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 8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4906	UC-3F
DESIGNED BY: SHF	
DRAWN BY: SHF	
CHECKED BY: KCZ	
APPROVED BY: KCZ	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

**UTILITY CONSTRUCTION**

**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**Weston & Sampson**  
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 598 East Chatham Street Suite 137  
 Phone: 919.297.0220

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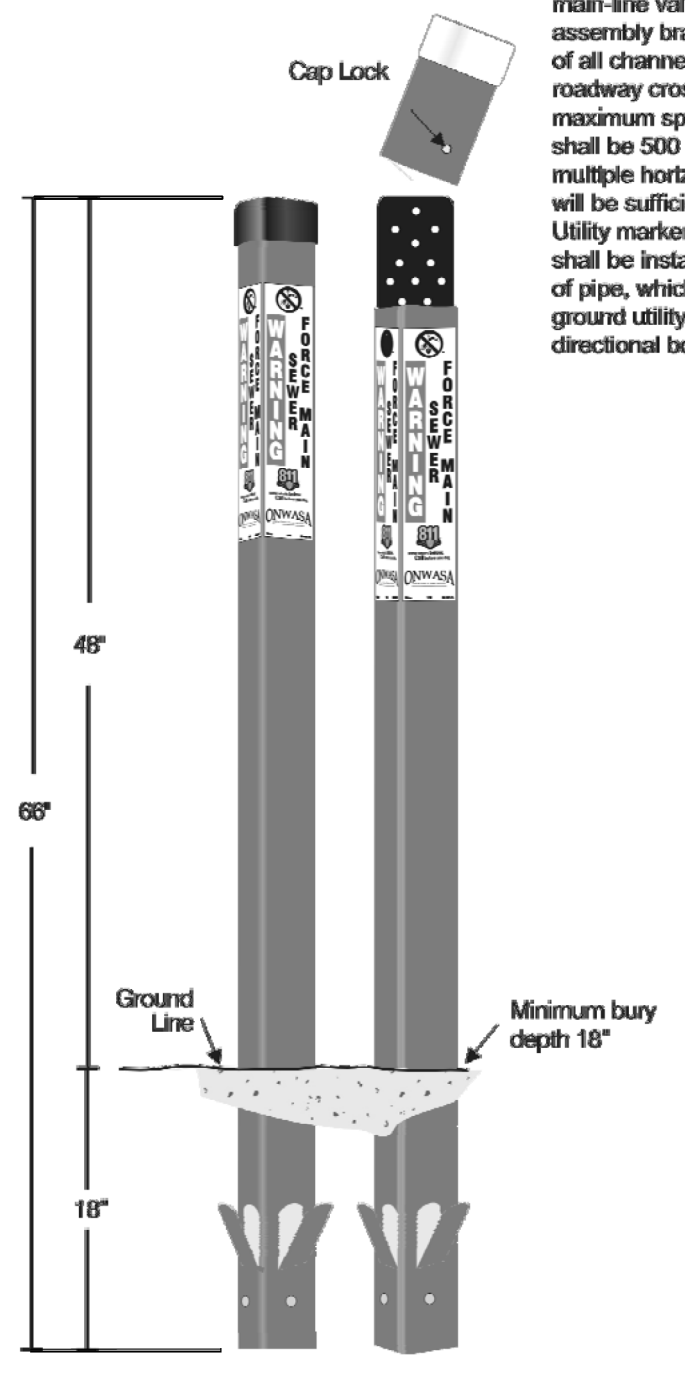
- Parts List**
- 1 - Rhino # TVF66GB - Rhino TriView Flex™, 66" Green with Black Cap OR
  - 1 - Rhino # TVT66GW2 - Rhino TriView™ Test Station, 66", 2 Inside Terminals, Green with White Cap
  - 1 - Cap Lock - TS-LOCK for Test Stations
  - 3 - Decal # SD-8517K Custom Decals

**NOTES:**

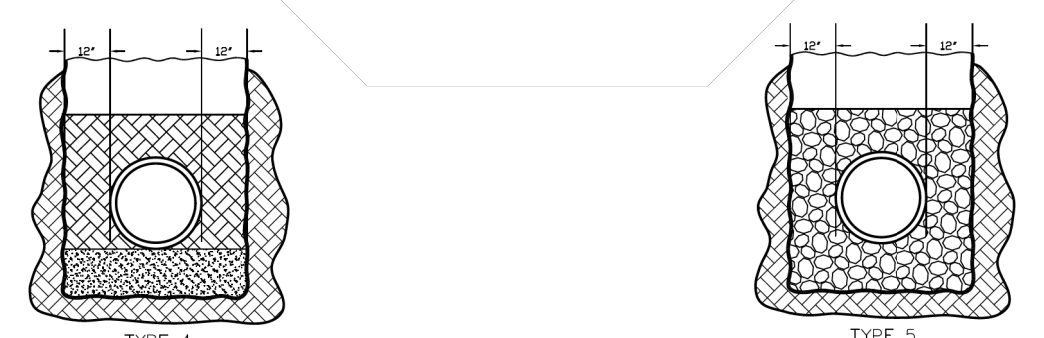
The TriGrip Anchor Flaps™ shall be extended prior to burial of the post. Soil shall be compacted during placement of marker post.

All materials shall be provided by Rhino Marking & Protection Systems, Inc.

Install above-ground utility markers at horizontal bends, main-line valve boxes (not within 10 feet of a fire hydrant assembly branch), ends of directional bores, bank edge of all channels crossed by directional bores, each side of a roadway crossing, and along the piping alignment. The maximum spacing for the above-ground utility markers shall be 500 linear feet. In locations where there are multiple horizontal bends in close proximity, one marker will be sufficient to demonstrate the change in direction. Utility markers designed to provide access to tracer wire shall be installed at every third marker, or every 1000 feet of pipe, whichever is lesser. Tracer wire accessible above-ground utility markers shall also be installed at ends of directional bores.



STANDARD UTILITY MARKER FOR SEWER FORCE MAIN  
NOT TO SCALE

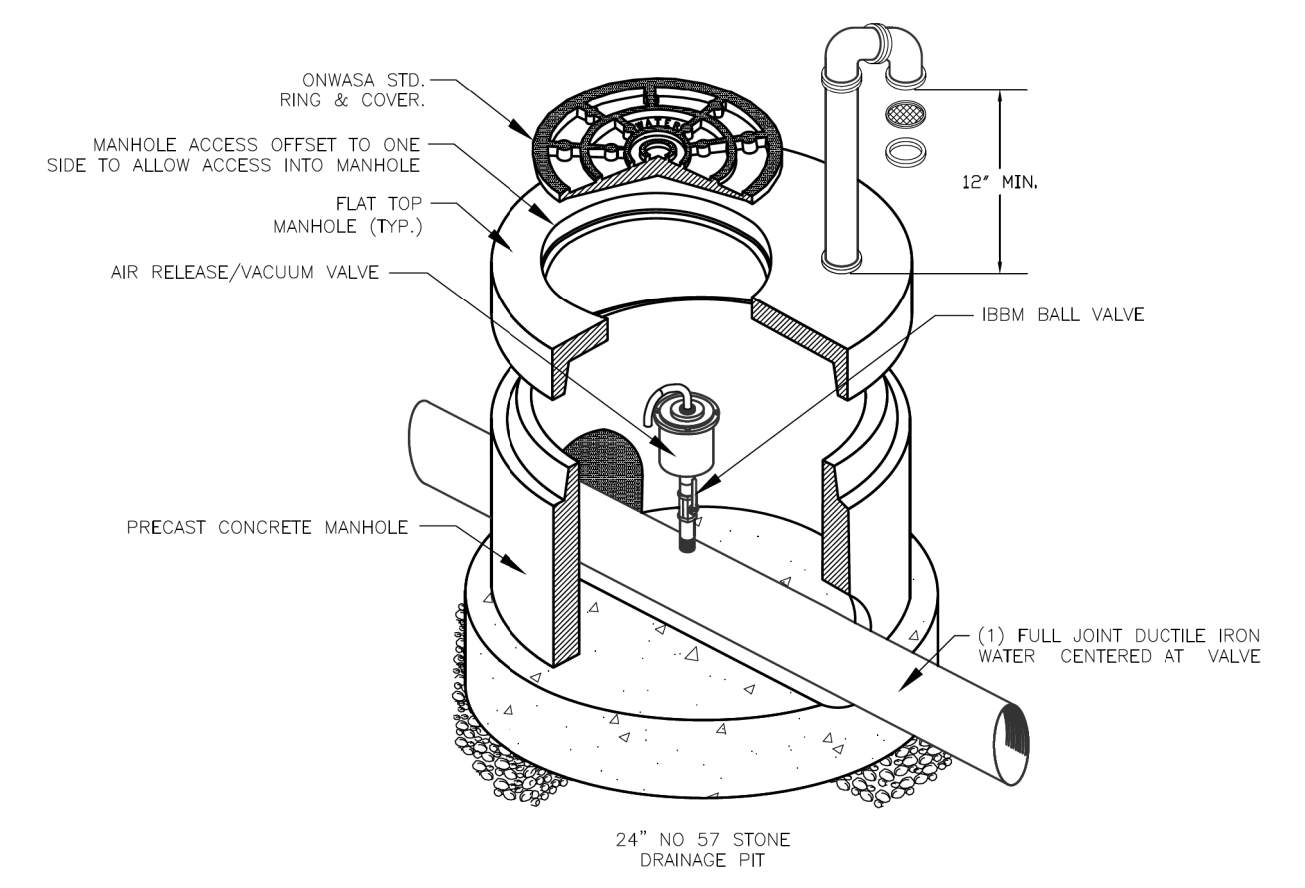


**TYPE 4**  
 PIPE BEDDED IN SAND, GRAVEL OR CRUSHED STONE TO A DEPTH OF 1/8 PIPE DIAMETER, 4" MINIMUM WITH BACKFILL COMPACTED TO TOP OF PIPE  
 (APPROXIMATELY 90 PERCENT STANDARD PROCTOR, AASHTO T-99)

**TYPE 5**  
 PIPE BEDDED TO ITS CENTERLINE IN COMPACTED GRANULAR MATERIAL, 4" MINIMUM UNDER PIPE. COMPACTED GRANULAR OR SELECT MATERIAL TO TOP OF PIPE.  
 (APPROXIMATELY 90 PERCENT STANDARD PROCTOR, AASHTO T-99)  
 (SELECT MATERIAL IS DEFINED AS NATIVE SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, ORGANIC MATERIAL, FOREIGN MATERIALS AND FROZEN EARTH)

- NOTES:**
- FOR NORMAL PIPE SIZES 14 INCH AND LARGER, CONSIDERATION SHOULD BE GIVEN TO THE USE OF LAYING CONDITIONS OTHER THAN TYPE 1.
  - CONSIDERATION OF THE PIPE-ZONE EMBEDMENT CONDITIONS INCLUDED IN THIS FIGURE MAY BE INFLUENCE BY FACTORS OTHER THAN PIPE STRENGTH. FOR ADDITIONAL INFORMATION ON PIPE BEDDING AND BACKFILL, SEE ANSI/AWWA C600.

SEWER FORCE MAIN EMBEDMENT DETAILS  
NOT TO SCALE



- WHEN TAPPING THE SEWER MAIN, DO NOT EXCEED THE PIPE MANUFACTURERS ALLOWANCES.
- ON ALL AIR RELEASE VALVES USE DOUBLE STRAP SERVICE SADDLE.
- UNLESS OTHERWISE INDICATED ON THE PLANS, MANHOLE SHALL BE FLAT-TOP.
- AIR RELEASE/VACUUM VALVE SHALL BE CRISPIN S SERIES OR VAL-MATIC SERIES 300.
- IF FORCE MAIN IS DUCTILE IRON UPSTREAM AND DOWNSTREAM OF AIR RELEASE VALVE, 5 FULL SECTIONS OF DUCTILE IRON PIPE, WITH EPOXY LINING PER THE PROJECT SPECIFICATIONS, SHALL BE CENTERED AT THE VALVE.
- AIR RELEASE/VACUUM VALVE MANHOLES SHALL BE 5" MINIMUM INSIDE DIAMETER.
- BOTTOM OF VENT PIPE SHALL BE A MINIMUM OF 12" OR 3' ABOVE FLOOD ELEVATION, WHICHEVER IS APPLICABLE

AIR RELEASE VALVE SEWER  
NOT TO SCALE

DETAILS APPLY TO ONWASA FACILITIES