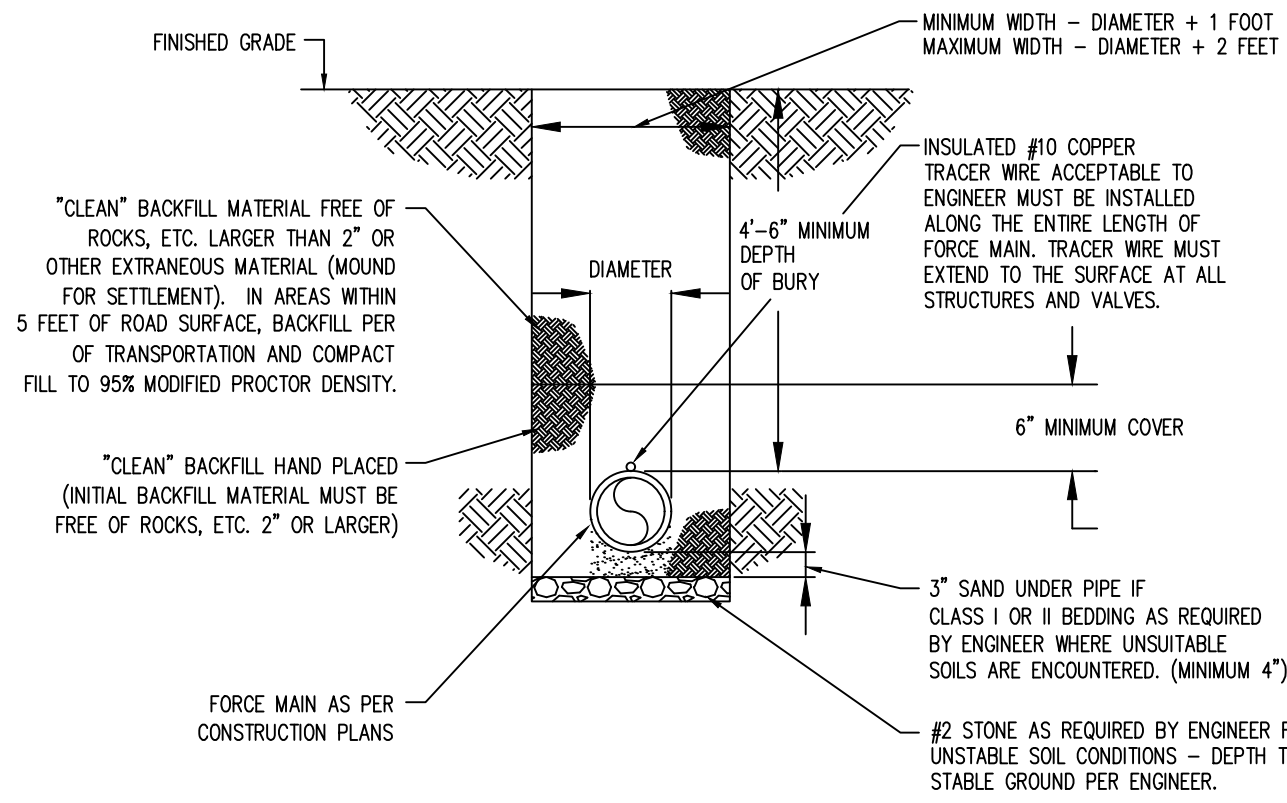


TYPE OF SOIL	SIZE OF THRUST BLOCK IN SQUARE INCHES												COORDINATE WITH ENGINEER							
	1/2" (11-1/4" & 1/8" (22-1/2") BOND				1/8" (45) BOND				1/4" (90) BOND					TEE & END PLUG	IN LINE VALVE					
	1.5"	2"	2.5"	3"	4"	1.5"	2"	2.5"	3"	4"	1.5"	2"	2.5"			3"	4"	1.5"	2"	2.5"
LOOSE SAND & GRAVEL, SOFT CLAY	20	30	40	60	100	40	60	80	110	190	70	100	140	210	340	50	70	100	150	240
COMPACTED SAND & GRAVEL, DENSE SILT, FIRM TILL & STIFF CLAY	10	20	30	40	50	20	30	40	60	100	40	50	70	110	170	30	40	50	80	120
VERY STIFF CLAY, DENSE TILL, SHALE OR ROCK	10	10	20	20	40	20	20	30	40	70	30	40	50	70	120	20	30	40	50	80

- NOTES:
- BLOCKS DESIGNED FOR 100 P.S.I. PRESSURE. FOR HIGHER PRESSURES CONTACT ENGINEER.
  - VERTICAL BENDS DOWNWARDS (3" AND GREATER) SHOULD BE INDIVIDUALLY DESIGNED USING FLANGED OR RESTRAINED JOINTS.
  - CONCRETE FOR THRUST BLOCKS TO BE 3750 P.S.I. LAID TO UNDISTURBED BEARING WALL OF THE TRENCH IN THE FORM OF A WEDGE WITH THE WIDE END AGAINST THE TRENCH WALL.
  - THRUST BLOCKING IS REQUIRED FOR ALL FORCE MAIN LOCATIONS WHERE THE MAIN CHANGES DIRECTION BY 11.25° OR MORE.
  - A THREE (3) INCH SAND CUSHION REQUIRED BETWEEN FITTING AND THRUST BLOCK.

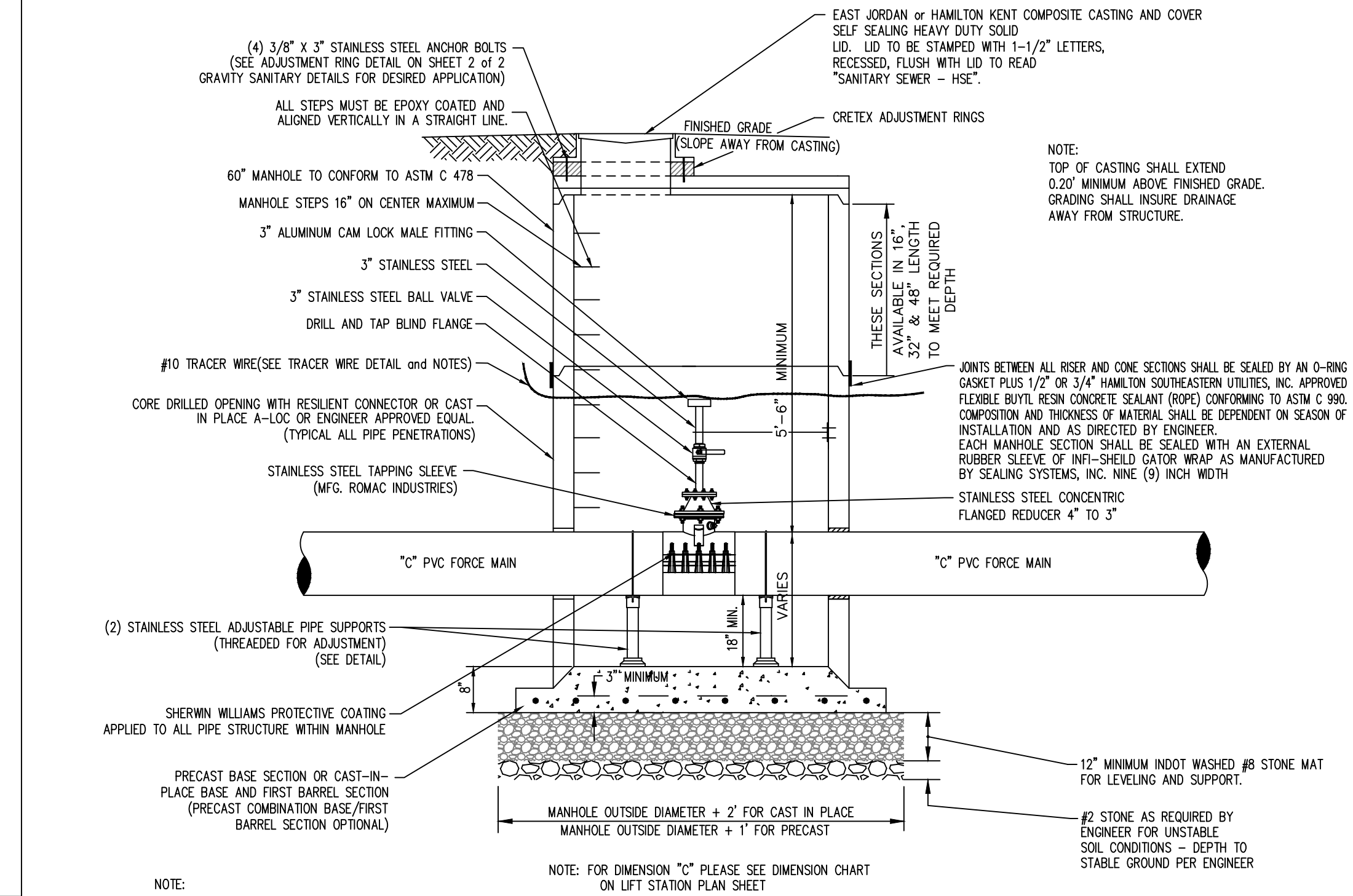
### FORCE MAIN THRUST BLOCKING DETAIL

NO SCALE



### FORCE MAIN TRENCH DETAIL

NO SCALE

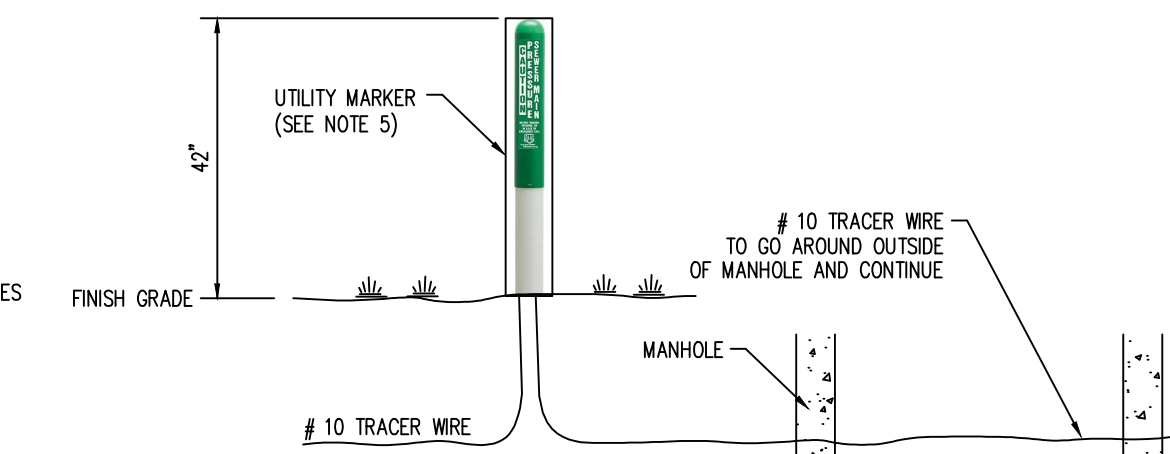


### CLEAN-OUT MANHOLE DETAIL

NO SCALE

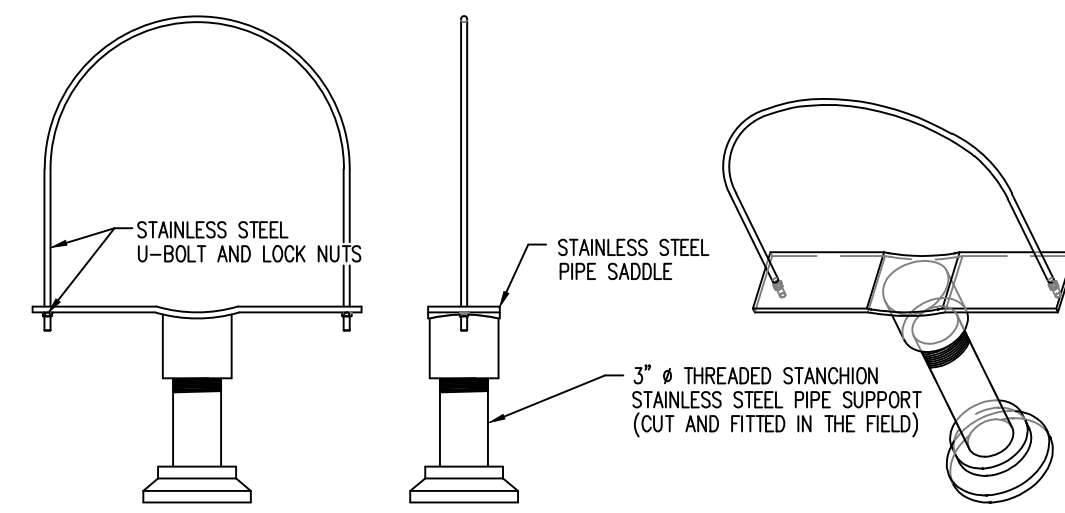
### NOTES:

- MANHOLE TO BE LOCATED SUCH THAT AIR/VACUUM DOES NOT INTERFERE WITH ACCESS OPENING.
- TOP OF CASTING SHALL EXTEND
- MANHOLE SECTIONS SHALL CONFORM TO ASTM C 478 UTILIZING 4,000 PSI CONCRETE. JOINTS SHALL CONFORM TO ASTM C 443. SIX (6) INCH AND EIGHT (8) INCH BOX STRUCTURES FOR LARGER FORCEMAIN SIZES.
- CONTRACTOR TO PROVIDE OPTIONAL VALMATIC CLEANING CONNECTIONS AND HOSES
- #10 TRACER WIRE TO BE CARRIED AROUND MANHOLE ENTRANCE AND SUPPORTED IN A TAPCO® MODEL NUMBER 113781A ROUND DOME UTILITY MARKER, WHITE POLE 66", 42" ABOVE GROUND, GREEN TOP UTILITY MARKER TO BE LOCATED OUTSIDE THE MANHOLE (SEE DETAIL).



### TRACER WIRE DETAIL

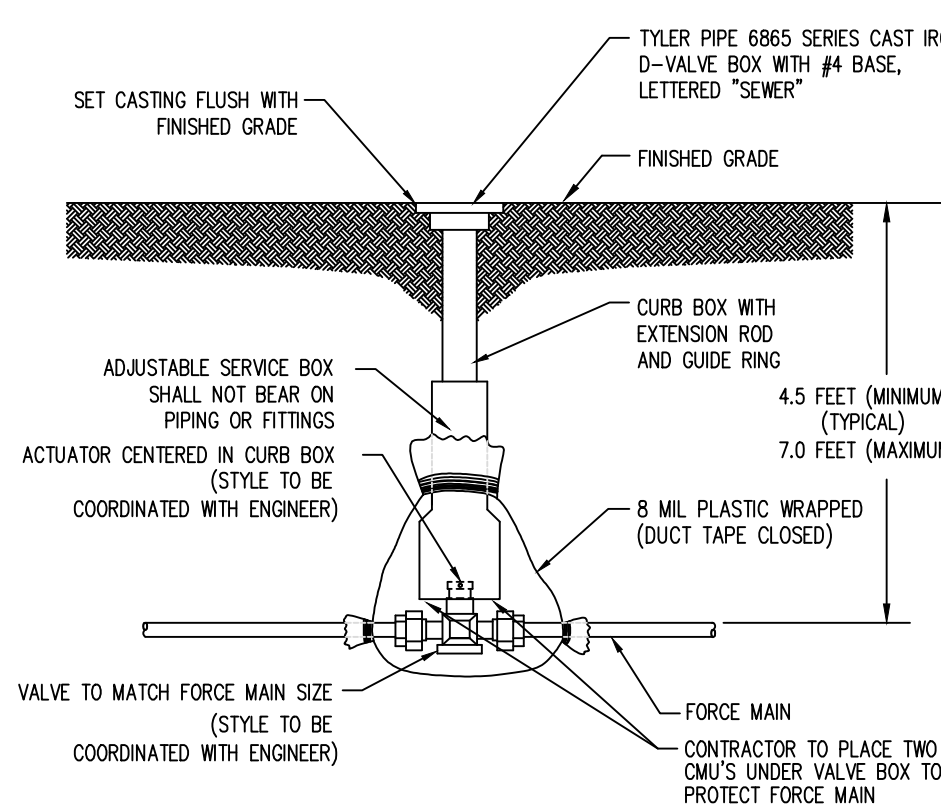
NO SCALE



- NOTES:
- ANVIL INTERNATIONAL SIZES RANGE FROM 4" TO 36"
  - ADJUSTMENT IS OBTAINED BY TURNING THE LOCKNUT NIPPLE. THE LOWER END OF THE NIPPLE IS STAKED, UP-SETTING THE THREADS TO PREVENT SEPARATION OF NIPPLE AND COUPLING DURING ADJUSTMENT.

### ADJUSTABLE PIPE SADDLE WITH U-BOLT

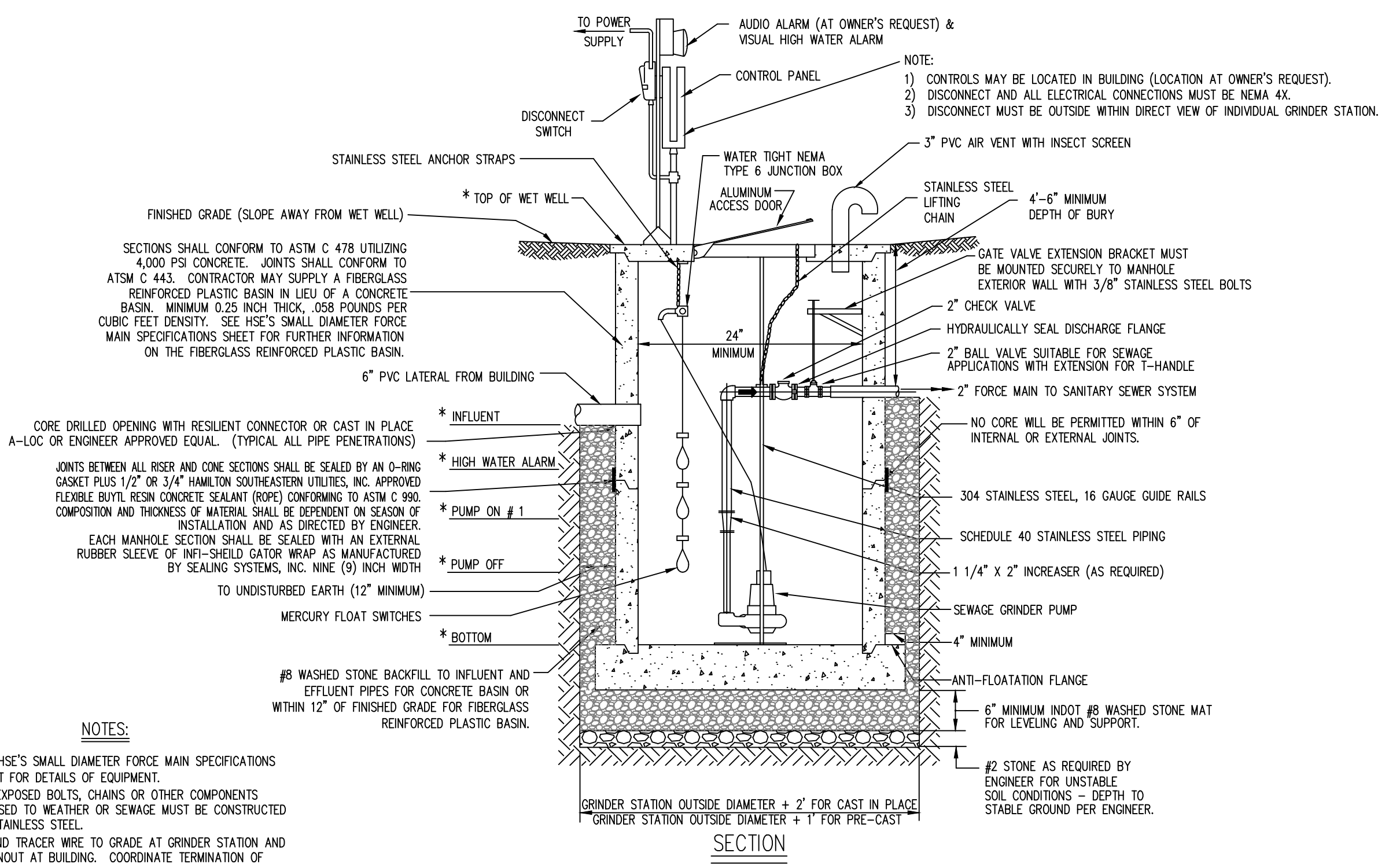
NO SCALE



NOTE: CONTRACTOR SHALL SUPPLY TEE HANDLE ACTUATOR

### ISOLATION VALVE DETAIL

NO SCALE



### INDIVIDUAL GRINDER STATION DETAIL

NO SCALE (COMMERCIAL ONLY)

### DISCLAIMER

HSE'S GRINDER PUMP DETAILS AND SMALL DIAMETER FORCE MAIN SPECIFICATIONS ARE COMPLEMENTARY IN NATURE AND SHOULD NOT BE INTERPRETED INDIVIDUALLY WITHOUT REFERENCE TO THE OTHER SHEETS.

REVISED 04/05/2018

NOTE: CONTRACTOR SHALL CONTACT ENGINEER PRIOR TO PURCHASING ANY EQUIPMENT FOR THIS PROJECT TO VERIFY PROPER INTERPRETATION OF SPECIFICATIONS AND CONSTRUCTION PLANS.

### ENGINEER

SAMCO  
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DATE	CHECK NO.	BY	DATE	CHECK NO.	BY
11/17/2017	1	WPF	11/17/2017	1	WPF
03/02/2018	2	WPF	03/02/2018	2	WPF

CERTIFIED

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JOB NO.

PROJECT

PREPARED FOR  
Hamilton Southeastern Utilities, Inc.

TITLE

TYPICAL GRINDER PUMP SANITARY SEWER DETAILS

SHEET