



**SANITARY SEWER, WATER LINE
AND GAS FACILITIES
STANDARD DETAILS**

REVISED FEBRUARY 2009

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DATE	REVISION

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY



RICHMOND
UTILITIES

INDEX OF DRAWINGS

NOTES:

*TOP SOIL SHALL BE STRIPPED AND STORED AT BEGINNING OF CONSTRUCTION. IT SHALL BE REPLACED ON TOP 12 INCHES OF ALL TRENCHES AND/OR AREAS DISTURBED BY CONSTRUCTION.

*ALL SANITARY SEWERS SHALL HAVE LOW PRESSURE AIR TEST, DEFLECTION TEST, AND VACUUM TESTED PER SPECIFICATIONS. VIDEO TAPING MAY OR MAY NOT BE REQUIRED.

*SEWERS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.

*SURFACE DRAINAGE SHALL BE MAINTAINED ON A DAY-BY-DAY BASIS.

*THE CONTRACTOR WILL BE REQUIRED TO DISPOSE OF ALL EXCESS EXCAVATED MATERIAL FROM THE SEWER LINE CONSTRUCTION.

*THE SANITARY INLET SHALL BE AT A MINIMUM OF 6 INCHES ABOVE THE TOP OF BOTH OF THE ADJACENT SANITARY MANHOLES.

*IN THE EVENT IT IS NOT POSSIBLE TO MAINTAIN THE INLET 6 INCHES ABOVE THE ADJACENT MANHOLES. THE DEVELOPER AND/OR BUILDER SHALL PROVIDE AN ADEQUATE MEANS TO PUMP TO PUBLIC SANITARY SEWER. THIS SHALL BE DETERMINED BY THE ENGINEER.

*NOTE: TYPICAL JOINT BETWEEN
DIFFERENT PIPE TYPES

A FLEXIBLE NEOPRENE BOOT COUPLING WITH STAINLESS STEEL CONTRACTING CLAMPS IS REQUIRED TO CONNECT DIFFERENT CLAY PIPE TO PVC OR CLAY PIPE TO D.I. PIPE.

*EXACT SIZES, DEPTHS, MATERIALS AND LOCATIONS OF EXISTING UTILITIES ARE UNKNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF THESE FAR ENOUGH IN ADVANCE OF THE PIPELINE OPERATION SO AS NOT TO CAUSE ANY UNNECESSARY DELAYS. RELOCATION OF EXISTING UTILITIES FOUND TO BE IN DIRECT CONFLICT WITH THIS CONTRACT SHALL BE ACCOMPLISHED BY THE OWNER OF THE UTILITIES INVOLVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES HAVING PROPERTY IN THE AREA PRIOR TO EXCAVATION. CONTINUOUS COMMUNICATIONS ON A DAY TO DAY BASIS WILL BE REQUIRED. THE UTILITY COMPANIES ARE AS FOLLOWS:


ELECTRIC COMPANIES CONTACT--
BLUEGRASS ELECTRIC CO-OP CORP.,
KENTUCKY UTILITIES COMPANY, OR
CLARK ENERGY.

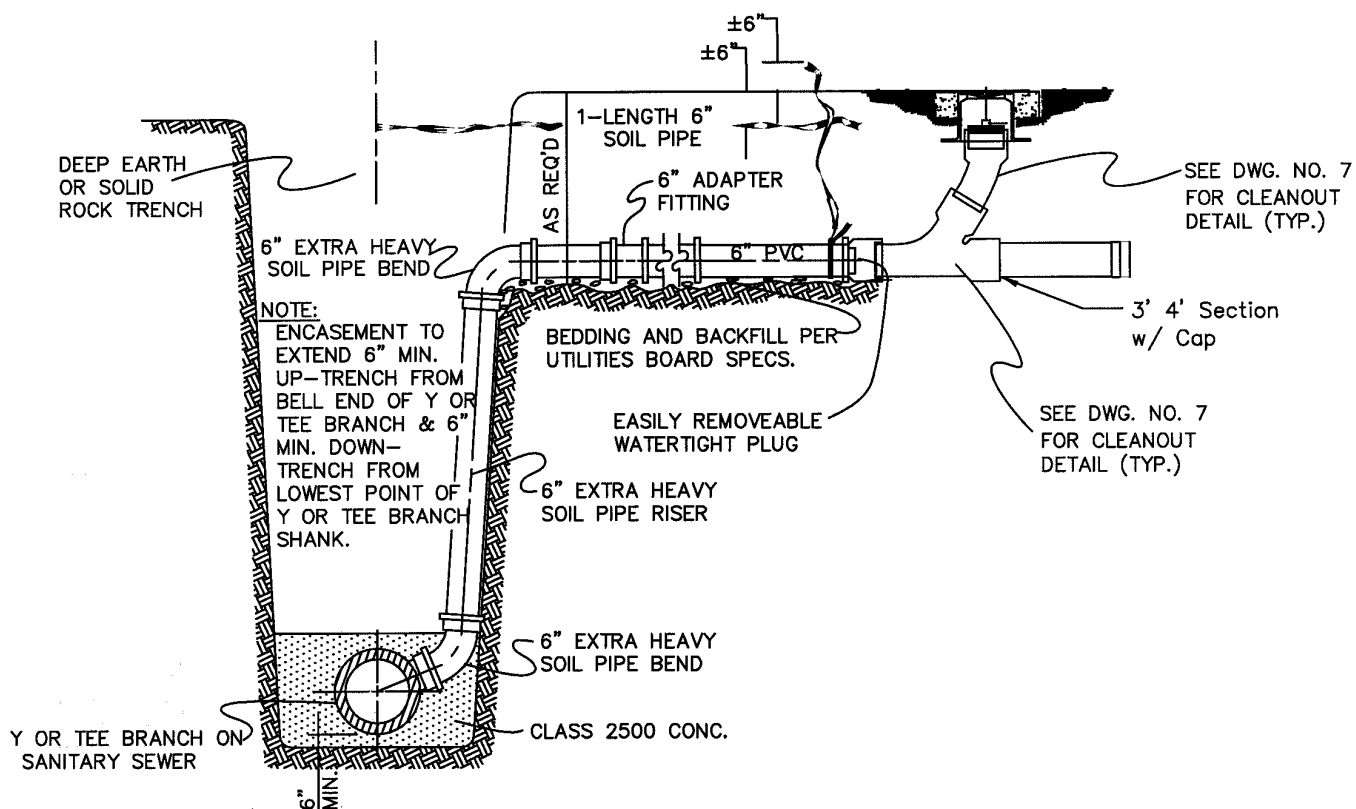
TELEPHONE CONTACT--
SOUTH CENTRAL BELL

GAS CONTACT--
RICHMOND UTILITIES BOARD, COLUMBIA
GAS OR DELTA GAS.

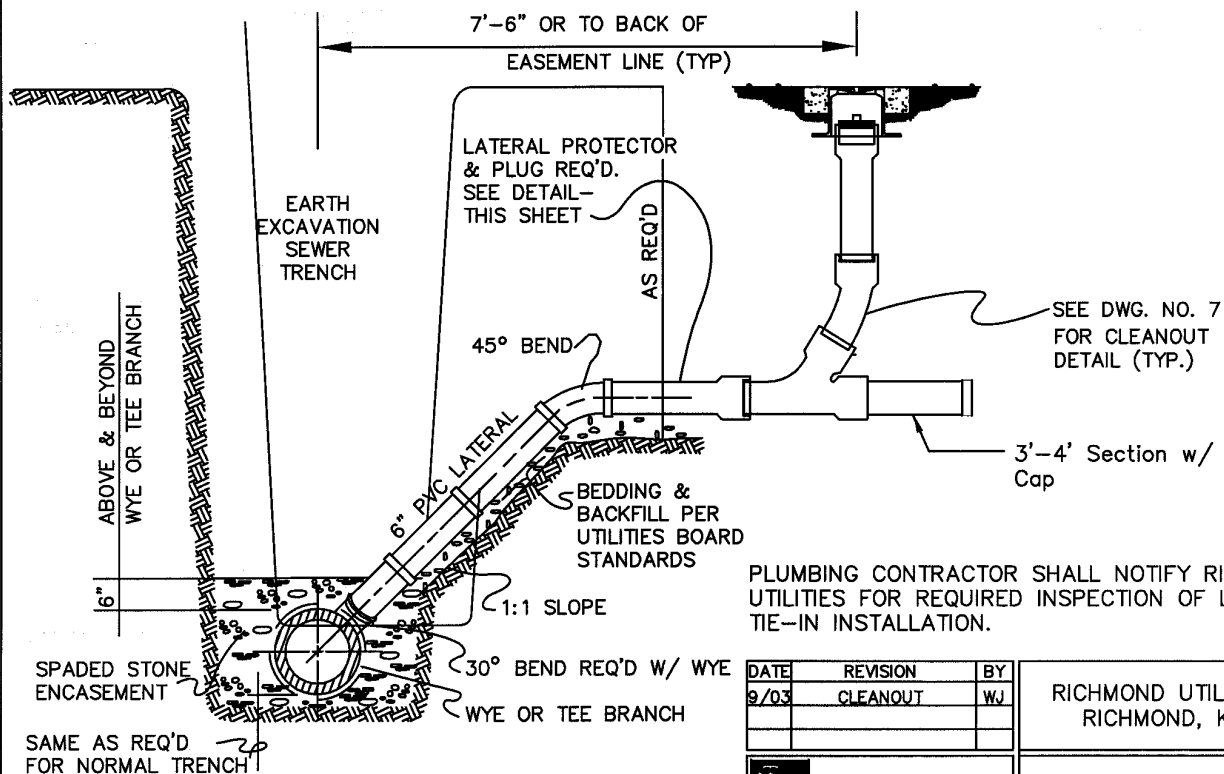
WATER CONTACT--
RICHMOND UTILITIES BOARD

KENTUCKY STATUTES (KRS 367.4901 THRU 367.4917) REQUIRE THAT ALL EXCAVATORS PLANNING EXCAVATION OR DEMOLITION WORK SHALL CALL ALL UTILITY COMPANIES IN THE AREA AND AN UNDERGROUND PROTECTION SERVICE SUCH AS "BUD" (1-800-752-6007) AT LEAST TWO (2) WORKING DAYS BEFORE COMMENCING WORK TO NOTIFY UTILITY COMPANIES IN THE AREA WITH UNDERGROUND FACILITIES OF THE PLANNED EXCAVATION OR DEMOLITION ACTIVITIES.

DATE	REVISION	RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY	
2/07			
 RICHMOND UTILITIES		SANITARY SEWER GENERAL CONSTRUCTION NOTES	
		JUNE, 1996	DWG. NO. S1



**TYPICAL DETAIL SEWER LATERALS
IN DEEP TRENCHES**
(NARROW R OF W &/OR SOLID ROCK)



PLUMBING CONTRACTOR SHALL NOTIFY RICHMOND UTILITIES FOR REQUIRED INSPECTION OF LATERAL TIE-IN INSTALLATION.

DATE	REVISION	BY
9/03	CLEANOUT	WJ

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

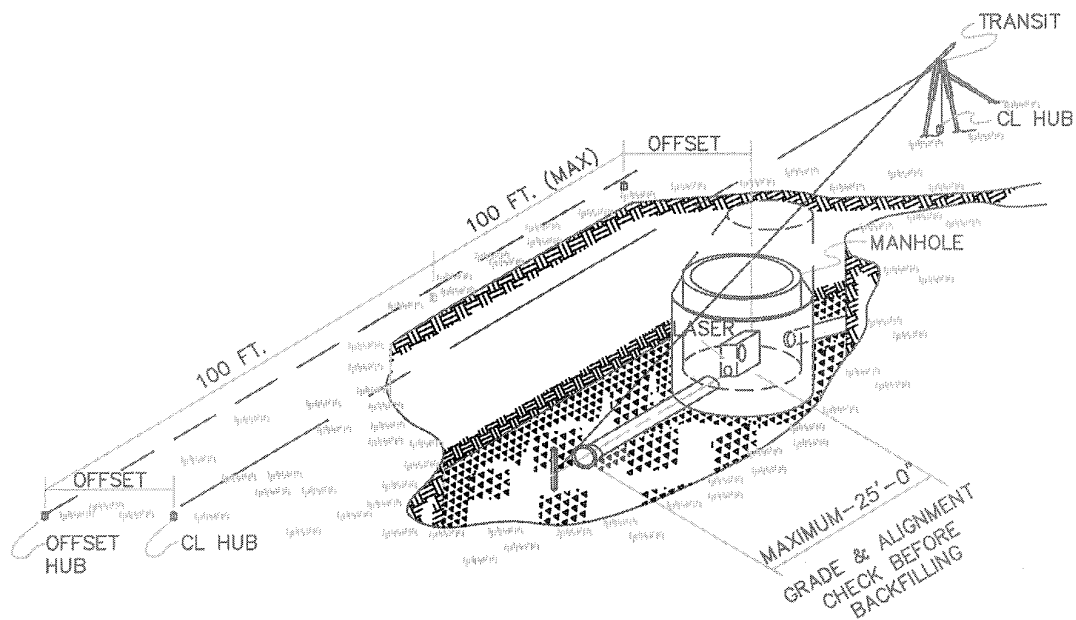


SANITARY SEWER
LATERALS

JUNE, 1996

DWG. NO. S3

TYPICAL DETAIL SEWER LATERALS
N T S



TYPICAL LASER ALIGNMENT EQUIPMENT SET UP
NO SCALE

DATE	REVISION
2/02	

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY



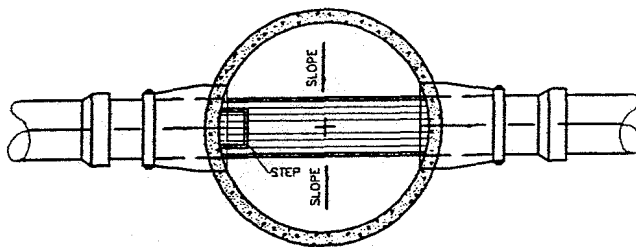
SANITARY SEWER
LASER ALIGNMENT SET UP

JUNE, 1996

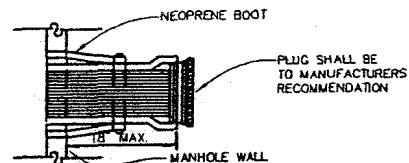
DWG. NO. S3A

GENERAL NOTES FOR PRECAST MANHOLES

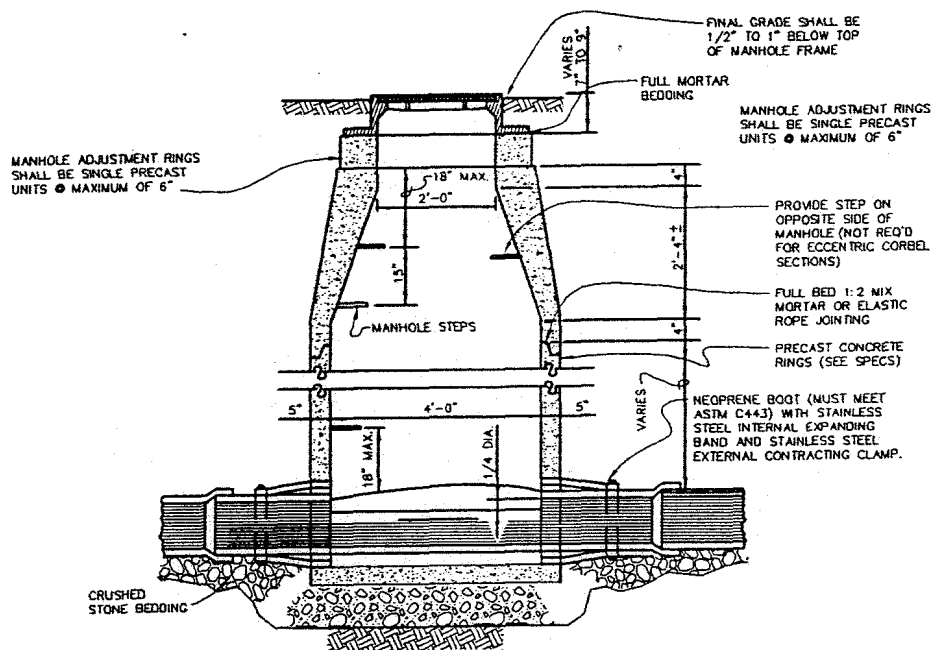
- STANDARD PRECAST CORBELS SHALL BE USED ON 4'-0" I.D. MANHOLES OVER 5'-0" DEEP AND ON 5'-0" I.D. MANHOLES OVER 7'-0" DEEP, UNLESS OTHERWISE NOTED ON THE PLANS.
- SLABS ARE DETAILED FOR USE IN TRAFFIC AND NON-TRAFFIC AREAS. ALL SLABS SHALL BE CLEARLY MARKED "TRAFFIC" OR "NON-TRAFFIC".
- PRECAST CONCRETE MANHOLE DEVELOPED BASE WITH FORMED CHANNELS REQUIRED.



LOWER PLAN



SECTION
TYPICAL STUB AND PLUG
AT MANHOLE WALL



**5'-0" INSIDE DIAMETER USED ON 30" AND LARGER SEWER LINES.
*5'-0" INSIDE DIAMETER USED ON 15" AND LARGER SEWER LINES
WHEN LINE TURNS 45° OR MORE.

SECTION
STANDARD MANHOLE

PRECAST CONCRETE MANHOLES – TYPICAL DETAILS

A S T M SPEC. C-478, LATEST REVISION FOR MANHOLE SECTIONS
ECCENTRIC CORBEL SECTION IS ACCEPTABLE (LOCATE VERTICAL WALL DOWNSTREAM; WHERE FLAT TOP IS USED, OFFSET ACCESS OPENING OVER DOWNSTREAM SIDE).

DATE	REVISION
2/02	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

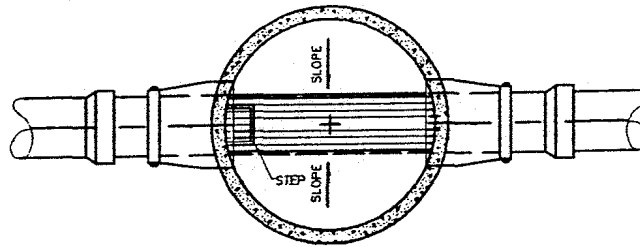
SANITARY SEWER
STANDARD MANHOLES

JUNE, 1996

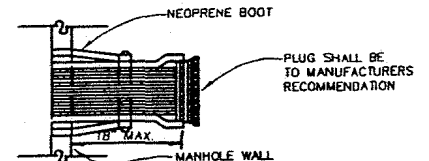
DWG. NO. S4

GENERAL NOTES FOR PRECAST MANHOLES

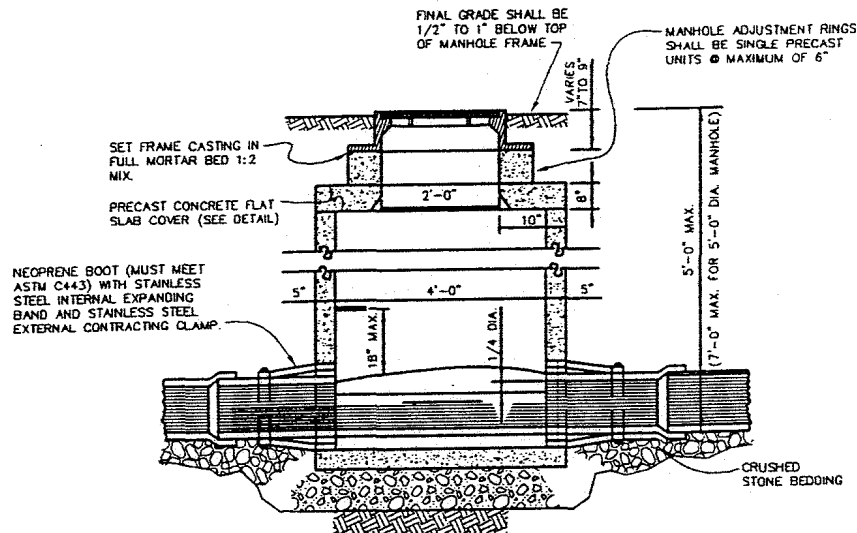
- STANDARD PRECAST CORBELS SHALL BE USED ON 4'-0" I.D. MANHOLES OVER 5'-0" DEEP AND ON 5'-0" I.D. MANHOLES OVER 7'-0" DEEP, UNLESS OTHERWISE NOTED ON THE PLANS.
- SLABS ARE DETAILED FOR USE IN TRAFFIC AND NON-TRAFFIC AREAS. ALL SLABS SHALL BE CLEARLY MARKED "TRAFFIC" OR "NON-TRAFFIC".
- PRECAST CONCRETE MANHOLE DEVELOPED BASE WITH FORMED CHANNELS REQUIRED.



LOWER PLAN



SECTION
TYPICAL STUB AND PLUG
AT MANHOLE WALL



- **5'-0" INSIDE DIAMETER USED ON 30" AND LARGER SEWER LINES.
- *5'-0" INSIDE DIAMETER USED ON 15" AND LARGER SEWER LINES WHEN LINE TURNS 45° OR MORE.

SECTION
SHALLOW MANHOLE

PRECAST CONCRETE MANHOLES – TYPICAL DETAILS

A S T M SPEC. C-478, LATEST REVISION FOR MANHOLE SECTIONS
ECCENTRIC CORBEL SECTION IS ACCEPTABLE (LOCATE VERTICAL WALL DOWNSTREAM; WHERE FLAT TOP IS USED, OFFSET ACCESS OPENING OVER DOWNSTREAM SIDE).

DATE	REVISION	RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY	
2/02			
		SANITARY SEWER STANDARD SHALLOW MANHOLES	
		JUNE, 1996	DWG. NO. S4A

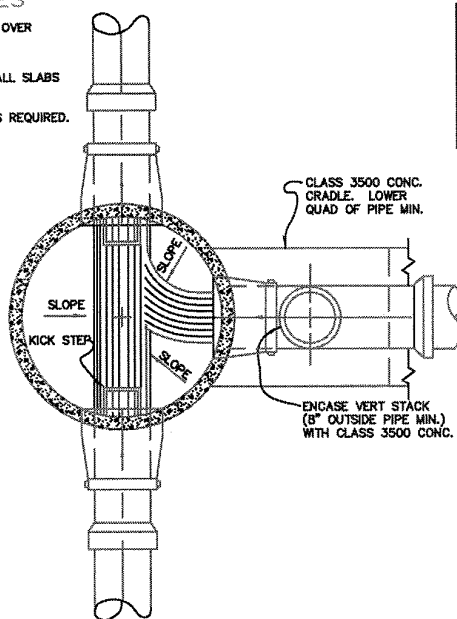


GENERAL NOTES FOR PRECAST MANHOLES

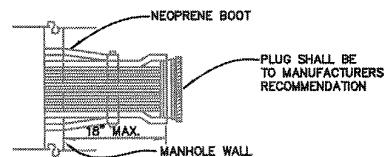
- * STANDARD PRECAST CORBELS SHALL BE USED ON 4'-0" I.D. MANHOLES OVER 5'-0" DEEP AND ON 5'-0" I.D. MANHOLES OVER 7'-0" DEEP, UNLESS OTHERWISE NOTED ON THE PLANS.
- * SLABS ARE DETAILLED FOR USE IN TRAFFIC AND NON-TRAFFIC AREAS. ALL SLABS SHALL BE CLEARLY MARKED "TRAFFIC" OR "NON-TRAFFIC".
- * PRECAST CONCRETE MANHOLE DEVELOPED BASE WITH FORMED CHANNELS REQUIRED.

PIPE SUPPORT TABLE			
SPAN	*I*	STEEL	SEAT "B"
0' - 4'	7"	3 - #5	1' - 0"
4' - 6'	9"	3 - #6	1' - 0"
6' - 8'	11"	3 - #7	1' - 6"
8' - 10'	13"	3 - #8	1' - 6"
10' - 12'	15"	3 - #9	2' - 0"

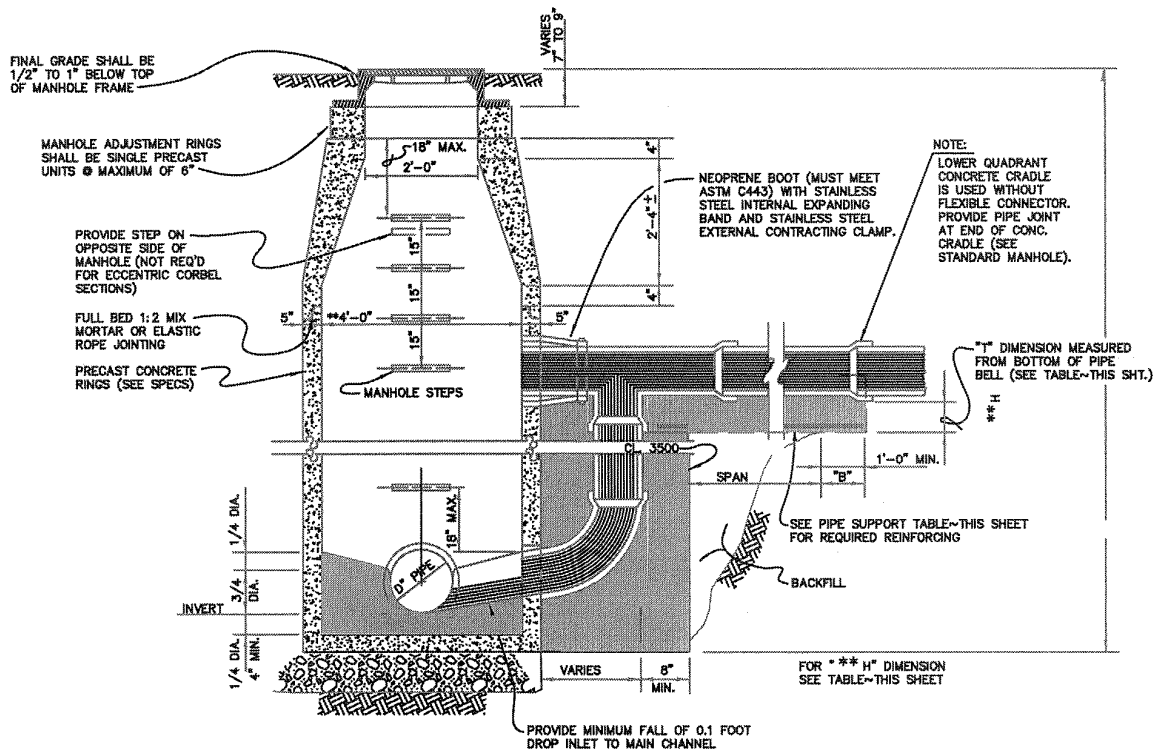
* REINFORCING SHOWN IS THE MINIMUM ALLOWED & SHALL BE PLACED WITH 2" COVER IN BOTTOM OF CRADLE. INCREASE THE NUMBER OF RODS BY ONE FOR EACH 8" INCREMENT THAT CRADLE WIDTH EXCEEDS 1' - 6". (I.E. FOR CRADLE SPAN OF 7' & CRADLE WIDTH OF 2'-6", USE 5-#7)



LOWER PLAN



SECTION
TYPICAL STUB AND PLUG
AT MANHOLE WALL



SECTION
DROP MANHOLE

PRECAST CONCRETE MANHOLES - TYPICAL DETAILS

A S T M SPEC. C-478, LATEST REVISION FOR MANHOLE SECTIONS
ECCENTRIC CORBEL SECTION IS ACCEPTABLE (LOCATE VERTICAL WALL DOWNSTREAM; WHERE FLAT TOP IS USED, OFFSET ACCESS OPENING OVER DOWNSTREAM SIDE).

DATE	REVISION
2/02	

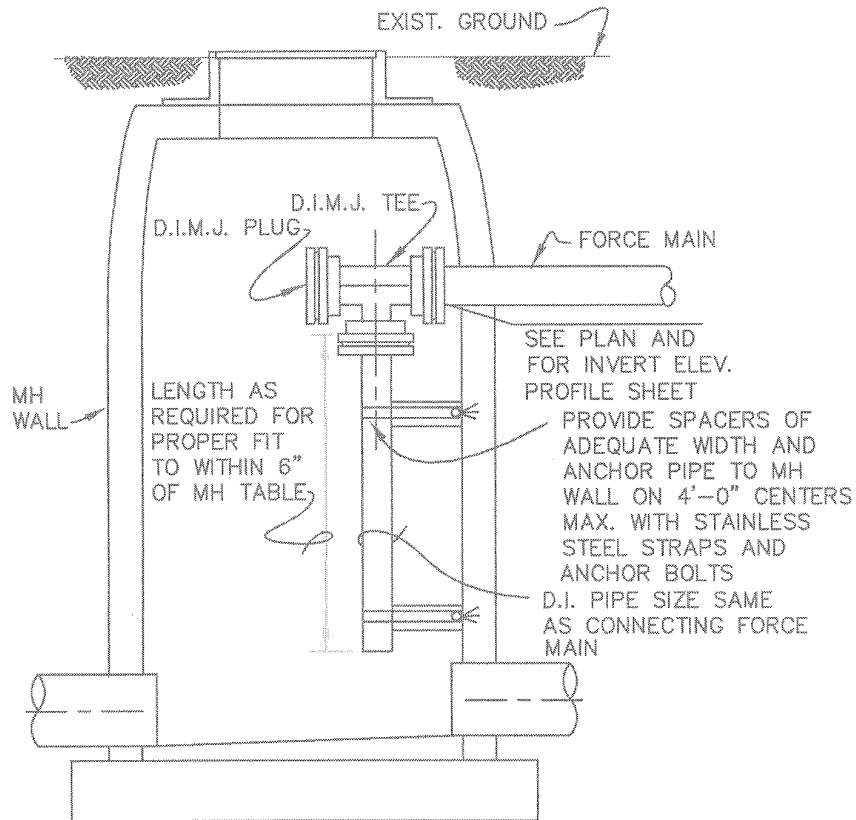


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
DROP MANHOLES

JUNE, 1996

DWG. NO. S4B



DETAIL
INSIDE DROP CONNECTION
NOT TO SCALE

NOTE:
TO BE USED DURING
EMERGENCIES ONLY

DATE	REVISION
2/02	

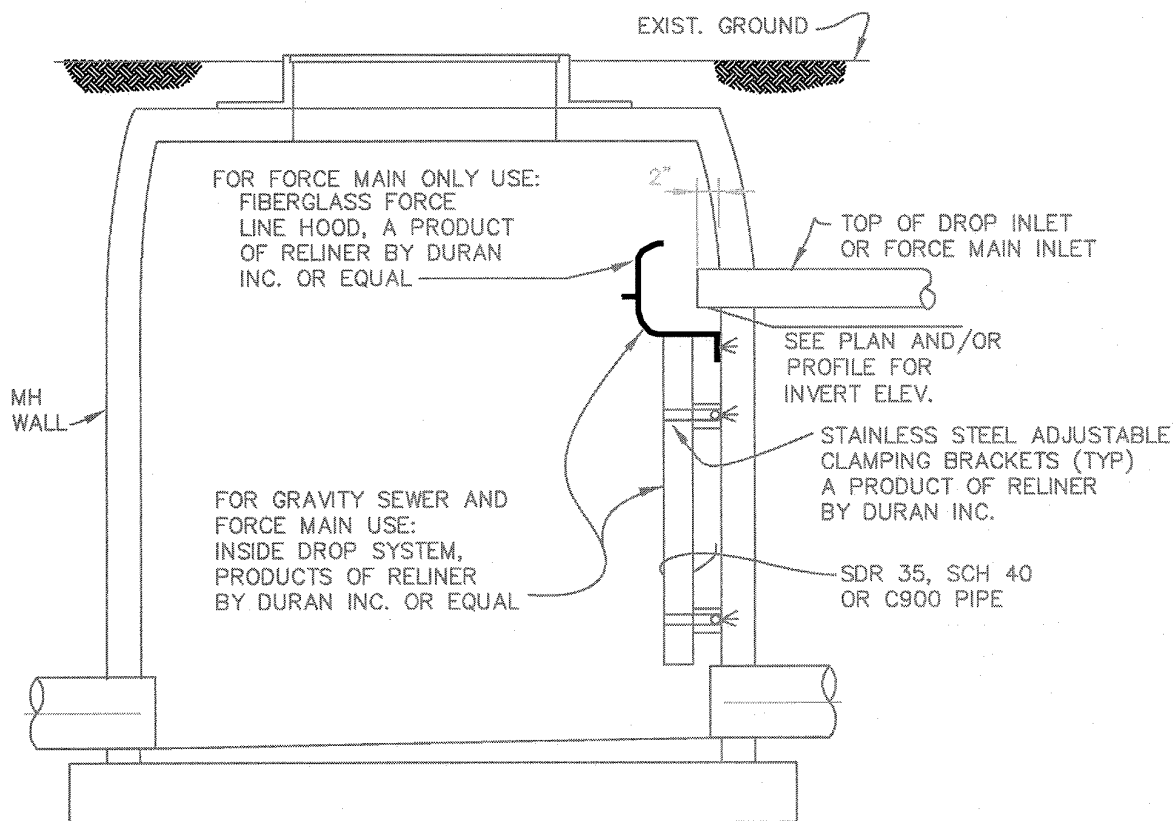


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
INSIDE/OUTSIDE DROP CONNECTIONS

JUNE, 1996

DWG., NO. S5



DETAIL
INSIDE DROP CONNECTION
NOT TO SCALE

NOTE:
TO BE USED WHEN INLET IS
3' OR MORE ABOVE BENCH
ON EXISTING MANHOLES ONLY
PRE-APPROVAL BY RU REQUIRED

DATE	REVISION
	02/07

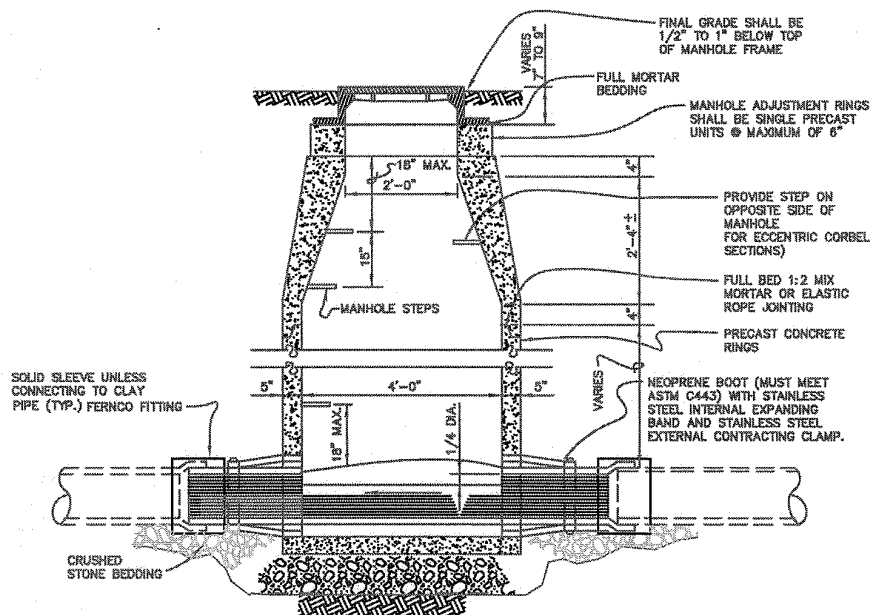
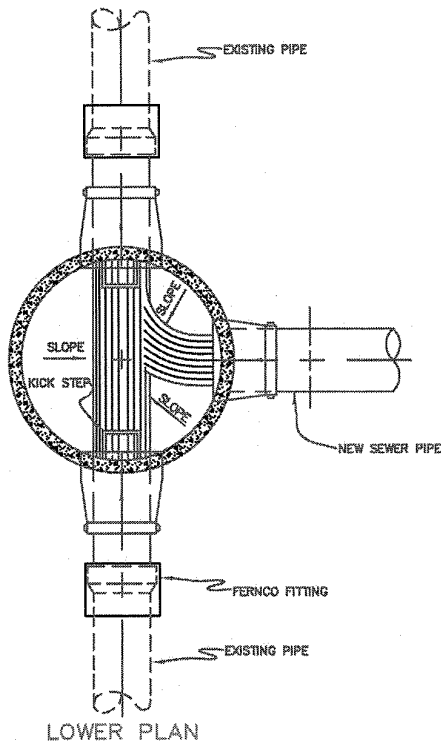


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
FORCE MAIN/GRAVITY SEWER
INSIDE DROP CONNECTION

SEPT, 2002

DWG. NO. S5A



SECTION
STANDARD MANHOLE
DETAIL — NEW GRAVITY SEWER TO EXISTING GRAVITY SEWER

DATE	REVISION
2/07	

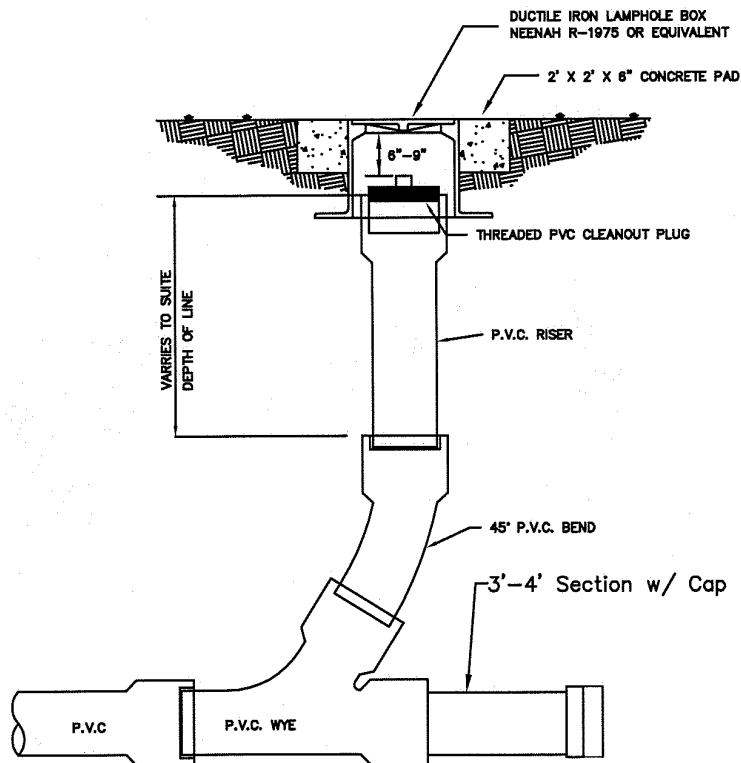


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
NEW GRAVITY SEWER TO
EXISTING GRAVITY SEWER

JUNE, 1996

DWG. NO. S6



LAMP HOLE CLEANOUT

DATE	REVISION
9/03	



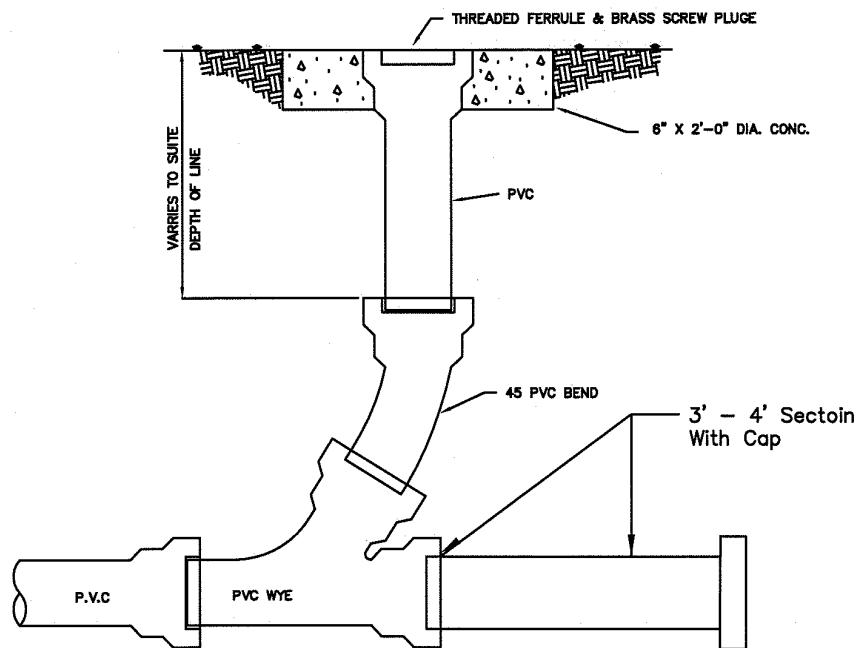
**RICHMOND
UTILITIES**

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
LAMP HOLE CLEANOUT

SEPT. 2003

DWG. NO. 7



DATE	REVISION
2/07	

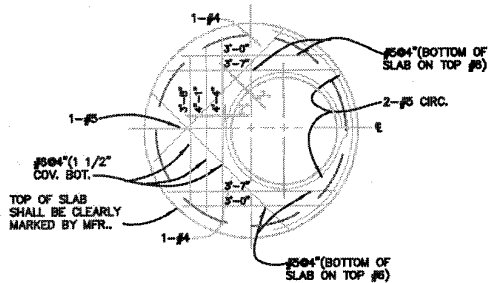


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
CLEANOUT

SEPT. 2003

DWG. NO. 7A



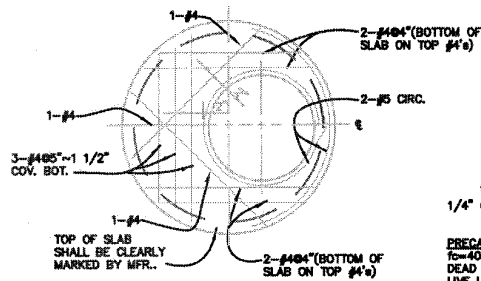
PLAN



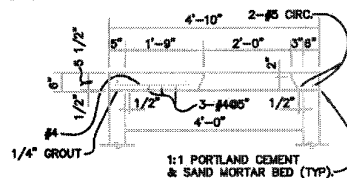
SECTION ON E

PRECAST SLAB PROPERTIES:
 $f_c=4000\text{psi}$; $f_y=60\text{ksi}$; $f_w=20\text{ksi}$
 DEAD LOAD=SLAB WEIGHT +120psf EARTH
 LIVE LOAD=HS20-44

PRECAST TOP SLABS FOR 4'-0" I.D. TRAFFIC MANHOLES



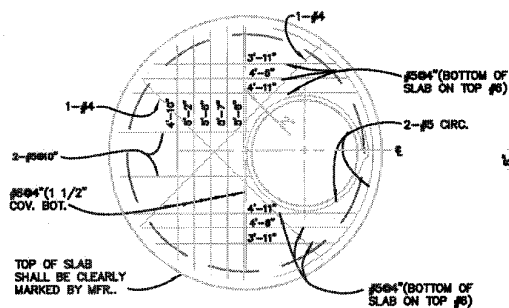
PLAN



SECTION ON E

PRECAST SLAB PROPERTIES:
 $f_c=4000\text{psi}$; $f_y=60\text{ksi}$; $f_w=20\text{ksi}$
 DEAD LOAD=SLAB WEIGHT +120psf EARTH
 LIVE LOAD=250psf

PRECAST TOP SLABS FOR 4'-0" I.D. NON-TRAFFIC MANHOLES



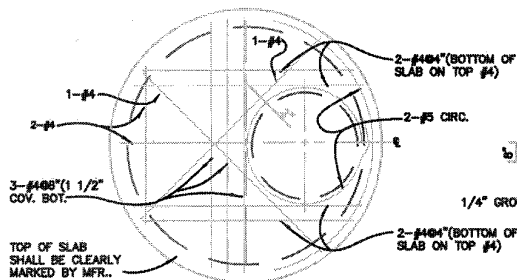
PLAN



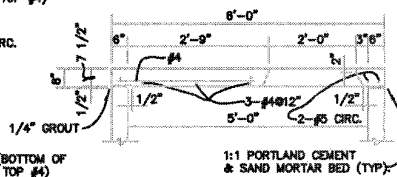
SECTION ON E

PRECAST SLAB PROPERTIES:
 $f_c=4000\text{psi}$; $f_y=60\text{ksi}$; $f_w=20\text{ksi}$
 DEAD LOAD=SLAB WEIGHT +120psf EARTH
 LIVE LOAD=HS20-44

PRECAST TOP SLABS FOR 5'-0" I.D. TRAFFIC MANHOLES



PLAN



SECTION ON E

PRECAST SLAB PROPERTIES:
 $f_c=4000\text{psi}$; $f_y=60\text{ksi}$; $f_w=20\text{ksi}$
 DEAD LOAD=SLAB WEIGHT +120psf EARTH
 LIVE LOAD=250psf

PRECAST TOP SLABS FOR 5'-0" I.D. NON-TRAFFIC MANHOLES

DATE	REVISION
2/02	

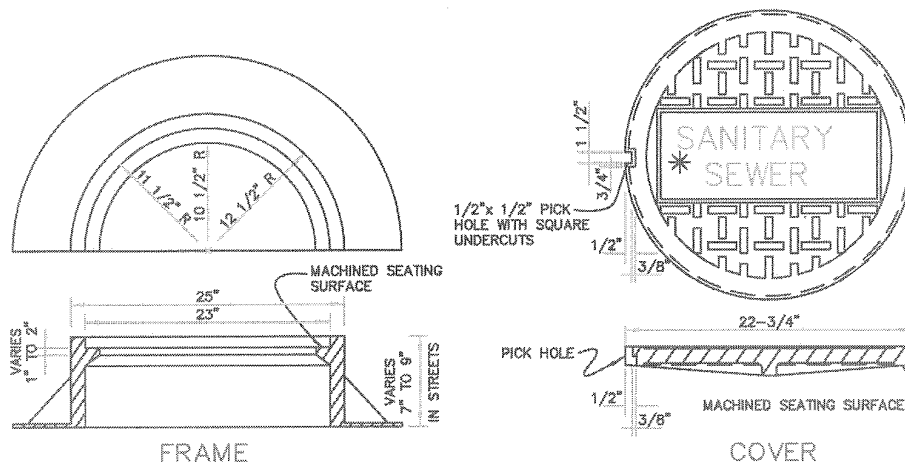


RICHMOND UTILITIES BOARD
 RICHMOND, KENTUCKY

SANITARY SEWER
 TOP SLAB FOR
 SANITARY SEWER MANHOLES

JUNE, 1996

DWG. NO. S8

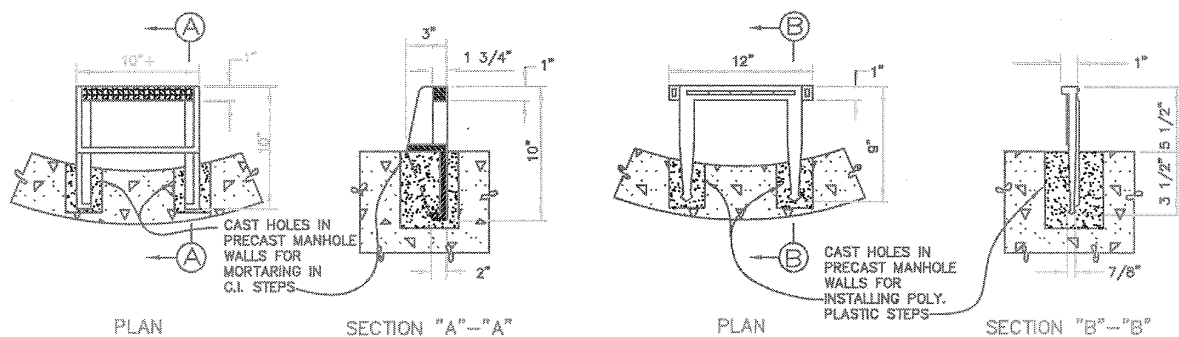


MANHOLE FRAME AND COVER

(REFER TO SPECIFICATIONS FOR WEIGHTS)

* NOTE:
LETTERING TO READ PER APPLICATION
"STORM SEWER", "SANITARY SEWER",
OR "WATER"

FRAMES AND COVERS TO HAVE COMBINED
WEIGHT OF 425 POUNDS AND BE
CLASSIFIED TRAFFIC WEIGHTS.



CAST IRON POLYPROPYLENE PLASTIC ENCAPSULATED STEEL MANHOLE STEPS FOR PRECAST CONCRETE MANHOLES

DATE	REVISION
2/02	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

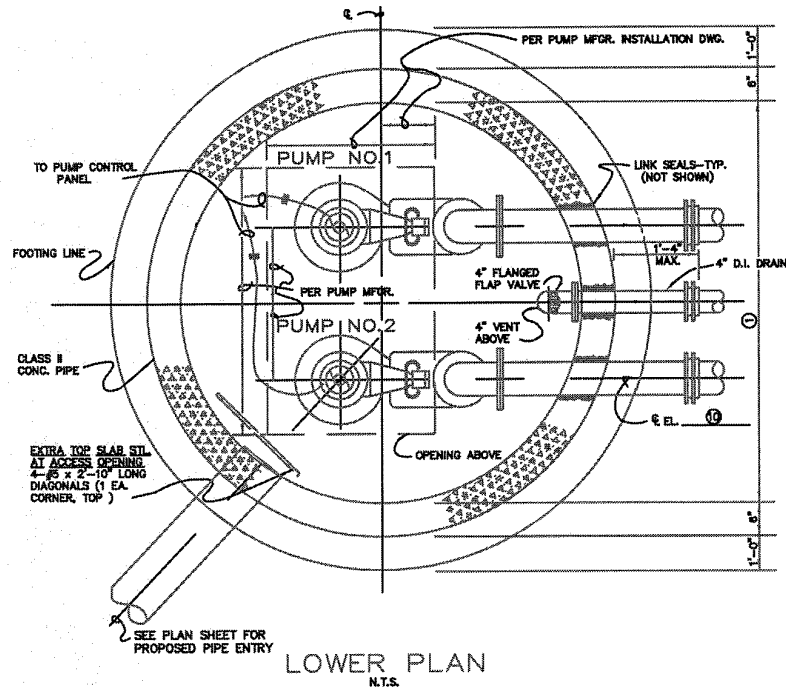
SANITARY SEWER
MANHOLE FRAME, COVER & STEPS

JUNE, 1996

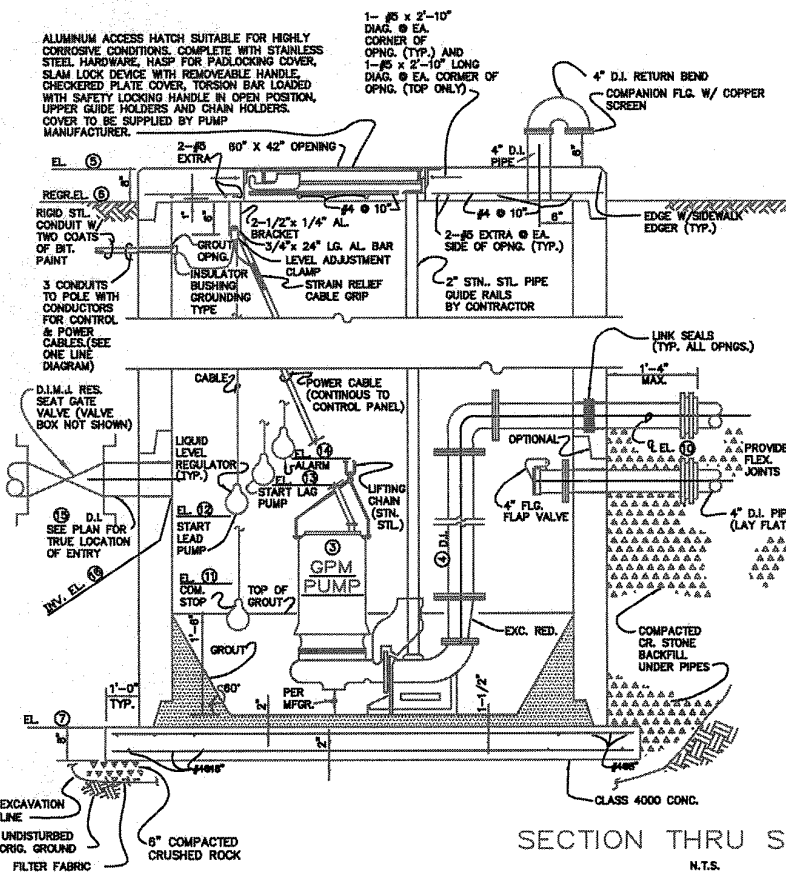
DWG. NO. S9

NOTE:
WET WELL IS A
CLASS 1, DIVISION 1,
GROUP D ATMOSPHERE

- NOTE: • Piping, Valves, Fittings, Etc. Inside Station Except Guide Rails Shall Have Coal Tar Shop Coats. Pumps & Motors Shall Have Shop Coat Of Kop-Coat Bitumastic Will Undercoat. Field Painting Shall Be 2 Coats Of Kop-Coat Bitumastic No. 50. Drying Time Between Coats And Application Shall Be Per Manufacturer's Recommendations. Contractor Shall Submit Recommendations To The Engineer.
- Pumping Station Is Subject To Flotation Until Construction Is Completed, Including Backfill & Regrade. The Contractor Shall Take All Steps Necessary To Prevent Flotation During Construction.
- Access Hatch Must Be Set Such As To Allow Guide Rails From Pump Discharge Flanged Connection To Be Vertical For Correct Operation.
- See Mfr's Installation Drawings For True Dimensions Off Centerline For Pumps And Access Hatch Locations.
- For Electrical And Controls Details See Dwg. No. _____



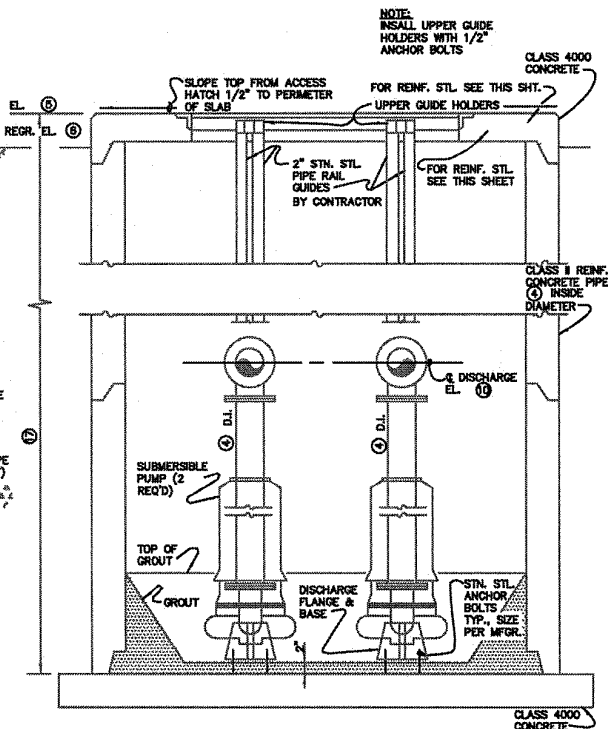
LOWER PLAN
N.T.S.



SECTION THRU STATION
N.T.S.

PUMPING STATION DATA

ITEM	PUMP STA.
1 WET WELL DIAMETER	
2 VALVE VAULT DIAMETER	
3 PUMP CAPACITY	
4 FORCE MAIN SIZE	
5 TOP OF TOP SLAB (WET WELL)	
6 REGRADE	
7 TOP OF BOTTOM SLAB (WET WELL)	
8 TOP OF TOP SLAB (VALVE VAULT)	
9 TOP OF BOTTOM SLAB (VALVE VAULT)	
10 CL. DISCHARGE PIPE ELEVATION	
11 PUMP COMMON STOP ELEVATION	
12 START LEAD PUMP ELEVATION	
13 START LAG PUMP ELEVATION	
14 PUMP ALARM ELEVATION	
15 GRAVITY SEWER SIZE	
16 INVERT ELEVATION-GRAVITY SEWER	
17 WET WELL DEPTH	
18 VALVE VAULT DEPTH	
19 PUMP MOTOR H.P., PHASE	
20 WET WELL TOP SLAB THICKNESS	
21 WET WELL BOTTOM SLAB THICKNESS	
22 STATION TYPE	



NOTE:
ALL INFLUENT LINES MUST CONNECT
INTO A MANHOLE BEFORE THE WETWELL

SEE DWG. NO. S10A
FOR VALVE VAULT
DETAILS

DATE	REVISION
2/07	



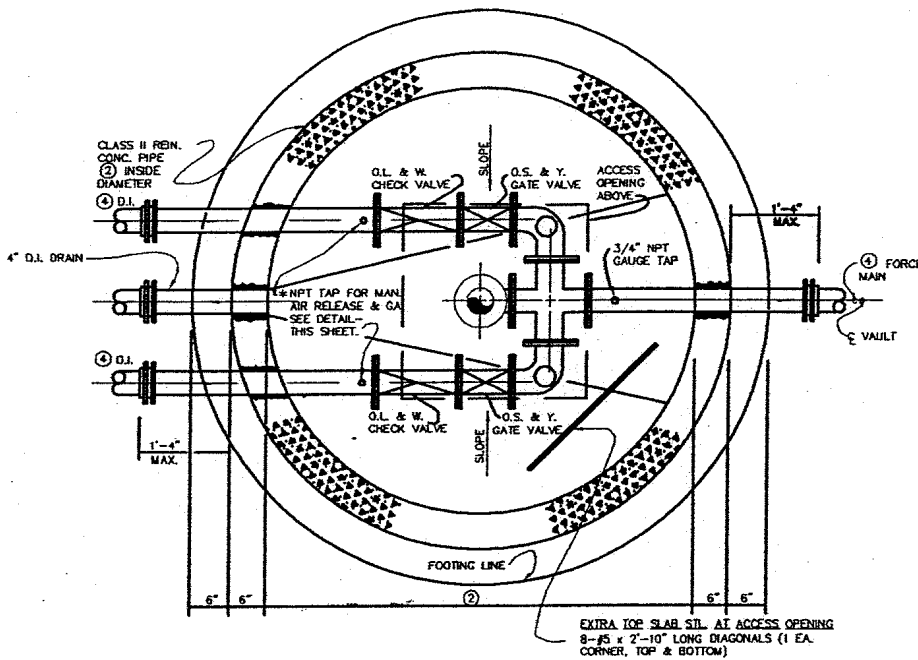
RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY NTS	
SANITARY SEWER SANITARY SEWER PUMPING STATION WET WELL	
JUNE, 1996	DWG. NO. S10

DIAPHRAGM SEAL SPECS

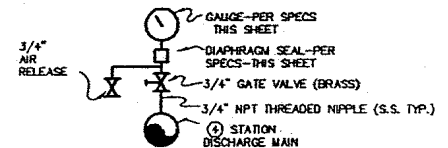
Liquid Filled Diaphragm Seals Shall Be Installed On All Gauges. Diaphragm Seals Shall Be Of The Continuous Duty Type, 3 Piece Construction With 1/4" Flushing Connection 316 Stainless Steel Lower Housing And Diaphragm Materials, 1/4" Gauge Connection And 1/2" Lower Connection. Viton Diaphragms Are Required On Low Range Pressure Applications (Less Than 15 psig.) Housing Bolts Shall Also Be Stainless Steel. Acceptable Models Are Marsh 42-01, Helicoid 100-H, Or Equal. Diaphragm Seals Shall Be "permanently" Attached To Gauges By Installation Of A Lead Sealed Wire Connecting The Two. This Is To Prevent Accidental Loss Of Fill Fluid. Fill Fluid Shall Be Factory Installed Silicone.

GAUGE SPECIFICATIONS

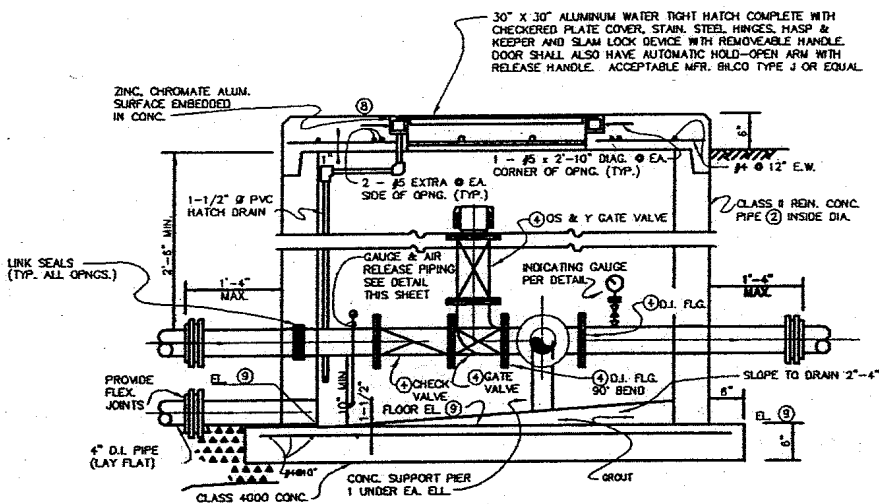
Gauge Shall Have Phosphor Bronze Bourdon Tubes, White Laminated Phenol Dials. Gauges Shall Be 4-1/2" And Have Micrometer Adjustment Of Pointers And Black Phenol, Black Cast Iron, Brass Or Aluminum Case And Ring, Rotary Gear Design, Corrosion Resistant, Std. Movement, Blowout Protection, And Bronze Sockets W/ Wrench Flats. Accuracy Shall Be Within 1/2 Of 1% Of The Scale Range. They Shall Be Manufactured By HELICOID GAUGE DIVISION, "410"; JAMES P. MARSH CORP. "MASTERGAGE"; ASHCROFT; U.S. GAUGES; Or Equal. All Gauges Shall Be Precalibrated (0-60 psi/140 ft).



LOWER PLAN OF VALVE VAULT
N.T.S.




DETAIL
INDICATING GAUGE
N.T.S.



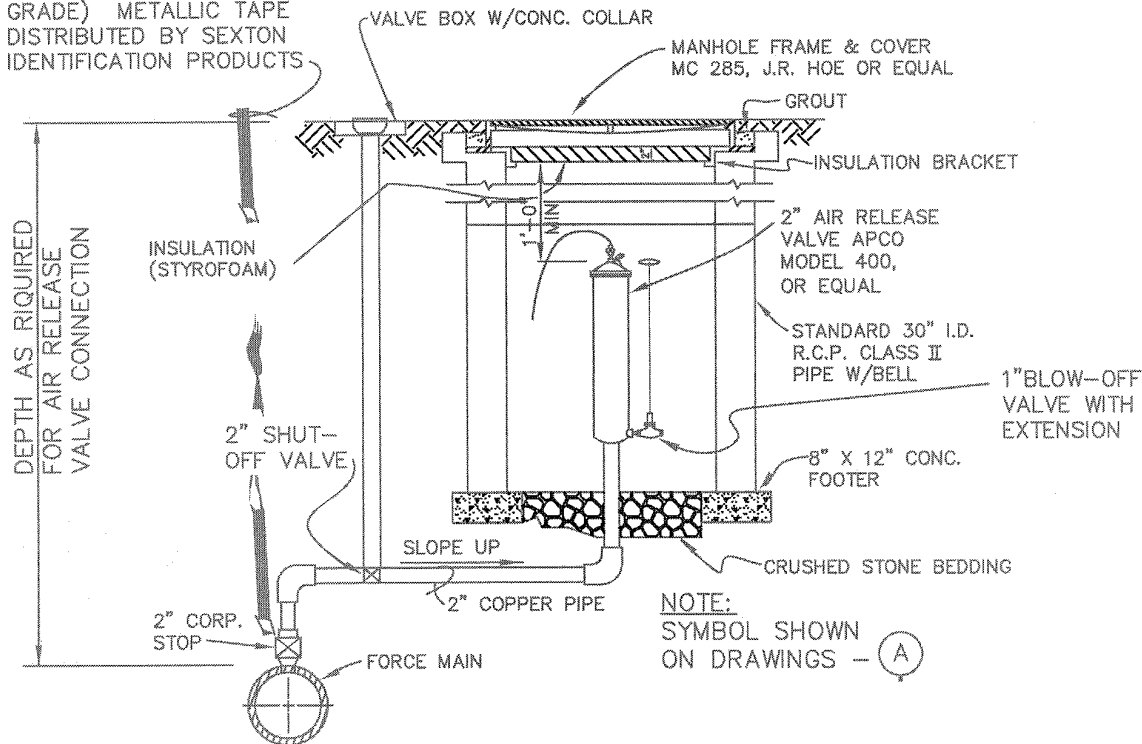
SECTION THRU VALVE VAULT
N.T.S.

AIR RELEASE PIPING &
INDICATING GAUGE
N.T.S.

DATE	REVISION	RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY N.T.S.	
2/02			
 RICHMOND UTILITIES		SANITARY SEWER SANITARY SEWER PUMPING STATION VALVE VAULT	
		JUNE, 1996	DWG. NO. S10A

SEE DWG NO. S10
FOR PUMP STATION
DATA

MARK ALL TAP CORP. STOPS
BY TIEING METALLIC TAPE TO
CORP. STOP AND RUN TO
TOP OF BACKFILL (FINISH
GRADE) METALLIC TAPE
DISTRIBUTED BY SEXTON
IDENTIFICATION PRODUCTS



DETAIL — AUTOMATIC AIR RELEASE VALVE ASSEMBLY FOR SEWAGE FORCE MAIN

NOT TO SCALE

DATE	REVISION
2/02	



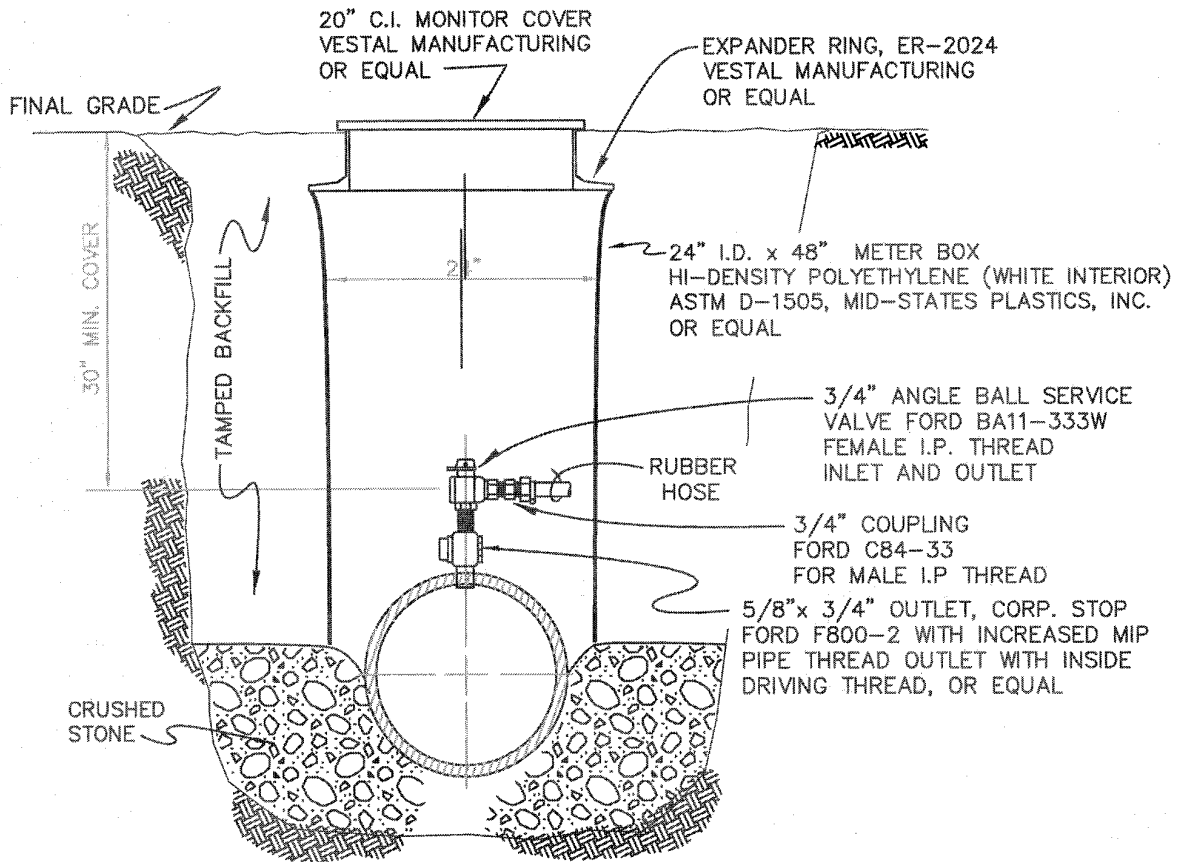
RICHMOND
UTILITIES

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
AUTOMATIC AIR RELEASE

JUNE, 1996

DWG. NO. S11



DETAIL MANUAL AIR RELEASE VALVE ASSEMBLY

N.T.S.

DATE	REVISION
2/02	

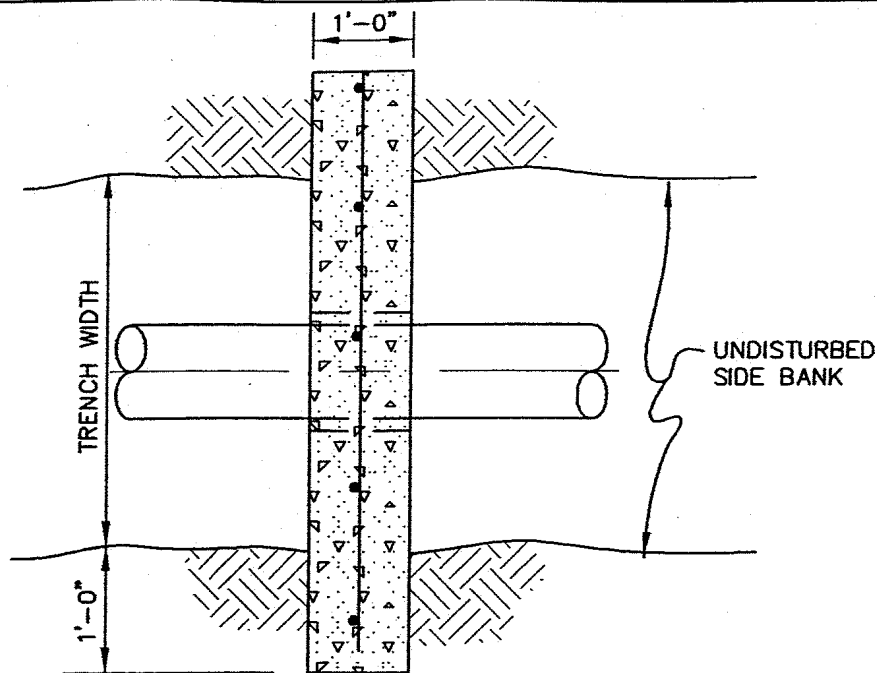
RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY



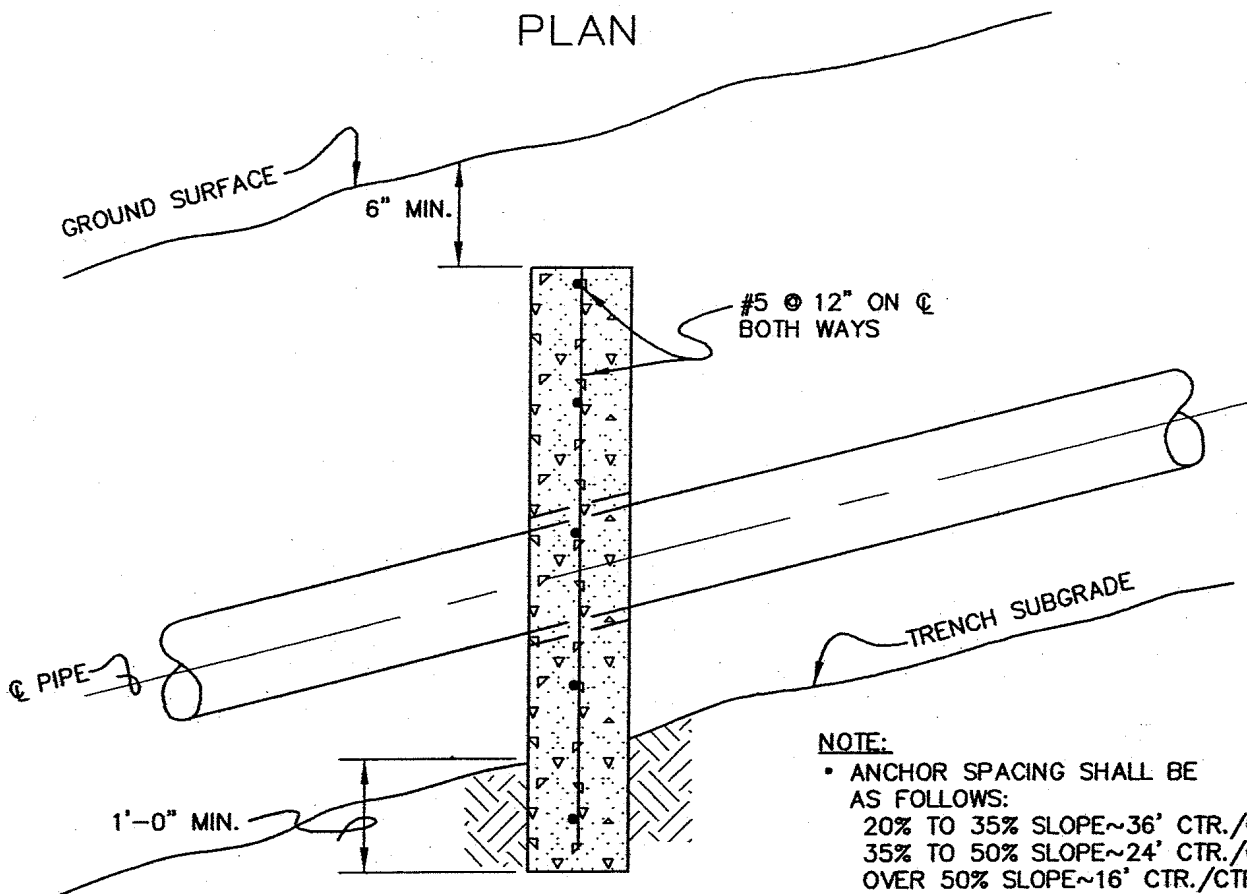
SANITARY SEWER
MANUAL AIR RELEASE

JUNE, 1996

DWG. NO. S12



PLAN



ELEVATION

PIPE ANCHOR (CONCRETE)

N.T.S.

NOTE:

- ANCHOR SPACING SHALL BE AS FOLLOWS:
20% TO 35% SLOPE~36' CTR./CTR.
35% TO 50% SLOPE~24' CTR./CTR.
OVER 50% SLOPE~16' CTR./CTR.
- SEE PROFILES FOR LOCATIONS OF CONCRETE PIPE ANCHORS.

DATE	REVISION



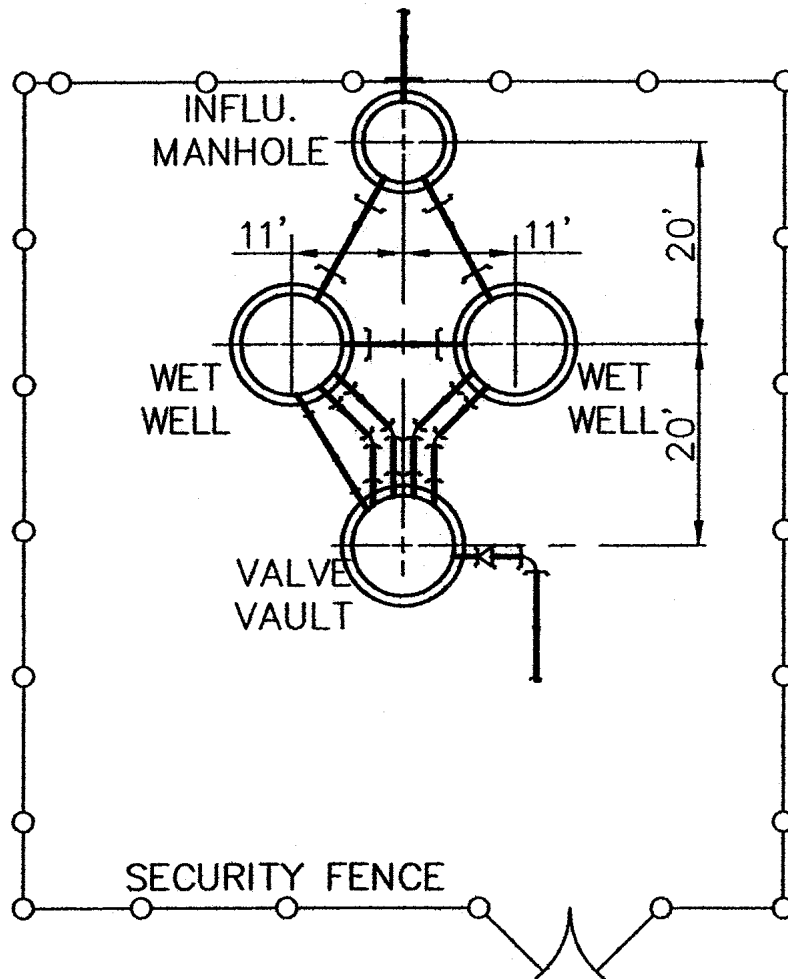
**RICHMOND
UTILITIES**

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

SANITARY SEWER
PIPE ANCHOR (CONCRETE)

JUNE, 1996

DWG. NO. S13



DATE	REVISION

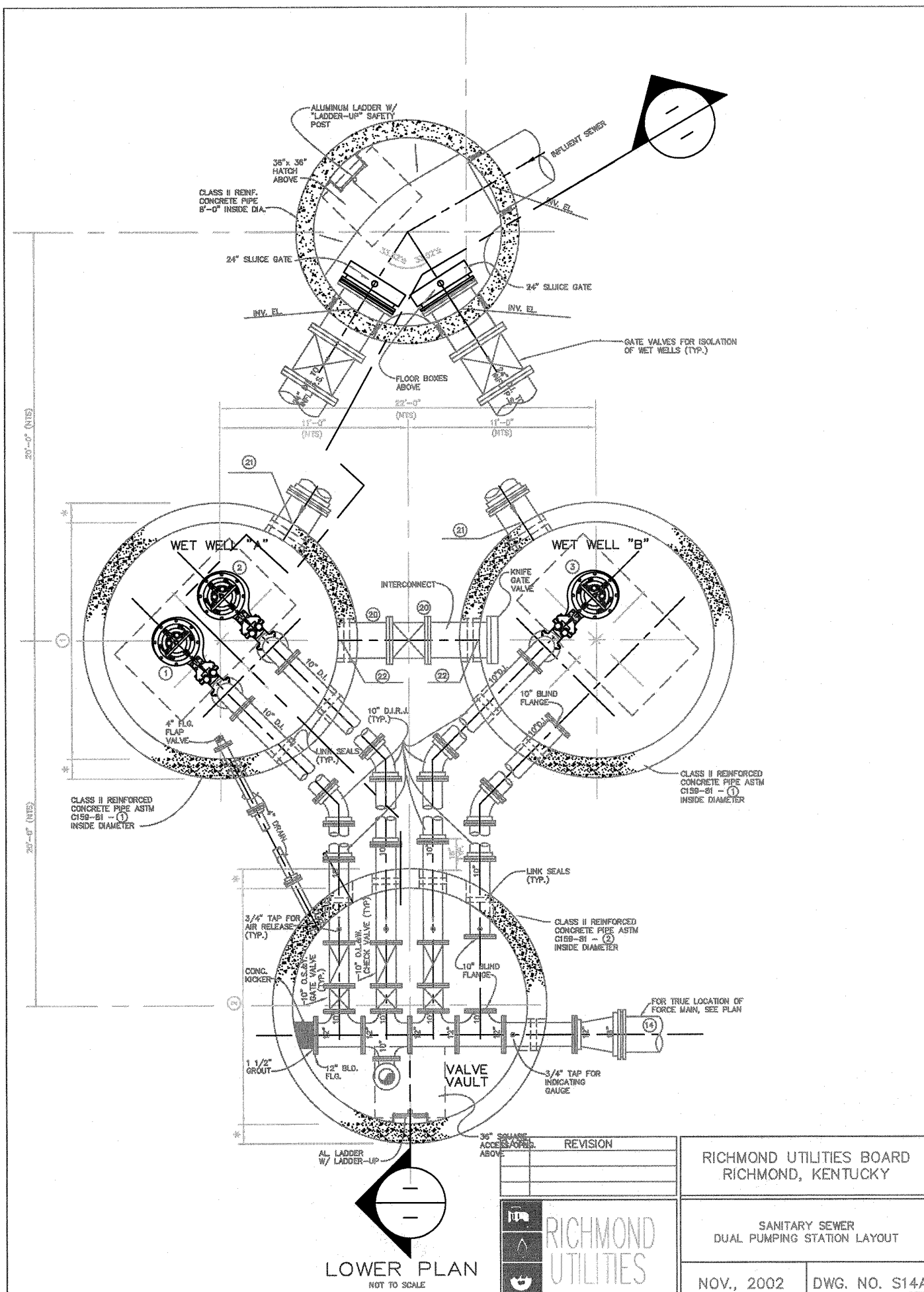
RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

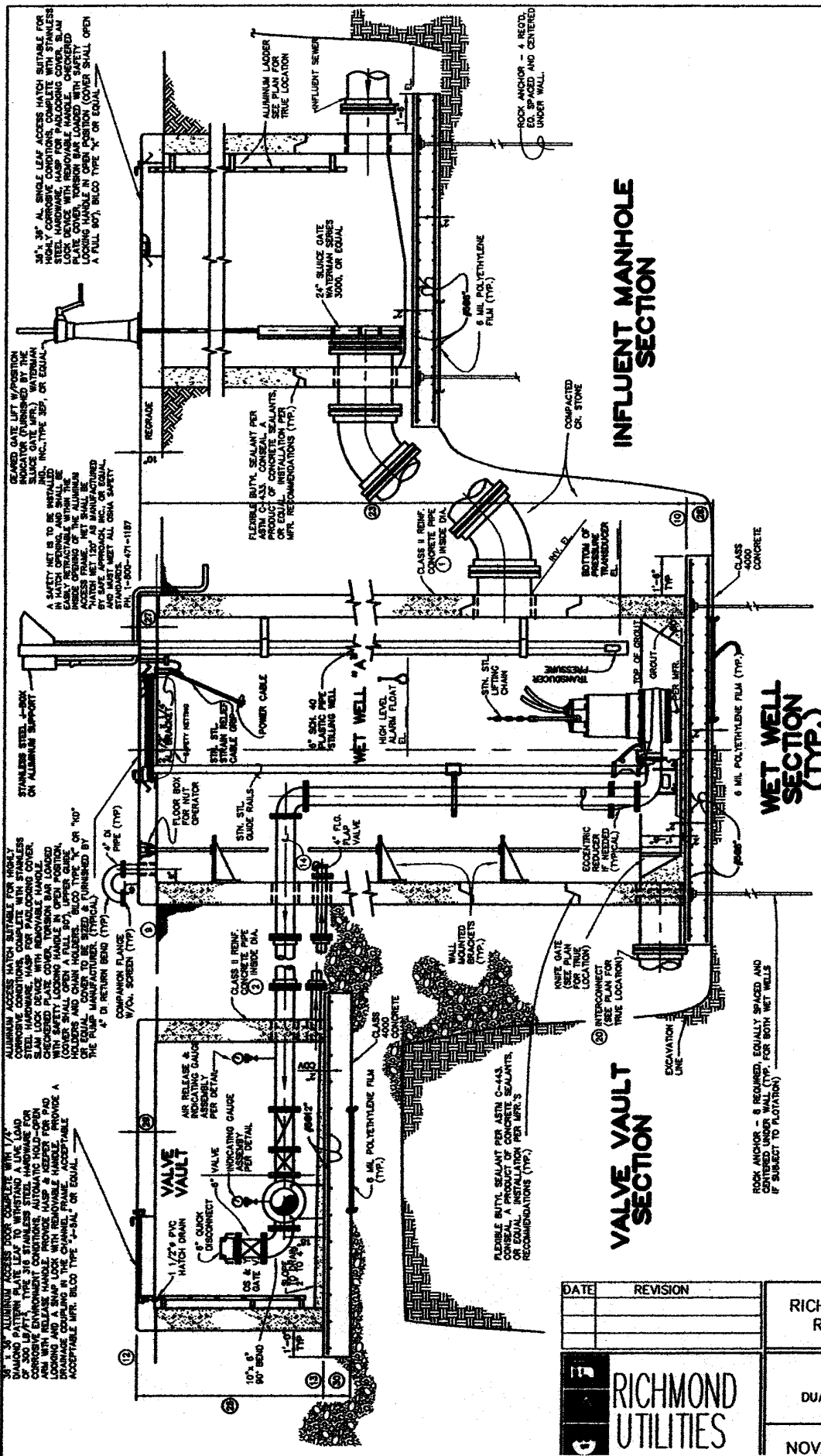


SANITARY SEWER
DUAL PUMPING STATION SITE PLAN

NOV, 2002

DWG. NO. S14





IF THE CURVATURE OF THE WALL WHERE A LINK SEAL IS PROPOSED TO BE INSTALLED IS TOO GREAT TO ALLOW INSTALLATION OF THE LINK SEAL, WITHIN MANUFACTURER'S RECOMMENDATIONS, A WEAPRENE BRIDGE SHALL BE USED ON THE CURVATURE OF THE STRUCTURE WITH A GROUT RING AND NON-SHOWN GROUT USED ON THE INTERIOR.

- NOTES:**
- ACCESS HATCH FOR PUMPS (FURNISHED BY PUMP MFR.) SHALL BE SET SUCH AS TO ALLOW GROUT RAILS FROM PUMP TO BE USED FOR CORRECT OPERATION.
 - SEE MFR'S INSTALLATION DRAWINGS FOR THE DIMENSIONS OFF CENTERLINE FOR PUMPS AND ACCESS HATCH.
 - WALL THICKNESS * PER PRECAST MANUFACTURER.
 - PIPING VALVES, FITTINGS, PUMPS, MOTORS, ETC. INSIDE STATION AND VALVE VAULT, EXCEPT GUIDE RAILS SHALL HAVE 2 FIELD COATS OF KOP-COAT 44-GARD (4-8 DRY MILS) DRYING TIME BETWEEN COATS AND APPLICATION SHALL BE PER

DATE		REVISION	
<div style="display: flex; align-items: center;"> <div> <p>RICHMOND UTILITIES</p> </div> </div>			
<p>RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY</p>		<p>SANITARY SEWER DUAL PUMPING STATION SECTION</p>	
NOV. 2002		DWG. NO. S14B	

DUAL PUMPING STATION DATA

ITEM	INFLUENT PUMP STATION	
① WET WELL DIAMETER "A" & "B"	10 FT	
② VALVE VAULT DIAMETER	10 FT	
③ PUMP CAPACITY #1	___ GPM	
④ PUMP CAPACITY #2	___ GPM	
⑤ PUMP CAPACITY #3	___ GPM	
⑥ FORCE MAIN SIZE	___ INCH	
⑦ TOP OF TOP SLAB (WET WELL) "A" & "B"	ELEV.	
⑨ REGRADE	ELEV.	
⑩ TOP OF BOTTOM SLAB (WET WELL) "A"	ELEV.	
⑪ TOP OF BOTTOM SLAB (WET WELL) "B"	ELEV.	
⑫ TOP OF TOP SLAB (VALVE VAULT)	ELEV.	
⑬ TOP OF BOTTOM SLAB (VALVE VAULT)	ELEV.	
⑭ CL. DISCHARGE PIPE ELEVATION	ELEV.	
⑮ PUMP COMMON STOP ELEVATION	ELEV.	
⑯ START LEAD PUMP ELEVATION (VFD)	ELEV.	
⑰ START 1st LAG PUMP ELAVATION	ELEV.	
⑱ START 2nd LAG PUMP ELEVATION	ELEV.	
⑲ GRAVITY SEWER SIZE	___ INCH	
⑳ INTERCONNECT SEWER PIPE	___ INCH	
㉑ INVERT ELEVATION-GRAVITY SEWER	ELEV.	
㉒ INVERT ELEVATION INTERCONNECT	ELEV.	
㉓ WET WELL DEPTH "A"	___ FT.	
㉔ WET WELL DEPTH "B"	___ FT.	
㉕ VALVE VAULT DEPTH	___ FT	
㉖ PUMP MOTOR H.P., PHASE	___ HP, ___ PHASE	
㉗ WET WELL TOP SLAB THICKNESS	10 INCH	
㉘ WET WELL BOTTOM SLAB THICKNESS	12 INCH	
㉙ VALVE VAULT TOP SLAB THICKNESS	10 INCH	
㉚ VALVE VAULT BOTTOM SLAB THICKNESS	12 INCH	
㉛ PUMP ALARM ELEVATION	ELEV.	

DATE	REVISION

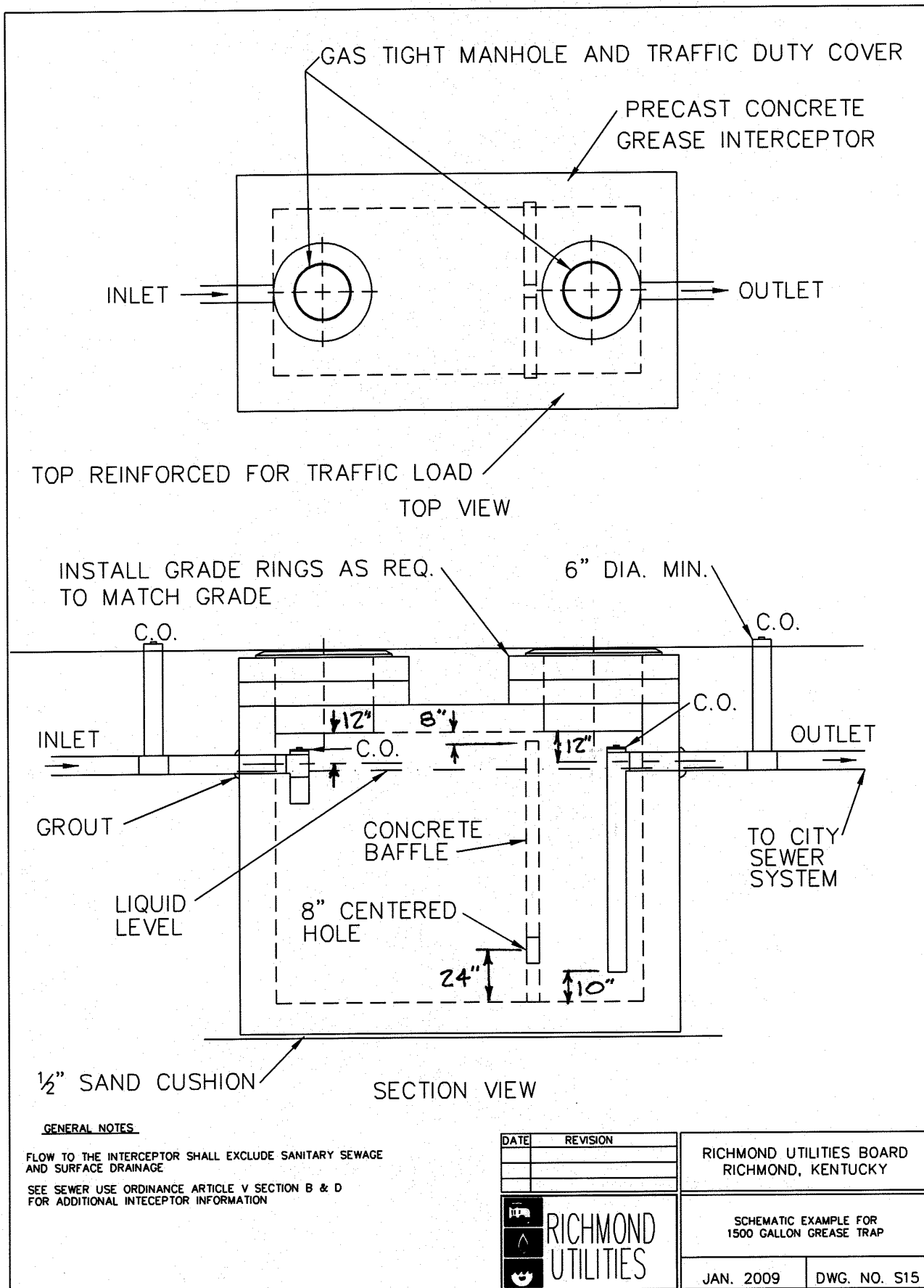
RICHMOND
UTILITIES

**RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY**

**SANITARY SEWER
DUAL PUMPING STATION PUMP DATA**

NOV, 2002

DWG. NO. S14C



GENERAL NOTES FOR WATER MAINS:

*MINIMUM COVER OVER WATER PIPE TO BE 36" (42" in KYDOH R/W).
*MAXIMUM COVER OVER WATER PIPE TO BE 48".
*MINIMUM COVER OVER VALVE NUT TO BE 12". MAXIMUM COVER OVER VALVE NUTS TO BE 48". WHERE VALVES ARE BURIED DEEPER THAN 36" A 3/4 "OR 1" SOLID STEEL VALVE OPERATING NUT EXTENSION SHALL BE REQUIRED AND SECURED TO VALVE OPERATING NUT

*CONTACTOR SHALL HAVE RICHMOND UTILITIES PERSONNEL ON SITE WHEN DIGGING OVER OR AROUND UTILITY LINES AND PUMP STATIONS. CONTRACTOR SHALL SCHEDULE EXCAVATION WITH RICHMOND UTILITIES DEPARTMENT SUPERVISORS, CALL 859-623-2323

*EXACT SIZES, DEPTHS, MATERIALS AND LOCATIONS OF EXISTING UTILITIES ARE UNKNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF THESE FAR ENOUGH IN ADVANCE OF THE PIPELINE OPERATION SO AS NOT TO CAUSE ANY UNNECESSARY DELAYS. RELOCATION OF EXISTING UTILITIES FOUND TO BE IN DIRECT CONFLICT WITH THIS CONTRACT SHALL BE ACCOMPLISHED BY THE OWNER OF THE UTILITIES INVOLVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES HAVING PROPERTY IN THE AREA PRIOR TO EXCAVATION. CONTINUOUS COMMUNICATIONS ON A DAY TO DAY BASIS WILL BE REQUIRED. THE UTILITY COMPANIES ARE AS FOLLOWS:

ELECTRIC COMPANIES CONTACT-
BLUEGRASS ELECTRIC CO-OP CORP.,
KENTUCKY UTILITIES COMPANY, OR
CLARK ENERGY.

TELEPHONE CONTACT-
SOUTH CENTRAL BELL

GAS CONTACT-
RICHMOND UTILITIES BOARD, COLUMBIA
GAS OR DELTA GAS.

WATER CONTACT-
RICHMOND UTILITIES BOARD

KENTUCKY STATUTES (KRS 367.4901 THRU 367.4917) REQUIRE THAT ALL EXCAVATORS PLANNING EXCAVATION OR DEMOLITION WORK SHALL CALL ALL UTILITY COMPANIES IN THE AREA AND AN UNDERGROUND PROTECTION SERVICE SUCH AS "BUD" (1-800-752-6007) AT LEAST TWO (2) WORKING DAYS BEFORE COMMENCING WORK TO NOTIFY UTILITY COMPANIES IN THE AREA WITH UNDERGROUND FACILITIES OF THE PLANNED EXCAVATION OR DEMOLITION ACTIVITIES.

*CONCRETE BLOCKING OF FITTINGS REQUIRED.

*CONCRETE LINE MARKERS TO BE LOCATED AT PROPERTY AND OR FENCE LINES AS DIRECTED BY RICHMOND UTILITIES.

*WHEREVER POSSIBLE, FIRE HYDRANTS SHALL BE LOCATED FOR MINIMUM DEPTH OF BURY. EXTENSIONS REQUIRED FOR DEEPER INSTALLATIONS.

*ALL PVC PIPE TO BE ASTM SDR 21, CL. 200. ALL DUCTILE IRON PIPE 12" AND LARGER SHALL BE CLASS 350 UNLESS OTHERWISE NOTED.

*DISTANCES SHOWN ALONG PIPELINE ARE HORIZONTAL DISTANCES BETWEEN HORIZONTAL ANGLES OF 90° AND/OR MATCH LINES EXCEPT WHERE PROFILES ARE SHOWN.

*ALL TIE-IN LOCATIONS SHALL BE UNCOVERED PRIOR TO CONSTRUCTION TO MAINTAIN PROPER ALIGNMENT AND ELEVATION OF NEW CONNECTIONS.

*CONTRACTOR SHALL INVENTORY REQUIRED MATERIALS, TRENCH DEWATERING EQUIPMENT, AND ASSEMBLE IF NECESSARY ALL REQUIRED FITTINGS PRIOR TO CUT-INS SO SO TO INSURE MINIMUM DOWN TIME FOR CONNECTION AND WITNESS BY RICHMOND UTILITIES.

*SURFACE DRAINAGE SHALL BE MAINTAINED ON A DAY-BY-DAY BASIS.

*THE CONTRACTOR WILL BE REQUIRED TO DISPOSE OF ALL EXCESS EXCAVATED MATERIAL FROM WATER MAIN AND SERVICE LINE CONSTRUCTION.

*EXACT SIZES, DEPTHS, MATERIALS AND LOCATIONS OF SEWER SERVICES AND BRANCH SEWERS ARE UNKNOWN. THE CONTRACTOR SHALL ACCURATELY DETERMINE THESE AHEAD OF HIS TRENCHING OPERATION, AND HAVE THE NECESSARY MATERIALS TO MAKE MAKE THE TIE-INS AS THE PIPE LAYING PROGRESSES.

*CROSSINGS OF ALL STREETS, DRIVEWAYS AND PAVED PARKING AREAS SHALL BE BACKFILLED PER SPECS TO THE TOP OF THE TRENCH SURFACE.

*ALL ROCKS, CLODS, EARTH AND OTHER LARGE MATERIAL SHALL BE REMOVED FROM THE TRENCH BOTTOM PRIOR TO PLACEMENT OF THE BEDDING.

*ALL CULVERTS AND CROSS DRAINS AT STREETS, DRIVES AND ENTRANCES NEAR THE WORK AREA SHALL BE PROTECTED. IF IN THE PATH OF THE SEWER DITCH, THEY SHALL BE REMOVED AND RELAYED AS PART OF THE TRENCHING AND BACKFILL OPERATION.

*PLACE #12 THW COPPER WIRE (SEE STANDARD DETAIL FOR MAIN INSTALLATION).

DATE	REVISION
2/07	



RICHMOND
UTILITIES

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
GENERAL CONSTRUCTION NOTES

JUNE, 1996

DWG. NO. W1

MARK ALL TAP CORP. STOPS
BY TIEING METALLIC TAPE TO
CORP. STOP AND RUN TO
TOP OF BACKFILL (FINISH
GRADE) METALLIC TAPE
DISTRIBUTED BY SEXTON
IDENTIFICATION PRODUCTS

C.I. TYPE C SINGLE LID
METER BOX COVER
FORD C32 OR EQUAL

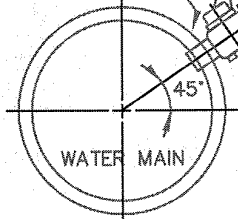
PLASTIC METER BOX 18"Dx24"L
MB-5, A PRODUCT OF RHINO WATER METER
BOXES, SOUTHEASTERN DISTRIBUTORS, INC.

METER ASSEMBLY LOCATED
18 TO 20 INCHES BELOW METER
JAR LID TO FACILITATE ACCESS

TWO EACH—FORD AV91-313W
3/4" ANGLE YOKE KEY VALVE,
5/8" METER YOKE NOSE BY
3/4" FEMALE IRON PIPE THREAD

1" FORD CORP STOP
F 1000-4 WITH
COMPRESSION FITTING
AND LOCKING SCREW
1" MALE TAPER JOINT
BY 1" C.T.S. PACK JOINT

DO NOT TAP FOR
SERVICE LINES ON
TOP OF WATER MAIN



FINAL GRADE

24" MINIMUM COVER

18" Ø

24"

FORD LOCK NUTS
YLN-1

FORD L94-13 YOKE
ELL, 5/8" METER
YOKE NOSE BY 3/4"
CTS PACK JOINT
(TYP.)

5/8" METER YOKE
FORD Y-501 (TYP.)

STN. STL.
INSERT
FORD NO. 52

ANGLE BRANCH PIECE 6 1/2" LONG,
FORD UA48-43, ONE 1" CTS PACK
JOINT BY TWO 3/4" MALE IRON PIPE
THREAD

TYPICAL NEW SERVICE AND DOUBLE 5/8" METER ASSEMBLY

NOT TO SCALE

FOR PVC PIPE
USE FORD BRASS
SADDLE STYLE S-70
OR S-90 FOR
PVC C-900

DATE	REVISION
2/07	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
WATER SERVICE &
DOUBLE METER ASSEMBLY

JUNE, 1996

DWG. NO. W2

MARK ALL TAP CORP. STOPS
BY TIEING METALLIC TAPE TO
CORP. STOP AND RUN TO
TOP OF BACKFILL (FINISH
GRADE) METALLIC TAPE
DISTRIBUTED BY SEXTON
IDENTIFICATION PRODUCTS

C.I. TYPE C SINGLE LID
METER BOX COVER
FORD C32 OR EQUAL

PLASTIC METER BOX 18"Dx24"L
MB-5, A PRODUCT OF RHINO WATER METER
BOXES, SOUTHEASTERN DISTRIBUTORS, INC
OR MIDSTATES METER BOX MS1824B

FINAL GRADE

METER ASSEMBLY LOCATED
18 TO 20 INCHES BELOW METER
JAR LID TO FACILITATE ACCESS

24" MINIMUM COVER

ANGLE YOKE
KEY VALVE
FORD AV91-444W

1" P.J./CTS
FORD YOKE ELL
L91-44

1"x3" BRASS NIPPLE
1" BRASS 90

1" FORD CORP STOP
F 1000-4 WITH
COMPRESSION FITTING
AND LOCKING SCREW
1" MALE TAPER JOINT
BY 1" C.T.S. PACK JOINT

DO NOT TAP FOR
SERVICE LINES ON
TOP OF WATER MAIN

1" FORD
Y-504

PIPE
SLOT

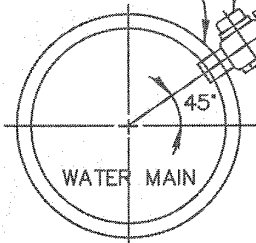
FORD COUPL. 1" CTS x 1"
C84-44G

STN. STL. INSERT
FORD NO. 52

GRADUAL LONG SWEEP AT
PIPE TO AVOID CRIMPING

1" Cu. OR
1" PE. SDR9 CL. 200

STN. STL.
INSERT
FORD NO. 52



FOR PVC PIPE
USE FORD BRASS
SADDLE STYLE S-70
OR S-90 FOR
PVC C-900

TYPICAL NEW 1" METER SETTING

NOT TO SCALE

DATE	REVISION
2/02	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
WATER METER SETTING

JUNE, 1996

DWG. NO. W3

MARK ALL TAP CORP. STOPS
BY TIEING METALLIC TAPE TO
CORP. STOP AND RUN TO
TOP OF BACKFILL (FINISH
GRADE) METALLIC TAPE
DISTRIBUTED BY SEXTON
IDENTIFICATION PRODUCTS

C.I. TYPE C SINGLE LID
METER BOX COVER
FORD C32 OR EQUAL

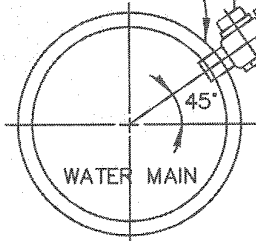
PLASTIC METER BOX 18"Dx24"L
MB-5, A PRODUCT OF RHINO WATER METER
BOXES, SOUTHEASTERN DISTRIBUTORS, INC
OR MIDSTATES METER BOX MS1824B

METER ASSEMBLY LOCATED
18 TO 20 INCHES BELOW METER
JAR LID TO FACILITATE ACCESS

ANGLE YOKE
KEY VALVE
FORD AV91-1313W

3/4" FORD CORP STOP
F 1000-4 WITH
COMPRESSION FITTING
AND LOCKING SCREW
3/4" MALE TAPER JOINT
BY 3/4" C.T.S. PACK JOINT

DO NOT TAP FOR
SERVICE LINES ON
TOP OF WATER MAIN



FINAL GRADE

24" MINIMUM COVER

FORD YOKE ELL
L91-13

FORD LOCK NUTS
YLN-1

3/4"x3" BRASS NIPPLE

3/4" BRASS 90

PIPE
SLOT

5/8" FORD
Y-501

STN. STL. INSERT FORD NO. 52

INSERT
FORD NO. 52

FORD COUPL. 3/4" x 3/4" CTS
C84-34-G

3/4" Cu. OR
3/4" PE. SDR9 CL. 200

GRADUAL LONG SWEEP AT
PIPE TO AVOID CRIMPING

STN. STL.
INSERT
FORD NO. 52

STN. STL.
INSERT
FORD NO. 52

TYPICAL NEW 5/8" METER SETTING

NOT TO SCALE

FOR PVC PIPE
USE FORD BRASS
SADDLE STYLE S-70
OR S-90 FOR
PVC C-900

DATE	REVISION
2/07	

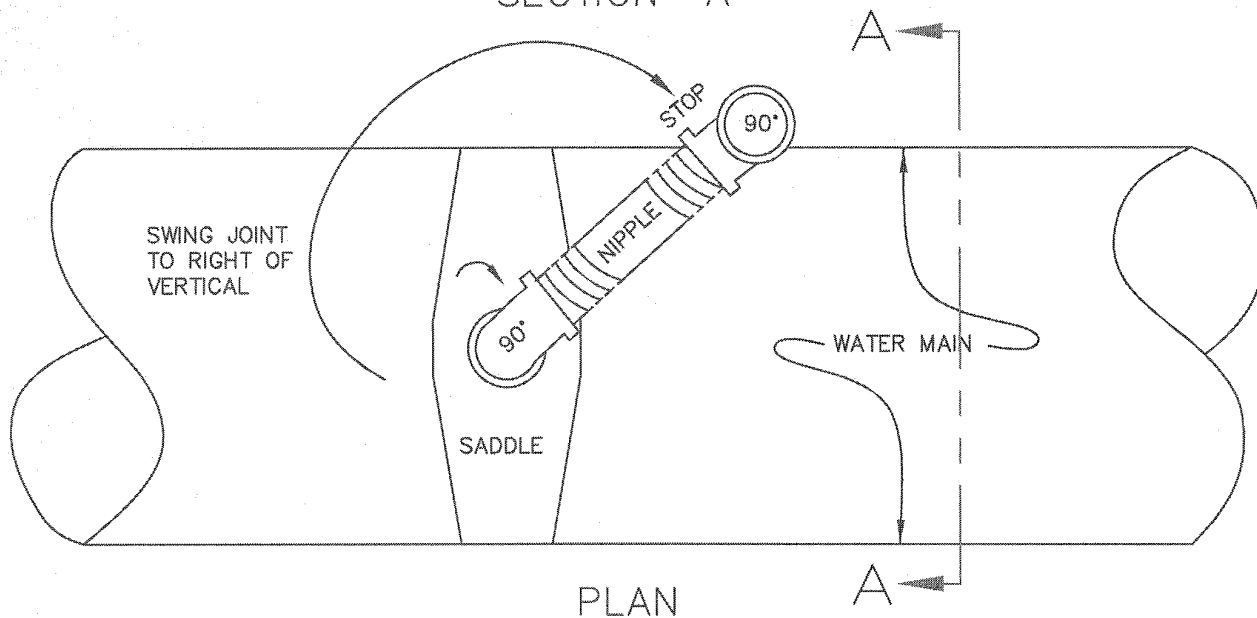
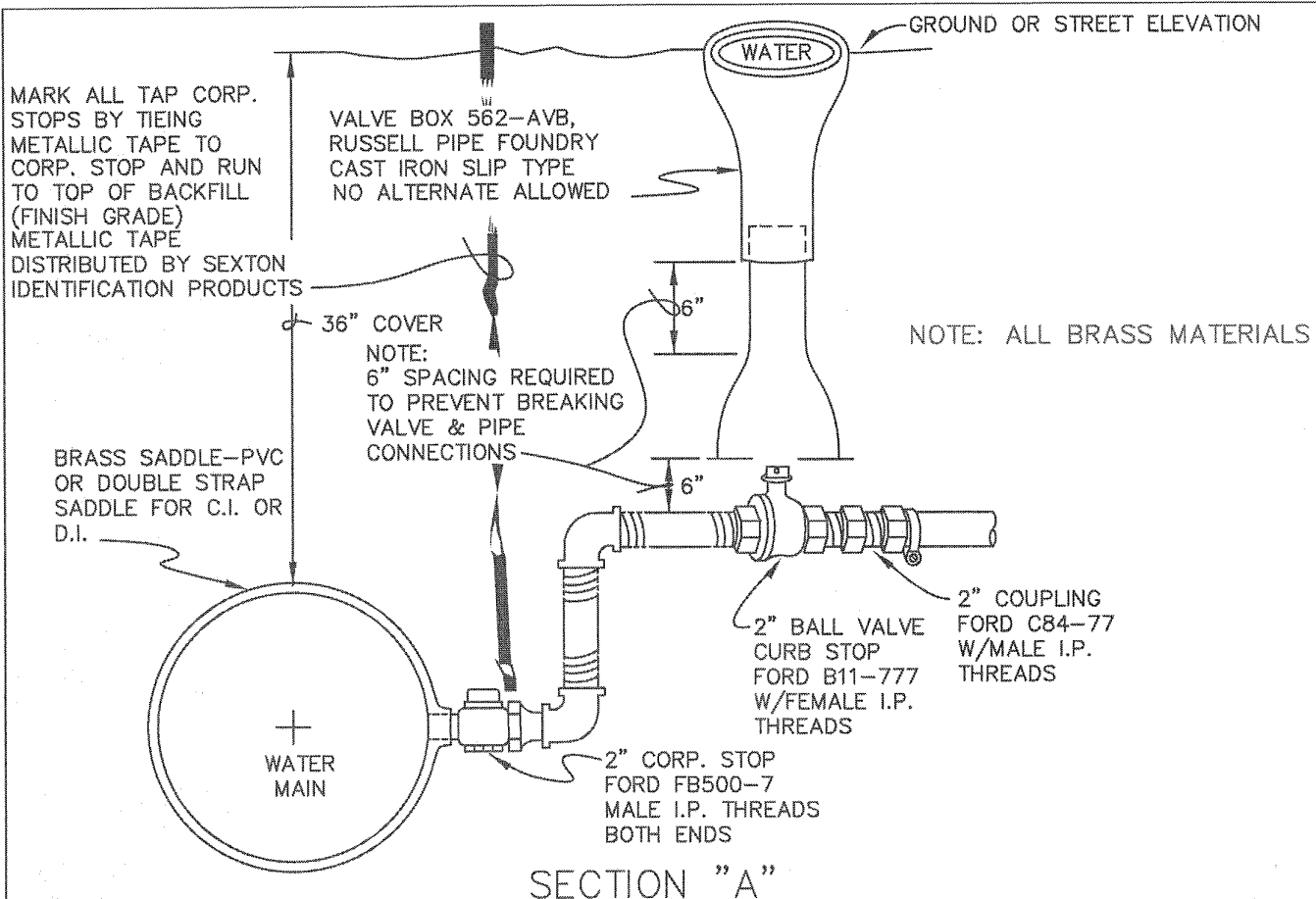


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
WATER METER SETTING

JUNE, 1996

DWG. NO. W3A



2" TAP ILLUSTRATION

NOTE: ALL BRASS MATERIALS

NOTE: CONSULT RICHMOND UTILITIES WATER DEPT. PRIOR TO PURCHASING MATERIALS FOR 2" TAP. RICHMOND UTILITIES MUST INSPECT ALL 2" TAPS, SERVICE LINES AND METER SETS PRIOR TO BACKFILLING.

DATE	REVISION
2/02	

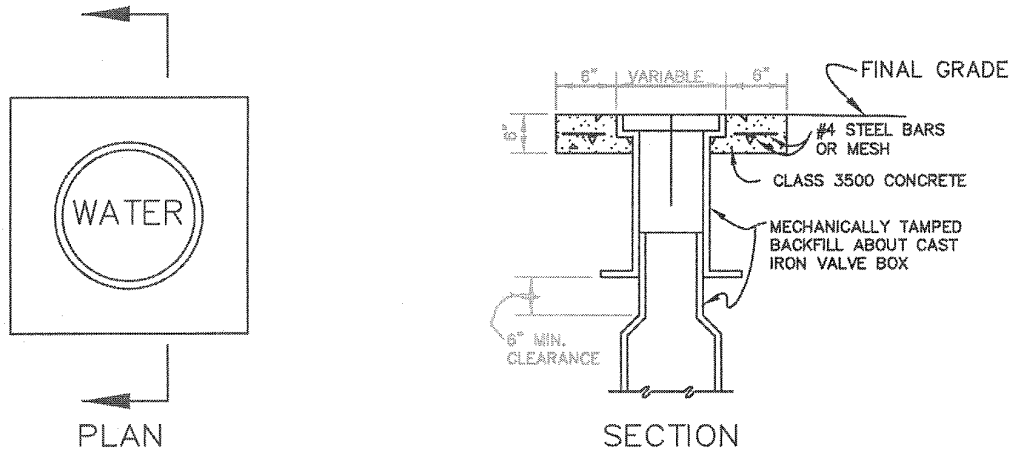


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
2" TAP ILLUSTRATION

JUNE, 1996

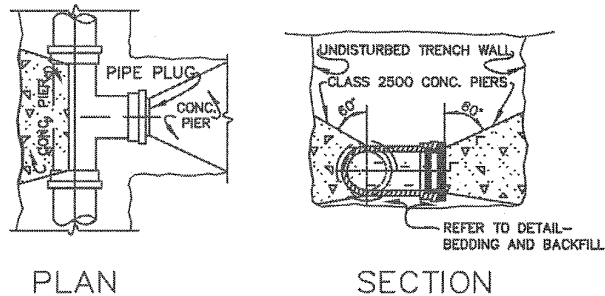
DWG. NO. W4



CONCRETE VALVE BOX COLLAR

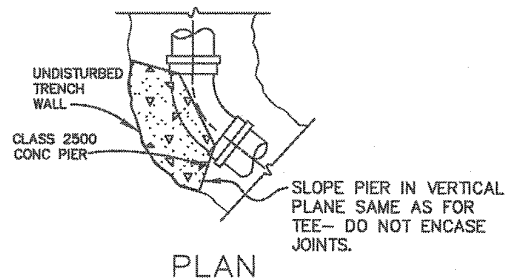
(REQUIRED ON ALL VALVES)
NOT TO SCALE

NOTE:
IF MECHANICAL JOINT PLUG IS USED ON THE BRANCH,
NO BLOCKING WILL BE REQUIRED ON THE PLUG. THE
SIDE OF THE TEE SHALL BE BLOCKED IN ALL CASES.



NOTE:
REFER TO DWG. NO. M10
FOR CONCRETE BACKING
DIMENSIONS

TYPICAL DETAIL OF CONCRETE BACKING AT TEES & PLUGS



TYPICAL DETAIL OF CONCRETE BACKING AT BENDS VERTICAL & HORIZONTAL

NOT TO SCALE

DATE	REVISION
2/02	

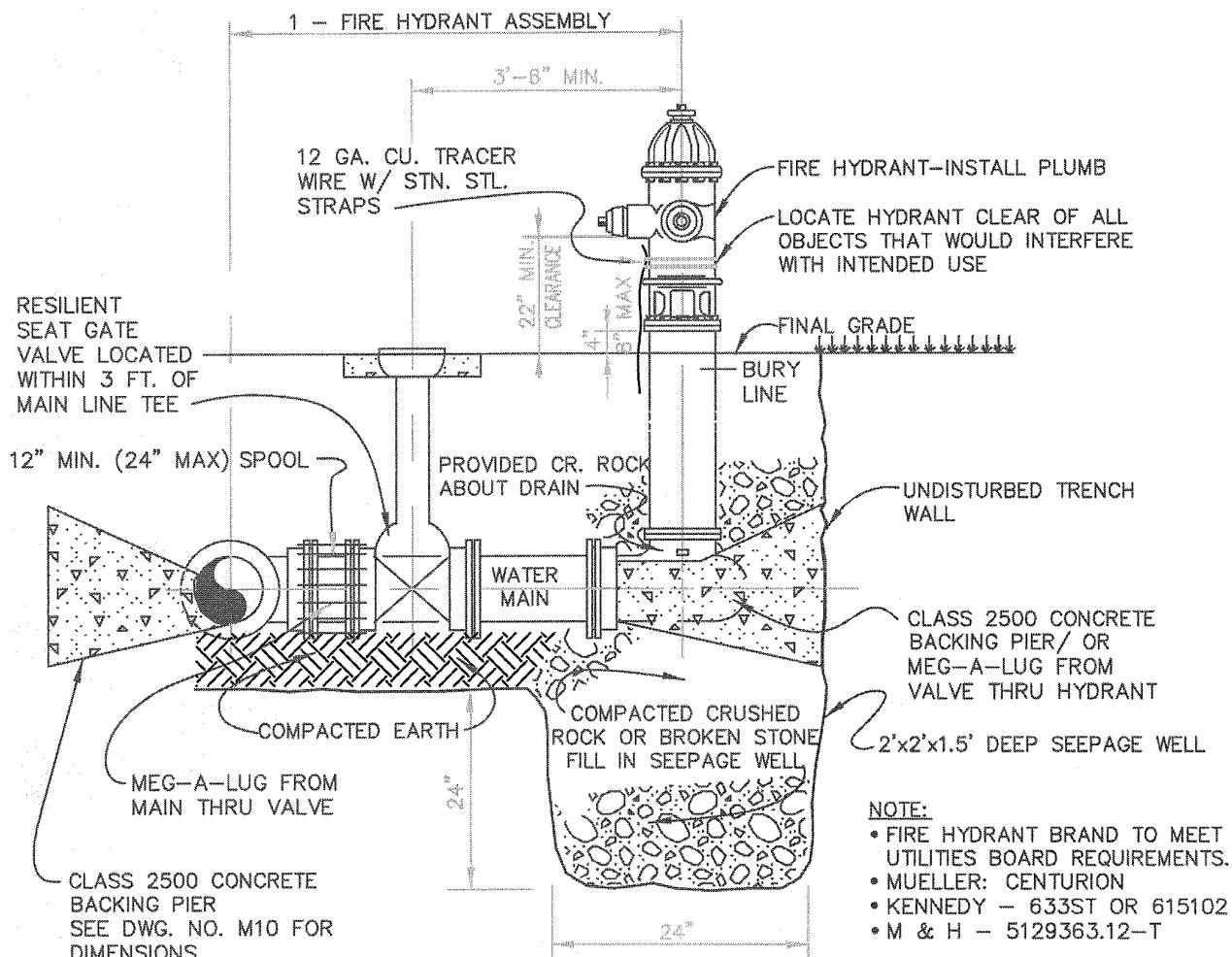


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
CONCRETE BACKING AT
TEES, BENDS & PLUGS
VALVE BOX CONCRETE COLLAR

JUNE, 1996

DWG. NO. W5



SECTION FIRE HYDRANT SETTING

N T S

DATE	REVISION
2/07	

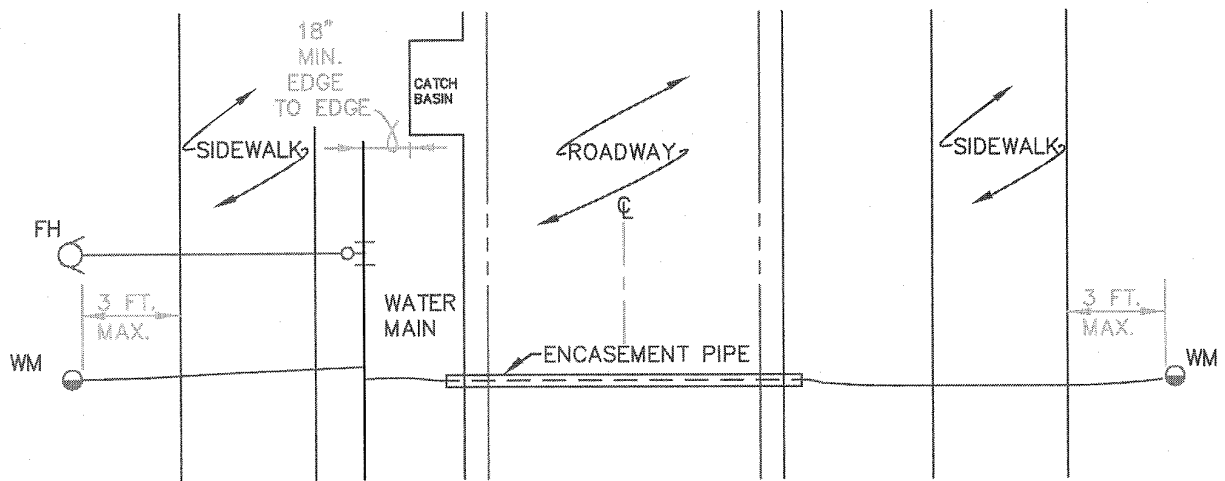
RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY



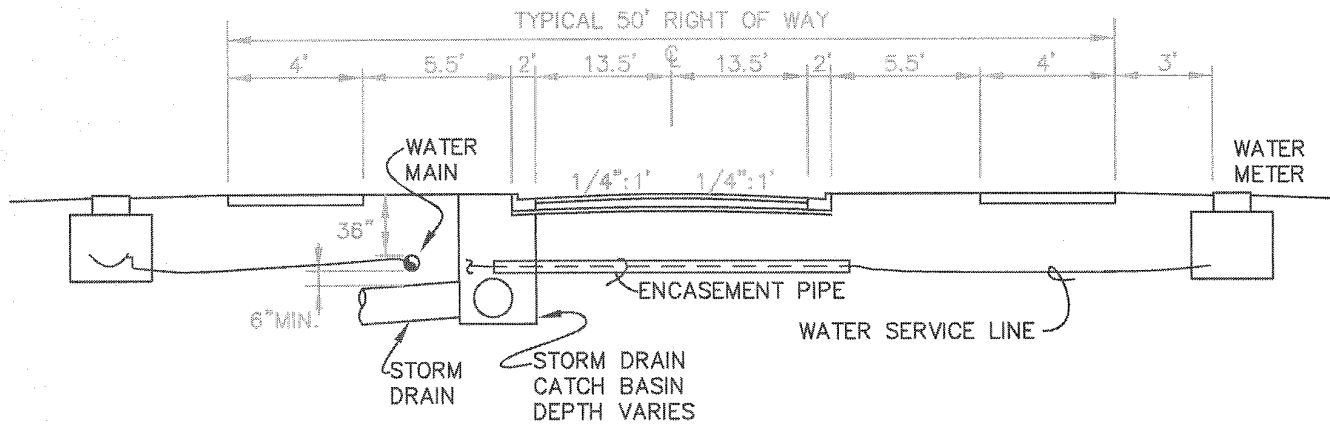
WATER TRANSMISSION MAIN
FIRE HYDRANT SETTING

JUNE, 1996

DWG. NO. W6



PLAN



ELEVATION

DATE	REVISION

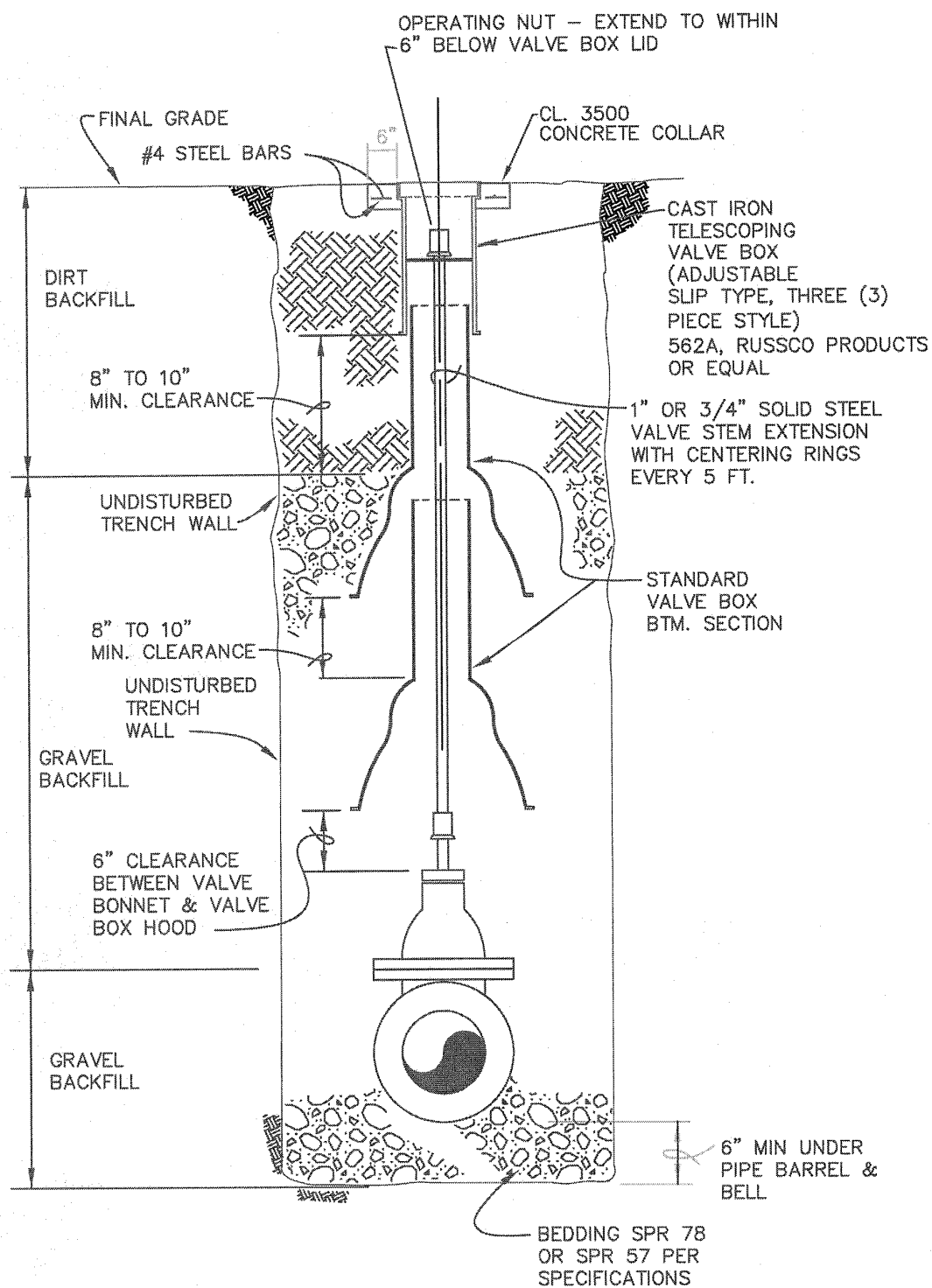


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
WATER LINE, HYDRANT & METER
(ROAD LOCATIONS)

JUNE, 1996

DWG. NO. W7



VALVE STEM EXTENSIONS & VALVE BOX STACKING DETAIL NOT TO SCALE

DATE	REVISION
2/07	

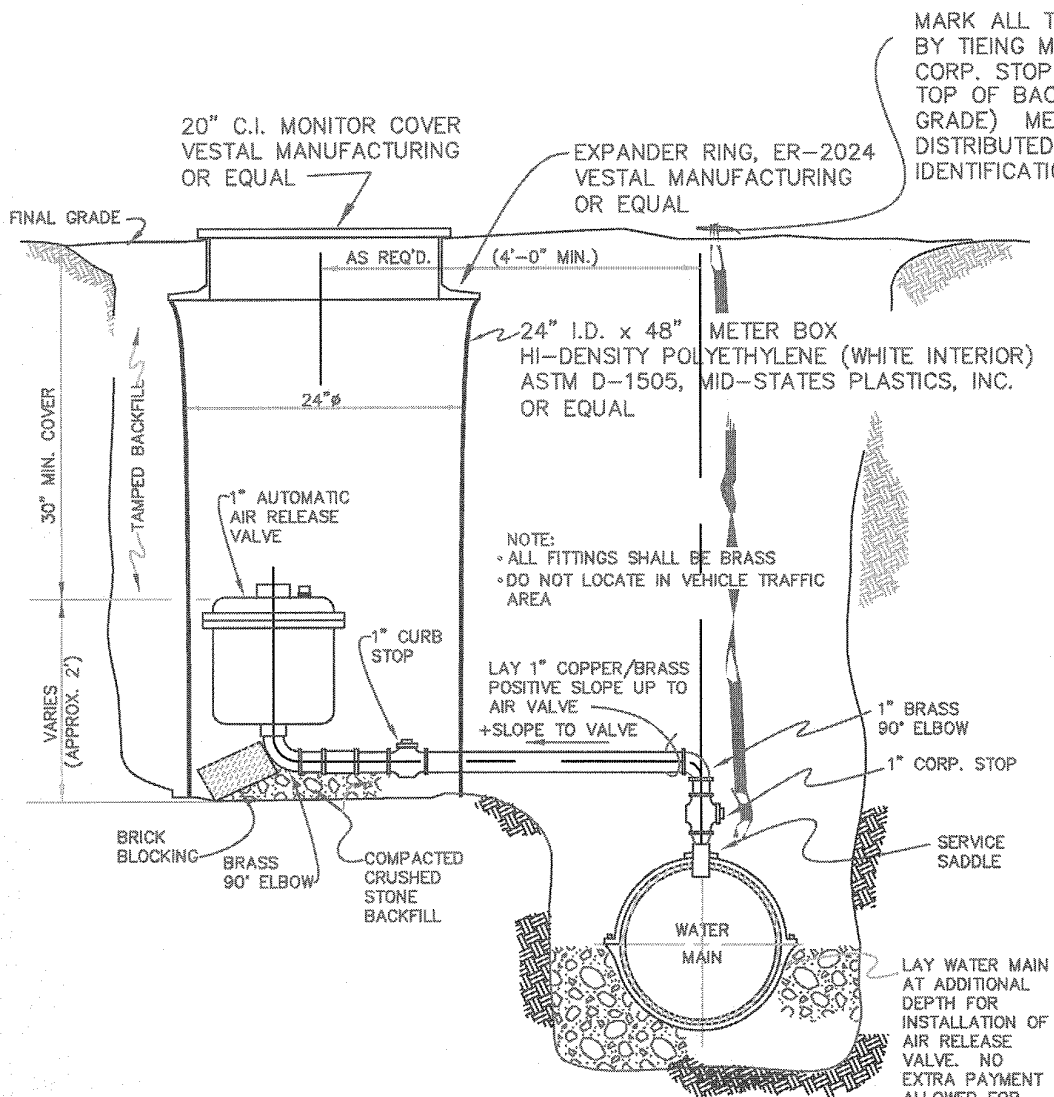


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
VALVE STEM EXTENSIONS &
VALVE BOX STACKING DETAIL

JUNE, 1996

DWG. NO. W8



DETAIL AUTOMATIC AIR RELEASE
VALVE ASSEMBLY
N T S

MARK ALL TAP CORP. STOPS
BY TIEING METALLIC TAPE TO
CORP. STOP AND RUN TO
TOP OF BACKFILL (FINISH
GRADE) METALLIC TAPE
DISTRIBUTED BY SEXTON
IDENTIFICATION PRODUCTS

DATE	REVISION
2/02	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

WATER TRANSMISSION MAIN
AUTOMATIC AIR RELEASE VALVE ASSEMBLY

FEB., 2002

DWG. NO. W9

GENERAL NOTES FOR FORCE MAINS:

*CONTACTOR SHALL HAVE RICHMOND UTILITIES PERSONNEL ON SITE WHEN DIGGING OVER OR AROUND UTILITY LINES AND PUMP STATIONS. CONTRACTOR SHALL SCHEDULE EXCAVATION WITH RICHMOND UTILITIES DEPARTMENT SUPERVISORS, CALL 859-623-2323

*EXACT SIZES, DEPTHS, MATERIALS AND LOCATIONS OF EXISTING UTILITIES ARE UNKNOWN. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION OF THESE FAR ENOUGH IN ADVANCE OF THE PIPELINE OPERATION SO AS NOT TO CAUSE ANY UNNECESSARY DELAYS. RELOCATION OF EXISTING UTILITIES FOUND TO BE IN DIRECT CONFLICT WITH THIS CONTRACT SHALL BE ACCOMPLISHED BY THE OWNER OF THE UTILITIES INVOLVED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES HAVING PROPERTY IN THE AREA PRIOR TO EXCAVATION. CONTINUOUS COMMUNICATIONS ON A DAY TO DAY BASIS WILL BE REQUIRED. THE UTILITY COMPANIES ARE AS FOLLOWS:

ELECTRIC COMPANIES CONTACT--
BLUEGRASS ELECTRIC CO-OP CORP.,
KENTUCKY UTILITIES COMPANY, OR
CLARK ENERGY.

TELEPHONE CONTACT--
SOUTH CENTRAL BELL

GAS CONTACT--
RICHMOND UTILITIES BOARD, COLUMBIA
GAS OR DELTA GAS.

WATER CONTACT--
RICHMOND UTILITIES BOARD

KENTUCKY STATUTES (KRS 367.4901 THRU 367.4917) REQUIRE THAT ALL EXCAVATORS PLANNING EXCAVATION OR DEMOLITION WORK SHALL CALL ALL UTILITY COMPANIES IN THE AREA AND AN UNDERGROUND PROTECTION SERVICE SUCH AS "BUD" (1-800-752-6007) AT LEAST TWO (2) WORKING DAYS BEFORE COMMENCING WORK TO NOTIFY UTILITY COMPANIES IN THE AREA WITH UNDERGROUND FACILITIES OF THE PLANNED EXCAVATION OR DEMOLITION ACTIVITIES.

*MIN. COVER OVER FORCE MAIN TO BE 36" (42" IN KYDOH R/W).

*MAX. COVER OVER FORCE MAIN TO BE 36" (42" IN KYDOH R/W).

*CONCRETE BLOCKING OF FITTINGS REQUIRED.

*LAY NEW MAIN UNDER EXISTING WATER LINES AND GAS LINES, EXCEPT AS APPROVED BY RICHMOND UTILITIES BOARD.

*ALL PVC PIPE TO BE CL. 200. ALL WATER MAIN PIPE 12" AND LARGER SHALL BE DUCTILE IRON MINIMUM CLASS 350.

*DISTANCES SHOWN ALONG PIPELINE ARE HORIZONTAL DISTANCES BETWEEN HORIZONTAL ANGLES OF 90° AND/OR MATCH LINES EXCEPT WHERE PROFILES ARE SHOWN.

*ALL TIE-IN LOCATIONS SHALL BE UNCOVERED PRIOR TO CONSTRUCTION TO MAINTAIN PROPER ALIGNMENT AND ELEVATION OF NEW CONNECTIONS.

*CONTRACTOR SHALL INVENTORY REQUIRED MATERIALS, TRENCH DEWATERING EQUIPMENT, AND ASSEMBLE IF NECESSARY ALL REQUIRED FITTINGS PRIOR TO CUT-INS SO SO TO INSURE MINIMUM DOWN TIME FOR CONNECTION AND WITNESS BY RICHMOND UTILITIES.

*SURFACE DRAINAGE SHALL BE MAINTAINED ON A DAY-BY-DAY BASIS.

*THE CONTRACTOR WILL BE REQUIRED TO DISPOSE OF ALL EXCESS EXCAVATED MATERIAL FROM WATER MAIN AND SERVICE LINE CONSTRUCTION.

*EXACT SIZES, DEPTHS, MATERIALS AND LOCATIONS OF SEWER SERVICES AND BRANCH SEWERS ARE UNKNOWN. THE CONTRACTOR SHALL ACCURATELY DETERMINE THESE AHEAD OF HIS TRENCHING OPERATION, AND HAVE THE NECESSARY MATERIALS TO MAKE MAKE THE TIE-INS AS THE PIPE LAYING PROGRESSES.

*CROSSINGS OF ALL STREETS, DRIVEWAYS AND PAVED PARKING AREAS SHALL BE BACKFILLED PER SPECS TO THE TOP OF THE TRENCH SURFACE.

*ALL ROCKS, CLODS, EARTH AND OTHER LARGE MATERIAL SHALL BE REMOVED FROM THE TRENCH BOTTOM PRIOR TO PLACEMENT OF THE BEDDING.

*ALL CULVERTS AND CROSS DRAINS AT STREETS, DRIVES AND ENTRANCES NEAR THE WORK AREA SHALL BE PROTECTED. IF IN THE PATH OF THE SEWER DITCH, THEY SHALL BE REMOVED AND RELAYED AS PART OF THE TRENCHING AND BACKFILL OPERATION.

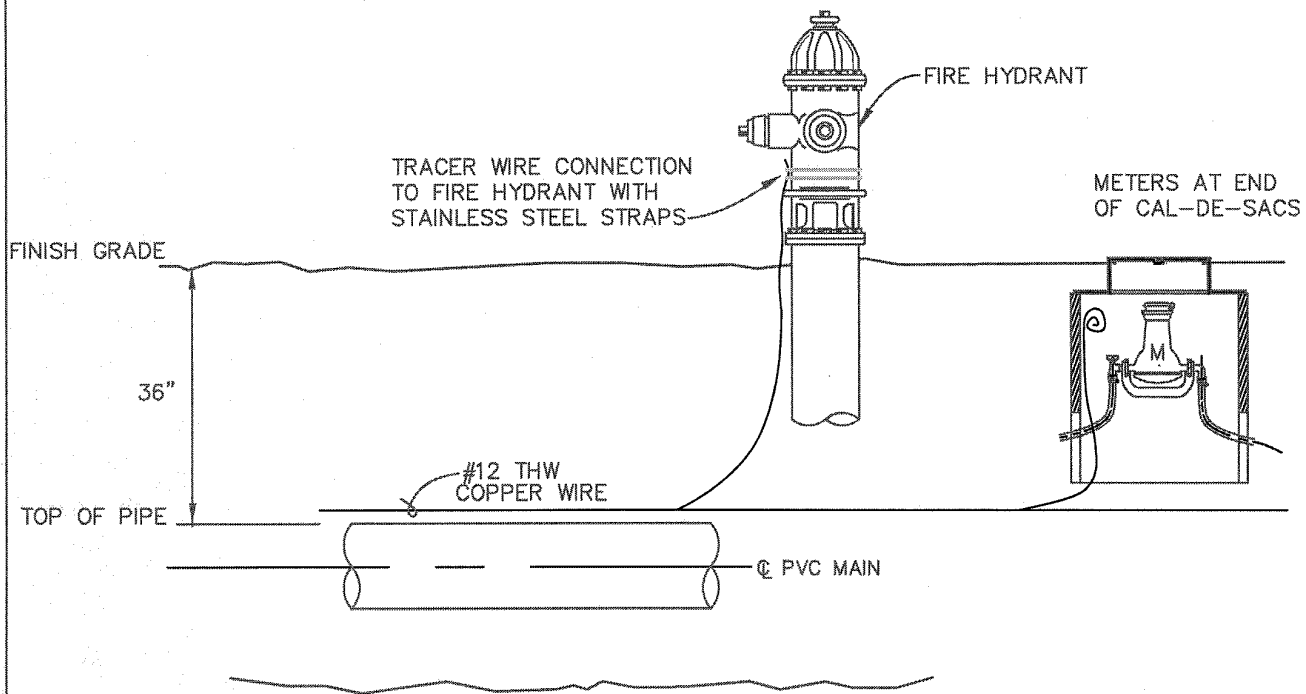
*PLACE #12 THW COPPER WIRE (SEE STANDARD DETAIL FOR MAIN INSTALLATION).

*NO SEWAGE WILL BE DISCHARGED TO STREAMS, DITCHES OR GROUND. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL PUMPS, HOSES LABOR AND EQUIPMENT ACCESSORY TO BYPASS MANHOLES OR SECTIONS OF LINE WHICH ARE OPEN FOR ANY REASON.

DATE	REVISION
2/07	



RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY	
MISCELLANEOUS DETAILS WATER & SEWER WATER & SANITARY FORCE MAIN GENERAL CONSTRUCTION NOTES	
JUNE, 1996	DWG. NO. M1



NOTES:

1. PLACE #12 THW COPPER WIRE DIRECTLY OVER PIPE.
2. WIRE TO BE TIED TO ALL FIRE HYDRANT AND METERS AT END OF CAL-DE-SACS.

TYPICAL MAIN WITH #12 THW COPPER WIRE COPPER TRACER WIRE INSTALLATION

N.T.S.

DATE	REVISION
2/02	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
TYPICAL COPPER TRACE WIRE

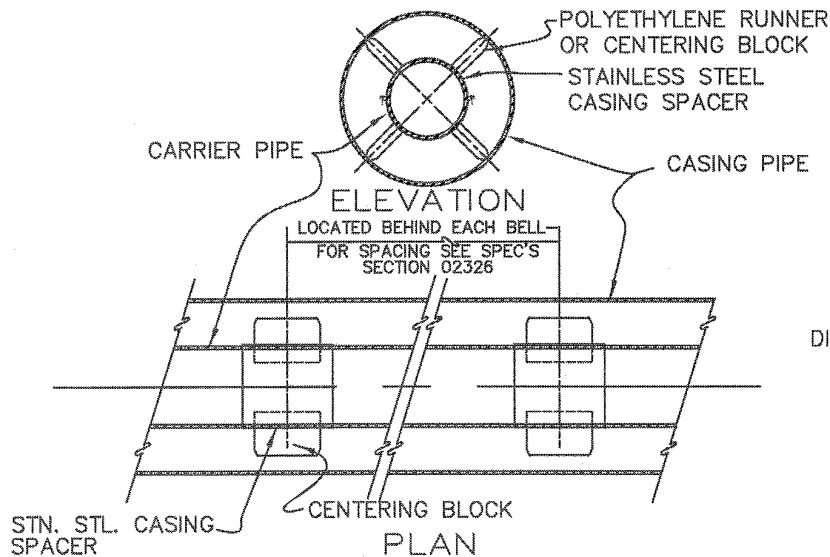
JUNE, 1996

DWG. NO. M2



MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
CONCRETE CAP AT CREEK CROSSING

JUNE, 1996 DWG. NO. M3

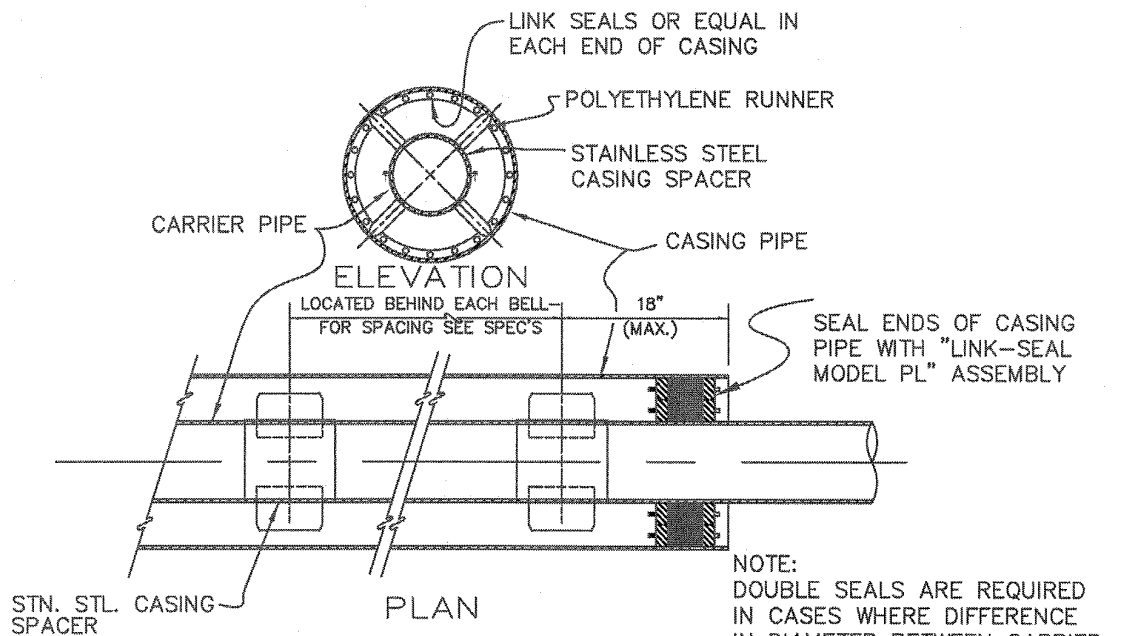


SPACER TABLE

PIPELINE DIAMETER (in.)	MAXIMUM SPACING (ft.)
2- 2 1/2	4
3-8	7
10-26	10
28	9
30	8
32	7
34	6
36-38	5.5
40-44	5
46-48	4

DETAIL CARRIER PIPE POSITIONING IN CASING PIPE

NOT TO SCALE



NOTE:
DOUBLE SEALS ARE REQUIRED
IN CASES WHERE DIFFERENCE
IN DIAMETER BETWEEN CARRIER
AND CASING PIPE IS TOO LARGE.
OTHERWISE SEALING SHALL BE
SINGLE SEAL.

DETAIL CARRIER PIPE POSITIONING IN CASING PIPE

NOT TO SCALE

DATE	REVISION
2/07	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
CARRIER PIPE POSITIONING
IN CASING PIPE

JUNE, 1996

DWG. NO. M4

PVC PIPE TO HAVE #12 THW COPPER
TRACER WIRE AND THERMAL BOX
ON 500 FT. CTRS. - HANDLEY MANUF.
#TR-1 OR EQUAL

NOTE:
ALL STONE BEDDING & BACKFILL
SHALL BE SPADED IN PLACE.

CRUSHED STONE BEDDING
AND INITIAL BACKFILL
SPR 78 FOR 6"Ø TO 10"Ø
PIPE, SPR 57 FOR 12"Ø AND
LARGER PIPE

NOTE:
MINIMUM TRENCH WIDTH
SHALL BE THE MAXIMUM
O.D. OF THE PIPE PLUS
12"

MAX. TRENCH WIDTH
VARIES WITH PIPE DIA.
SEE SECT. 02610
OF SPECS

BACKFILL MATERIAL AND PLACEMENT VARIES
WITH LOCATION EXCEPT IN THE CASE OF
OPEN-CUT CROSSING OF CITY, COUNTY OR
STATE ROADS WHICH SHALL BE CRUSHED
ROCK NO. 78 ONLY.

12"
OUTSIDE PIPE
BARREL

6" MINIMUM D.I. PIPE
6" MINIMUM PVC PIPE

BEDDING &
INITIAL BACKFILL

TYPICAL TRENCH DETAIL WATER MAIN CONSTRUCTION PVC PIPE & DUCTILE IRON PIPE

NTS

MAX. TRENCH WIDTH
VARIES WITH PIPE DIA.
SEE SECT. 02610
OF SPECS

NO ROCK ALLOWED WHEN
OUTSIDE PAVED AREAS

BACKFILL MATERIAL AND PLACEMENT VARIES
WITH LOCATION EXCEPT IN THE CASE OF
OPEN-CUT CROSSING OF CITY, COUNTY OR
STATE ROADS WHICH SHALL BE CRUSHED
ROCK NO. 78 ONLY.

PVC PIPE TO HAVE #12 THW COPPER
TRACER WIRE AND THERMAL BOX
ON 500 FT. CTRS. - HANDLEY MANUF.
#TR-1 OR EQUAL

CRUSHED STONE BEDDING
AND INITIAL BACKFILL
SPR 78 FOR 6"Ø TO 10"Ø
PIPE, SPR 57 FOR 12"Ø AND
LARGER PIPE

NOTE:
ALL STONE BEDDING & BACKFILL
SHALL BE SPADED IN PLACE.

6" MIN. BELOW
BARREL & BELL

TYPICAL TRENCH DETAIL SEWAGE FORCE MAIN CONSTRUCTION BEDDING ON EARTH OR IN SOLID ROCK (PVC AND POLYETHYLENE PIPE)

d=6" THRU 16" PIPE

DATE	REVISION
2/07	



RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
TRENCH DETAILS

JUNE, 1996

DWG. NO. M5

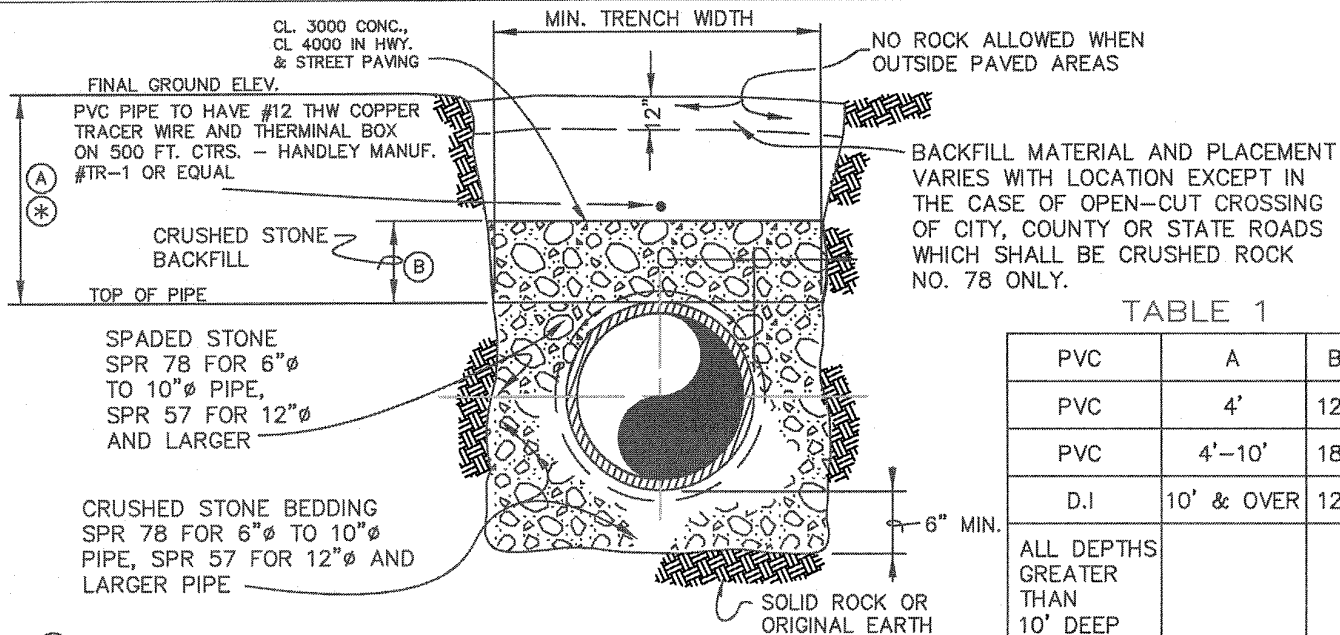


TABLE 1

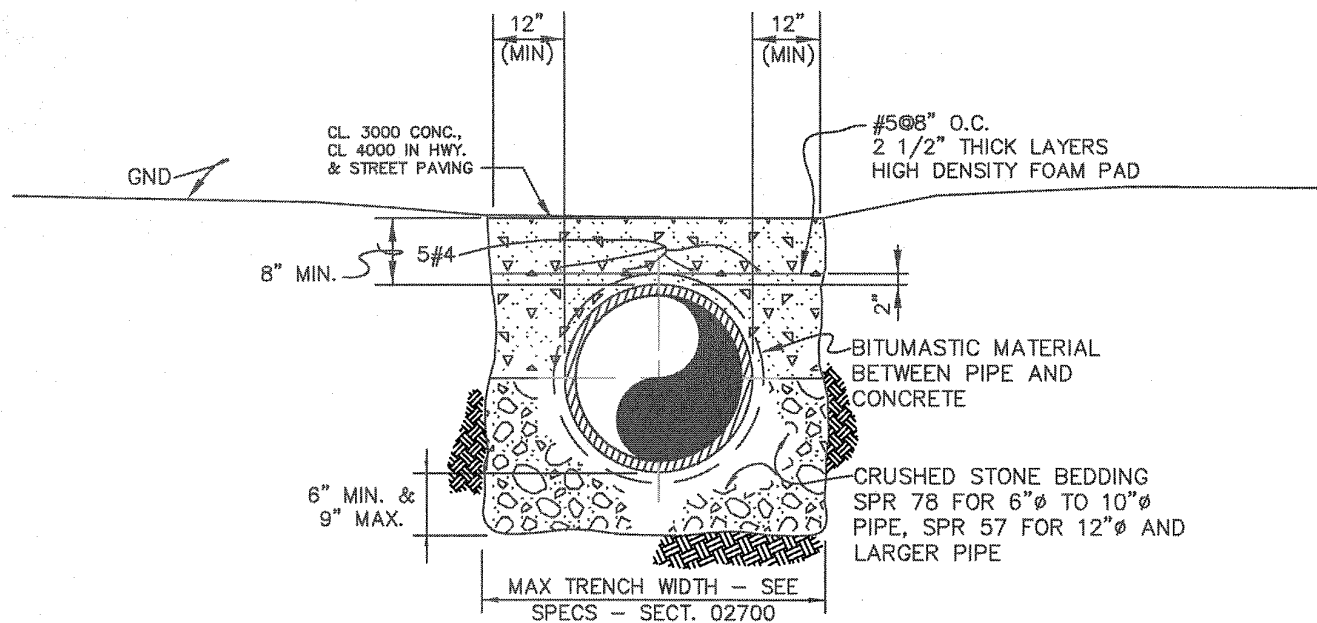
PVC	A	B
PVC	4'	12"
PVC	4'-10'	18"
D.I	10' & OVER	12"
ALL DEPTHS GREATER THAN 10' DEEP SHALL BE DUCTILE IRON		

(*) PER SPECIFICATION
SECTION 02700

(*) PER SPECIFICATION
SECTION 02610

TRENCH DETAIL GRAVITY SEWER CONSTRUCTION PVC PIPE & DUCTILE IRON PIPE

d = 6" THRU 16" PIPE
N T S



CONCRETE ARCH ON
FIRM EARTH OR
IN SOLID ROCK
AT SHALLOW COVER

NOTE:
APPLICABLE TO
SHALLOW COVER
FOR IMPACT
PROTECTION

REVISION
2/07

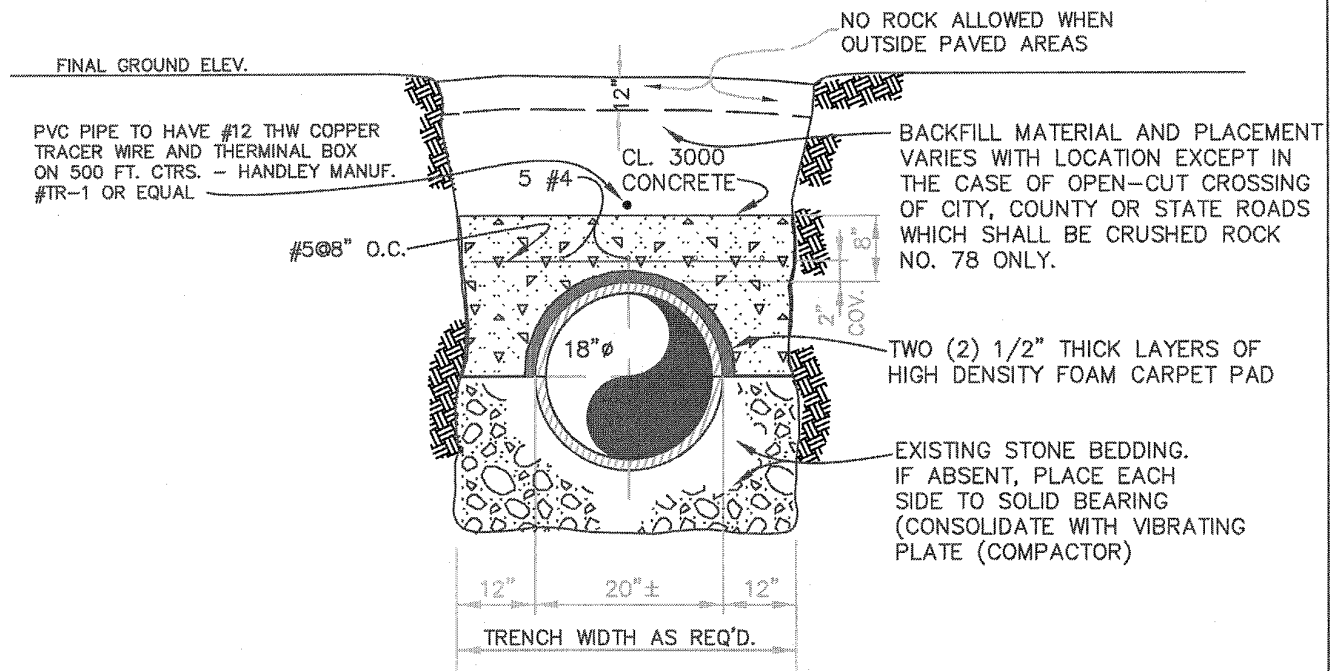


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

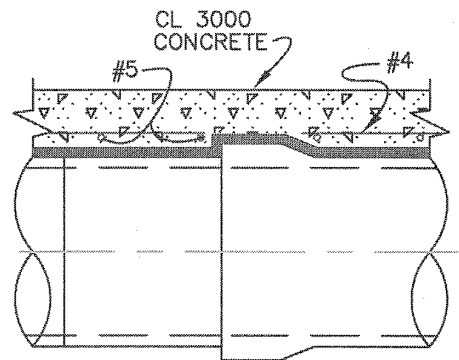
MISCELLANEOUS DETAILS
WATER & SEWER
GRAVITY SEWER TRENCH DETAIL &
SHALLOW COVER CONCRETE ARCH

JUNE, 1996

DWG. NO. M6



TRENCH DETAIL
WITH CONCRETE ARCH



ELEVATION

DATE	REVISION
2/07	

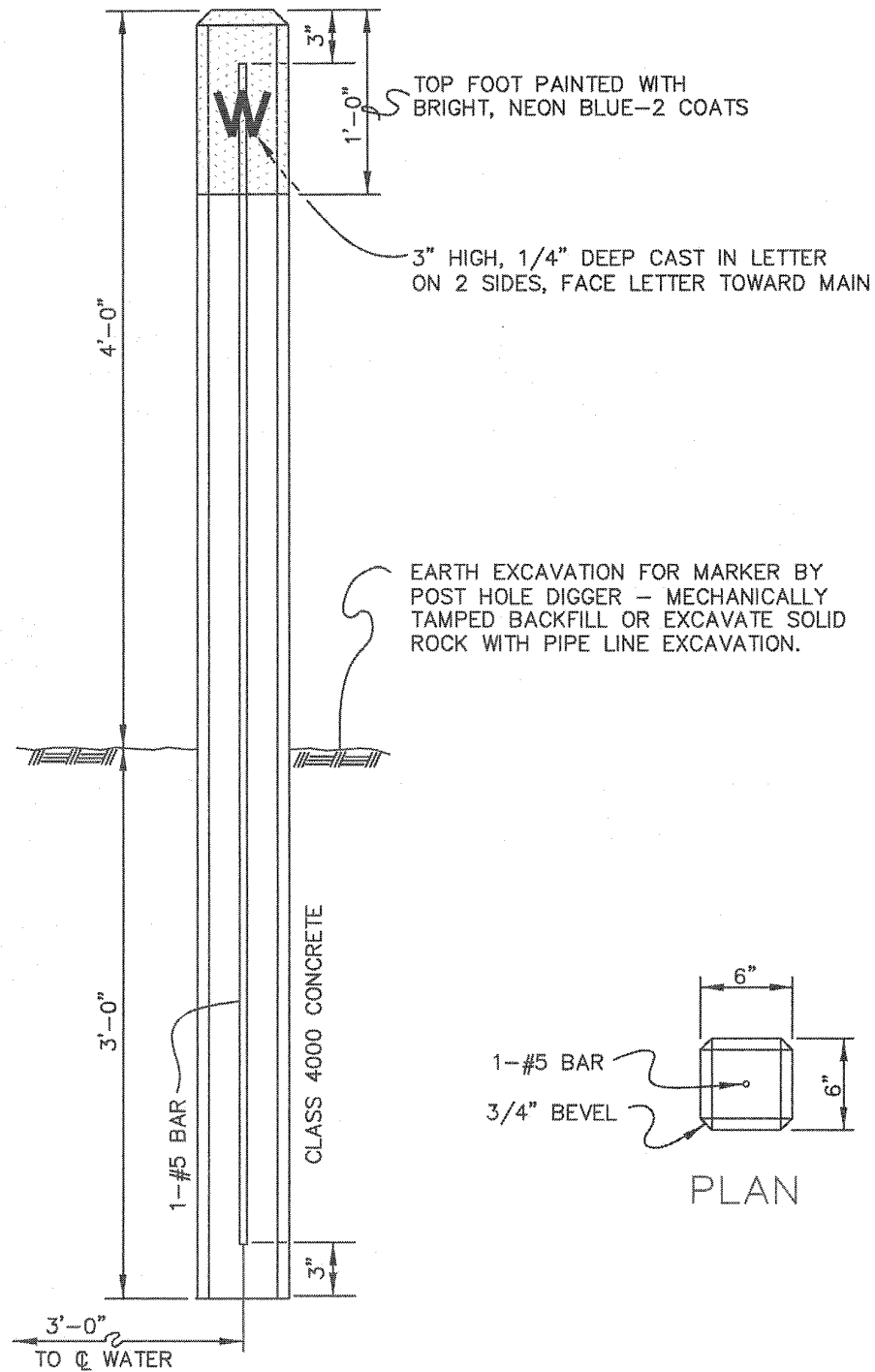


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
CONCRETE ARCH

JUNE, 1996

DWG. NO. M6A



ELEVATION DETAIL CONCRETE LINE MARKER NOT TO SCALE

DATE	REVISION
2/02	

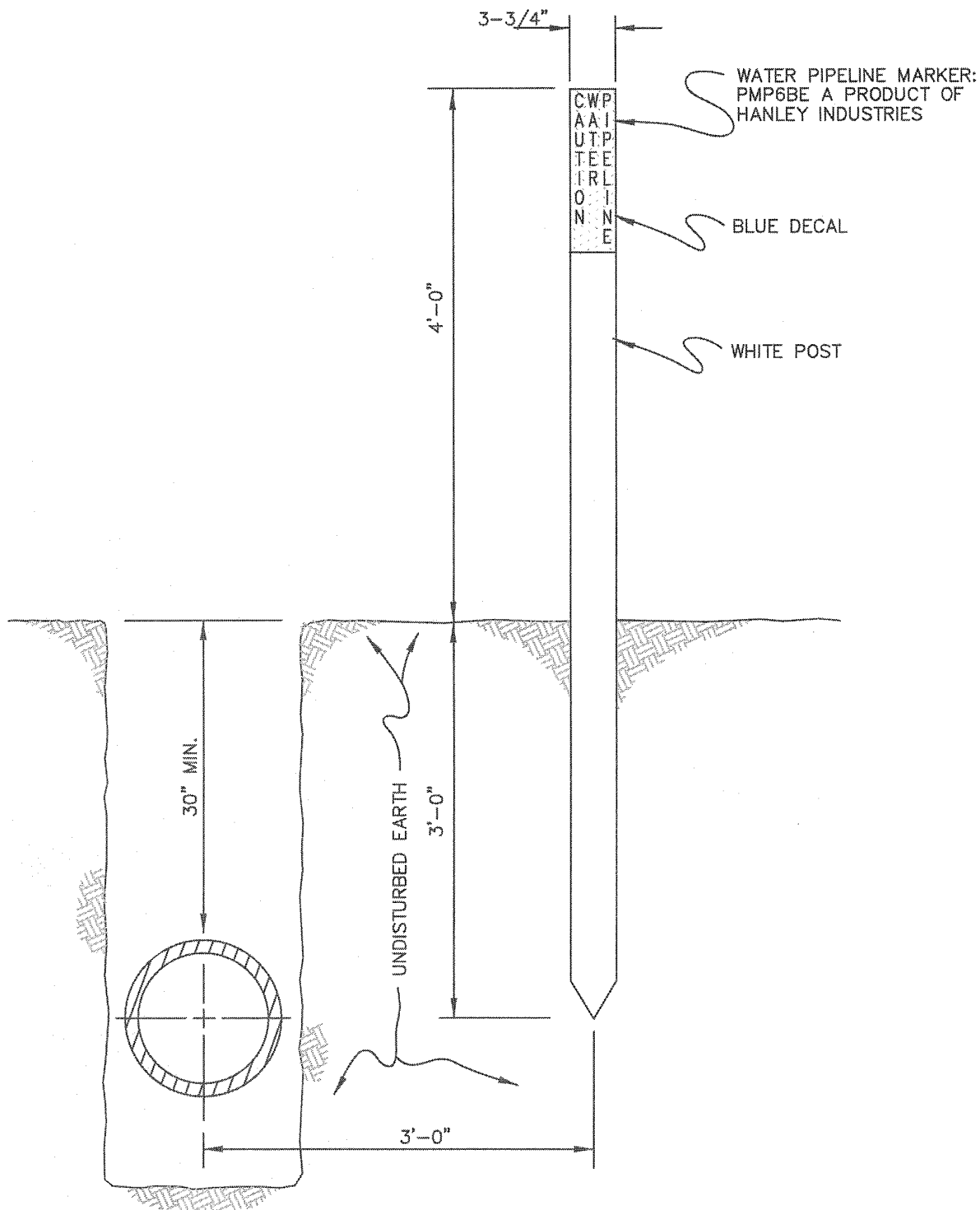


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
CONCRETE LINE MARKER

FEB., 2002

DWG. NO. M7



DETAIL FLEXIBLE FIBERGLASS COMPOSITION LINE MARKER

N.T.S.

DATE	REVISION
2/02	

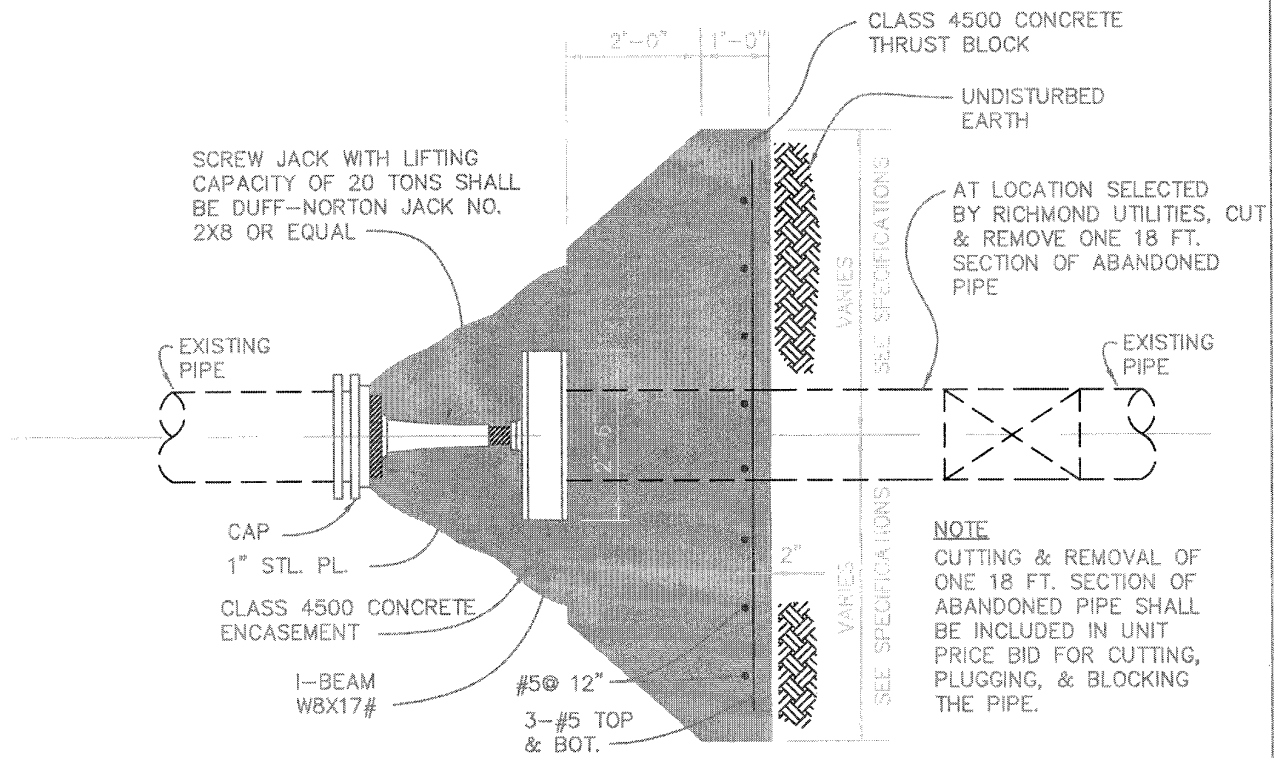


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
FIBERGLASS LINE MARKER

FEB., 2002

DWG. NO. M7A



NOTES

THRUST BLOCK SHALL BE 4'-0" HIGH & CENTERED ABOUT THE EXISTING PIPE.

CUT & BLOCK EXISTING MAIN

NOT TO SCALE

DATE	REVISION

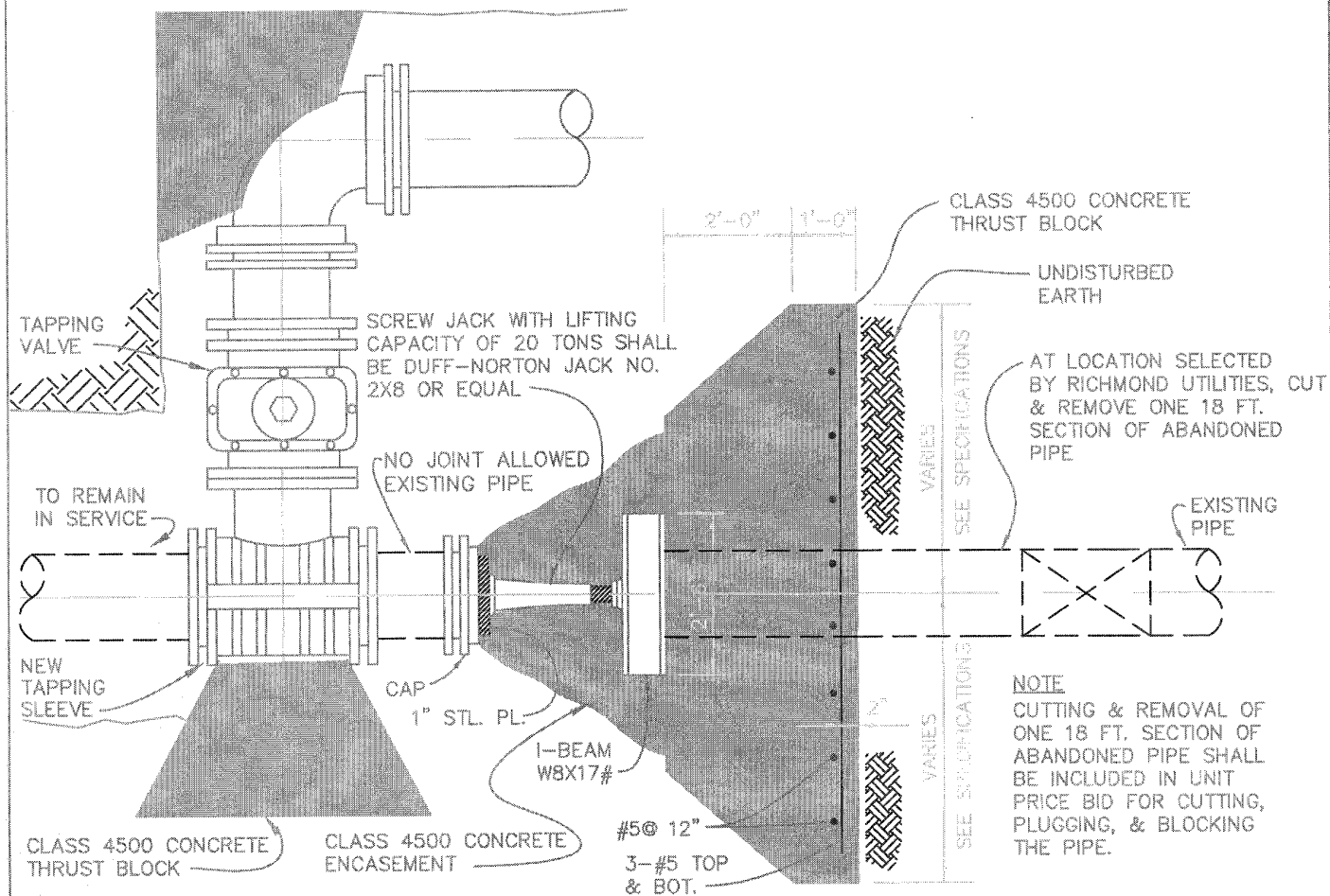


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
CUT & BLOCK EXISTING MAIN

FEB., 2002

DWG. NO. M8



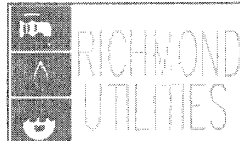
NOTES

THRUST BLOCK SHALL BE 4'-0" HIGH & CENTERED ABOUT THE EXISTING PIPE.

KILL MAIN LINE

NOT TO SCALE

DATE	REVISION

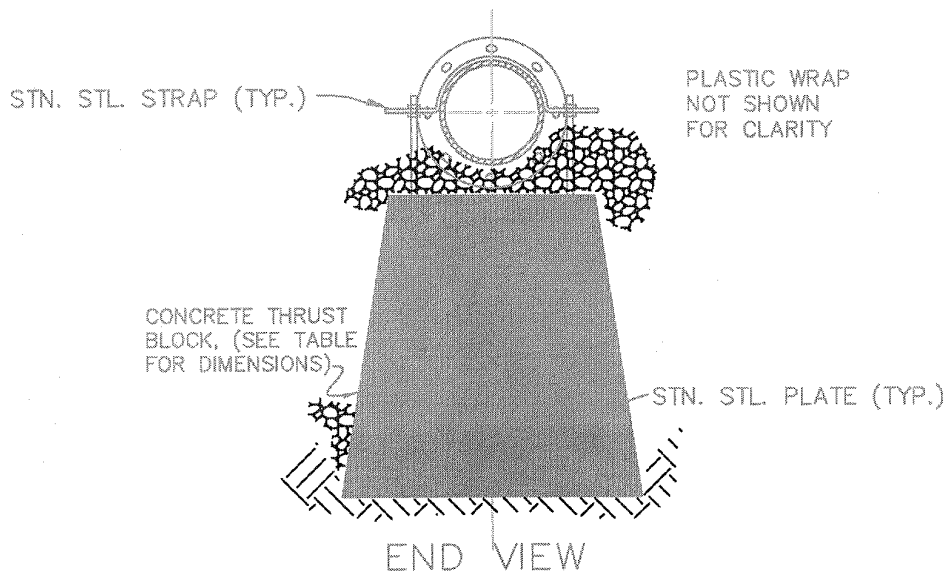
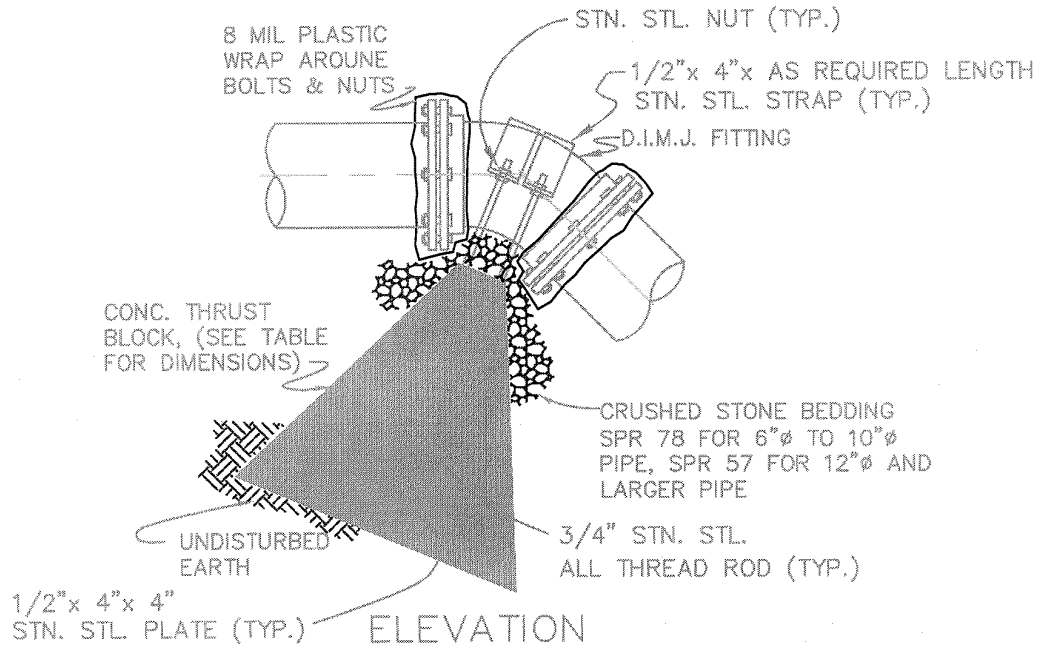
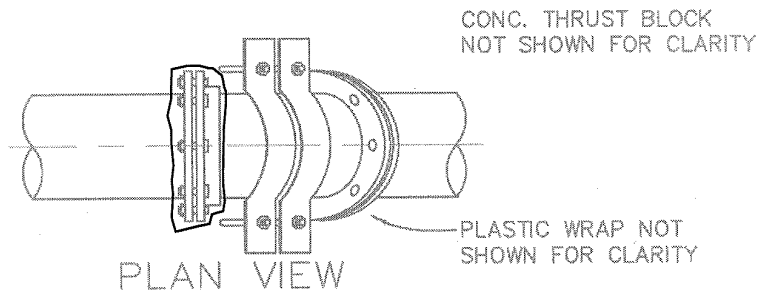


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
KILL MAIN LINE

FEB., 2002

DWG. NO. M8A



DATE	REVISION

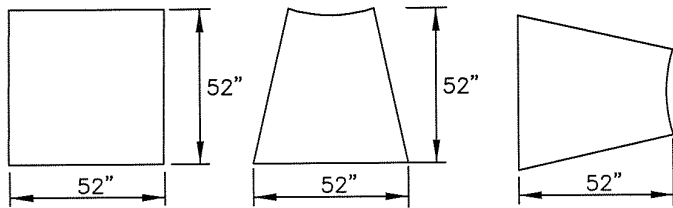


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

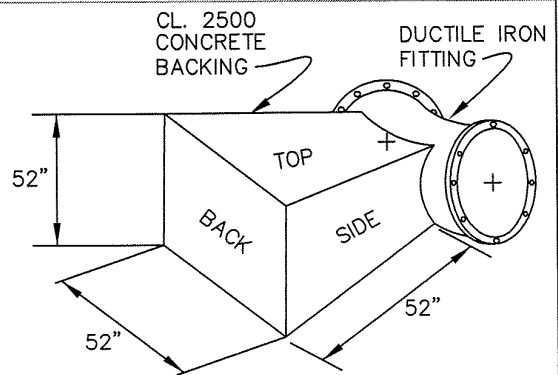
MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
VERTICAL OVERBEND & THRUST BLOCK

FEB., 2002

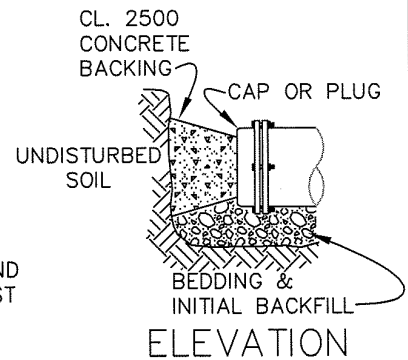
DWG. NO. M9



BACK VIEW TOP VIEW SIDE VIEW



ISOMETRIC VIEW



ELEVATION

TABLE 1

TEST PRESSURE: 150 PSI ALL TYPES SOIL

PIPE DIA. INCHES	90°	PLUG/ TEE	45°	22 1/2°	11 1/4°
4	14	12	12	12	12
6	20	18	18	18	18
8	28	22	20	18	18
10	34	28	24	18	18
12	40	34	30	24	24

① TO OBTAIN THE NUMBER IN INCHES — MEASURE THE LENGTH, WIDTH AND DEPTH THE THRUST BLOCK TO BE INSTALLED SEE APPROPRIATE PRESSURE AND SOIL TYPE TO READ DOWN TO CORRECT PIPE DIAMETER AND ACROSS TABLE TO CORRECT FITTING.

② REINFORCEMENT STEEL RODS MAY BE NEEDED BY RICHMOND UTILITIES FOR LARGER THRUST BLOCK.

TABLE 2

TEST PRESSURE: 350 PSI SANDY CLAY SOIL

PIPE DIA. INCHES	90°	PLUG/ TEE	45°	22 1/2°	11 1/4°
4	18	18	18	18	18
6	26	22	20	18	18
8	35	30	24	18	18
10	44	36	32	32	24
12	52	44	38	28	24
14	62	52	46	32	24
16	70	58	52	36	26
18	78	66	58	42	30
20	88	72	64	46	32
24	104	88	76	56	40

TABLE 4

TEST PRESSURE: 350 PSI SHALE SOIL

PIPE DIA. INCHES	90°	PLUG/ TEE	45°	22 1/2°	11 1/4°
4	18	18	18	18	18
6	18	18	18	18	18
8	18	18	18	18	18
10	22	18	18	18	18
12	26	22	20	18	18
14	30	26	24	18	18
16	36	30	21	18	18

TABLE 5

TEST PRESSURE: 130 PSI SOLID ROCK

PIPE DIA. INCHES	90°	PLUG/ TEE	45°	22 1/2°	11 1/4°
4	18	18	18	18	18
6	18	18	18	18	18
8	18	18	18	18	18
10	20	18	18	18	18
12	24	20	18	18	18
14	26	22	20	18	18

TABLE 3

TEST PRESSURE: 350 PSI HARD CLAY SOIL

PIPE DIA. INCHES	90°	PLUG/ TEE	45°	22 1/2°	11 1/4°
4	18	18	18	18	18
6	18	18	18	18	18
8	24	22	18	18	18
10	32	26	24	18	18
12	38	32	28	20	20
14	44	36	32	24	24
16	50	42	36	26	26
18	56	46	42	30	30
20	62	52	46	32	32
24	74	62	54	40	40

DATE	REVISION

RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

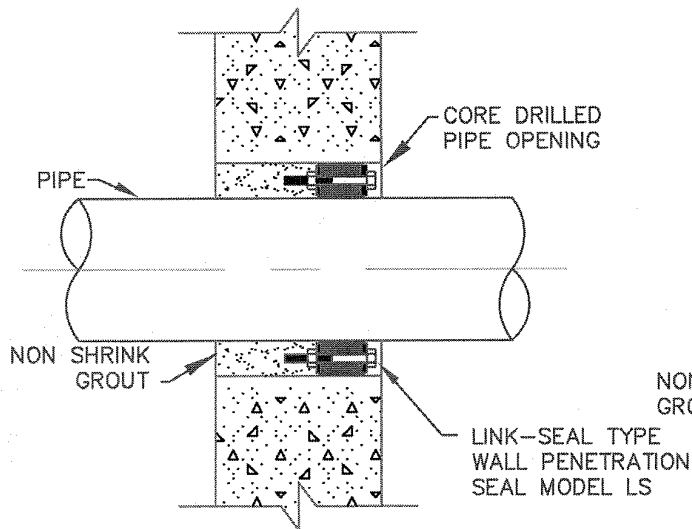


RICHMOND
UTILITIES

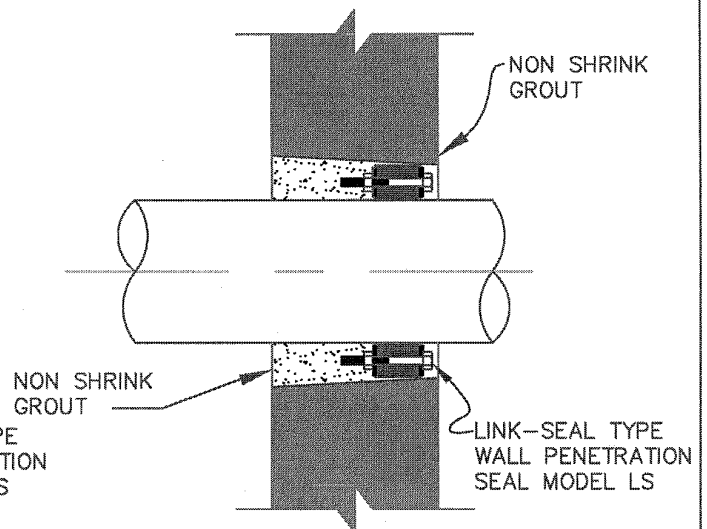
MISCELLANEOUS DETAILS
WATER & SEWER
WATER & SANITARY FORCE MAIN
THRUST BLOCK DETAIL

FEB., 2002

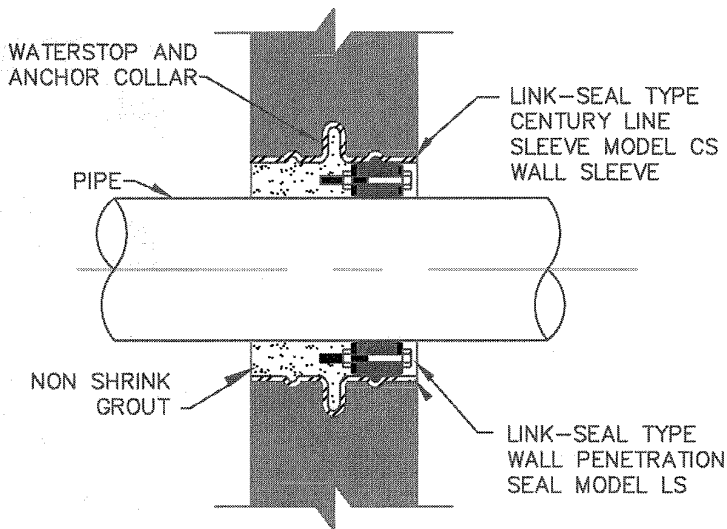
DWG. NO. M10



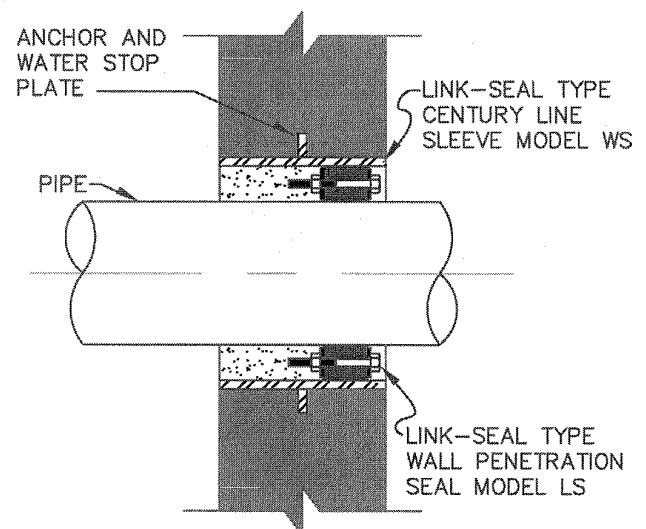
CORE
PIPE OPNG. IN NEW
OR EXISTING WALL OR SLAB



BOX-OUT
PIPE OPNG. IN
NEW WALL OR SLAB



WALL SLEEVE
IN NEW WALL
OR SLAB



WALL SLEEVE
IN NEW WALL
OR SLAB
(NOT TO BE USED IN
WATER HOLDING BASIN)

PIPE PENETRATION THROUGH CONCRETE WALLS OR SLABS

NOT TO SCALE

DATE	REVISION

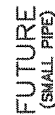
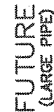


RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
PIPE PENETRATIONS THRU WALLS OR SLABS
(LINK SEALS)

FEB., 2002

DWG. NO. M11



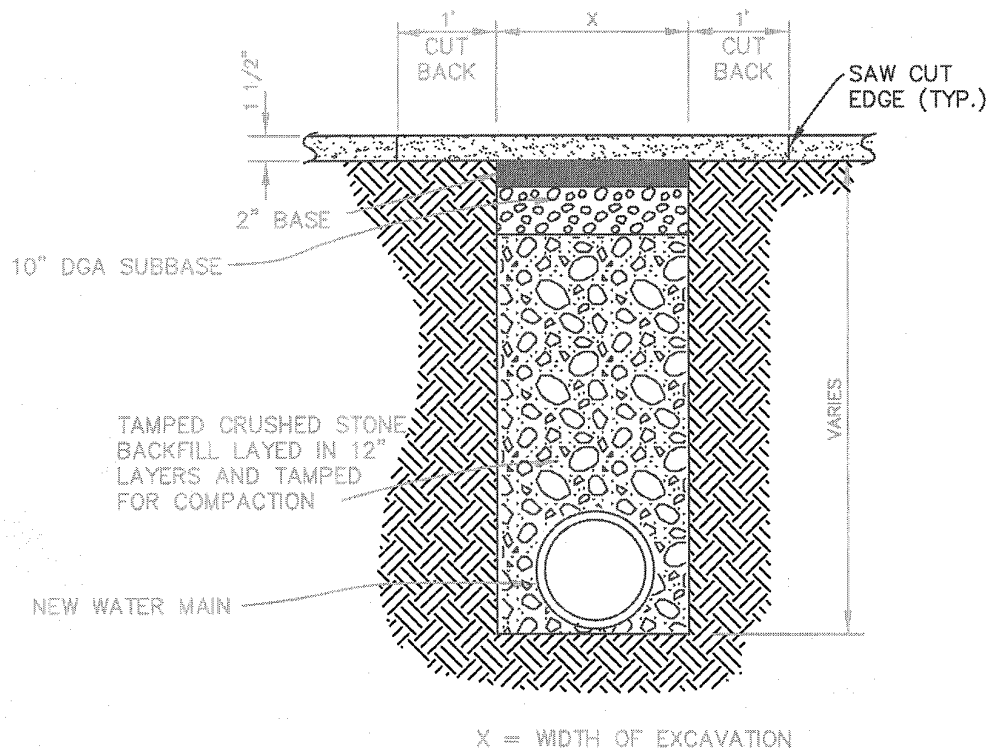
NOTE:

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RICHMOND UTILITIES BOARD
RICHMOND, KENTUCKY

MISCELLANEOUS DETAILS
WATER & SEWER
PIPE THRU
WALLS OR SLABS

FEB.. 2002 DWG. NO. M11A




PROVIDE A MINIMUM 6" GRAVEL BEDDING BENEATH PIPE

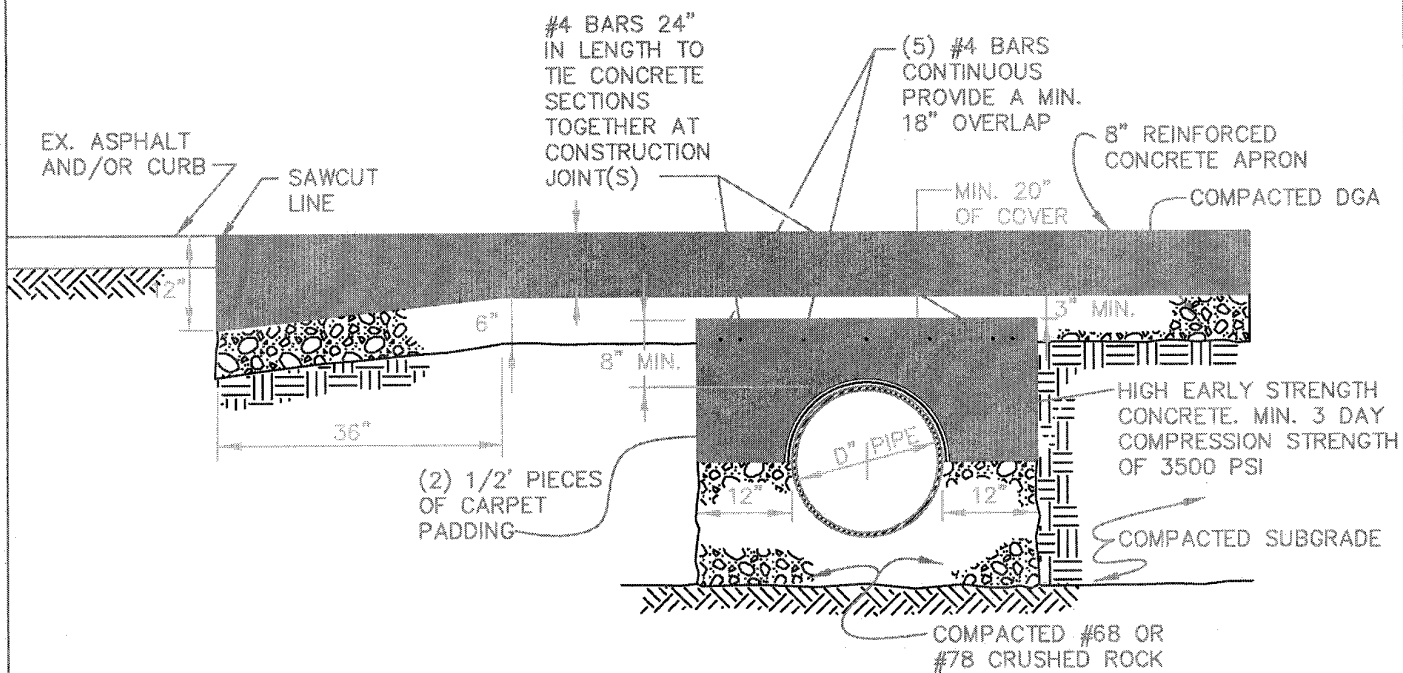
NOTE:
REPLACE BITUMINOUS PAVEMENT WITH SAME TYPE AND DEPTH AS EXISTING PAVEMENT.

BITUMINOUS SURFACE

DETAIL — SURFACE RESTORATION METHOD FOR CITY AND COUNTY STREETS, ROADS AND PARKING AREAS

NOT TO SCALE

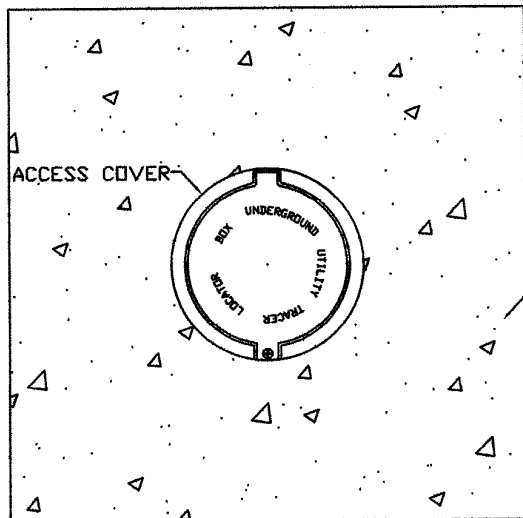
DATE	REVISION	RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY	
2/02			
 RICHMOND UTILITIES		MISCELLANEOUS DETAILS WATER & SEWER ROADWAY SURFACE RESTORATION	
		JUNE, 1996	DWG. NO. M12



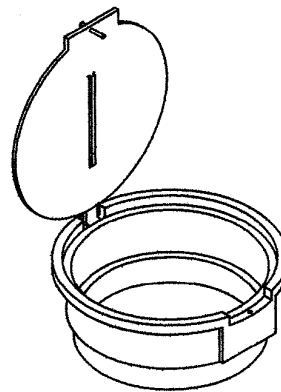
CONCRETE ARCH OVER PIPE IN ROADWAY (WHERE WATER MAIN IS LESS THAN 36" DEEP)

DATE	REVISION	RICHMOND UTILITIES BOARD RICHMOND, KENTUCKY	
		MISCELLANEOUS DETAILS WATER & SEWER CONCRETE ARCH OVER PIPE IN ROADWAY	
		AUG, 2002	DWG. NO. M13

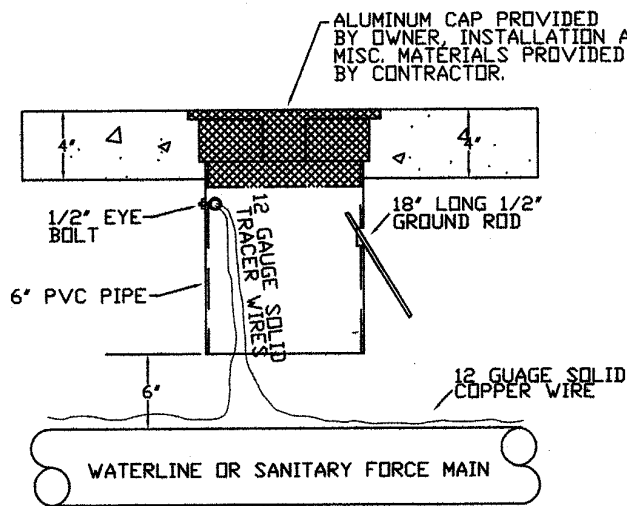




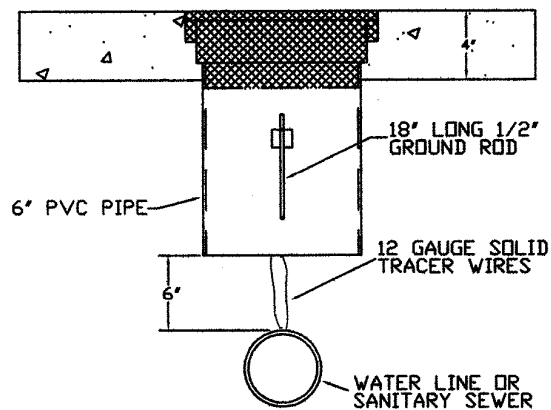
TOP VIEW



ISOMETRIC VIEW




FRONT VIEW

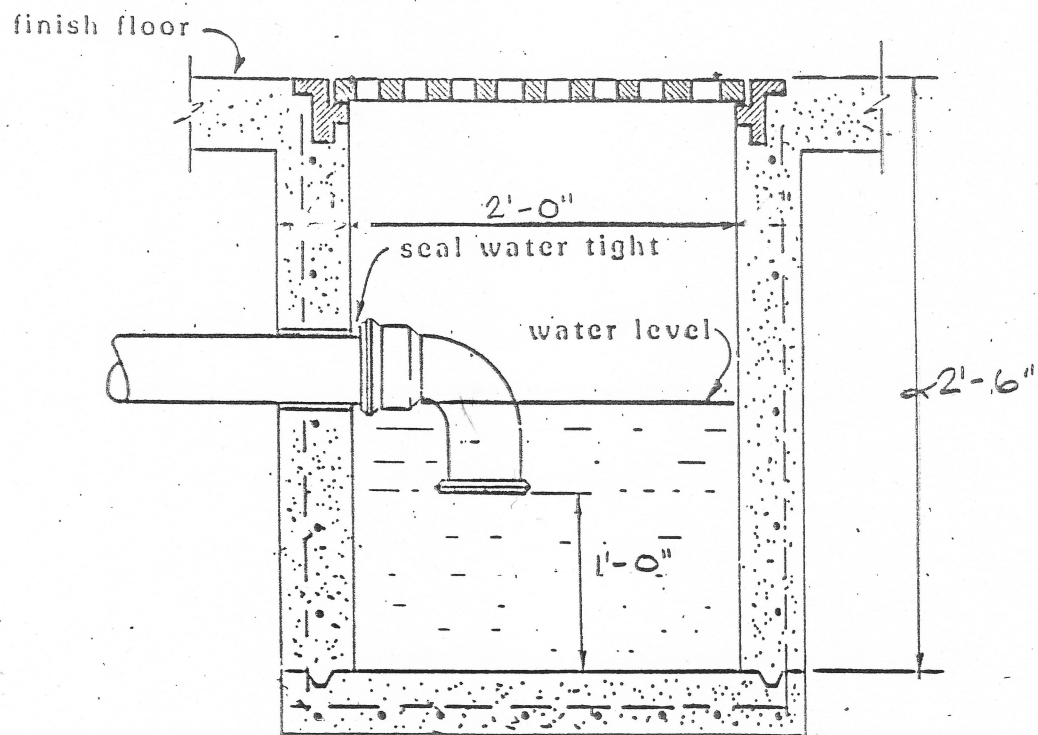


SIDE VIEW

NOTE: ANY SPLICES IN TRACER WIRE REQUIRE A HEAT SHRINK KIT.
ACCESS COVER SHOWN NOT TO SCALE.

NOTE: TRACER WIRE LOCATOR BOXES ARE TO BE LOCATED AT THE BEGINNING, TERMINATION AND EVERY 500' ALONG ALL NEWLY CONSTRUCTED UTILITY LINES.

Scale N.T.S.	DETAIL NO.	TRACER WIRE BOX DETAIL	 <p>Consulting Engineers Professional Surveyors Planners & Construction Management Phone (606) 473-5474 (606) 473-6848 Fax (606) 473-5432 P O Box 706 Greenup, Kentucky 41144</p>
Drawn by M.B.I.	A-001		
Approved P.T.B.			
Date 5/24/95			



SAND TRAP DETAIL

NO SCALE

RICHMOND UTILITIES

MARCH 2015

Dwg. No. S15-A