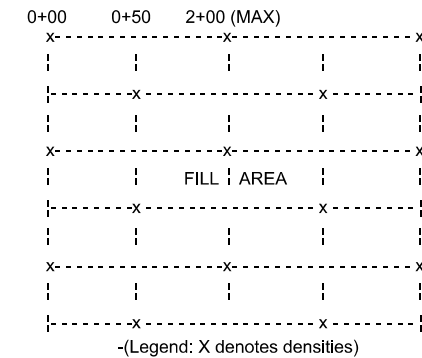


WASTEWATER GENERAL NOTES

1. All construction shall be in accordance with the standard specifications and details of the Town of Northlake and the Fourth Edition of the "Standard Specifications for Public Works Construction - North Central Texas" herein referred to as "COG". Copies may be obtained from the North Central Texas Council of Governments, 616 Six Flags Drive, Suite 200, Arlington, Texas 76005-5888.
2. For 6-inch to 15-inch sizes, wastewater lines shall be ASTM D3034 Polyvinyl Chloride (PVC) SDR 35 for depths less than 14 feet. For depths greater than 14 feet, SDR 26 shall be used.
3. For 18-inch to 48-inch size wastewater mains shall be one of the following types:
 - a. ASTM F679 PVC, Large-Diameter Plastic Gravity Sewer Pipe and Fittings
 - b. ASTM F794 PVC, Profile Gravity Sewer Pipe and Fittings based on a Controlled, Inside Diameter
 - c. ASTM F949 PVC, Corrugated Sewer Pipe with a Smooth Interior Lining
 - d. ASTM F1803 PVC, Closed Profile Gravity Sewer Pipe and Fittings based on Controlled, Inside Diameter
4. All pipe joints shall be gasketed, bell and spigot, push-on type conforming to ASTM D3212 and compatible with the type of pipe to which they are attached.
5. All PVC pipe shall have a minimum pipe stiffness that equals or exceeds 46 psi.
6. For creek crossings with less than 5 feet of cover to the creek flowline, the pipe shall be PVC with concrete encasement.
7. Embedment and backfill shall be as per the Wastewater Details for pipes 6-inch to 15-inch diameter. Larger pipes shall be installed per ASTM D2321 and manufacturers recommendations with embedment and backfill details shown on the plans.
8. The minimum cover over all wastewater mains is 4 feet, unless approved by the Town. Approved mains with less than 3.5 feet of cover shall be capped as per details.
9. Clay cut-off walls shall be constructed as per the Wastewater Details.
10. PVC wastewater pipe is allowed to be stored a maximum of six (6) months without cover. Thereafter all pipes should be covered or protected from sunlight and to be protected from other elements.
11. When PVC wastewater pipe is installed in casing, skids must be used to prevent damage to the pipe and bell during installation. PVC pipe should not rest on the Bells. Plastic spacers such as RACI or approved equal shall be used.
12. All property corners shall be staked with iron pins prior to the installation of any wastewater services. The locations of the wastewater service shall be staked according to the plans.
13. Wastewater services to be marked with "S" stamped or cut in the curb.
14. All new manhole locations shall be marked with "MH" stamped or cut on the curb.
15. All wastewater shall be one of the following standard sizes, 8-inch, 10-inch, 12-inch, 15-inch, 18-inch, 21-inch, 24-inch, 30-inch, or 36-inch.
 - a. The CONTRACTOR shall be responsible for notifying the Town Inspector at least 24 hours prior to any required testing.
 - b. Soil and material testing technicians shall provide written proof of having minimum of two (2) years of related field experience.
 - c. The CONTRACTOR shall coordinate all testing activities with the Town Inspector and shall facilitate required testing throughout the construction period. The Inspector shall be present during all testing.
 - d. The Town shall make final decision as to the validity of all testing results.


- e. The CONTRACTOR shall be responsible for ensuring that materials to be tested are in compliance with all plans and specifications prior to testing. All materials found not to be in compliance with the plans and specifications before and after testing shall be removed and replaced at the CONTRACTOR'S expense.
- f. All costs associated with the retesting of work that fails to meet the specifications required in the contract documents shall be borne by the CONTRACTOR. For Town projects, retesting cost shall be withheld from pay requests submitted by the CONTRACTOR, this cost will be based on the Town's cost with no additional mark-up. A letter of acceptance will not be issued until all testing deficiencies are addressed and all related cost paid.
- g. The Town Inspector shall be notified of concrete placement 24 hours in advance for steel and form inspection.
- h. One set of four cylinders (2-7 day, 2-28 day) for cast-in-place concrete shall be made for every day that concrete is placed (ASTM C-31). Air, slump, and temperature tests shall be taken for every set of cylinders made. Concrete with a temperature above 95 degrees will be rejected. Additional cylinders and or tests may be requested at the Inspector or ENGINEER'S discretion. Exterior forms shall not be removed for a minimum of 24 hours unless approved by Inspector or ENGINEER. Sulfate resistant concrete shall be used for all manholes.
- i. Backfill and Density Testing
 - 1) All trenches shall be backfilled in accordance with standard details and mechanically compacted with approved vibratory methods in accordance with COG Item 504.5.3.2.1 and paragraph 3) below unless otherwise stated on the plans or in the specifications.
 - 2) Densities shall conform to standard trench details, COG Item 504.5.3.2.1, and Paragraph 3) below unless otherwise stated on the plans or in the specifications. Proctor samples shall be taken for all classifications of soil on site. Atterberg Limits shall be determined on all Proctor samples. No "potholing" will be allowed. Densities shall be taken on all sewer services both sides of the street within the Right-of-Way and shall conform to Paragraph 3) below and COG Item 504.5.3.2.1, unless otherwise stated on the plans or in the specifications. Backfill adjacent to all structures shall be compacted manually and density tested on every lift.
 - 3) Mechanical Tamping of Backfill
 - a) All ditch lines and bore pits shall be mechanically tamped.
 - b) Backfill, other than select fill, may consist of onsite or offsite inorganic soils and should be placed in loose lifts 6" - 8" in thickness (not to exceed 12") and should be mechanically compacted to 95 percent of the maximum dry density as defined by ASTM D-698 (Standard Proctor) procedures under existing and proposed pavement, and to 90 percent standard proctor procedures elsewhere. The moisture content of the fill at the time of compaction shall be between minus 2% of optimum to four percentage points above the proctor optimum value.
 - c) All backfill material to be select native material, 6" diameter clods and smaller, unless directed otherwise on the plans or in the specifications and to be mechanically tamped and density controlled as described in Paragraph b) above.
 - d) Water Jetting is not permitted.
 - e) Densities shall be taken every one (1) lift at staggered locations not to exceed 200 feet increments. Offset fifty (50) feet every other lift.

- f) Densities may be taken at typical locations as shown below; also, densities will be taken at random locations and at the geo-technician's discretion.

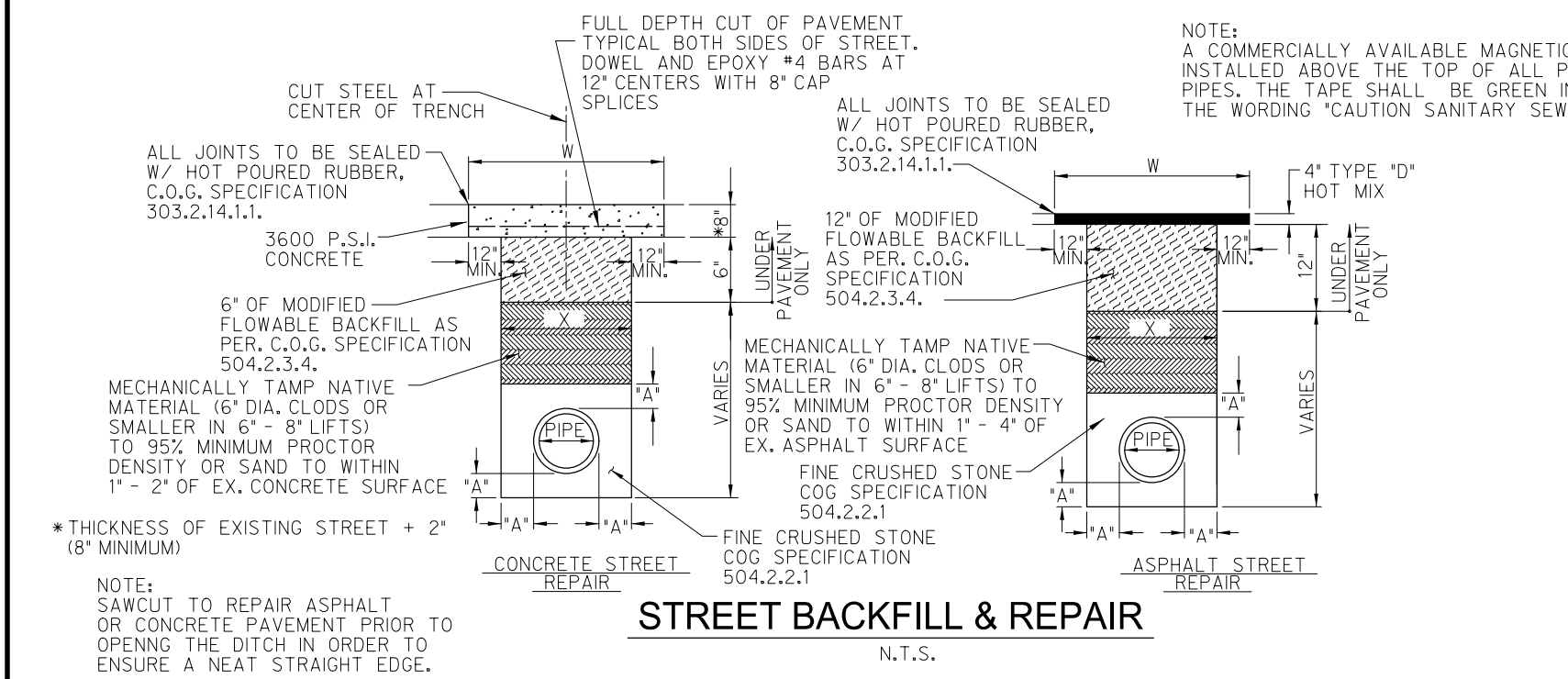
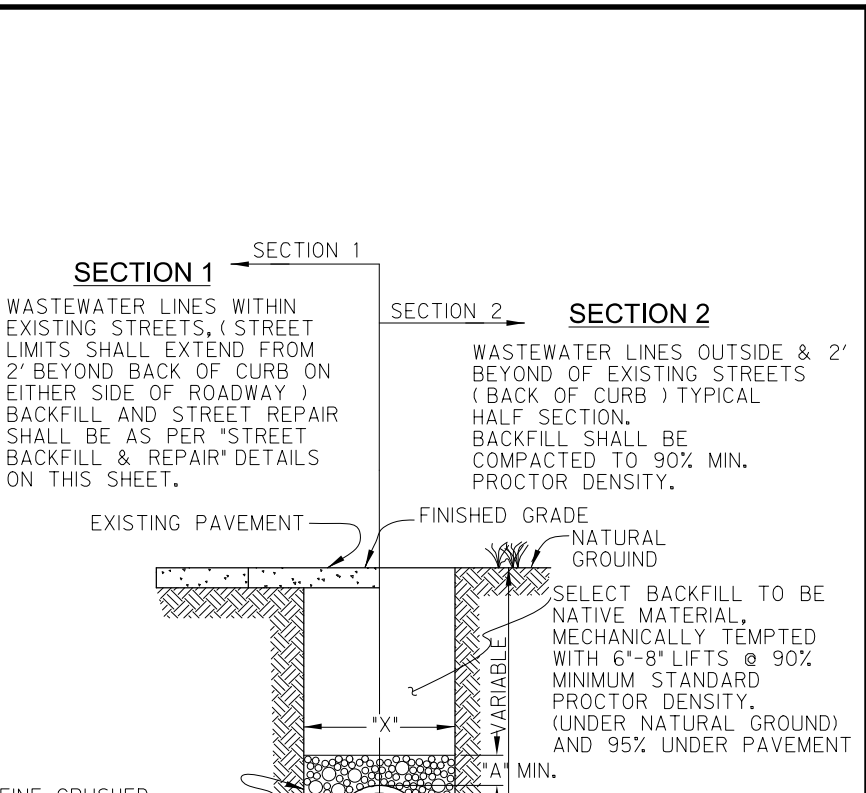
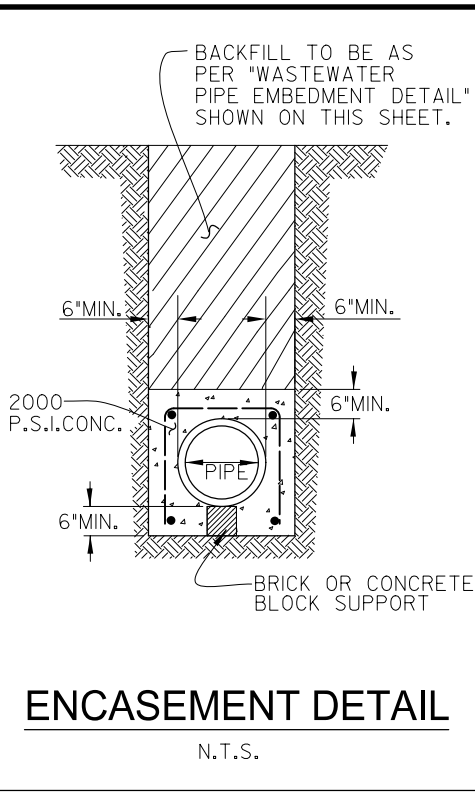
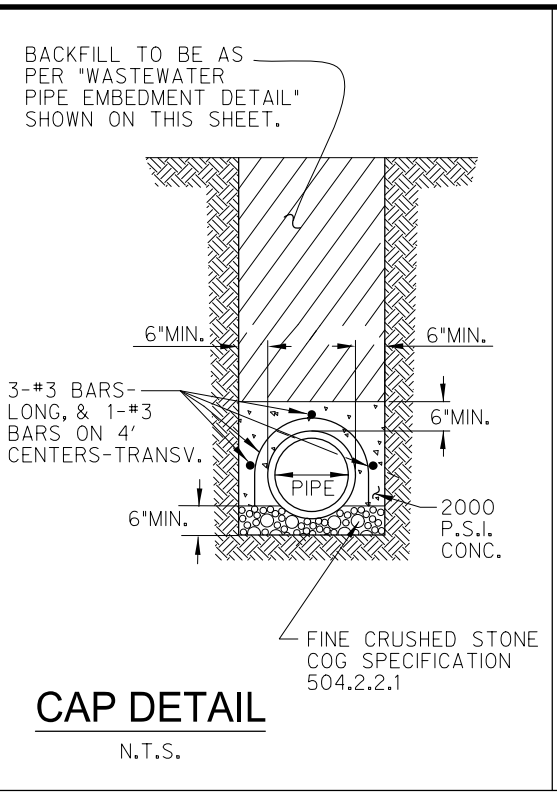
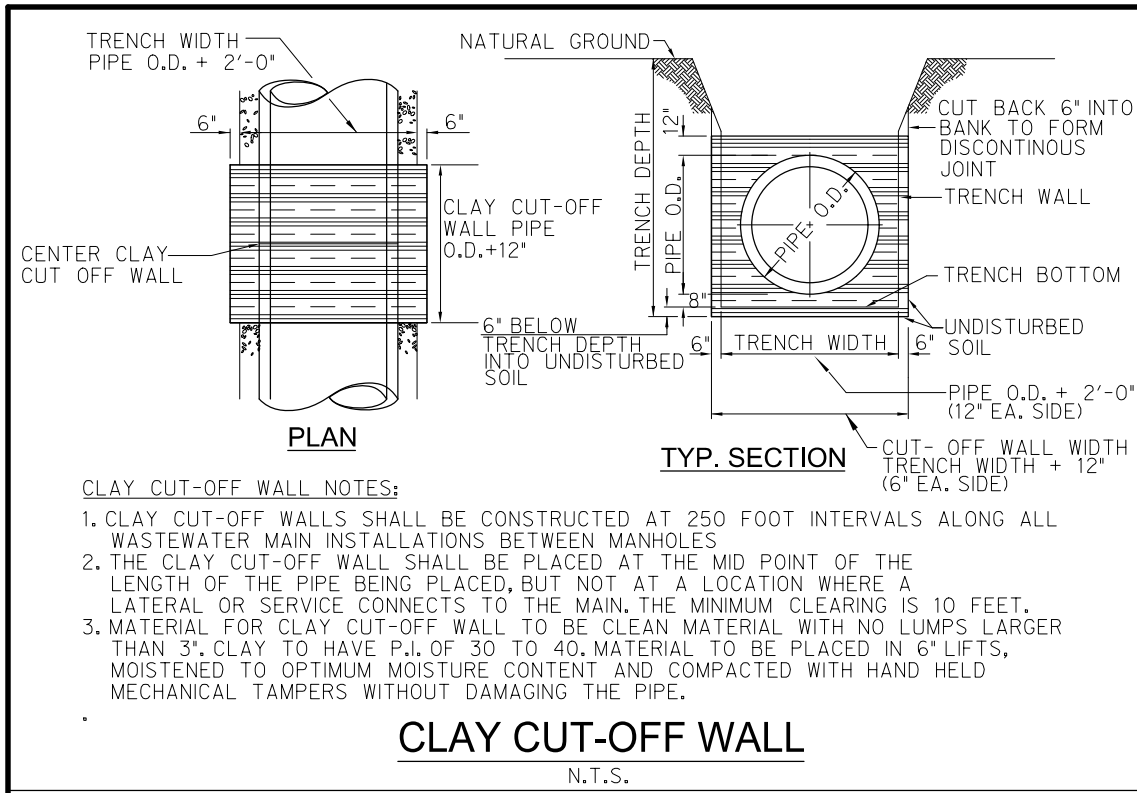


- j. Deflection Testing - All sewer lines shall be tested with a mandrel for 5% deflection (max.) in accordance with COG Item 507.5.1.4.1. The Town Inspector must be present.
- k. Air Testing - All sewer lines shall be tested by a low pressure air test according to the COG Item 507.5.1.3. The Town Inspector must be present.
- l. Television Inspection - All sewer lines shall be televised in accordance with COG Item 507.5.2 and placed on DVD. A copy of the DVD and stationing report shall be submitted to the Town prior to any paving activities so failures may be identified and repaired accordingly COG Item 507.5.2). All services shall be "panned."
- m. Manhole Testing - Vacuum testing of manholes shall be performed in accordance with COG Item 502.1.5.
- n. Deflection Testing, Air Testing, and Television Inspection shall not be performed until all utilities are complete in place and backfilled.

WW-1

WASTEWATER STANDARD DETAILS						
WASTEWATER GENERAL NOTES						
 <p style="text-align: center;">THE TOWN OF NORTHLAKE TEXAS</p>						
DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
HALFF	HALFF	HALFF	DEC 2012	N.T.S.	WW-1	

CERTIFICATION:
 THIS TOWN OF NORTHLAKE STANDARD DETAIL SHEET IS AUTHORIZED FOR USE IN THIS PROJECT BY THE ENGINEER WHOSE SEAL APPEARS ON THIS SHEET. THIS ENGINEER IS ALSO CERTIFYING THAT THE CONTENT OF THE DETAILS AND NOTES ON THIS SHEET HAVE NOT BEEN ALTERED FROM THAT RECEIVED FROM THE TOWN OF NORTHLAKE.



MECHANICALLY TAMPED NATIVE MATERIAL MAY BE USED TO THE BOTTOM OF CONCRETE PAVEMENT WHEN BOTH OF THE FOLLOWING CONDITIONS ARE MET:

1. THE OUTSIDE OF THE WASTEWATER PIPE MUST BE A MINIMUM OF 2 FEET BELOW THE BOTTOM OF THE PAVEMENT.
2. THE STREET IS BEING COMPLETELY REPLACED OR IT IS A NEW STREET.

TABLE OF DIMENSIONS FOR WIDTH OF TRENCH AND PAVEMENT REPLACEMENT

NORMAL SIZE OF PIPE IN INCHES	O.D. OF PIPE BELL IN INCHES (PVC-SDR35)	MINIMUM TRENCH WALL CLERANCE "A" IN INCHES	WIDTH OF TRENCH ("X")		WIDTH OF PVMT. REPLACEMENT * ("W") CONC. & ASPHALT **
			MAXIMUM ** IN INCHES	MINIMUM ** IN INCHES	
4	4.67	6	24	18	42
6	6.74	6	24	19	48
8	8.99	6	24	21	48
10	11.27	6	28	24	48
12	13.27	6	30	26	50
15	16.45	8	37	33	57
18	20.73	8	41	37	61
21	24.42	8	45	41	65
24	27.21	8	48	44	68
27	30.61	8	51	47	71

NOTE: * REFER TO THE PLANS FOR SPECIFIED WIDTH OF REPLACEMENT.
** RECOMMENDED WIDTHS - VARIES BASED ON DEPTH, AND SOIL MATERIAL.

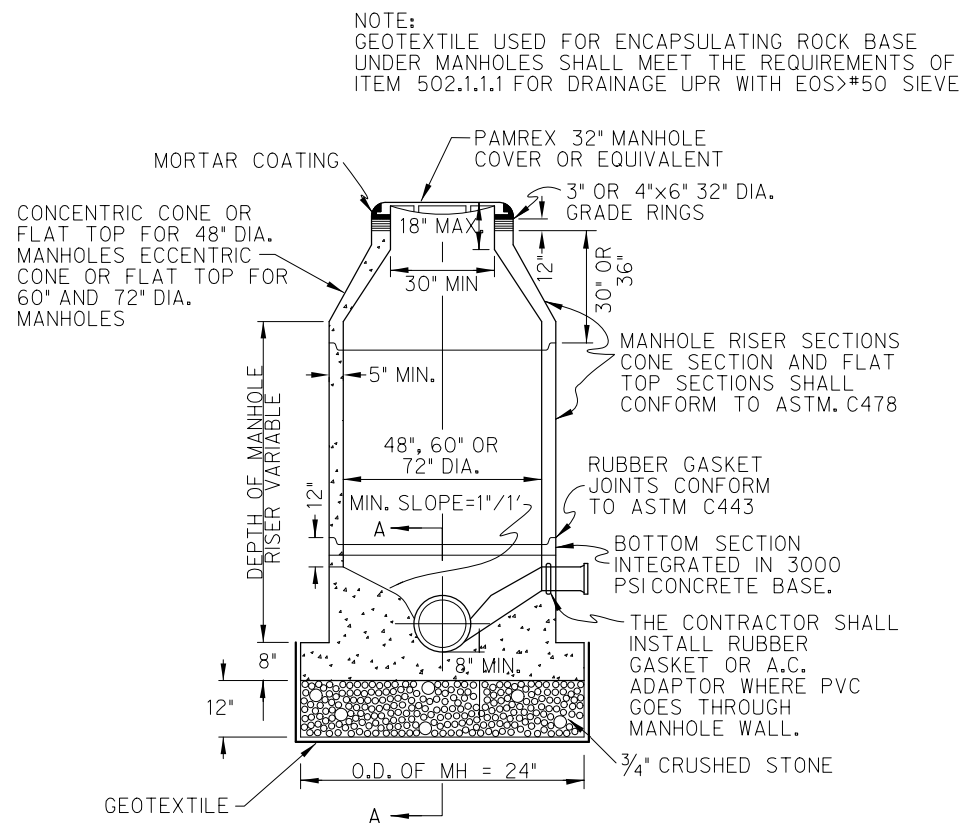
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WASTEWATER STANDARD DETAILS

BACKFILL / EMBEDMENT

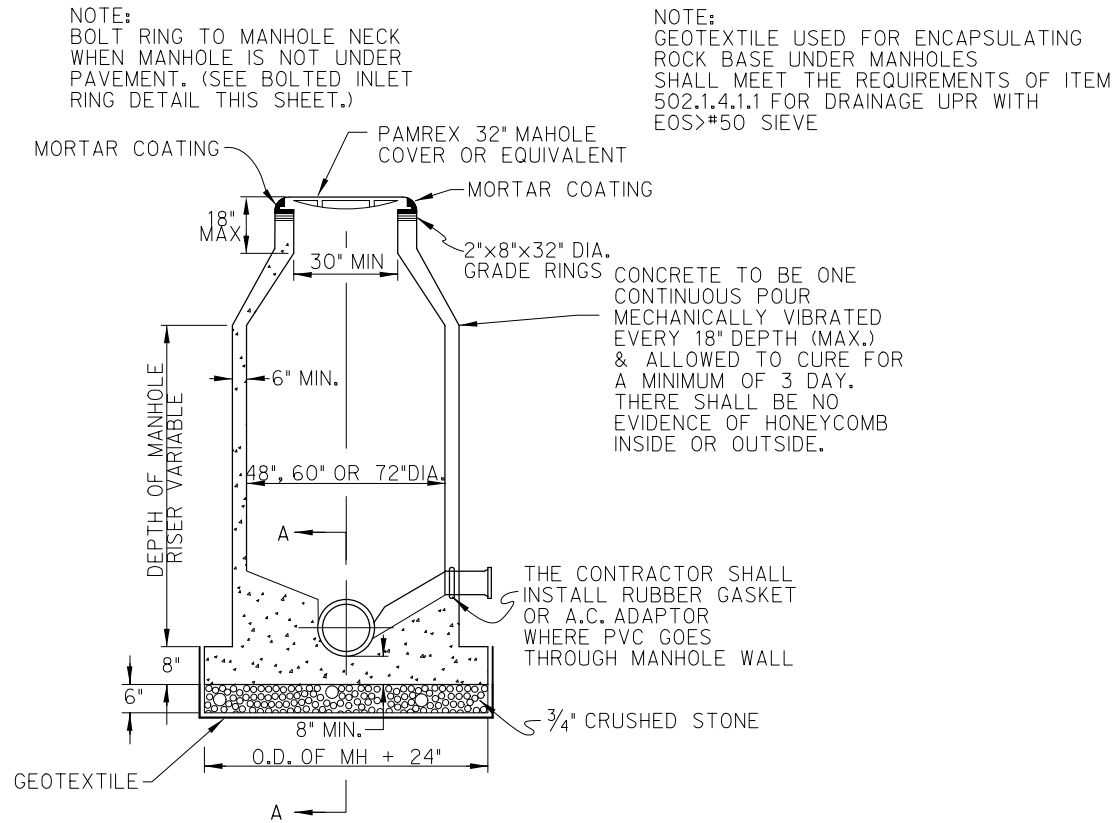
THE TOWN OF NORTHLAKE TEXAS

DESIGN	DRAWN	CHECK	DATE	SCALE	FILE	NO.
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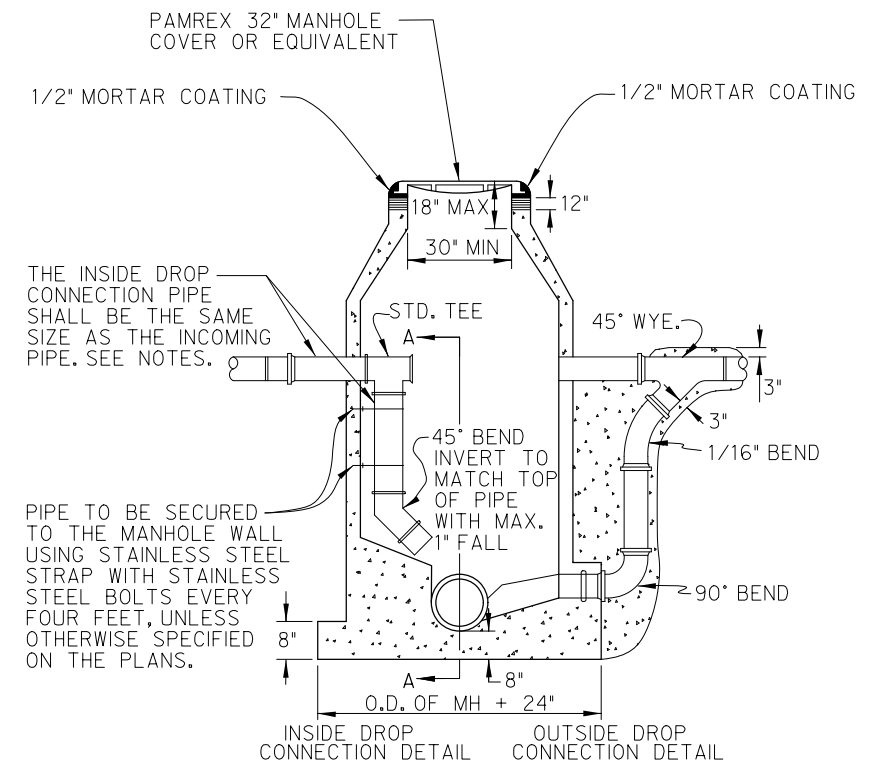
PRECAST CONCRETE MANHOLE

N.T.S.
SEE CONCRETE MANHOLE NOTES.



POURED IN PLACE CONCRETE MANHOLE

N.T.S.
SEE CONCRETE MANHOLE NOTES.



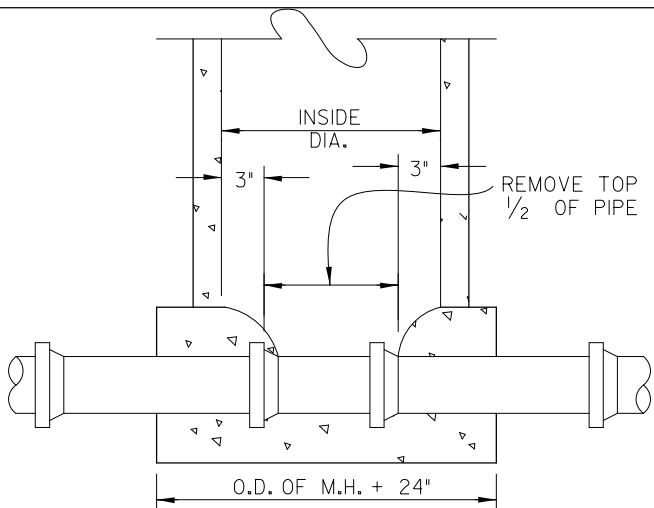
STANDARD DROP CONNECTION TO MANHOLE

N.T.S.

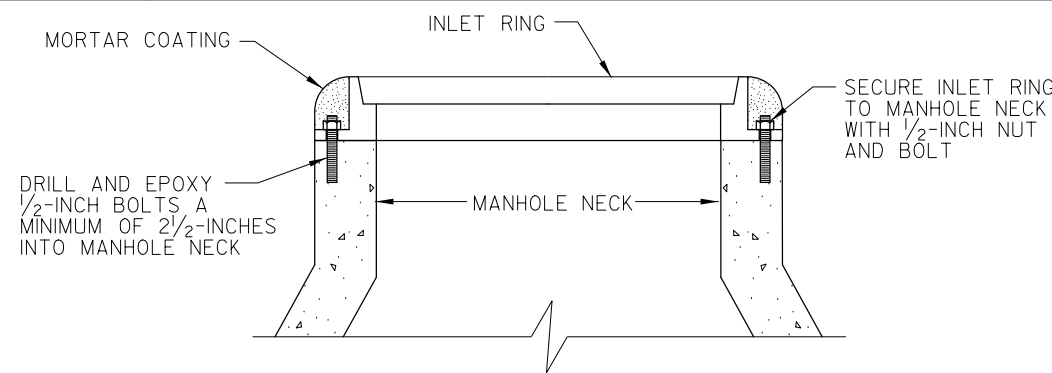
CONCRETE MANHOLE NOTES:

1. CONCRETE FOR ALL PRECAST AND POURED IN PLACE MANHOLES SHALL BE 6.5 SACK, 4200 P.S.I. SULPHATE RESISTANT CONCRETE.
2. THE DIAMETER OF THE CONCRETE BASE SHALL NOT BE LESS THAN THE INSIDE DIAMETER OF THE MANHOLE PLUS 2 FEET.
3. STEPS SHALL NOT BE INSTALLED IN MANHOLE.
4. ALL NEW MANHOLES SHALL BE MARKED WITH "MH" STAMPED OR CUT IN THE CURB.
5. USE DROP CONNECTIONS WHEN CONNECTING LINE EXCEEDS 24" ABOVE THE MANHOLE FLOWLINE.
6. USE OUTSIDE DROP CONNECTIONS ON ALL NEW MANHOLES.
7. INSIDE DROP CONNECTION MANHOLES ARE ALLOWED ONLY ON EXISTING MANHOLES 5' (OR LARGER) IN DIAMETER
8. ALL PRECAST MANHOLES SHALL BE AS MANUFACTURED BY HANSON, DALWORTH, OR EQUIVALENT.
9. MANHOLE COVER AND NECK SHALL HAVE A MINIMUM CLEAR OPENING OF 30".

WW-3



SECTION "A-A"
N.T.S.



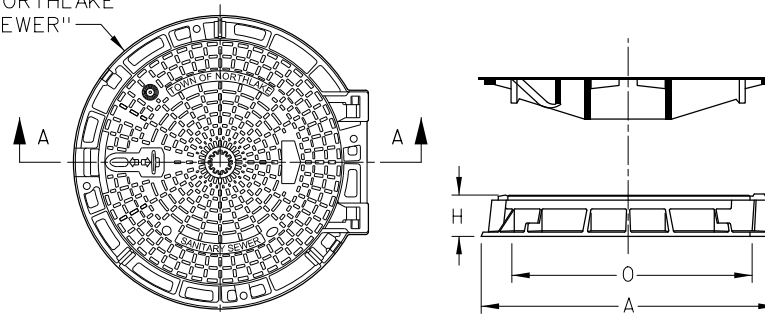
BOLTED INLET RING DETAIL

N.T.S.

PAMREX 32 INCH MANHOLE COVER AND FRAME

N.T.S.

"TOWN OF NORTHLAKE"
"SANITARY SEWER"



SECTION A-A
N.T.S.

NOTES:

1. MANHOLE COVER AND FRAME SHALL BE PAMREX OR APPROVED EQUAL. COVER AND FRAME SHALL BE MANUFACTURED FROM DUCTILE IRON.
2. COVERS SHALL BE Dually Hinged and incorporate a 90 degree blocking system to prevent accidental closure. Covers shall be one man operable using standard tools and shall be capable of withstanding a test load of 80,000 pounds.
3. FRAMES SHALL BE CIRCULAR, INCORPORATE A SEATING RING AND A FITTED PLUG IN EACH HINGE HOUSING, AND BE AVAILABLE IN A 32 INCH CLEAR OPENING. THE FRAME DEPTH SHALL NOT EXCEED 5 INCHES AND THE FLANGE SHALL INCORPORATE BEDDING SLOTS, BOLT HOLES, AND LIFTING EYES.
4. ALL COMPONENTS SHALL BE BLACK COATED.

FRAME WEIGHT: 107 LBS.
COVER WEIGHT: 162 LBS.
TOTAL WEIGHT: 269 LBS.

DIMENSIONS (INCHES)			WEIGHT (lbs)		REFERENCE
A	O	H	COVER AND FRAME	COVER ONLY	
39 1/10"	31 1/2"	5"	269	162	RE 32 R8 FD

CERTIFICATION:

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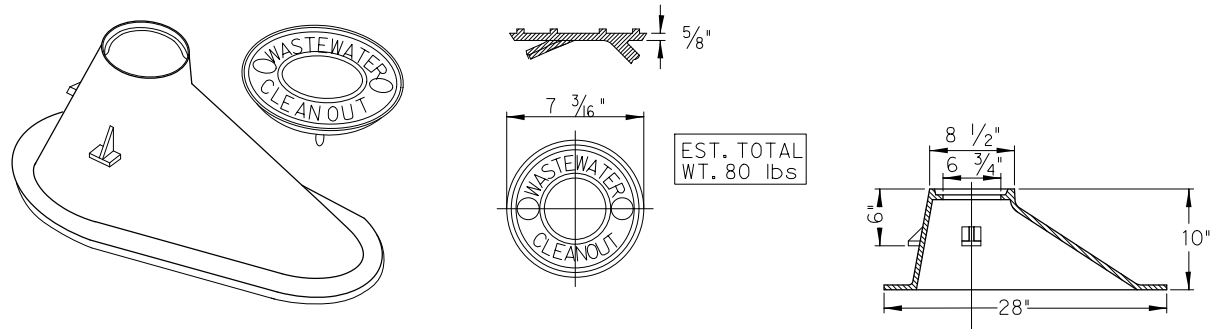
WASTEWATER STANDARD DETAILS

MANHOLES



THE TOWN OF NORTHLAKE
TEXAS

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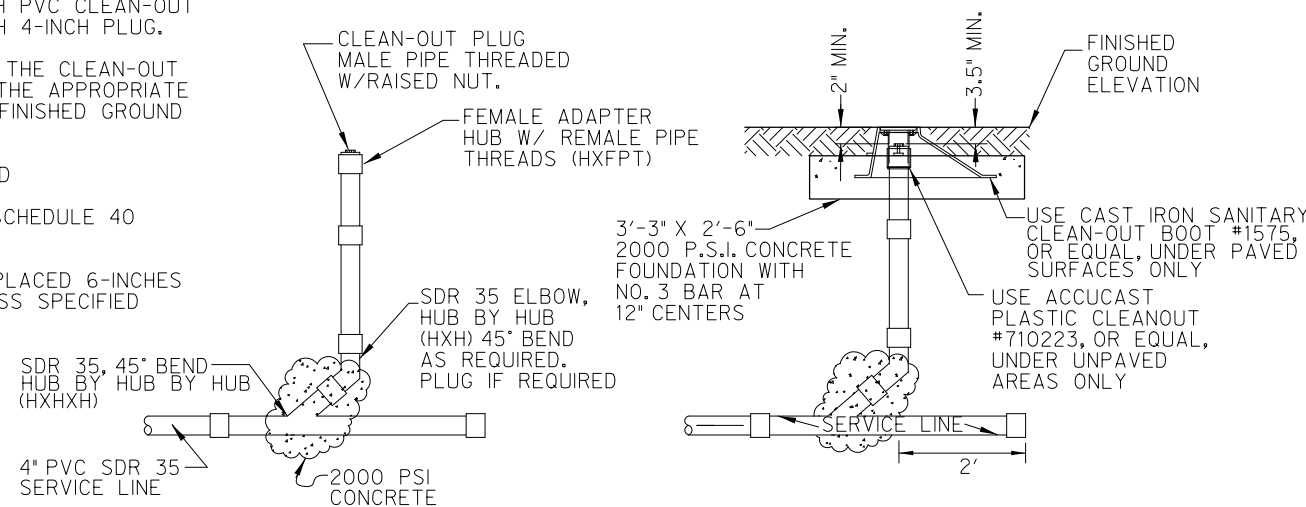
ACCUCAST CAST IRON CLEAN-OUT BOOT

N.T.S.

ACCUCAST #1575 OR EQUAL
(TO BE USED UNDER PAVED SURFACES ONLY)

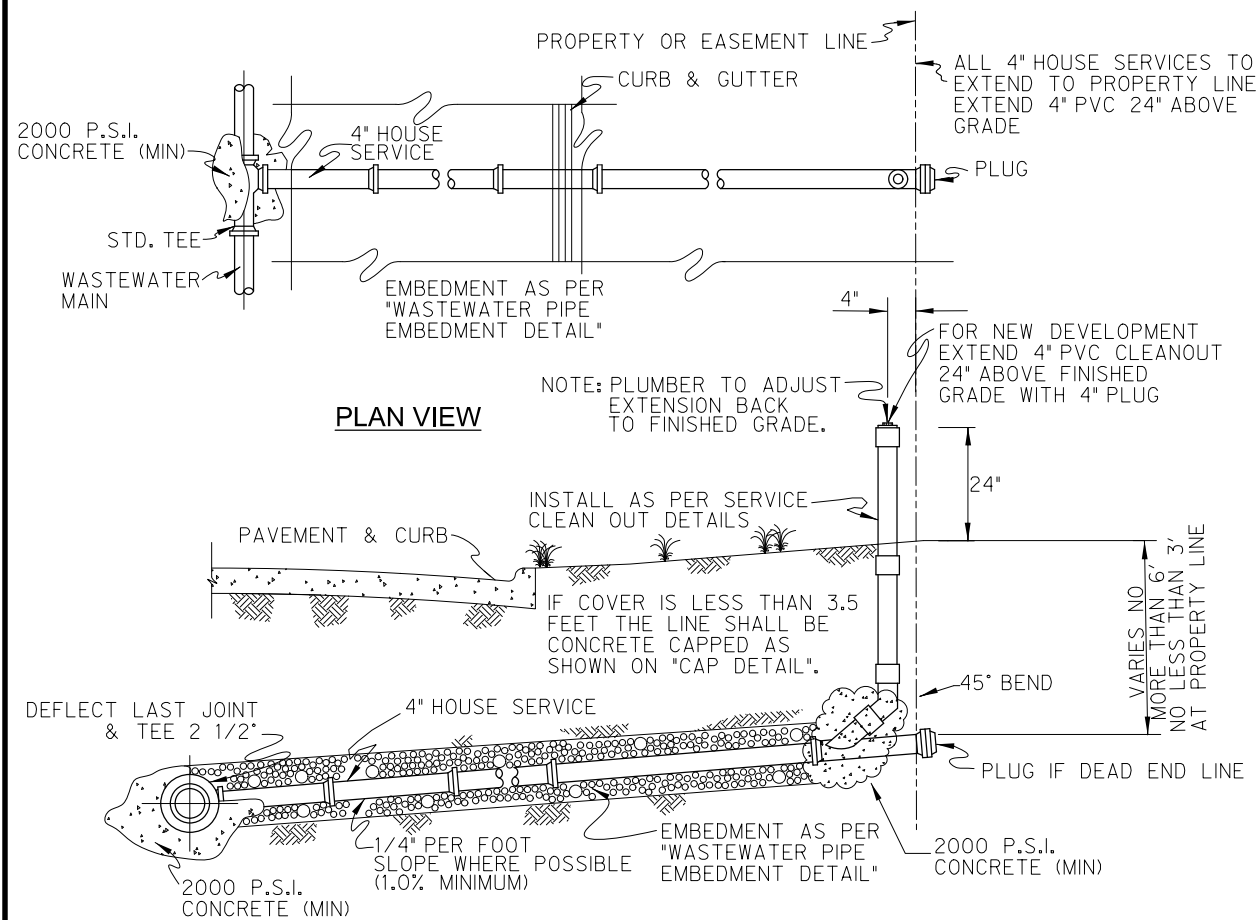
WASTEWATER SERVICE CLEAN-OUT NOTES:

- FOR NEW DEVELOPMENT EXTEND 4-INCH PVC CLEAN-OUT 24-INCHES ABOVE FINISHED GRADE WITH 4-INCH PLUG.
- AT THE TIME OF SERVICE CONNECTION THE CLEAN-OUT EXTENSION SHALL BE ADJUSTED AND THE APPROPRIATE CLEAN-OUT BOOT INSTALLED AT THE FINISHED GROUND ELEVATION.
- ALL FITTINGS SHALL BE SOLVENT WELD
- ALL PIPE SHALL BE PVC SDR 35 OR SCHEDULE 40 WHEN LESS THAN 14- FEET DEEP
- CENTER LINE OF CLEAN-OUTS TO BE PLACED 6-INCHES INSIDE TOWN RIGHT-OF-WAY LINE UNLESS SPECIFIED OTHERWISE.
- WASTEWATER SERVICE LEAN-OUTS ARE NOT ALLOWED ON MAIN LINES.



WASTEWATER SERVICE CLEAN-OUT DETAILS

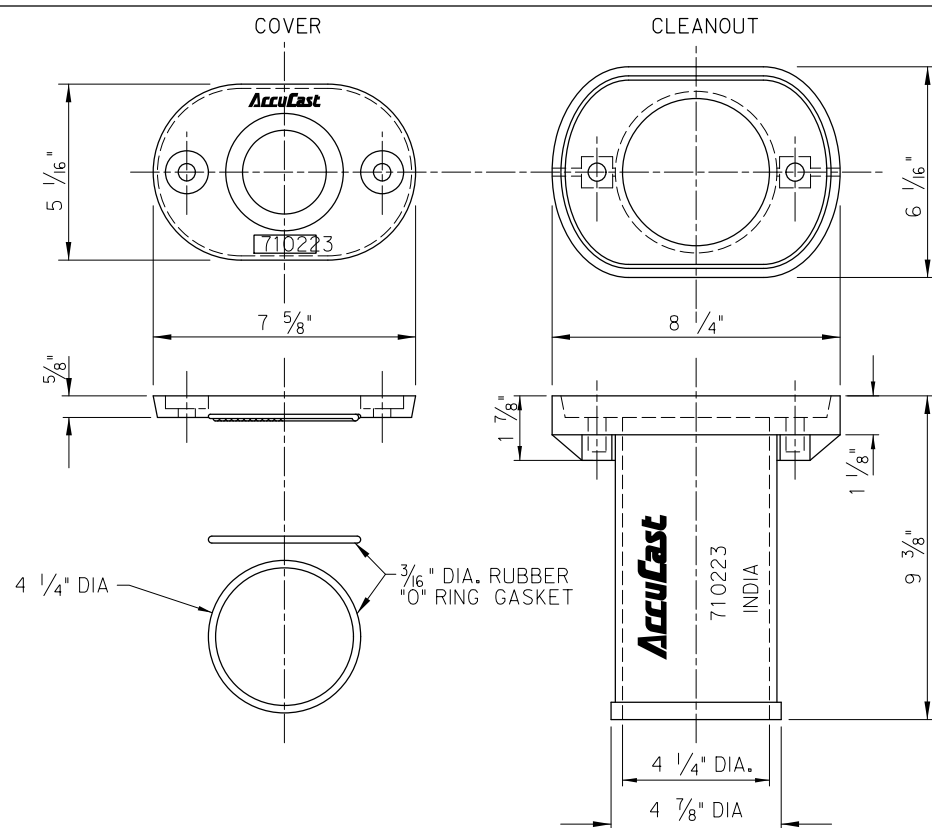
N.T.S.



STANDARD WASTEWATER SERVICE CONNECTION

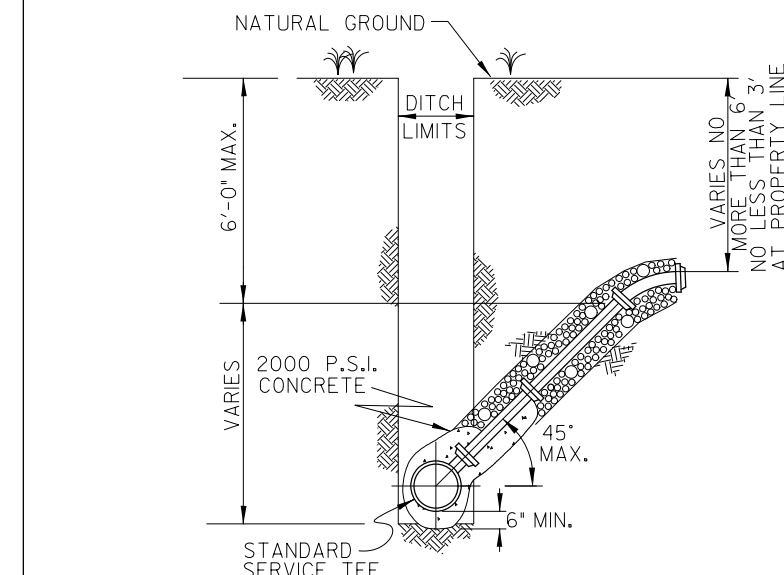
N.T.S.

- NOTES:
- WASTEWATER SERVICES TO BE MARKED WITH "S" STAMPED OR CUT IN CURB.
 - WYES ARE NOT ALLOWED ON SANITARY SEWER SERVICE LINE CONNECTIONS.



ACCUCAST PLASTIC SEWER CLEANOUT

ACCUCAST #710223 OR EQUAL
(TO BE USED UNDER UNPAVED SURFACES ONLY)
NOT TO SCALE



STANDARD DEEP CUT CONNECTION

N.T.S.

WW-4

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WASTEWATER STANDARD DETAILS

SERVICES



THE TOWN OF NORTHLAKE
TEXAS

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