



NO. DESCRIPTION:

1. VENT PER CLTW STANDARD DETAIL.
2. CLTW STANDARD CAST IRON FRAME AND COVER.
3. 12" OR 16" ON-CENTER STEP SPACING. SPACING IN ANY SINGLE MANHOLE SHALL BE UNIFORM AND EITHER ALL 12" OR ALL 16". STEP SPACING SHALL BE CONSISTENT THROUGHOUT A PROJECT.
4. TRANSITION OR FLAT TOP SLAB.
5. STEP PER CLTW STANDARD DETAIL.
6. 6" MINIMUM #57 STONE BASE, SUITABLE BEARING CAPACITY AS APPROVED BY GEOTECHNICAL ENGINEER.
7. 1 INCH PER FOOT SLOPE (TYP.).
8. FLEXIBLE WATERTIGHT CONNECTOR, (TYP.).
9. 6" (MIN.) WIDE BUTYL RUBBER JOINT WRAP REQUIRED ON EXTERIOR OF ALL JOINTS.
10. BUTYL RUBBER JOINT SEALANT-2 FULL CIRCLES EACH JOINT COMPRESSED (TYP.). USED BETWEEN PRECAST SECTIONS AND FRAME.
11. VARIES - INCREMENTS SHALL BE 1 FOOT INCREMENTS FOR 12" STEP SPACING AND 16" INCREMENTS FOR 16" STEP SPACING.
12. STRAIGHT WALL OF MH TO BE LOCATED OVER WIDEST SHELF.
13. TRANSITION TOP SHALL HAVE 12" OR 16" VERTICAL LAID LENGTH TO MAINTAIN STEP SPACING. TRANSITION AND FLAT TOP REINFORCEMENT SHALL BE SUBMITTED FOR REVIEW FOR STRUCTURAL INTEGRITY.
14. STEPS SHALL BE PLACED NO CLOSER THAN 1/2 THE STEP SPACING FROM A JOINT AND SHALL BE NO CLOSER THAN 6".
15. CONE SLOPE SHALL BE THE FULL CONE HEIGHT AS SHOWN HERE.

NOTES:

- A. MANHOLE TO CONFORM WITH ASTM C478 EXCEPT AS MODIFIED BELOW.
- B. MANHOLE BASE TO BE REINFORCED WITH A MINIMUM AREA OF 0.20 SQ. IN. PER LINEAR FOOT EACH WAY. WALL REINFORCING TO BE PER MANHOLE DIAMETER AS LISTED BELOW. EITHER TONGUE OR GROOVE SHALL HAVE REINFORCING EQUAL IN AREA TO MINIMUM OF WALL SECTION.

| MANHOLE DIAMETER | MANHOLE REINFORCEMENTS (SQ. IN. PER VERTICAL FOOT) |
|------------------|--|
| 6' | 0.18 |
| 7' | 0.21 |
| 8' | 0.24 |
| 9' | 0.27 |
| 10' | 0.30 |
| 11' | 0.33 |
| 12' | 0.36 |

- C. ALL JOINTS SHALL CONFORM WITH ASTM C990.
- D. STEPS TO CONFORM TO CLTW STANDARD DETAIL.
- E. ALL PIPE OPENINGS TO BE NO GREATER THAN 4" LARGER THAN OUTSIDE DIAMETER OF PIPE AND ADDITIONALLY REINFORCED WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90°. (ADDITIONAL REINFORCING NOT REQUIRED FOR CORED OPENINGS).
- F. ALL SURFACES SHALL BE SMOOTH EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FINS AND OTHER IMPERFECTIONS.
- G. PENETRATING LIFTING HOLES SHALL BE PLUGGED WITH EXPANSION GROUT OR HAVE WATERTIGHT PLASTIC INSERTS.
- H. INVERTS TO BE PRECAST CONCRETE.
- I. ALL MANHOLE SECTIONS SHALL BE DESIGNED FOR H-20 LOADING AND A MINIMUM HEIGHT OF 40 VERTICAL FEET.
- J. WIRE TO CONFORM WITH ASTM A1064, LOCATED IN CENTER 1/3 OF WALL (IF IT IS A SINGLE REINFORCEMENT CAGE. IF 2 CAGES ARE USED, THEN EACH CAGE SHALL HAVE A MINIMUM OF 1 INCH COVER TO THE INNER OR OUTER WALL FACE).
- K. REBAR TO CONFORM WITH ASTM A615 OR A706, GRADE 60.
- L. PRODUCT MARKINGS REQUIRED BY ASTM C478 SHALL BE MARKED ON BOTH THE INTERIOR AND EXTERIOR OF EACH PRECAST SECTION.
- M. ALL STEPS SHALL BE PULLOUT TESTED TO A MINIMUM LOAD OF 1,000 LBS. TEST REPORTS REQUIRED.
- N. PRECAST PRODUCT SHALL NOT BE SHIPPED FROM THE MANUFACTURER UNTIL IT HAS REACHED A MINIMUM OF 4,000 PSI COMPRESSIVE STRENGTH AND NO LESS THAN 7 DAYS AFTER CASTING, WHICHEVER IS GREATER.
- O. FOR 12" AND LARGER PIPE, PROVIDE FULL INVERT AS SHOWN. THE SHELF SHALL SLOPE 1 INCH PER FOOT (MIN.) FROM THE MANHOLE WALL TO THE TROUGH.
- P. OUTSIDE DROP SHALL NOT ENTER 5' RISER SECTIONS.
- Q. FOR 5' DIAMETER RISER AND CONES SECTIONS, REFER TO 5' DIAMETER MANHOLE DETAILS.
- R. INSIDE DROPS OR OUTSIDE DROPS SHALL ONLY ENTER MANHOLE RISER SECTION BELOW THE TRANSITION SLAB.
- S. FLUSH CAST IN PLACE FRAMES ARE PREFERRED ON FLAT TOP MANHOLES. BOLT DOWN FRAMES REQUIRE PRIOR APPROVAL BY CLT WATER.