

ND-02 MANHOLE CONSTRUCTION NOTES

The following shall be required when setting manholes on existing District sewers or connecting to existing District manholes.

1) MANHOLE INSTALLATION ON EXISTING DISTRICT SEWERS

- a) Contractor shall notify District 48 hours before installation and a District Inspector must be present before installation takes place.
- b) Manholes are required to be set for connecting sewers or lateral sewer connections that are 6 inches or larger on District sewers smaller than 20 inches. Minimum manhole diameter shall be in accordance with Standard Detail ND-03.
- c) Existing District sewers shall be fully supported at all times. Cut existing sewer to neat straight lines with cutting tools suitable for the pipe material. Damaged pipe shall be repaired or replaced at no additional cost to the District.
- d) Manholes shall be constructed using pre-cast polymer concrete per Standard Details ND-07, ND-12, and ND-14, unless otherwise directed by the District. All joints and connections must be sealed and watertight.
- e) Frame and cover shall be cast iron, traffic rated, and marked "NORTH DAVIS SEWER" with a vented lid per Standard Detail ND-04.
- f) The base of the manhole shall provide a minimum of 9 inches of material beneath the existing pipe, unless otherwise shown, and placed on 12 inches of one-inch gravel bedding compacted to 95% density. Contractor shall provide suitable foundation as directed by the District in areas of unstable trench foundation, unsuitable materials, wet conditions, or over excavation. Manhole shall be constructed to prevent load on the existing sewer.
- g) Pipe connections to manholes shall be made using a booted flexible, water-tight, factory installed connection per ASTM C923. Booted flexible seals shall not exceed 50% of the manufacturer's recommendations for axial deflection in the installed condition. All hardware shall be 316 stainless steel. Z-Lok, Press-Seal, PSX, Kor-N-Seal Toggle, or approved equal.
- h) Flexible connections to manhole stub-outs shall be in accordance with ASTM C1173. All hardware shall be 316 stainless steel. Fernco, Mission Rubber Company, or approved equal.
- i) Contractor shall be responsible for proper slope and installation of connecting lateral sewer. Invert of lateral sewer shall match the crown of the existing District sewer.
- j) Manhole benches shall be a minimum of 2 inches above top of the District sewer with a 12:1 slope to the channel and a smooth finish. Channels shall be formed with same slope, size, depth, and shape as District sewer with a smooth finish. Connecting lateral sewers shall be curved in the direction of flow with uniform radius and to minimize dropping and splashing of flow. See detail ND-07.
- k) Provide exterior joint wrap for new construction, repair or rehabilitation of concrete manholes, and polymer manholes greater than 72-in in diameter. Exterior joint wrap shall conform to ASTM C877 Type II or Type III. Press-Seal EZ-Wrap, Cretex Wrap, Conwrap 212, or approved equal.
- l) Contractor shall be solely responsible for proper backfilling, compaction, and testing of street section and meet all restoration requirements of the Agency, City, or UDOT where the manhole is installed. Contractor must coordinate any additional installation or inspection requirements with the appropriate Agency.
- m) No ladder rungs shall be provided.
- n) Where required, concrete shall be Type I/II Portland Cement per ASTM C150 with a minimum compressive strength of 4000 psi per ASTM C39. No additives shall be permitted without prior approval by the District. Encasement shall be cast in a single placement.



2) LATERAL SEWER CONNECTIONS TO EXISTING MANHOLES

- a) Items a through n in Section 1 "MANHOLE INSTALLATION ON EXISTING DISTRICT SEWERS" shall apply.
- b) No manhole connection shall be made until complete design drawings of the manhole and sewer installations are submitted to the District for approval - 14 days prior to work commencing.
- c) Existing manhole bench and channel shall be reconstructed to match the diameter, shape, and slope of the incoming lateral sewer. Channel shall be made with smooth saw cuts in the direction of flow with uniform radius to minimize dropping and splashing.

3) SEWER BYPASSING AND DEWATERING

- a) Where required, bypassing and sewer dewatering of District sewers shall be performed in accordance with Standard Detail ND-05.

4) MANHOLE TESTING AND ACCEPTANCE

- a) The Contractor shall test each manhole with a vacuum test prior to backfilling in accordance with ASTM C1244.
- b) The District reserves the right to require additional vacuum testing or an exfiltration test per ASTM C969, after backfilling.
- c) Acceptance testing, final completion, and warranty requirements shall be per Standard Detail ND-06.



TABLE 2A. Standard Details Pertaining to Manholes

STANDARD DETAIL NO.	STANDARD DETAIL TITLE	USE	DISTRICT APPROVAL REQUIRED
ND-03	MANHOLE DIAMETER REQUIREMENTS	MANHOLE CONSTRUCTION	
ND-04	MANHOLE COVER AND GRADE RING		
ND-05	FLOW CONTROL AND BYPASS PUMPING REQUIREMENTS		
ND-06	ACCEPTANCE TESTING, FINAL COMPLETION, AND WARRANTY REQUIREMENTS		
ND-07	STANDARD MANHOLE CONNECTION	CONNECTING TO DISTRICT SEWERS THAT ARE LESS THAN 48" IN DIAMETER	
ND-08	STANDARD MANHOLE DETAIL 48" DIA CONCRETE SEWER OR LARGER	CONNECTING TO RCP/CP DISTRICT SEWERS THAT ARE 48" IN DIAMETER OR LARGER	
ND-09	STANDARD CONCRETE MANHOLE MODIFICATION DETAIL ON 48" DIA CONCRETE SEWER OR LARGER	CONNECTING TO RCP/CP DISTRICT SEWERS THAT ARE 48" IN DIAMETER OR LARGER BY MODIFYING EXISTING MANHOLE	
ND-10	STANDARD FRP TEE BASE MANHOLE DETAIL 48" DIA FRP SEWER OR LARGER	CONNECTING TO FRP DISTRICT SEWERS THAT ARE 48" IN DIAMETER OR LARGER	
ND-11	STANDARD MANHOLE DETAIL FRP	FRP MANHOLE FOR CONNECTING TO FRP DISTRICT SEWERS LESS THAN 48" DIAMETER	
ND-12	STANDARD POLYMER MANHOLE DETAIL FOR 42" DIA SEWER OR SMALLER	48", 60", AND 72" DIAMETER MANHOLES	
ND-13	STANDARD GREASE INTERCEPTOR		
ND-14	STANDARD POLYMER MANHOLE DETAIL FOR 48" DIA SEWER OR LARGER	MANHOLES THAT ARE GREATER THAN 72" IN DIAMETER	
ND-15	PARTIAL MANHOLE REPLACEMENT OR ADJUSTMENT		
ND-16	MANHOLE CONNECTION TO CIPP LINED PIPE		



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