

MAGNUSQUARE® II SERIES Vertical Lamp MSV

Job **Lowe's Home Improvement Warehouse** Type **H123FG**

Dimensions		Specifications							
<p>MSV FLAT GLASS</p> <table border="1"> <tr> <th>A</th> <th>B</th> </tr> <tr> <td>14.9"</td> <td>21.0"</td> </tr> <tr> <td>378 mm</td> <td>533 mm</td> </tr> </table>		A	B	14.9"	21.0"	378 mm	533 mm	<p>Housing Rugged, one piece aluminum, formed and welded for long term weatherability.</p> <p>Ballast Mounted to a pre-galvanized steel end support which ties into arm or yoke for secure, cool operation.</p> <p>Lens / Door Frame Door assembly is hinged and held in place by twin securing screws. A one piece lens gasket seals to reflector giving protection from dirt and insects.</p> <p>Lektrocote® Finish Electrostatically applied powder coating, high temperature bonded to surface for maximum adherence and finish hardness.</p> <p>Additional Features All fixtures supplied with lamp for installation convenience. Various optical distributions available. A selection of mounting arms and adapters allow use on new or existing poles. Hubbell SSP steel of SAP aluminum poles are recommended. Units are NRTL/C certified and UL listed for use in North America.</p>	
A	B								
14.9"	21.0"								
378 mm	533 mm								

Ordering Information									
Catalog Number	series	wattage	source	distribution	voltage	finish	options	options	options
	MSV	40	H	BP	5	3	AR4	FG	
SERIES	Magnusquare® II Series - Vertical Lamp		DISTRIBUTION 1		LEKTROCOTE FINISH				
			BI	Type I	1	Bronze			
			BP	Type III	2	Black			
			BT	Type IV	3	Gray			
			BW	Type V sq.	4	White			
WATTAGE			VOLTAGE		OPTIONS				
25	250W		5	480V	Twist-Lock photocontrol receptacle (specify voltage) (photocontrol ordered separately)				
40	400W		6	Tri-Tap (120, 277, 347V)	PCR(X) ¹				
10	1000W (metal halide only)		8	QuadTap® (120, 208, 240, 277V)	F(X) ²				
SOURCE			OPTIONS						
S	High Pressure Sodium		AR4*		10 inch arm and RSD-0* Round Pole Adapter				
H	Metal Halide		CS		Cutoff Shield				
P	Pulse Start		FG		Flat Glass				

1. Change letter V to B for high performance reflector.
2. Substitute voltage for "X" (1-120V, 2-208V, 3-240V, 4-277V, 5-480V, 6-347V).
3. * 4 or 5 inch round pole adapter.
Accessories must be ordered separately. See Accessories.
Comments: See back for Photometrics.

Submitted by: Hubbell Lighting, Inc., 2000 Electric Way, Christiansburg, Virginia 24073, (540) 382-6111 • Fax (540) 382-1526 OTD 1 - 8/98

MAGNUSQUARE® II SERIES Vertical Lamp MSV

Job **Lowe's Home Improvement Warehouse** Type **H23FG**

Dimensions		Specifications							
<p>MSV FLAT GLASS</p> <table border="1"> <tr> <th>A</th> <th>B</th> </tr> <tr> <td>14.9"</td> <td>21.0"</td> </tr> <tr> <td>378 mm</td> <td>533 mm</td> </tr> </table>		A	B	14.9"	21.0"	378 mm	533 mm	<p>Housing Rugged, one piece aluminum, formed and welded for long term weatherability.</p> <p>Ballast Mounted to a pre-galvanized steel end support which ties into arm or yoke for secure, cool operation.</p> <p>Lens / Door Frame Door assembly is hinged and held in place by twin securing screws. A one piece lens gasket seals to reflector giving protection from dirt and insects.</p> <p>Lektrocote® Finish Electrostatically applied powder coating, high temperature bonded to surface for maximum adherence and finish hardness.</p> <p>Additional Features All fixtures supplied with lamp for installation convenience. Various optical distributions available. A selection of mounting arms and adapters allow use on new or existing poles. Hubbell SSP steel of SAP aluminum poles are recommended. Units are NRTL/C certified and UL listed for use in North America.</p>	
A	B								
14.9"	21.0"								
378 mm	533 mm								

Ordering Information									
Catalog Number	series	wattage	source	distribution	voltage	finish	options	options	options
	MSV	40	H	BP	5	3	AR4	FG	
SERIES	Magnusquare® II Series - Vertical Lamp		DISTRIBUTION 1		LEKTROCOTE FINISH				
			BI	Type I	1	Bronze			
			BP	Type III	2	Black			
			BT	Type IV	3	Gray			
			BW	Type V sq.	4	White			
WATTAGE			VOLTAGE		OPTIONS				
25	250W		5	480V	Twist-Lock photocontrol receptacle (specify voltage) (photocontrol ordered separately)				
40	400W		6	Tri-Tap (120, 277, 347V)	PCR(X) ¹				
10	1000W (metal halide only)		8	QuadTap® (120, 208, 240, 277V)	F(X) ²				
SOURCE			OPTIONS						
S	High Pressure Sodium		AR4*		10 inch arm and RSD-0* Round Pole Adapter				
H	Metal Halide		CS		Cutoff Shield				
P	Pulse Start		FG		Flat Glass				

1. Change letter V to B for high performance reflector.
2. Substitute voltage for "X" (1-120V, 2-208V, 3-240V, 4-277V, 5-480V, 6-347V).
3. * 4 or 5 inch round pole adapter.
Accessories must be ordered separately. See Accessories.
Comments: See back for Photometrics.

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Cast Alum. Pole Cap With S.S. Screws
4" O.D.
7 11/16" x 4 1/16" Pole Top
Three 7/16" Dia. Holes
3/8" Dia. Alum. Wire Hook In Shaft Top
Shoe Box Drilling (Drill Per 77193-001)
2 1/32"
Internal Damper (factory installed)
20'-0" Tapered
13'-10"
23'-0"
6" O.D.
2'-0" 1'-6" 9 3/4" Sq.
9" to 10" Dia. Bolt Circle
4 1/4"
6"
3'-0"
4"
Identification Label With Hapco And Hubbell Part Numbers, Fixture Type & Date
Ground Lug Opposite Handhole
Reinforced Handhole (3" x 5") With Cover And Stainless Steel Hex. Hd. Screws
Base Flange Alloy 356-T6 With Bolt Covers And Stainless Steel Hex. Hd. Screws

Hapco Number	Hubbell Number	Fixture Type	Color
B0453-011P31	RTA-236-A2-M51	7H2-23FG*	Bronze
B0453-011P246	RTA-236-A2-M53	7H2-23FG*	Gray
B0453-012P31	RTA-236-A2-M51	7H25FG*	Bronze
B0453-012P246	RTA-236-A2-M53	7H25FG*	Gray
B0453-013P31	RTA-236-A2-M51	7H23FG*	Bronze
B0453-013P246	RTA-236-A2-M53	7H23FG*	Gray
B0453-014P31	RTA-236-A2-M51	7LOW*	Bronze
B0453-015P31	RTA-236-A2-M51	7SE*	Bronze
B0453-016P31	RTA-236-A2-M51	7H123FG*	Bronze
B0453-016P246	RTA-236-A2-M53	7H123FG*	Gray
B0453-017P246	RTA-236-A2-M53	7H1423FG*	Gray
B0453-018P31	RTA-236-A2-M51	7L23FG*	Bronze
B0453-018P246	RTA-236-A2-M53	7L23FG*	Gray
B0453-019P31	RTA-236-A2-M51	7H23*	Bronze
B0453-019P246	RTA-236-A2-M53	7H23*	Gray
B0453-020P31	RTA-236-A2-M51	7A*	Bronze
B0453-020P246	RTA-236-A2-M53	7A*	Gray
B0453-021P31	RTA-236-A2-M51	7B*	Bronze
B0453-021P246	RTA-236-A2-M53	7B*	Gray
B0453-022P31	RTA-236-A2-M51	7C*	Bronze
B0453-022P246	RTA-236-A2-M53	7C*	Gray
B0453-023P31	RTA-236-A2-M51	7G*	Bronze
B0453-023P246	RTA-236-A2-M53	7G*	Gray
B0453-024P31	RTA-236-A2-M51	7H4123FG*	Bronze
B0453-024P246	RTA-236-A2-M53	7H4123FG*	Gray

10 Added -020, -021, -022, & -023 (RUC) 11/04
4 Added -024 5/05
5 Added -017P246 3/04
6 Added -018P30 & P246 3/04
7 Added -019P246 (RUC) 3/04
8 Added -019P30 & -019P246 (RUC) 6/04
9 P.31 Was P.30 (RUC) 7/04

WARNING: DO NOT INSTALL LIGHTING POLES WITHOUT LUMINAIRES

hapco TITLE AREA LIGHTING POLE
CUSTOMER HUBBELL LIGHTING
SCALE 3/2 DATE 6/12/01
BY RM DWS:ND
CHKD B80453
Abingdon, Va.

HAND HOLE (LOCATE FUSEHOLDER AND FUSE DIRECTLY INSIDE HAND HOLE)
CONDUIT STUBS TO BE INSTALLED TO HEIGHT OF ANCHOR BOLTS
POLE BASE W/ LEVELING NUTS & 1" GROUT (MIN.)
#8 BARE GROUND WIRE
CLAMP SUITABLE FOR DIRECT BURIAL
#8 BARE GROUND WIRE
3/4"Ø X 10'-0" COPPER CLAD GROUNDING ROD
2'-0"
ROUND BASE
6 NO. 5 BARS
ANCHOR BOLTS
6x6 10/10 WWF "CAGE"
PLAN

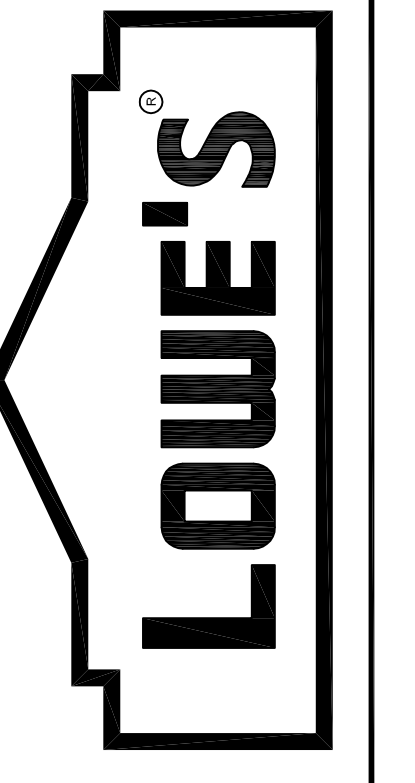
#8 BARE GROUND WIRE
POLE GROUND LUG W/ FEMALE 1/2" X 13 NC THREAD
NOTE: POLE BASE IS TO BE ONE CONTINUOUS POUR. 2" PORTION OF EXPOSED CONC. BASE ABOVE PAVEMENT SHALL BE HAND RUBBED SMOOTH, PNE-FABBED CONC. POLE BASES WILL NOT BE ACCEPTED (ALL BASES MUST BE POURED ON SITE)
POLE SHAFT
POLE BASE WITH 1" GROUT
GALVANIZED ANCHOR BOLTS & HARDWARE
CONCRETE BASE
ELECT CONDUIT
6 NO. 5 BARS WITHIN A 6x6 10/10 WWF "CAGE"
MAINTAIN 3" MINIMUM CONCRETE COVERAGE ON ALL BARS
SECTION
POLE BASE DETAILS
GROUND LIGHT POLE PER N.E.C.
NOTE #1 SITE ELECTRICAL CONTR. TO COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES & DRAINAGE BEFORE DRILLING POLE BASES. (TYP.)

CITY FILE: 05-037
NOT TO BE USED FOR CONSTRUCTION

REVISIONS	
DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

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WILKESBORO, NC 28697
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SITE PLAN
PHOTOMETRIC DETAILS
LOWE'S OF
ROCHESTER HILLS
OAKLAND COUNTY, MICHIGAN
PROJECT No. 05000184
DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL
ISSUE DATE: 10/18/2005
PERMIT SET
ISSUE DATE:
CONSTRUCTION SET
ISSUE DATE:
DRAWING NUMBER:
SP-35
4102-50-35



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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IRRIGATION LEGEND

- HUNTER, PGP GEAR DRIVEN ROTOR, W/ #4 NOZZLE
- HUNTER, PGP GEAR DRIVEN ROTOR, W/ #7 NOZZLE
- HUNTER, PGP GEAR DRIVEN ROTOR, W/ #9 NOZZLE
- HUNTER, PGP GEAR DRIVEN ROTOR, W/ #10 NOZZLE
- HUNTER, PRO SERIES, 4" POP UP SPRAY, W/ 10' NOZZLE
- HUNTER, PRO SERIES, 4" POP UP SPRAY, W/ 12' NOZZLE
- HUNTER, PRO SERIES, 4" POP UP SPRAY, W/ 15' NOZZLE
- HUNTER, PRO SERIES, 4" POP UP SPRAY, W/ STRIP NOZZLE
- HUNTER, PRO SERIES, 12" POP UP SPRAY, W/ 10' NOZZLE
- HUNTER, PRO SERIES, 12" POP UP SPRAY, W/ 12' NOZZLE
- HUNTER, PRO SERIES, 12" POP UP SPRAY, W/ 15' NOZZLE
- HUNTER, PRO SERIES, 12" POP UP SPRAY, W/ STRIP NOZZLE
- ⊙ HUNTER, QCV100, QUICK COUPLING VALVE 1"
- ⊙ HUNTER, PGV SERIES, ELECTRIC VALVE, SIZE AS SHOWN
- ⊙ NETAFIM CONTROL ZONE, 1"
- △ HUNTER, ICCPL, ICC SERIES, AUTOMATIC CONTROLLER
- ⊙ HUNTER, MINICLIK, AUTOMATIC RAIN SENSOR
- ⊙ TAP LOCATION 2"
- PRESSURE VACUUM BREAKER, BY OTHER THAN IRRIGATION CONTRACTOR, 2"
- PVC MAINLINE, CLASS 200, BE, 18" BURY, SIZE AS SHOWN
- POLY LATERAL, 100 PSI, NSF, 12" BURY, SIZE AS SHOWN
- ▨ NETAFIM TLDL0618, TECHLINE W/0.6 GPH X 18" SPACED EMMITERS
- PVC SLEEVING, CLASS 200, BE, 18" BURY, SIZE AS SHOWN

IRRIGATION SPECIFICATIONS

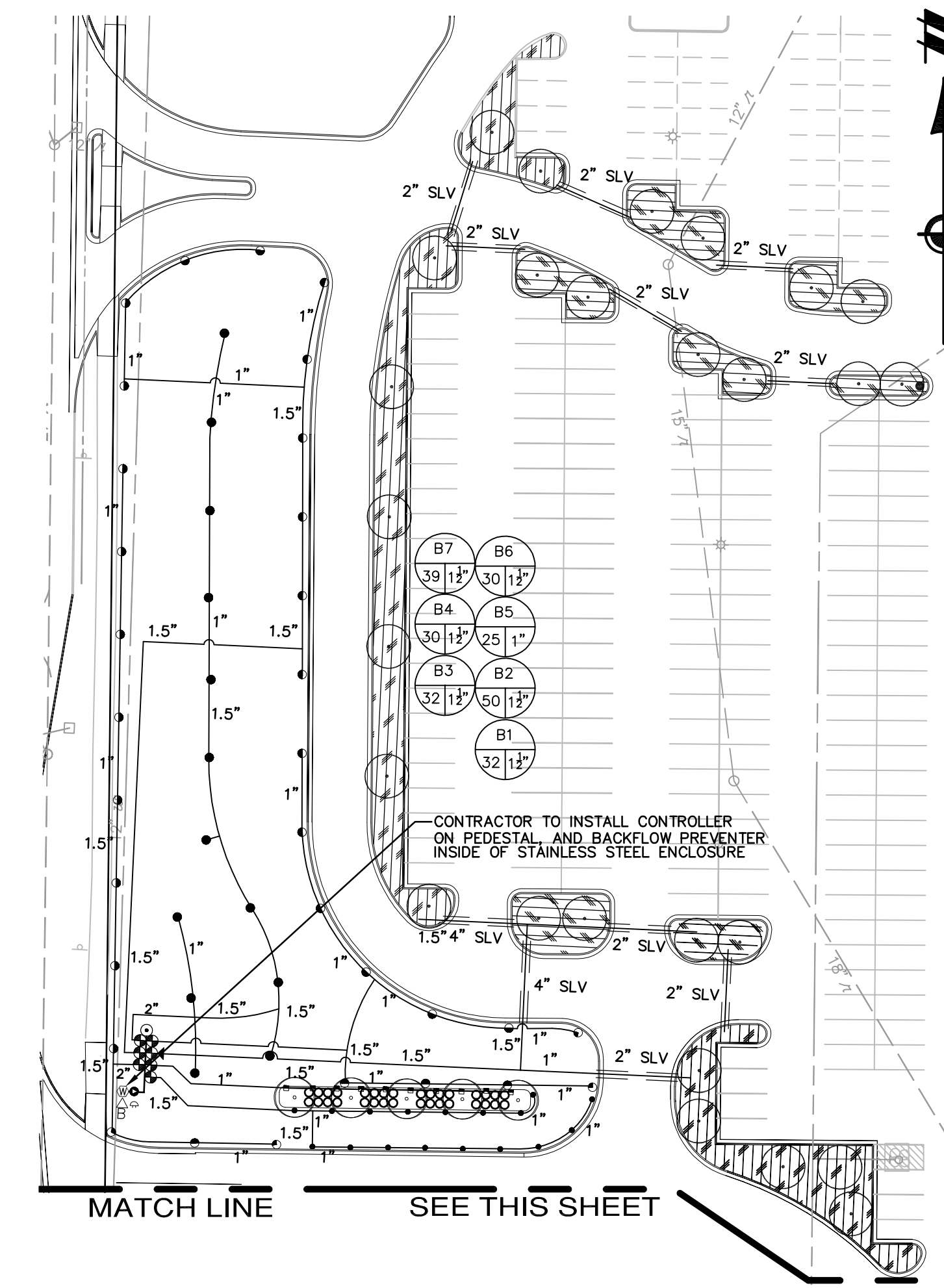
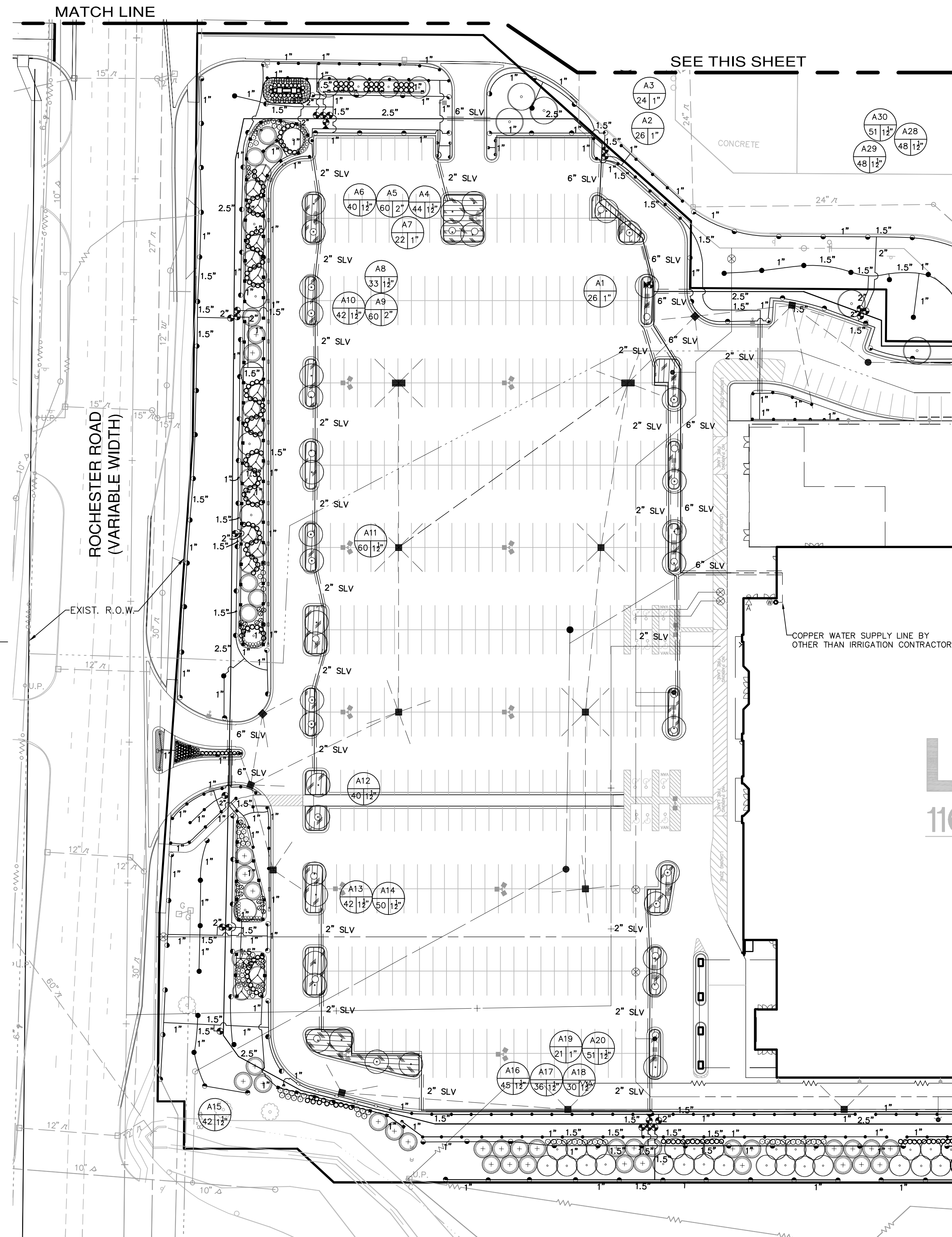
1. ALL WORK IS TO BE IN COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL CODES AND ORDINANCES.
2. ALL UNDERGROUND ELECTRICAL CONNECTIONS ARE TO BE MADE WITH WATERPROOF WIRE CONNECTORS.
3. ALL AUTO CONTROL VALVES ARE TO BE INSTALLED IN VALVE BOXES OF APPROPRIATE SIZE, PROVIDING CLEARANCE FOR MAINTENANCE.
4. ALL CONTROL WIRING DOWNSTREAM OF THE CONTROLLER IS TO BE 14 AWG, UL APPROVED FOR DIRECT BURY.
5. ALL ROTORS AND SPRAY POP-UPS SHALL BE INSTALLED ON SWING PIPE.
6. ALL QCV SHALL BE INSTALLED ON 3-ELBOW PVC SWING JOINTS.
7. SYSTEM DESIGN BASED UPON 60 GPM @ 65 PSI.
8. CONTRACTOR TO VERIFY WATER PRESSURE AND AVAILABILITY PRIOR TO INSTALLATION.
9. ANY IRRIGATION PIPING SHOWN OUTSIDE OF CURBS FOR CLARITY ONLY.
10. 120V. TO CONTROLLER AND COPPER STUB, BY OTHER THAN IRRIGATION CONTRACTOR.



FOR ITS REPRESENTATIVE, THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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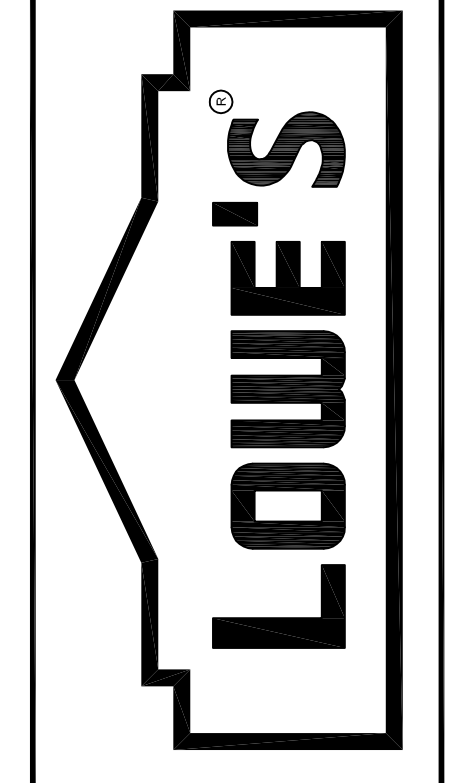
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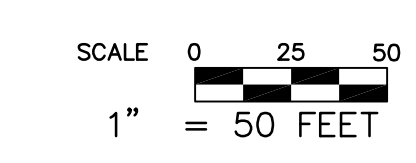
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SITE PLAN
 IRRIGATION PLAN
 LOWE'S OF
 ROCHESTER HILLS
 OAKLAND COUNTY, MICHIGAN
 PROJECT No: 05000184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL ISSUE DATE: 10/18/2005
 PERMIT SET ISSUE DATE:
 CONSTRUCTION SET ISSUE DATE:
 DRAWING NUMBER:
SP-36
 4102-50-36



CITY FILE: 05-037
 NOT TO BE USED FOR CONSTRUCTION

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IRRIGATION LEGEND

- HUNTER, PGP GEAR DRIVEN ROTOR, W/ #4 NOZZLE
- HUNTER, PGP GEAR DRIVEN ROTOR, W/ #7 NOZZLE
- HUNTER, PGP GEAR DRIVEN ROTOR, W/ #9 NOZZLE
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- HUNTER, PRO SERIES, 4" POP UP SPRAY, W/ 10' NOZZLE
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- △ HUNTER, ICCPL, ICC SERIES, AUTOMATIC CONTROLLER
- ⊕ HUNTER, MINICLIK, AUTOMATIC RAIN SENSOR
- ⊗ TAP LOCATION 2"
- PRESSURE VACUUM BREAKER, BY OTHER THAN IRRIGATION CONTRACTOR, 2"

- PVC MAINLINE, CLASS 200, BE, 18" BURY, SIZE AS SHOWN
- POLY LATERAL, 100 PSI, NSF, 12" BURY, SIZE AS SHOWN
- ▨ NETAFIM TLDL0618, TECHLINE W/0.6 GPH X 18" SPACED EMMITERS
- PVC SLEEVING, CLASS 200, BE, 18" BURY, SIZE AS SHOWN

IRRIGATION SPECIFICATIONS

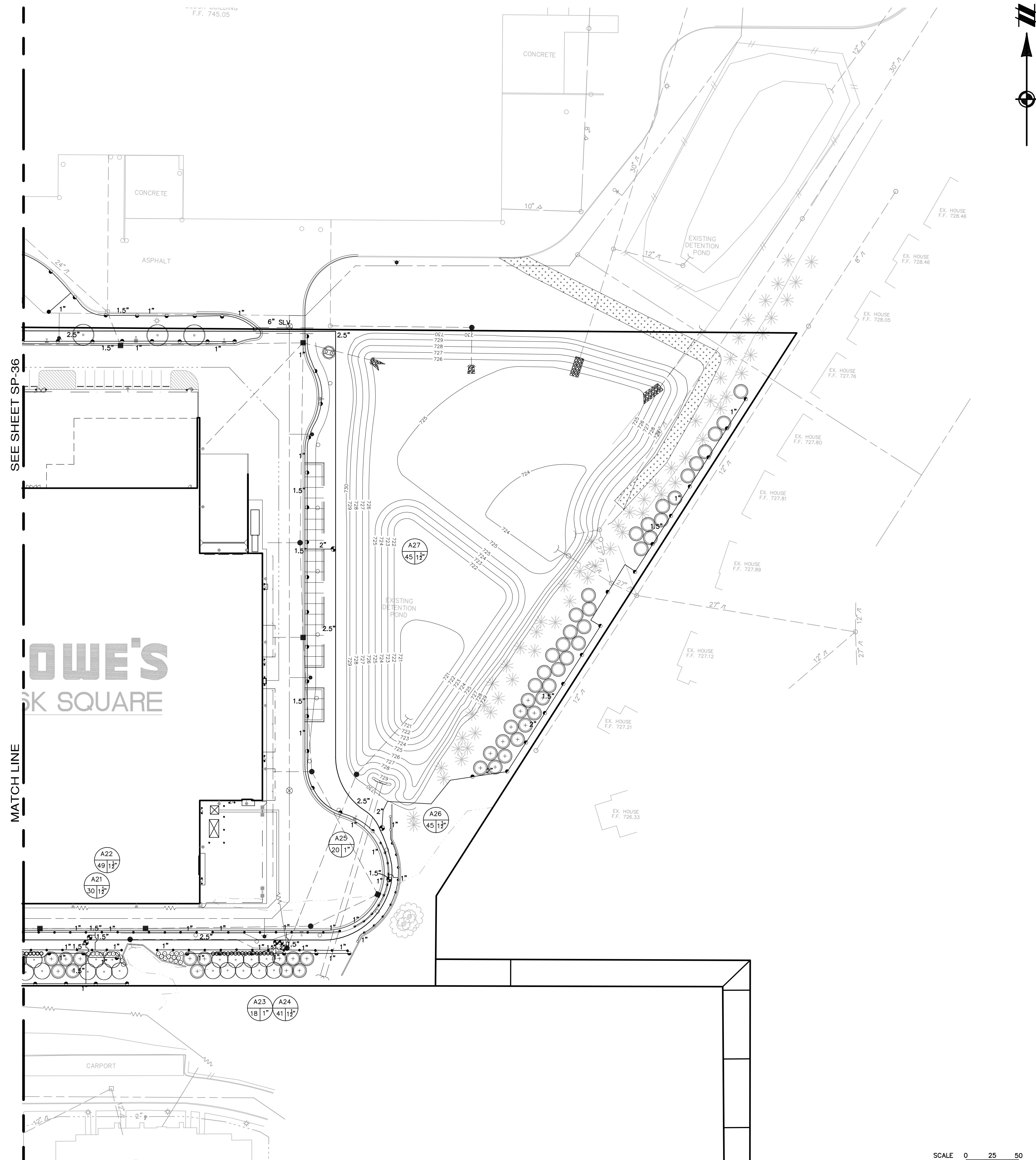
1. ALL WORK IS TO BE IN COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL CODES AND ORDINANCES.
2. ALL UNDERGROUND ELECTRICAL CONNECTIONS ARE TO BE MADE WITH WATERPROOF WIRE CONNECTORS.
3. ALL AUTO CONTROL VALVES ARE TO BE INSTALLED IN VALVE BOXES OF APPROPRIATE SIZE, PROVIDING CLEARANCE FOR MAINTENANCE.
4. ALL CONTROL WIRING DOWNSTREAM OF THE CONTROLLER IS TO BE 14 AWG, UL APPROVED FOR DIRECT BURY.
5. ALL ROTORS AND SPRAY POP-UPS SHALL BE INSTALLED ON SWING PIPE.
6. ALL QCV SHALL BE INSTALLED ON 3-ELBOW PVC SWING JOINTS.
7. SYSTEM DESIGN BASED UPON 60 GPM @ 65 PSI.
8. CONTRACTOR TO VERIFY WATER PRESSURE AND AVAILABILITY PRIOR TO INSTALLATION.
9. ANY IRRIGATION PIPING SHOWN OUTSIDE OF CURBS FOR CLARITY ONLY.
10. 120V. TO CONTROLLER AND COPPER STUB, BY OTHER THAN IRRIGATION CONTRACTOR.



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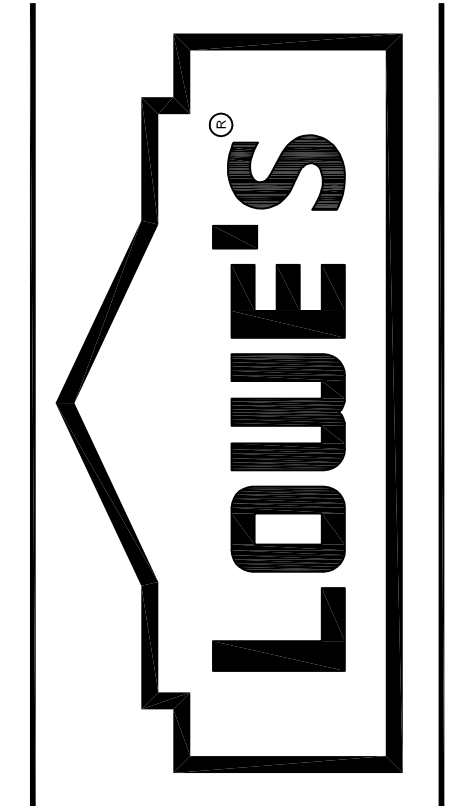
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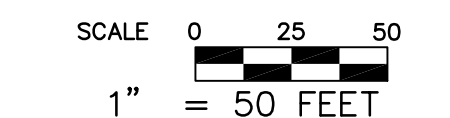
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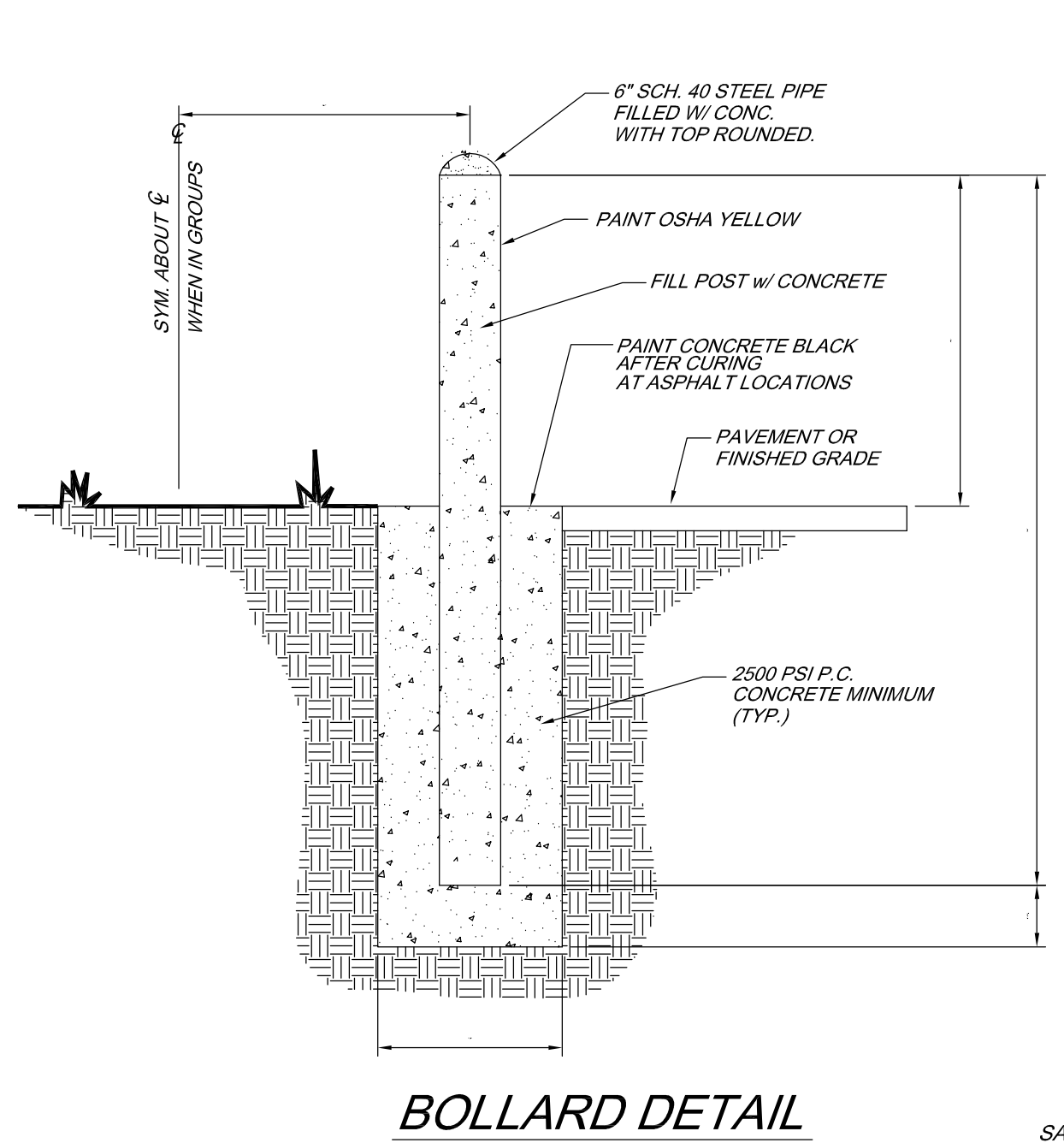
SITE PLAN IRRIGATION PLAN
LOWE'S OF ROCHESTER HILLS
 OAKLAND COUNTY, MICHIGAN
 PROJECT No: 05000184 | DRAWN BY: JTL | CHECKED BY: DL

ORIGINAL ISSUE DATE: 10/18/2005
PERMIT SET ISSUE DATE:
CONSTRUCTION SET ISSUE DATE:
DRAWING NUMBER: SP-37
4102-50-37

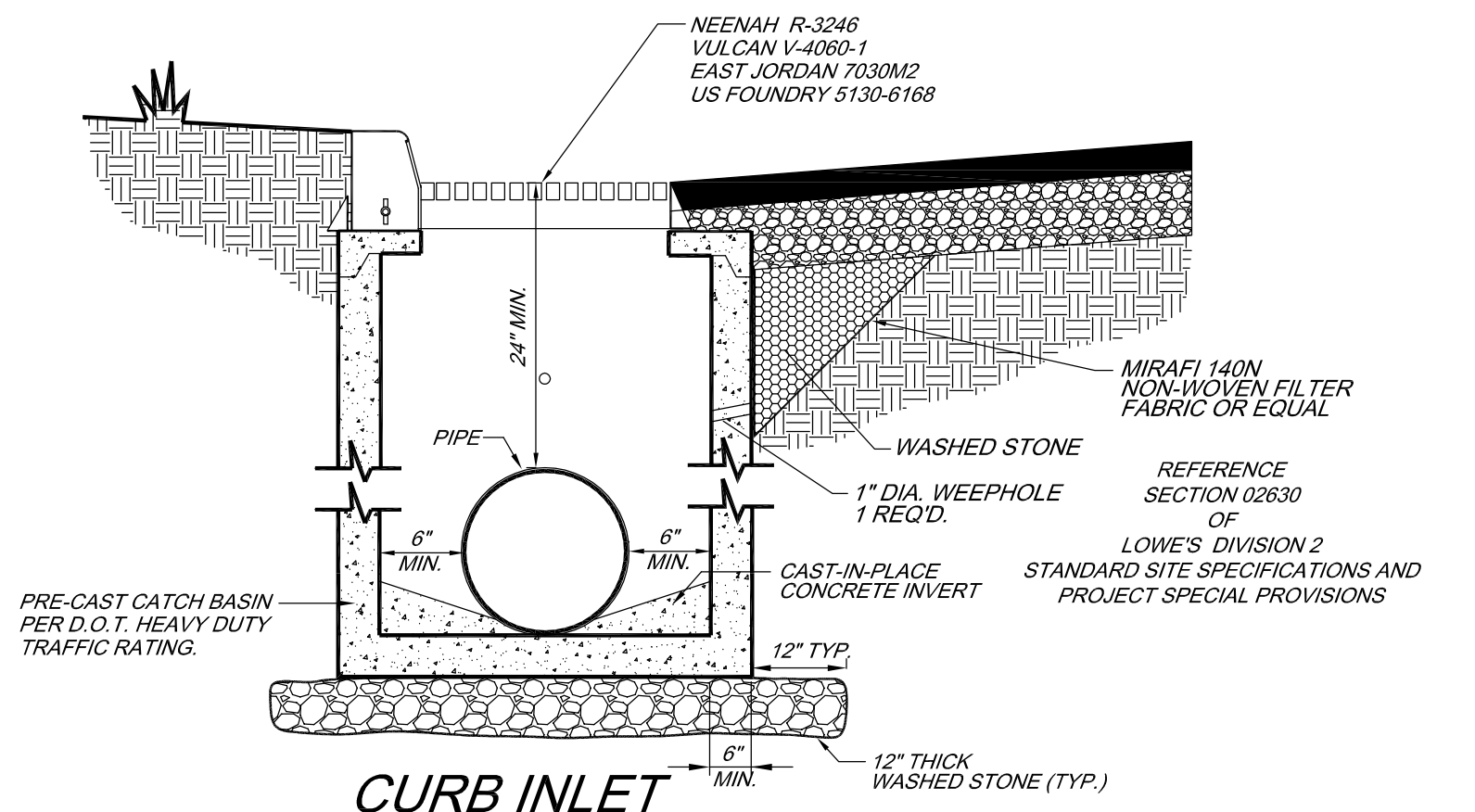
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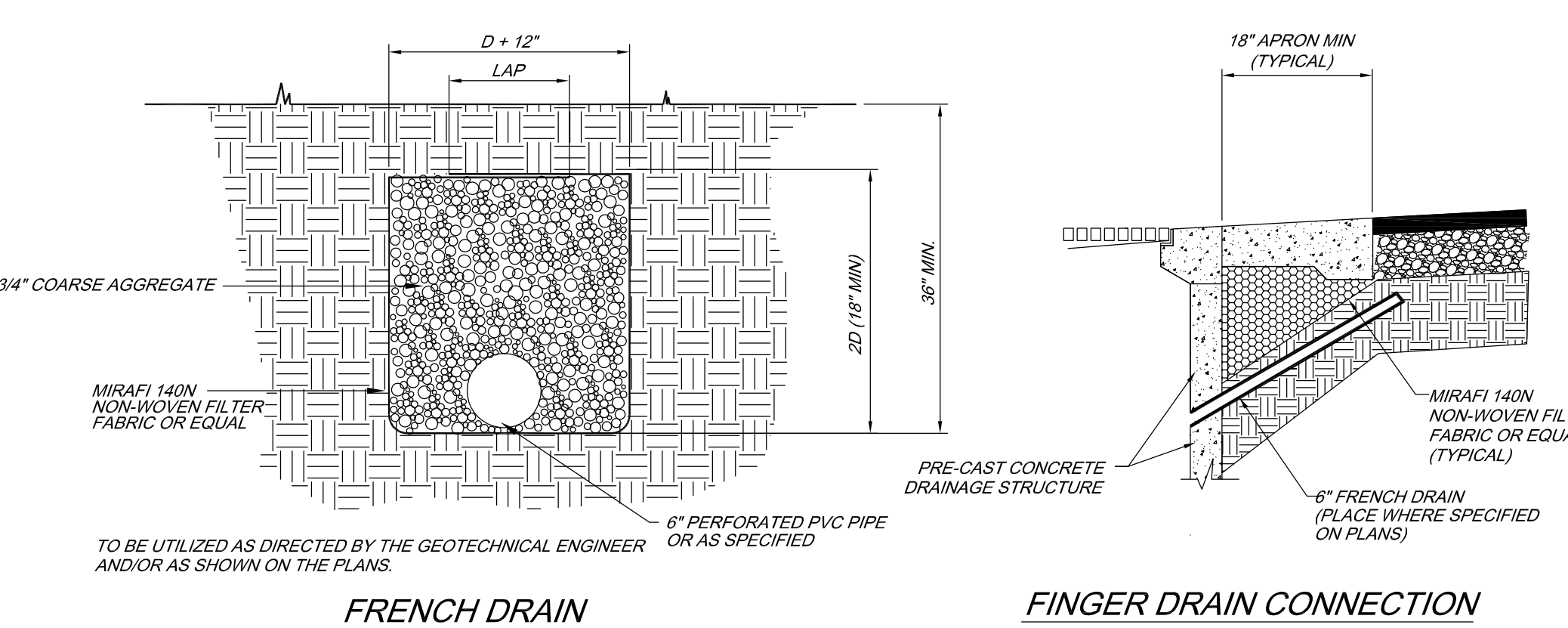
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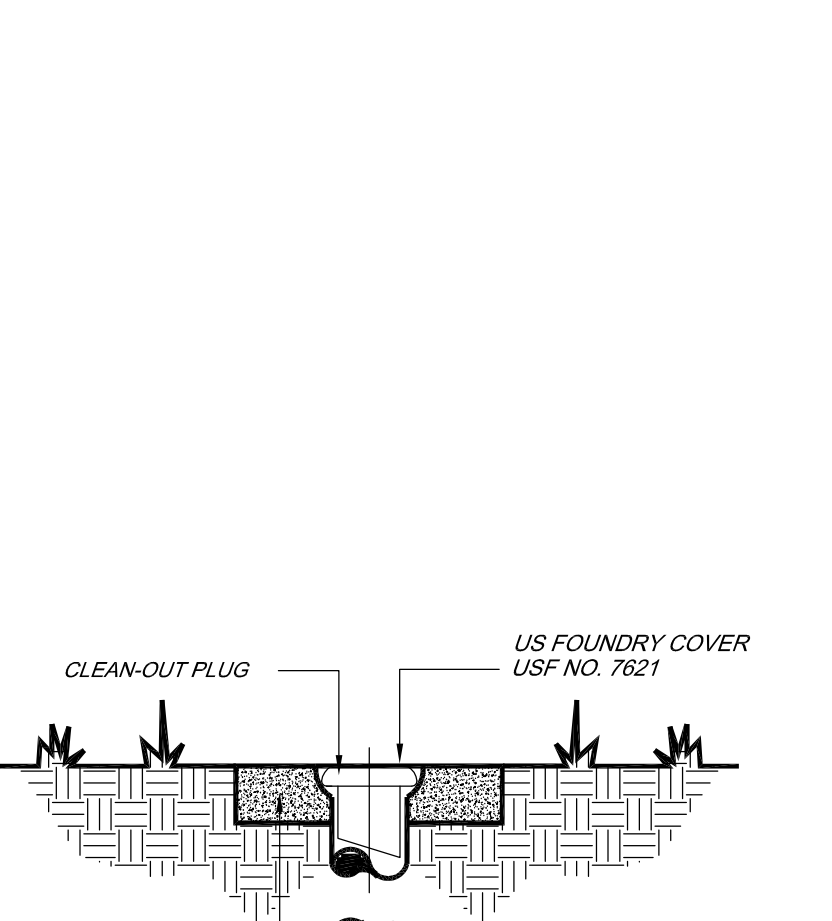
BOLLARD DETAIL



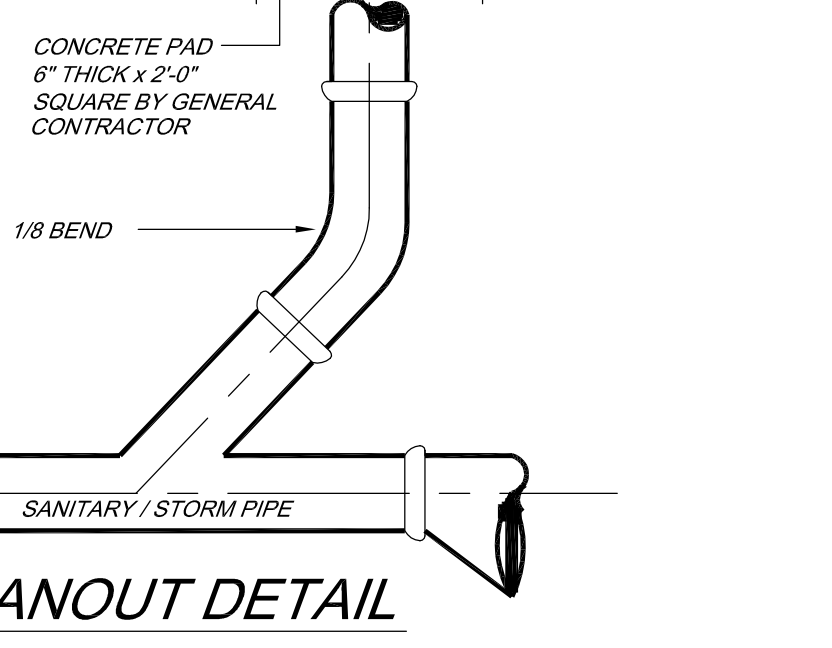
CURB INLET



FRENCH DRAIN



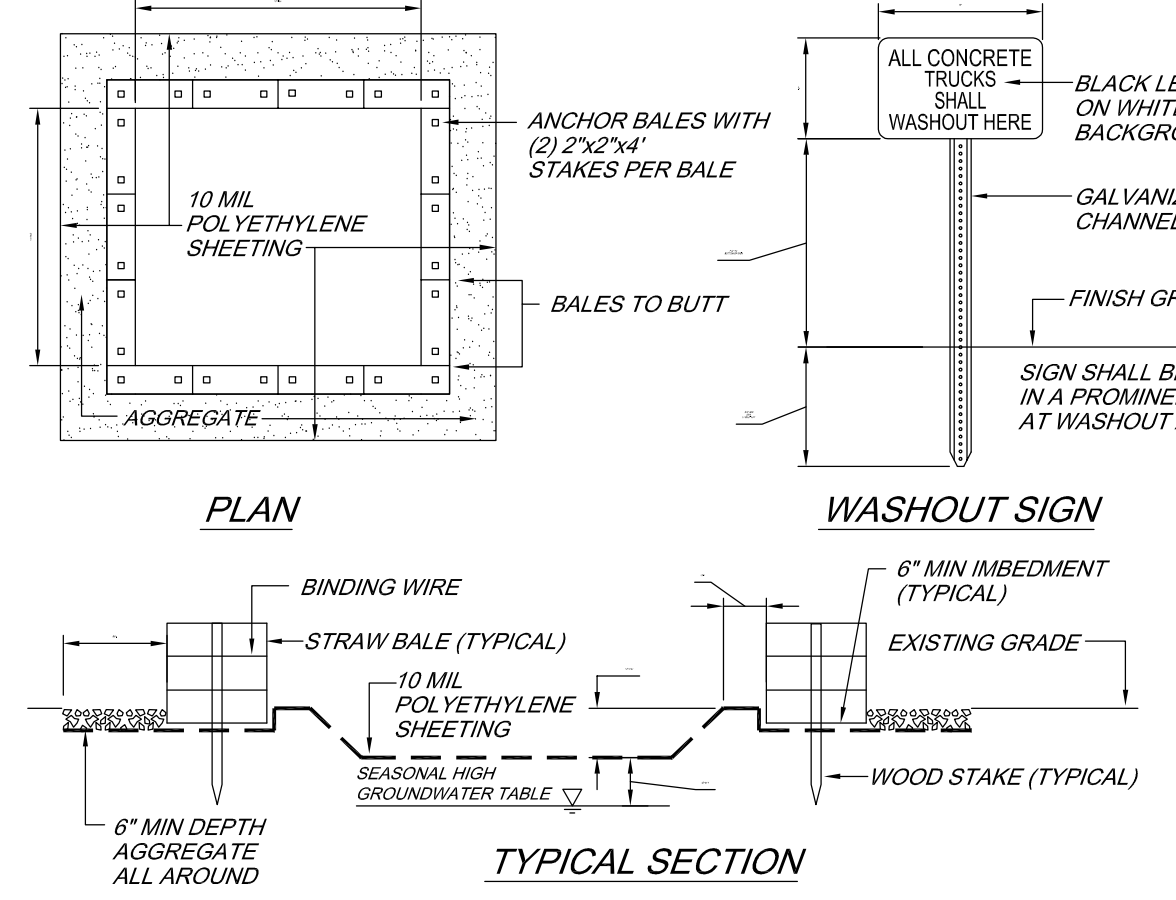
FINGER DRAIN CONNECTION



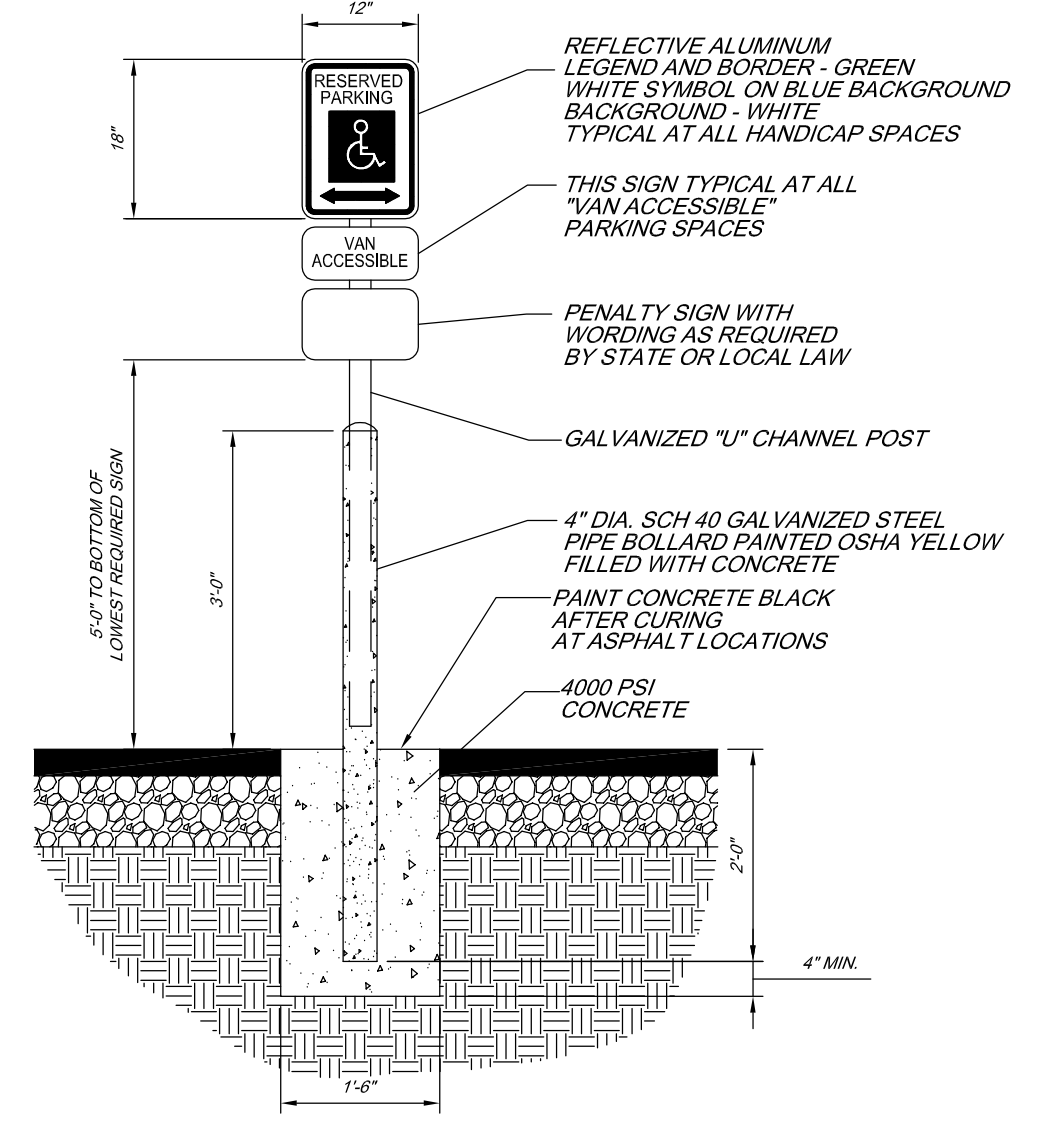
CLEANOUT DETAIL



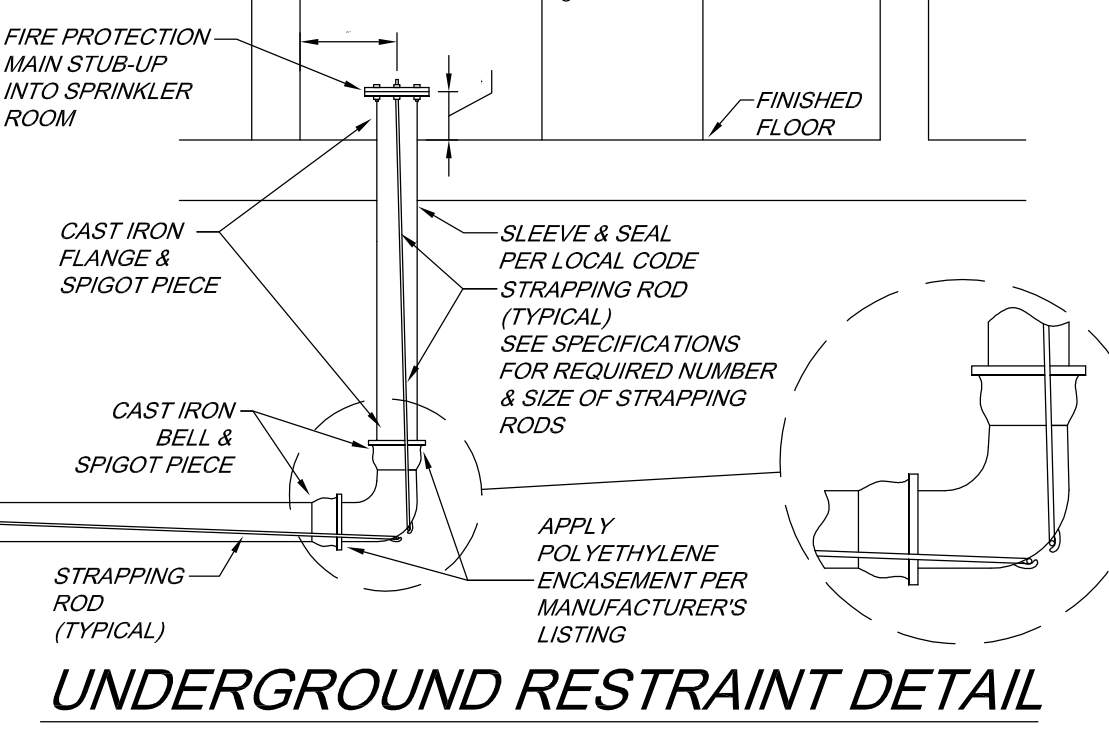
MANHOLE APRON



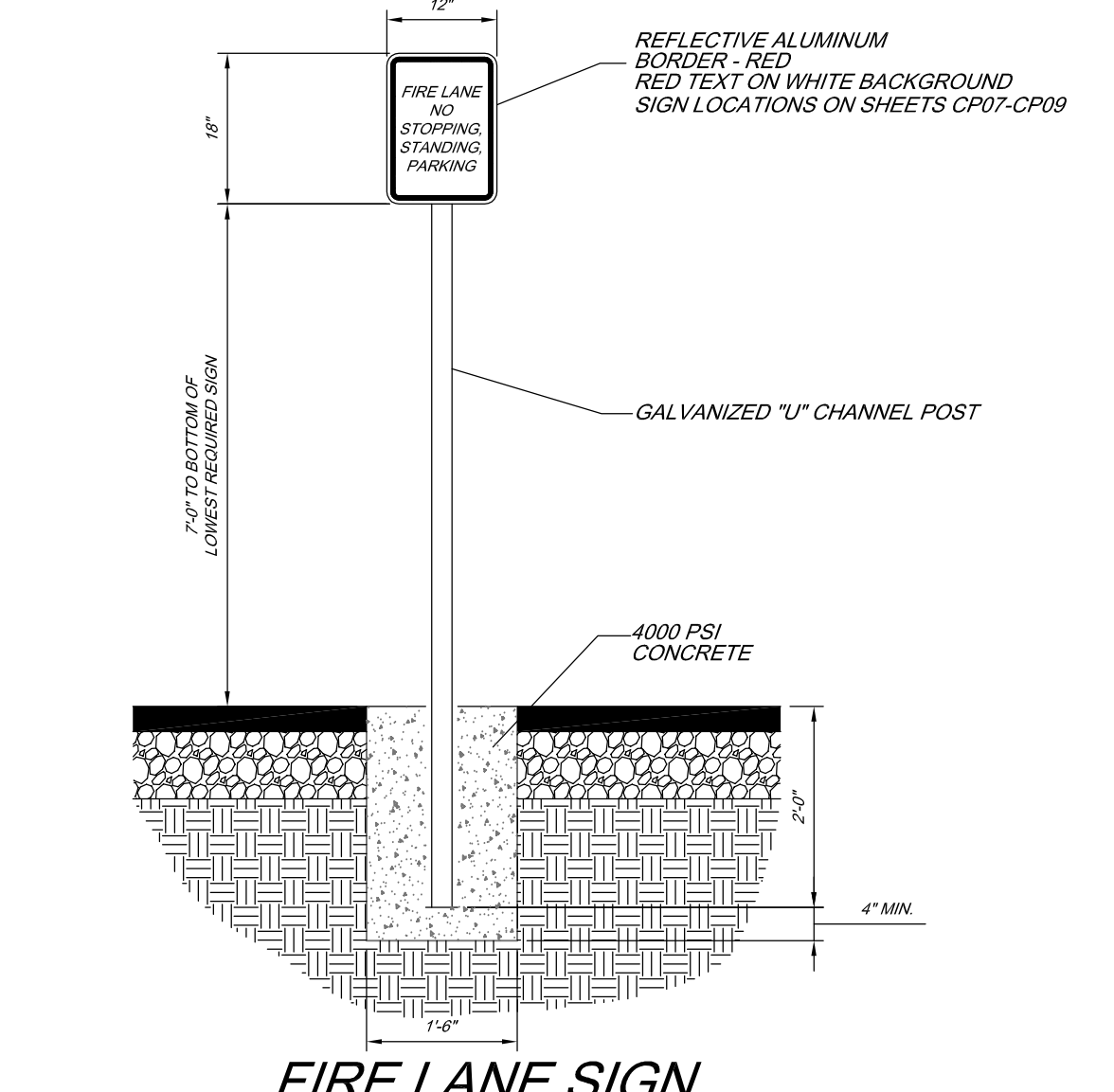
WASHOUT SIGN



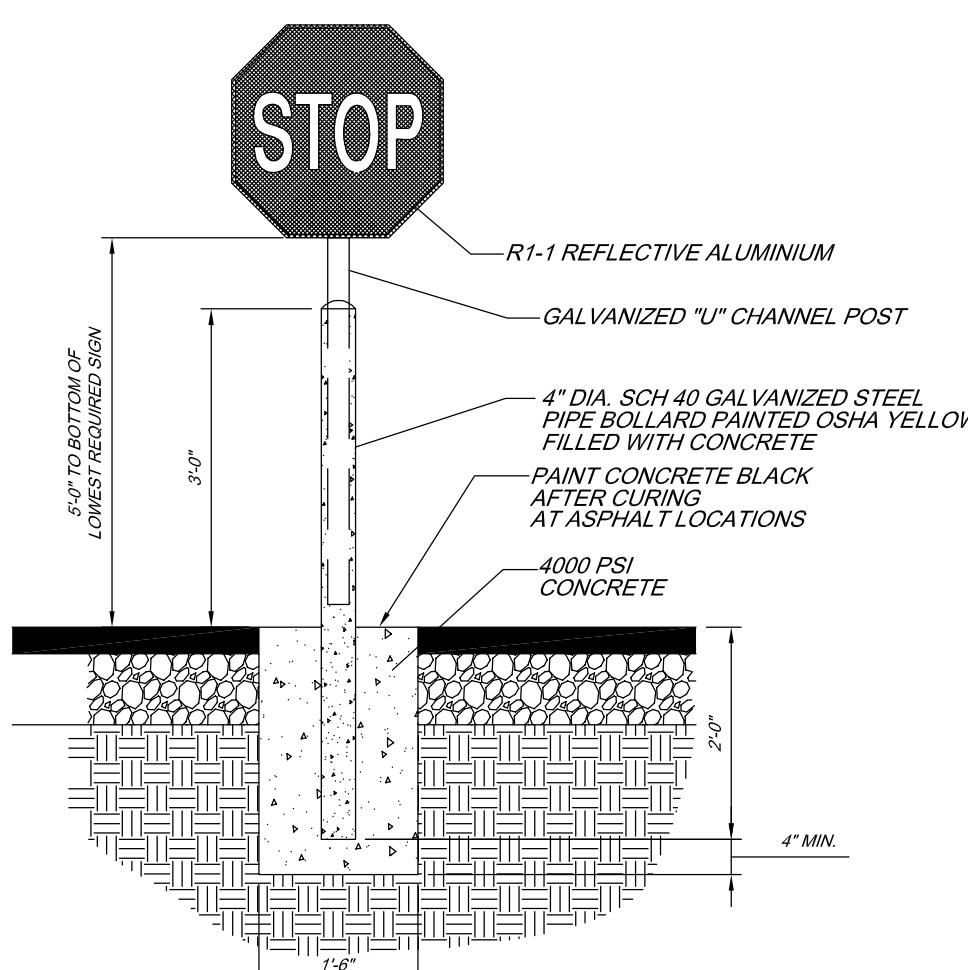
HANDICAP PARKING SIGN



UNDERGROUND RESTRAINT DETAIL



FIRE LANE SIGN

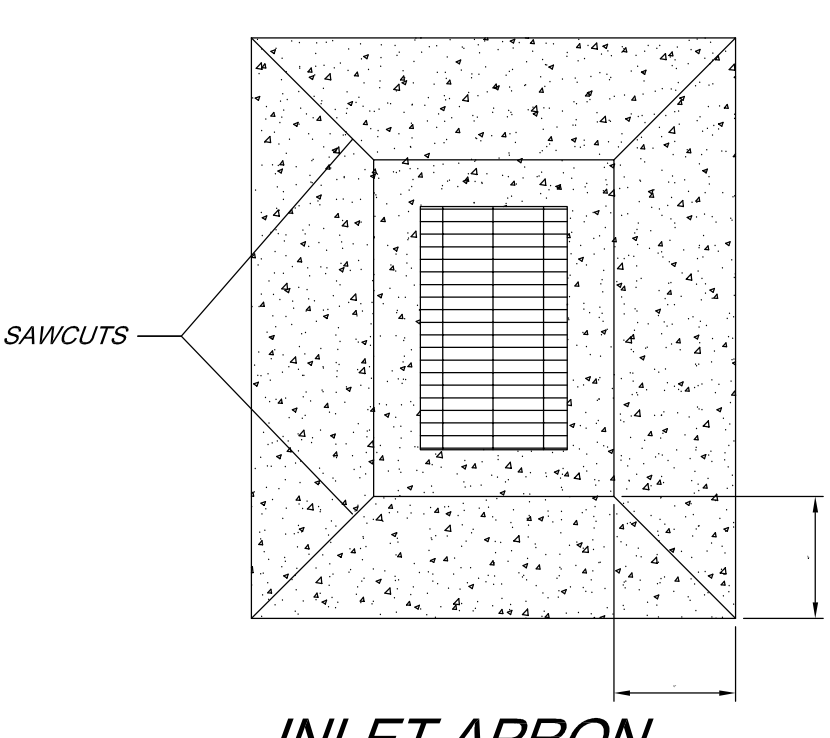


STOP SIGN WITH BOLLARD

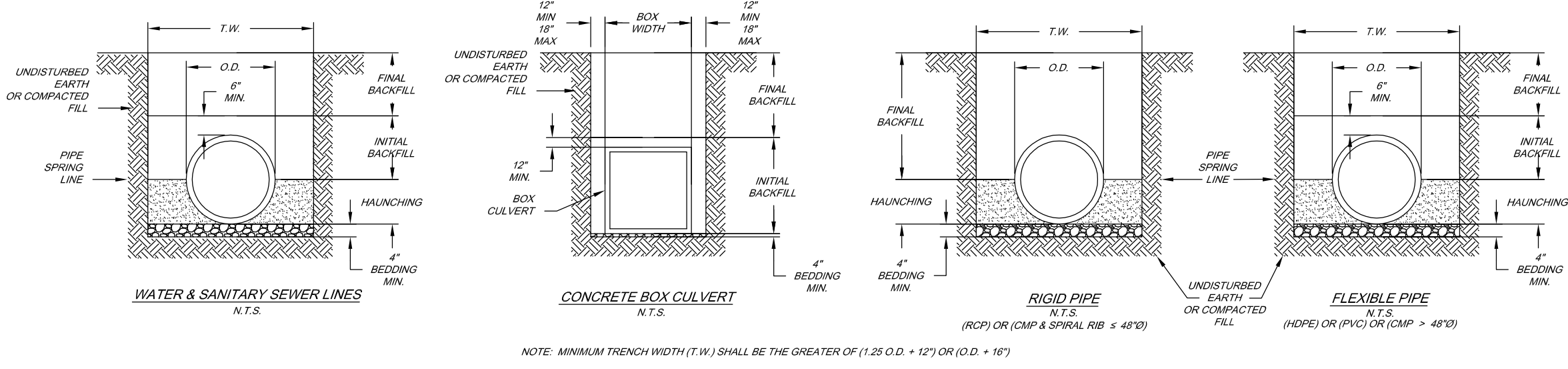
NOTES:

1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

CONCRETE WASHOUT AREA



INLET APRON



TRENCH AND BEDDING DETAILS

GENERAL NOTES:

1. BEDDING SHALL BE DUMPED CLASS I/A WORKED BY HAND OR CLASS II/COMPACTED TO 90% STANDARD PROCTOR OR CLASS II/COMPACTED TO 90% STANDARD PROCTOR. LOCAL CODES PERMITTING WITH GEOTECHNICAL ENGINEER AND OWNER APPROVAL, NATIVE SOILS MAY BE USED FOR BEDDING PROVIDED IT MEETS THE EMBEDMENT AND BACKFILL MATERIALS IN TABLE 1 EXCLUDING CLASS I/A.
2. HAUNCHING SHALL BE WORKED AROUND THE PIPE BY HAND TO ELIMINATE VOID AND SHALL BE CLASS I/A OR CLASS II/COMPACTED TO 90% STANDARD PROCTOR. FINE GRAVEL SHALL NOT BE USED AS A HAUNCHING MATERIAL. CLASS III MATERIAL SHALL BE ALLOWED FOR RIGID PIPE COMPACTED AT 90% STANDARD PROCTOR.
3. INITIAL BACKFILL SHALL BE CLASS I/A WORKED BY HAND OR CLASS II/COMPACTED TO 90% STANDARD PROCTOR OR CLASS II/COMPACTED TO 90% STANDARD PROCTOR. LOCAL CODES PERMITTING WITH GEOTECHNICAL ENGINEER AND OWNER APPROVAL, NATIVE SOILS MAY BE USED FOR FLEXIBLE PIPE WHEN FALL HEIGHTS EXCEED 6'.
4. FINAL BACKFILL SHALL BE CLASS I/A WORKED BY HAND OR CLASS II/COMPACTED TO 90% STANDARD PROCTOR OR CLASS II/COMPACTED TO 90% STANDARD PROCTOR.
5. FINAL BACKFILL NOT UNDER PAVED AREAS CAN BE CLASS I/A COMPACTED TO 90% STANDARD PROCTOR.
6. ALL MATERIALS ARE CLASSIFIED IN ACCORDANCE WITH ASTM D 2321, (SEE TABLE 1).
7. ALL MATERIALS SHALL BE INSTALLED IN MAXIMUM 6" LIFTS UNLESS OTHERWISE SPECIFIED BY LOCAL CODES. CLASS I/A MATERIALS SHALL BE COMPACTED NEAR OPTIMUM MOISTURE CONTENT.
8. FILL SALVAGED FROM EXCAVATIONS SHALL BE FREE OF DEBRIS, ORGANICS AND ROCKS LARGER THAN 6".
9. ALL TRENCH EXCAVATIONS SHALL BE SLOPED, SHORED, BRACED OR OTHERWISE SUPPORTED IN ACCORDANCE WITH OSHA REGULATIONS AND LOCAL ORDINANCES.
10. DESIGN ENGINEER SHALL DESIGNATE ON THE PLANS WHERE WATER/TRENCH JOINTS ARE TO BE RELOCATED.
11. REPLACE WET OR UNSUITABLE SOIL AS NECESSARY TO PROVIDE A SUITABLE BASE, AS DIRECTED BY GEOTECHNICAL ENGINEER OR OWNER.
12. WHERE GROUND WATER IS PRESENT CLASS I-A MATERIAL SHALL BE WRAPPED WITH A NON-WOVEN GEO-TEXTILE EXCLUDING BEDDING MATERIAL BETWEEN 4" & 6" THICK.
13. CONTRACTOR SHALL REFER TO GEOTECHNICAL REPORT FOR SOIL TYPE AND CLASSIFICATIONS FOR THIS PROJECT.
14. CONTRACTOR SHALL REFER TO THE LATEST VERSION OF ASTM STANDARDS PRIOR TO CONSTRUCTION.

TABLE 1: CLASSES OF EMBEDMENT AND BACKFILL MATERIALS

ASTM D 2321 MATERIAL CLASS	ASTM D 2487 SOIL GROUP	MATERIAL TYPE	% PASSING			
			1 1/2" IN.	NO. 4	NO. 200	ATTERBERG LIMITS
IA	NONE	MANUFACTURED OPEN GRADED AGGREGATES	100%	<10%	<5%	NON PLASTIC
IB	NONE	MANUFACTURED DENSE GRADED AGGREGATES	100%	<50%	<5%	NON PLASTIC
II	GW	COARSE-GRAINED SOILS, CLEAN	100%	<50% OF "COARSE FRACTION"	<5%	NON PLASTIC
	SW			<50% OF "COARSE FRACTION"		
	SP			<50% OF "COARSE FRACTION"		
	GM			<50% OF "COARSE FRACTION"		
III	GC	COARSE-GRAINED SOILS W/ FINES	100%	<50% OF "COARSE FRACTION"	125 TO 500	<4 OR <"A" LINE
	SM			<50% OF "COARSE FRACTION"		<4 OR <"A" LINE
	SC			<50% OF "COARSE FRACTION"		>7 OR >"A" LINE
	MC			<50% OF "COARSE FRACTION"		<4 OR <"A" LINE
IV-A	CL	FINE-GRAINED SOILS	100%	100%	>50	>7 OR >"A" LINE

TRENCH AND BEDDING DETAILS

CITY FILE: 05-037
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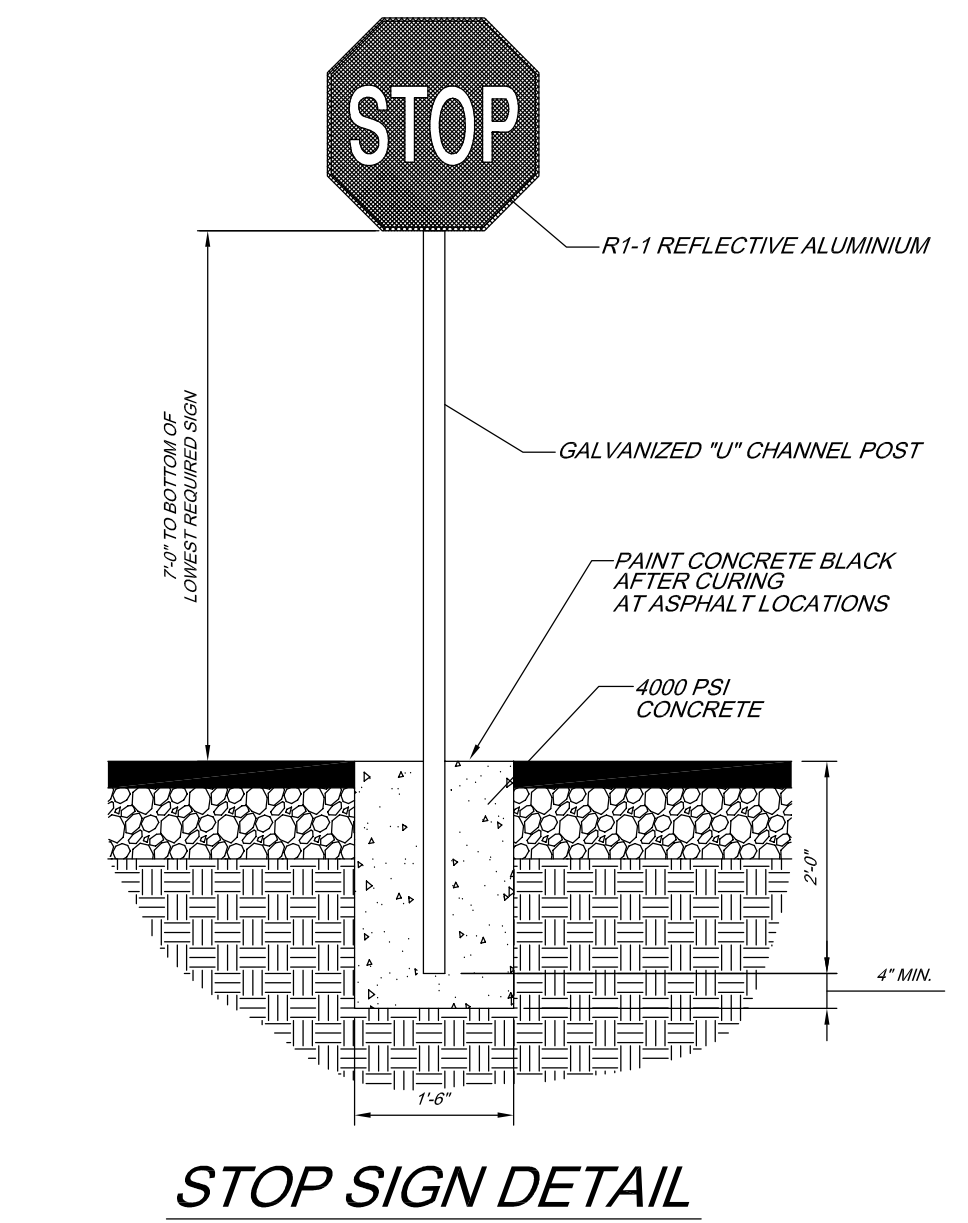
SCALE: 1" = N.T.S.

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 FOR THE LOCATION OF UNDERGROUND FACILITIES

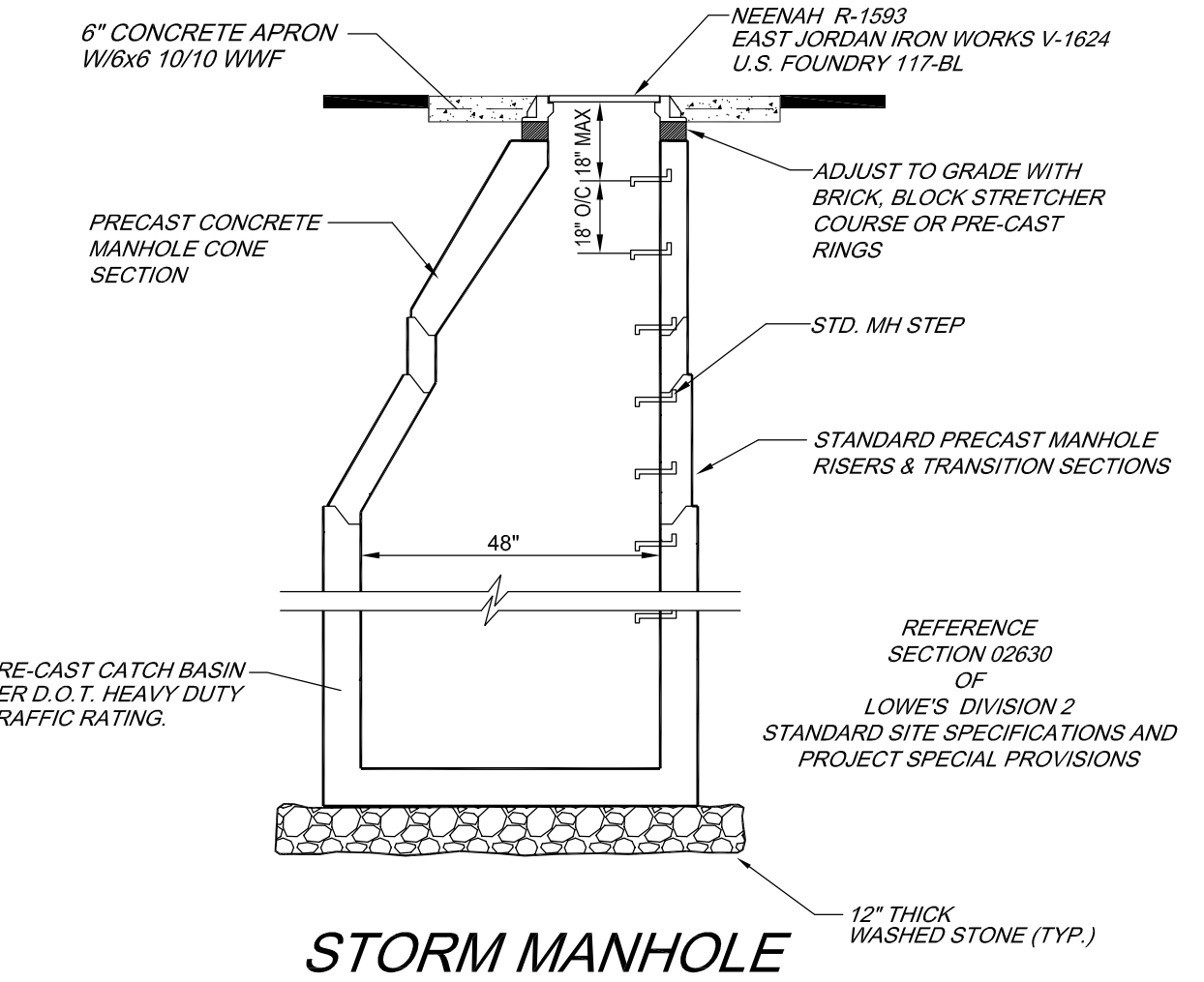
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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STOP SIGN DETAIL



STORM MANHOLE

REVISIONS

DATE	DESCRIPTION
12/21/05	REVISED PER CITY OF ROCHESTER HILLS
07/06/06	REVISED PER CITY OF ROCHESTER HILLS
08/28/06	REVISED PER CITY OF ROCHESTER HILLS

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OAKLAND COUNTY, MICHIGAN

PROJECT No: 05000184 DRAWN BY: JTL CHECKED BY: DL

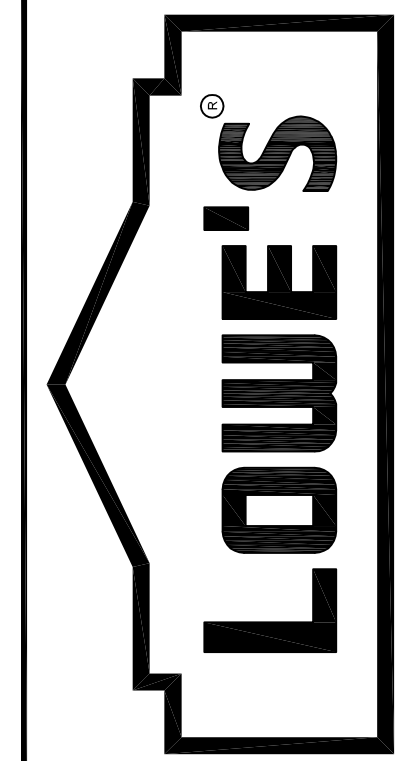
SP-40
4102-50-40

REVISIONS

DATE	DESCRIPTION
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07/06/06	REVISED PER CITY OF ROCHESTER HILLS
06/28/06	REVISED PER CITY OF ROCHESTER HILLS

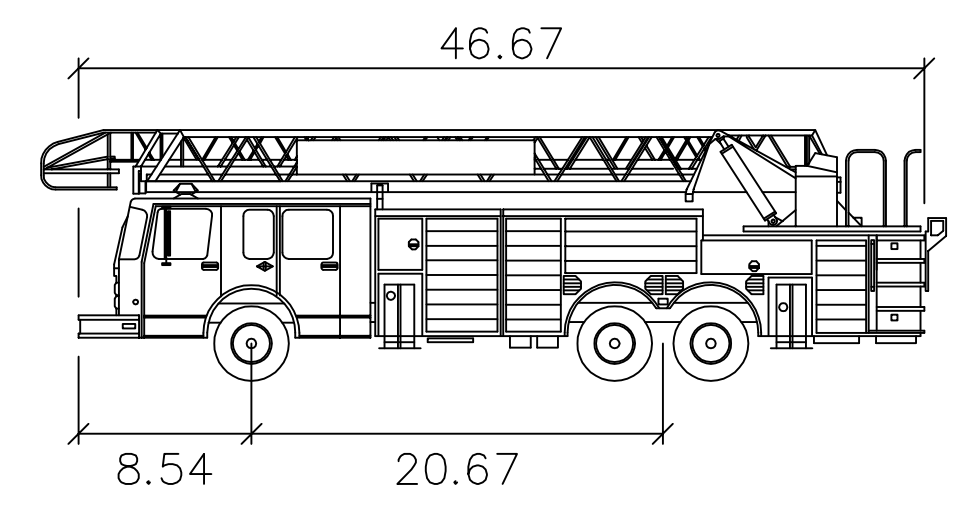
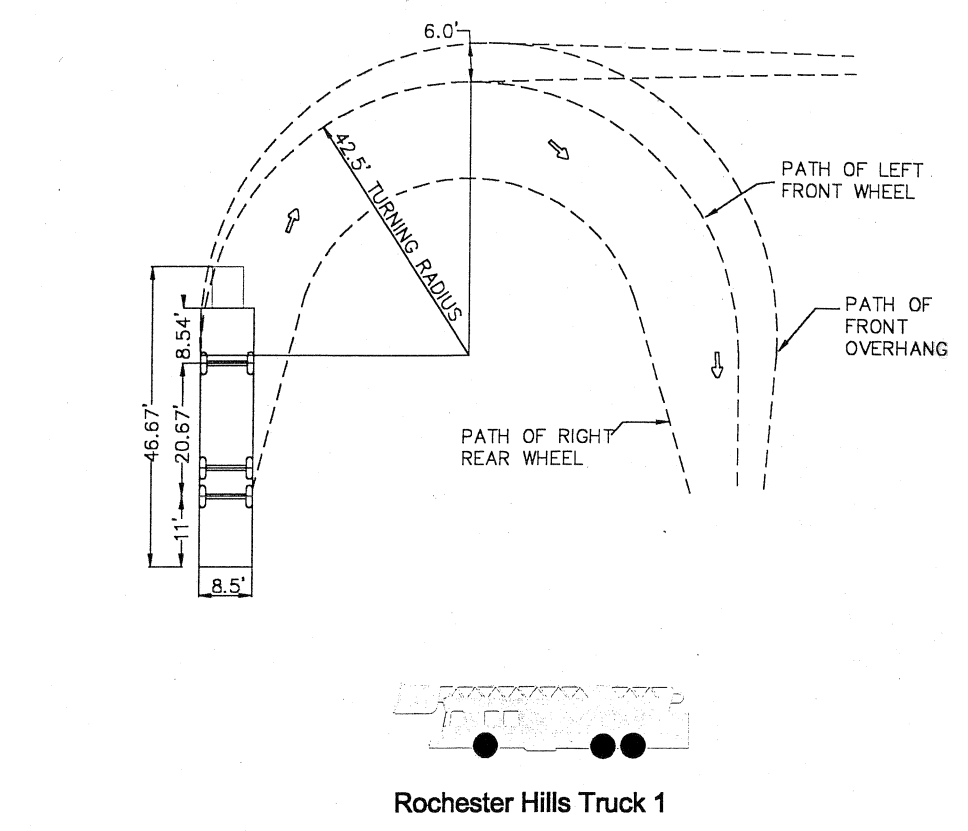
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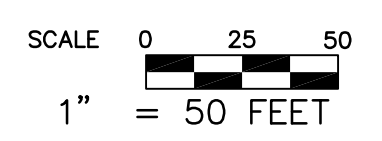


**SITE PLAN
 AUTOTURN EXHIBIT (FIRE TRUCK)**
 LOWE'S OF
 ROCHESTER HILLS
 OAKLAND COUNTY, MICHIGAN
 PROJECT NO: 05000184 DRAWN BY: JTL CHECKED BY: DL

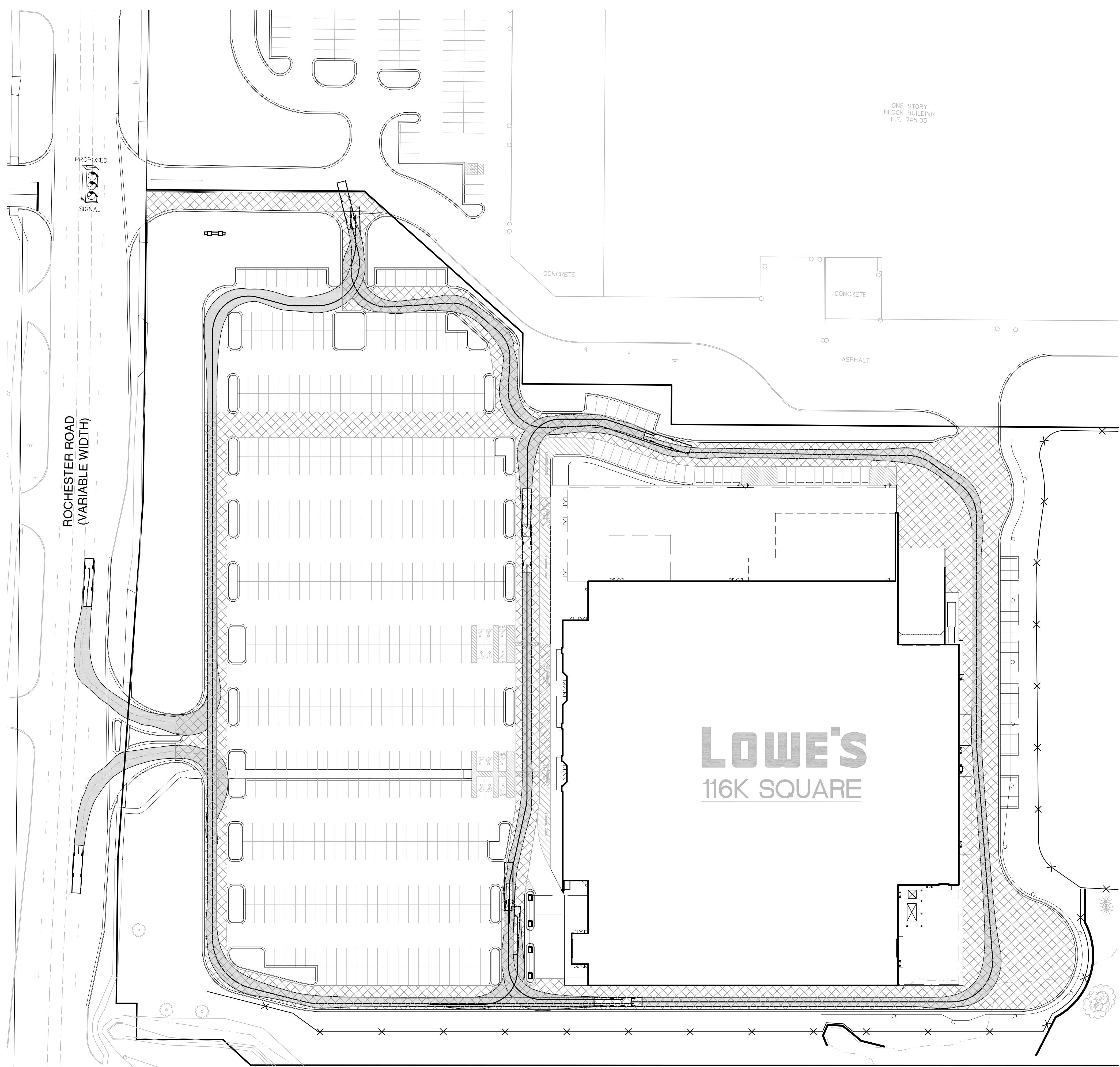
ORIGINAL ISSUE DATE: 10/18/2005
 PERMIT SET ISSUE DATE:
 CONSTRUCTION SET ISSUE DATE:
 DRAWING NUMBER:
SP-42
 4102-50-42



ROCH HILLS FIRE TRUCK
 feet
 Width : 8.50
 Track : 8.50
 Lock to Lock Time : 6.00
 Steering Angle : 40.00



CITY FILE: 05-037
NOT TO BE USED FOR CONSTRUCTION



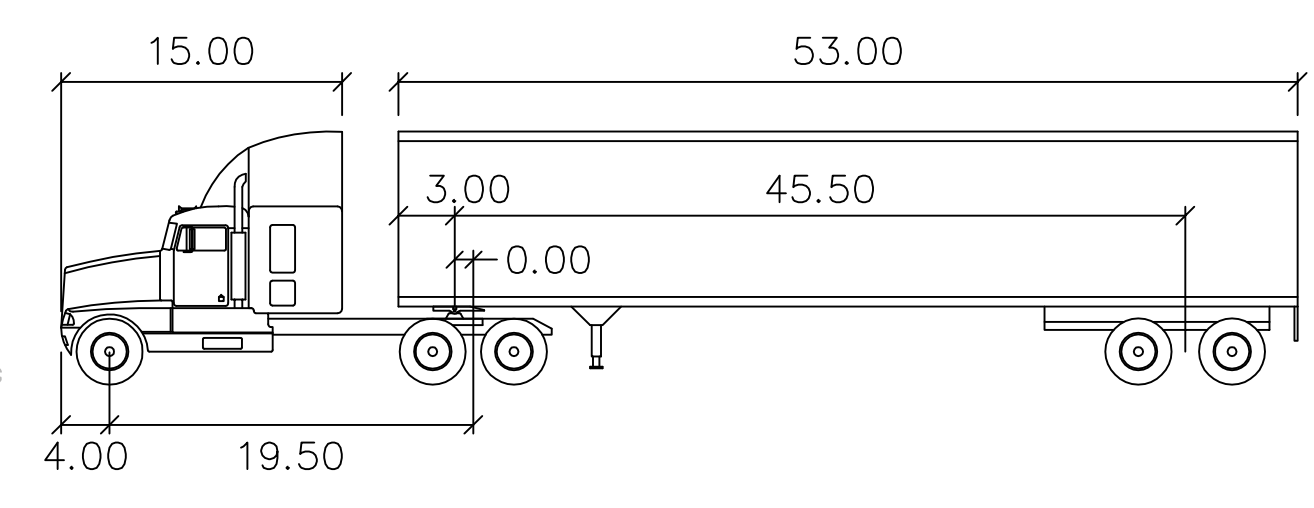
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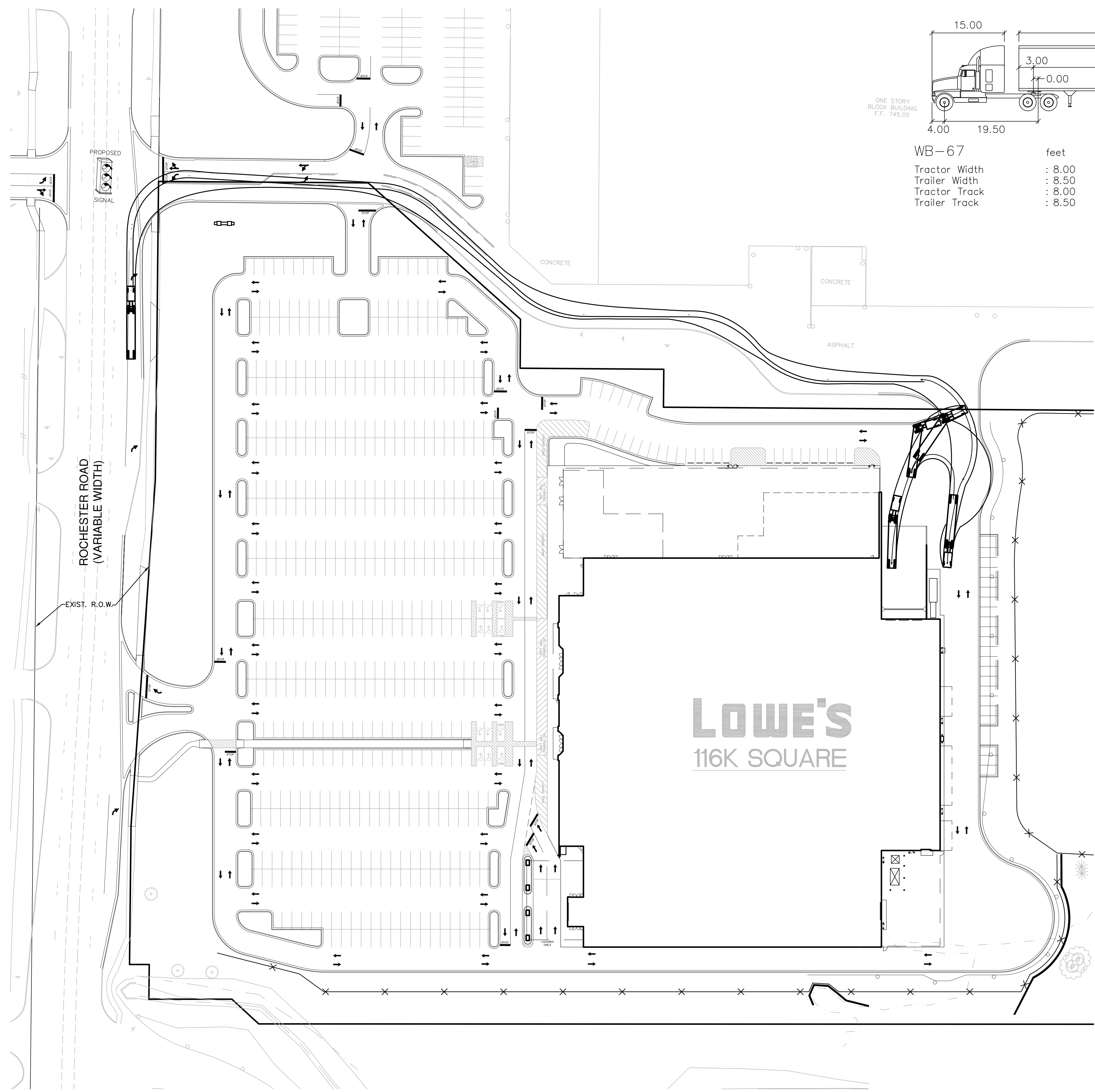
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K:\0500184\sp42\Plan_Site\Site-Plan\mxd APPROVED BY CITY OF ROCHESTER HILLS PLANNING COMMISSION 05/01/06 10:42:07 AM 10/18/05 2:42:26 PM entler

REVISIONS	
DATE	DESCRIPTION
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07/06/06	REVISED PER CITY OF ROCHESTER HILLS
06/28/06	REVISED PER CITY OF ROCHESTER HILLS

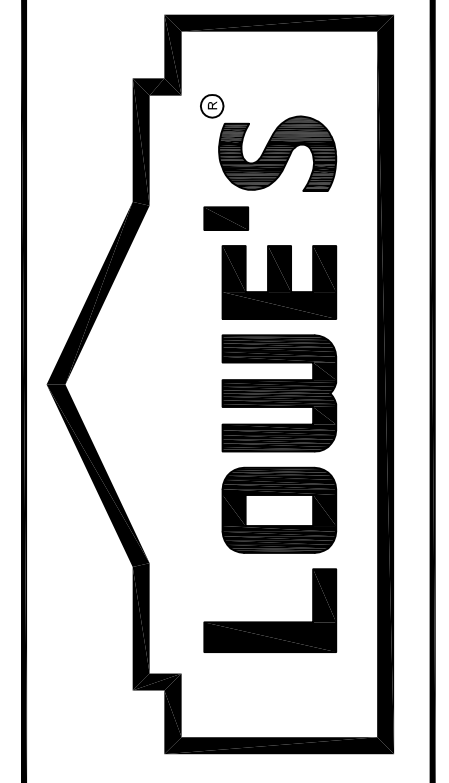


WB-67	feet	
Tractor Width	: 8.00	Lock to Lock Time : 6.00
Trailer Width	: 8.50	Steering Angle : 28.40
Tractor Track	: 8.00	Articulating Angle : 75.00
Trailer Track	: 8.50	



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SITE PLAN
 AUTOTURN EXHIBIT (WB 67)
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 ROCHESTER HILLS
 OAKLAND COUNTY, MICHIGAN
 PROJECT NO: 0500184 DRAWN BY: JTL CHECKED BY: DL

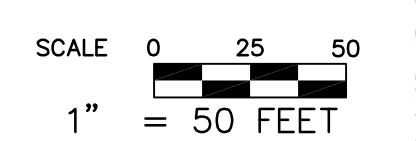
ORIGINAL
 ISSUE DATE: 10/18/2005
 PERMIT SET
 ISSUE DATE:
 CONSTRUCTION SET
 ISSUE DATE:
 DRAWING NUMBER:
 SP-43
 4102-50-43



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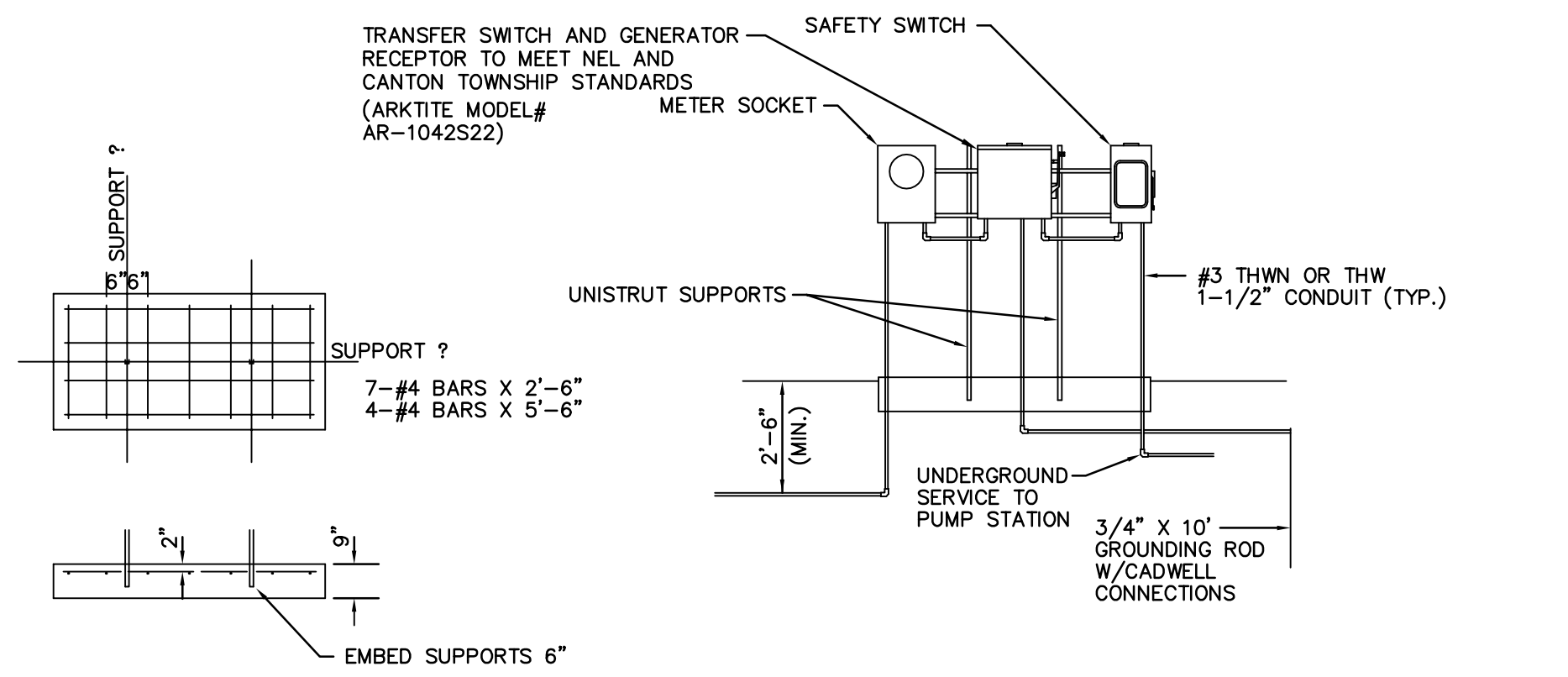
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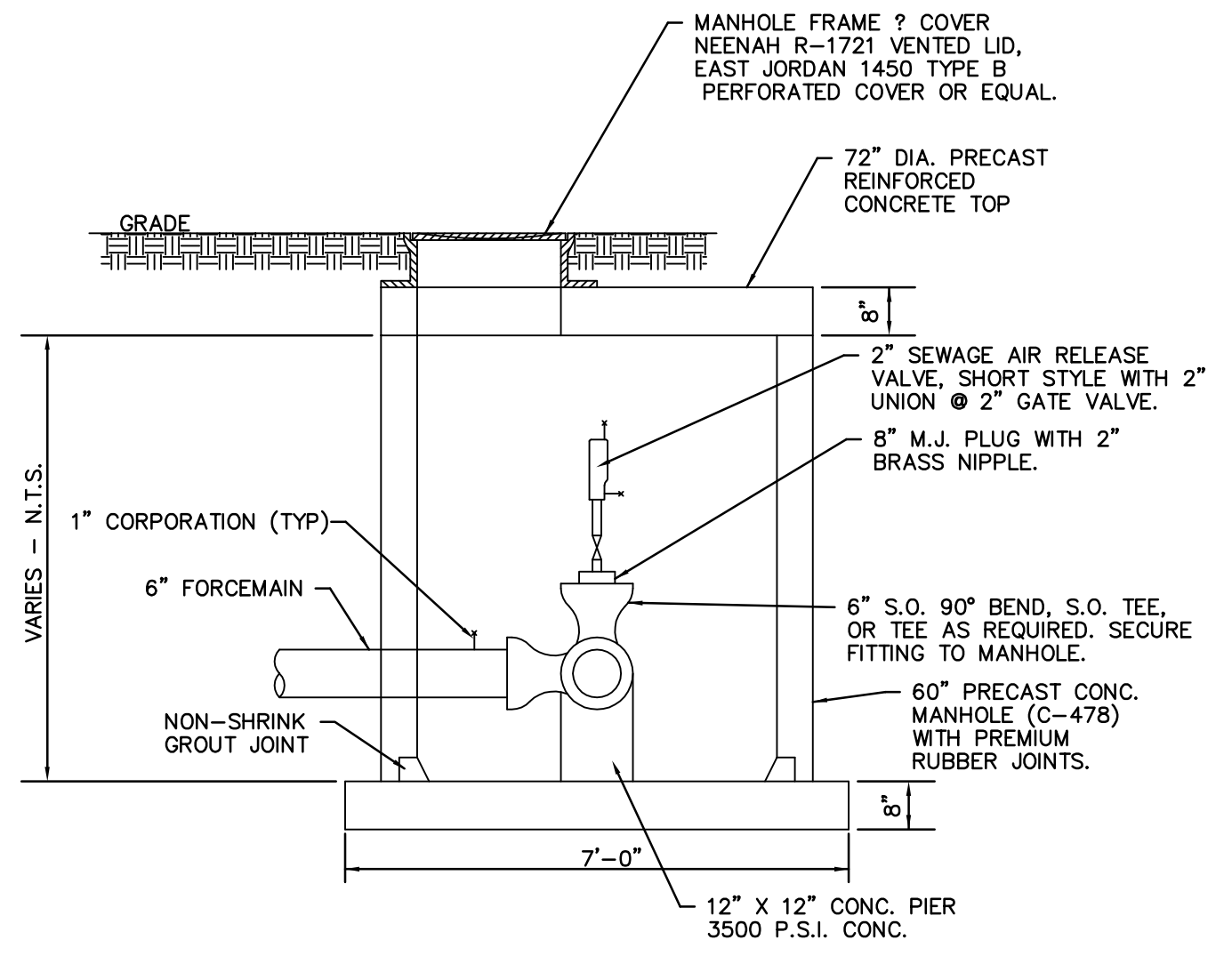


CITY FILE: 05-037
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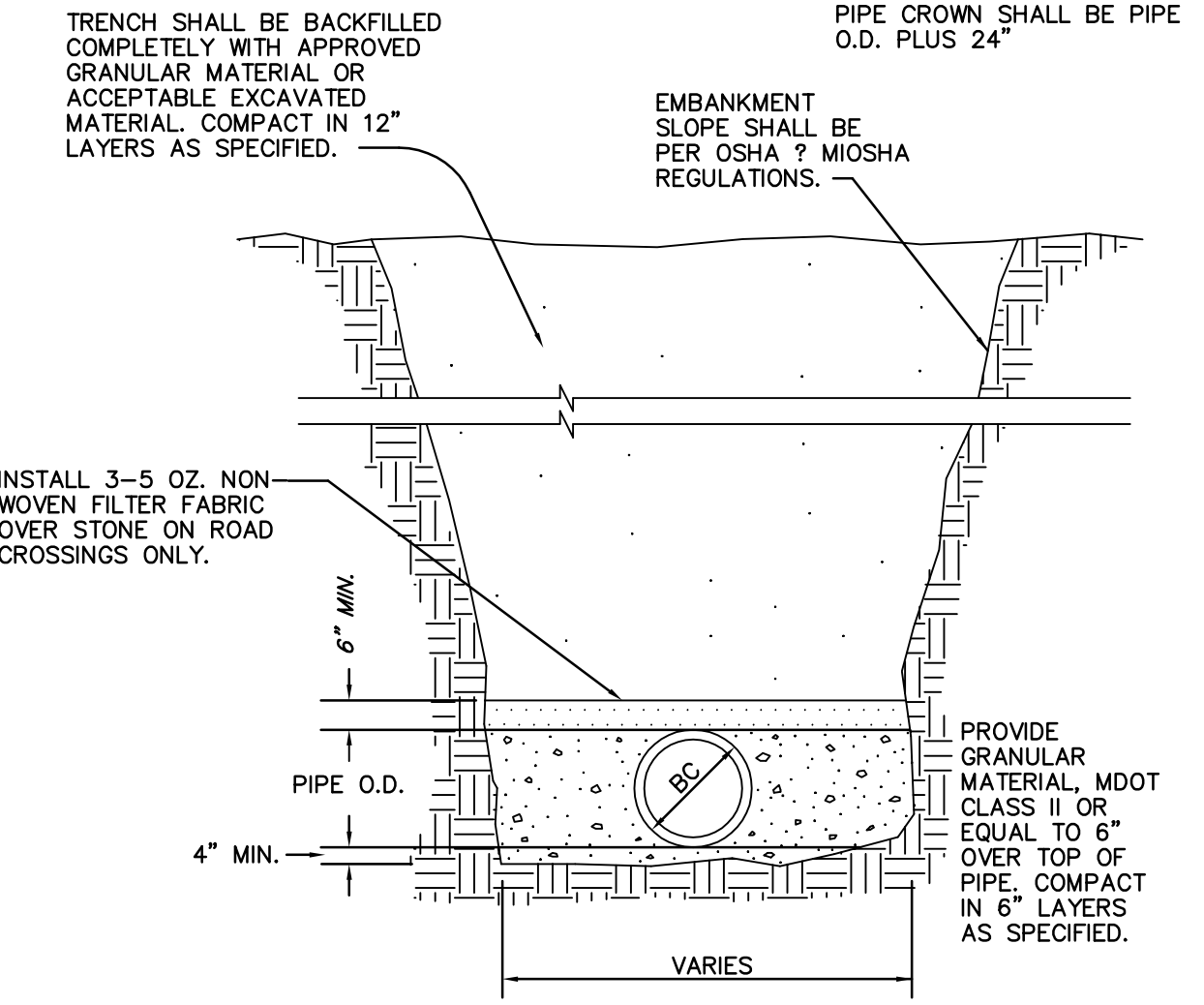
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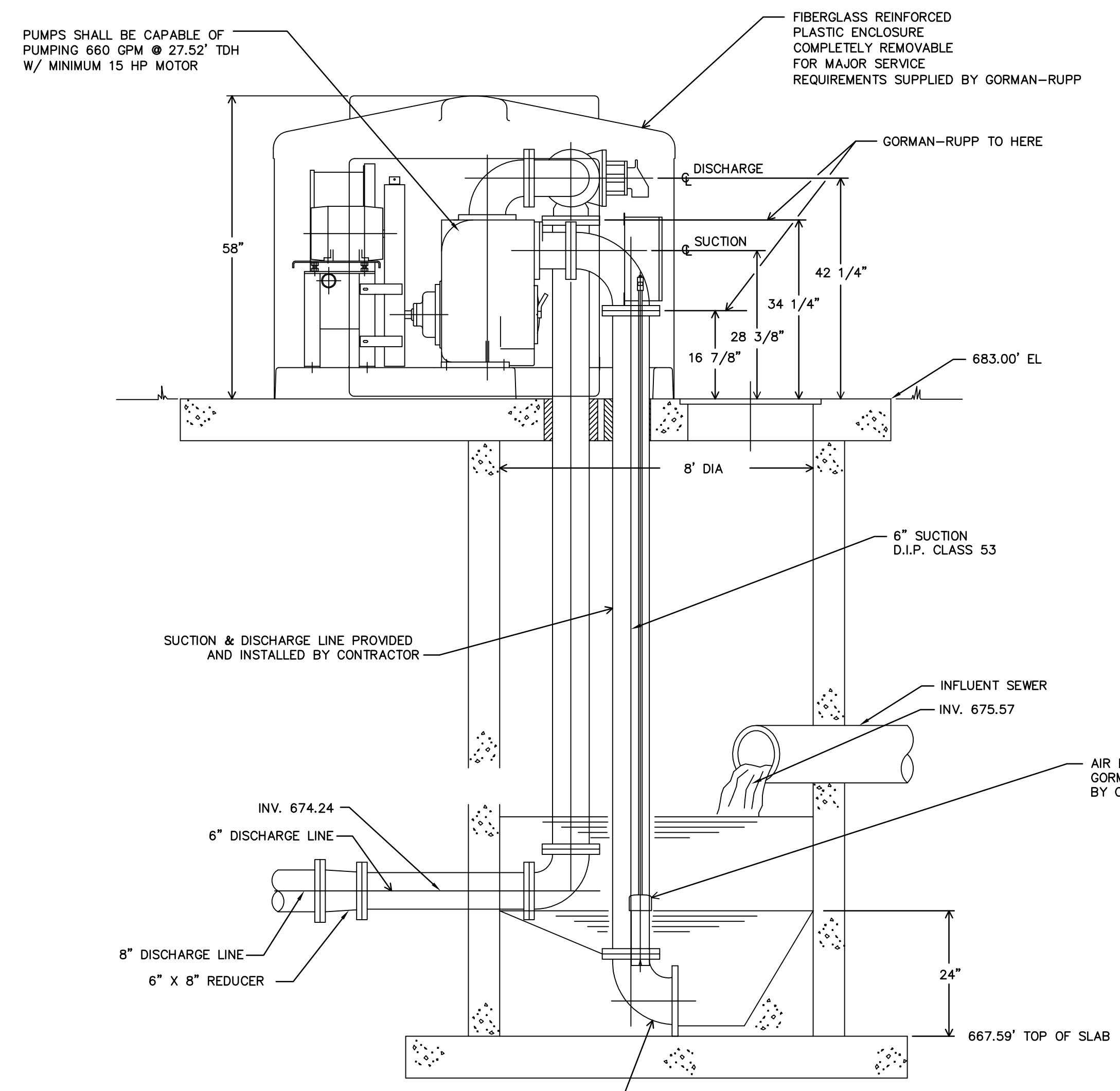
ELECTRICAL POWER FEED
NOT TO SCALE



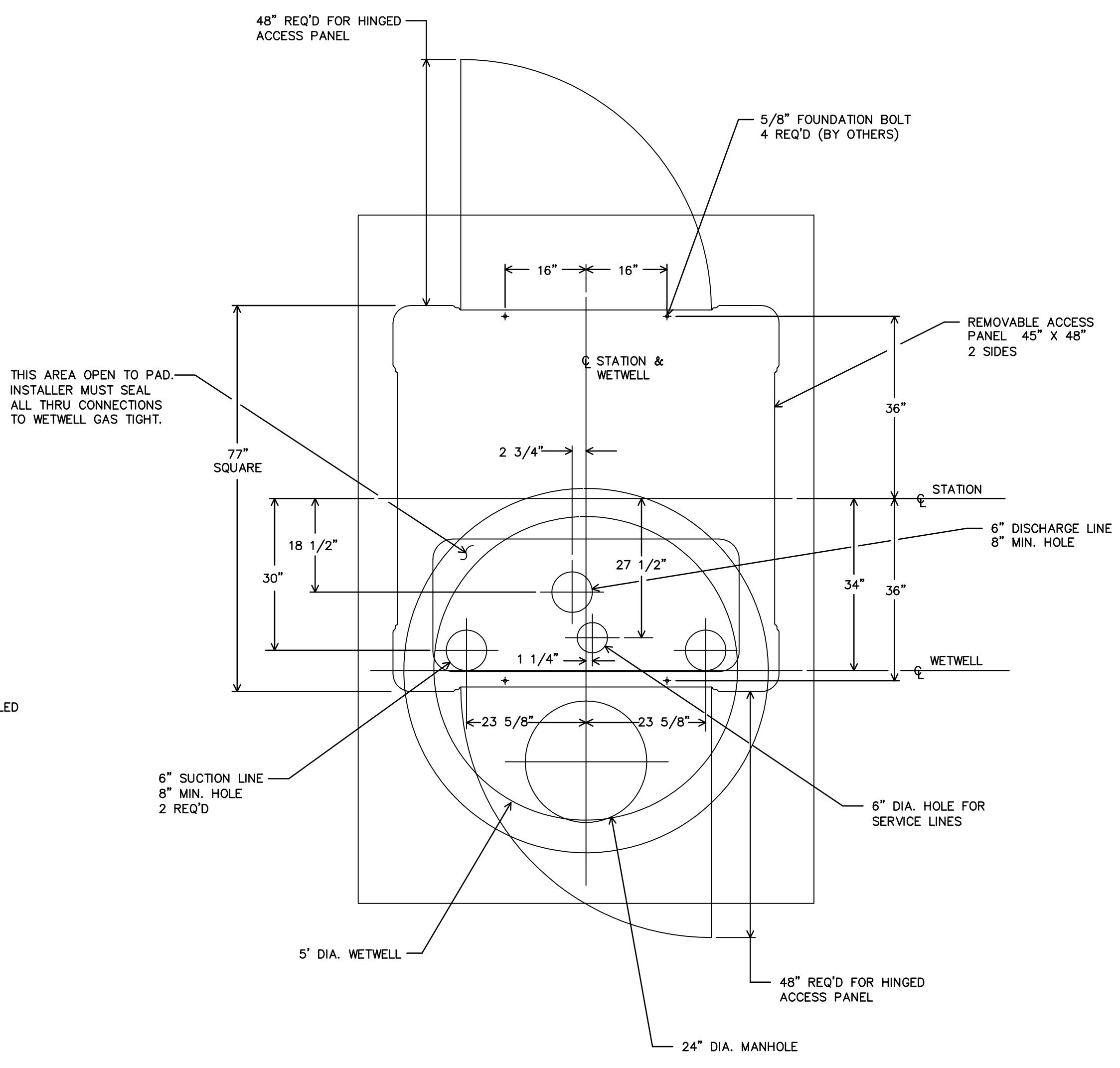
FORCEMAIN MANHOLE DETAIL
NOT TO SCALE



POLYETHYLENE PIPE TRENCH DETAIL
NOT TO SCALE



ELEVATION VIEW
NOT TO SCALE



PLAN VIEW
NOT TO SCALE



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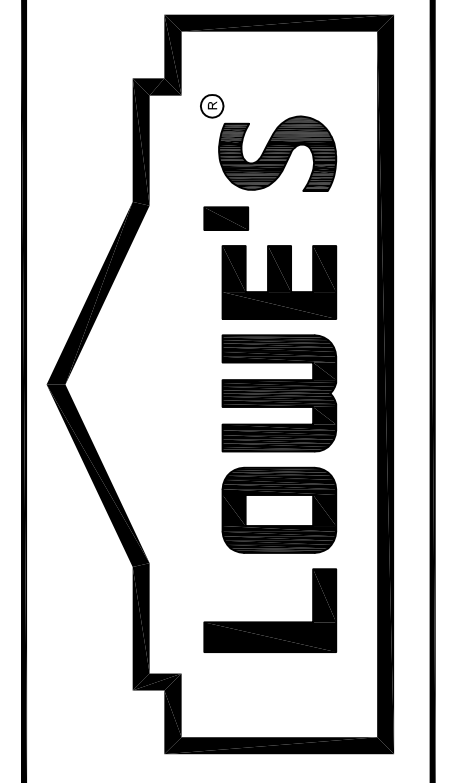
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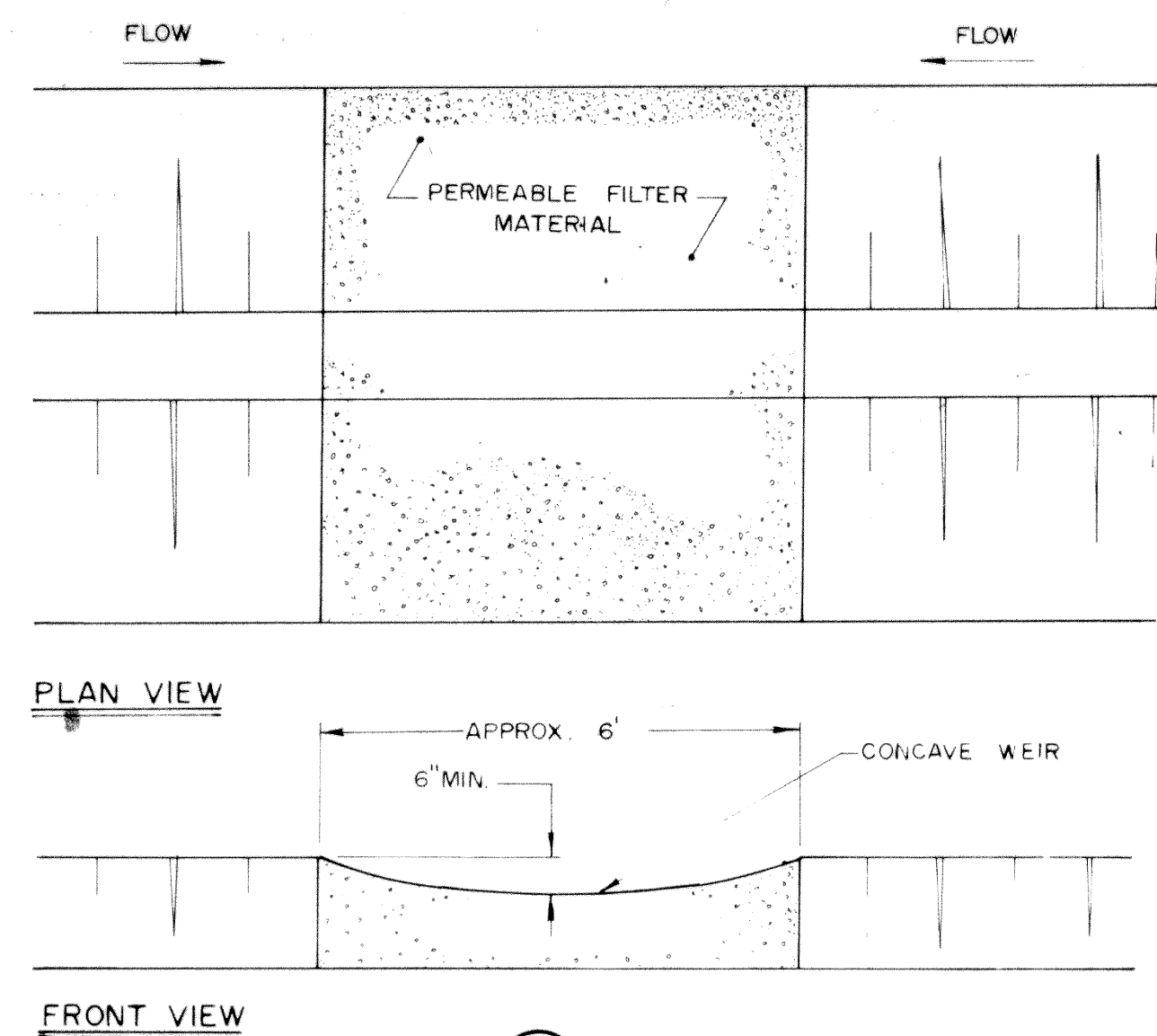


SITE PLAN
STORM SEWER DETAILS
LOWE'S OF
ROCHESTER HILLS
ROCHESTER HILLS, MICHIGAN
OAKLAND COUNTY, MICHIGAN
PROJECT NO: 05000184 DRAWN BY: JTL CHECKED BY: DL

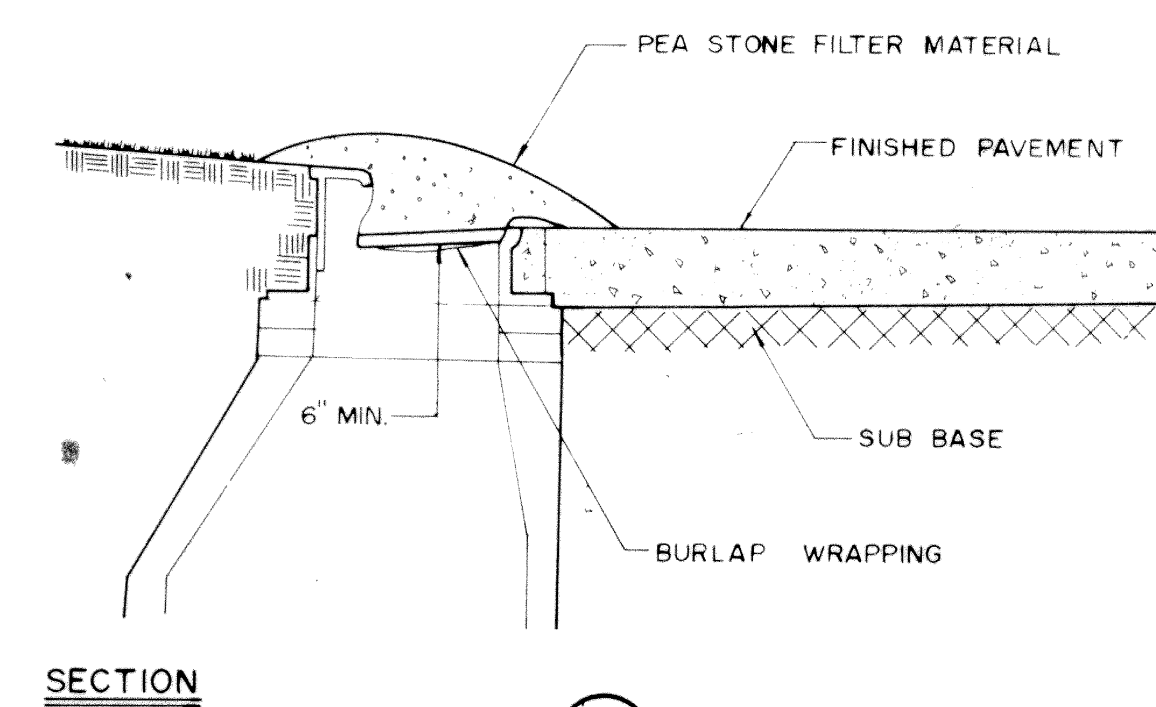
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ISSUE DATE: 10/18/2005
PERMIT SET
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SP-44
4102-5044

CITY FILE: 05-037
NOT TO BE USED FOR CONSTRUCTION
SCALE 1" = N.T.S.

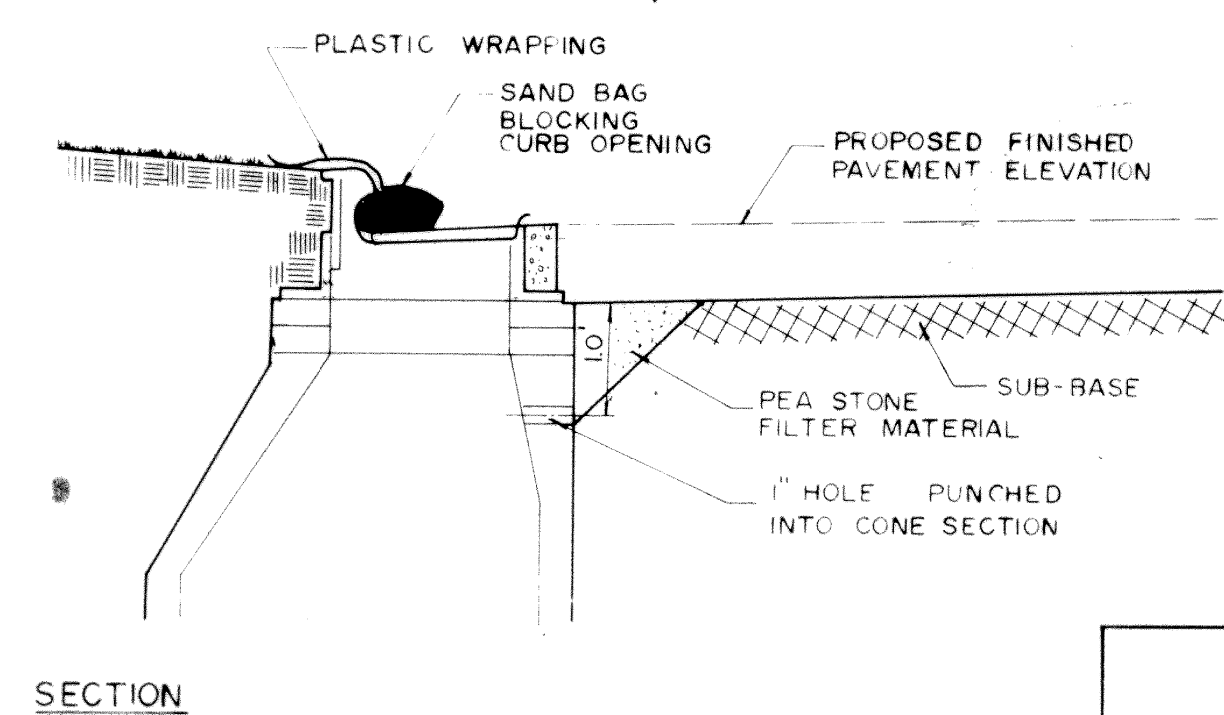
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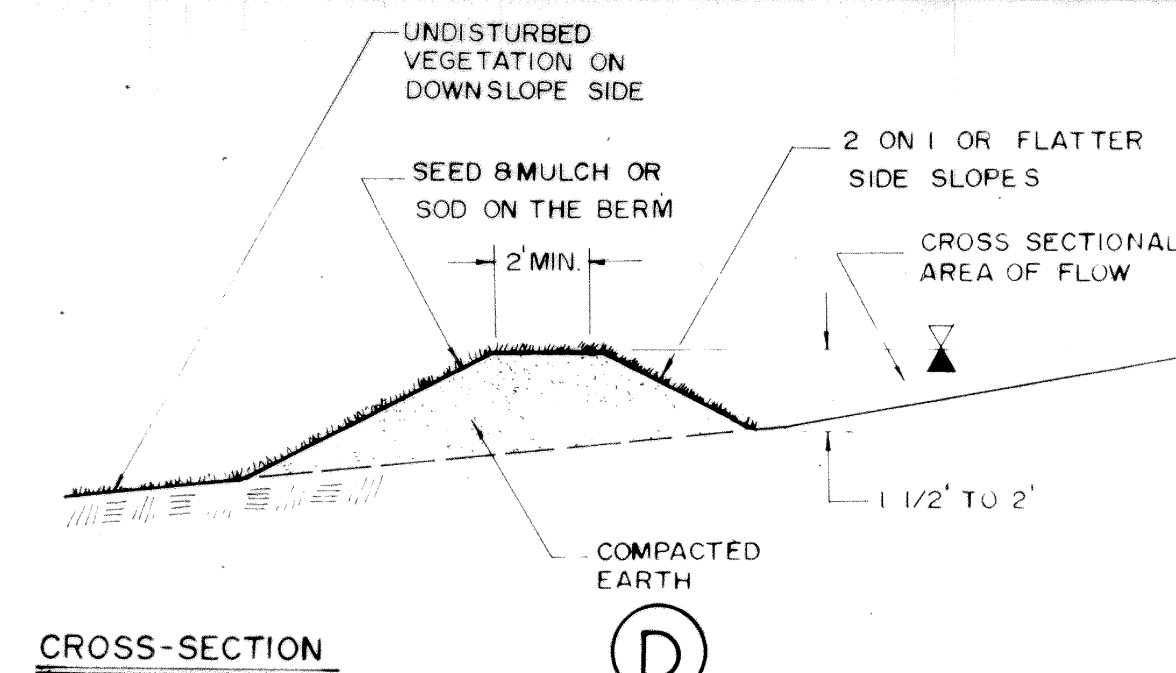
(A)
STONE OUTLET FILTER
within an earth berm



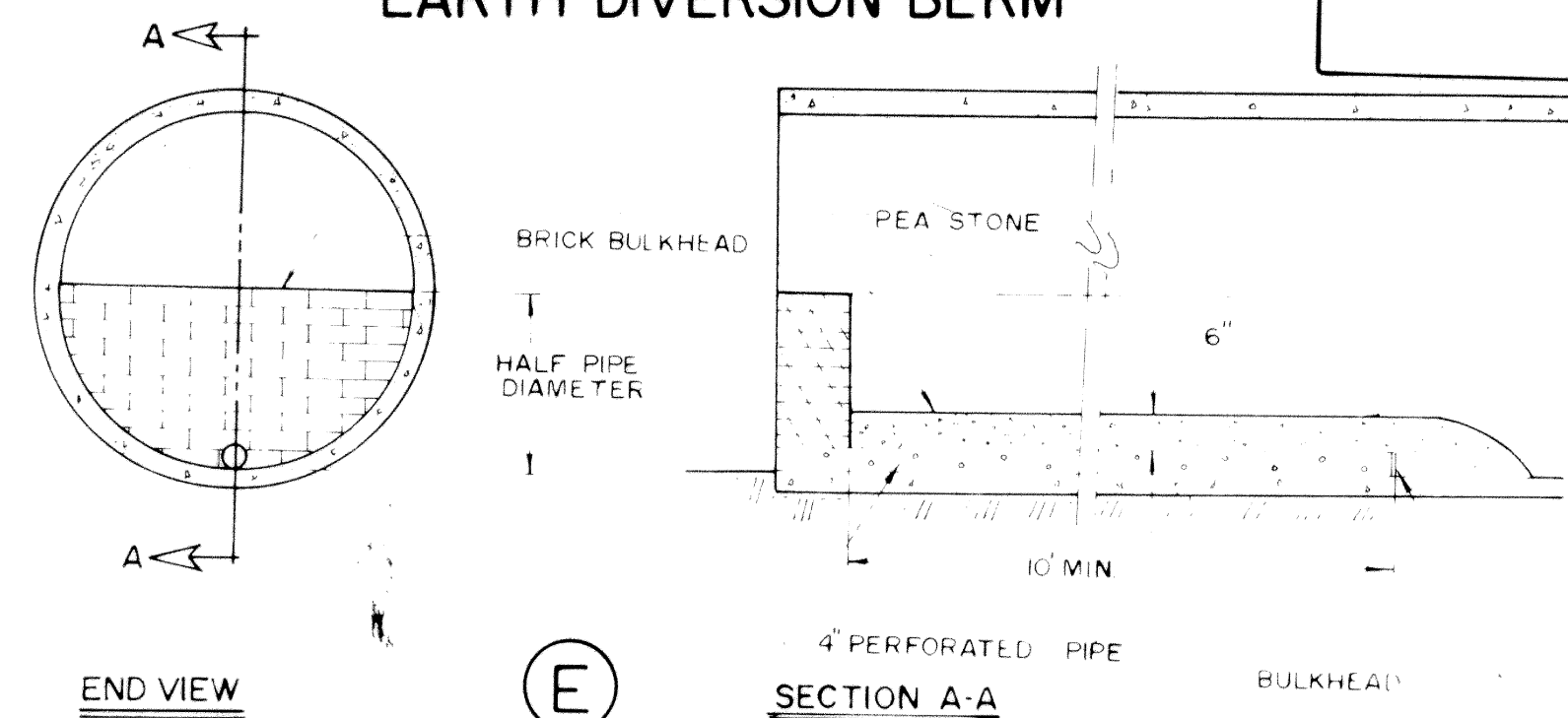
(B)
CURB & GUTTER INLET FILTER
after paving



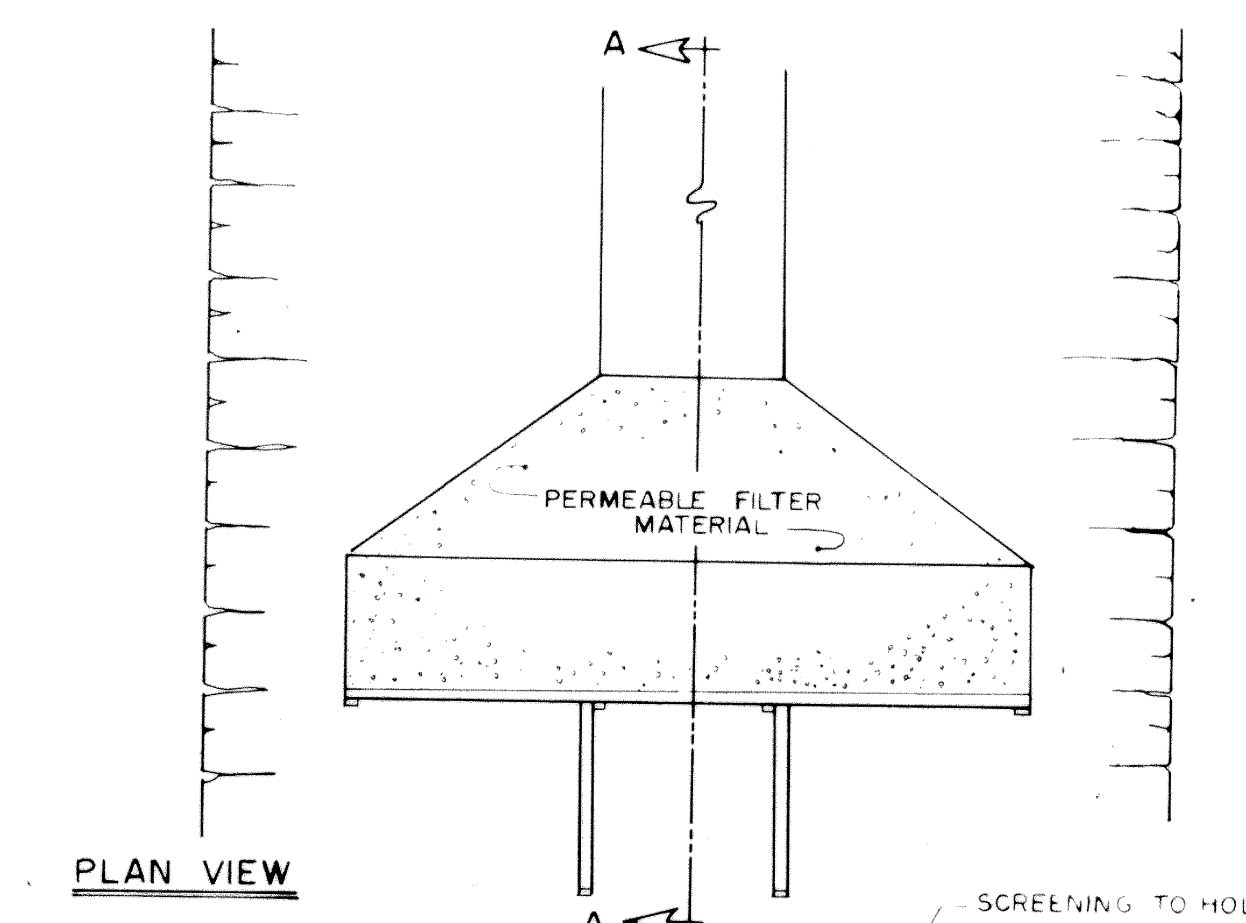
(C)
CURB & GUTTER INLET FILTER
before paving



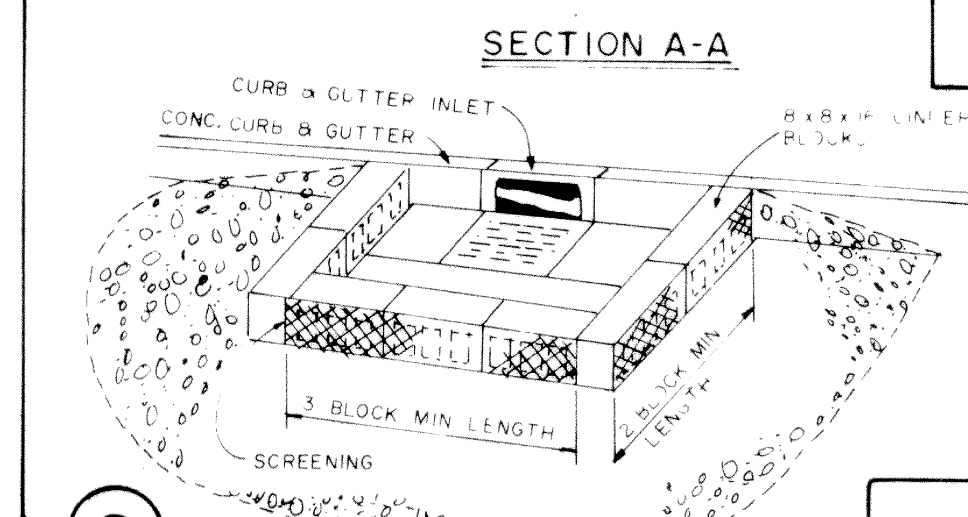
(D)
EARTH DIVERSION BERM



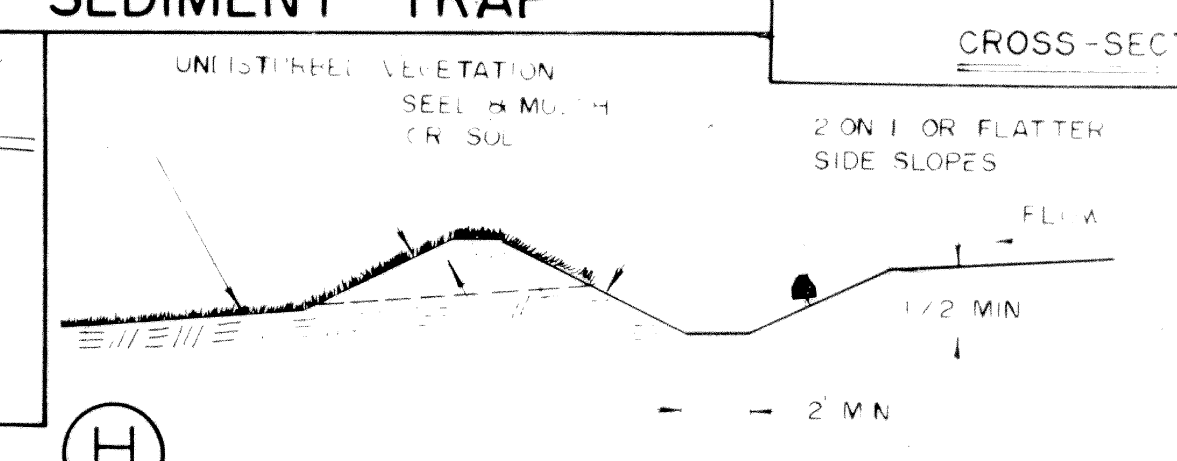
(E)
PIPE SEDIMENT BARRIER



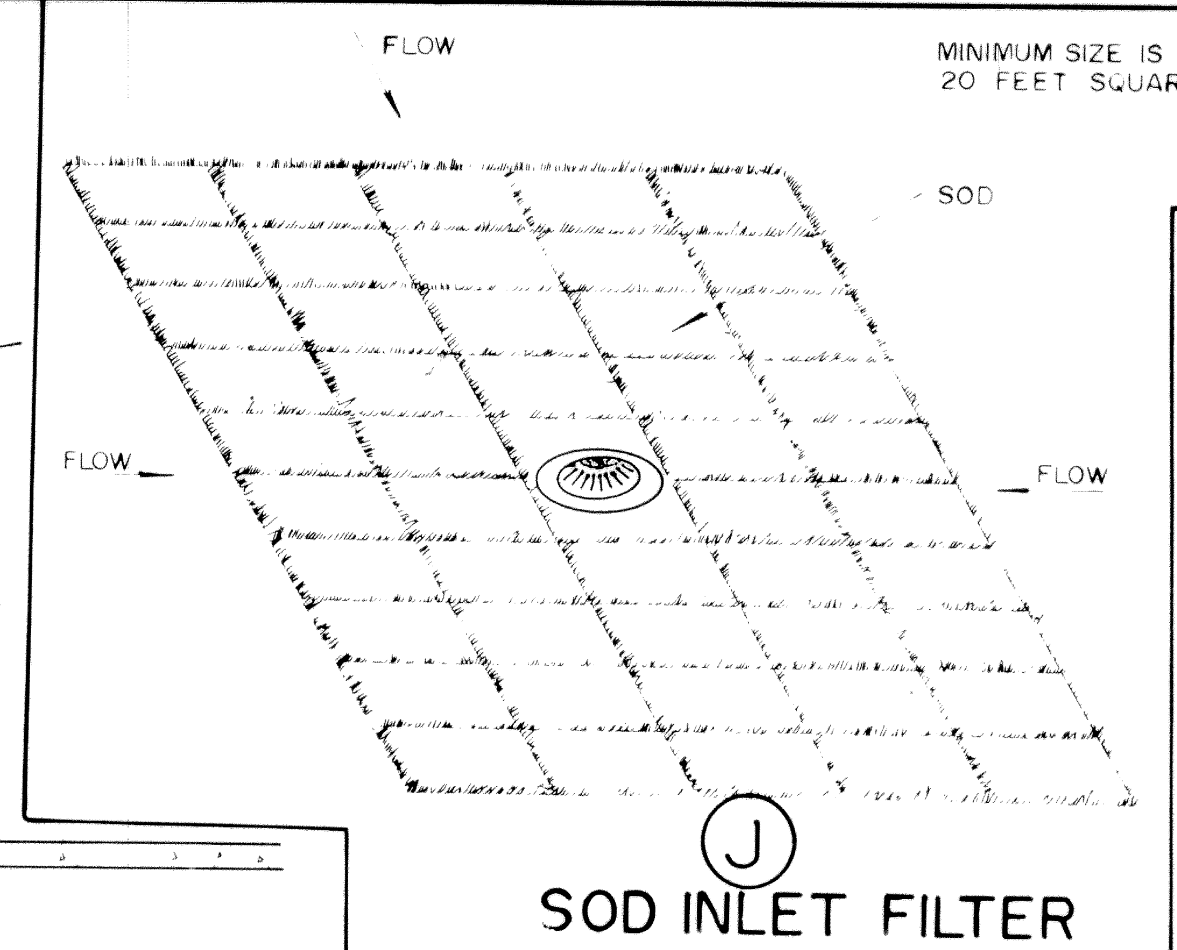
(F)
SEDIMENT TRAP



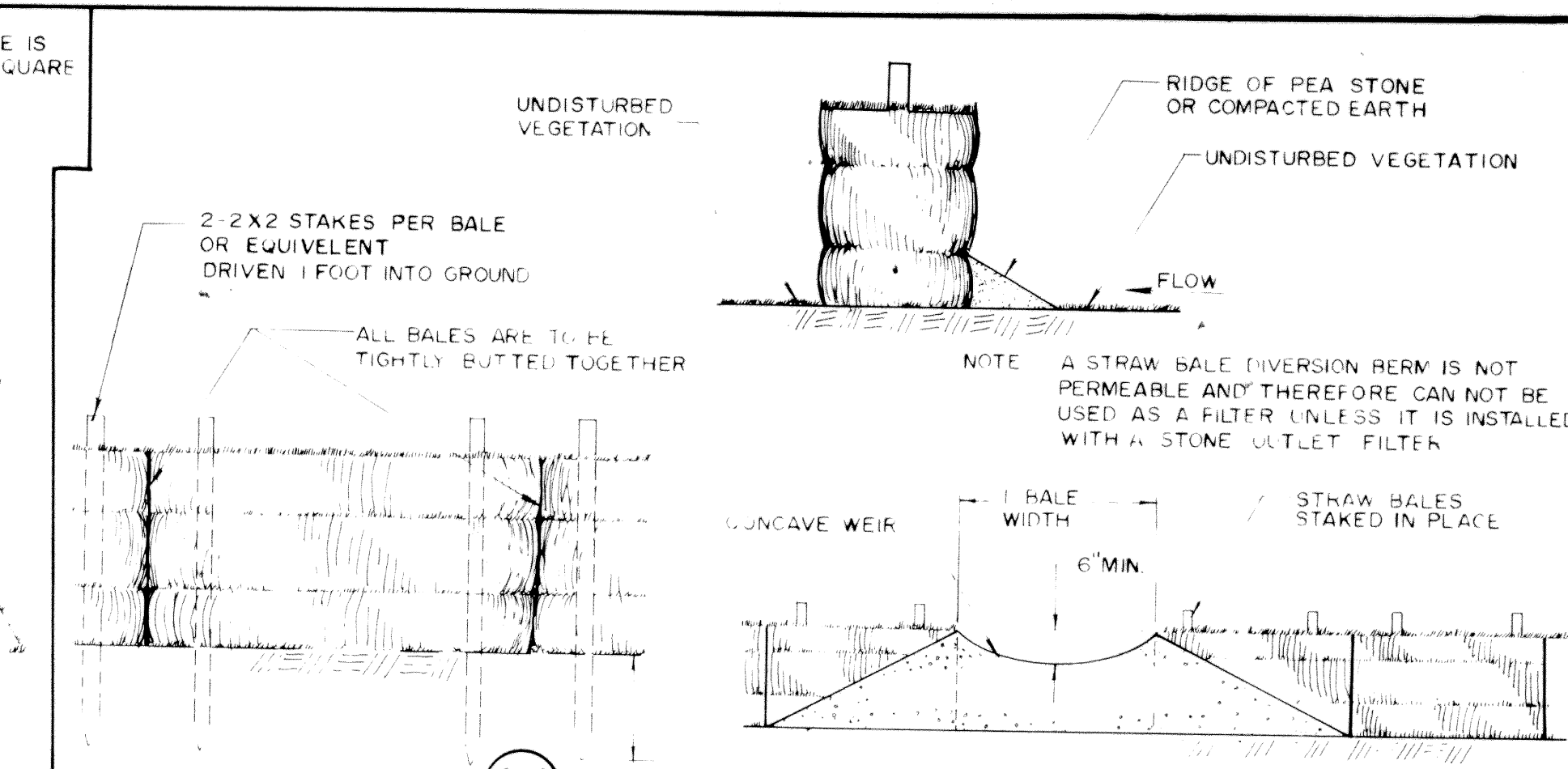
(G)
CINDER BLOCK FILTER INLET



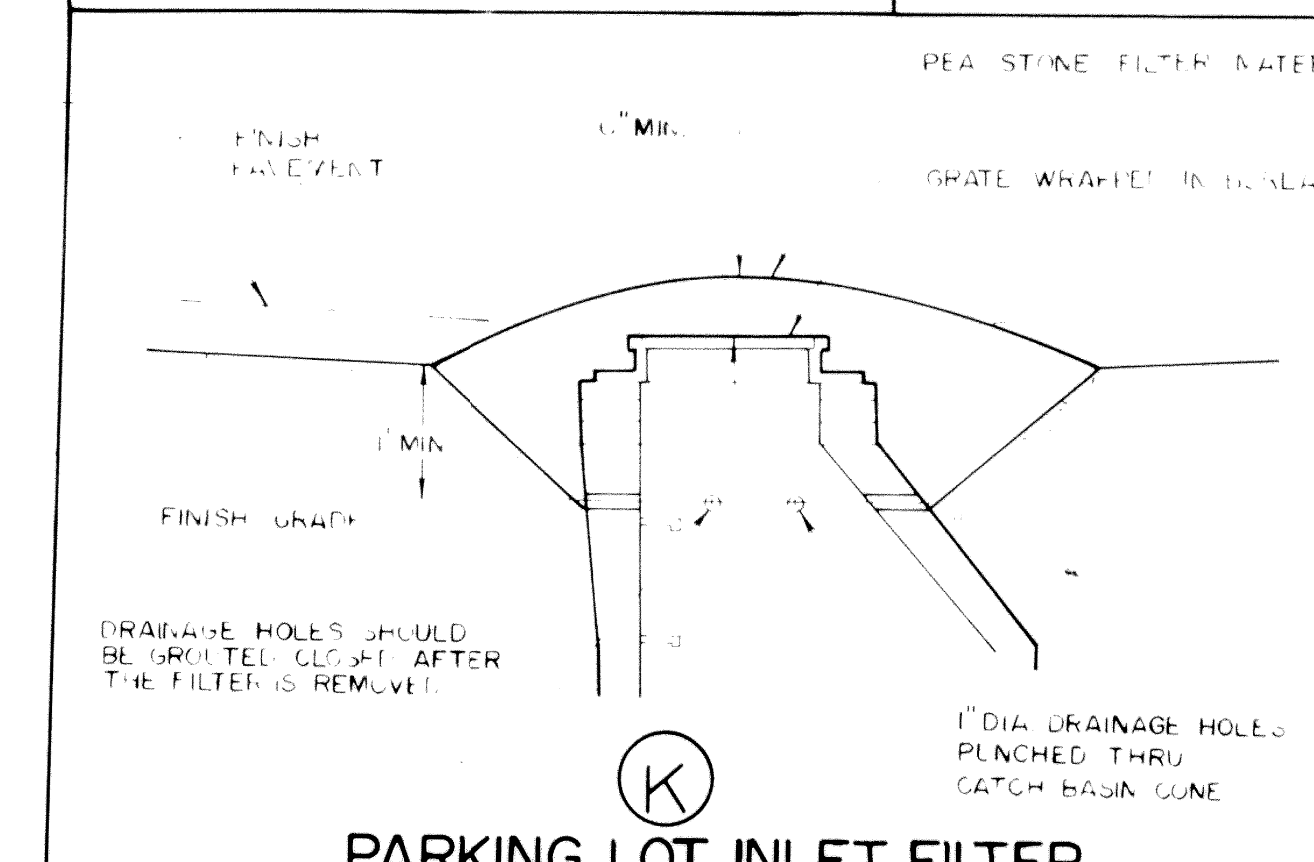
(H)
DIVERSION DITCH



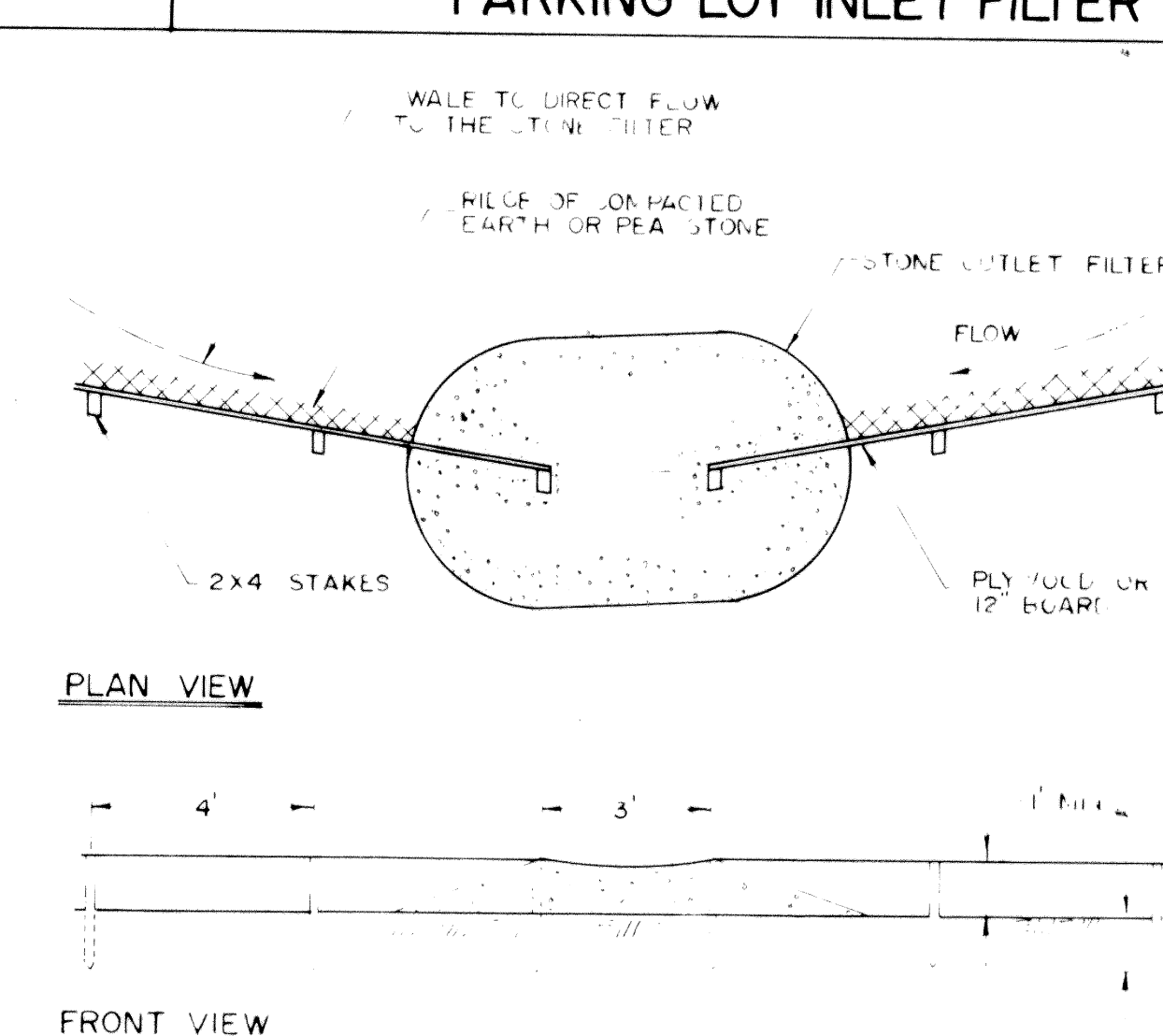
(J)
SOD INLET FILTER



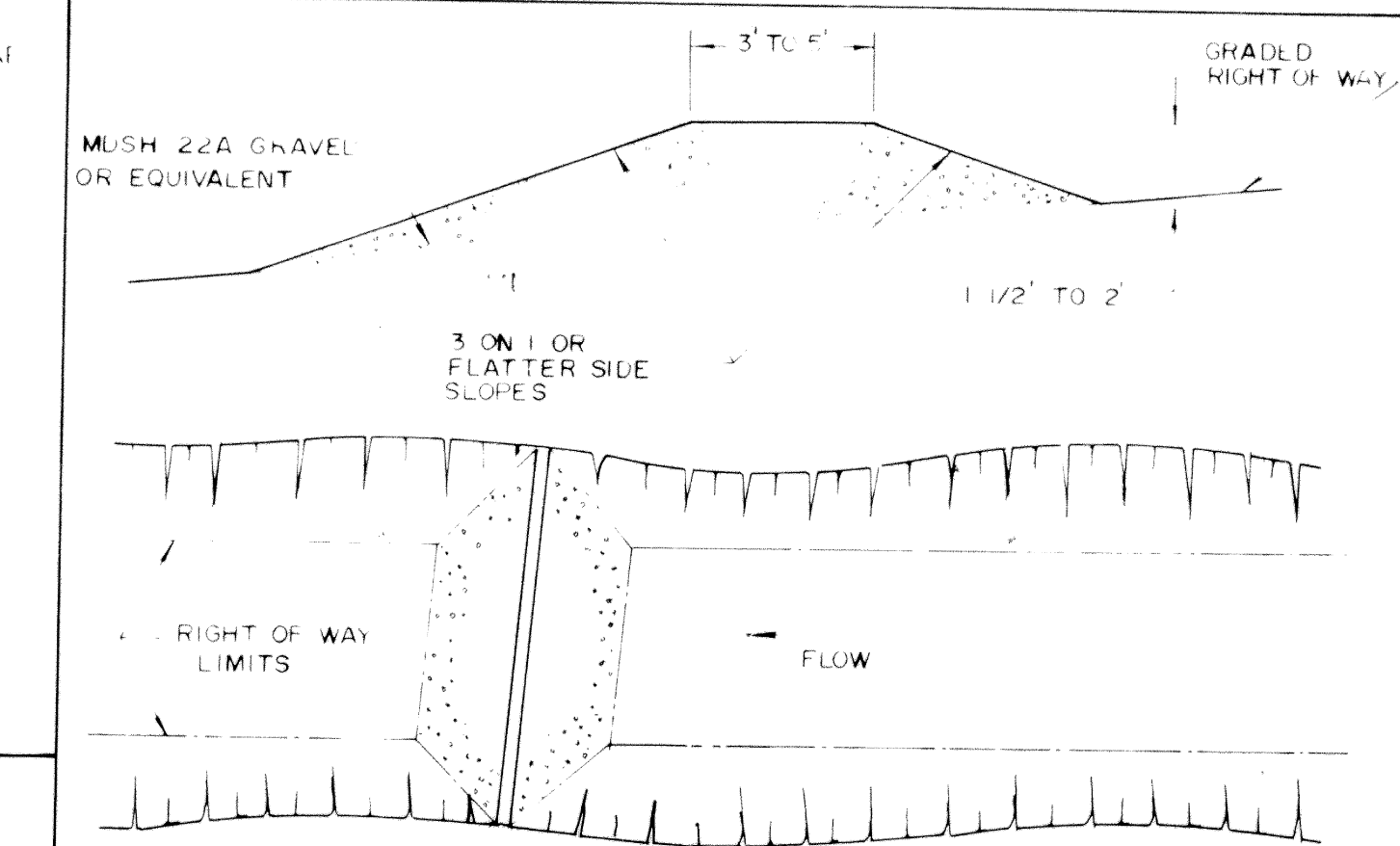
(M)
STRAW BALE FILTER/6A GRAVEL



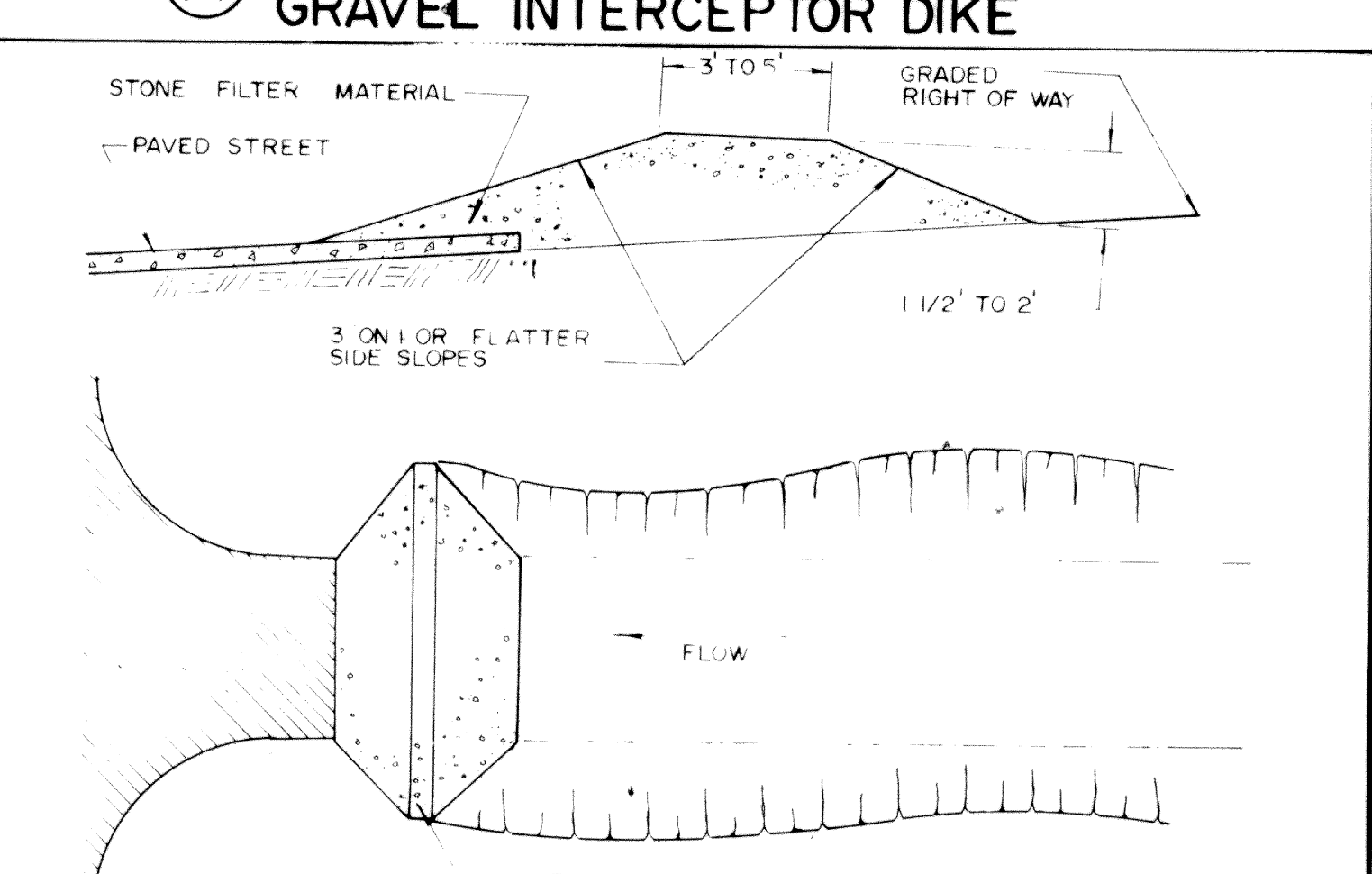
(K)
PARKING LOT INLET FILTER



(L)
PLYWOOD SEDIMENT FILTER



(N)
GRAVEL INTERCEPTOR DIKE

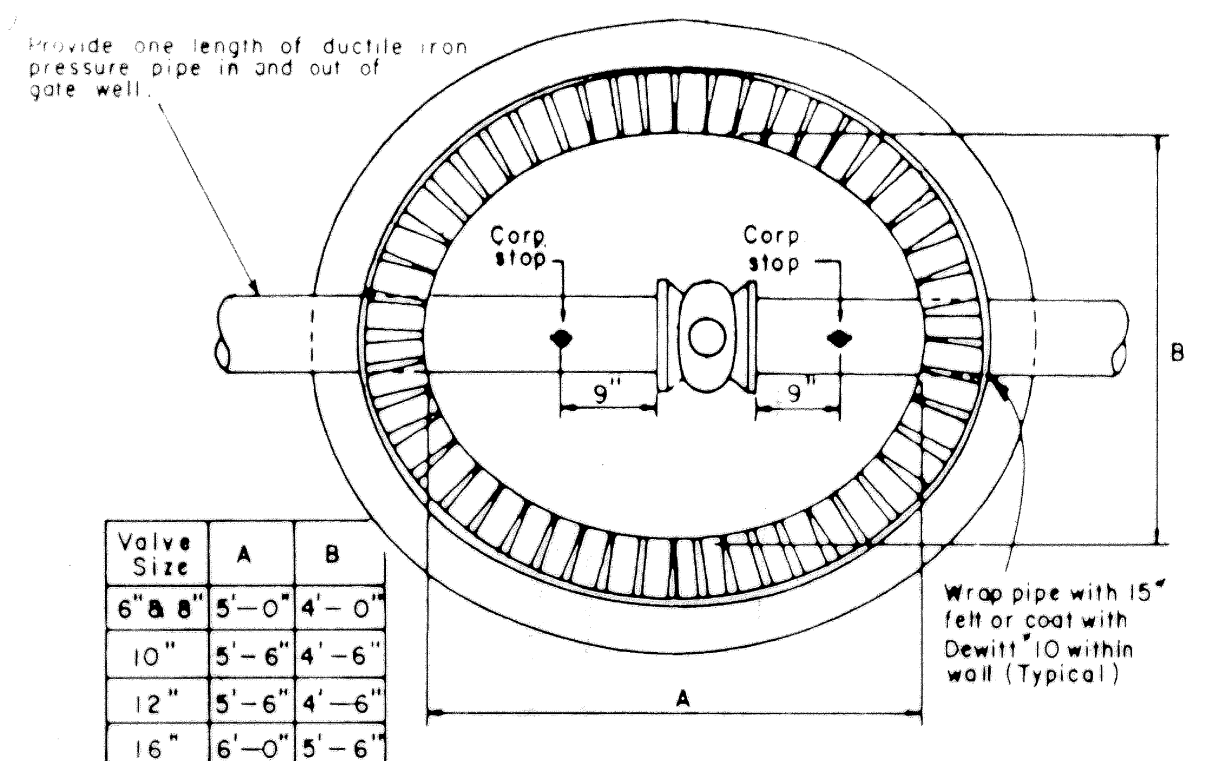


(P)
STONE FILTER BERM

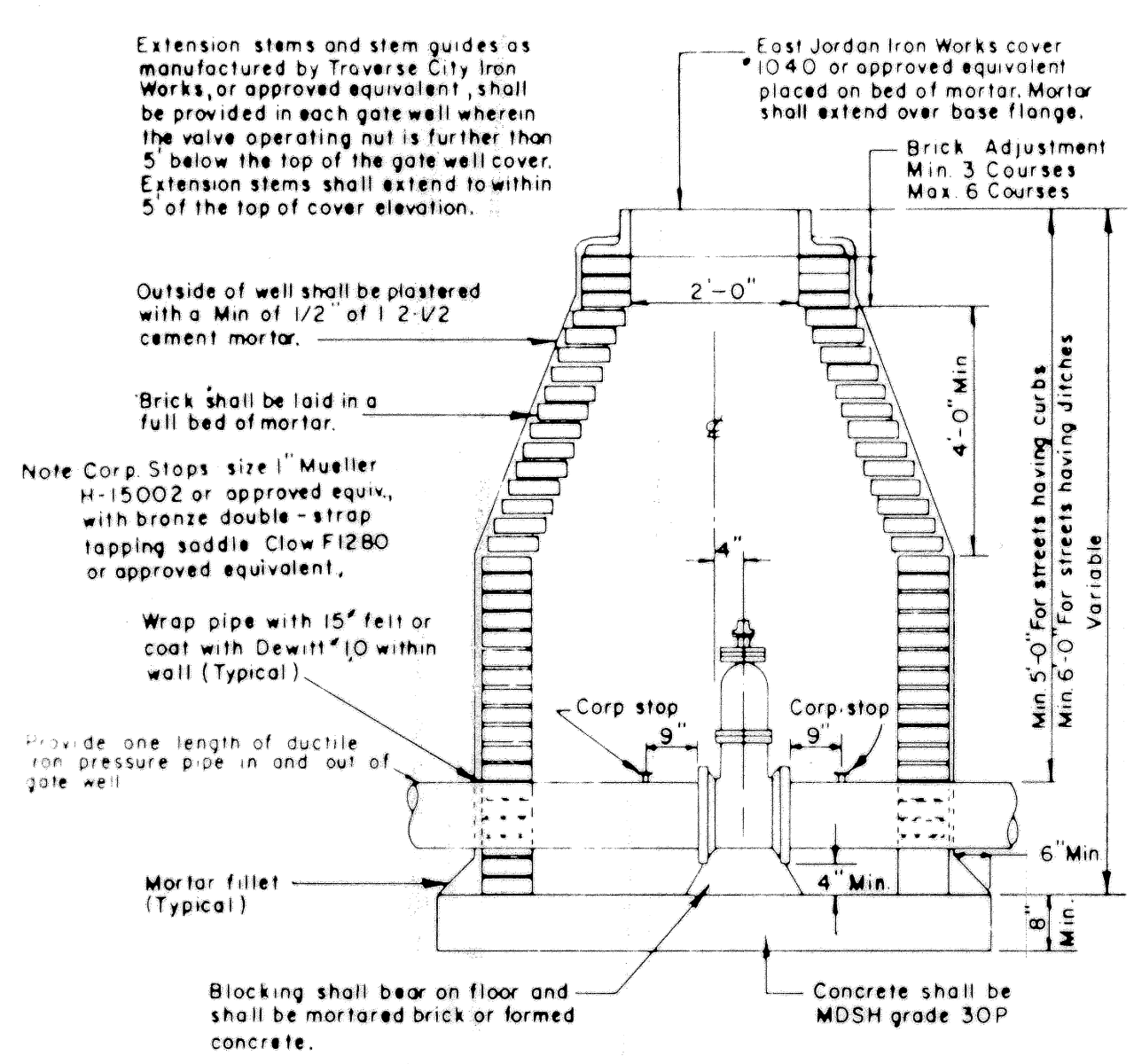
NOTE:
ALL EROSION CONTROLS MUST BE REMOVED FROM STREETS PRIOR TO OPENING TO TRAFFIC.

EROSION & SEDIMENT CONTROL				
CITY OF ROCHESTER HILLS				
Engineering Department				
1275 W. AVON ROAD - ROCHESTER, MICHIGAN 48063				
PHONE: (313) 656-4640				
DR BY	DATE	REVISIONS		
JHEW	6-2-76	DATE	REMARKS	INT.

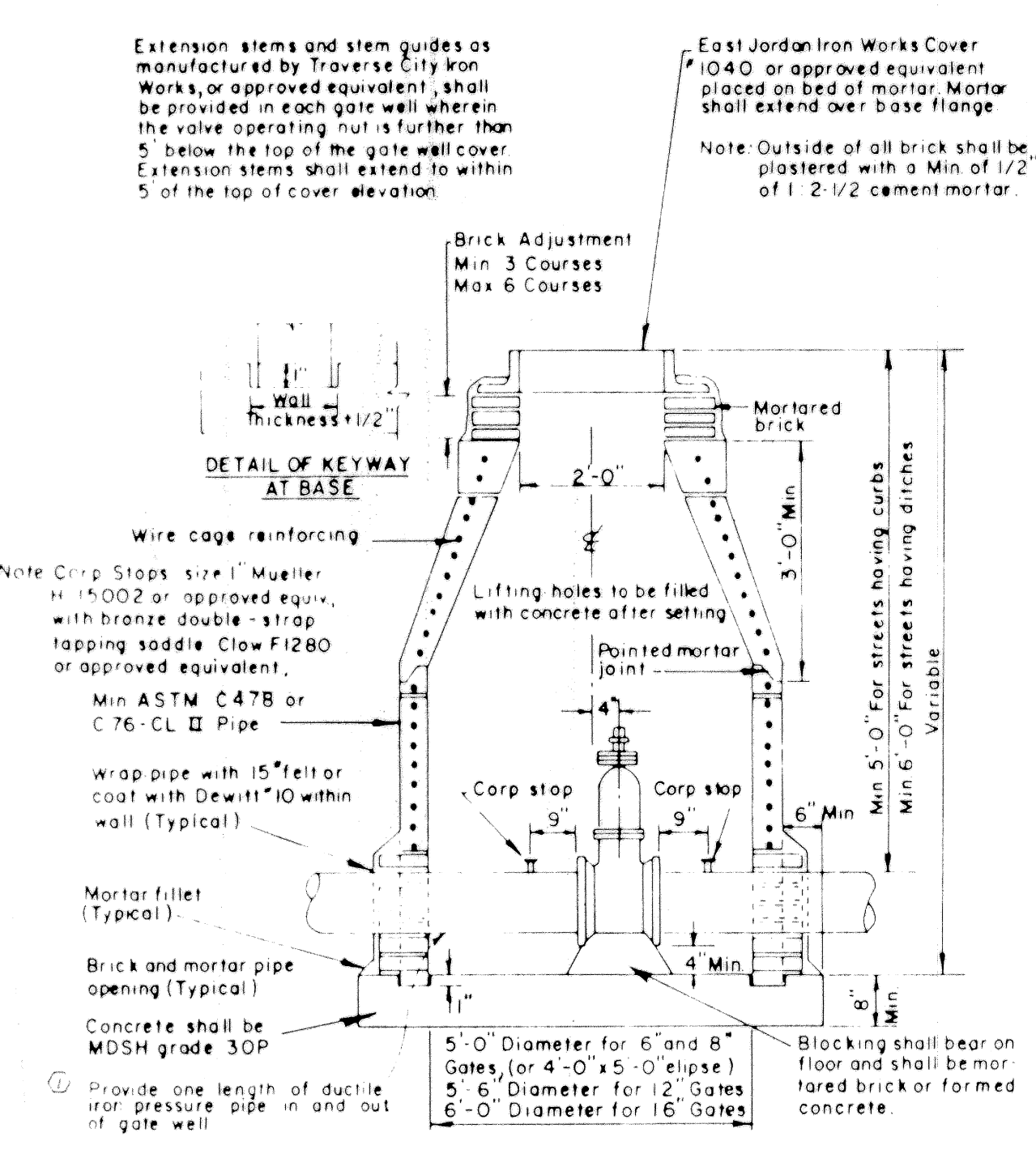
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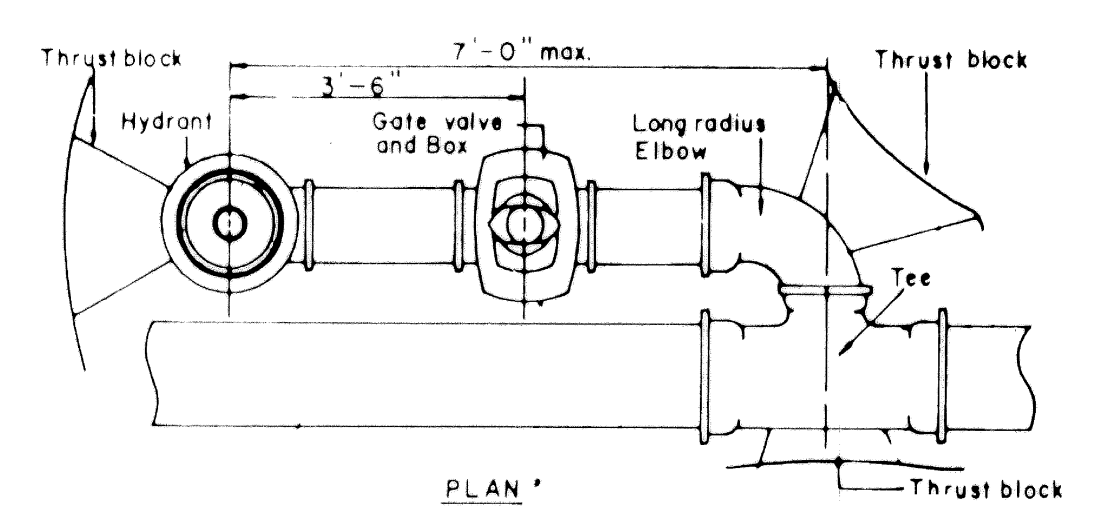
PLAN OF BRICK GATE WELL



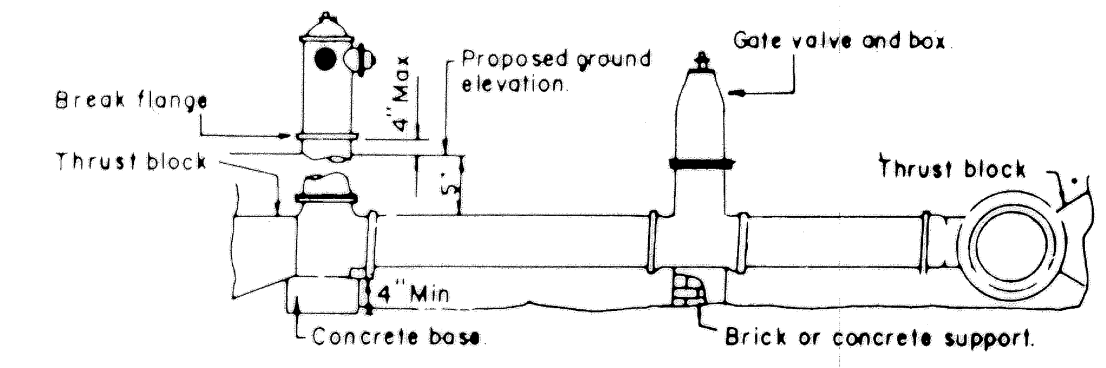
DETAIL OF BRICK GATE WELL



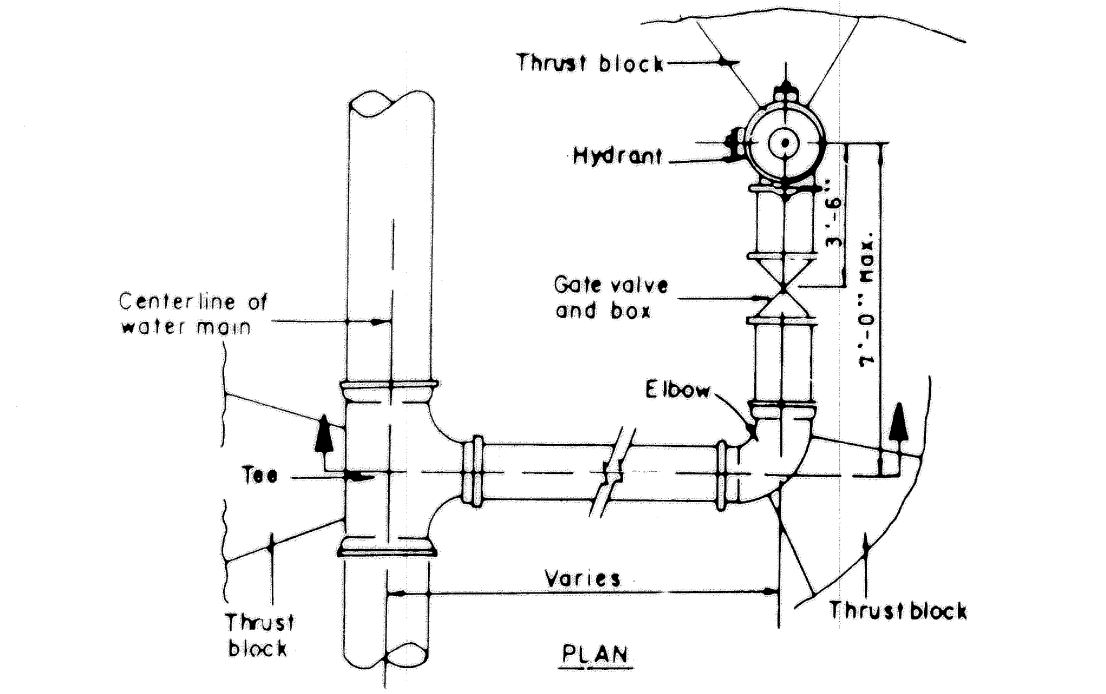
DETAIL OF PRECAST CONCRETE GATE WELL



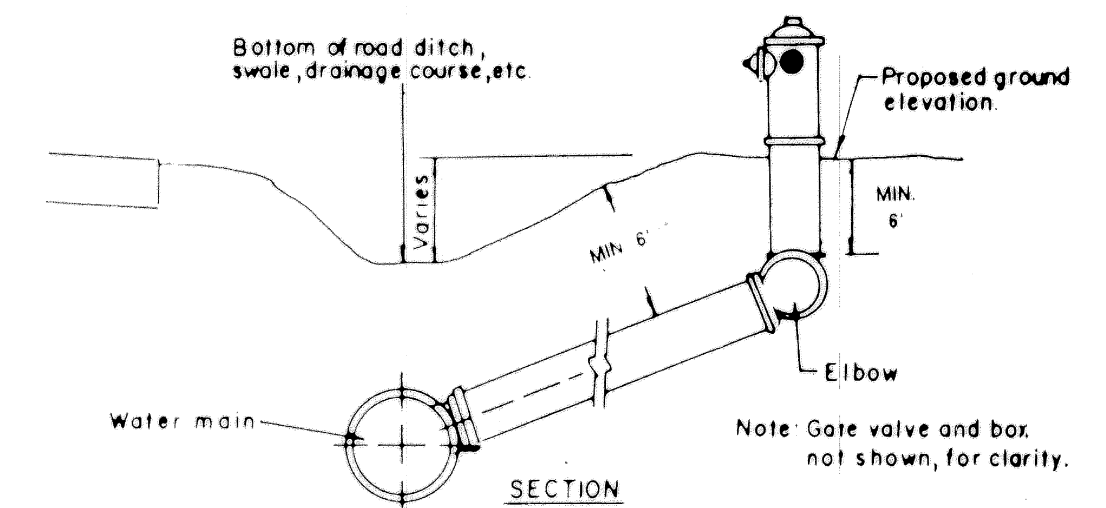
HYDRANT CONNECTION A



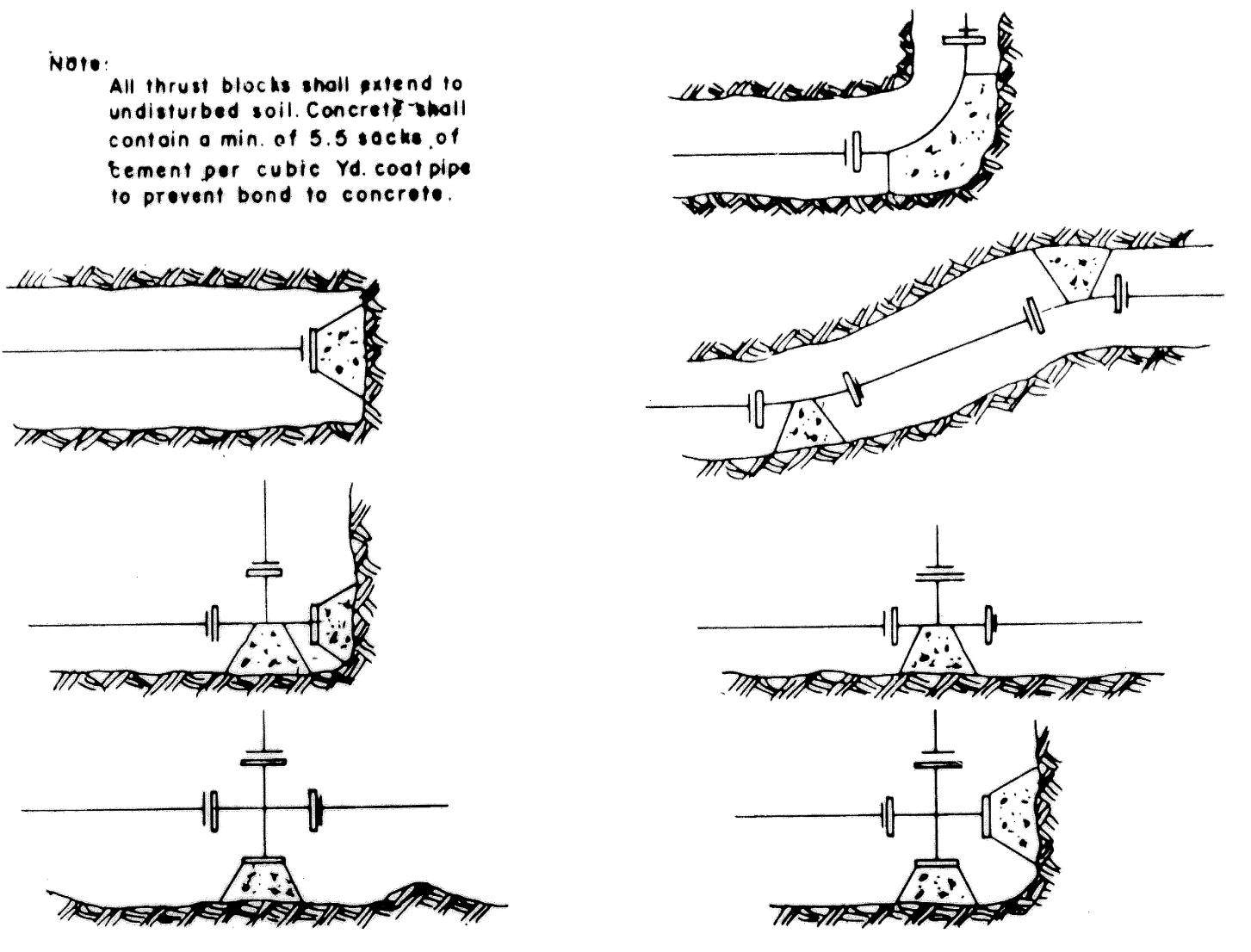
TYPICAL ELEVATION HYDRANT CONNECTIONS A,B,C



HYDRANT CONNECTION B



HYDRANT CONNECTION C



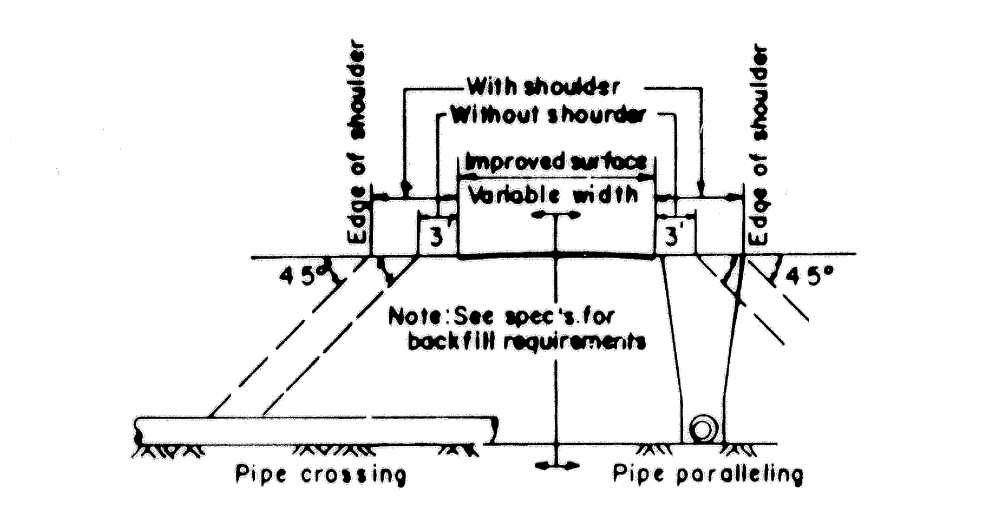
THRUST TABLE

MAIN SIZE	TEES DEAD ENDS	90 DEG BENDS	45 DEG BENDS	22 1/2 DEG BENDS
6"	4.250	6.000	3.250	1.660
8"	7.540	10.670	5.770	2.940
12"	16.970	23.990	12.980	6.620
16"	43.650	61.725	33.400	17.025
20"	63.675	90.050	48.725	24.850
24"	87.475	123.700	66.950	34.125
30"	130.250	184.200	99.700	50.825
36"	182.650	258.300	139.800	71.250

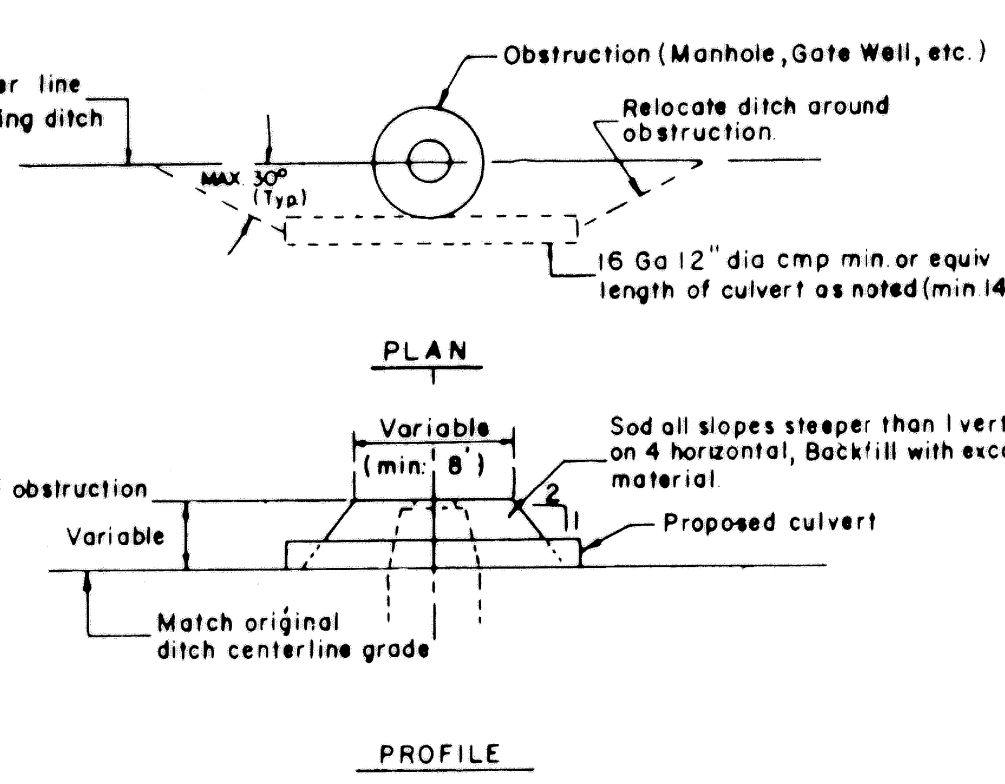
SOIL BEARING LOADS - (HORIZONTAL THRUST)

TYPE OF SOIL	SBL LBS PER SQ. FT.
MUCK, PEAT, ETC.	0
SOFT CLAY	1000
SAND	2000
SAND AND GRAVEL	3000
SAND AND GRAVEL CEMENTED WITH CLAY	4000
HARD COMPACTED CLAY	5000

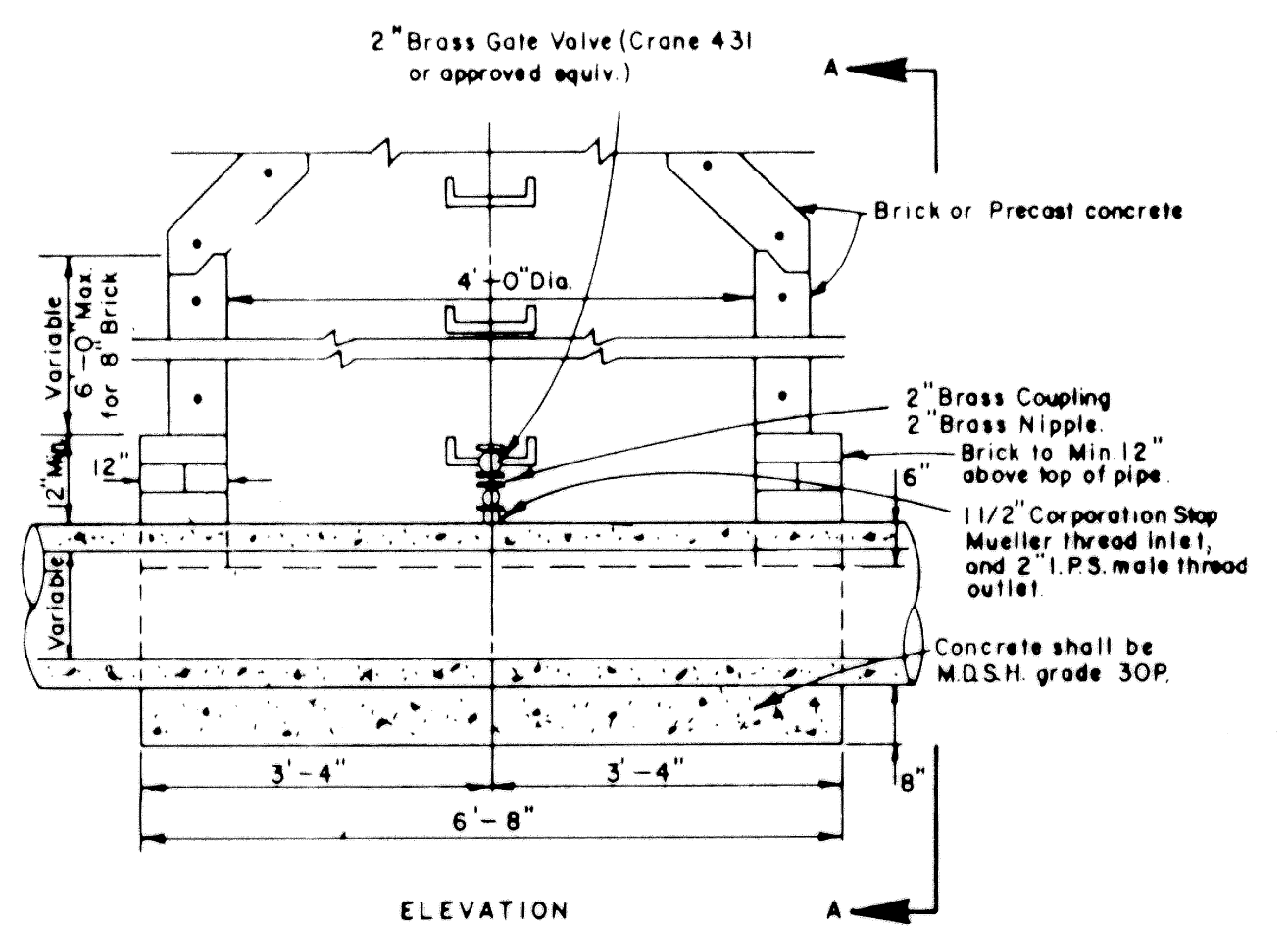
THRUST BLOCK LOCATIONS & TABLES



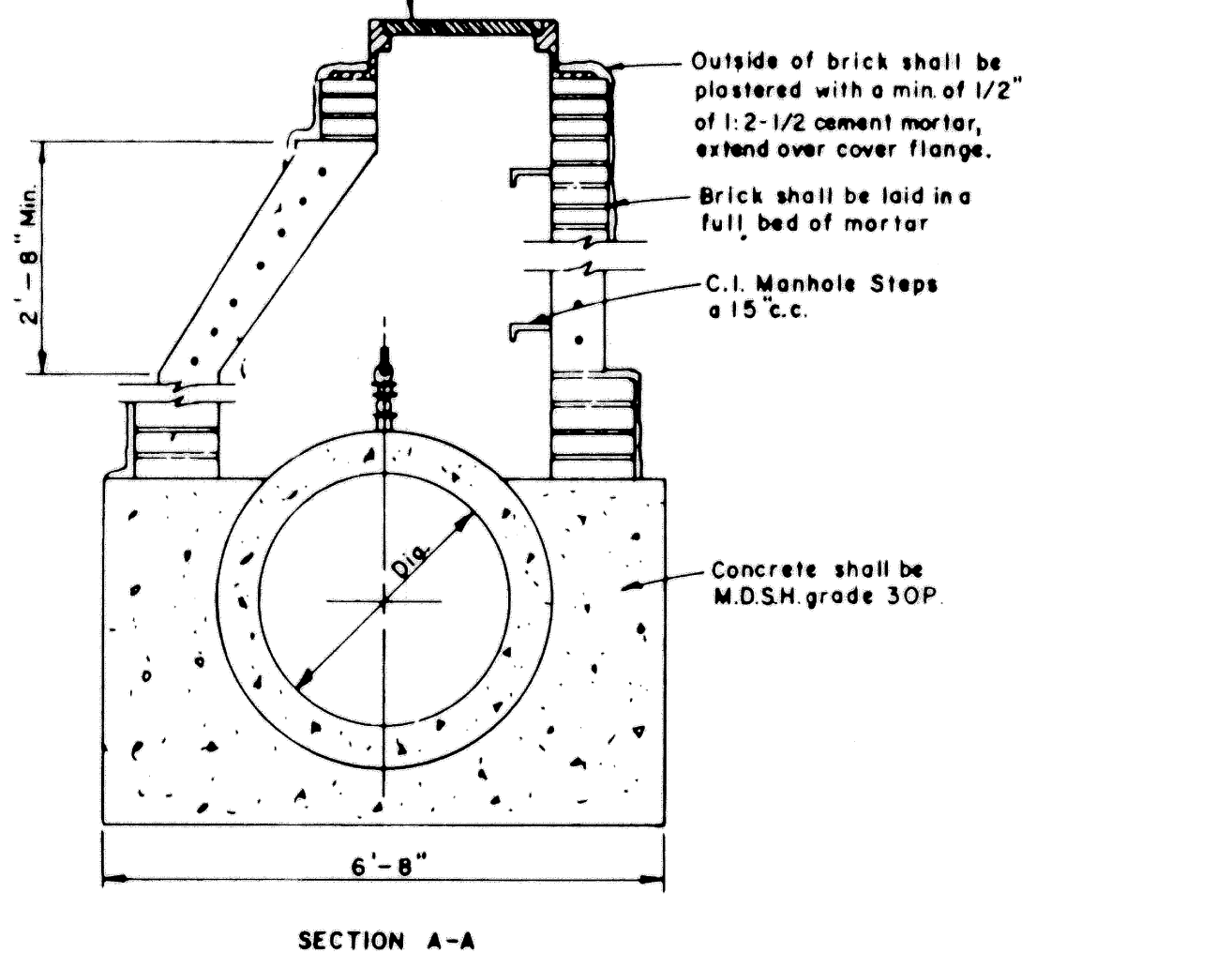
BACKFILLING IN THE AREA OF STREETS ALLEYS, SIDEWALKS, DRIVES, & PARKING AREAS



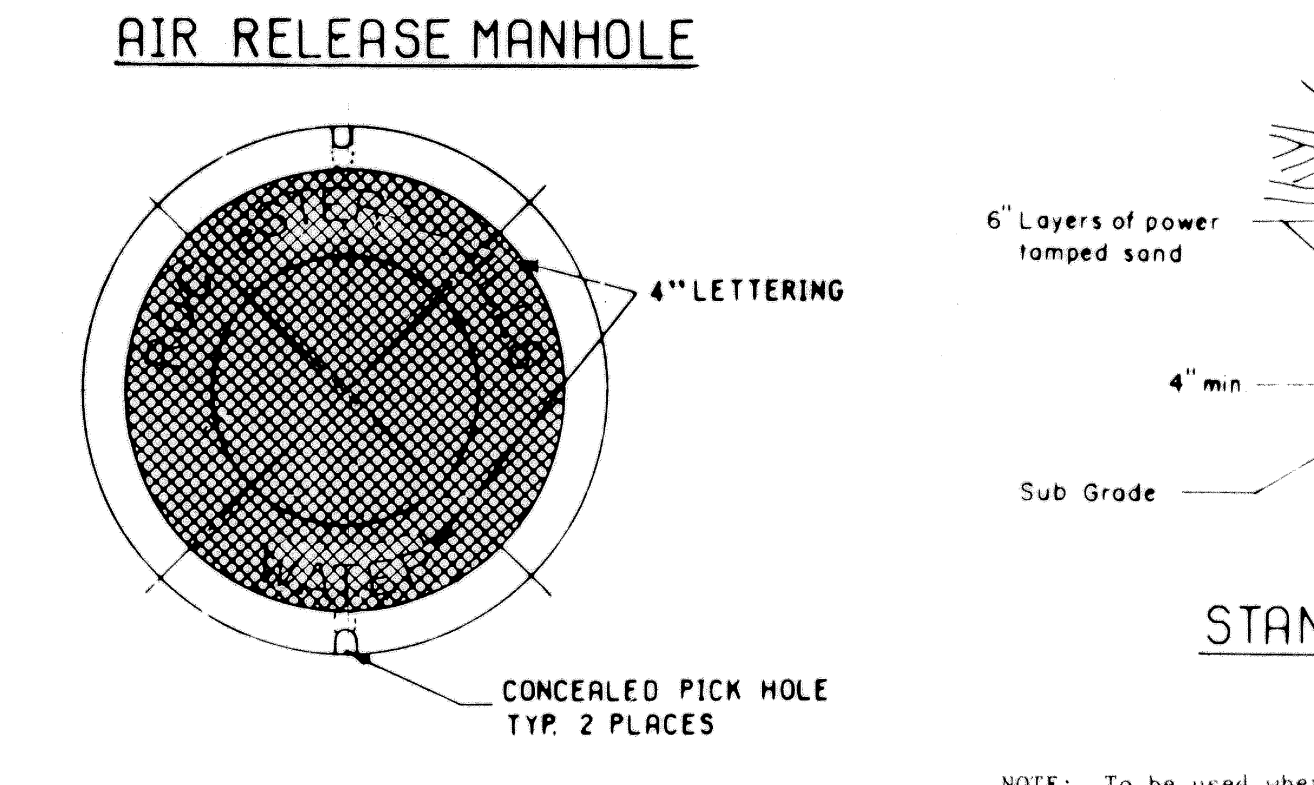
DITCH RELOCATION & ENCLOSURE AROUND OBSTRUCTIONS



AIR RELEASE MANHOLE



STANDARD BEDDING

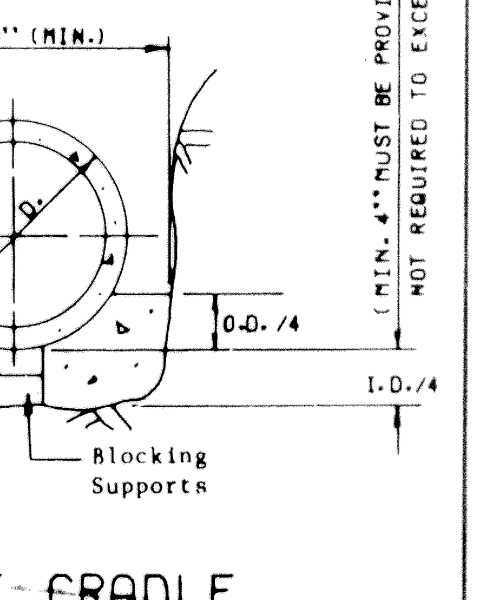


GATE WELL COVER DETAIL

CONCRETE MIXTURES

CONC GRADE	CEMENT (MIN)	COARSE AGGR (MIN)	AIR ENTR (%)	COMPRESSIVE STRENGTH (PSI) F'c = 28 DAYS
40S	611	6AA	6.5 ± 1.5	4000
40S	611	6AA	9.0 ± 1.5	4000
40S	611	6A	6.5 ± 1.5	4000
40S	611	17A	0	4000
35S	564	6AA	0	3500
35S	564	6AA	6.5 ± 1.5	3500
35S	564	6A	0	3500
30P	517	6A	6.5 ± 3.0	3000
PREST CONC	705	6AA	6.5 ± 1.5	5000

CONCRETE MIXTURES



CONCRETE GRADLE BEDDING

DRAWN V.L.B. DATE 9-25-76
 DESIGN R.W.R. DATE COMPLETED
 CHECKED A.J.C. J.R.C. DATE 2-17-78

REVISION	NO.	DATE	BY	REASON
1	ADDendum #1	1/16/76	V.L.B.	
2	Rev	3/6/76	V.L.B.	

NOTIFY THE CITY OF ROCHESTER HILLS ENGINEERING DEPARTMENT AT 656-4640, 48 HOURS PRIOR TO THE START OF CONSTRUCTION
 CITY OF ROCHESTER HILLS ENGINEERING DEPARTMENT
 1400 ROCHESTER HILLS DRIVE, ROCHESTER HILLS, MICHIGAN 48063

CITY OF ROCHESTER HILLS
 WATER SUPPLY SYSTEM
 CITY OF ROCHESTER HILLS
 OAKLAND COUNTY MICHIGAN

WATER MAIN
 DETAILS

JOB NO.	
DATE ISSUED	
SHEET NO.	

K:\05001\84\wp\Plan Set\Site-Primary\AS Submittal\2006-09-09 APPROVED BY CITY OF ROCHESTER HILLS PLANNING COMMISSION\05001\84\wp-6-07.dwg, 3/10/2006 2:41:18 PM, entlbr

SPECIFICATIONS FOR POLYVINYL CHLORIDE (PVC) PIPE SANITARY SEWERS

MATERIALS AND CERTIFICATIONS

PVC Pipe and Fittings shall be as described under ASTM Designation D 3034-81, Standard Specification for Polyvinyl Chloride Sewer Pipe and Fittings. Minimum wall thickness shall be SDR 35.

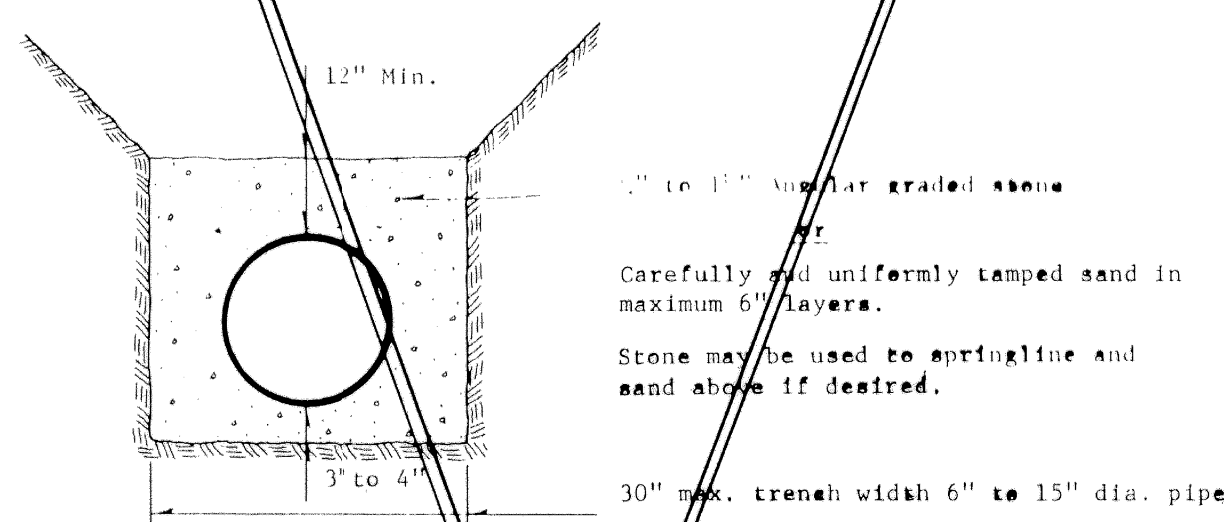
All pipe shall be certified by the manufacturer to meet the applicable ASTM specification requirements. Certification forms together with a report of the test results shall be provided to the construction inspector with pipe deliveries and copies shall be forwarded to the Engineer or the Owner. Certification forms shall include project name, location, Contractor, and test lot number. Lot sizes shall be acceptable to the Engineer.

All pipe and fittings shall be suitably marked to provide manufacturer's name or trademark, lot or production number, ASTM designation, PVC cell classification, SDR number, and nominal diameter. Fittings, however, need not contain lot number, cell classification, or SDR number. Pipe shall have "home" mark.

BEDDING

Bedding for PVC pipe shall be in accordance with ASTM D 2321-74, except (1) only Class I and Class II materials having a maximum particle size of 1/2" may be used, (2) embedment shall extend to minimum 12" above top of pipe, and (3) flooding or puddling shall not be used. It is essential that it be recognized that the successful use of flexible pipe requires bedding that provides unyielding side support and complete bedding contact under pipe haunches. Bedding material must be properly placed and compacted to provide lateral restraint against deflection in the pipe diameter. Pipe must be bedded to true line and grade throughout its length. Bell holes shall be provided where required.

PVC PIPE BEDDING DETAIL



Where unstable bottoms are encountered, the Contractor shall provide a foundation consisting of an approved graded processed angular stone or gravel to act as an impervious mat to prevent migration or vertical movement of unstable soils or bedding materials. Where trench sheeting, plates, or a trench box are used due to severe ground conditions, all voids to the side and below the top of the pipe caused by the sheeting, plates, or box withdrawal shall be completely filled or the supports left in place below the top of the pipe.

Concrete cradle bedding shall not be used where allowable trench widths are exceeded. In lieu of concrete cradle bedding, standard pipe bedding shown shall be provided to the full width between undisturbed trench walls or at least 2.5 pipe diameters on both sides of the pipe.

Due to potential damage to exterior walls of plastic pipe, particularly under cold weather conditions, if rocks, frozen material or large objects strike the pipe, the Contractor shall carefully avoid dumping any materials other than approved bedding sand or stone on the pipe until 12" cover is placed on it. Pipe walls and joints shall also be protected from abrasion and damage during handling, and shall be fully inspected just prior to placing in the trench.

Care shall be taken during bedding compaction to avoid distorting the shape of the pipe or damaging its wall. Mobile equipment shall not be used over the pipe trench until 48" of cover has been placed.

House connections shall be made to wye or tee fittings. Bedding for house connection sewers shall be equal to that of the main sewer bedding. Risers in deep and unstable trenches should be bedded in Class I angular stone to avoid settlement. Concrete shall not be used for bedding. End caps or plugs shall be braced or anchored to withstand air test pressures. Caps or plugs shall not be chemically welded in place.

JOINTS

Joints for pipe and fittings shall be of the elastomeric gasket push-on type. Such joints shall conform to ASTM Designation D 3212-81 and the pipe manufacturer's shall file with the Oakland County D.P.W. a copy of certified test results of its jointing system prior to use. Gasket joints shall be installed in accordance with procedures specified by the pipe manufacturer. Care shall be taken to insure all joints being pushed to the full "home" position and held tightly in the "home" position during any grade or line adjustments.

CUTTING AND HANDLING

Cutting of pipe lengths, where required, shall be performed by the use of tools or equipment that will provide a neat, perpendicular cut without damage to the plastic. All burrs shall be removed by the use of a file, knife, or abrasive paper. Spigot ends on the pipe shall be beveled similar to factory beveling to prevent gasket damage.

Bowing or warping of plastic pipe can occur with temperature fluctuations. The Contractor shall store and protect the pipe to minimize bowing. Nominal pipe lengths of 12', 12'6", or 20' having deviations from straight greater than 1" shall not be used.

SPECIAL CONDITIONS

The completed installation shall at no point have out-of-round pipe deflections greater than 75%. The Engineer shall have the option of requiring deflectionmeter or go/no-go gauging tests run prior to acceptance on pipelines where high deflections are suspected.

All standard Oakland County D.P.W. specifications and details shall apply to this work except where covered otherwise by these supplemental specifications. Oakland County D.P.W. air test requirements shall be met. D.P.W. approved flexible manhole joints shall be used. To maintain the flexibility of the pipe materials, concrete encasement of drop connections shall not be used. Where adapters to other materials are required, only approved adapters and joints may be used. Where connections are made to existing manholes, a rubber waterstop shall be used around the pipe.

As-built plans shall be provided the Oakland County D.P.W. by the Engineer or the local unit of government and as-built plans shall specifically designate where PVC sewer pipe was installed.

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SPECIFICATIONS FOR TRUSS PIPE SANITARY SEWERS

MATERIALS AND CERTIFICATIONS

Arco Truss Pipe and Fittings shall be as described under ASTM Designation D2680-80, Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Composite Sewer Pipe. Appendix XI of said specification shall be as modified by the building requirements outlined below.

Solid wall ABS pipe for 6" house connection sewers shall be SDR 35 or SDR 21.5, conforming to ASTM Designation D 2751-80 Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings. Solid wall pipe shall be installed in accordance with bedding requirements outlined below.

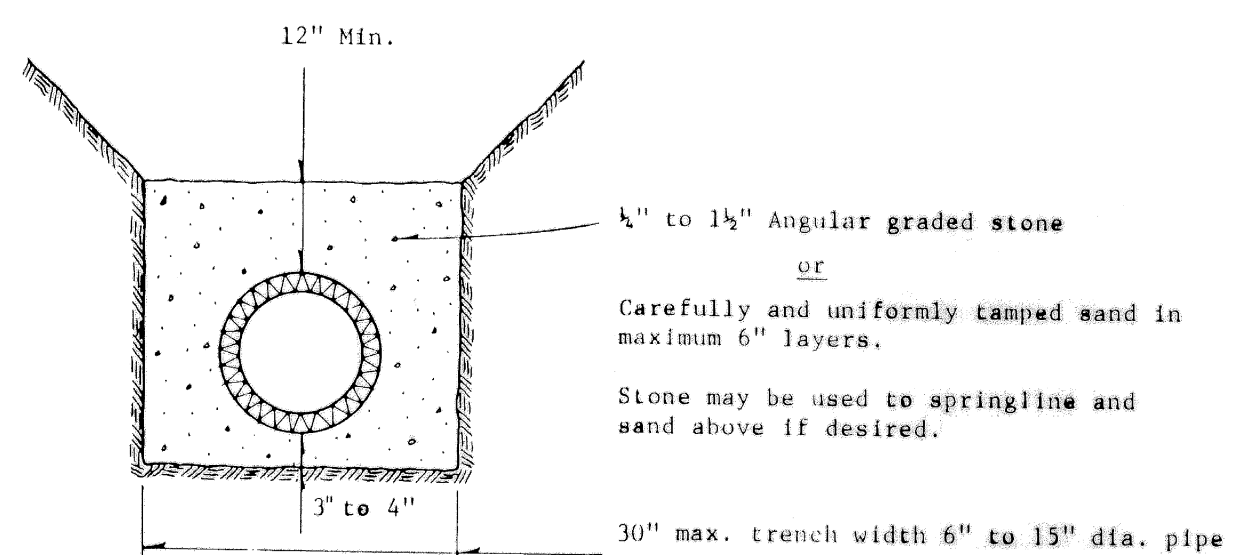
All pipe shall be certified by the manufacturer to meet the applicable ASTM specification requirements. Certification forms, together with a report of the test results, shall be provided to the inspector with pipe deliveries and copies shall be forwarded to the Engineer or the Owner. Certification forms shall include project name, location, Contractor, and test lot number. Lot sizes shall be acceptable to the Engineer.

All pipe and fittings shall be suitably marked to provide manufacturer's name, lot or production number, ASTM designation, ABS, nominal diameter, and SDR number, where applicable. Fittings, however, need not contain lot of production number. Pipe shall have a "home" mark. Truss Pipe with an absence of filler material at the ends greater than 1/4" deep shall be subject to rejection or acceptable repair.

BEDDING

Bedding for Truss Pipe and ABS solid wall pipe shall be in accordance with ASTM D2321-74, except, (1) only Class I and Class II materials may be used, (2) embedment shall extend to minimum 12" above top of pipe, and (3) flooding or puddling shall not be used. It is essential that it be recognized that the successful use of flexible and semi-flexible pipe requires bedding that provides unyielding side support and complete bedding contact under pipe haunches.

Truss and Solid Wall Pipe Bedding Material



Where unstable bottoms are encountered, the Contractor shall provide a foundation consisting of an approved graded and processed angular stone or gravel to act as an impervious mat to prevent migration or vertical movement of unstable soils or bedding materials. Where trench sheeting, plates, or a trench box are used due to severe ground conditions, all voids to the side and below the top of the pipe caused by the sheeting, plates, or box withdrawal shall be completely filled or the supports left in place below the top of the pipe.

Concrete cradle bedding shall not be used where allowable trench widths are exceeded. In lieu of concrete cradle bedding, standard pipe bedding shown shall be provided to the full width between undisturbed trench walls or at least 2.5 pipe diameters on both sides of the pipe.

Due to potential damage to exterior walls of Truss Pipe, particularly under cold weather conditions, if rocks, frozen material, or large objects strike the pipe, the Contractor shall carefully avoid dumping any materials other than approved bedding sand or stone on the pipe until 12" cover is placed on it. Pipe walls and ends shall also be protected from abrasion and damage during handling, and shall be fully inspected just prior to placing in the trench.

Care shall be taken during bedding compaction to avoid distorting the shape of the pipe or damaging its exterior wall. Mobile equipment shall not be used over the pipe trench until 48" of cover has been placed.

House connections shall be made to wye or tee fittings. Bedding for house connection sewers shall be equal to that of the main sewer bedding. Risers in deep and unstable trenches should be bedded in Class I angular stone to avoid settlement. Concrete shall not be used for bedding. End caps or plugs shall be braced or anchored to withstand air test pressures. Caps or plugs shall not be chemically welded in place.

JOINTS

Joints shall be chemically welded in accordance with the manufacturer's recommendation. Additionally, all exposed ends of Truss Pipe shall be fully and thoroughly coated with plastic jointing cement prior to making joints so as to seal ends to eliminate the possibility of false low pressure air tests. Care shall be taken to insure all joints being pushed to the full "home" position and held tightly in the "home" position during any grade or line adjustments. Pipe shall be rotated during joint insertion to insure a complete spread of jointing cement. ABS Plastic Cement Primer and ABS Plastic Pipe Cement shall arrive at the job site in sealed and labeled containers. "Johnny Mops" or similar swab type applicators shall be used to apply primer and cement. Opened containers in the trench shall be protected from dirt, water, and other contaminants.

CUTTING AND HANDLING

Cutting of pipe lengths, where required, shall be performed by the use of tools or equipment that will provide a neat, perpendicular cut without damage to the plastic or the filler material. Bowing or warping of ABS pipe can occur with temperature fluctuations. The Contractor shall store and protect the pipe to minimize bowing. Nominal 12'6" pipe lengths having deviations from straight greater than 1" shall not be used.

SPECIAL CONDITIONS

The completed installation shall at no point have out-of-round pipe deflections greater than 5%. The Engineer shall have the option of requiring deflectionmeter or go/no-go gauging tests run prior to acceptance on pipelines where high deflections are suspected.

All standard Oakland County D.P.W. specifications and details shall apply to this work except where covered otherwise by these supplemental specifications. Oakland County D.P.W. air test requirements shall be met. D.P.W. flexible manhole joints shall be used. To maintain the flexibility of the pipe materials, concrete encasement of drop connections shall not be used. Where adapters to other materials are required, only approved adapters and joints may be used. Where the connections are made to existing manholes, a rubber waterstop shall be used around the pipe.

As-built plans shall be provided the Oakland County D.P.W. by the Engineer or the local unit of government and as-built plans shall specifically designate where ABS sewer pipe was installed.

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SANITARY SEWER CONSTRUCTION NOTES

- All construction shall conform to the current standards and specifications of the local unit of government and the Oakland County Department of Public Works. All sanitary sewer construction shall have full time inspections supervised by a professional engineer provided by or caused to be provided by the local unit of government.
- At all connections to Oakland County Department of Public Works sewers or to extensions thereto, and before start of construction, the Contractor must request and have in his possession an approved connection permit issued by the Oakland County Department of Public Works. Request for application for permit must be accompanied by a \$150.00 inspection fee for each connection plus \$15.00 for each new manhole constructed. The Contractor shall also have posted with the Oakland County Department of Public Works a \$5,000.00 surety bond and \$500.00 cash deposit. The Contractor shall notify the local units of government and the Oakland County Department of Public Works 24 hours prior to the beginning of any construction.
- No sewer installation shall have an infiltration exceeding 250 gallons per inch diameter per mile of pipe per 24 hour period and no single run of sewer between manholes shall exceed 500 gallons per inch diameter per mile. Air tests in lieu of infiltration tests shall be as specified in D.P.W. "Acceptance Tests", dated September 1972. Only Modified Groove Tongue, O-Ring, Unilac, Anst, Nobel Ring-Tite, Fluid-Tite or equal, as approved by the Oakland County Department of Public Works may be used for sewer joints. All joints shall meet requirements of ASTM C425 or C443.
- At all connections to an existing D.C.D.P.W. sewer or extension thereto a watertight bulkhead with a capped 1 inch diameter pipe to permit measuring infiltration shall be provided. A temporary 12 inch deep sump shall also be provided in the first manhole above the connection which will be filled in after successful completion of an infiltration test up to the standard fillet provided for the flow channel.
- All building leads and risers shall be 6 inch diameter, N.C.P.I. ER 4-67 Extra Strength vitrified clay pipe with type of joint material allowed in Note No. 3 above, or an approved equal pipe and joint. Sewer pipe wye or the openings shall contain factory installed premium joint material of the type identical to that of the building lead pipe used. Building leads to be furnished with removable air-tight and water-tight stoppers.
- All sewer pipe shall be installed in Class "B" bedding or better.
- All new manholes shall have D.P.W. approved flexible, water-tight seals where pipes shall pass through walls. Manholes shall be of precast sections with modified groove tongues and rubber gasket type joints. Precast manhole cone sections shall be Oakland County Department of Public Works approved modified eccentric cone type. All manholes shall be provided with belted, water-tight covers.
- At all connections to manholes on Oakland County Department of Public Works sewers or extensions (precast drop connections will be required when the difference to invert elevations exceeds 18 inches. Outside drop connections only will be approved.
- Wherever existing manholes or sewer pipe are to be tapped, holes shall be drilled at 4 inch center around periphery of opening to create a plan of weakness before breaking out section. Non-shrink grout shall be used to seal the opening and a concrete collar shall be poured 12 inches thick around the pipe and extended 12 inches beyond the opening.
- New manholes constructed directly on Oakland County Department of Public Works sewers shall be provided with covers reading "Oakland County D.P.W. Sanitary" in raised letters. New manholes built over any existing sanitary sewers shall have monolithic poured bottoms.
- No ground water, storm water, construction water, downspout drainage or weep tile drainage shall be allowed to enter any sanitary sewer installation.
- Prior to any excavation, the Contractor shall telephone MIBS DIG (647-7344) for the location of underground gas and cable facilities and shall also notify representatives of other utilities located in the vicinity of the work.
- Where plastic sewer pipe is used, standard OGDPW specifications for laying plastic pipe shall appear on project plans.

GENERAL NOTES

- Construction Standards
 - All construction shall comply with current standards and specifications of the City of Rochester Hills.
 - Work in the Right-of-way of the County shall conform to the standards and specifications of the Oakland County Road Commission.
 - All elevations are USGS Datum.
- Agencies, Permits, Inspections and Insurance

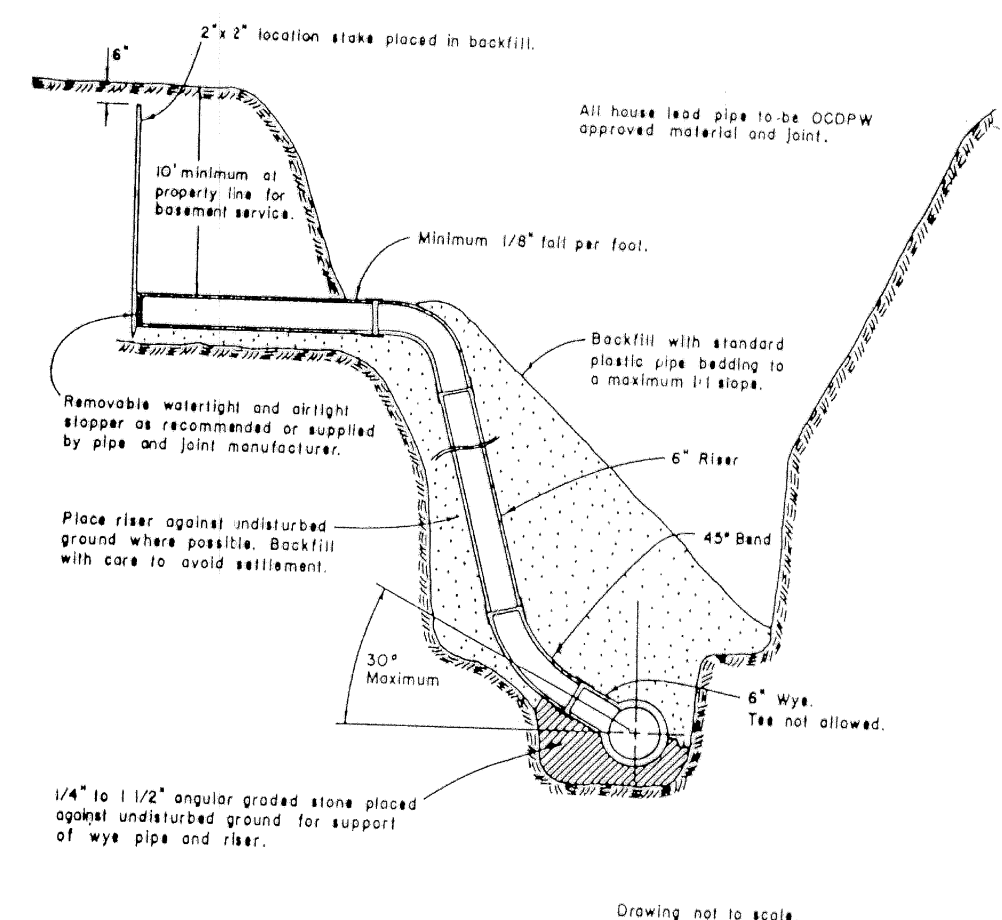
Before construction starts, the contractor shall:

 - Obtain a work permit from the City Engineering Department, hereinafter called the Department (address: 1000 Rochester Hills Drive, Rochester Hills, MI 48309-3033 656-4640)
 - Provide the Department with the following:
 - Performance Bond in the amount of 100% of total construction cost for each permit as security for faithful performance of work in accord with the City Ordinances, Standards, Specifications, rules and regulations. This bond shall continue for twelve months, or shorter period as allowed by the City, after final inspection and acceptance of the work performed.
 - Certificate(s) of insurance indemnifying the City (see "PROCEDURAL REQUIREMENTS FOR LAND DEVELOPMENT" for specific insurance coverages to be provided.)
 - Contact the Department for full-time construction review.
 - Notify the Department, at 656-4640 and the Detroit Water and Sewerage Department at 833-4662, at least 48 hours prior to start of construction.
 - Call Miss Dig at 800-482-7171, 24 hours before construction, for underground utility locations. All utilities shall be staked to show existing location before construction starts.
 - Obtain a construction permit from the Oakland County Road Commission for any construction being done in their right-of-way.
 - Obtain a permit for any work within Michigan Department of State Highways' right-of-way.
- Construction shall proceed in the following sequence:
 - Those soil erosion and sedimentation control facilities intended to remain in perpetual existence (e.g. sedimentation basins, detention basins or ponds, energy dissipating structures, etc.) shall be constructed prior to initiation of any other work.
 - The entire site, in all new developments, shall be graded to within 6" of proposed finish grade prior to construction of any underground or surface improvements.
 - The dimensions and locations (both horizontal and vertical alignment) of all streets, drives, parking areas, and easements for sanitary sewers, storm sewers and drains, and water mains, shall be accurately determined and the centerline of all streets and easements shall be field staked, prior to construction of any underground improvements.
- Fencing
 - All holes, pits, shafts and trenches to be left open overnight shall be completely enclosed with suitable fencing, and provided with acceptable lighting.
- Project Changes
 - Any deletion, addition or change to work during construction shall be by Change Order with prior approval of the City Engineer. Plan revisions shall be made and submitted to the City, by the developer's Engineer, for approval and distribution.

NOTE:
100%
100% of the sanitary sewer lines to be inspected by T.V."

AS A MEANS OF INSURING THAT PIPE-LAYING IS PROPERLY DONE AND THAT ALL JOINTS ARE IN A "HOME" POSITION, THE CONTRACTOR SHALL PROVIDE FOR TELEVISION VIEWING OF 100% OF THE TRUSS PIPE FOOTAGE LAID, WITH NO LESS THAN ONE MANHOLE RUN BEING TELEVIEWED ON EACH PROJECT. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO THE OAKLAND COUNTY DEPARTMENT OF PUBLIC WORKS AND TO THE LOCAL UNIT OF GOVERNMENT PRIOR TO TELEVISION VIEWING, SO THAT EACH MAY HAVE A REPRESENTATIVE PRESENT.

ALL SANITARY SEWER HOUSELEADS SHALL BE EXTENDED A MINIMUM OF 2' BEYOND THE PROPERTY OR EASEMENT LINE.

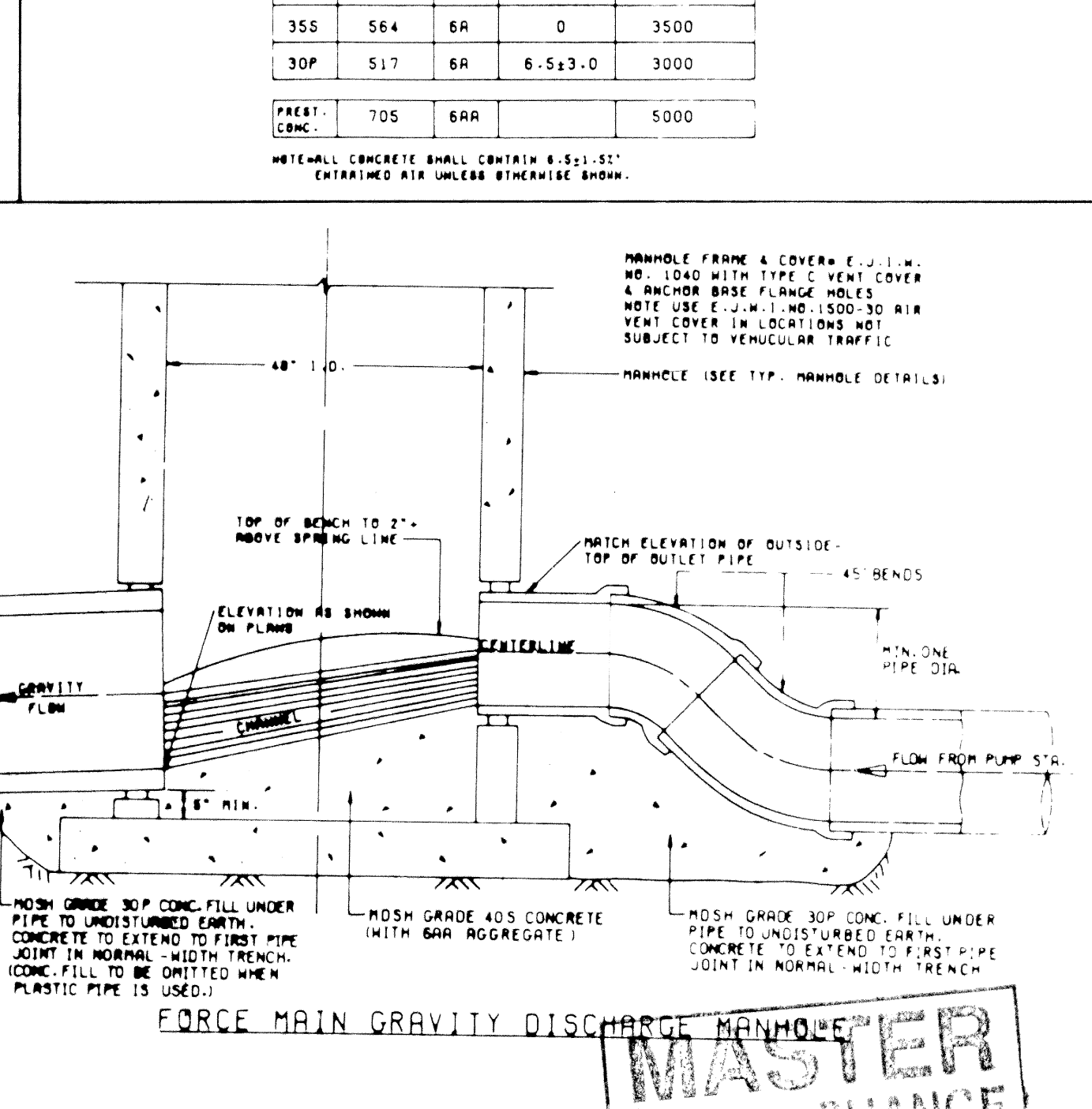
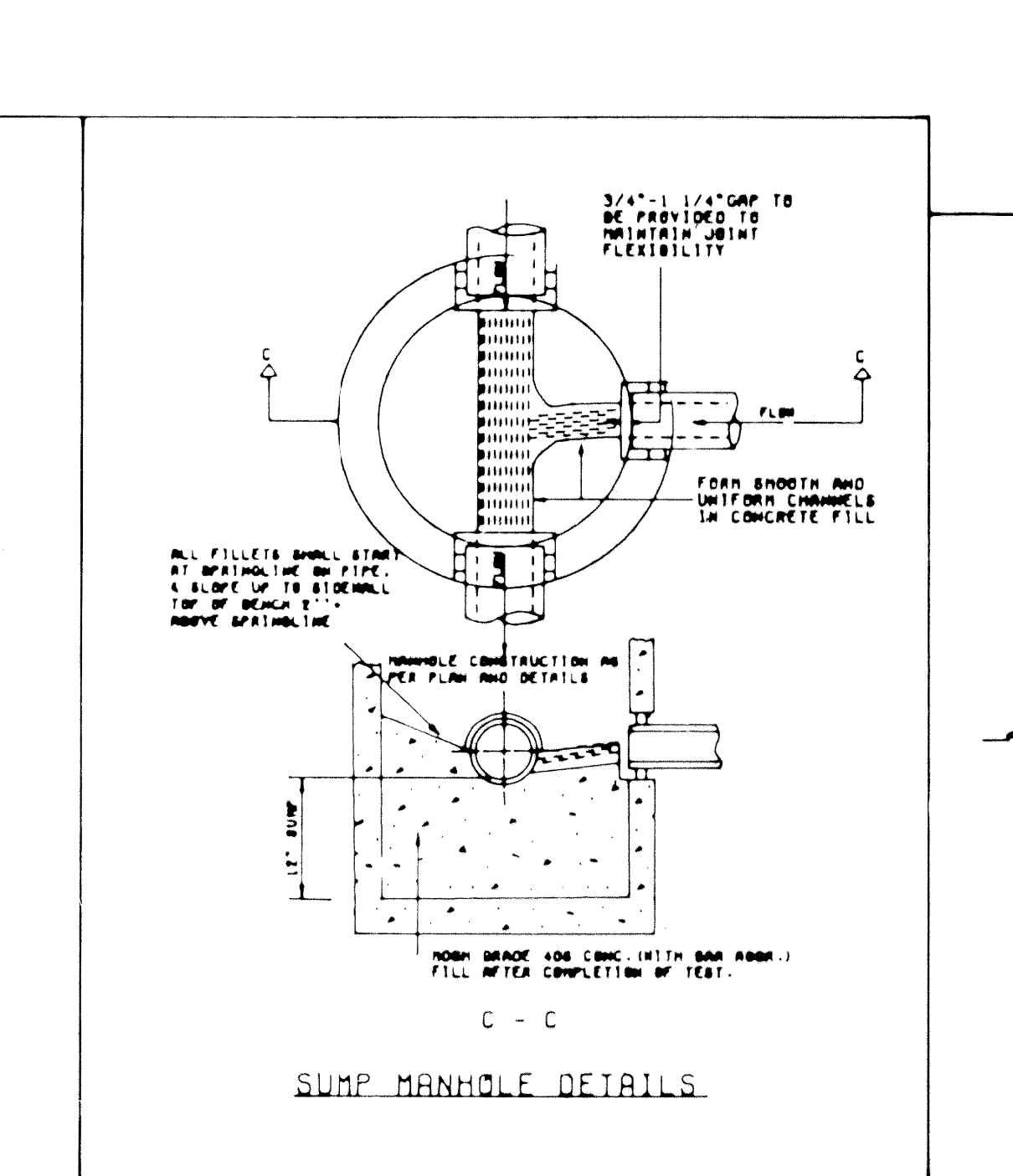
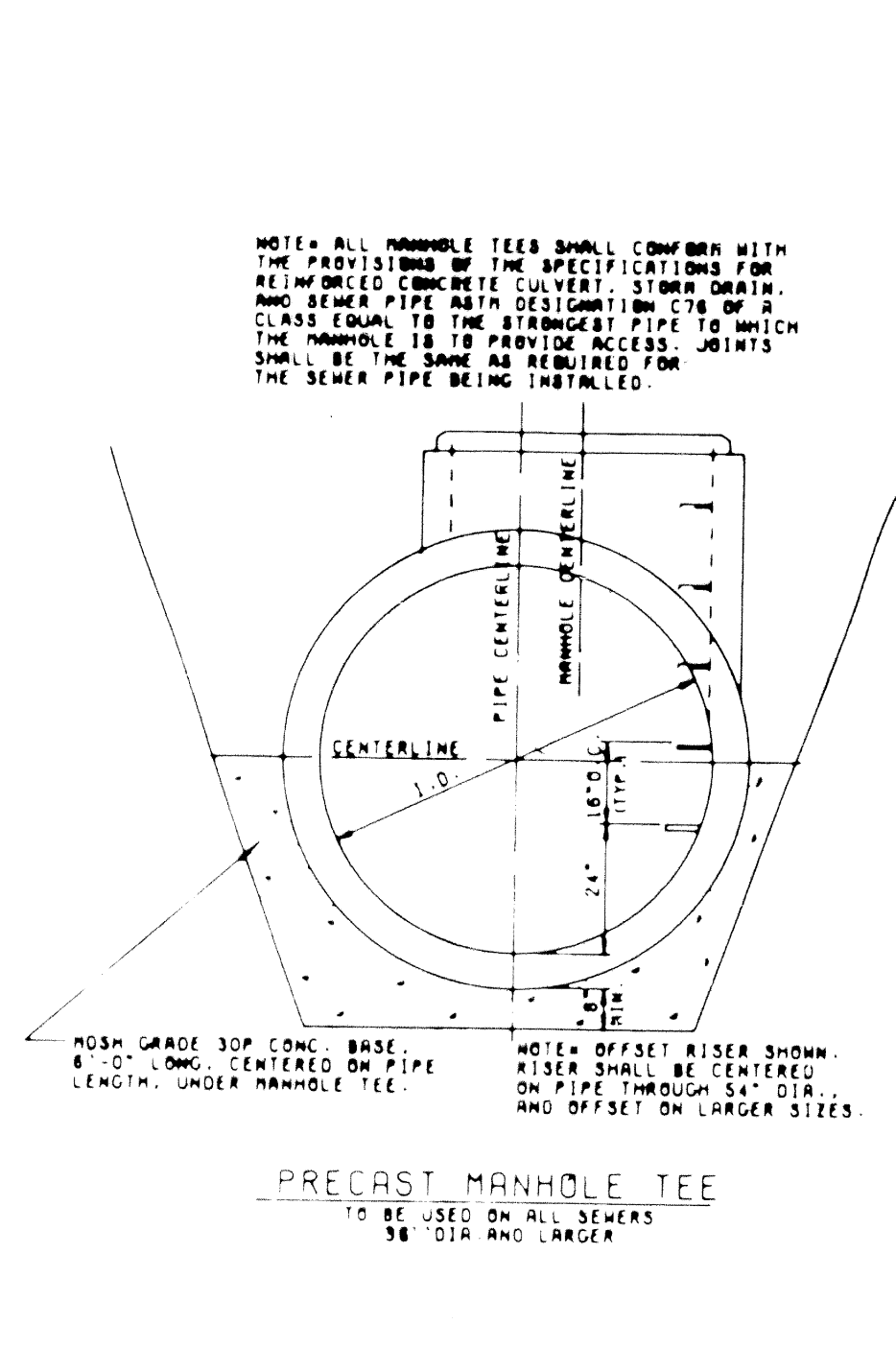
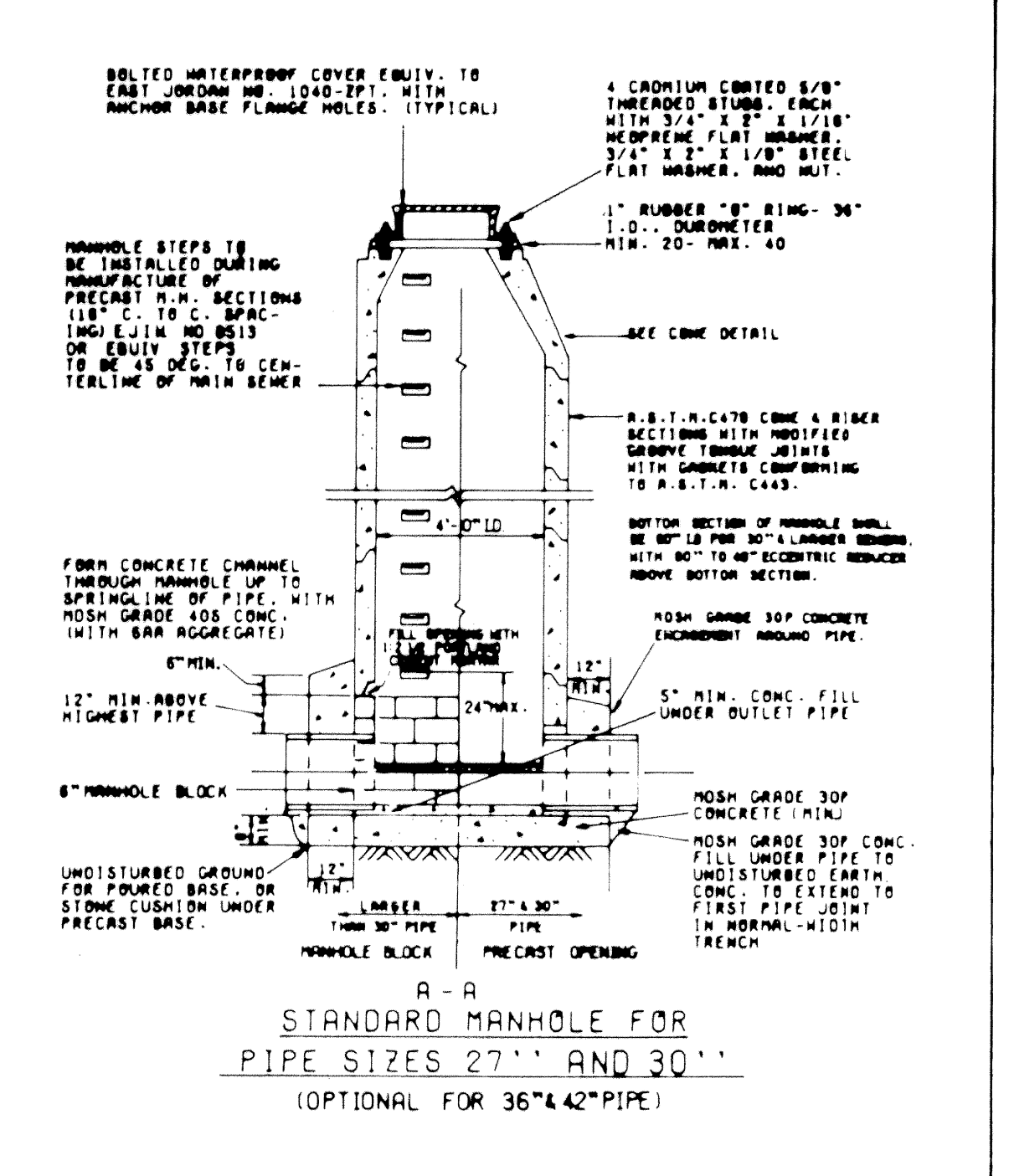
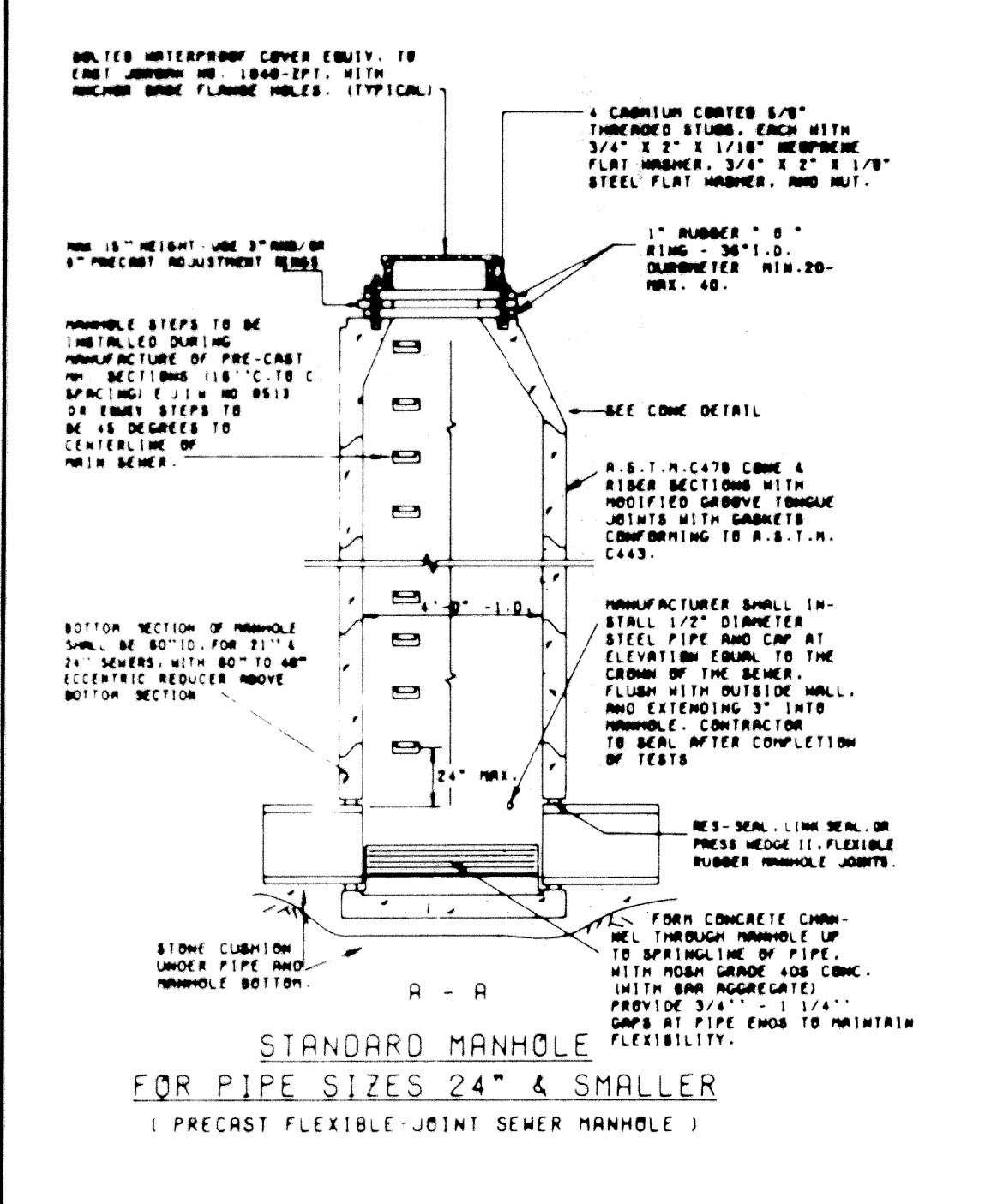
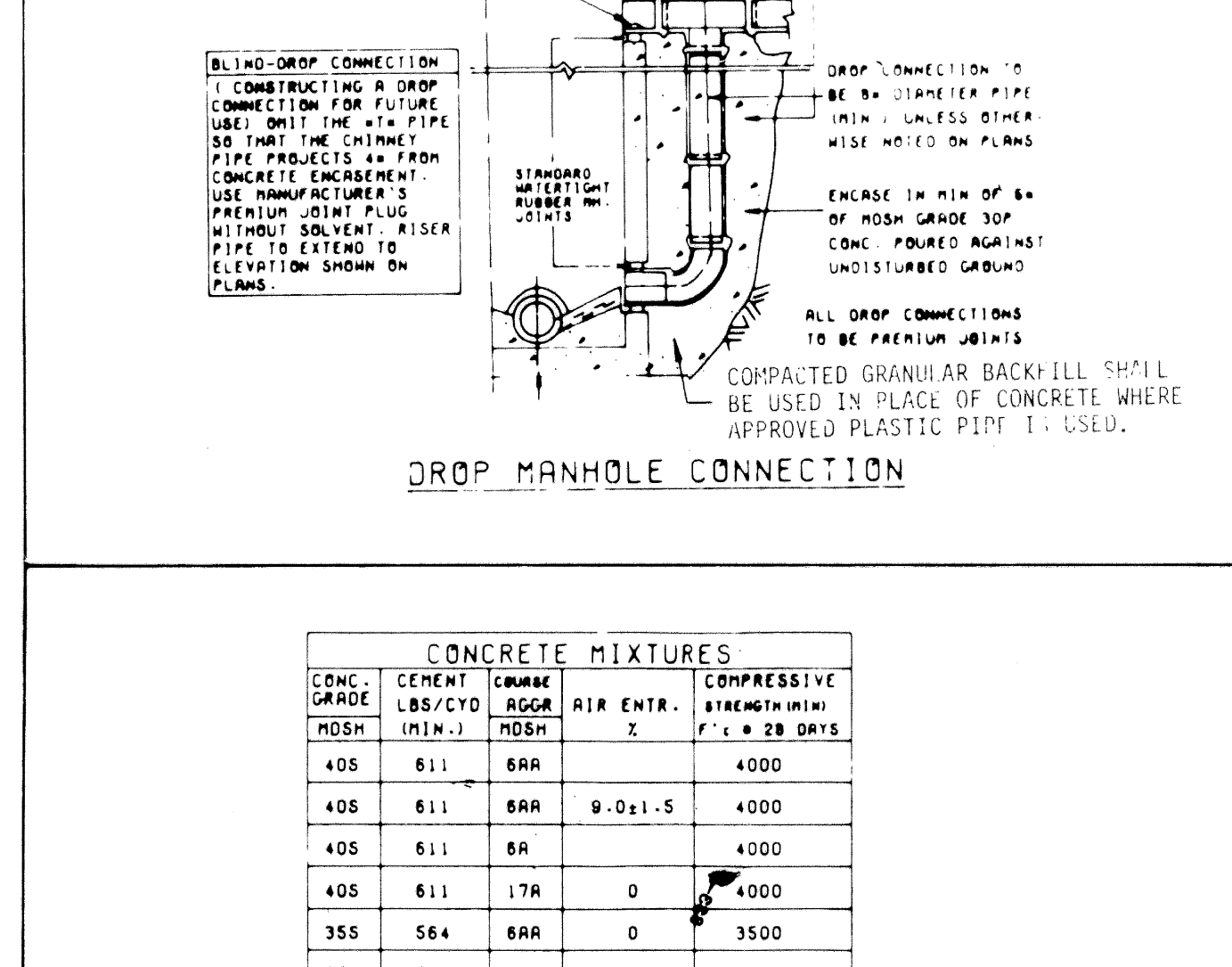
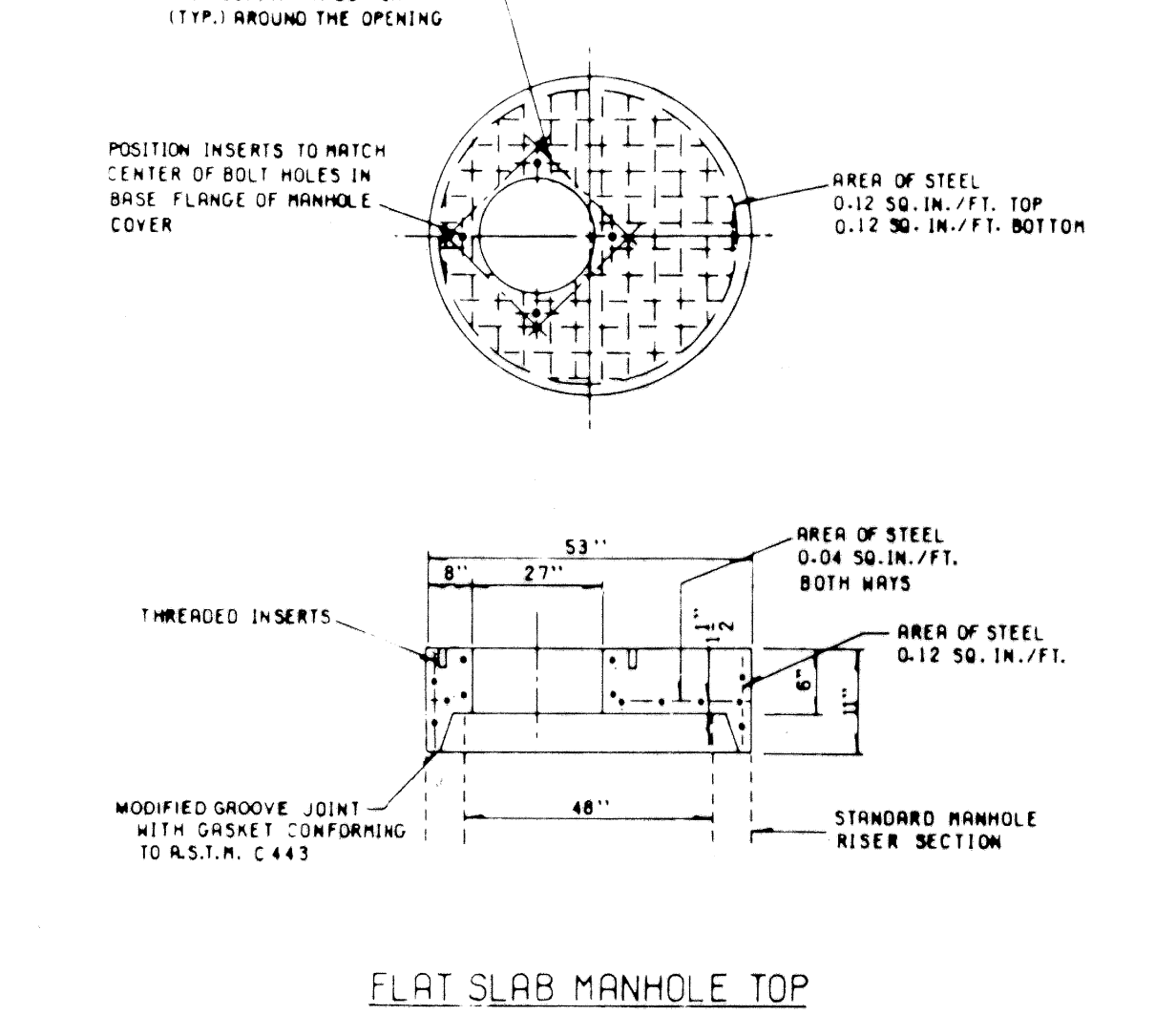
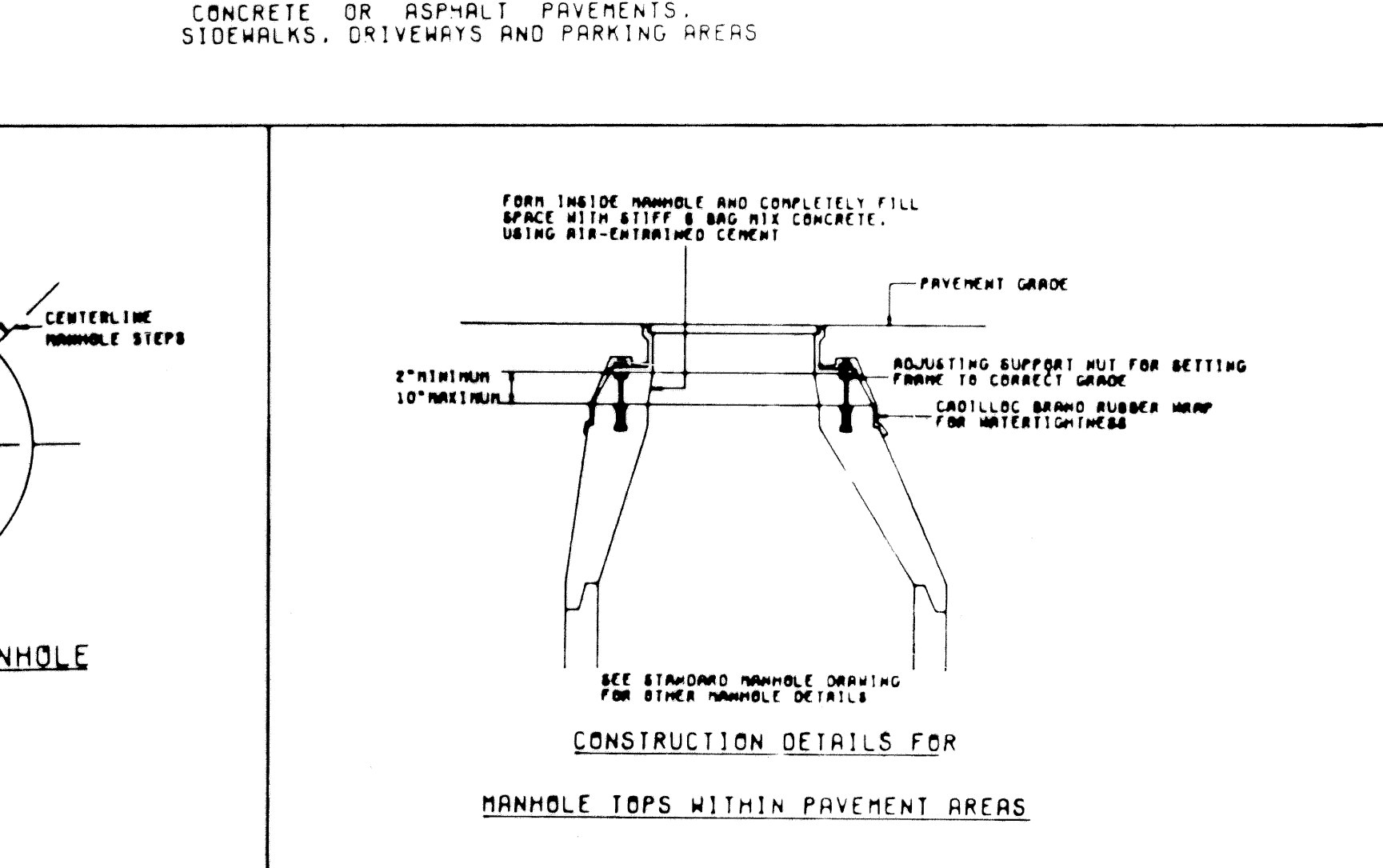
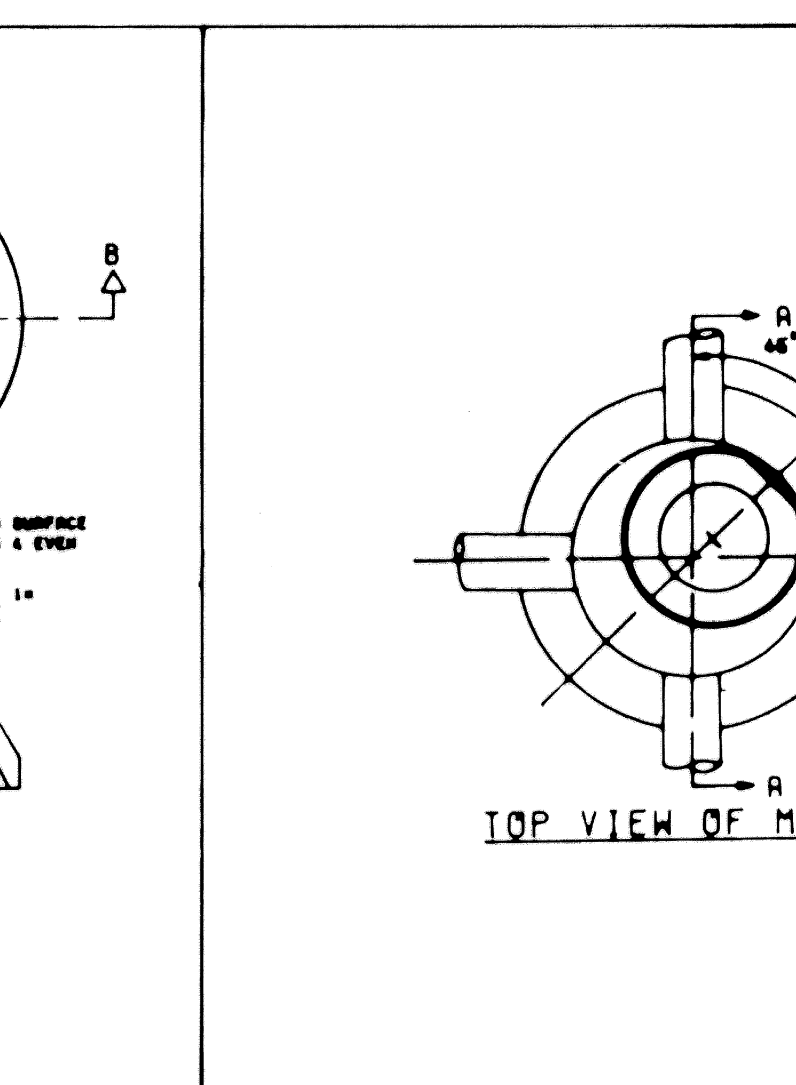
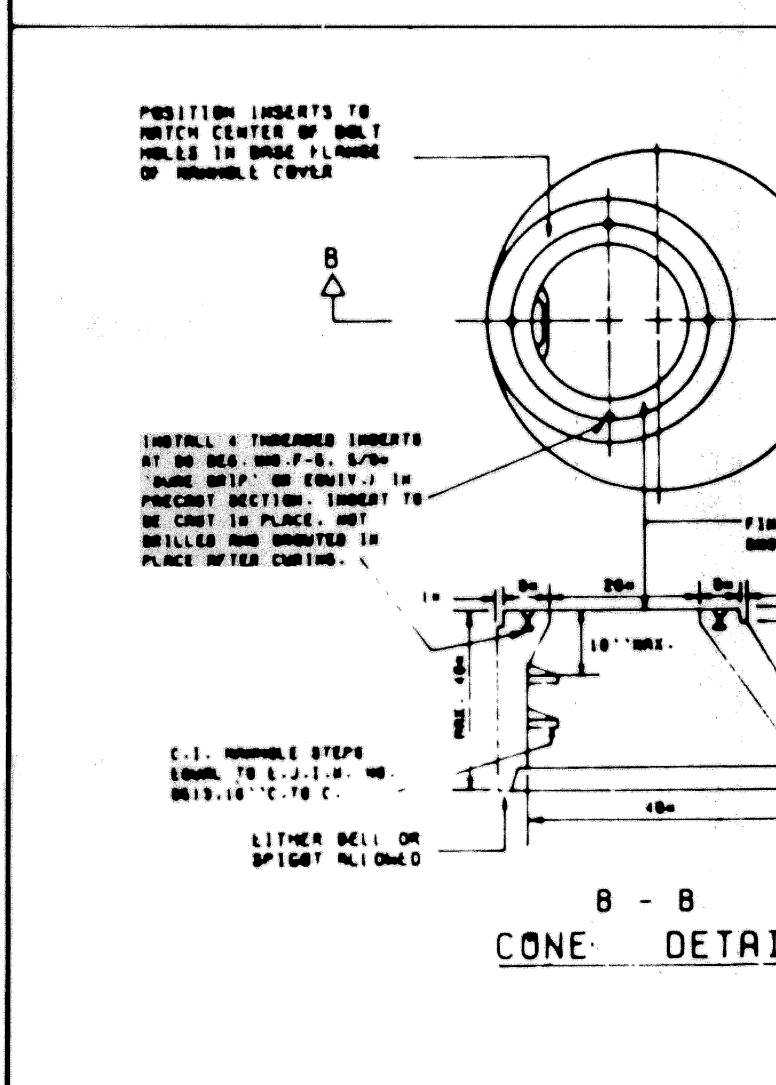
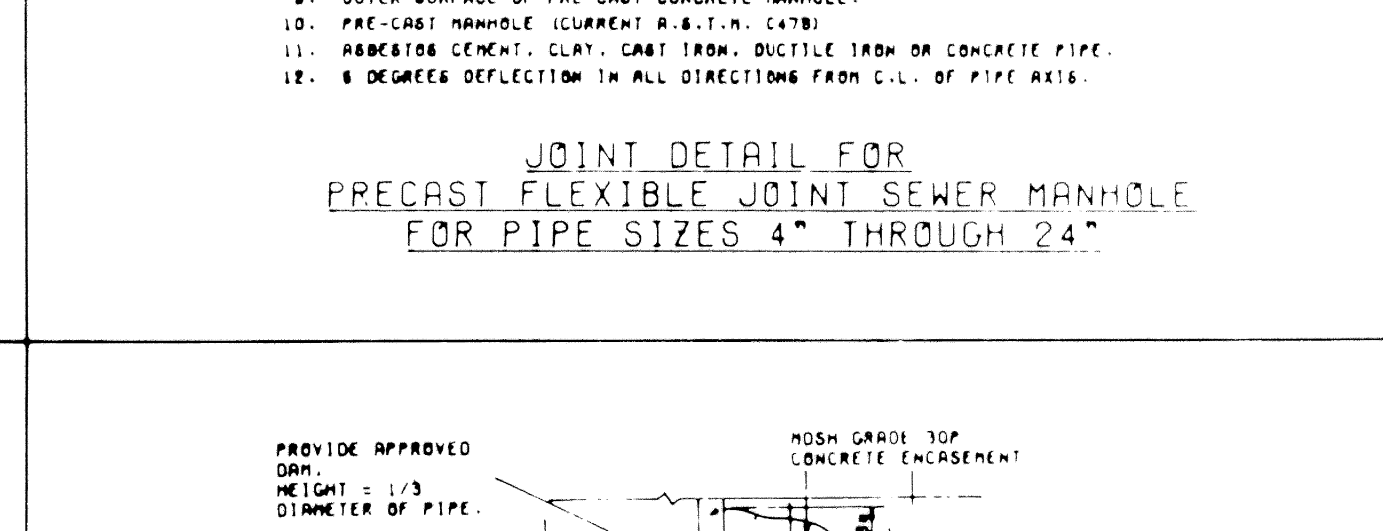
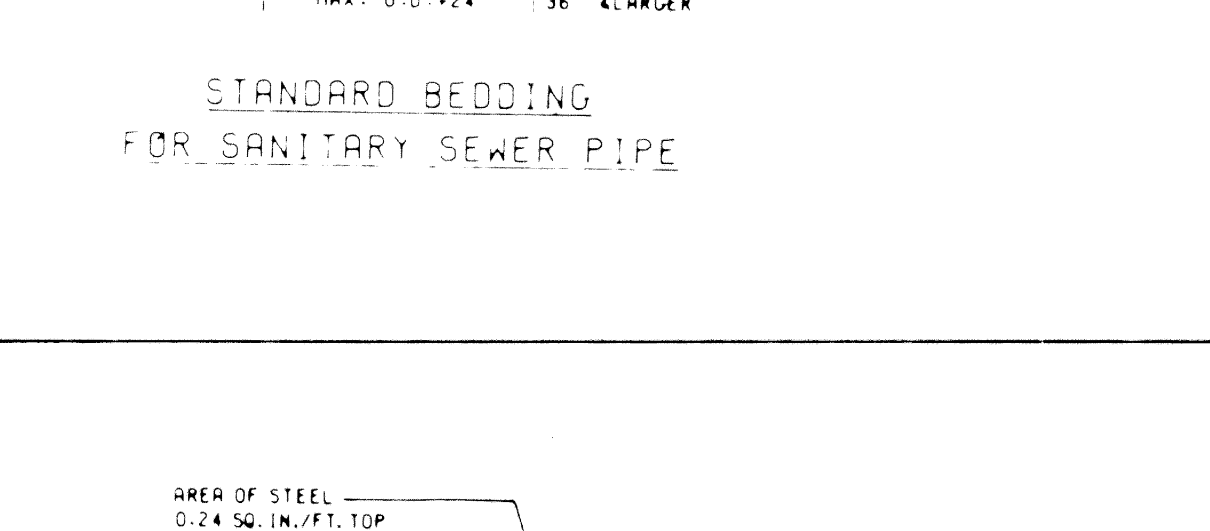
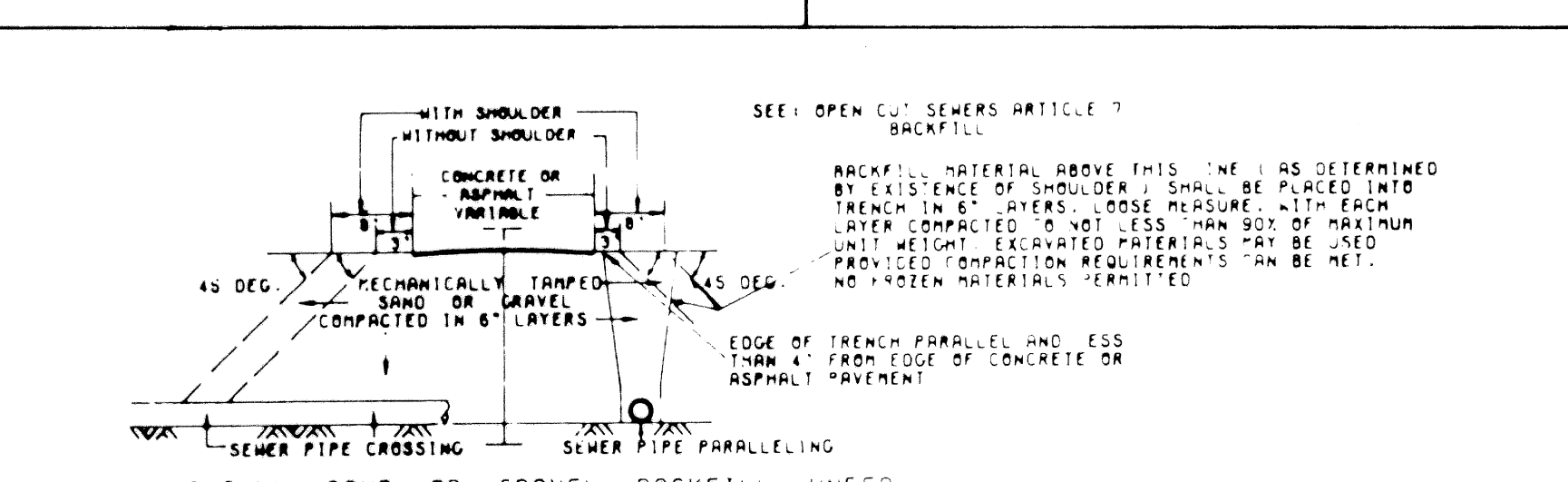
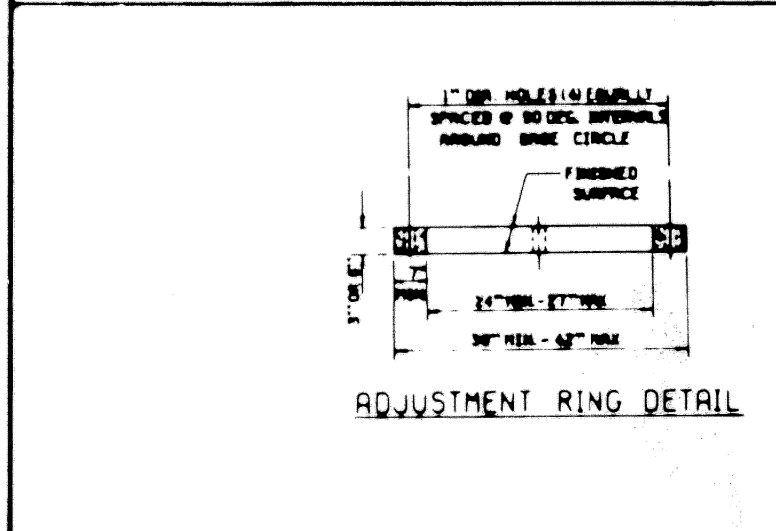
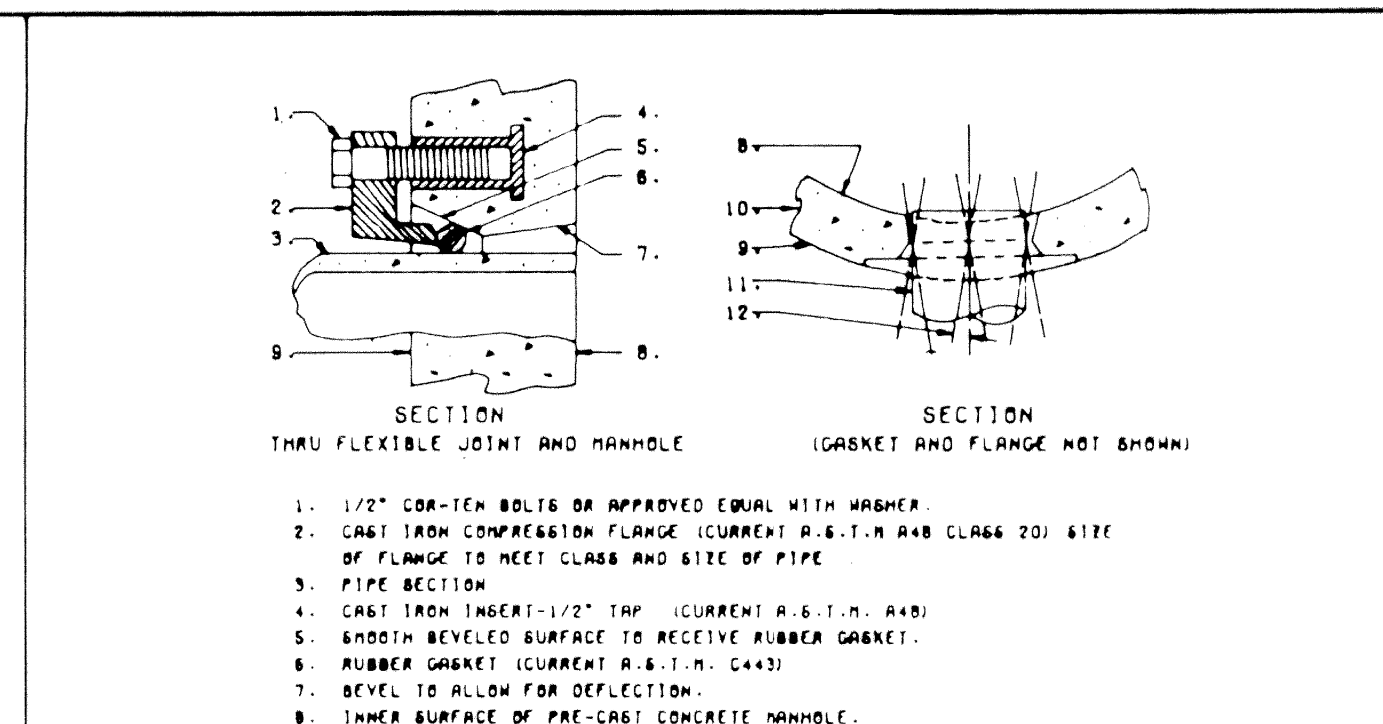
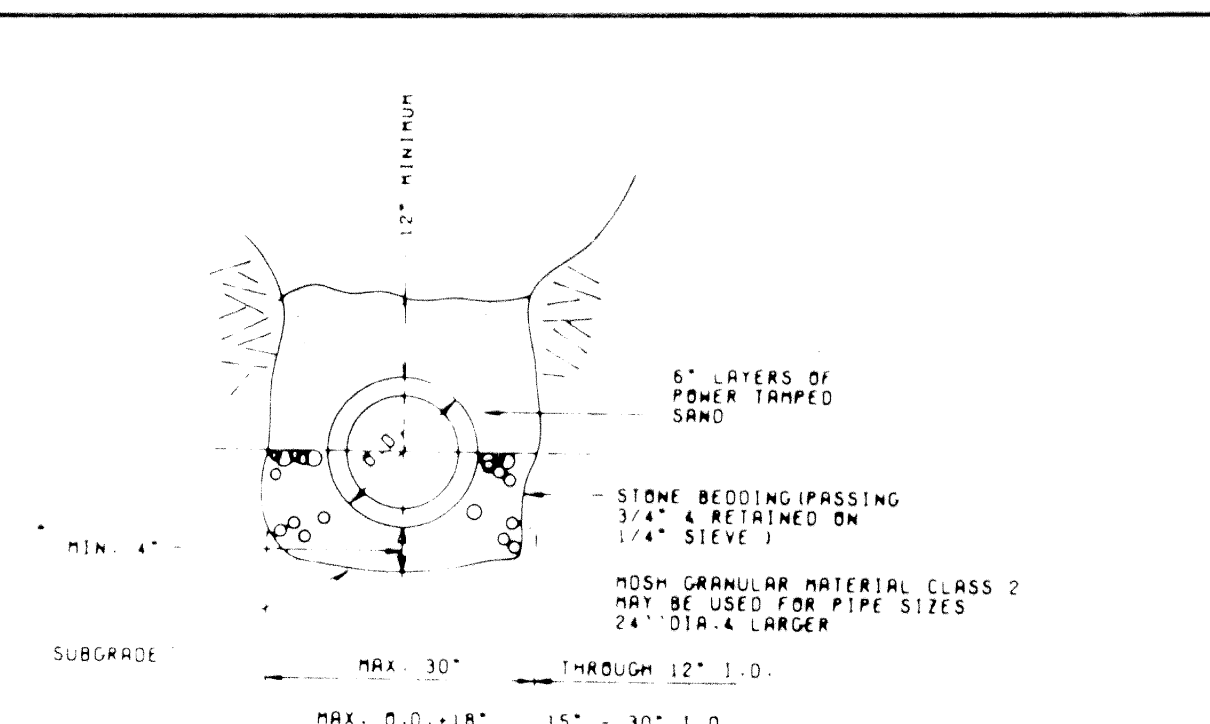
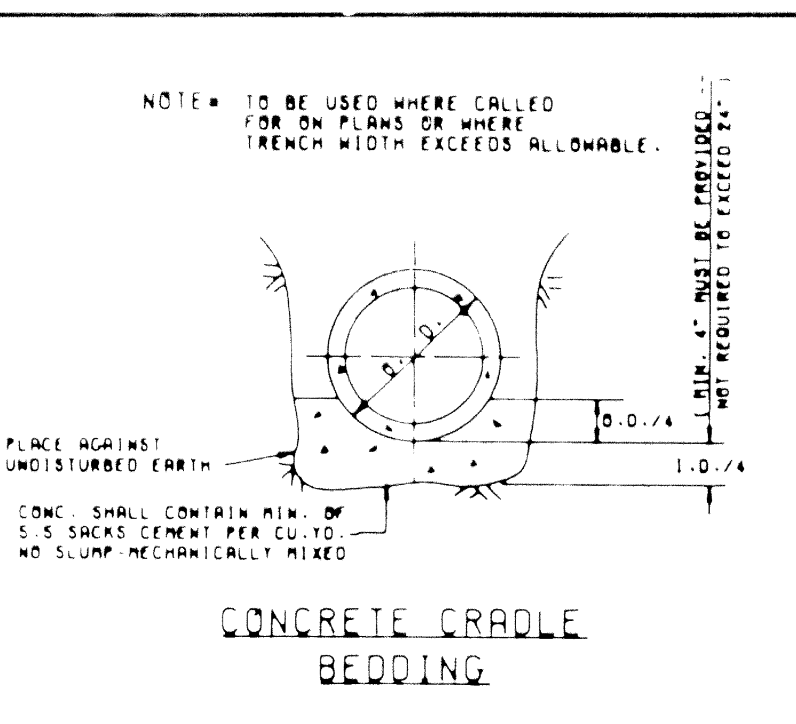
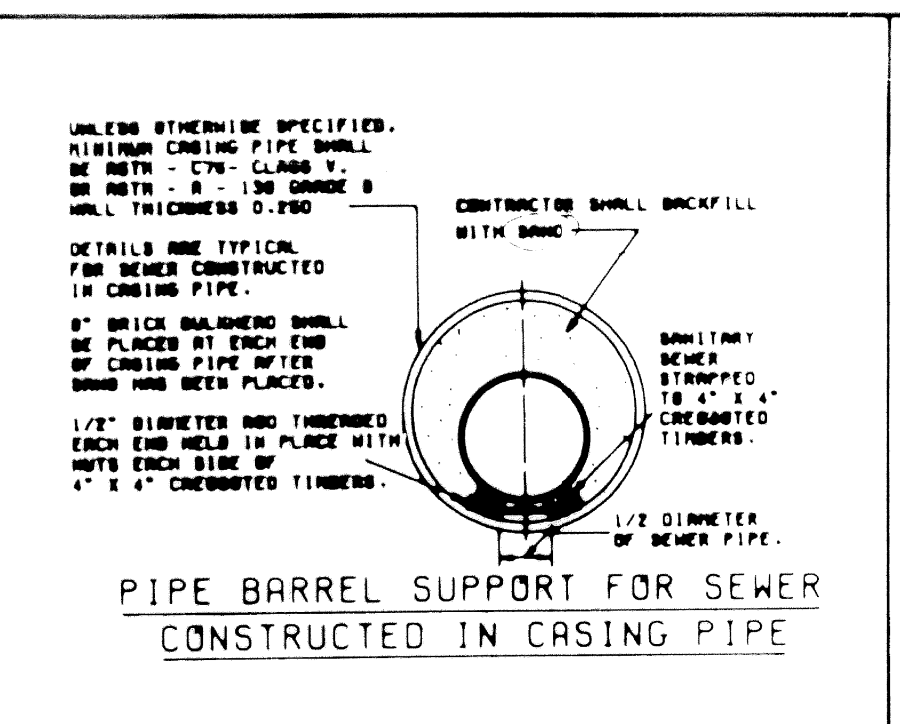
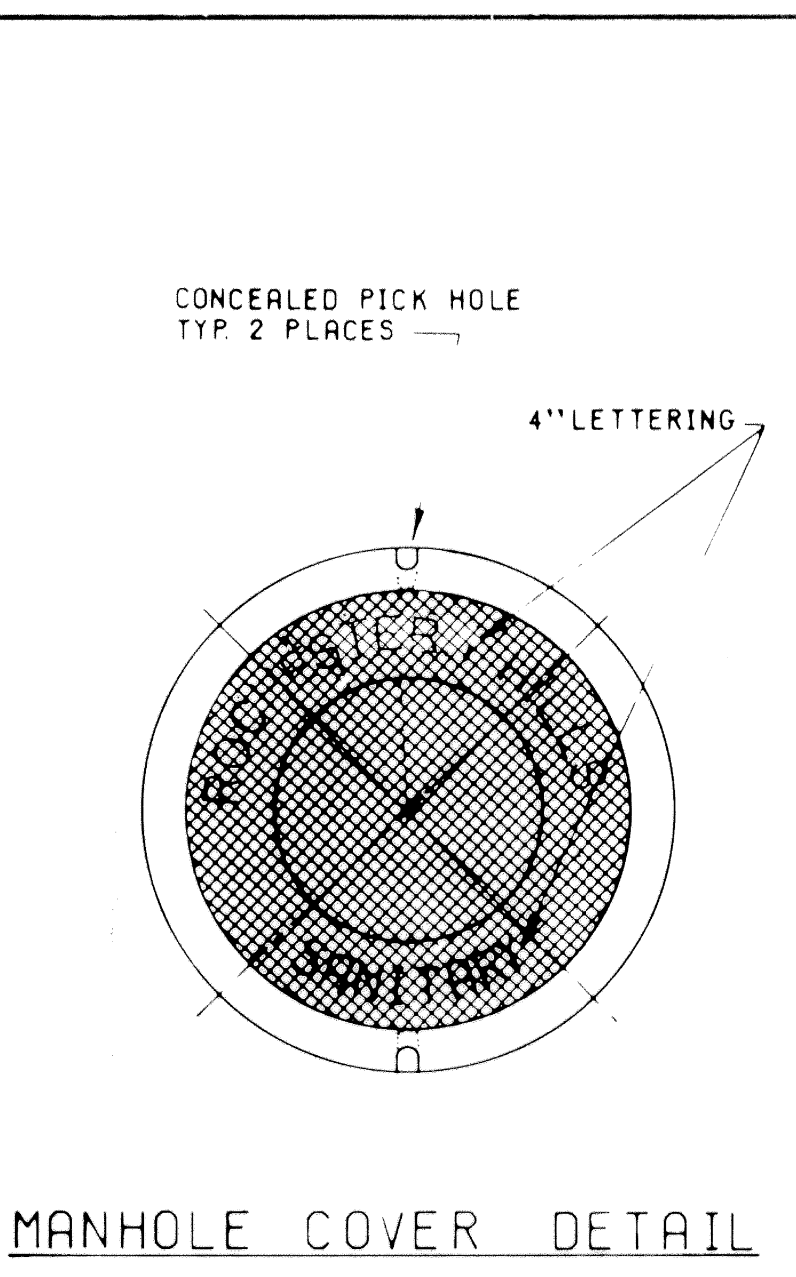
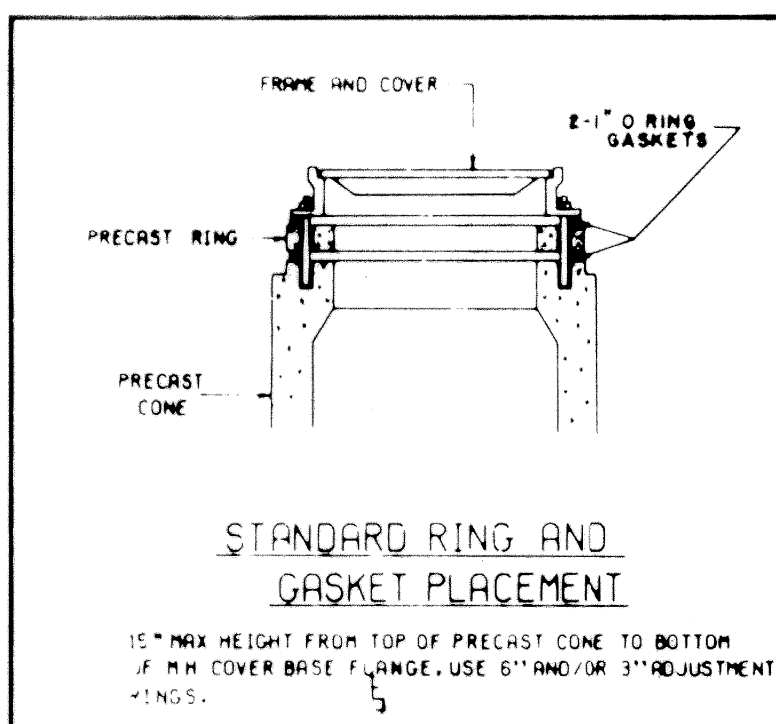


HOUSE LEAD DETAIL for PLASTIC LEADS INSTALLED MORE THAN 16 FEET DEEP (to a maximum of 35 feet deep)

CITY OF ROCHESTER HILLS			
ENGINEERING DEPARTMENT			
SCALE:	APPROVED BY:	DRAWN BY: OCDPW	
DATE: 11/15/89		REVISED:	
SAN. SEWER DETAILS			
			DRAWING NUMBER:

OCDPW 5-88

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MARK	BULLETIN	DATE	MARK	BULLETIN	DATE	MARK	BULLETIN	DATE
REV	REV	5/80	REV	REV	5/80			

CITY OF ROCHESTER HILLS PLANNING COMMISSION 05/09/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100

CITY OF ROCHESTER HILLS
1000 ROCHESTER HILLS DRIVE
ROCHESTER HILLS, MICHIGAN 48063
PHONE: (313) 651 4450
OKLAND COUNTY, MICHIGAN.

SANITARY SEWER
DETAILS

MASTER
DO NOT CHANGE
FOR
JOB NO. 17
DATE AUG. 1975
SHEET NO.

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