

NOTES:

1. PRECAST MANHOLE SECTIONS SHALL BE MANUFACTURED IN ACCORDANCE WITH LATEST EDITIONS OF ASTM C-478 WITH 4000 P.S.I., TYPE II CEMENT.
2. PRECAST CONCRETE MANHOLE BASES SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. AND SHALL UTILIZE TYPE II CEMENT.
3. CONCRETE INVERTS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4000 P.S.I. AND SHALL UTILIZE TYPE II CEMENT.
4. LIFT HOLES THROUGH PRECAST STRUCTURES ARE NOT PERMITTED.
5. ALL PIPE PENETRATIONS SHALL BE PRECAST OR CORE-DRILLED.
6. AN A-LOK TYPE COLLAR, KOR-N-SEAL, OR AN APPROVED RUBBER BOOT SHALL BE USED AT ALL PIPE PENETRATIONS.
7. "D-LOK", "AKWASTOP", "RAM-NEK" OR APPROVED EQUAL AT ALL RISER JOINTS,  $\frac{1}{2}$ " THICK WITH WIDTH AT LEAST  $\frac{1}{2}$ " THE WALL THICKNESS.
8. THE INTERIOR OF THE ADJUSTMENT SECTION SHALL BE PLASTERED WITH  $\frac{3}{4}$ " ACID RESISTANT MORTAR OVER BRICK ADJUSTMENT. ONE TO THREE COURSES OF BRICK ARE TO BE USED FOR ADJUSTMENT.
9. MANHOLE COVER SHALL BE WATERTIGHT OR EQUIPPED WITH AN INFLOW PROTECTOR. FRAME AND COVER SHALL BE USF#170-E, O/E; COVER WEIGHT 130 POUNDS; TOTAL WEIGHT 280 POUNDS.
10. BOTTOM BARREL AND BASE OF MANHOLE TO BE MONOLITHICALLY CAST UNLESS OTHERWISE APPROVED BY CITY.
11. SERVICE LATERALS SHALL NOT ENTER MANHOLES UNLESS SPECIFIED ON THE PLANS AND THEN MUST BE TREATED AS MAINS (SHOW ELEVATIONS, PRECAST OR CORE-DRILLED PENETRATIONS, FLOW CHANNEL CONSTRUCTION, ETC.).
12. AN OUTSIDE DROP CONNECTION SHALL BE REQUIRED FOR ALL INFLUENT LINES WHICH HAVE AN INVERT 2' OR MORE ABOVE THE MANHOLE INVERT.
13. FOR NON-STANDARD MANHOLES, THE ENGINEER OF RECORD SHALL DESIGN ALL MANHOLE REINFORCEMENT STEEL AND JOINT DETAILS AND SHALL SUBMIT CALCULATIONS TO THE CITY FOR REVIEW.
14. PRECAST OR CORE-DRILLED PENETRATION DIAMETERS SHALL BE PER MANUFACTURER SPECIFICATIONS OR AS FOLLOWS:  
 10" TO 12" FOR 8" DIAMETER PIPE.  
 12" TO 16" FOR 10" DIAMETER PIPE.  
 16" FOR 12" DIAMETER PIPE.
15. MATERIALS OF CONSTRUCTION, PLACEMENT, AND COMPACTION REQUIREMENTS FOR BEDDING MATERIALS SHALL BE PER CITY SPECIFICATIONS.
16. FLOW CHANNELS SHALL BE CONSTRUCTED TO DIRECT INFLUENT INTO THE FLOW STREAM.
17. PROPERLY SHAPED SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.

CITY OF GROVELAND STANDARD DETAILS: SANITARY SEWER

	<b>Metzger &amp; Willard, Inc.</b> Civil - Environmental Engineers - Surveyors 8600 Hohen River Parkway, Suite 300 Tampa, Florida 33637 (813) 977-0005	<b>GENERAL SANITARY SEWER NOTES</b>	DATE: JULY 7, 2008 SCALE: N.T.S.
			S-1A

TESTING AND INSPECTION OF GRAVITY SEWERS:

1. ALL NEW SANITARY SEWER LINES IN THE CITY OF GROVELAND SERVICE AREA SHALL BE CLEANED AND LAMPED, INSPECTED BY CLOSED CIRCUIT TV AND TESTED, AT THE EXPENSE OF THE OWNER/CONTRACTOR, PRIOR TO BEING ACCEPTED BY THE CITY.
2. ALL ELEMENTS OF THE SEWER SYSTEM MUST BE INSTALLED AND BE COMPLETELY FINISHED, INCLUDING MAIN SEWER LINES, LATERALS, CLEANOUTS, AND MANHOLES.
3. ALL SEWER LINES SHALL BE CLEANED PRIOR TO THE TV INSPECTION.
4. A HYDRAULIC SEWER CLEANER SHALL NOT BE USED DURING THE TV INSPECTION PROCEDURE.
5. IF LINES ARE FOUND TO BE UNCLEAN DURING THE TV INSPECTION, THE INSPECTION WILL BE TERMINATED UNTIL THE LINES ARE SATISFACTORILY CLEANED.
6. WHERE SEWERS ARE UNDER PAVED AREAS, THE AREA SHALL BE COMPACTED AND PRIMED BEFORE THE SYSTEM SHALL BE RELEASED FOR TV INSPECTION.

CLOSED CIRCUIT TELEVISION INSPECTION OF SEWER LINES

PROCEDURES FOR TELEVISION:

1. THE CITY'S PUBLIC WORKS DEPARTMENT AND THE ENGINEER OF RECORD SHALL BE GIVEN AT LEAST FORTY-EIGHT (48) HOURS NOTICE PRIOR TO THE TIME PLANNED FOR THE TV INSPECTION AND FOR CONDUCTING THE TESTING. A SPECIFIC TIME AND DATE WILL BE AGREED UPON BY THE CITY, ENGINEER OF RECORD AND CONTRACTOR.
2. NO INSPECTION SHALL COMMENCE WITHOUT THE PRESENCE OF THE CITY'S INSPECTOR, EXCEPT WHEN PRIOR ARRANGEMENTS HAVE BEEN MADE BETWEEN THE CONTRACTOR, ENGINEER OF RECORD AND THE CITY. IN THE EVENT THE INSPECTION IS PERMITTED TO START WITHOUT THE INSPECTOR'S PRESENCE, THE TELEVISION MUST MEET ALL REQUIREMENTS HEREIN.
3. ALL TV INSPECTIONS SHALL BE COMMENCED UP STREAM OF THE SYSTEM TO PREVENT FOREIGN SUBSTANCES FROM ENTERING A SECTION PREVIOUSLY TELEVIEWED. THE CAMERA SHALL BE STARTED FROM THE DOWN STREAM MANHOLE AND TELEVISION WILL BE DONE AGAINST THE NORMAL FLOW OF THE LINE. THIS PROCEDURE WILL ALLOW FOR THE VIEWING OF THE SERVICE LATERALS.
4. BEFORE THE CAMERA IS PLACED IN THE SEWER LINE, WATER WITH YELLOW OR ORANGE DYE SHALL BE PUT INTO THE UPSTREAM MANHOLE OF THE SECTION BEING TELEVIEWED. THIS WILL ENABLE THE CAMERA TO DETECT ANY CHANGES IN GRADE THAT MAY BE PRESENT IN THE SYSTEM.
5. THE TV AND VIDEO TAPES SHALL BE TURNED ON BEFORE THE CAMERA IS PLACED IN THE MANHOLE FOR INSPECTION AND SHALL NOT BE TURNED OFF UNTIL THE CAMERA IS REMOVED FROM THE MANHOLE. THE CAMERA SHALL BE MOVED THROUGH THE LINE UNDER THE CONTROL OF THE TV CAMERA OPERATOR. THE CAMERA SHALL BE DRAWN THROUGH THE LINE AT A RATE NOT TO EXCEED THIRTY (30) FEET PER MINUTE AND SHALL STOP AT ALL SERVICE CONNECTIONS IN THE LINE.
6. A VIDEO TAPE SHALL BE MADE OF THE ENTIRE SYSTEM BEING TELEVIEWED. THIS SHALL BECOME THE PROPERTY OF THE CITY UPON COMPLETION OF THE TV INSPECTION (NOT A COPY). THE TAPE (S) SHALL BE LABELED TO INCLUDE THE PROJECT NAME, DATE OF INSPECTION AND LINE SECTIONS ACCORDING TO CONSTRUCTION PLANS CONTAINED ON EACH TAPE. A WRITTEN REPORT SHALL ACCOMPANY THE TAPE (S).
7. IN THE EVENT THAT THE TELEVISION OF THE LINES REVEALS PROBLEMS (I.E. BELLIES, LATERAL DEFLECTION, ETC.), IT MAY ALSO BE NECESSARY, AT THE DISCRETION OF THE CITY, TO REQUIRE AN APPROVED 9-ARM DEFLECTION MANDREL TO BE PULLED THROUGH THE SEWER TO ENSURE THAT THE LINE IS WITHIN ACCEPTABLE SLOPES AND THAT DEFLECTION DOES NOT EXCEED 5% OF THE AVERAGE INSIDE DIAMETER, AS ESTABLISHED BY ASTM STANDARDS. ANY PIPE FOUND TO BE OUT OF COMPLIANCE WITH THESE SPECIFICATIONS, OR NOT MEETING THE REQUIREMENTS OF THE CITY IS TO BE REMOVED AND REPLACED AT THE EXPENSE OF THE OWNER/CONTRACTOR.

CITY OF GROVELAND STANDARD DETAILS: SANITARY SEWER

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TELEVISION EQUIPMENT MINIMUM REQUIREMENTS:

1. THE CLOSED CIRCUIT TV CAMERA SHALL PRODUCE A CLEAR COLOR PICTURE ON THE MONITOR AND ON THE VIDEO TAPES. THE CAMERA SHALL BE ABLE TO SHOW DETAIL TO THE POINT THAT ALL JOINTS AND ANY DEFECTS MAY BE READILY SEEN AT THE TIME OF THE INSPECTION. THE CAMERA SHALL HAVE THE ABILITY TO VIEW IN THE 360 DEGREE PATTERN. IF THE CAMERA CANNOT VIEW 360 DEGREES, THE CONTRACTOR MUST HAVE THE ABILITY TO VIEW SERVICE CONNECTIONS SEPARATELY WITH A CAMERA FOR THIS PURPOSE TO INSPECT ANY SERVICE CONNECTION THE CITY REQUESTS.
2. AN ELECTRONIC DATAVIEW SHALL BE USED DURING THE TV INSPECTION WHICH PROJECTS THE FOLLOWING:  
 A. DATE OF INSPECTION.  
 B. MANHOLE NUMBER OF SEWER LINE BEING INSPECTED.  
 C. FOOTAGE OF SEWER LINE DURING INSPECTION.
3. THE VIDEO RECORDER SHALL PRODUCE A NO NOISE STILL PICTURE, AND PROVIDE BOTH AUDIO AND VIDEO DURING THE INSPECTION.
4. A MEASURING DEVICE, APPROVED BY THE CITY TO CHECK THE GRADE OF THE PIPE DURING THE INSPECTION, SHALL BE REQUIRED ON ANY DISPUTED AREAS AND THESE WILL BE RE-TELEVIEWED.
5. AUDIO OF THE INSPECTION SHALL BE SIMULTANEOUSLY RECORDED ON THE VIDEO TAPE. THE AUDIO SHALL CONSIST OF ORDINARY DESCRIPTION AND COMMENTARY.

TESTING:

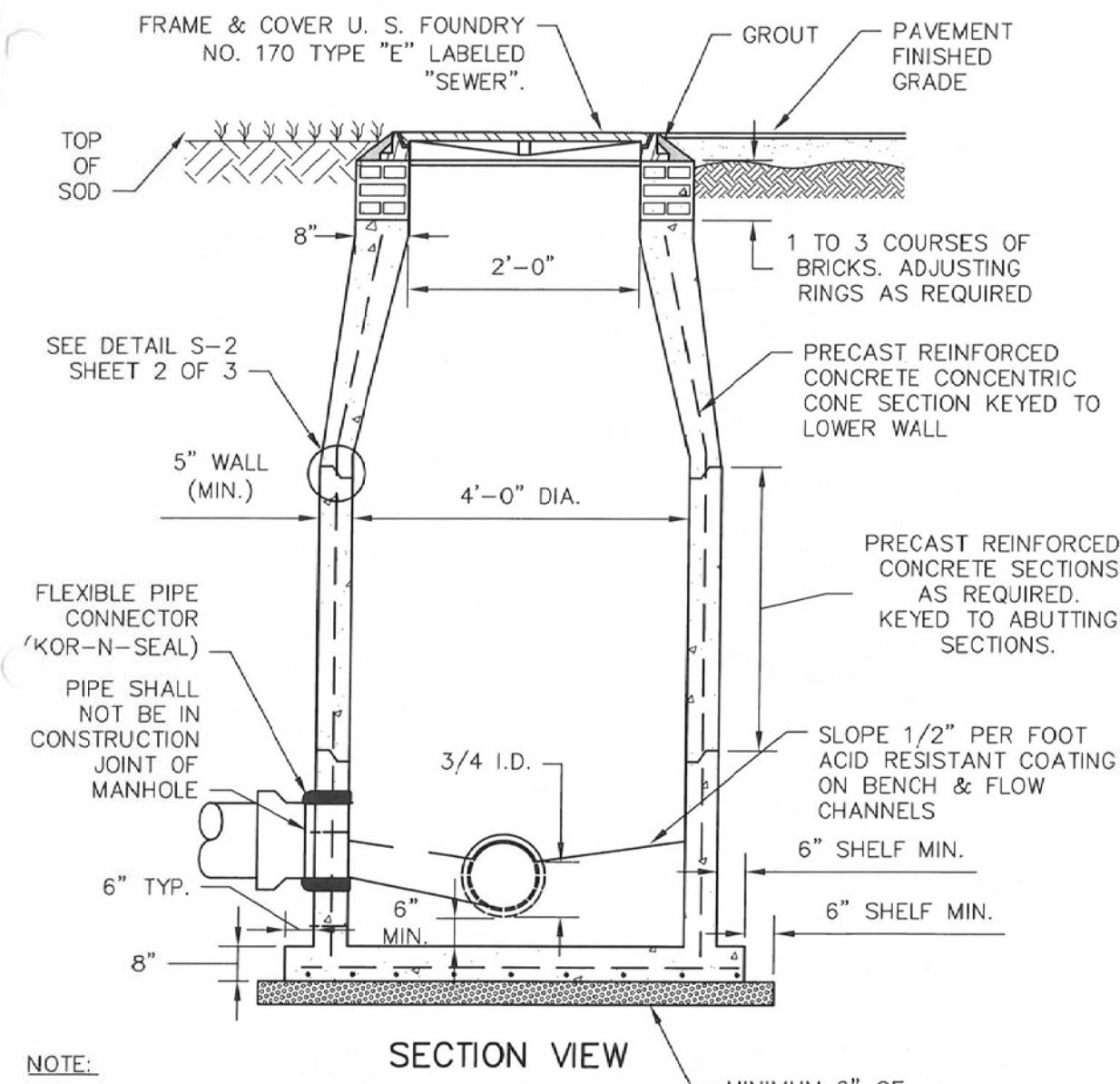
1. SANITARY SEWERS SHALL BE TESTED IN SECTIONS. TESTING SHALL NOT PROCEED UNTIL ALL FACILITIES ARE IN PLACE AND ALL ASSOCIATED CONCRETE IS CURED. ALL PIPING SHALL BE THOROUGHLY CLEANED PRIOR TO TESTING TO CLEAR THE LINES OF ALL FOREIGN MATTER.
2. WHERE THE PIPE IS INSTALLED IN CONDITIONS WHERE THE GROUNDWATER LEVEL IS LESS THAN TWO FEET ABOVE THE HIGHEST POINT IN THE LINE, THE CONTRACTOR WILL UTILIZE LOW-PRESSURE AIR TESTING IN ACCORDANCE WITH UNI-BELL PVC PIPE ASSOCIATION, UNI-B6-98, "RECOMMENDED PRACTICE FOR LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE", LATEST REVISIONS.
3. WHERE GROUNDWATER IS AT LEAST TWO FEET ABOVE THE LOWEST POINT IN THE LINE, INFILTRATION TESTING SHALL BE USED. INFILTRATION SHALL NOT EXCEED 300 GALLONS PER DAY PER INCH OF DIAMETER PER MILE AS MEASURED BETWEEN MANHOLES. TESTING SHALL PROCEED FOR A CONTINUOUS PERIOD OF TWO (2) HOURS, WITH INFILTRATION AMOUNTS MEASURED BY METHODS APPROVED BY THE PUBLIC WORKS DEPARTMENTS. PIEZOMETERS OR OTHER CITY-APPROVED METHODS SHALL BE USED TO DETERMINE THE GROUNDWATER LEVEL.
4. SHOULD ANY TEST FAIL, NECESSARY REPAIRS SHALL BE ACCOMPLISHED BY THE CONTRACTOR, AND THE TEST REPEATED UNTIL THE ESTABLISHED LIMITS ARE SATISFIED. ANY REPAIRS SHALL BE PERFORMED UNDER THE SUPERVISION OF THE CITY FORCES AND BY METHODS RECEIVING PRIOR APPROVAL BY THE CITY.

REQUIREMENTS FOR SEWER SYSTEM ACCEPTANCE BY THE CITY:

1. THE CONTRACTOR SHALL REPLACE, RE-TEST AND RE-TELEVIEW ALL LINES EXCEEDING THE MAXIMUM ALLOWABLE DEFLECTIONS LISTED ABOVE.
2. ANY SECTIONS REQUIRING REPAIRS DUE TO PIPE FRACTURES OR POOR GRADE SHALL ALSO BE RE-TESTED AND RE-TELEVIEWED WITH THE SAME GUIDELINES AFTER THE REPAIR WORK IS COMPLETED.
3. ANY SECTION OF PVC PIPE WITH MORE THAN 5% DEFLECTION (REDUCTION IN INSIDE DIA.) SHALL NOT BE ACCEPTED.

CITY OF GROVELAND STANDARD DETAILS: SANITARY SEWER

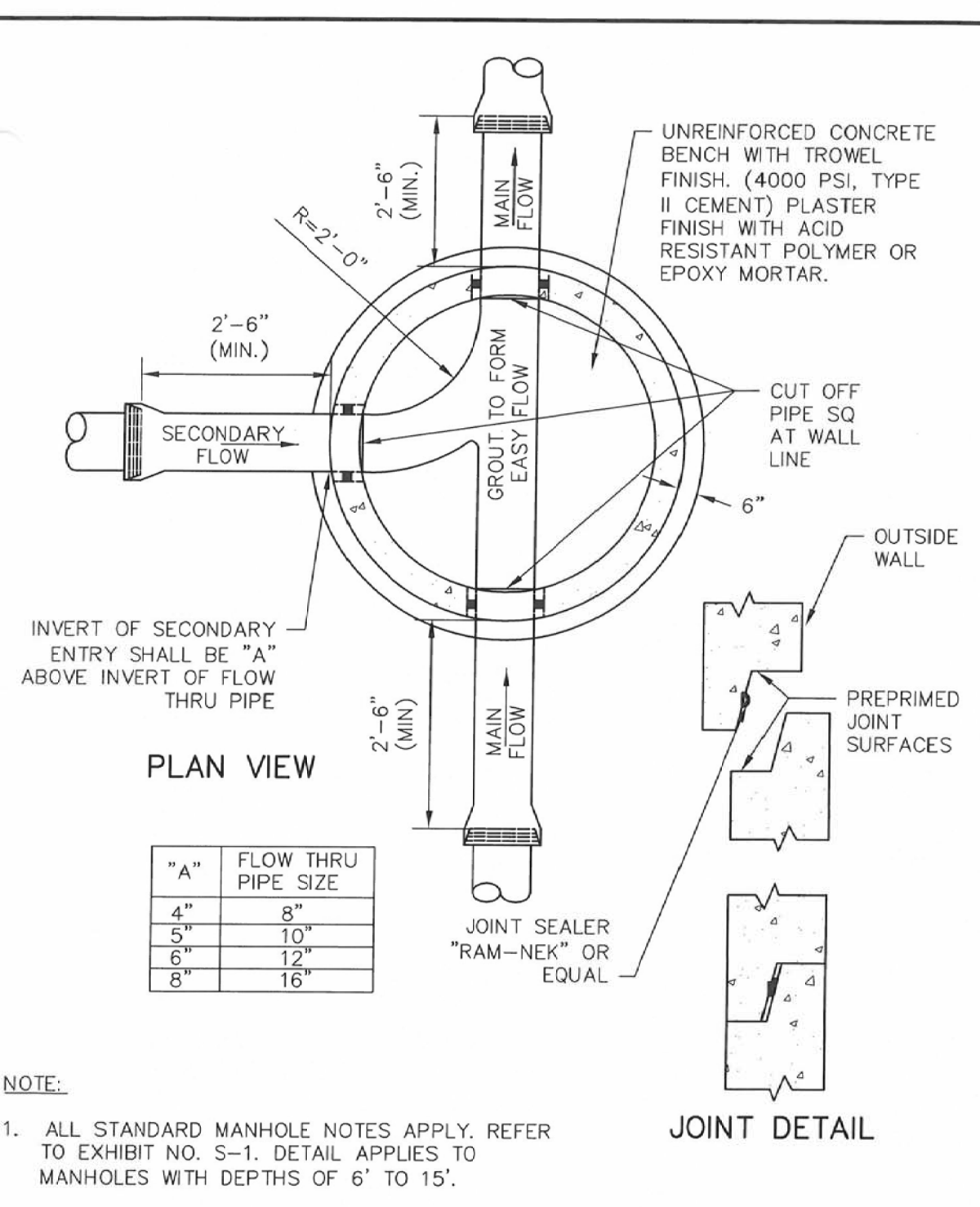
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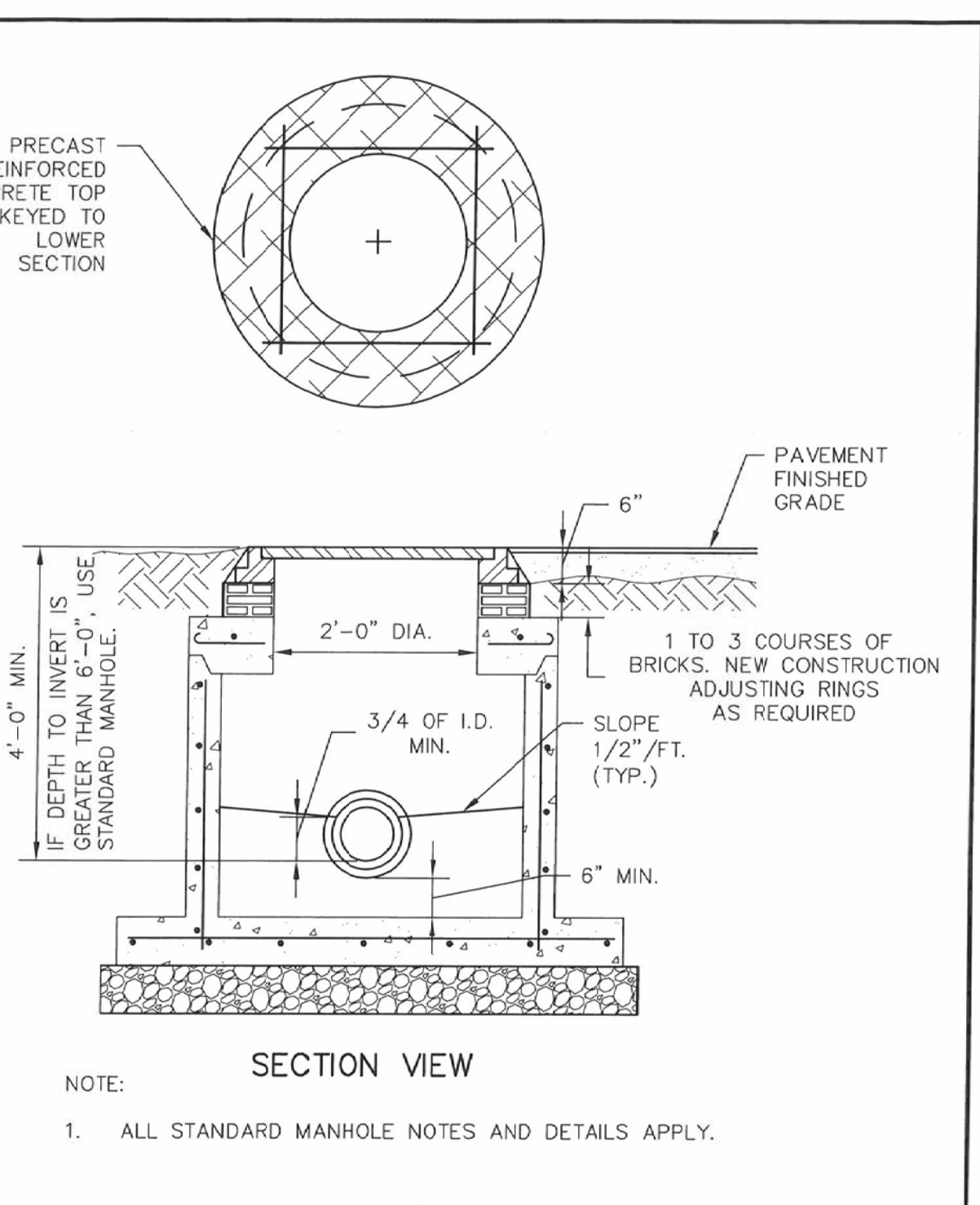
- NOTE:  
 1. ALL STANDARD MANHOLE NOTES APPLY. REFER TO EXHIBIT NO. S-1. DETAIL APPLIES TO MANHOLES WITH DEPTHS OF 6' TO 15'.

CITY OF GROVELAND STANDARD DETAILS: SANITARY SEWER

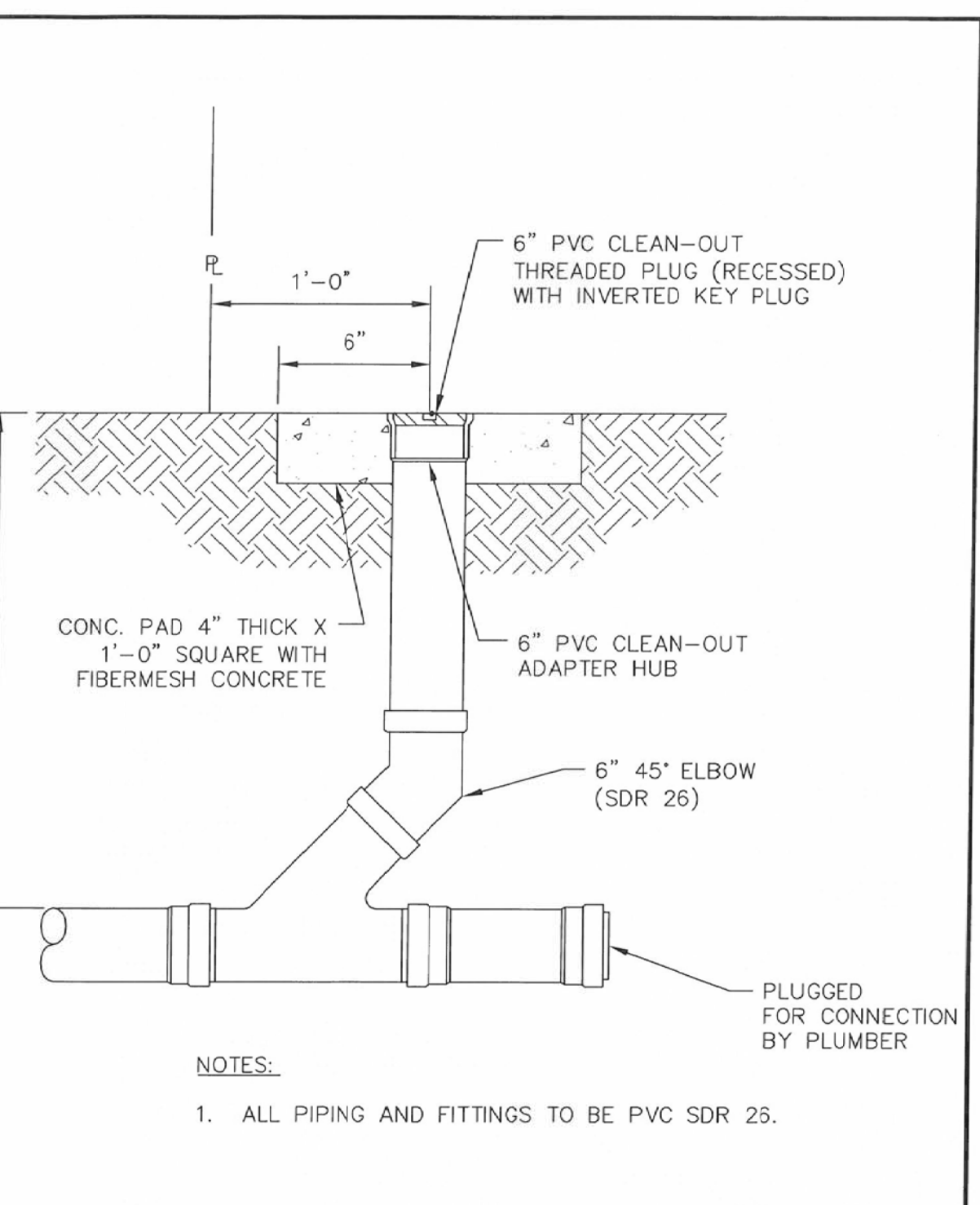
	<b>Metzger &amp; Willard, Inc.</b> Civil - Environmental Engineers - Surveyors 8600 Hohen River Parkway, Suite 300 Tampa, Florida 33637 (813) 977-0005	<b>STANDARD 48\"/&gt; </b>
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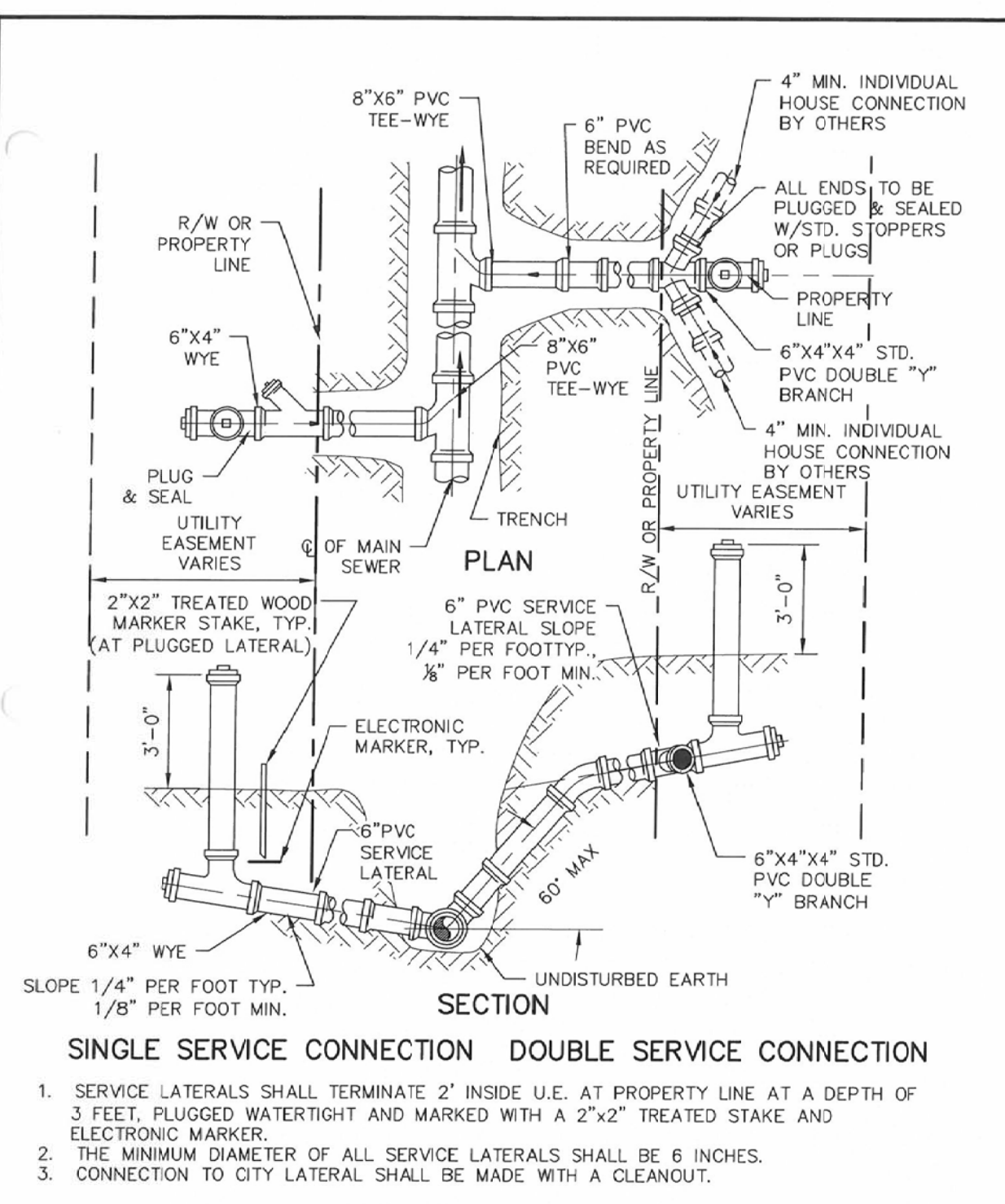
	<b>Metzger &amp; Willard, Inc.</b> Civil - Environmental Engineers - Surveyors 8600 Hohen River Parkway, Suite 300 Tampa, Florida 33637 (813) 977-0005	<b>STANDARD 48\"/&gt; </b>
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	<b>Metzger &amp; Willard, Inc.</b> Civil - Environmental Engineers - Surveyors 8600 Hohen River Parkway, Suite 300 Tampa, Florida 33637 (813) 977-0005	<b>STD 48\"/&gt; </b>
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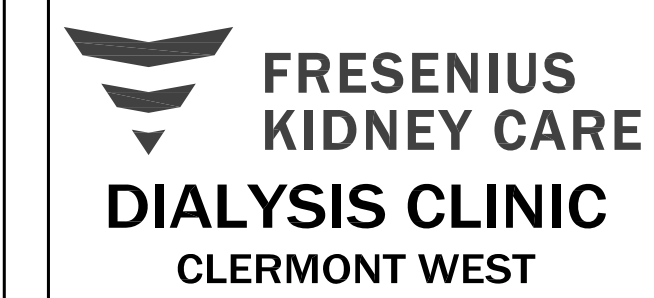


	<b>Metzger &amp; Willard, Inc.</b> Civil - Environmental Engineers - Surveyors 8600 Hohen River Parkway, Suite 300 Tampa, Florida 33637 (813) 977-0005	<b>CLEAN-OUT DETAIL</b>	DATE: JULY 7, 2008 SCALE: N.T.S.
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PROJECT:



LOCATION:  
 (ADDRESS TO BE ASSIGNED)  
 N.W.Q. OF C.R. 565A & S.R. 50  
 GROVELAND  
 LAKE COUNTY, FL 34736

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REVISIONS	DATE

PROJECT MANAGER:	BK
DRAWING BY:	JEC
JURISDICTION:	CITY OF GROVELAND, FL
DATE:	19 MAY 2016
TITLE:	<b>CITY OF GROVELAND DETAILS</b>
SHEET NUMBER:	<b>C-7.4</b>
SCALE:	
JOB/FILE NUMBER:	<b>865.001</b>