

**GRADING AND DRAINAGE NOTES**

1. THE DESIGN, INSPECTION, AND CERTIFICATION OF ANY RETAINING WALL SHOWN OR REFERENCED HEREIN, INCLUDING BUT NOT LIMITED TO, SEGMENTAL RETAINING WALLS, MASS GRAVITY WALLS, GABION WALLS, ETC., GREATER THAN FORTY-EIGHT INCHES IN HEIGHT, SHALL BE BY OTHERS. ANY RETAINING WALL DATA SHOWN OR REFERENCED HEREIN SHALL BE FOR COORDINATION OF THE WALL LOCATION AND ELEVATIONS ONLY.
2. THE OWNER/CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING AND PROVIDING SEPARATE AND INDEPENDENT RETAINING WALL DESIGNS, INSPECTIONS, AND CERTIFICATIONS BY A REGISTERED PROFESSIONAL ENGINEER OTHER THAN CRAFTON TULL. THIS SHALL ALSO APPLY TO ANY ASSOCIATED AND NECESSARY PUBLIC SAFETY DEVICES INCLUDING, BUT NOT LIMITED TO, PEDESTRIAN SAFETY RAILS.
3. THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF EXISTING UTILITIES ON SITE OR IN RIGHT-OF-WAY. ALL UTILITIES MUST BE LOCATED PRIOR TO GRADING START.
4. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
5. ALL CUT OR FILL SLOPES SHALL BE A MAX 3:1 SLOPE OR FLATTER UNLESS OTHERWISE NOTED.
6. IF ANY EXISTING STRUCTURES TO REMAIN ARE DAMAGED DURING CONSTRUCTION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITION OR BETTER.
7. ALL STORM SEWER PIPE CONNECTIONS TO STRUCTURES SHALL BE GROUTED TO ENSURE CONNECTION AT STRUCTURE IS WATERTIGHT. ALL STORM SEWER STRUCTURES SHALL HAVE A SMOOTH UNIFORM POURED MORTAR INVERT FROM INVERT IN TO INVERT OUT.
8. ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC (H20) LOADING AND BE INSTALLED ACCORDINGLY WHEN IN PAVED AND TRAFFIC AREAS.
9. ALL STORM SEWER MANHOLES IN PAVED AREAS SHALL BE FLUSH WITH THE PAVEMENT AND SHALL HAVE TRAFFIC BEARING RINGS AND COVERS. MANHOLES IN UNPAVED AREAS SHALL BE 1" ABOVE FINISH GRADE. LIDS SHALL BE LABELED PER JURISDICTIONAL SPECIFICATIONS.
10. SITE GRADING SHALL NOT PROCEED UNTIL APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED. THE CONTRACTOR SHALL ADHERE TO ALL TERMS AND CONDITIONS AS OUTLINED IN THE GENERAL NPDES PERMIT AND THE SWPPP FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
11. ALL UNSURFACED AREAS DISTURBED BY GRADING OPERATION SHALL RECEIVE 4 INCHES OF TOPSOIL TO FINAL GRADE. REFER TO THE LANDSCAPE PLAN.
12. TOPOGRAPHIC INFORMATION TAKEN FROM A TOPOGRAPHIC SURVEY BY LAND SURVEYORS. IF CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON PLANS, CONTACT ENGINEER IMMEDIATELY.
13. THE CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS THROUGHOUT ALL PHASES OF CONSTRUCTION.
14. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULES, SLOPE PAVING, SIDEWALKS, EXIT PORCHES, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT UTILITY ENTRANCE LOCATIONS.
15. THE EARTHWORK FOR ALL BUILDING FOUNDATIONS AND SLABS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL BUILDING PLANS AND SPECIFICATIONS.
16. EXISTING DRAINAGE STRUCTURES TO BE INSPECTED AND REPAIRED AS NEEDED, AND EXISTING PIPES TO BE CLEANED OUT TO REMOVE ALL SILT AND DEBRIS.
17. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ENSURE A SMOOTH FIT AND CONTINUOUS GRADE.
18. CONTRACTOR SHALL MAINTAIN ALL EXISTING PARKING, SIDEWALKS, DRIVES, ETC. CLEAR AND FREE FROM ANY CONSTRUCTION ACTIVITY AND/OR MATERIAL TO ENSURE EASY AND SAFE PEDESTRIAN AND VEHICULAR TRAFFIC TO AND FROM THE SITE.
19. IF WET AREAS ARE ENCOUNTERED ON-SITE THE CONTRACTOR SHALL COORDINATE WITH THE GEOTECHNICAL ENGINEER FOR THE DESIGN AND PLACEMENT OF A FRENCH DRAIN SYSTEM.
20. CRAFTON, TULL & ASSOCIATES, INC. (CTA) HAS NOT NECESSARILY ESTABLISHED MINIMUM FINISH FLOOR ELEVATIONS FOR EACH INDIVIDUAL BUILDING OR LOT IN THIS SUBDIVISION. WHEN A MINIMUM BUILDING FLOOR ELEVATION IS NOT ESTABLISHED AND NOTED, THE ULTIMATE RESPONSIBILITY FOR THE PROPER GRADING OF EACH INDIVIDUAL LOT OR PARCEL SHALL REST WITH THE LOT'S OWNER. TYPICALLY, THE MINIMUM FINISH FIRST FLOOR ELEVATIONS SHOULD BE AT LEAST TWELVE INCHES (12") ABOVE THE FINISHED TOP OF STREET CURB ELEVATION ASSOCIATED WITH EACH INDIVIDUAL LOT OR PARCEL OR AS REQUIRED BY LOCAL AND STATE CODES.

**LEGEND (EXISTING SYMBOLS)**

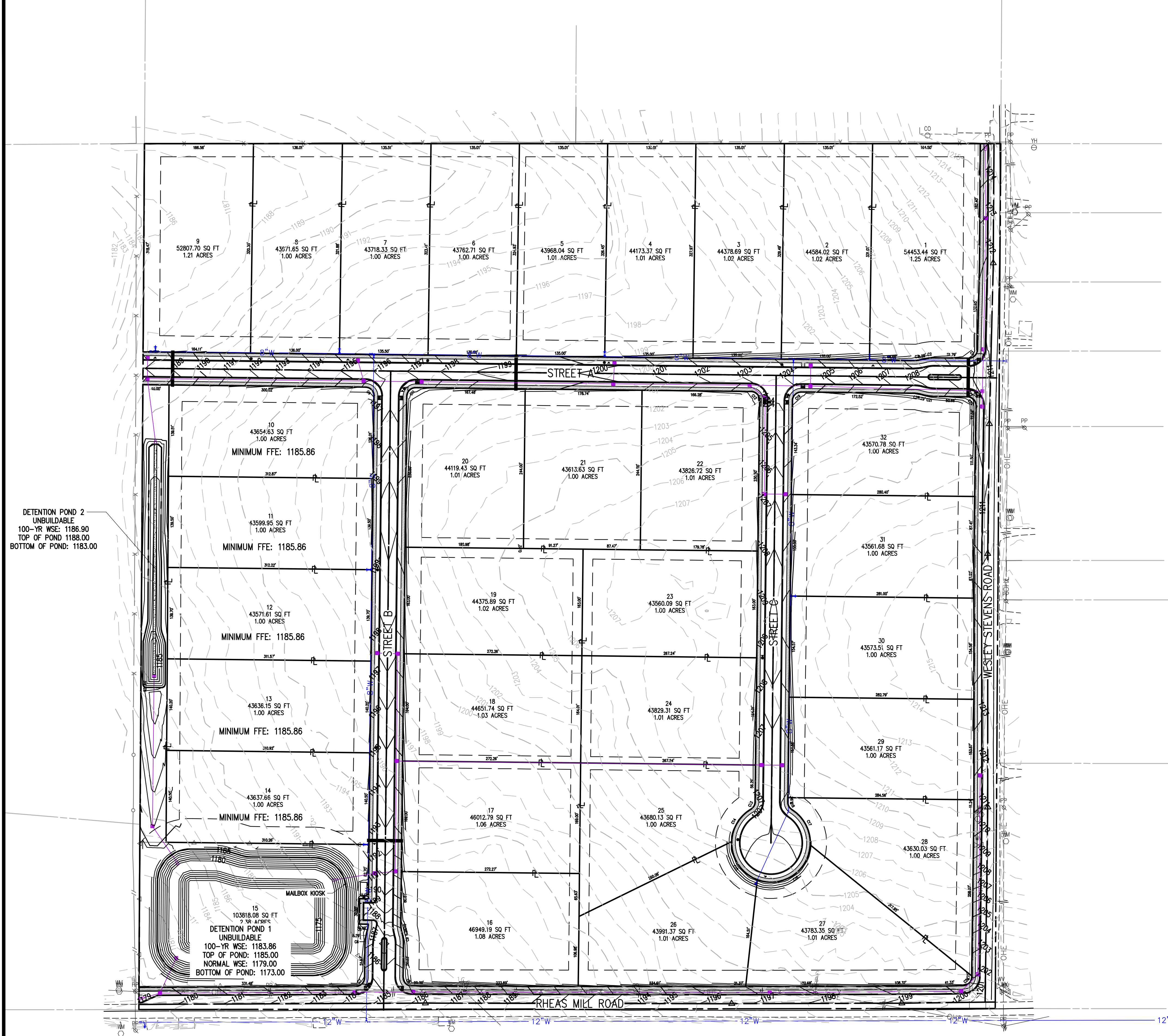
SYMBOLS	LINEWORK
	EASEMENT
	CURB
	INTERMEDIATE CONTOUR
	INDEX CONTOUR
	RIGHT OF WAY
	ROAD CENTERLINE

**LEGEND (CONSTRUCT)**

SYMBOLS	LINEWORK
	EASEMENT
	CURB
	INTERMEDIATE CONTOUR
	INDEX CONTOUR
	RIGHT OF WAY
	PROPERTY LINE
	ROAD CENTERLINE

**SITE STABILIZATION AND CERTIFICATION**

CRAFTON TULL CANNOT CERTIFY THE SITE AS COMPLETE IN ORDER TO OBTAIN THE CERTIFICATE OF OCCUPANCY UNTIL ALL DISTURBED AREAS RELATED TO THE CONSTRUCTION OF THE PROJECT, BOTH ONSITE AND OFFSITE, HAVE BEEN STABILIZED PER THE PLANS AND SPECIFICATIONS AND ALL REQUIREMENTS SPELLED OUT IN PERMITS ISSUED BY THE STATE AND LOCAL AUTHORITIES HAVE BEEN MET.



DETENTION POND 2  
UNBUILDABLE  
100-YR WSE: 1186.90  
TOP OF POND: 1188.00  
BOTTOM OF POND: 1183.00

10  
43654.63 SQ FT  
1.00 ACRES  
MINIMUM FFE: 1185.86

11  
43599.95 SQ FT  
1.00 ACRES  
MINIMUM FFE: 1185.86

12  
43571.61 SQ FT  
1.00 ACRES  
MINIMUM FFE: 1185.86

13  
43626.15 SQ FT  
1.00 ACRES  
MINIMUM FFE: 1185.86

14  
43637.66 SQ FT  
1.00 ACRES  
MINIMUM FFE: 1185.86

15  
103818.08 SQ FT  
2.38 ACRES  
DETENTION POND 1  
UNBUILDABLE  
100-YR WSE: 1183.86  
TOP OF POND: 1185.00  
NORMAL WSE: 1179.00  
BOTTOM OF POND: 1173.00

20  
44119.43 SQ FT  
1.01 ACRES

21  
43613.63 SQ FT  
1.00 ACRES

19  
44375.89 SQ FT  
1.02 ACRES

18  
44851.74 SQ FT  
1.03 ACRES

17  
46012.79 SQ FT  
1.06 ACRES

16  
46949.19 SQ FT  
1.08 ACRES

22  
43826.72 SQ FT  
1.01 ACRES

23  
43660.09 SQ FT  
1.00 ACRES

24  
43829.31 SQ FT  
1.01 ACRES

25  
43680.13 SQ FT  
1.00 ACRES

26  
43991.37 SQ FT  
1.01 ACRES

27  
43783.35 SQ FT  
1.01 ACRES

28  
43630.03 SQ FT  
1.00 ACRES

29  
43561.17 SQ FT  
1.00 ACRES

30  
43573.51 SQ FT  
1.00 ACRES

31  
43561.68 SQ FT  
1.00 ACRES

32  
43570.78 SQ FT  
1.00 ACRES

33  
44584.02 SQ FT  
1.02 ACRES

34  
44378.69 SQ FT  
1.02 ACRES

35  
44173.37 SQ FT  
1.01 ACRES

36  
43968.04 SQ FT  
1.01 ACRES

37  
43762.71 SQ FT  
1.00 ACRES

38  
43783.33 SQ FT  
1.00 ACRES

39  
43671.65 SQ FT  
1.00 ACRES

40  
52807.70 SQ FT  
1.21 ACRES

DRAWING COURTESY: RHEAS MILL ROAD SUBDIVISION, CRAFTON TULL & ASSOCIATES, INC. DATE: 01/20/2025. PREPARED BY: JENNA DAVIS. PROJECT NO.: 2402005.3.03.17.01

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FARMINGTON, AR

No.	Description	Date

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ISSUE DATE: mm/dd/yy  
CONTACT: C. GARDNER  
DATE:   
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OVERALL GRADING PLAN

















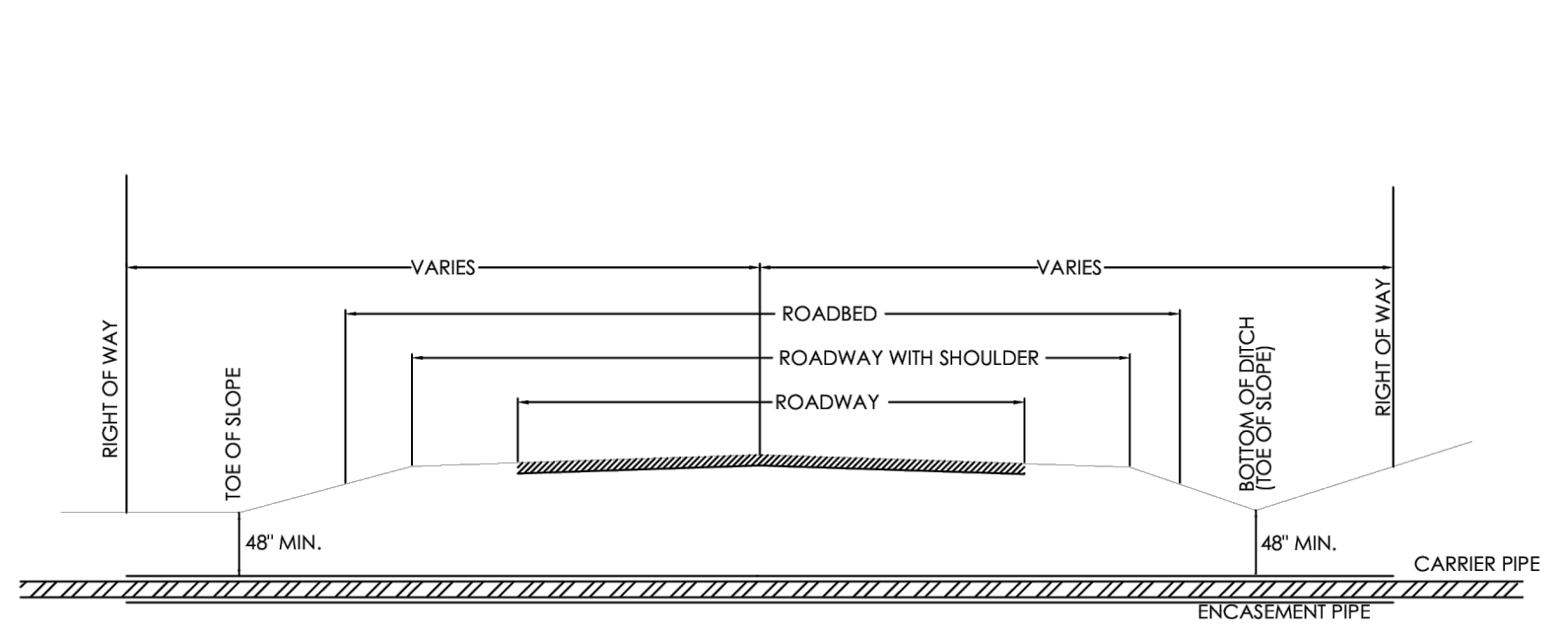






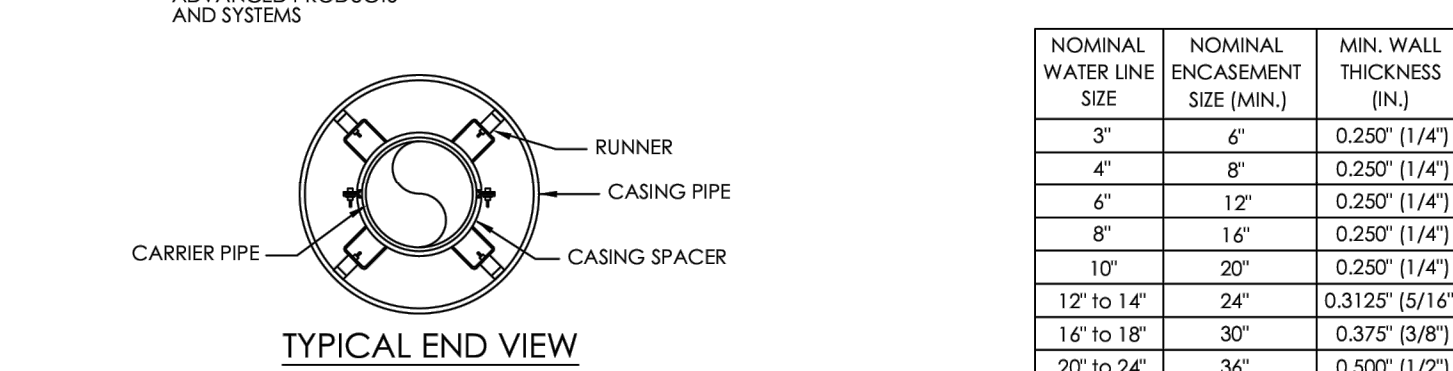
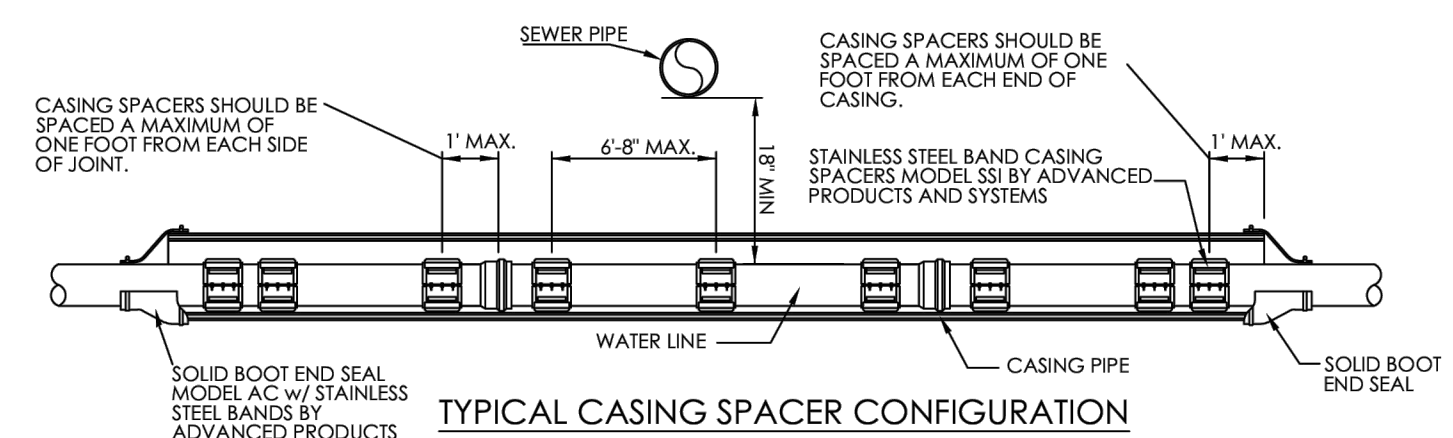






- NOTES:
- CASING SHALL EXTEND A MINIMUM OF SIX (6) FEET BEYOND THE FLOW LINE OF PARALLEL DITCHES, TOE OF SLOPE, OR FACE OF CURB AS APPLICABLE FOR THE HIGHWAY SECTION.
  - ENCASEMENT MAY BE OF METALLIC OR NONMETALLIC MATERIAL.
  - THE STRENGTH OF THE ENCASEMENT MATERIAL SHALL EQUAL OR EXCEED STRUCTURAL REQUIREMENTS FOR HIGHWAY DRAINAGE CURBS.
  - A MARKER BEARING THE UTILITY OWNERS NAME SHALL BE PLACED AT EACH RIGHT OF WAY LINE WHERE CROSSED. (NOT REQUIRED FOR SERVICE LINES)
  - OWNERSHIP OF THE LINES SHALL BE SHOWN ON VENTS.
  - CASING PIPE SHALL BE SEALED AT THE ENDS WITH A FLEXIBLE MATERIAL.
  - CASING SHALL EXTEND RIGHT OF WAY TO RIGHT OF WAY.

**ROAD CROSSING**  
NTS

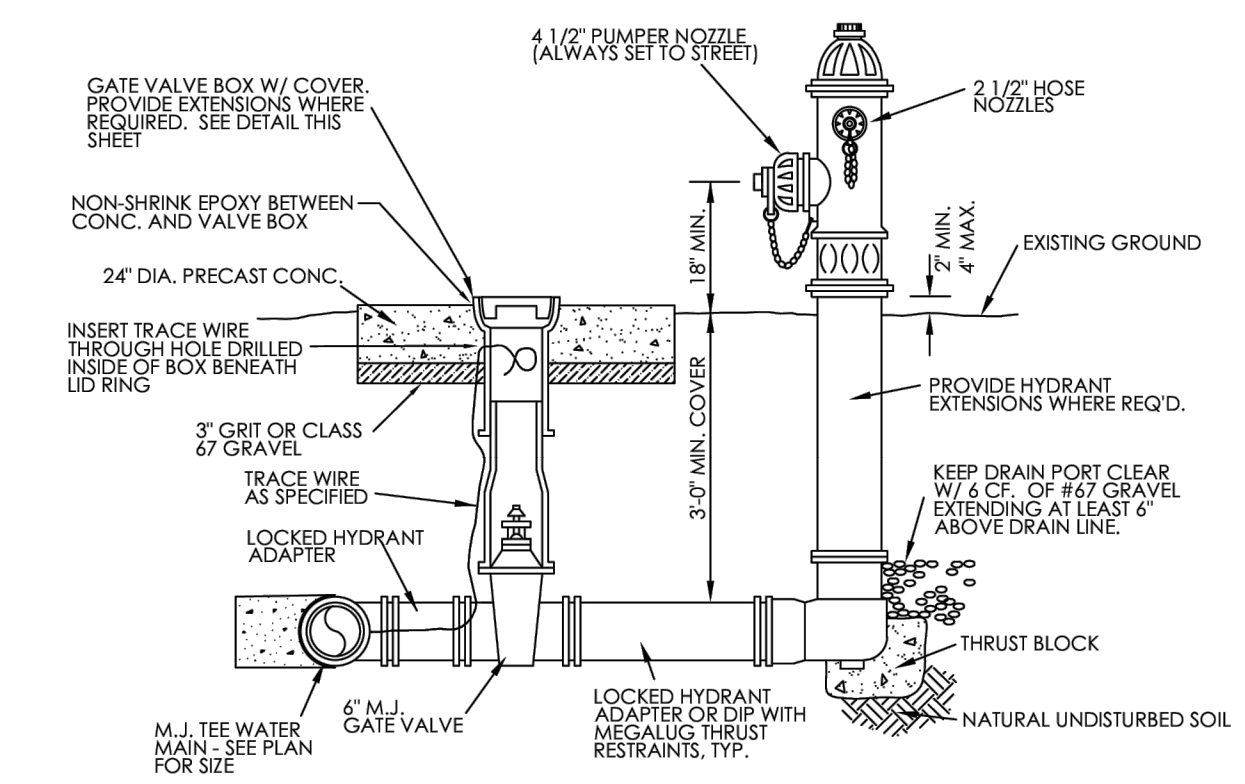


- NOTES:
- SPACERS SHALL BE PREFABRICATED STEEL SPACERS, SMITH-BLAIR MODEL 883.
  - QUANTITY OF RUNNERS SHALL BE IN ACCORDANCE WITH CARRIER PIPE SIZE AS FOLLOWS:  
TO 14" DIAMETER - 4 RUNNERS  
16" TO 36" DIAMETER - 6 RUNNERS  
38" TO 48" DIAMETER - 8 RUNNERS
  - DIMENSIONS BETWEEN SPACERS SHALL BE AS FOLLOWS:  
STAINLESS STEEL - 8 TO 12 FEET  
CARBON STEEL - 8 TO 12 FEET
  - WIDTH OF SPACERS SHALL BE IN ACCORDANCE WITH CARRIER PIPE SIZE AS FOLLOWS:  
TO 14" DIAMETER - 8" WIDTH  
16" AND LARGER DIAMETER - 12" WIDTH
  - A MINIMUM OF THREE SPACERS PER FULL JOINT OF PIPE. MAXIMUM SPACING BETWEEN SPACERS SHALL BE 6'-8".
  - ALL D.I. CARRIER PIPE MUST HAVE FIELD LOCK GASKETS INSTALLED WITHIN THE CASING PIPE. ALL PVC CARRIER PIPE MUST HAVE BELL RESTRAINTS ON EVERY PIPE BELL WITHIN THE CASING PIPE.
  - WATER LINES SHALL BE "CENTERED" IN CASING.
  - MAINTAIN 18" MINIMUM BETWEEN WATER AND SEWER MAINS. SEE "WATER CROSSING AT SEWER LINE" DETAIL.
  - ALL ENCASEMENT PIPE SHALL BE NEW STEEL & HAVE A MINIMUM WALL THICKNESS AS SHOWN IN THE ENCASEMENT/CARRIER PIPE SIZING CHART.

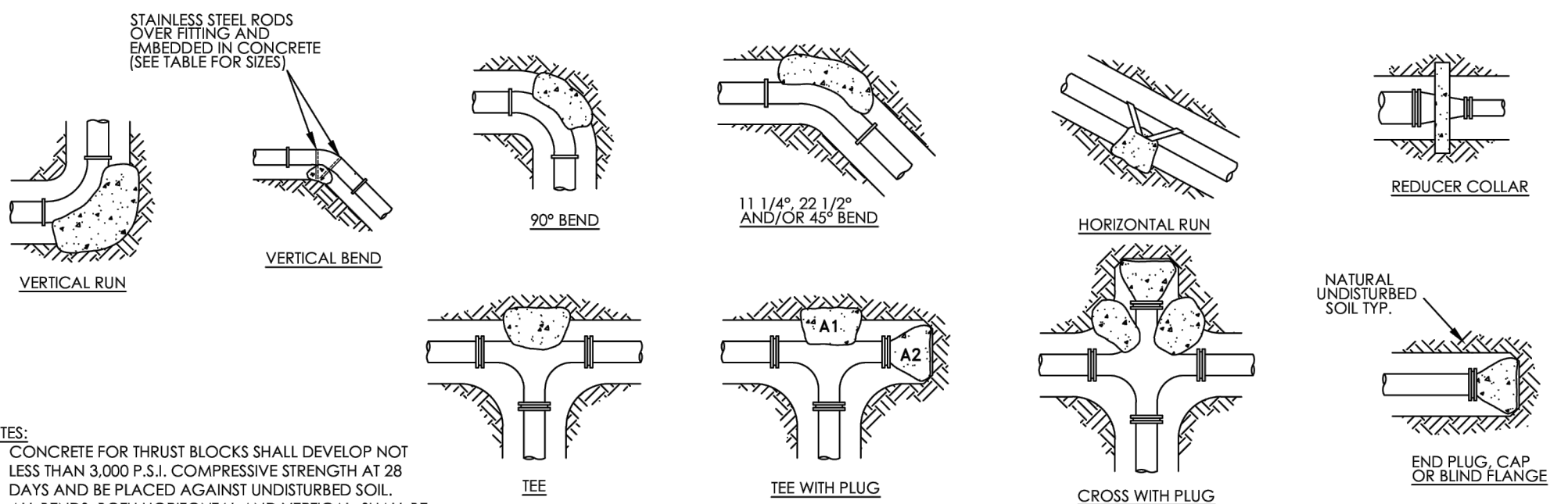
NOMINAL WATER LINE SIZE	NOMINAL ENCASEMENT SIZE (MIN.)	MIN. WALL THICKNESS (IN.)
3"	6"	0.250 (1/4")
4"	8"	0.250 (1/4")
6"	12"	0.250 (1/4")
8"	16"	0.250 (1/4")
10"	20"	0.250 (1/4")
12" TO 14"	24"	0.3125 (5/16")
16" TO 18"	30"	0.375 (3/8")
20" TO 24"	36"	0.500 (1/2")

**ENCASEMENT / CARRIER PIPE SIZING CHART**  
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**WATER MAIN ENCASEMENT**  
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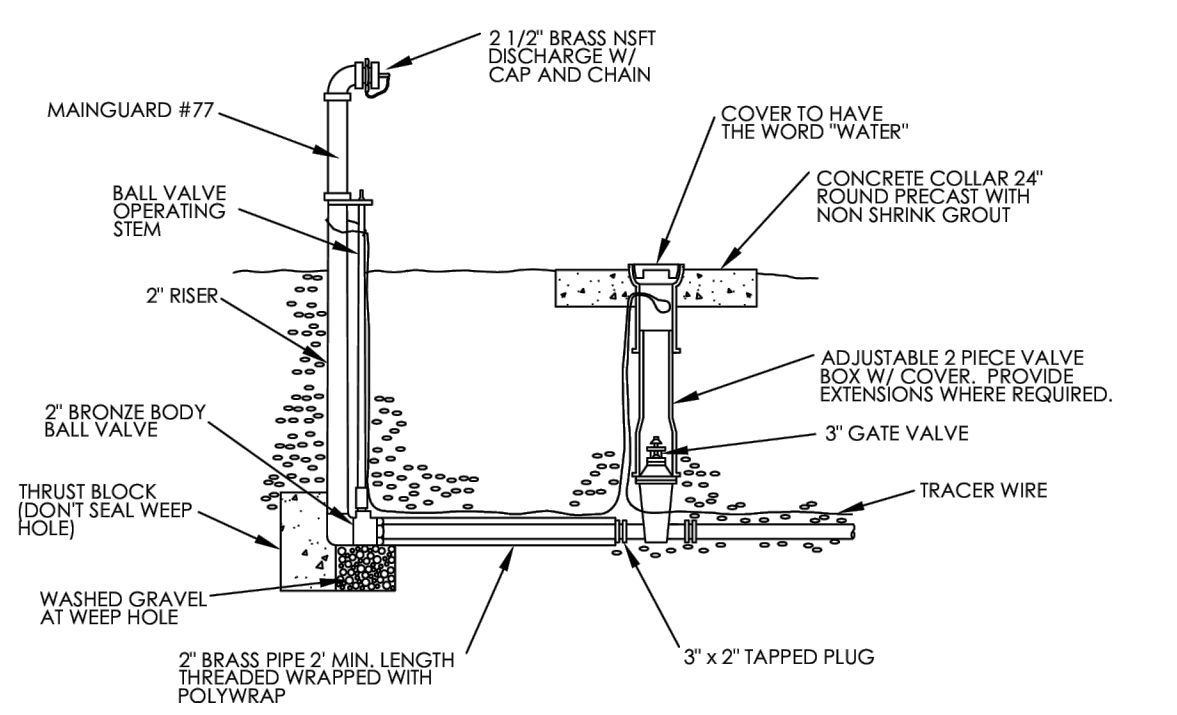
**FIRE HYDRANT ASSEMBLY**  
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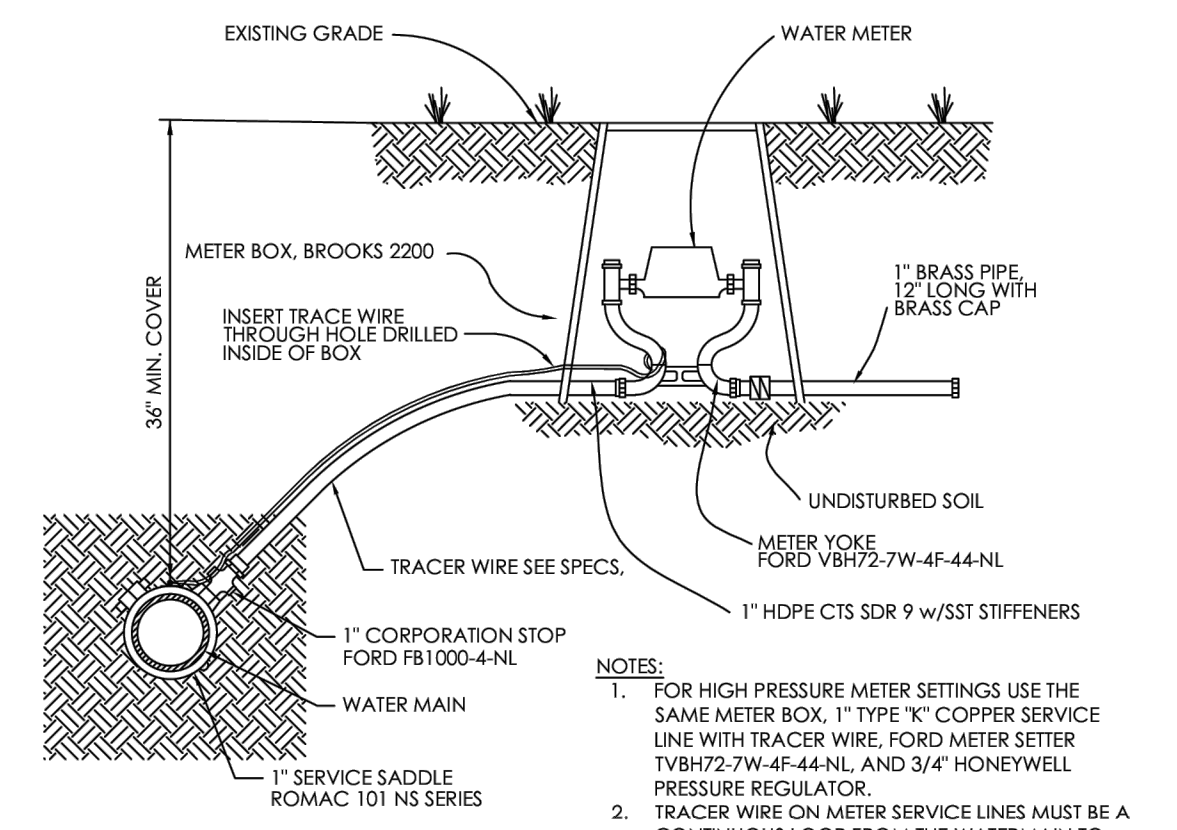
- NOTES:
- CONCRETE FOR THRUST BLOCKS SHALL DEVELOP NOT LESS THAN 3,000 P.S.I. COMPRESSIVE STRENGTH AT 28 DAYS AND BE PLACED AGAINST UNDISTURBED SOIL.
  - ALL BENDS, BOTH HORIZONTAL AND VERTICAL, SHALL BE BACKED WITH CONCRETE. VERTICAL BENDS SHALL BE BACKED WITH CONCRETE PADS WHERE BENDS TURN UP, OR LOADED WHERE BENDS TURN DOWN.
  - WRAP PIPE JOINTS IN 8 MIL POLYETHYLENE BEFORE PLACING CONCRETE. USE LONG-RADIUS FITTINGS WHEREVER POSSIBLE.
  - BEARING AREA SHOWN IN TABLE IS BASED UPON A 2,000 LB/SF SOIL BEARING, AND UPON A PIPE LINE PRESSURE OF 200 PSI PLUS WATER HAMMER. AREAS SHOWN SHALL BE ADJUSTED, SHOULD FIELD CONDITIONS VARY.
  - UTILIZE MEGALUG THRUST RESTRAINTS ON MECHANICAL JOINT FITTINGS AND VALVES, IN ADDITION TO THESE THRUST BLOCKS.

BEARING AREA OF THRUST BLOCKS IN SQ. FT. (HORIZONTAL BENDS)								VOLUME OF THRUST BLOCKS IN CU. YDS. (VERTICAL BENDS)							
FITTING SIZE	TEE WYE PLUG OR CAP	90° BEND PLUGGED	TEE PLUGGED ON RUN (A)	TEE PLUGGED ON RUN (B)	BEND ANGLE			FITTING SIZE	BEND ANGLE	R.O.D. SIZE	EMBEDMENT	CUBIC YARDS			
					45°	22 1/2°	11 1/4°						45°	22 1/2°	11 1/4°
2, 3, 4, 4	1.3	1.8	1.3	1.8	1.0	1.0	-	2, 3, 4, 4	1.5	0.5	0.3	-	#6	30"	
6	2.8	4.0	2.8	4.0	2.2	1.7	1.0	-	6	3.4	1.3	0.6	-	#6	30"
8	5.0	7.1	5.0	7.1	3.8	2.0	1.0	-	8	5.1	2.0	0.8	-	#6	30"
10	7.9	11.1	7.9	11.1	6.0	3.1	1.6	-	10	8.0	3.1	1.2	-	#6	30"
12	11.3	16.0	11.3	16.0	8.7	4.4	2.3	-	12	11.3	4.3	1.7	-	#6	30"

**THRUST BLOCKING**  
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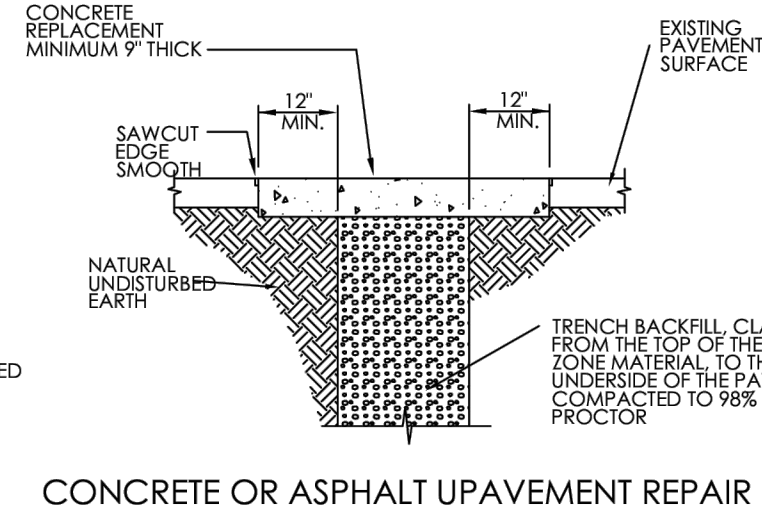
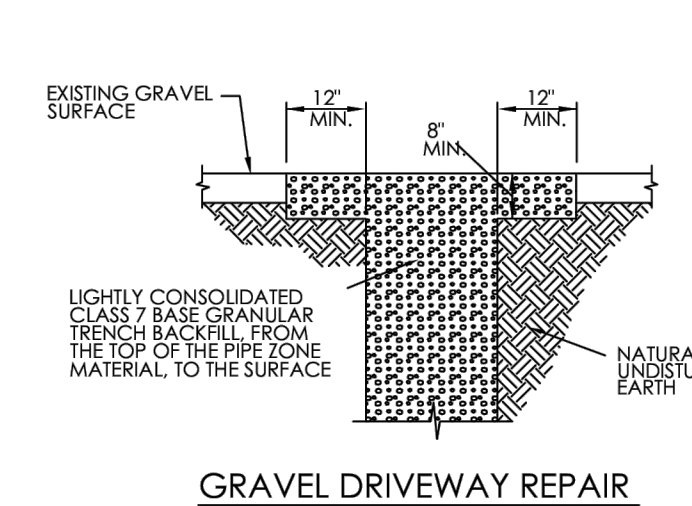
**BLOWOFF ASSEMBLY**  
NTS



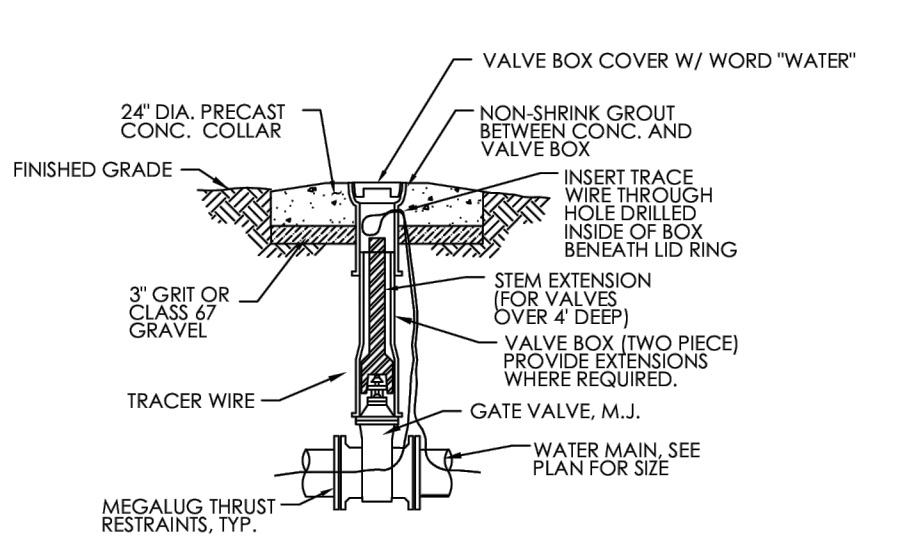
**SINGLE METER SETTING**  
NTS

- NOTES:
- FOR HIGH PRESSURE METER SETTINGS USE THE SAME METER BOX, 1" TYPE "C" COPPER SERVICE LINE WITH TRACER WIRE. FORD METER SETTER TVB72-7W-4F-44NL AND 3/4" HONEYWELL PRESSURE REGULATOR.
  - TRACER WIRE ON METER SERVICE LINES MUST BE A CONTINUOUS LOOP FROM THE WATERMAIN TO THE METER SETTER AND BACK. TRACER SHALL BE SPLICED WITH GREASE FILLED DIRECT BURY WIRE NUTS.

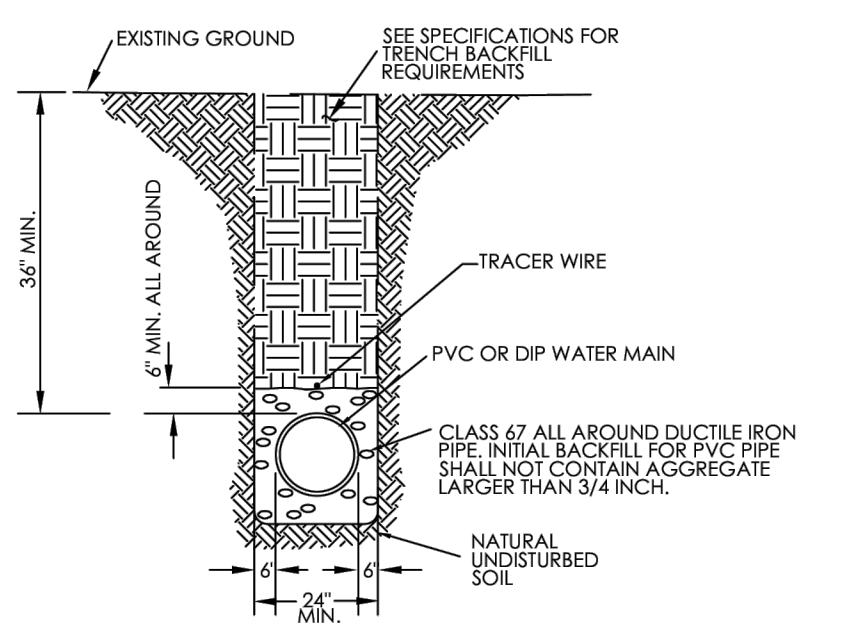
\*ALL COMPONENT/FITTINGS SHALL MEET THE FEDERAL DEFINITION OF "LEAD-FREE"



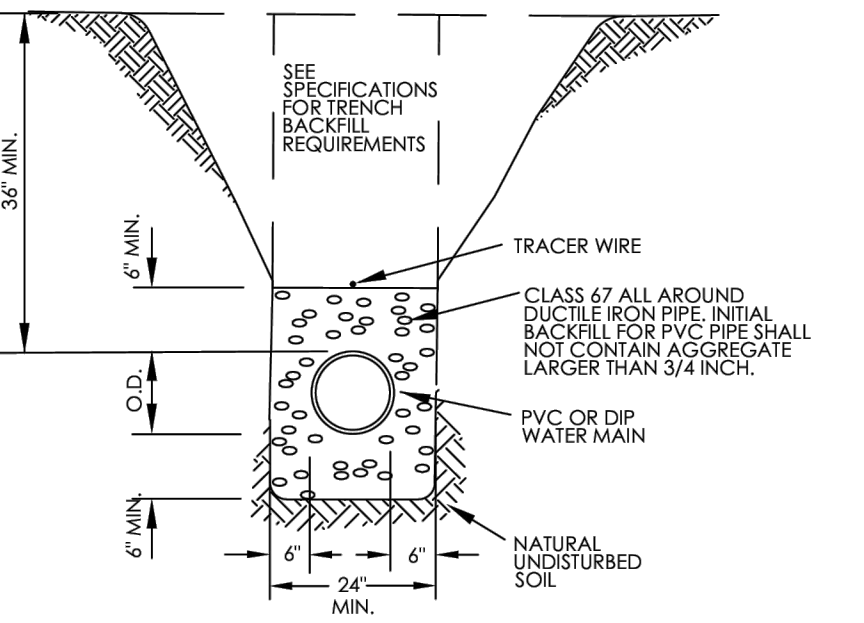
**REPAIR DETAILS**  
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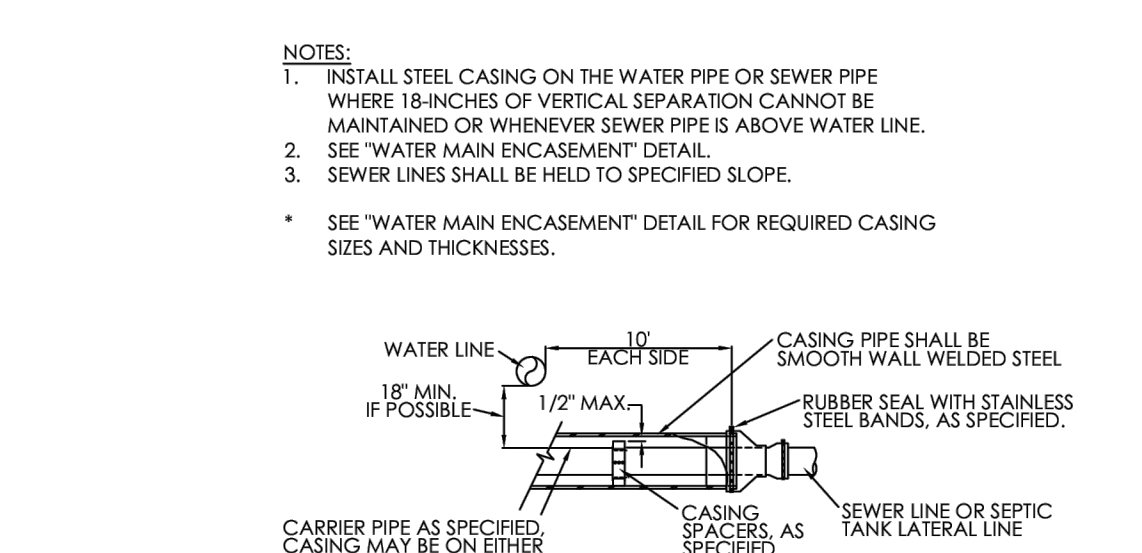
**GATE VALVE**  
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**TYPICAL SOIL TRENCH**  
NTS



**ROCK EXCAVATION TRENCH**  
NTS



**WATER CROSSING AT SEWER LINE**  
NTS

Washington Water Authority  
12567 West Highway 62  
Farmington, AR 72730  
479-267-2111

WVA STANDARD DETAILS  
2023  
WASHINGTON COUNTY, ARKANSAS

Drawn By: RZJ  
Checked By: LFG

Date: 08/07/2023  
Scale: NTS  
Revisions: 08/07/2023

Sheet  
1 of 1

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ISSUE DATE: mm/dd/yyyy  
CONTACT: C. GARDNER  
DATE: \_\_\_\_\_  
BY DATE: \_\_\_\_\_

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