# CONSTRUCTION PLANS TO SERVICE HARRIS COUNTY MUNICIPAL UTILITY DISTRICT NO. 191

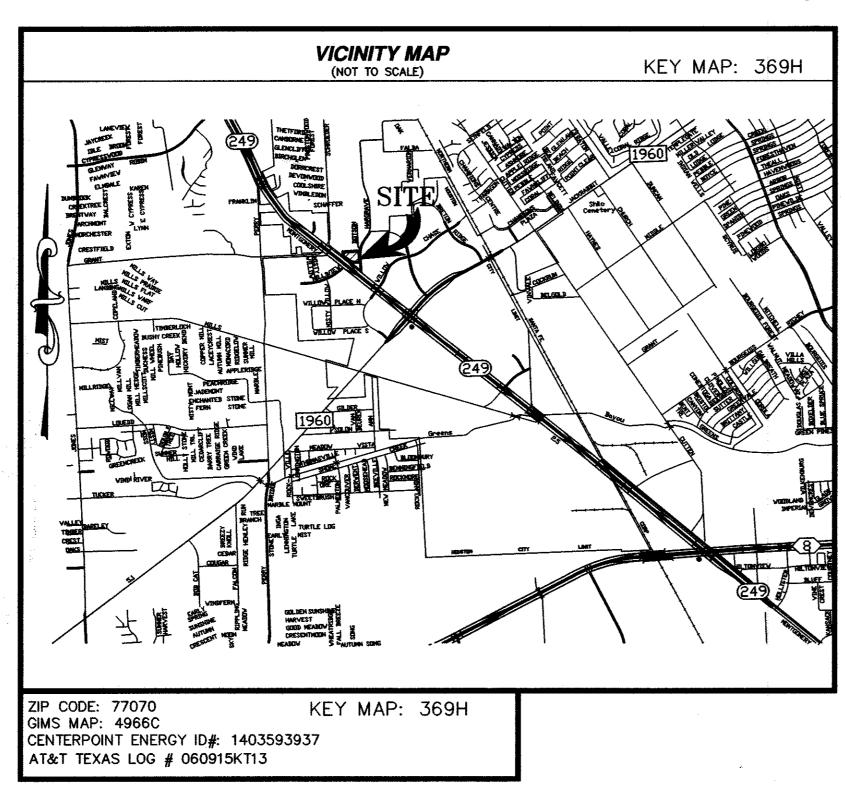
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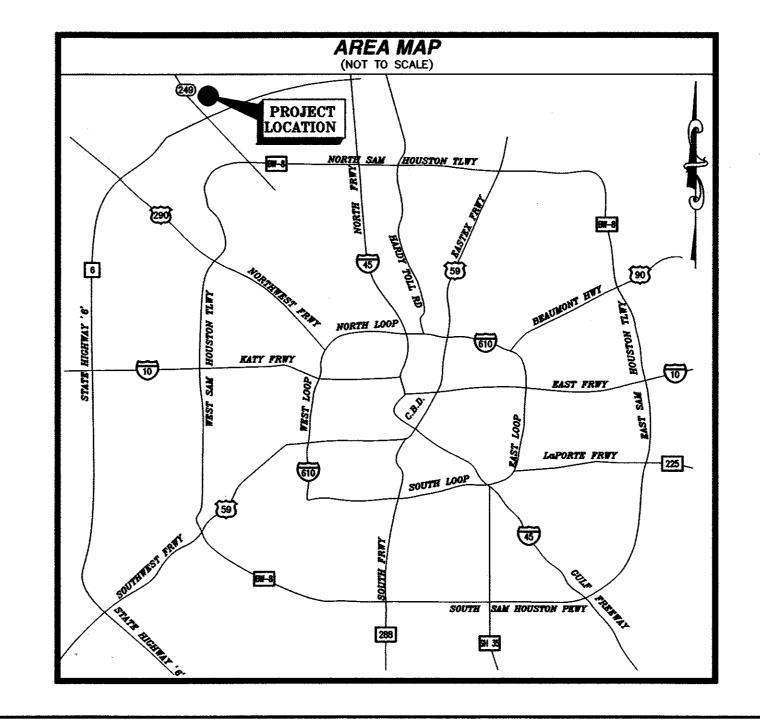
PROP. 8" WATER LINE AND 8" SANITARY SEWER

ALONG HARGRAVE ROAD & S.H. 249

HOUSTON, TEXAS 77070

JANUARY 2016





ACCORDING TO MAP NO. 48201C0435M OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAPS FOR HARRIS COUNTY AND INCORPORATED AREAS, DATED OCTOBER 16, 2013, THE SUBJECT TRACT IS SITUATED WITHIN: ZONE X-UNSHADED

ONE CALL NOTIFICATION SYSTEM CALL BEFORE YOU DIG!!! CALL AT LEAST 2 WORKING DAYS (48 HOURS) BEFORE YOU DIG: TEXAS811 (DIG TESS) (1-800-344-8377) LONE STAR NOTIFICATION CENTER (1-800-669-8344)

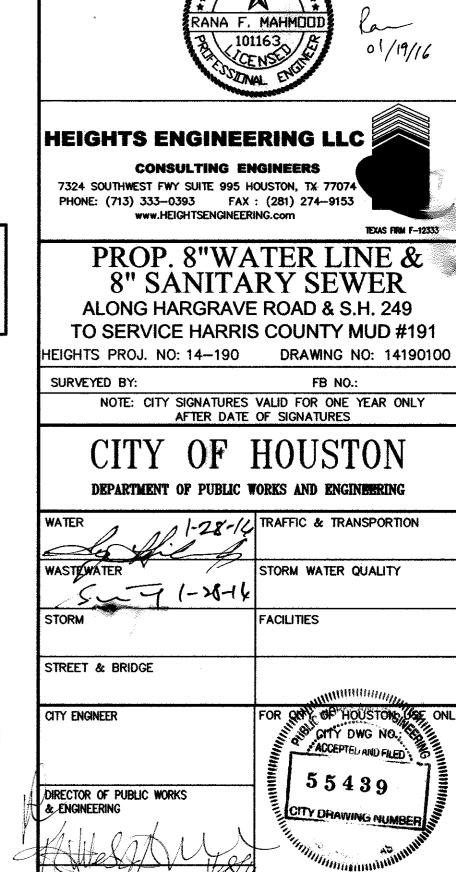
48 HOURS NOTICE PRIOR TO START OF CONSTRUCTION.

CONTRACTOR SHALL NOTIFY THE CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING, OCE 48 HOURS BEFORE STARTING WORK ON THIS PROJECT. TEL NO: 832-394-9098

### INDEX OF DRAWINGS

SHEET NO:	DESCRIPTION		
1	COVER SHEET		
2	CONSTRUCTION NOTES	40 HOUR NOTICE.	
3	HARRIS COUNTY EXPRESS REVIEW SHEET	48 HOUR NOTICE:  CONTRACTOR SHALL NOTIFY HARRIS COUNTY PRIOR TO COMMENCING	
4	OVERALL WATER & SANITARY LAYOUT	CONSTRUCTION AND/OR BACK-FILLING ANY UTILITIES. CONTRACTOR(S) TO CONTACT MARC BARBE WITH PUBLIC REVIEW	
5	STORMWATER POLLUTION PREVENTION PLAN	DEPARTMENT @ (713-274-3823) OR (MARC.BARBE@HCPID.ORG).	
6	PLAN & PROFILE: HARGRAVE ROAD-BASELINE #1: 0+00 TO END		
7	PLAN & PROFILE: HARGRAVE ROAD-BASELINE #2 & BASELINE #3: 0+00 TO EN	D	
8	PLAN & PROFILE: S.H. 249-BASELINE #4: 0+00 TO END		
9	WATERLINE CONSTRUCTION DETAILS		
10°	SANITARY SEWER CONSTRUCTION DETAILS		
11	STORMWATER POLLUTION PREVENTION DETAILS		
		(1) 1 ( ) Ob.	
	C.O.H. LOG#: 15-1136	HARRIS COUNTY MUD NO. 191 ENGINEER DATE SIGNATURE VALID FOR ONE (1) YEAR	

ILMS#: 15089701



SHEET NO: 1 OF

### GENERAL CONSTRUCTION NOTES

- ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE NOT GUARANTEED TO BE COMPLETED OR DEFINITE AND HAVE NOT BEEN FIELD VERIFIED, BUT WERE OBTAINED FROM THE BEST INFORMATION AVAILABLE. CONTRACTOR HAS SOLE RESPONSIBILITY FOR FIELD VERIFICATION OF ALL EXISTING UTILITIES AND SHALL UNCOVER AND VERIFY EXISTING ELEVATIONS OF SAME AT ALL PROPOSED CROSSINGS AND PROPOSED CONNECTIONS BEFORE COMMENCING WORK. COST SHALL BE INCLUDED IN BID ITEM PRICE. ALL
- CONFLICTS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
  CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING AT 713-863-1450 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING THE
- CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITY LINES AND SHALL REQUEST THE EXACT LOCATION OF THESE FACILITIES BY CALLING THE UTILITY COORDINATING COMMITTEE AT (713)223-4567 OR TOLL FREE 1-800-245-4545, AT LEAST 48 HOURS BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCUR DUE TO HIS FAILURE TO REQUEST THE
- LOCATION AND PRESERVATION OF THESE UNDERGROUND FACILITIES. CONTRACTOR SHALL COMPLY WITH "OSHA" REGULATIONS AND STATE OF TEXAS LAW CONCERNING
- CONTRACTOR SHALL PROVIDE A TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM. THE REQUIREMENTS OF "OSHA" SAFETY AND HEALTH REGULATIONS, PART 1926, SUBPART P AS PUBLISHED IN THE FEDERAL REGISTER, VOLUME 54 , NO. 209, DATED OCTOBER 31, 1989.
- TEXAS LAW ARTICLE 1436C, PROHIBITS ALL ACTIVITIES IN WHICH PERSONS OR EQUIPMENT MAY COME WITHIN 6 FEET OF ENERGIZED OVERHEAD POWER LINES, AND FEDERAL REGULATIONS, TITLE 29, PART 1910.190(1) AND PART 1926.440(a)(15) REQUIRE A MINIMUM CLEARANCE OF 10 FEET FROM THESE FACILITIES. THE ABOVE LAWS CARRY BOTH CRIMINAL AND CIVIL LIABILITIES, WITH CONTRACTOR BEING LEGALLY RESPONSIBLE FOR THE SAFETY OF WORKERS UNDER THESE LAWS. IF CONTRACTOR MUST WORK NEAR OVERHEAD POWER LINES, HE MUST CALL (713)228-7400 FOR THE LINES TO BE DE-ENERGIZED AND OR MOVED AT HIS EXPENSE.
- WATERLINES, WASTEWATER COLLECTION SYSTEMS, PAVING, TRAFFIC SIGNALS AND DRAINAGE SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING'S "STANDARD CONSTRUCTION SPECIFICATIONS" (MOST RECENT IISUE OCTOBER 2002). AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING" (MOST RECENT OCTOBER 2002) WITH ALL SUBSEQUENT AMMENDMENTS ADDED THERETO UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN MUST AGREE WITH THE MINIMUM STANDARDS ESTABLISHED IN THE LATEST ISSUE OF THE "INFRASTRUCTURE" DESIGN MANUAL"" (MOST RECENT ISSUE OCTOBER 2002). NOTE THAT PLAN SIGNATURES AND LETTERS OF CAPACITY AVAILABILITY FOR STORM, WASTEWATER AND WATER EXPIRES AFTER 1 YEAR & THE LATEST EDITIONS OF DESIGN RULES, SPECS STANDARD DETAILS AND MANUALS SHALL GOVERN AS OF THE DATE
- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO THE EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATER LINES, WASTEWATER COLLECTION SYSTEMS AND STORM SEWERS, DURING CONSTRUCTION. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERTO, WITH NO COST TO THE OWNER OR IF THE CONSTRUCTION DOES NOT BEGIN WITHIN A YEAR AFTER THE PLANS HAVE BEEN SIGNED, NEW
- SIGNATURES MUST BE OBTAINED AND LETTERS OF AVAILABILITY MUST BE UPDATED. CONTRACTOR SHALL PREPARE A SET OF "AS-BUILT" DRAWINGS SHOWING ANY FIELD CHANGES MADE TO THE APPROVED ENGINEERING PLANS AND SUBMIT TO THE DESIGN CONSULTANT FOR SUBMISSION TO CITY AND HARRIS COUNTY MUD NO. 191 ENGINEER.
- CONTRACTOR SHALL REVIEW & BECOME THOROUGHLY FAMILIAR W/ THE CONTENTS OF REFERENCED SOILS REPORT, WHICH WILL BE CONSIDERED AN INTEGRAL PART OF THE CONSTRUCTION DOCUMENTS. ANY PROBLEMS ARISING FROM THE CONTRACTOR'S LACK OF FAMILIARITY WITH SOILS REPORT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- CONTRACTOR TO CONTACT PW&E OFFICE(S) O: 3300 MAIN STREET; AND/OR THE APPROPRIATE ON-LINE C/H PW&E WEBPAGE(S), AS APPROPRIATE, TO OBTAIN ALL CORRECT C/H PW&E-TYPE PERMIT(S) REQUIRED BY THE PROPOSED CONSTRUCTION, REPLACEMENT, RELOCATION, UTILITY ABANDONMENT AND/OR TRAFFIC CONTROL WORK WHETHER SHOWN (OR NOT) ON THESE PLANS. FOR ANY TREE-CUTTING PERMITS IN COMMERCIAL B.L. SETBACK AREAS &/OR EXISTING PAVED CITY ROAD(S)/R-O-W(S), CONTACT C/H FORESTRY @ 311 OR (713)-867-0379 @ (PARKS & REC.'S) URBAN FORESTRY'S MAIN OFFICE.

### SANITARY SEWER CONSTRUCTION NOTES:

- SANITARY SEWER MATERIALS, CONSTRUCTION AND TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES AND REGULATIONS.
- ALL SANITARY SEWERS SHALL BE CONSTRUCTED OF SDR 26 POLYVINYL- CHLORIDE (P.V.C.) MEETING ASTM-D3034 WITH RUBBER GASKETED JOINTS, EXCEPT WHERE PRESSURE RATED PIPE IS REQUIRED TO MEET THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY CRITERIA FOR SANITARY SEWER IN
- ALL SANITARY SEWERS PIPES SHALL BE CEMENT SAND BEDDED AND BACKFILLED ACCORDING TO CITY OF HOUSTON DWG. 02317-03 FOR DRY STABLE TRENCH.
- ALL SEWER TRENCHES UNDER OR WITHIN 1' OF EXISTING OR FUTURE PAVEMENT SHALL BE BACKFILLED AND COMPACTED TO 95% STD. PROCTOR DENSITY WITH CEMENT STABILIZED SAND UP TO WITHIN 1' OF TOP OF PAVING SUBGRADE. INCLUDE COST OF CEMENT STABILIZED SAND BACKFILL IN UNIT PRICE BID PER LINEAR FOOT FOR SANITARY SEWER LINE.
- FOR THE CONSTRUCTION OF SANITARY SEWERS, SEPARATION DISTANCES WITH WATER LINES SHALL DETERMINE THE PROPOSED CONSTRUCTION METHODS AS GOVERNED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY- RULES AND REGULATIONS FOR "DESIGN CRITERIA FOR SEWERAGE SYSTEMS". TEXAS ADMINISTRATION CODE-CHAPTER 317 (CURRENT REVISION).
- MAINTAIN 12-INCH MINIMUM VERTICAL CLEARANCE AT CROSSINGS BETWEEN SANITARY SEWERS AND CULVERTS, UNLESS OTHERWISE NOTED.
- NATURAL GROUND ADJACENT TO UTILITY TRENCH EXCAVATION TO BE CLEARED AND GRUBBED PRIOR TO PLACEMENT OF EXCESS TRENCH MATERIAL.
- SANITARY SEWER MANHOLE RIMS SHALL BE ADJUSTED TO 3" ABOVE FINISHED GRADE WITHIN STREET R.O.W. AND 6" ABOVE GROUND ELEVATION WITHIN EASEMENTS, AFTER FINAL SITE GRADING HAS BEEN COMPLETED. CLEAN FILL SHALL BE ADDED AND SLOPE AWAY FROM MANHOLE RIM FOR STORM WATER DRAINAGE AT NO SEPARATE PAY.
- WHENEVER SANITARY SEWER CROSSES WITHIN 9 FEET ABOVE OR BELOW A WATER LINE, THE SANITARY SEWER SHALL BE CONSTRUCTED OF P.V.C., AWWA C900, CLASS 150, DR-18, PRESSURE RATED PIPE FOR A MINIMUM DISTANCE OF 9 FEET ON EITHER SIDE OF THE WATER LINE. IN ALL CASES. BACKFILLING, PIPE MATERIAL AND APPURTENANCES SHALL BE GOVERNED BY TEXAS COMMISSION ON ENVIRONMENTAL QUALITY MINIMUM STANDARDS FOR WATER LINE/SANITARY SEWER SEPARATION.
- ALL SANITARY SEWER MANHOLE COVERS WITHIN THE PAVED AREA SHALL HAVE SEALED (BOLTED AND
- CONTRACTOR TO PERFORM TCEQ AIR PRESSURE AND INFILTRATION TESTS ON ALL SANITARY SEWER
- ALL SANITARY SEWER BORE AND JACKING WORK IS TO USE EITHER AWWA C-900, DR 18, PVC PIPE OR POLYETHYLENE LINED & ENCASED D.I.P., THK. CL. 50-54, {THICK-WALL HIGH PRESSURE TYPE(S) OF PIPE}. USE SAME FOR ANY SAN. SWR. PIPE {IN THE ROAD R.O.W.} HAVING LESS THAN 6' OF TOP COVER FROM THE ADJACENT N.G./F.G. AT THE ADJACENT ROAD R.O.W. LINE.
- ANY AND ALL D.I.P. TO BE USED WILL HAVE BOTH EXTERNAL AND INTERNAL PROTECTION. EXTERNAL POLYETHYLENE TUBING OR DOUBLE WRAP WILL BE 8 MILS. THICK PER LAYER AND TIED TO PIPE AT 3' MAX. INTERVALS (IF LAID) OR BANDED TO PIPE AT 1' MAX. INTERVALS (W/SCREW TIGHTENED STEEL BANDS) IF JACKED. INTERNAL POLYETHYLENE HEAT FUSED BONDED LINER {OR CERAMIC LINING} WILL BE 40 MILS, MIN. THICKNESS.

### WATER CONSTRUCTION NOTES

SHALL HAVE MINIMUM OF 5' COVER FROM TOP OF CURB.

- WATER MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING 'STANDARD SPECIFICATIONS' DATED OCTOBER 2002 AND 'STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATERLINES, STORM DRAINAGE AND STREET PAVING' OCTOBER 2002.
- ALL WATERLINES SHALL BE ENCASED IN BANK SAND TO AT LEAST 12" ABOVE THE PIPE. COST OF BANK SAND TO BE INCLUDED IN UNIT PRICE OF WATERLINE.
- SANITARY PRECAUTIONS MUST BE TAKEN DURING WATERLINE CONSTRUCTION, AS CALLED FOR BY AWWA STANDARDS PRECAUTIONS INCLUDE KEEPING PIPE CLEAN AND CAPPING OR OTHERWISE EFFECTIVELY COVERING OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS IN PROGRESS
- WATER MAINS SHALL HAVE MINIMUM OF 4' COVER FROM TOP OF CURB, EXCEPT 16" AND LARGER WATER LINES
- ALL DUCTILE IRON PIPE WATERLINE SHALL HAVE BANK RUN SAND EMBEDMENT IN ACCORDANCE WITH THE CITY OF HOUSTON STANDARD SPECIFICATION NO.'S S 02317-EXCAVATION AND BACKFILL FOR UTILITIES AND 02320- UTILITY
- ALL WATER MAINS UNDER STREET PAVEMENT, IF NOT STEEL SECTION, SHALL BE P.V.C. PIPE. SIZES 4 THRU 12 INCH SHALL BE AWWA C-900 CLASS 150 DR-18.
- THIS PROJECT SHALL BE BUILT BY MEANS OF ALL AUGER EXCEPT AS NOTED ON THE DRAWINGS. CONTRACTOR TO DETERMINE THE LOCATIONS OF BORE PITS IN THE FILED SUBJECT TO THE CITY ENGINEER'S APPROVAL.
- CONTRACTOR SHALL PROVIDE ADEQUATE CONCRETE THRUST BLOCKING TO WITHSTAND TEST PRESSURE AS SPECIFIED IN CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORK AND ENGINEERING SPECIFICATIONS.
- PRIOR TO WATER MAIN ADJUSTMENTS, THE INSTALLATION OF WATER METERS AND LEADS OR UNMETERED SPRINKLER LINE, THE CONTRACTOR SHALL CONTACT CITY OF HOUSTON, FOR DETAILS OF PERMITS AND BONDS.
- 10. PRIOR TO WATER MAIN CONSTRUCTION, THE CONTRACTOR SHALL CONTACT CAPITAL PROJECTS, PLAN REVIEW SECTION • (713) 837-7024 AND COMPLY WITH ALL REQUIREMENTS NECESSARY FOR ISSUANCE OF A WORK ORDER FOR
- WATER MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING STANDARD SPECIFICATIONS WITH LATEST ADDENDA AND AMENDMENTS THERETO.

### STREET. BRIDGE AND RIGHT-OF-WAY NOTES

- DEPARTMENT OF PUBLIC WORKS AND ENGINEERING'S "STANDARD CONSTRUCTION SPECIFICATIONS" AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE, AND STREET PAVING" UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN IS CONSISTENT WITH THE MINIMUM STANDARDS ESTABLISHED IN THE "INFRASTRUCTURE DESIGN MANUAL" http://documents.public works.houstontx.gov/document-center/engineering-and-construction/index.htm.
- FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 8" IN DEPTH AND EACH COMPACTED TO NOT LESS THAT 95% STANDARD PROCTOR DENSITY PRIOR TO INSTALLATION OF WATER LINE AND FILL
- AREA SHALL BE SEEDED AND FERTILIZED WITHIN 10 WORKING DAYS. UTILITY CONTRACTOR SHALL PROVIDE TEMPORARY SILT BARRIER FENCE ON ALL NON-CURB INLETS WHICH WILL REMAIN IN PLACE AFTER UNDERGROUND CONTRACT IS COMPLETE.
- CONTRACTOR SHALL PROVIDE SILT BARRIER FENCE ON ALL STAGE 1 CURB INLETS
- EXISTING PAVEMENTS, CURBS, DRIVEWAYS AND SIDEWALKS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO THE CITY OF HOUSTON STANDARDS, WITH LATEST ADDENDUM'S
- CONDITION OF THE ROAD AND/OR RIGHT-OF WAY, UPON COMPLETION OF JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
- ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF
- EXPOSE 15" OF REINFORCING STEEL AT PROPOSED SAWED JOINT. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS. HORIZONTAL DOWELS SHALL BE #6 BARS, 24" LONG, 24" C-C, DRILLED AND EMBEDDED 8" INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL.
- CONTRACTOR TO MAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS, AND REES ALONG THE AREA OF EXCAVATION.
- CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING. EXCAVATION, TRENCHING AND SHORING AS SPECIFIED IN CITY OF HOUSTON ORDINANCE #87-1457.

WHEELCHAIR RAMPS SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF HOUSTON STANDARDS AT ALL

- INTERSECTIONS WHERE SIDEWALKS EXIST AND THE EXISTING CURB OR SIDEWALK IS DAMAGED OR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HOUSTON, DEPARTMENT OF PUBLIC WORKS AND
- ENGINEERING'S "STANDARD CONSTRUCTION SPECIFICATIONS" AND "STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS. WATER LINES, STORM DRAINAGE AND STREET PAVING" UNLESS OTHERWISE NOTED AND APPROVED ON THESE PLANS. THE DESIGN SHOULD BE CONSISTENT WITH THE MINIMUM STANDARD ESTABLISHED IN THE "DESIGN MANUAL FOR WASTEWATER COLLECTION SYSTEMS, WATER
- THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES TO EXISTING WATER, WASTEWATER, STORM SEWER AND TRAFFIC SIGNAL CONDUITS, ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE CITY OF HOUSTON, DEPT. OF PUBLIC WORKS AND ENGINEERING "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, AT NO COST TO THE CITY OF
- PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT DEPARTMENT OF PUBLIC WORKS AND ENGINEERING AT 832-394-9386 OR 832-394-8851 AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/ WORK ORDERS FOR STREET CONSTRUCTION.
- DOUBLE REFLECTORIZED BLUE TRAFFIC MARKERS SHALL BE PLACED 6-INCHES OFFSET OF THE CENTERLINE OF ALL FIRE HYDRANT LOCATIONS BY THE PAVING CONTRACTOR. HYDRANTS LOCATED AT INTERSECTIONS SHALL HAVE A BUTTON PLACED ON EACH STREET.

### TRAFFIC AND TRANSPORTATION NOTES

- CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TEXAS M.U.T.C.D., MOST RECENT EDITION WITH
- NO LANES SHALL BE CLOSED DURING THE HOURS OF 7:00 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM MONDAY THRU FRIDAY ON MAJOR THOROUGHFARES.
- 3. NO WORK ON RESIDENTIAL STREETS FROM 7:00 PM TO 7:00 AM, SEVEN DAYS A WEEK.
- CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH STEEL PLATES ANCHORED PROPERLY DURING NON-WORKING HOUR AND OPEN LANES FOR NORMAL TRAFFIC FLOW.
- OFF DUTY UNIFORM POLICE OFFICER(S)/CERTIFIED FLAGGER(S) IS/ARE REQUIRED TO DIRECT TRAFFIC WHEN lanes are blocked.
- HEN NO "TRAFFIC CONTROL PLANS" EXIST AS A PART OF CONTRACT. DRAW! PREPARE THE PLANS\* AND SUBMIT TO TRAFFIC PLAN REVIEW SECTION, FOR APPROVAL TEN WORKING DAYS PRIOR \* THESE PLANS SHALL BE DRAWN TO SCALE ON REPRODUCIBLE MYLARS AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. PLANS WILL BECOME A PART OF THE CONTRACT DRAWINGS.
- ALL TRAFFIC CONTROL DEVICES USED AT NIGHT SHALL BE REFLECTORIZED OR ILLUMINATED.
- CONTRACTOR SHALL MAINTAIN LOCAL DRIVEWAY ACCESS TO RESIDENTIAL AND COMMERCIAL PROPERTIES ADJACENT TO WORK AREA AT ALL TIMES.
- CONTRACTOR SHALL NOTIFY FIRE, POLICE, METROPOLITAN TRANSIT AUTHORITY, AND SCHOOLS FIVE WORKING DAYS PRIOR TO IMPLEMENTATION FOR TRAFFIC CONTROLS.
- 10. APPROVED COPIES OF THE TRAFFIC CONTROL PLANS AND LANE CLOSURE PERMITS SHALL BE AVAILABLE FOR INSPECTION AT JOB SITE AT ALL TIMES. \*CONTRACTOR MUST SECURE "LANE/SIDEWALK CLOSURE PERMITS" FROM CITY'S TRAFFIC MANAGEMENT AND
- MAINTENANCE BRANCH BEFORE CLOSING A LANE/SIDEWALK. THE REQUEST MUST BE MADE AT LEAST TEN BUSINESS DAYS PRIOR TO THE DATE FOR WHICH THE CLOSURE IS SOUGHT. NOTE THAT WORKING HOURS MAY BE RESTRICTED OR THE REQUEST MAY BE DENIED. CALL 832-395-3020 FOR AN APPLICATION.

### CENTERPOINT ENERGY GAS

### CAUTION: <u>UNDERGROUND</u> GAS FACILITIES

LOCATIONS OF CENTERPOINT ENERGY MAIN LINES (TO INCLUDE CENTERPOINT ENERGY, INTRASTATE PIPELINE, LLC. WHERE APPLICABLE) ARE SHOWN IN AN APPROXIMATE LOCATION ONLY. SERVICE LINES ARE USUALLY NOT SHOWN. OUR SIGNATURE ON THESE PLANS ONLY INDICATES THAT OUR FACILITIES ARE SHOWN IN APPROXIMATE LOCATION. IT DOES NOT IMPLY THAT A CONFLICT ANALYSIS HAS BEEN MADE. THE CONTRACTOR SHALL CONTACT THE UTILITY COORDINATING COMMITTEE AT 1-800-545-6005 OR 811 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE MAIN AND SERVICE LINES FIELD LOCATED.

- WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713)-945-8036 OR (713)-945-8037 (7:00 A.M. TO 4:30 P.M.) FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.
- WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTERPOINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.
- WHEN CENTERPOINT ENERGY FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT MUST BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON THE PIPING. FOR EMERGENCIES REGARDING GAS LINES CALL (713)-659-3552 OR (713)-207-4200.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

### CENTERPOINT ELECTRIC

### CAUTION: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY EXIST ON THE PROPERTY. THE LOCATION OF OVERHEAD LINES HAS NOT BEEN SHOWN ON THESE DRAWINGS AS THE LINES ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE FORBIDS ACTIVITIES THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES.

- . ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD
- HIGH VOLTAGE LINES; AND OPERATING A CRANE, DERRICK, POWER SHOVEL, DRILLING RIG, PILE DRIVER, HOISTING EQUIPMENT, OR SIMILAR APPARATUS WITHIN 10 FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES.

PARTIES RESPONSIBLE FOR THE WORK, INCLUDING CONTRACTORS ARE LEGALLY RESPONSIBLE FOR THE SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR LINES TO BE TURNED OFF OR REMOVED CALL CENTERPOINT ENERGY AT (713) 207-2222.

ACTIVITIES ON OR ACROSS CENTERPOINT ENERGY FEE OR EASEMENT PROPERTY NO APPROVAL TO USE, CROSS OR OCCUPY CENTERPOINT FEE OR EASEMENT PROPERTY IS GIVEN. IF YOU NEED TO USE CENTERPOINT PROPERTY, PLEASE CONTACT OUR SURVEYING & RIGHT OF WAY DIVISION AT (713) 207-6248 OR (713) 207-5769.

### STORM SEWER CONSTRUCTION NOTES

- STORM SEWERS SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACKFILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 (OCT. 20) AS APPLICABLE UNLESS OTHERWISE SHOWN ON THE
- . ALL STORM SEWER CONSTRUCTED IN SIDELOT EASEMENT SHALL BE R.C.P. (C-76, CLASS III) AND SHALL BE BEDDED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 02317-02, 02317-03, 02317-05, 02317-06, AND 02317-07 AS APPLICABLE.
- ALL SEWER UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE BACKFILLED WITH 1-1/2 SACK CEMENT/C.Y. STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL.
- ALL TRENCH BACKFILLS SHALL BE IN 8" LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS ON EACH LIFT, AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM D-698/AASHTO T99).
- CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINTS CONFORMING TO ASTM C443 AND ASTM C877
- ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24-INCH AND LARGER R.C.P. (C-76, CLASS III).
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES AND INLETS ARE TO BE PLUGGED WITH 8" BRICK WALLS UNLESS OTHERWISE NOTED. CONTRACTOR SHALL PROVIDE 12" MINIMUM CLEARANCE AT STORM SEWER AND
- WATER LINE CROSSINGS. ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION
- 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE DRAINAGE SYSTEM DISTURBED AS A RESULT OF HIS

02086-ADJUSTMENTS MANHOLES, INLETS AND VALVE BOXES TO GRADE.

1. ALL DITCHES SHALL BE REGRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS HSALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED.

CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVISES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND

AND/ OR EXCAVATED MATERIALS FROM NETERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING

DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS SO

UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS

CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO REMOVE AN

CONTRATOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWAYS CLEANIN

5. CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAR DAYS

6. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND/ OR CULVERTS FOR UNOBSTRUTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE REPLACED BY

**Table 7.3** 

SS

 $-\sqrt{1}$ 

OVER

EXISTING PROP

12.3

PROTECTION REQUIREMENTS AT

WATER LINE (WL) - SANITARY SEWER (SS) CROSSINGS

PROPOSED WATER LINE

UNDER

EXISTING PROP

V | V

SS

THAT EXCAVATED MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING

SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT

ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

SWPPP CONSTRUCTION NOTES

SHALL BE SWEPT BACK INTO THE EXCAVATED AREA.

•LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE.

Department of Public Works and Engineering

•STRUCTURAL CONTROL MEASURES.

CITY OF HOUSTON

Minimum 2 feet vertical clearance

centered at SS Crossing. Provide

ft horizontally from centerline of SS

Place 1 full section (min 18 ft) of SS

centered at WL Crossing. Provide

ft horizontally from centerline of WL

pressure-rated DIP or pressure-rated

joints centered at WL crossing

and PVC pipe

joints on each end

than 24 inches), PVC pipe is only

PVC pipe with adapters and restrained

Provide DIP for small diameter WL (less

allowed if encased as per TAC § 290.44

Embed SS with CSS for the total length

Place 1 full section (min 18 ft) of min

150 psi SS centered at WL crossing.

WL or encase in a joint of 150 psi

of 1 pipe segment plus 1 foot beyond the

Provide restrained joints on SS, spaced at

least 9 ft horizontally from centerline of

and use restrained joints for both DIP

Place 1 full section (min 18 ft) of WL

restrained joints on WL, spaced at least 9

restrained joints on SS, spaced at least 9

Replace 1 full section of existing SS with

EXCESS MUD, SILT OR ROCK TRACKED FROM THE EXCAVATED AREA.

AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

\*DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED.

SEEDING OR SODDING.SLOPES OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

•AREAS USED FOR STORAGE OF MATRIALS THAT ARE EXPOSED TO PRECIPITATION.

UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.

### Appendix D CONSTRUCTION NOTES TO BE ON ALL PROJECTS

- WATER LINES, WASTEWATER COLLECTION SYSTEMS, AND STORM DRAINAGE SYSTEMS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DEPARTMENT OF PUBLIC WORKS AND ENGINEERING "DESIGN MANUAL, STANDARD CONSTRUCTION SPECIFICATIONS, AND DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAYING", DATED (NOVEMBER 1, 2008.).
- REINFORCED CONCRETE (C76 CLASS III) STORM SEWERS SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE CITY OF HOUSTON'S DRAWINGS 02317-02, 02317-03, 02317-05, 02317-06 AND 02317-07 AS APPLICABLE.
- . ALL STORM SEWERS CONSTRUCTED IN SIDE LOT EASEMENTS SHALL BE R.C.P., MINIMUM TWENTY (20) FOOT WIDE EASEMENTS SHALL BE PROVIDED.
- AN ALTERNATIVE TO CEMENT STABILIZED SAND MAY BE USED AS BACKFILL FOR PIPES FIFTY-FOUR (54) INCH AND LARGER, FROM 1-FOOTABOVE THE TOP OF THE PIPE TO THE BOTTOM OF THE SUBGRADE. CONTRACTOR MAY BACKFILL WITH SUITABLE MATERIAL, PROVIDED THE BACK FILL MATERIAL IS PLACED IN EIGHT (8) INCH LIFTS AND MECHANICALLY COMPACTED TO NINETY-FIVE (95)% STANDARD PROCTOR DENSITY. TESTS SHALL BE TAKEN AT ONE HUNDRED (100) FOOT INTERVALS ON EACH LIFT. BEDDING AND BACKFILL TO ONE (1) FOOT ABOVE THE TOP OF THE PIPE SHALL BE COMMENT-STABILIZED SAND.
- ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH EIGHT (8) INCH BRICK WALLS UNLESS OTHERWISE NOTED.
- i. THE CONTRACTOR(S) SHALL NOTIFY HARRIS COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT -ARCHITECTURE AND ENGINEERING DIVISION - PERMIT OFFICE TWENTY-FOUR (24) HOURS IN ADVANCE OF COMMENCING UTILITY AND /OR PAVING CONSTRUCTION AT (713) 316-3561 AND WRITTEN NOTIFICATION FORTY-EIGHT (48) HOURS IN ADVANCE OF COMMENCING CONSTRUCTION AT 10555 NORTHWEST FREEWAY, SUITE 146, HOUSTON, TX 77092.
- PAVING SHALL BE IN ACCORDANCE WITH THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR THE APPROVAL AND ACCEPTANCE OF INFRASTRUCTURE" AND/OR AMENDMENTS OF THE SAME.
- I. GUIDELINES SET FORTH IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" SHALL BE
- OWNER OR OWNER'S AGENT TO OBTAIN ALL PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT" PRIOR TO STARTING CONSTRUCTION.
- 10. OWNER OR OWNER'S AGENT TO OBTAIN ALL NOTIFICATIONS REQUIRED BY HARRIS COUNTY.TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITIES AND /OR CULVERTS WITHIN HARRIS COUNTY AND HARRIS COUNTY FLOOD CONTROL DISTRICT RIGHTS-OF WAY.

**DESIGN MANUAL** 

UNDER

EXISTING | PROP

WL

WL

 $\sqrt{1}$ 

Water Line Design Requirements

PROPOSED SANITARY SEWER

PROP

WL.

OVER

EXISTING

WL

AT&T TEXAS/SWBT FACILITIES

CONSTRUCTION NOTES INVOLVING UTILITIES AND PAVING

WORK LOCATED WITHIN A PUBLIC RIGHT-OF-WAY

"NOTIFICATIONS ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT -

CONSTRUCTION OF UTILITIES OR LEFT TURN LANES WITHIN HARRIS COUNTY AND HARRIS

COUNTY FLOOD CONTROL DISTRICT RIGHTS-OF-WAY." CONTACT HARRIS COUNTY PERMIT

ARCHITECTURE AND ENGINEERING DIVISION - PERMIT OFFICE - REQUIRED PRIOR TO

1) FULL SIZE PLAN SETS ARE REQUIRED TO OBTAIN THE APPROPRIATE C/H

PW&E-TYPE PERMITS FOR SUCH WORK AS IS SHOWN ON (OR REQUIRED FOR)

THESE PLANS, INCLUDING ANY: STREET CUT; LANE/SIDEWALK CLOSURE; TRENCH

SAFETY; AND/OR TRAFFIC CONTROL PLAN(S) & THEIR APPLICABLE PERMIT(S)

REQUIRED FOR SAID WORK, WHETHER CONTAINED WITHIN THIS PLAN SET OR

2) TREE & PLANT PROTECTION: CONTRACTOR IS TO PRESERVE AND PROTECT EXISTING TREES AND PLANTS FROM FOLIAGE, BRANCH, TRUNK AND/OR ROOT

OF HOUSTON STREET TREE ORDINANCE AND CITY OF HOUSTON SPECIFICATION

01562. INSIDE OF THE CITY'S EXISTING PAVED PUBLIC ROAD R-O-W's AND ANY

DAMAGE THAT COULD RESULT FROM CONSTRUCTION OPERATIONS AS PER THE CITY

3) CITY INSPECTOR IS TO CONTACT THE CITY FORESTRY TREE INSPECTOR FOR ANY

PROPOSED UTILITY/DRAINAGE WORK ABOUT EXISTING CITY TREES AND BUSHES. SOME

LINES' WORK MAY REQUIRE: RE-ROUTING AROUND EXISTING TREES AND BUSHES

&/OR LEVIES FOR DAMAGES TO CITY PROPERTY! TO THE CITY.

SHOWN (OR NOT SHOWN) ON THESE PLANS; OR FINANCIAL REIMBURSEMENT {FINES

SUPPLEMENTAL PLAN SHEET(S) (OR SET(S)).

AFFECTED COMMERCIAL B.L., SETBACK AREAS.

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE

TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT ENERGY AT 713-207-2222

PRIVATE UTILITY LINES SHOWN ATAT TEXAS/SWBT FACILITIES ved for AT&T/SBC underground conduit facilities ONLY SIGNATURE VALID FOR ONE YEAR.

THE PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES NOT MEAN THAT THERE ARE NO DIRECT (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY) NOT TO BE USED FOR CONFLICT VERIFICATION.) (GAS SERVICE

Appendix L

OFFICE (713) 316-3590.

**NOTES:** 

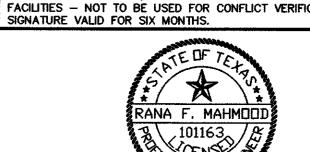
PLEASE CONTACT THE AT&T TEXAS DAMAGE PREVENTION MANAGER MR. ROOSEVELT LEE JR. AT (713)567-4552 OR EMAIL HIM AT R17259 ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OF EXCAVATING NEAR OUR AT&T TEXAS/SWBT FACILITIES.

CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. HE AGREES TO OBLIGATION TO CALL 811.

PROCEDURES. WHEN BORING, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES WHEN AT&T TEXAS/SWBT FACILITIES ARE EXPOSED, THE CONTRACTOR WILL PROVIDE SUPPORT TO PREVENT DAMAGE TO THE CONDUIT DUCTS OR CABLES. WHEN EXCAVATING NEAR TELEPHONE POLES THE CONTRACTOR SHALL BRACE THE POLE FOR SUPPORT. Date: 1-20-16 CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY

> Atuto CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.)

LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS



TEXAS FIRM F-12333

### HEIGHTS ENGINEERING LLC **CONSULTING ENGINEERS**

7324 SOUTHWEST FWY SUITE 995 HOUSTON, TX 77074 PHONE: (713) 333-0393 FAX: (281) 274-9153

www.HEIGHTSENGINEERING.com PROP. 8" WATER LINE &

8" SANITARY SEWER ALONG HARGRAVE ROAD & S.H. 249 TO SERVICE HARRIS COUNTY MUD #191

CONSTRUCTION NOTES HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190500

### 0F HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY

AFTER DATE OF SIGNATURES

1-28-1/2 TRAFFIC & TRANSPORTION WASTEWATER STORM WATER QUALITY 1-21-16 FACILITIES

CITY DWG NO.:

ACCEPTED AND FILED

55439

CITY DRAWING NUMBE

STREET & BRIDGE

DRAWING SCALE HORIZ: 1" = NA VERT: 1" = NA

DRAWN BY: AHS CHECKED BY: RM

COH LOG#: 15-1136

SHEET NO: 2 OF: 1

### pressure pipe (min 18 ft) two nominal sizes larger with spacers at 5 ft interval. 1. Minimum clearance is 2 feet for non-pressure rated SS and 1 foot for pressure rated SS

- 2. Required if existing SS is disturbed and /or there is evidence of leakage 3. Not required for augered WL unless there is evidence of leakage; completely fill augered hole with bentonite/clay
- 4. Not required for augered SS; completely fill augered hole with bentonite/clay mixture

- a. Both water lines and wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600
- b. Sanitary sewers (SS) is applicable to both gravity sanitary sewers and force mains.

### HARRIS COUNTY MUD NO. 191 NOTES:

FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES.

CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.

CABLES OR OTHER CABLES IN CONDUIT IN THE AREA.

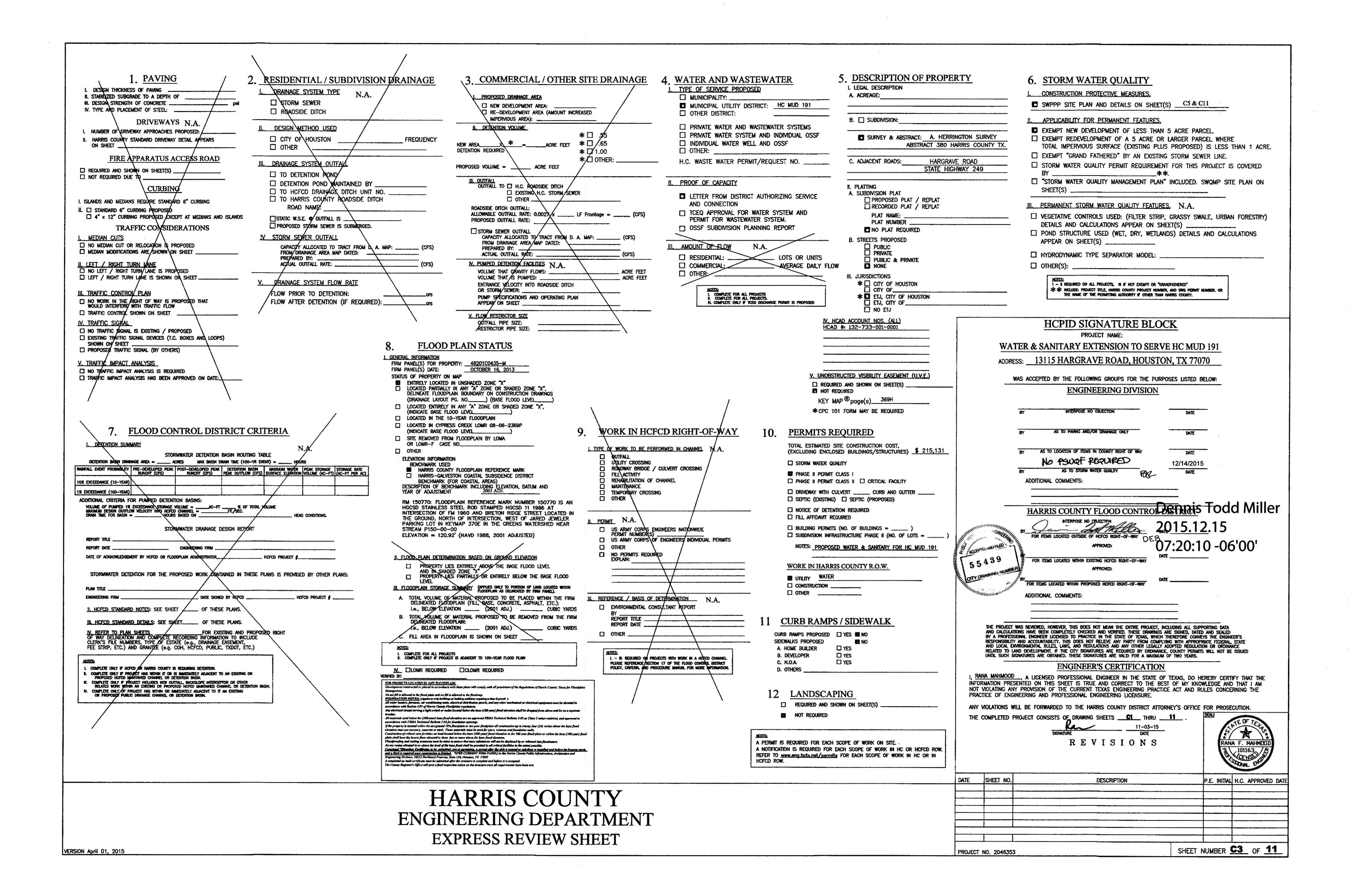
THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO

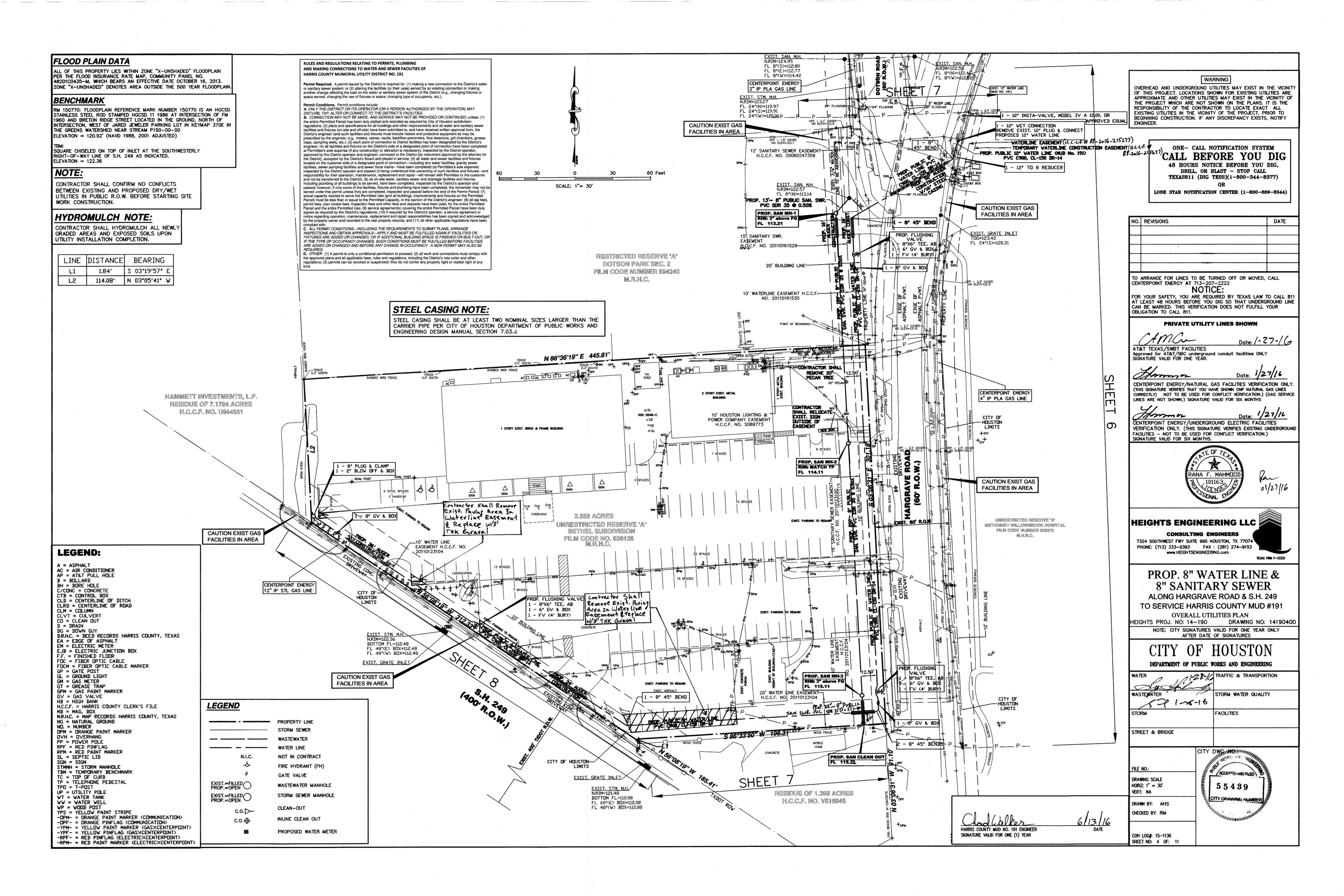
WHEN EXCAVATING WITHIN EIGHTEEN (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT

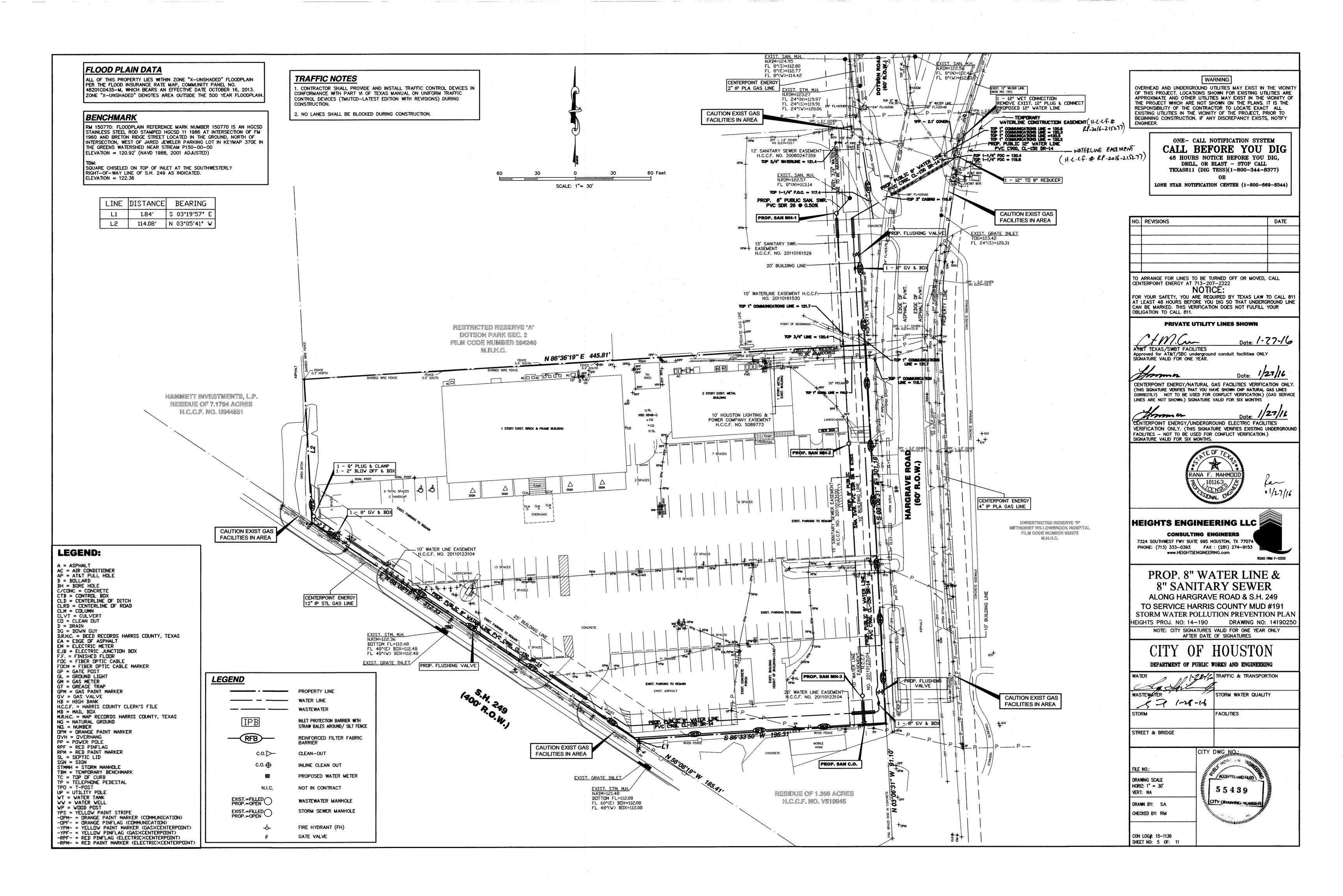
FACILITIES, ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION

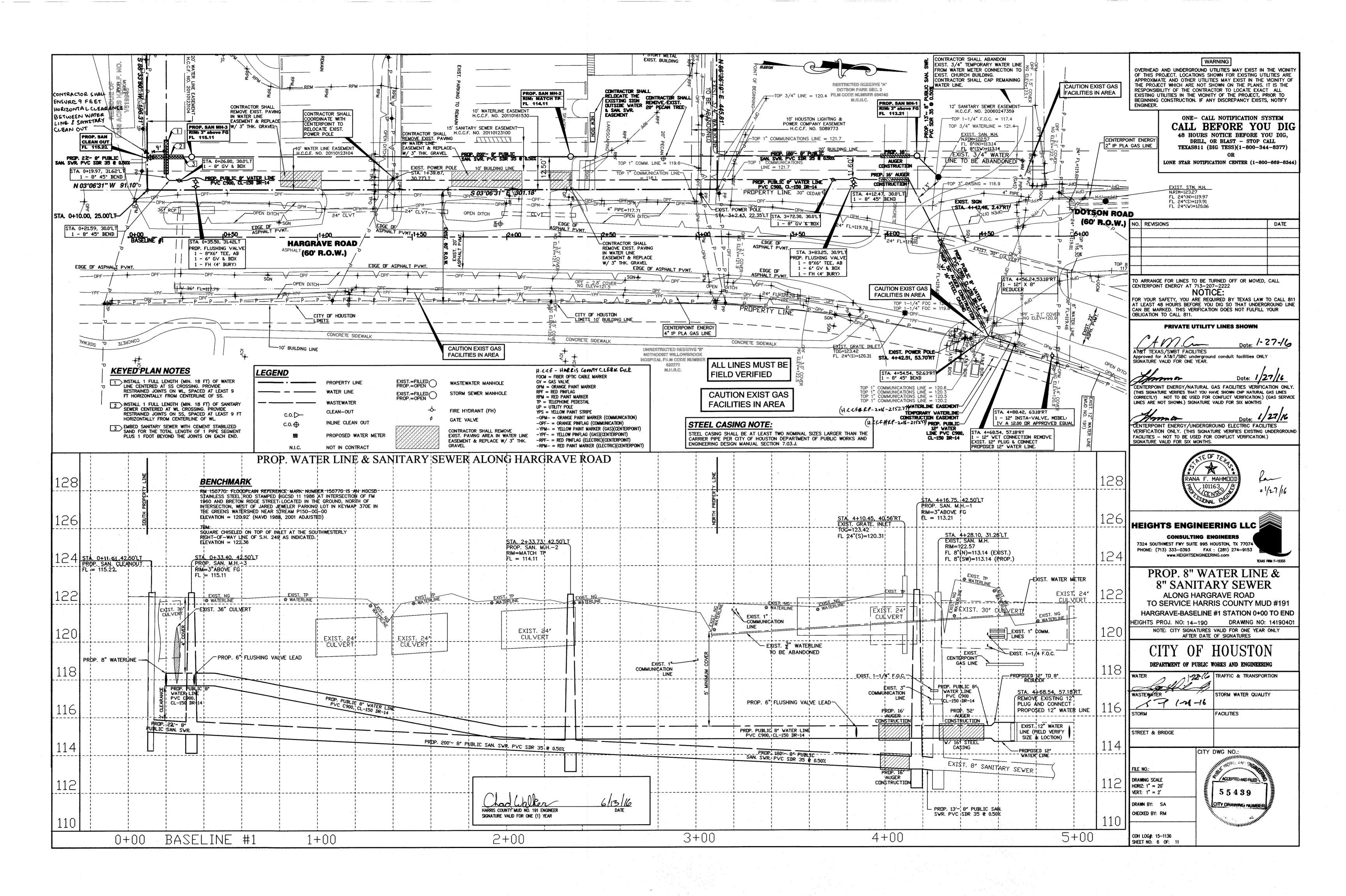
- CONTRACTOR SHALL CONTACT HARRIS COUNTY MUD NO. 191 DISTRICT ENGINEER, MR. RYAN A. ARD, PE WITH JONES AND CARTER, INC., AT (281)-363-4039, A MINIMUM OF
- 48 HOURS AND NO MORE THAN 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL CONTACT HARRIS COUNTY MUD NO. 191 DISTRICT OPERATOR, MR. HOWARD WILHITE WITH HAYS UTILITY SOUTH, AT 281-353-9809, A MINIMUM OF 48 HOURS AND NO MORE THAN 72 HOURS PRIOR TO COMMENCING CONSTRUCTION TO SET UP AN INSPECTION TO VERIFY DISTRICT'S FACILITIES.
- THE DISTRICT'S OPERATOR SHALL BE NOTIFIED 24 HOURS IN ADVANCE TO WITNESS AND INSPECT THE SANITARY SEWER LINE CONNECTION. NO SANITARY SEWER LINES SHALL BE COVERED IN THE GROUND BEFORE THE DISTRICT'S OPERATOR HAS INSPECTED THE
- CONTRACTOR SHALL CONTACT THE DISTRICT OPERATOR TO OPERATE ALL VALVES. AT NO TIME IS THE CONTRACTOR OR CONTRACTOR'S REPRESENTATIVE TO OPERATE ANY PART OF THE HARRIS COUNTY MUD NO. 191 WATER SYSTEM
- ALL CONNECTIONS TO HARRIS COUNTY MUD NO. 191 FACILITIES SHALL BE IN ACCORDANCE WITH THE DISTRICT'S CURRENT RATE ORDER. AFTER PLANS AND SPECIFICATIONS ARE APPROVED BY THE DISTRICT, NO CHANGE MAY BE EFFECTED OR PERMITTED, EXCEPT PURSUANT TO WRITTEN CHANGE ORDER APPROVED BY THE DISTRICT. SUCH CHANGE ORDERS SHALL CLEARLY STATE CHANGES TO BE MADE AND
- AFTER CONTRACTS, BONDS, INSURANCE, ETC. ARE APPROVED BY THE DISTRICT. NO CHANGE MAY BE EFFECTED OR PERMITTED, EXCEPT PURSUANT TO WRITTEN CHANGE ORDER APPROVED BY THE DISTRICT. SUCH CHANGE ORDERS SHALL CLEARLY STATE CHANGES TO BE MADE AND THE INCREASE OR DECREASE IN COST EFFECTED THEREBY.

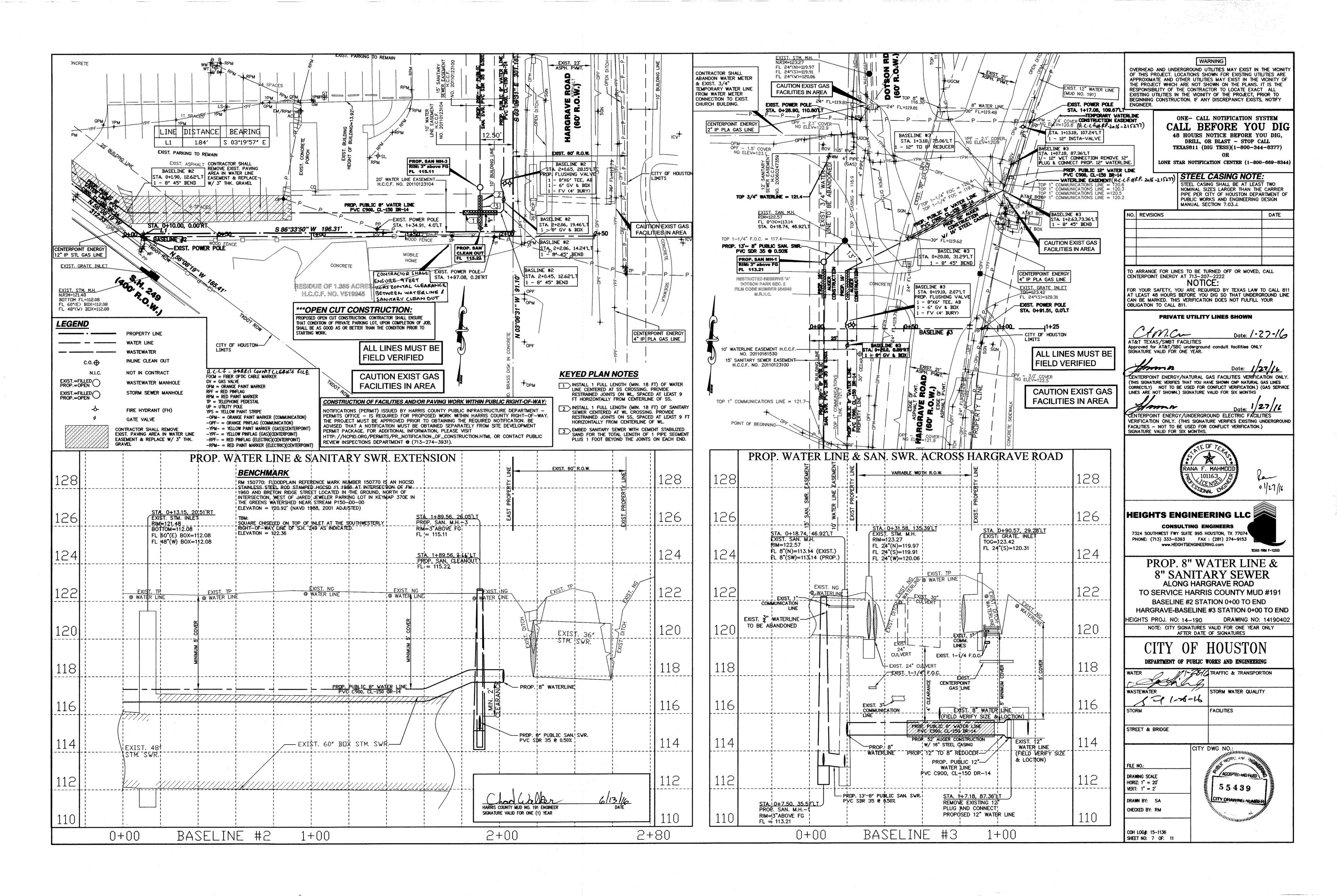
THE INCREASE OR DECREASE IN COST EFFECTED THEREBY.

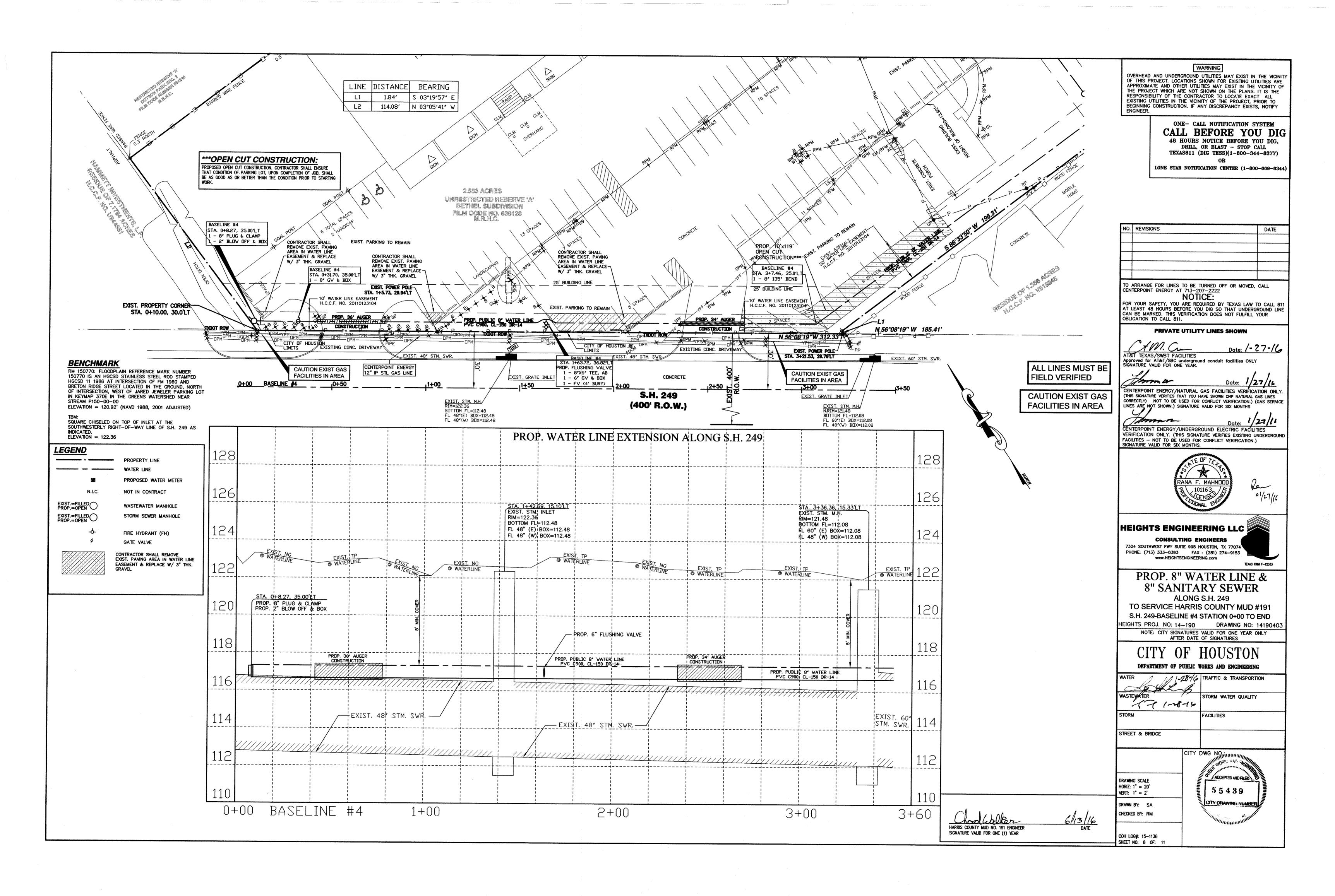


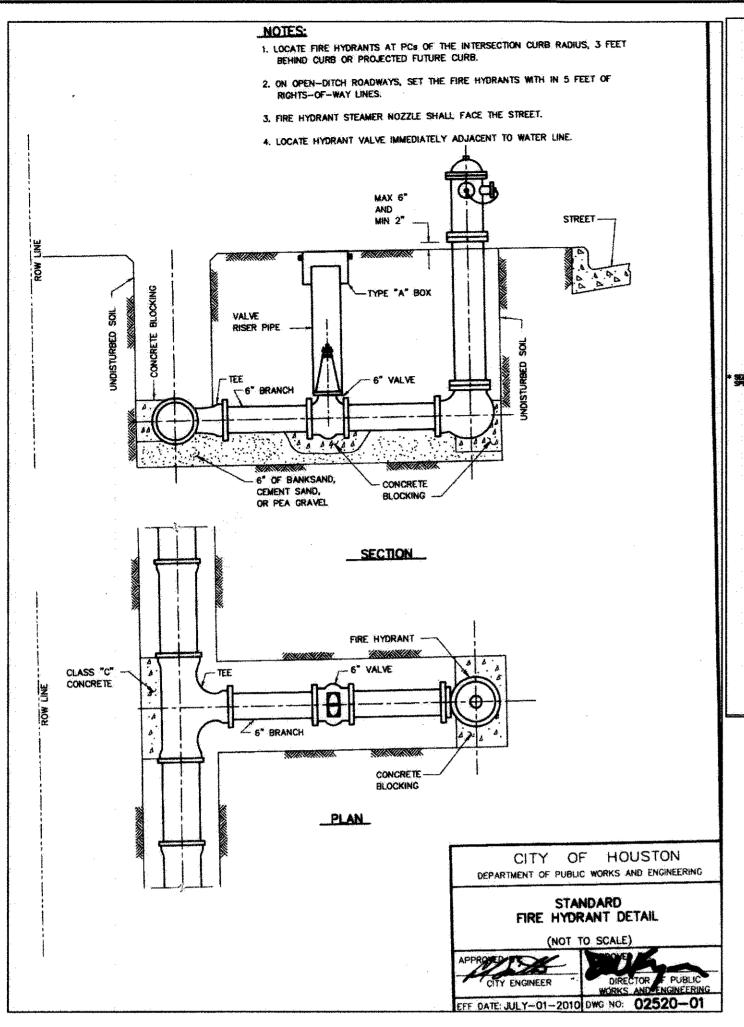












3'-0"

METER BOX W/ COVER

BRASS COMPRESSION TYPE

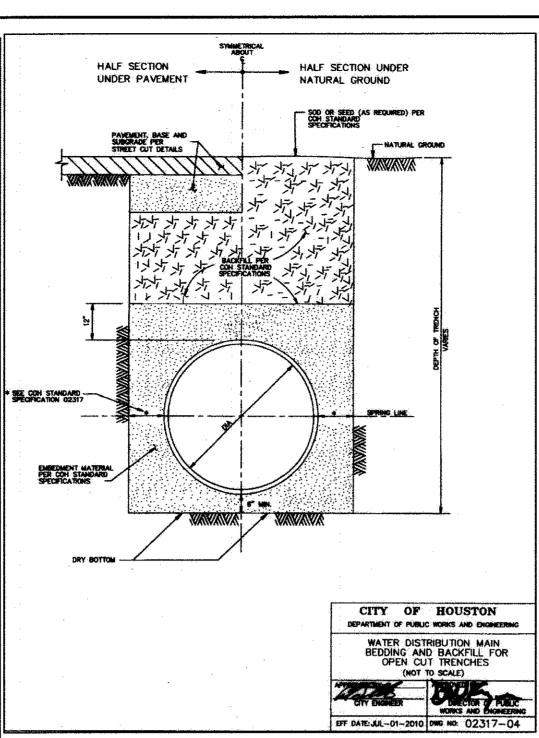
SERVICE TAP W/ CORPORATION

PLACE GATE VALVE VERTICAL TO GROUND WITH END OF BRASS PLUG 3 INCHES FROM SURFACE

2. PLACE METER BOX CENTER AROUND GATE VALVE BOX WITH LONG SIDE PARALLEL TO VALVE.

GENERAL NOTES:

WATER LINE



### TCEQ WATER DISTRIBUTION GENERAL CONSTRUCTION NOTES:

TCEQ WATER DISTRIBUTION SYSTEM

REQUIRED BY 30 TAC \$290.44(A)(1).

GENERAL CONSTRUCTION NOTES 1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D. WHEN CONFLICTS ARE NOTED WITH LOCAL STANDARDS, THE MORE STRINGENT REQUIREMENT SHALL BE APPLIED. CONSTRUCTION FOR PUBLIC WATER SYSTEMS MUST ALWAYS, AT A MINIMUM, MEET TCEQ'S "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS.

2. AN APPOINTED ENGINEER SHALL NOTIFY IN WRITING THE LOCAL TCEQ'S REGIONAL OFFICE WHEN CONSTRUCTION WILL START. PLEASE KEEP IN MIND THAT UPON COMPLETION OF THE WATER WORKS PROJECT, THE ENGINEER OR OWNER SHALL NOTIFY THE COMMISSION'S WATER SUPPLY DIVISION, IN WRITING, AS TO ITS COMPLETION AND ATTEST TO THE FACT THAT THE WORK HAS BEEN COMPLETED ESSENTIALLY ACCORDING TO THE PLANS AND CHANGE ORDERS ON FILE WITH THE COMMISSION AS REQUIRED IN 30 TAC \$290.39(H)(3). 3. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NSF INTERNATIONAL STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI, AS

4. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NSF INTERNATIONAL SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 150 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS, AS REQUIRED BY 30 TAC \$290.44(A)(2). 5. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY, AS REQUIRED BY 30 TAC §290.44(A)(3). 6. WATER TRANSMISSION AND DISTRIBUTION LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 24 INCHES BELOW GROUND SURFACE, AS REQUIRED BY 30 TAC \$290.44(A)(4). REVISED MARCH 4, 2015

7. PURSUANT TO 30 TAC \$290.44(A)(5), THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY THE MOST CURRENT AWWA FORMULAS FOR PVC PIPE, CAST IRON AND DUCTILE IRON PIPE. INCLUDE THE FORMULAS IN THE NOTES ON THE PLANS. O THE HYDROSTATIC LEAKAGE RATE FOR POLYMNYL CHLORIDE (PVC) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-605 AS REQUIRED IN 30 TAC \$290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE;

• Q = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,

- L = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET, • D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
- P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).
- O THE HYDROSTATIC LEAKAGE RATE FOR DUCTILE IRON (DI) PIPE AND APPURTENANCES SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY FORMULAS IN AMERICA WATER WORKS ASSOCIATION (AWWA) C-600 AS REQUIRED IN 30 TAC \$290.44(A)(5). PLEASE ENSURE THAT THE FORMULA FOR THIS CALCULATION IS CORRECT AND MOST CURRENT FORMULA IS IN USE;

- · L = THE QUANTITY OF MAKEUP WATER IN GALLONS PER HOUR,
- S = THE LENGTH OF THE PIPE SECTION BEING TESTED, IN FEET,
- D = THE NOMINAL DIAMETER OF THE PIPE IN INCHES, AND
- P = THE AVERAGE TEST PRESSURE DURING THE HYDROSTATIC TEST IN POUNDS PER SQUARE INCH (PSI).

8. THE MAXIMUM ALLOWABLE LEAD CONTENT OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES TO 0.25 PERCENT. 9. THE SYSTEM MUST BE DESIGNED TO MAINTAIN A MINIMUM PRESSURE OF 35 PSI AT ALL POINTS WITHIN THE DISTRIBUTION NETWORK AT FLOW RATES OF AT LEAST 1.5 GALLONS PER MINUTE PER CONNECTION. WHEN THE SYSTEM IS

REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER, IN ACCORDANCE WITH 30 TAC \$290.44(F)(3).

INTENDED TO PROVIDE FIREFIGHTING CAPABILITY, IT MUST ALSO BE DESIGNED TO MAINTAIN A MINIMUM PRESSURE OF 20 PSI UNDER COMBINED FIRE AND DRINKING WATER FLOW CONDITIONS AS REQUIRED BY 30 TAC \$290.44(D). REVISED 10. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES IN THE DISTRIBUTION SYSTEM AT ALL POINTS WHERE TOPOGRAPHY OR OTHER FACTORS MAY CREATE AIR LOCKS IN THE LINES. ALL VENT OPENINGS TO THE

ATMOSPHERE SHALL BE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT AS REQUIRED BY 30 TAC §290.44(D)(1). 11. PURSUANT TO 30 TAC \$290.44(D)(4), ACCURATE WATER METERS SHALL BE PROVIDED. SERVICE CONNECTIONS AND METER LOCATIONS SHOULD BE SHOWN ON THE PLANS.

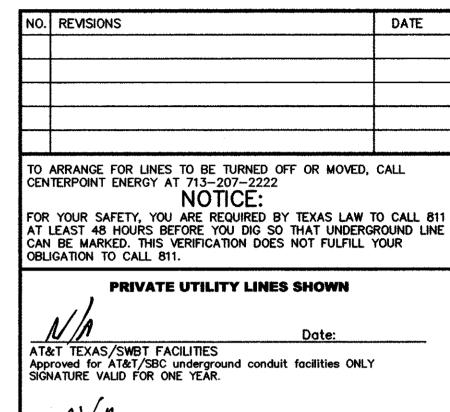
12. PURSUANT TO 30 TAC \$290.44(D)(5), SUFFICIENT VALVES AND BLOWOFFS TO MAKE REPAIRS. THE ENGINEERING REPORT SHALL ESTABLISH CRITERIA FOR THIS DESIGN. 13. PURSUANT TO 30 TAC \$290.44(D)(6), THE SYSTEM SHALL BE DESIGNED TO AFFORD EFFECTIVE CIRCULATION OF WATER WITH A MINIMUM OF DEAD ENDS. ALL DEAD-END MAINS SHALL BE PROVIDED WITH ACCEPTABLE FLUSH VALVES AND DISCHARGE PIPING. ALL DEAD-END LINES LESS THAN TWO INCHES IN DIAMETER WILL NOT REQUIRE FLUSH VALVES IF THEY END AT A CUSTOMER SERVICE. WHERE DEAD ENDS ARE NECESSARY AS A STAGE IN THE GROWTH OF THE SYSTEM, THEY SHALL BE LOCATED AND ARRANGED TO ULTIMATELY CONNECT THE ENDS TO PROVIDE CIRCULATION. 14. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES AND SEPTIC TANK DRAINFIELDS. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS, AND MATERIALS UTILIZED MUST MEET 30 TAC

15. PURSUANT TO 30 TAC \$290.44(E)(5), THE SEPARATION DISTANCE FROM A POTABLE WATERLINE TO A WASTEWATER MAIN OR LATERAL MANHOLE OR CLEANOUT SHALL BE A MINIMUM OF NINE FEET. WHERE THE NINE—FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE POTABLE WATERLINE SHALL BE ENCASED IN A JOINT OF AT LEAST 150 PSI PRESSURE CLASS PIPE AT LEAST 18 FEET LONG AND TWO NOMINAL SIZES LARGER THAN THE NEW CONVEYANCE. THE SPACE AROUND THE CARRIER PIPE SHALL BE CENTERED ON THE CROSSING AND BOTH ENDS SEALED WITH CEMENT GROUT OR MANUFACTURED SEALANT.

16. PURSUANT TO 30 TAC \$290.44(E)(6), FIRE HYDRANTS SHALL NOT BE INSTALLED WITHIN NINE FEET VERTICALLY OR HORIZONTALLY OF ANY WASTEWATER LINE, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE REGARDLESS OF 17. PURSUANT TO 30 TAC \$290.44(E)(7), SUCTION MAINS TO PUMPING EQUIPMENT SHALL NOT CROSS WASTEWATER MAINS, WASTEWATER LATERALS, OR WASTEWATER SERVICE LINES. RAW WATER SUPPLY LINES SHALL NOT BE INSTALLED

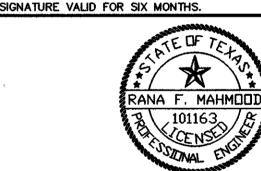
WITHIN FIVE FEET OF ANY TÎLE OR CONCRETE WASTEWATER MAIN, WASTEWATER LATERAL, OR WASTEWATER SERVICE LINE. 18. PURSUANT TO 30 TAC \$290.44(E)(B), WATERLINES SHALL NOT BE INSTALLED CLOSER THAN TEN FEET TO SEPTIC TANK DRAINFIELDS, REVISED MARCH 4, 2015

19. PURSUANT TO 30 TAC \$290.44(F)(1), THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION. 20. PURSUANT TO 30 TAC \$290.44(F)(2), WHEN WATERLINES ARE LAID UNDER ANY FLOWING OR INTERMITTENT STREAM OR SEMI-PERMANENT BODY OF WATER THE WATER MAIN SHALL BE INSTALLED IN A SEPARATE WATERTIGHT PIPE ENCASEMENT. VALVES MUST BE PROVIDED ON EACH SIDE OF THE CROSSING WITH FACILITIES TO ALLOW THE UNDERWATER PORTION OF THE SYSTEM TO BE ISOLATED AND TESTED. 21. THE CONTRACTOR SHALL DISINFECT THE NEW WATER MAINS IN ACCORDANCE WITH AWWA STANDARD C-651 AND THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATER LINE WILL BE

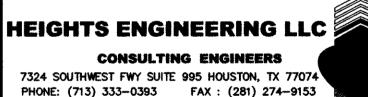


CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY) NOT TO BE USED FOR CONFLICT VERIFICATION.) (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS

CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.)



TEXAS FIRM F-12333



www.HEIGHTSENGINEERING.com

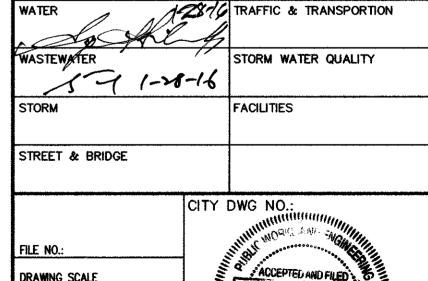
PROP. 8" WATER LINE & 8" SANITARY SEWER **ALONG HARGRAVE ROAD & S.H. 249** TO SERVE HARRIS COUNTY MUD #191

WATERLINE CONSTRUCTION DETAILS HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190501

### AFTER DATE OF SIGNATURES OF HOUSTON

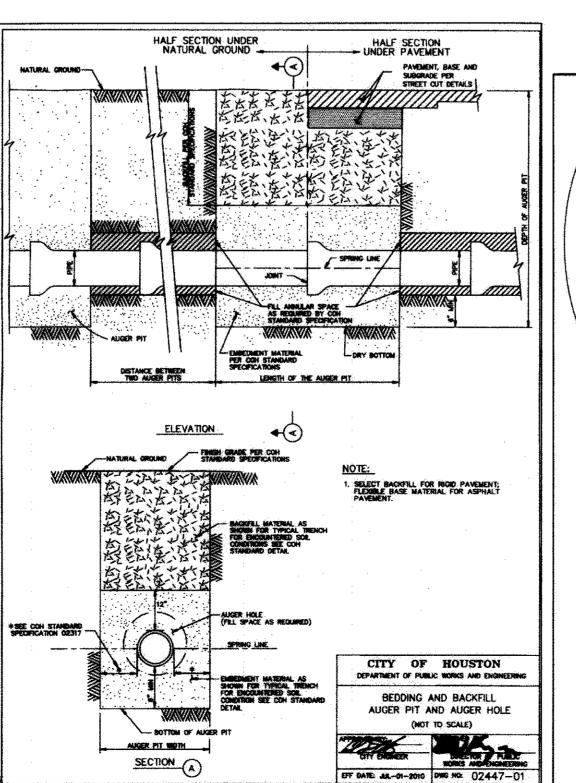
NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY

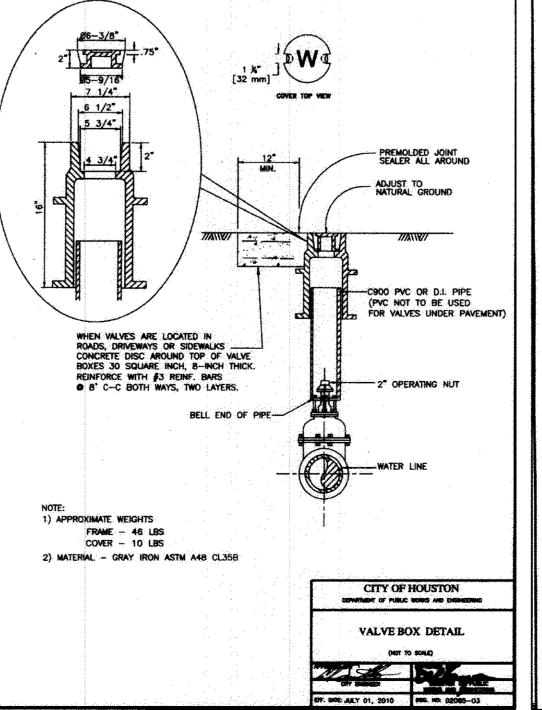
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

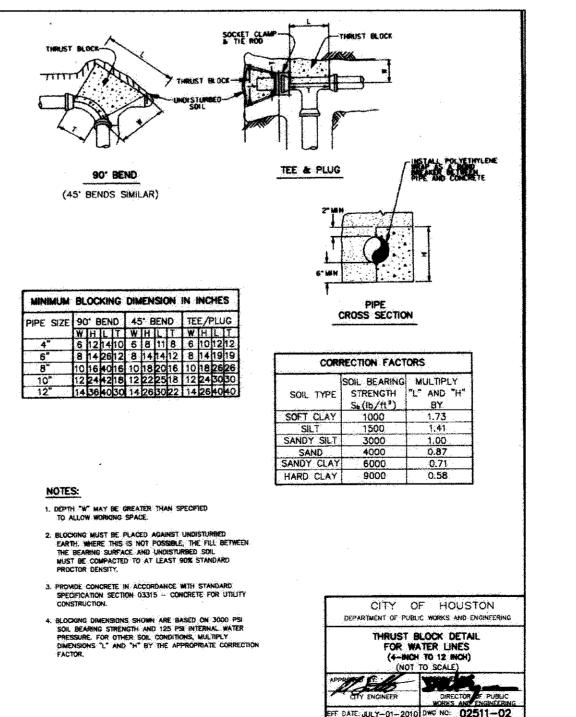


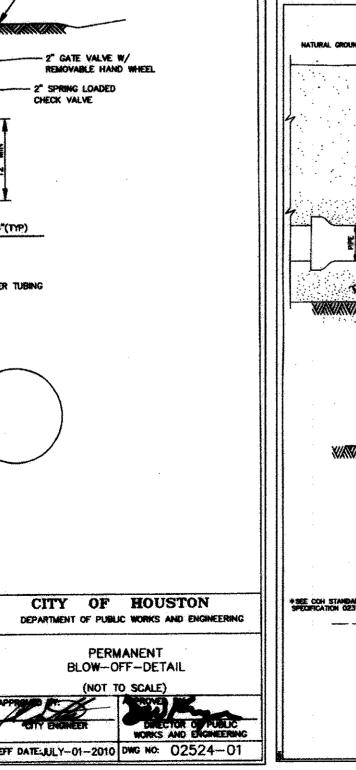
SHEET NO: 9 OF: 11

128/6 TRAFFIC & TRANSPORTION DRAWING SCALE HORIZ: NTS CITY DRAWING DRAWN BY: SA CHECKED BY: RM COH LOG#:15-1136

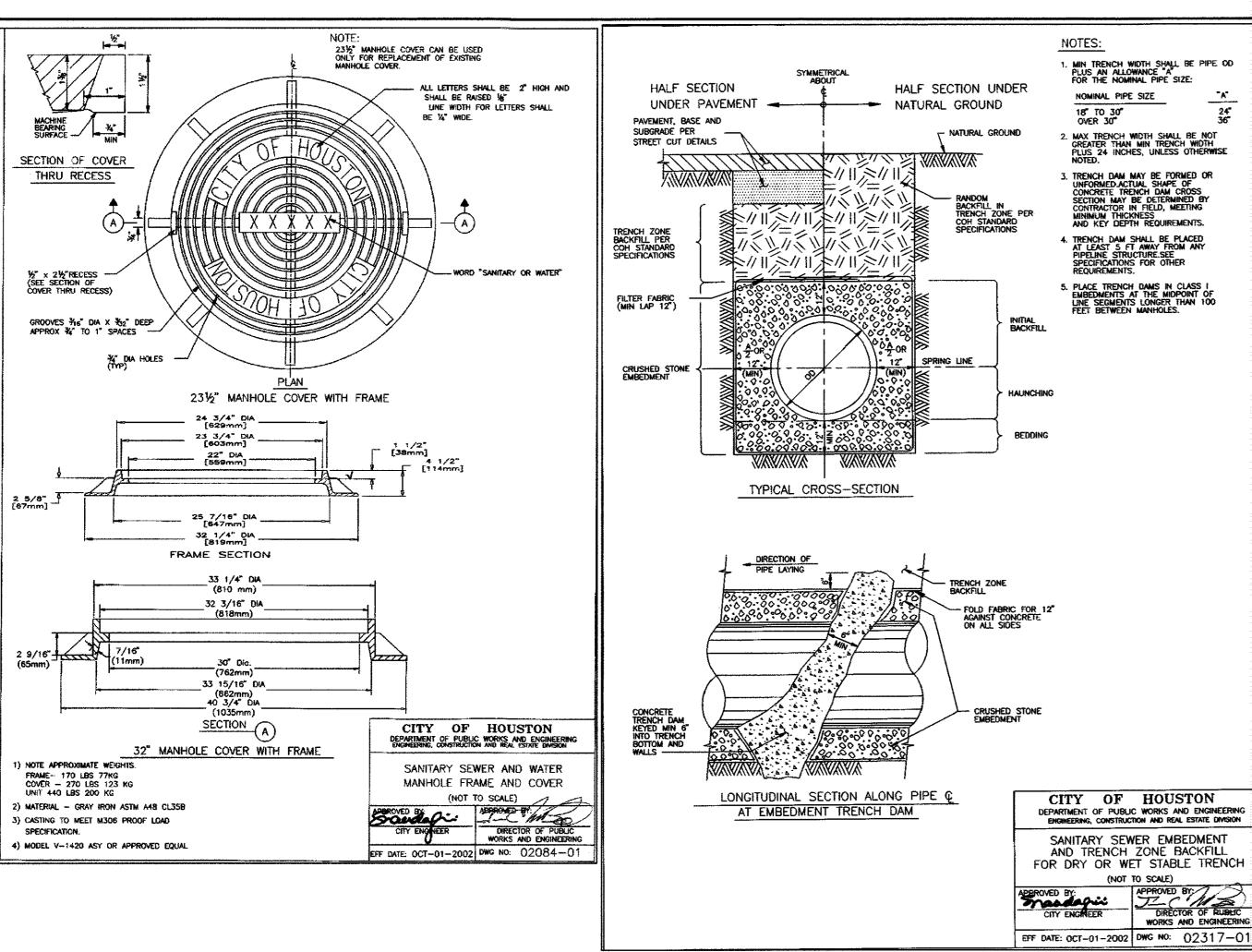


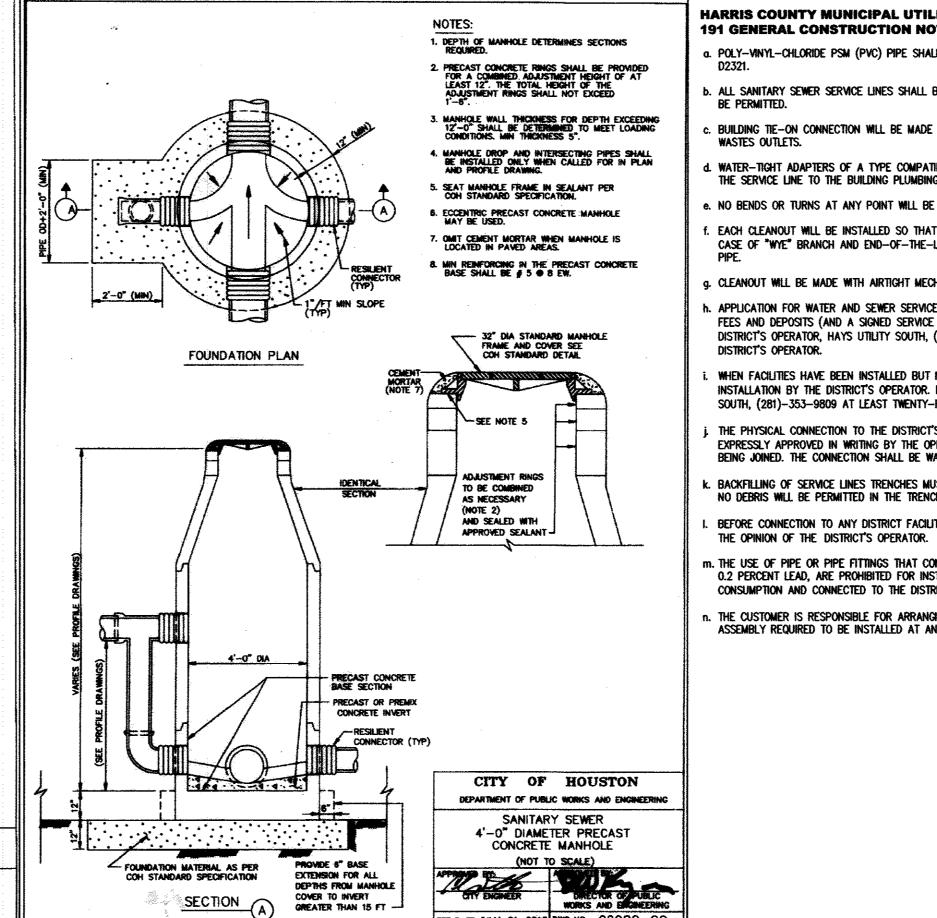






2" GATE VALVE W/



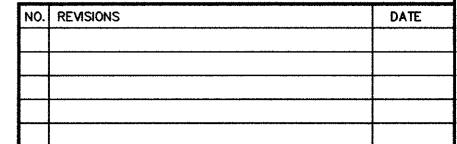


EFF DATE: JULY-01-2010 DWG NO: 02082-02

HARRIS COUNTY MUNICIPAL UTILITY DISTRICT NO. 191 GENERAL CONSTRUCTION NOTES:

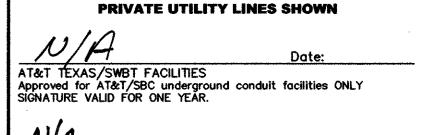
- a. POLY-VINYL-CHLORIDE PSM (PVC) PIPE SHALL CONFORM TO ASTM SPECIFICATIONS D3034 AND BE INSTALLED ACCORDING TO ASTM
- b. ALL SANITARY SEWER SERVICE LINES SHALL BE CONSTRUCTED TO TRUE ALIGNMENT AND GRADE. WARPED AND SAGGING LINES WILL NOT
- BUILDING TIE-ON CONNECTION WILL BE MADE DIRECTLY TO THE STUB-OUT FROM THE BUILDING PLUMBING AT THE FOUNDATION ON ALL
- I. WATER-TIGHT ADAPTERS OF A TYPE COMPATIBLE WITH THE MATERIALS BEING JOINED WILL BE USED AT THE POINT OF CONNECTION OF THE SERVICE LINE TO THE BUILDING PLUMBING. NO CEMENT GROUT MATERIALS ARE PERMITTED.
- e. NO BENDS OR TURNS AT ANY POINT WILL BE GREATER THAN 45 DEGREES.
- f. EACH CLEANOUT WILL BE INSTALLED SO THAT IT OPENS IN A DIRECTION OPPOSITE TO THE FLOW OF THE WASTE AND, EXCEPT IN THE CASE OF "WYE" BRANCH AND END-OF-THE-LINE CLEANOUTS, CLEANOUTS WILL BE INSTALLED VERTICALLY ABOVE THE FLOW LINE OF THE PIPE.
- g. CLEANOUT WILL BE MADE WITH AIRTIGHT MECHANICAL PLUG.
- h. APPLICATION FOR WATER AND SEWER SERVICE MUST BE FILED PRIOR TO CONSTRUCTION OF THE SERVICE LINE, AND ALL APPLICABLE FEES AND DEPOSITS (AND A SIGNED SERVICE AGREEMENT) SHOULD ACCOMPANY THIS APPLICATION (FORMS ARE AVAILABLE FROM THE DISTRICT'S OPERATOR, HAYS UTILITY SOUTH, (281)-353-9809). CONSTRUCTION MUST NOT BEGIN UNTIL AUTHORIZED BY THE
- WHEN FACILITIES HAVE BEEN INSTALLED BUT NOT YET COVERED, THE APPLICANT MUST ARRANGE AND OBTAIN AN INSPECTION OF THE INSTALLATION BY THE DISTRICT'S OPERATOR. REQUESTS FOR INSPECTIONS SHALL BE MADE TO THE DISTRICT'S OPERATOR, HAYS UTILITY SOUTH, (281)-353-9809 AT LEAST TWENTY-FOUR HOURS IN ADVANCE OF THE INSPECTION.
- THE PHYSICAL CONNECTION TO THE DISTRICT'S FACILITIES MAY ONLY BE MADE BY THE DISTRICT'S OPERATOR (UNLESS OTHERWISE EXPRESSLY APPROVED IN WRITING BY THE OPERATOR) AND MUST BE BY USE OF AN ADAPTER OF A TYPE COMPATIBLE WITH MATERIALS BEING JOINED. THE CONNECTION SHALL BE WATERTIGHT. NO CEMENT GROUT MATERIALS ARE PERMITTED.
- k. Backfilling of service lines trenches must be accomplished within twenty—four (24) hours of inspection and approval.

  No debris will be permitted in the trench. BEFORE CONNECTION TO ANY DISTRICT FACILITIES, ALL REQUIREMENTS OF THE DISTRICT'S RULES AND REGULATIONS MUST BE MET, IN
- m. THE USE OF PIPE OR PIPE FITTINGS THAT CONTAIN MORE THAT 0.25 PERCENT LEAD, OR SOLDERS AND FLUX THAT CONTAIN MORE THAN 0.2 PERCENT LEAD, ARE PROHIBITED FOR INSTALLATION OR REPAIR OF ANY PLUMBING IN ANY FACILITY PROVIDING WATER FOR HUMAN CONSUMPTION AND CONNECTED TO THE DISTRICT'S WATER SUPPLY SYSTEM.
- n. THE CUSTOMER IS RESPONSIBLE FOR ARRANGING FOR THE DISTRICT'S OPERATOR TO INSTALL AND TEST ANY BACKFLOW PREVENTION ASSEMBLY REQUIRED TO BE INSTALLED AT ANY CONNECTION AND TO CONDUCT ANNUAL TESTS OF THE



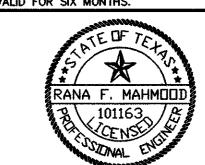
TO ARRANGE FOR LINES TO BE TURNED OFF OR MOVED, CALL CENTERPOINT ENERGY AT 713-207-2222 NOTICE:

FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINE CAN BE MARKED. THIS VERIFICATION DOES NOT FULFILL YOUR OBLIGATION TO CALL 811.



NA CENTERPOINT ENERGY/NATURAL GAS FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES THAT YOU HAVE SHOWN CNP NATURAL GAS LINES CORRECTLY) NOT TO BE USED FOR CONFLICT VERIFICATION.) (GAS SERVICE LINES ARE NOT SHOWN.) SIGNATURE VALID FOR SIX MONTHS

CENTERPOINT ENERGY/UNDERGROUND ELECTRIC FACILITIES VERIFICATION ONLY. (THIS SIGNATURE VERIFIES EXISTING UNDERGROUND FACILITIES - NOT TO BE USED FOR CONFLICT VERIFICATION.) SIGNATURE VALID FOR SIX MONTHS.



## HEIGHTS ENGINEERING LLC

7324 SOUTHWEST FWY SUITE 995 HOUSTON, TX 77074 PHONE: (713) 333-0393 FAX: (281) 274-9153



PROP. 8" WATER LINE & 8" SANITARY SEWER ALONG HARGRAVE ROAD & S.H. 249 TO SERVE HARRIS COUNTY MUD #191 SANITARY SEWER CONSTRUCTION DETAILS HEIGHTS PROJ. NO: 14-190 DRAWING NO: 14190502 NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES

DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

1284 TRAFFIC & TRANSPORTION STORM WATER QUALITY TP 1-18-16 STORM FACILITIES STREET & BRIDGE

CITY DWG NO .:

DRAWN BY: SA

ACCEPTED AND FILE 55439 CITY DRAWING NUME

COH LOG#:15-1136 SHEET NO: 10 OF: 11

