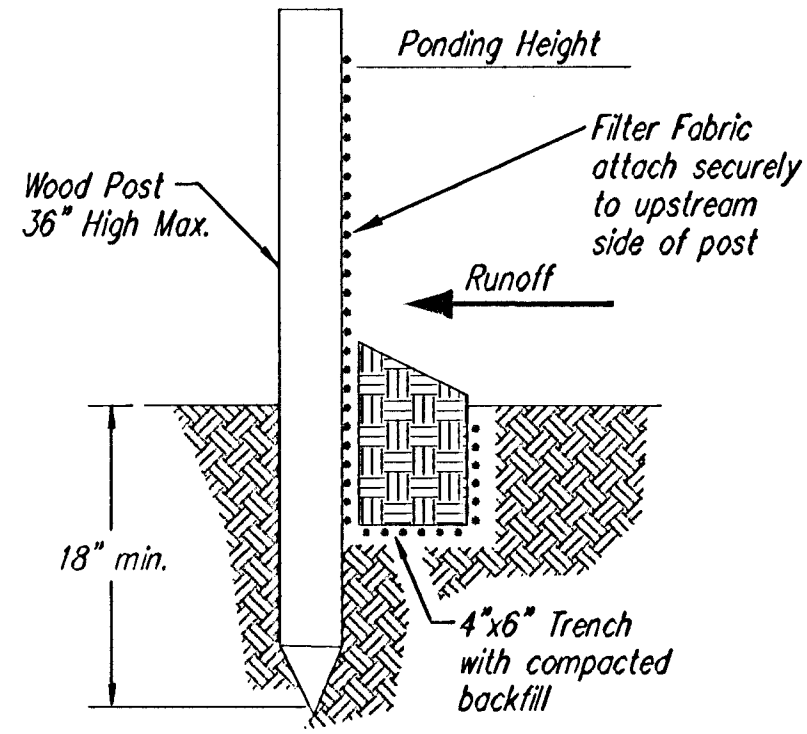
List of common placement/installation mistakes to avoid:

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?

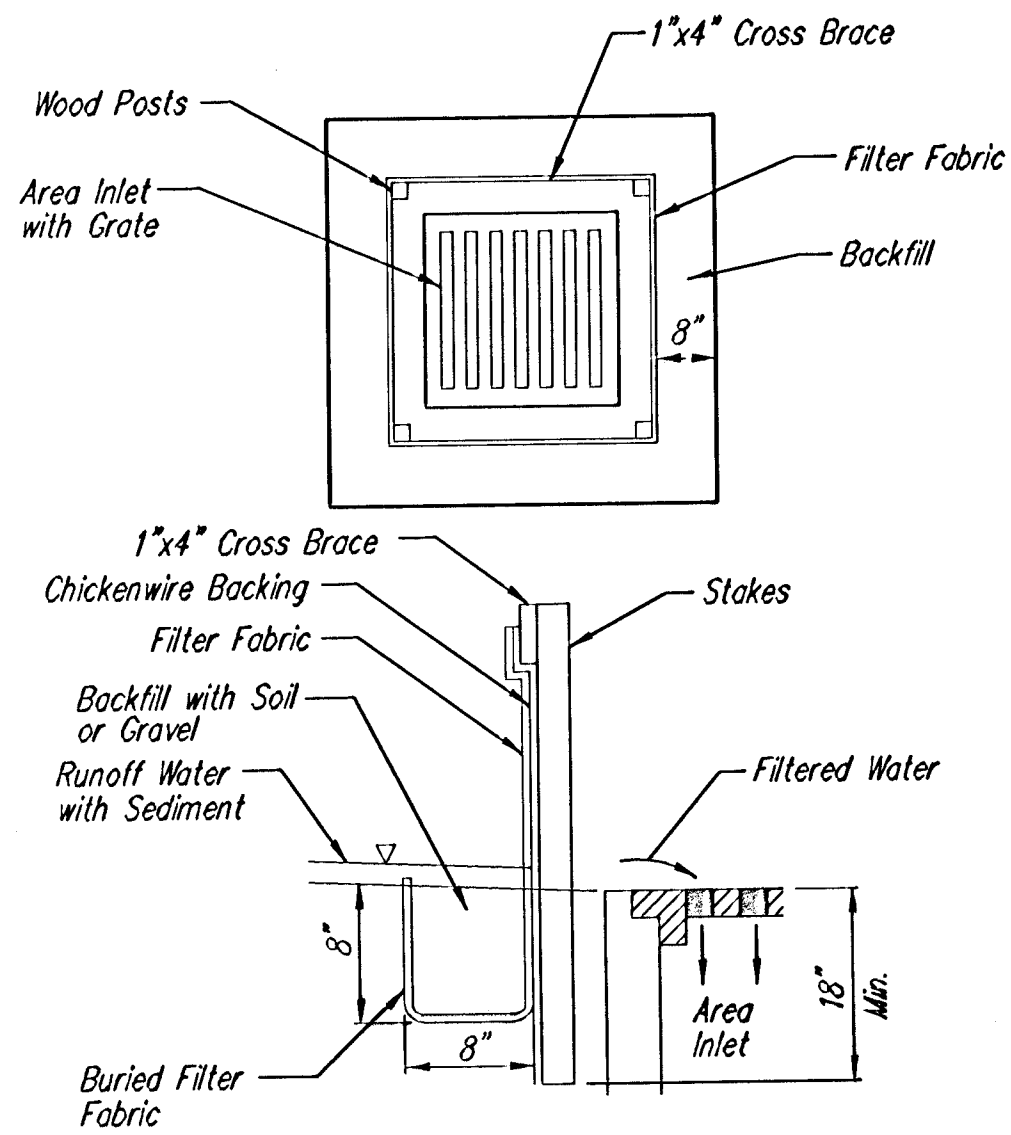


SOIL EROSION BMP DETAILS

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

PROJECT NUMBER 468-83598 OCA NO. 751400

DATE MAY 2005 SHEET 10 OF 14



SILT FENCE BARRIERS FOR AREA INLETS
(INLET PROTECTION)

Material Specification:

Silt fence fabric should conform to the AASHTO M288 96 silt fence specification. The wire or polymeric mesh backing used to help support the 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. The material used to frame the tops of the posts should be 1" by 4" boards. Silt fence fabric and support backing should be attached to the wooden posts and frame with staples, wire, zip ties, or nails.

Placement:

Place a silt fence drop inlet barrier in a location where it is unlikely to be overtopped. Water should flow through silt fence, not over it. Silt fence barriers for area inlets often fail when repeatedly overtopped. When used as a barrier for area inlets, silt fence fabric and posts must be supported at the top by a wooden frame. When a silt fence barrier for area inlets 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 8" deep by 8" wide. Drive posts to a depth of at least 18" around the perimeter of the area inlet. The distance between posts should be 4' or less. If the distance between two adjacent corner posts is more than 4', add another post(s) between them. Connect the tops of all the posts with a wooden frame made of 1" by 4" boards. Use nails or screws for fastening. Attach the wire or polymeric-mesh backing to the outside of the post/frame structure with staples, wire, zip ties, or nails. Roll out a continuous length of silt fence fabric long enough to wrap around the perimeter of the area inlet. Add more length for overlapping the fabric joint. Place the edge of the fabric in the trench, starting at the outside edge of the trench. 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. Attach the silt fence to the outside of the post/frame structure with staples, wire, zip ties, or nails. The joint should be overlapped to the next post.

Note: When a silt fence barrier for area inlet 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.

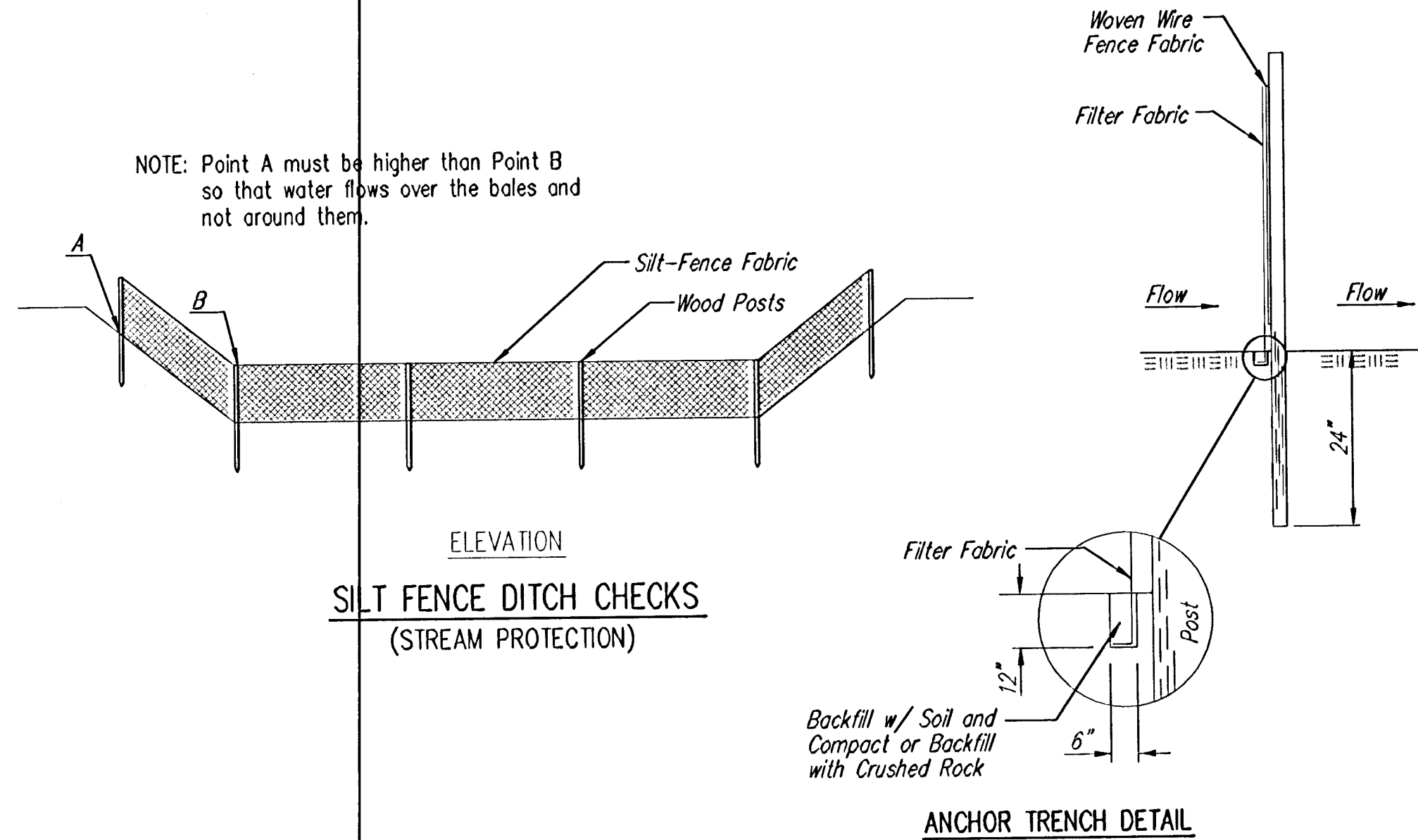
List of common placement/installation mistakes to avoid:

Water should flow through a silt fence barrier for area inlet—not over it. Place a silt fence barrier for area inlet in a location where it is unlikely to be overtopped. Silt fence barrier for area inlets often fail when repeatedly overtopped. Do not place posts on the outside of the silt fence barrier for area inlet. In this configuration, the force of the water is not resisted by the posts, but only by the staples (wire, zip-ties, nails, etc.). The silt fence will rip and fail. Do not install silt fence barrier for area inlets without framing the top of the posts. The corner posts around area inlets are stressed in two directions whereas a normal silt fence is only stressed in one direction. This added stress requires more support.

Inspection and Maintenance:

Silt fence barrier for area inlets 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 silt fence?
Does the silt fence sag excessively?
Has the silt fence torn or become detached from the posts?
Does sediment need to be removed from behind the area inlet barrier?



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:

Place silt fence in ditches where it is unlikely that it will be overtopped. Water should flow through a silt fence ditch check, not over it. Silt fence ditch checks often fail when overtopped. Silt fence ditch checks should be placed perpendicular to the flowline of the ditch. The silt fence should extend far enough so that the ground level at the ends of the fence is higher than the top of the low point of the fence. 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. Silt fence 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 Check Ditch grade (%)	Spacing 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 at least 12" deep by 6" 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 for later use. Roll out a continuous length of silt fence fabric on the downstream side of the trench. Place the edge of the fabric in the trench starting at the top upstream edge of the trench. Line two sides of the trench with the fabric as shown on detail. 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 on the upstream side of the trench to clear an area for driving in the posts. Just downstream of the trench, drive posts into the ground to a depth of at least 24". Place posts no more than 4' apart. Attach the silt fence to the anchored post with staples, wire, zip ties, or nails.

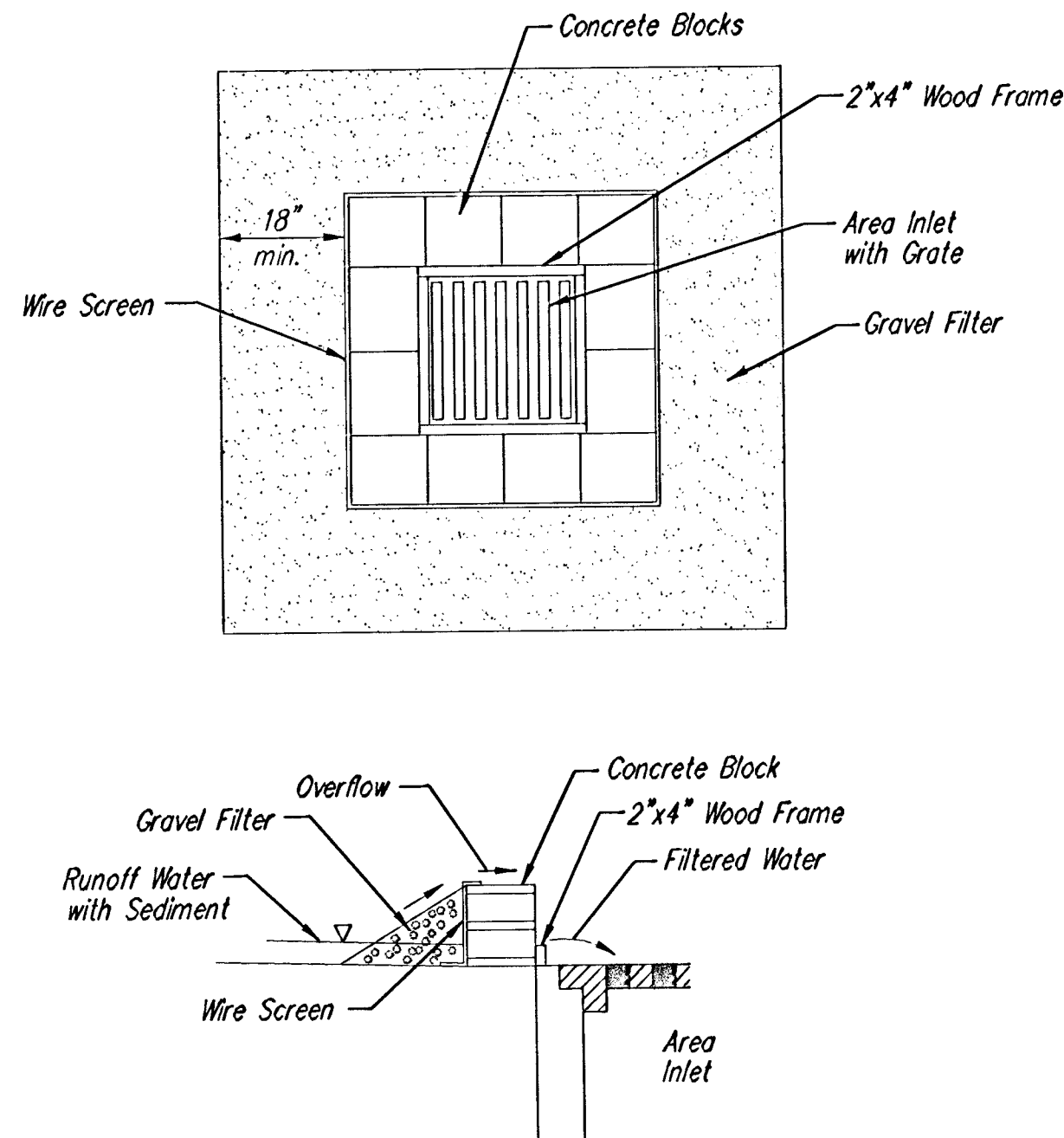
List of common placement/installation mistakes to avoid:

Water should flow through a silt fence ditch check—not over it. Place silt fence in ditches where it is unlikely that it will be overtopped. Silt fence installations quickly deteriorate when water overtops them. Do not place silt fence posts on the upstream 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 a silt fence ditch check directly in front of a culvert outlet. It will not stand up to the concentrated flow. Do not place silt fence 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 fence is higher than the low point on the top of the fence. Do not place silt fence ditch checks in channels with shallow soils underlain by rock. If the check is not anchored sufficiently, it will wash out.

Inspection and Maintenance:

Silt fence 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 the silt fence sag excessively?
Has the silt fence torn or become detached from the posts?
Does sediment need to be removed from behind the ditch check?



CONCRETE BLOCK FILTER FOR AREA DRAIN
(INLET PROTECTION)

Gravel barriers provide little filtering of large inflow waters. However, when installed correctly and maintained, they can effectively treat low runoff flows.

Placement of gravel filters around area drains must be completed in a manner that will not cause local flooding.

Gravel filters can be used if the immediate and adjacent area to the area drain consists of soil or pavement.

Only gravel filters are to be installed on top of the pavement.

Instructions for Installing:

STEP 1: Place concrete blocks around the grate. The blocks can be stacked one or two high and should be supported by a 2"x4" board.
STEP 2: Wrap 1/2" mesh wire screen around the concrete blocks.
STEP 3: Place 1" to 1-1/2" diameter rock around the blocks and wire screen. Be sure the rock extends down from the top of the concrete block.
STEP 4: To prevent damage to vehicles, signs warning drivers about the structures may be necessary.

An alternative method is use of gravel bags that are supported to prevent collapsing.

Use of rock having diameters smaller than 1" may result in clogging of pores and reduce the amount of water flowing into an inlet.

Maintenance:

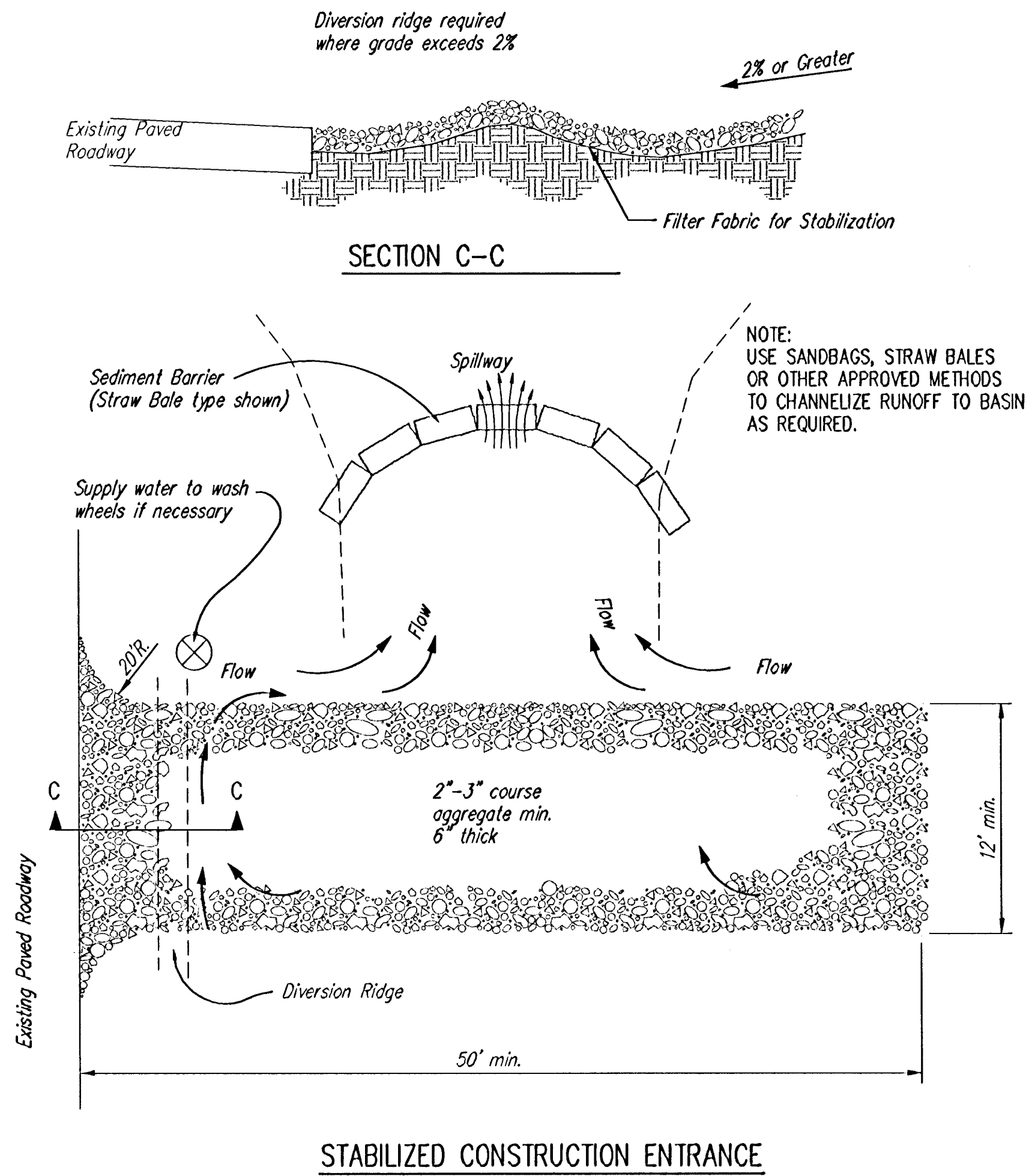
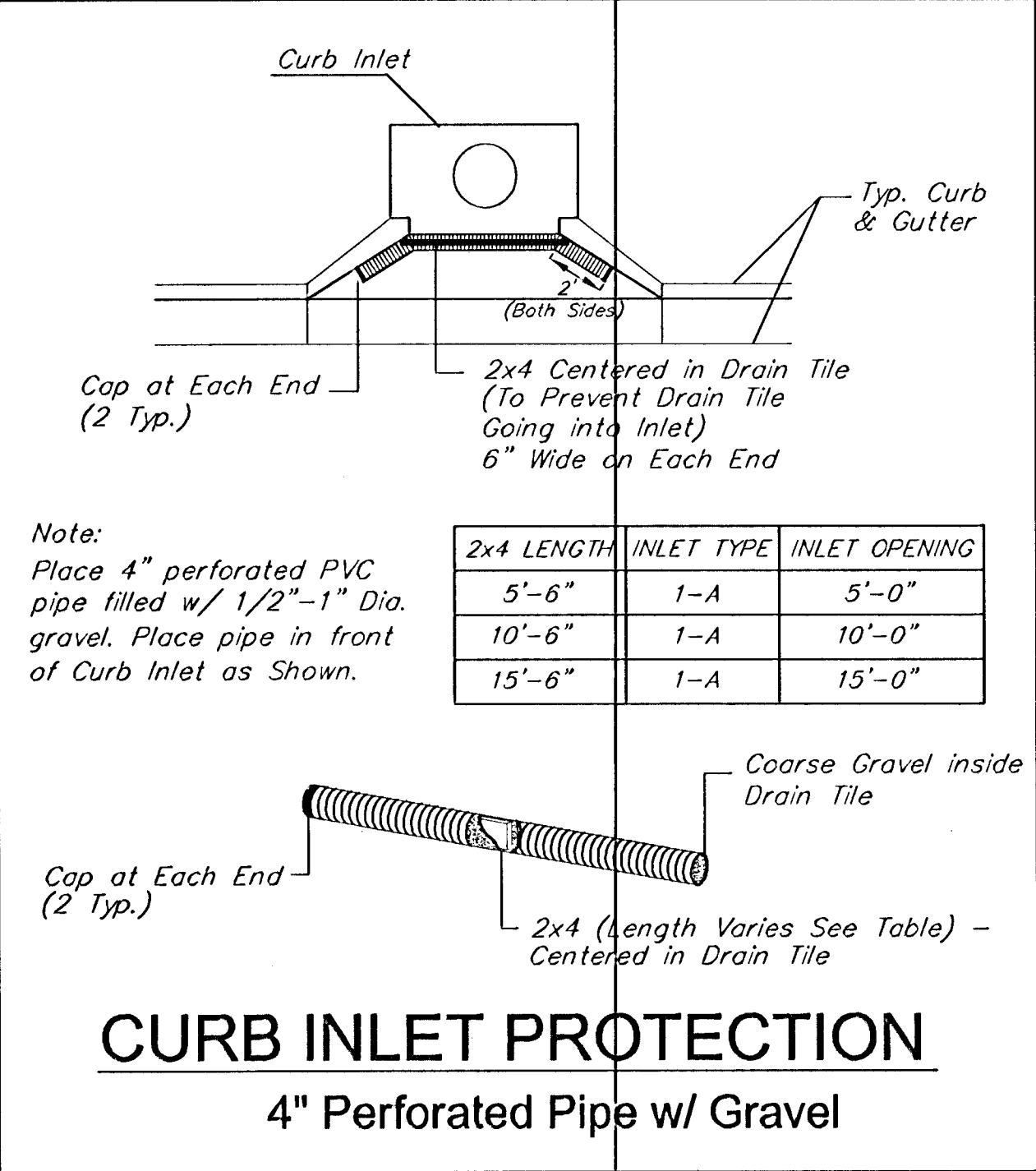
All gravel filters installed around area drains should be inspected and repaired after each runoff event. Sediment should be removed when material is within 3" of the top of any block. Periodically, the gravel should be raked to increase infiltration and filtering of runoff waters. Accumulated sediment is to be removed immediately from roads and streets after every runoff event.



**SOIL EROSION
BMP DETAILS**

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

PROJECT NUMBER 468-83598	OCA NO. 751400
DATE MAY 2005	SHEET 11 OF 14



- 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.



**SOIL EROSION
BMP DETAILS**

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

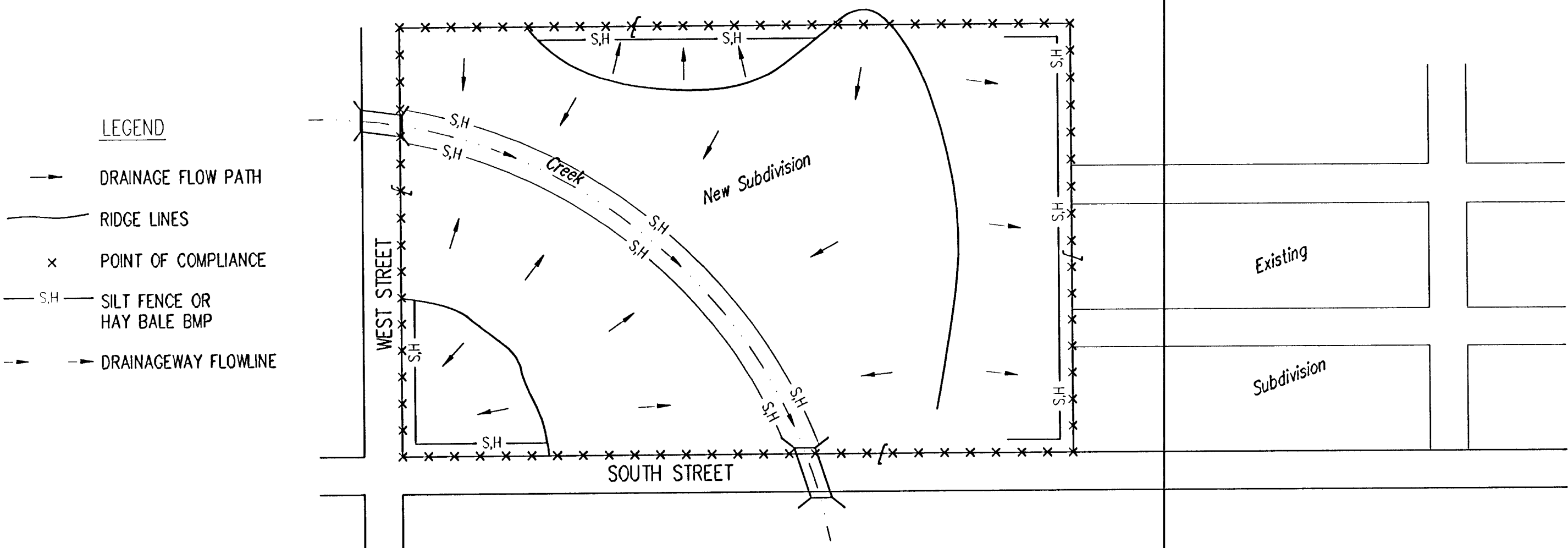
PROJECT NUMBER
468-83598

OCA NO.
751400

DATE
MAY 2005

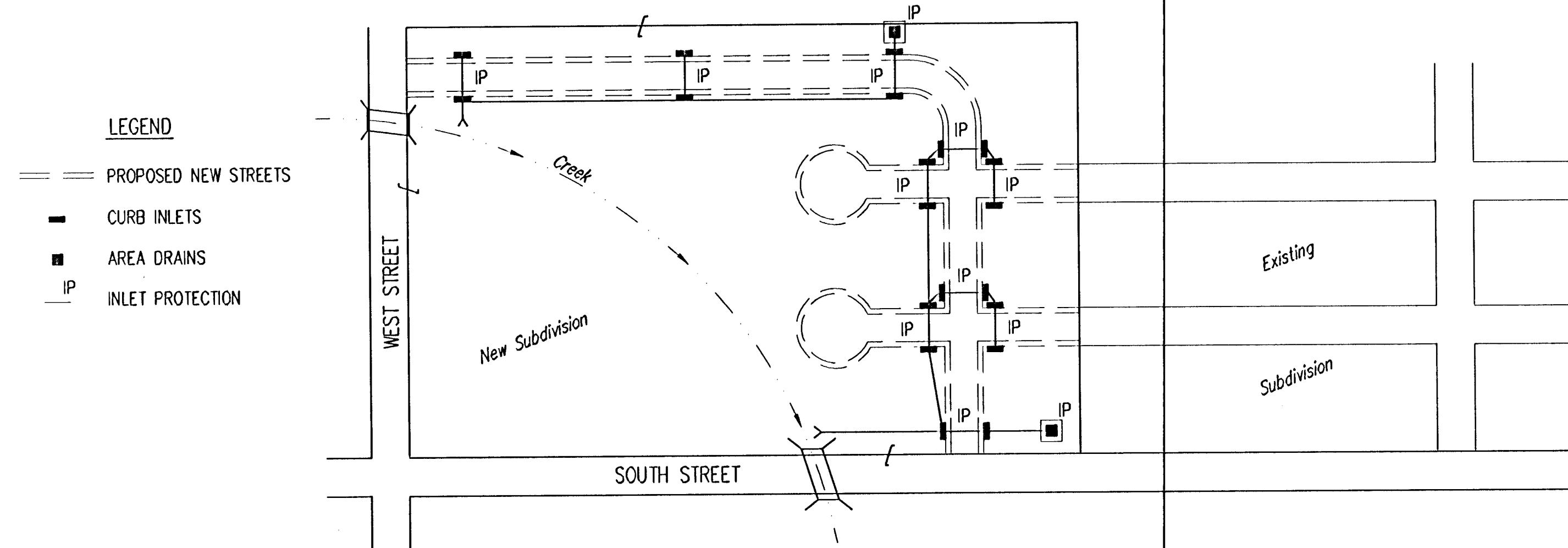
SHEET 12 OF 14

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



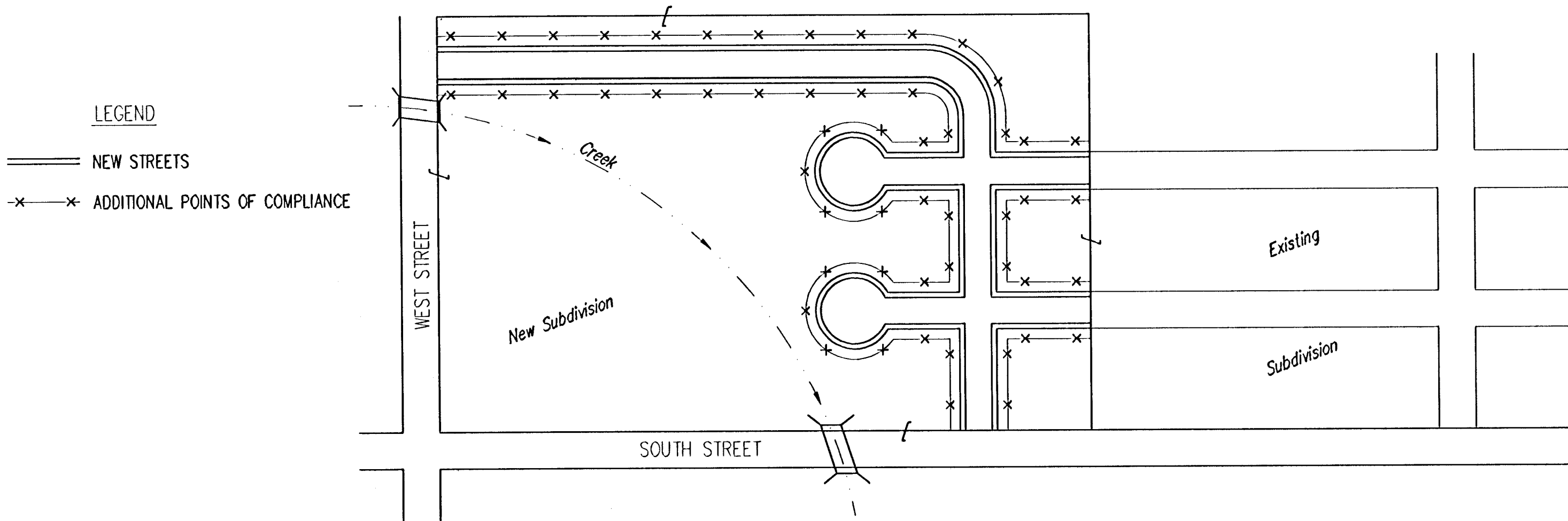
1. DURING THIS PHASE OF SUBDIVISION CONSTRUCTION, THE POINTS OF COMPLIANCE ARE THE PERIMETER BOUNDARIES AND ANY DRAINAGE WAYS OR STORM SEWERS DRAINING THROUGH OR FROM THE SITE. SHOULD LAKES BE CONSTRUCTED WITHIN THE SUBDIVISION THAT WILL DISCHARGE DURING STORMS, THEY ARE ALSO A POINT OF COMPLIANCE.
2. 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 GUTTERLINES 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 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.

PHASE 3 – STREET CONSTRUCTION

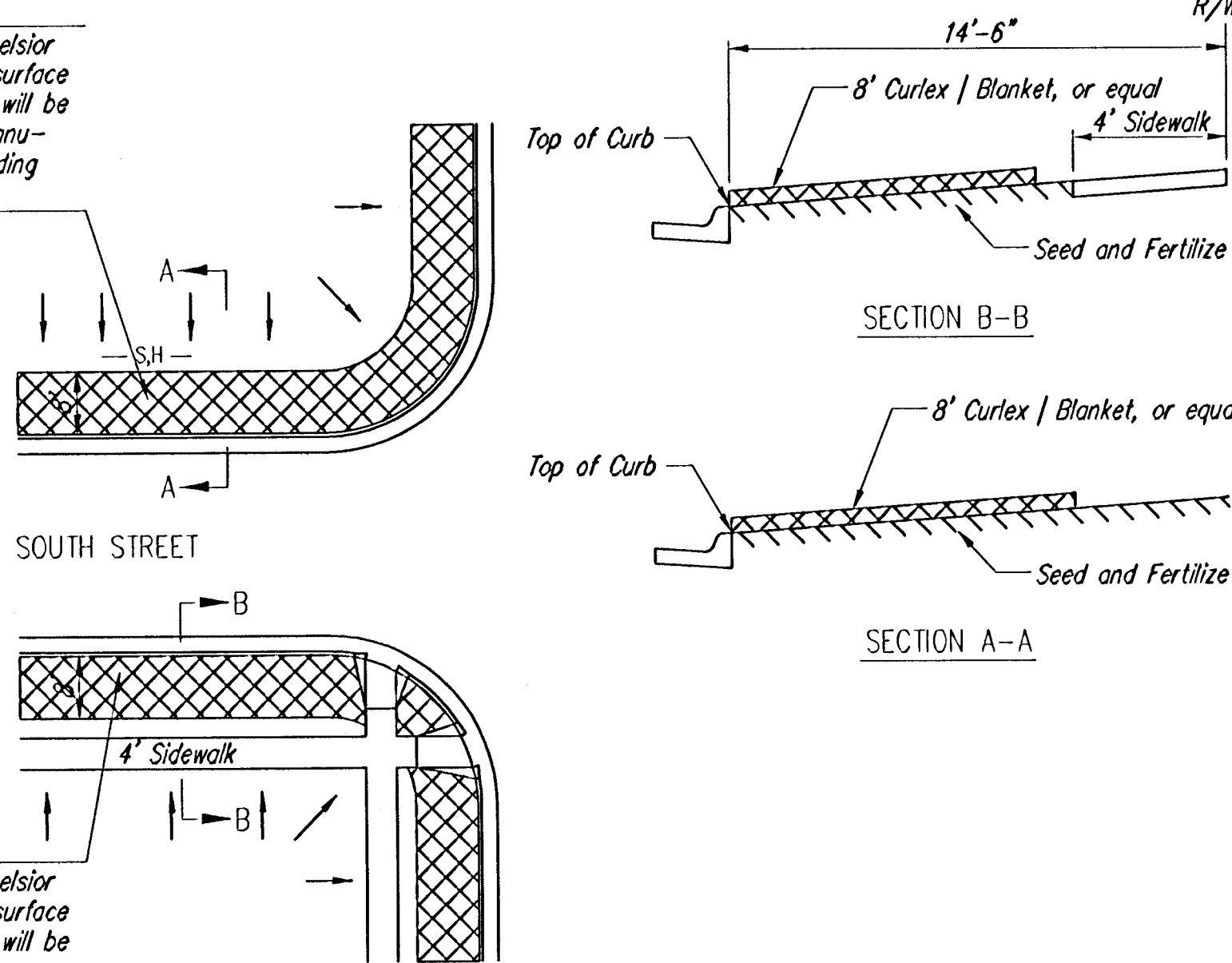


1. DURING THIS PHASE OF SUBDIVISION CONSTRUCTION, NEW STREETS ARE INSTALLED. ALL BMP'S INSTALLED DURING PHASE 1 AND 2 MUST STILL BE MAINTAINED. THE POINT OF COMPLIANCE NOW SHIFTS TO THE BACK OF CURB ALONG EACH STREET.
2. CURB OPENING INLET PROTECTION:
 - A. SUMP AREAS – INLET PROTECTION SHALL BE PROVIDED 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.

GENERAL NOTES:

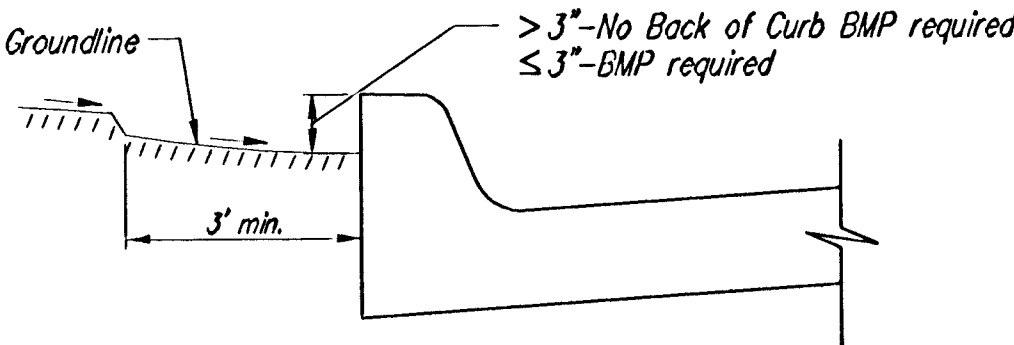
1. THE INTENT OF ALL BEST MANAGEMENT PRACTICES (B.M.P.'S) IS TO PREVENT ERODED SOIL FROM ENTERING DITCHES, STORM SEWERS, OR ANY OTHER DRAINAGE FEATURE.
2. THIS SHEET IS INTENDED TO PROVIDE GUIDELINES AS TO WHAT TYPE OF BMP'S WILL BE INSTALLED DURING THE CONSTRUCTION PROCESS. CONTRACTORS ARE EXPECTED 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.

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 manufacturers recommendation, including staples.



BACK OF CURB PROTECTION DETAIL

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 manufacturers recommendation, including staples.



CURB BACKFILL DETAIL



SOIL EROSION BMP'S
SUBDIVISION
DEVELOPMENT
PROCESS

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

PROJECT NUMBER
468-83598

OCA NO.
751400

DATE
MAY 2005

SHEET 13 OF 14

SHADOW WOODS ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

Maple Group, L.L.C.

[Signature]
JAY W. RUSSELL
Member

Page 1 for Owners Acknowledgement

MINIMUM BUILDING PAD ELEVATIONS FOR LOWEST OPENING TO THE STRUCTURES		
LOT	BLOCK	ELEVATION
1-24	D	177.2
1-7	E	160.5

BENCHMARK:
1350' S. W. & Maple -
City of Wichita Benchmark Disc
on NW corner of NE corner
of intersection.
34.00' SW to Section Cor. Iron
Elev. = 150.29 City Datum
(1337.69 NGVD29)

NOTE:
A master grading plan for drainage has been developed for this subdivision and is on file with the City of Wichita, Kansas. All drainage easements, rights-of-way or reserves shall remain as established grades or as modified with the approval of the City Engineer of the City of Wichita, Kansas. No obstructions which impede the flow of this drainage system shall be allowed.

NOTE:
A drainage plan has been developed for this subdivision and is on file with the City of Wichita, Kansas. Drainage intent shall remain as depicted or as modified with the approval of the City Engineer of the City of Wichita, Kansas. No obstructions which impede the flow of this drainage system shall be allowed.



- = #4 REBAR W/ "BAUGHMAN" CAP (SET)
- = #4 REBAR W/ "BAUGHMAN" CAP (FOUND)
- = #4 REBAR W/ "TILS" CAP (FOUND)
- = STONE (FOUND)
- = 1/4" IRON IN TRIMBLE (FOUND)

- (M) = MEASURED
- (P) = PLATTED
- (D) = DESCRIBED
- (C-P) = CALCULATED PER PLATTED INFO
- (C-D) = CALCULATED PER DESCRIBED INFO

