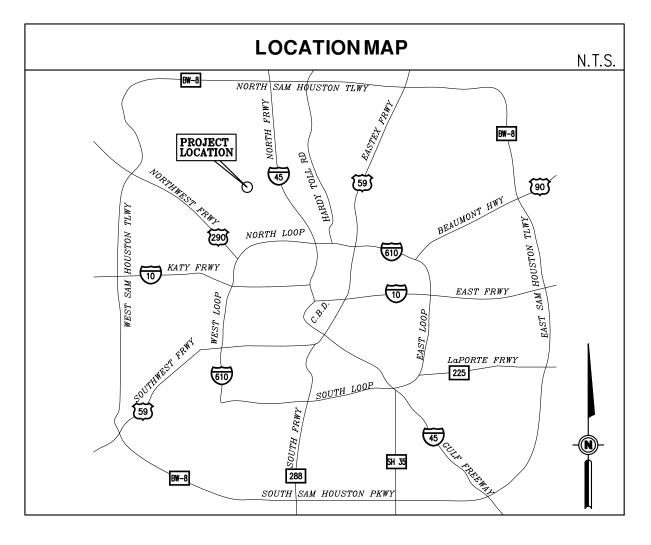
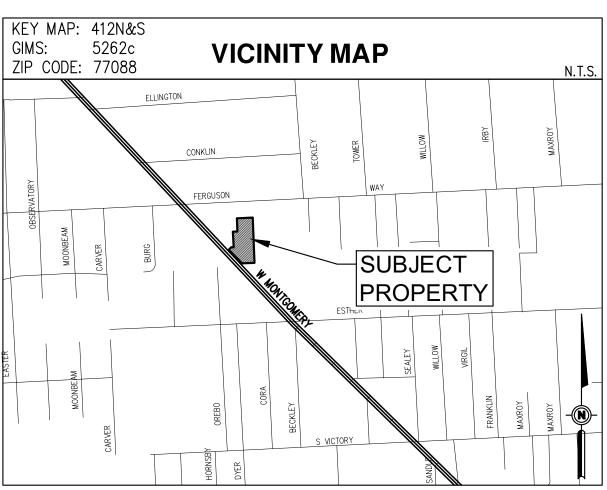
CONSTRUCTION PLANS FOR PROPOSED 24" STORM SEWER, 8" SANITARY SEWER, 6" WATER LINE CONNECTION AND PROPOSED MEDIAN CLOSURE

9116 W. MONTGOMERY ROAD CITY OF HOUSTON, TEXAS 77088





CONTRACTOR SHALL NOTIFY HOUSTON PUBLIC WORKS, OFFICE OF THE CITY ENGINEER, 48 HOURS BEFORE STARTING WORK ON THIS PROJECT. TELEPHONE NO. 832-394-9098

FLOOD INFORMATION					
F.I.R.M. NO.: 480: REVISED DATE: JUNE 09, 20 BASE FLOOD ELEVATION: 1 DESIGNATED FLOOD ELEVATION	ZONE: X-UNSHADED				
TOPOGRAPHIC SURVEY DATED: MARCH 2021 PREPARED BY: MOMENTUM ENGINEERING & SURVEYING					

SHEET NUMBER	DESCRIPTION
1	COVER SHEET
2	GENERAL NOTES
3	OVERALL SITE PLAN
4	PLAN & PROFILE
5	DETAILS
6	DETAILS

ONE CALL NOTIFICATION SYSTEM

CALL BEFORE YOU DIG !!!

811 (IN HOUSTON)

(NEW STATEWIDE NUMBER OUTSIDE HOUSTON)

1-800-344-8377

WATER AND WASTEWATER
ILMS PROJECT NUMBER: 20105801
FEBRUARY 22, 2021
STORMWATER INFORMATION FORM
LOG NO. 2021-00714

28.0 SERVICE UNITS
ON 2.1396 ACRES AT
9116 W. MONTGOMERY RD.
(28 S.F.R.)

NOTE:
PROPOSED DRIVEWAYS, SIDEWALKS, AND
DETENTION CALCULATIONS WILL BE PERMITTED
UNDER CITY OF HOUSTON ILMS NO. 21023933.

THIS PROJECT INCLUDES WORK TO BE PERFORMED IN THE CITY OF HOUSTON'S RIGHT OF WAY AND EASEMENTS. DRAWINGS MUST BE APPROVED AND PERMITTED PRIOR TO BEGINNING CONSTRUCTION

CONTACT REQUIRED SECTIONS BELOW AS INDICATED

PERMITS 1002 Washington (2nd Floor)

PAVING 832-394-9578

STORM 832-394-9579

ALLEY 832-394-8851

STREET CUT / EXCAVATION 832-394-9101

PERMITS 1002 Washington (3rd Floor)

SANITARY 832-394-8971

		**************************************	ALI TABBOUS 98580 98580 SSONAL EN	
	<u> </u>	REVISION	1	11/30
NO.	DESCRIPTION		BY	DATE
3.				
2.				
1.				
	PIONEE 7050 EAST FREEW/ (832) 307-0010 FIRM NO. 18084			
ISSUED: SEPTEMBER	2021			PEPN: 2
DRAWN BY: MG			(CHECKED BY
	IGNATURES VALID F	OD ONE VEAD		
Winnie-Brace Brown S	0/29/2022		WORKS 	
WATER WASTE WATER LIN 10/26/202 STORM WATER	9/29/2022		er quality Pirir 1 TRANSPORTATION	 <u>0/10/</u> 20
WATER Winnie-Brace Brown S WASTE WATER LIN 10/26/202	DATE	FACILITIES Juan P TRAFFIC & STREET & E	ER QUALITY Pirir 1 TRANSPORTATION/ BRIDGE F UBLIC WORKS	
WATER WINNIE-Brace Brown S WASTE WATER LIV 10/26/202 STORM WATER CITY ENGINEER	DATE	FACILITIES Juan P TRAFFIC & STREET & E DIRECTOR O HOUSTON P HOUSTON USE	ER QUALITY Pirir 1 TRANSPORTATION/ BRIDGE F UBLIC WORKS	,

ILMS # 21026619

STREET & BRIDGE NOTES

- HOUSTON PUBLIC WORKS "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" REFERENCED AT: HTTPS: //EDOCS.PUBLICWORKS.HOUSTONTX.GOV/ENGINEERING-AND-CONSTRUCTION/DESIGN-MANUALS.HTML FILL AREAS ON PLANS SHALL BE FILLED IN LAYERS NOT EXCEEDING 8"IN DEPTH AND EACH COMPACTED TO NOT LESS THAN 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-CURBED 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 REPLACED TO CITY OF HOUSTON STANDARDS, WITH LATEST ADDENDA AND AMENDMENTS THERETO.
- 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 SATISFACTION OF THE OWNING AUTHORITY. EXPOSED 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 TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG AREAS OF EXCAVATION
- CONTRACTOR SHALL COMPLY WITH OSHA REGULATIONS AND STATE OF TEXAS LAWS CONCERNING EXCAVATION, TRENCHING AND SHORING AS SPECIFIED IN CITY OF HOUSTON ORDINANCE #87-1457.
- WHEEL CHAIR 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 REMOVED DURING
- WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS "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 TI MINIMUM STANDARD ESTABLISHED IN THE 'DESIGN MANUAL FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORMS DRAINAGE AND STREET PAVING".
- 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 HOUSTON PUBLIC WORKS "STANDARD CONSTRUCTION SPECIFICATIONS" WITH LATEST ADDENDA AND AMENDMENTS THERETO, AT NO COST TO THE CITY OF HOUSTON
- PRIOR TO STREET CONSTRUCTION, THE CONTRACTOR SHALL CONTACT HOUSTON PUBLIC WORKS AT (PHONE) 832-394-9578 AND COMPLY WITH ALL REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMITS/WORK ORDERS
- FOR STRFFT 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 STREE

SANITARY SEWER NOTES

- ALL SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HOUSTON "STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS. WATER LINES. STORM DRAINAGE. STREET PAVING. AND TRAFFIC AND ALL CURRENT AMENDMENTS THERETO AND BE SUBJECT TO A STANDARD EXFILTRATION TEST. TESTS ARE TO BE PERFORMED ON THE TOTAL FOOTAGE OF SEWER LINE INCLUDED IN THE PROJECT. REQUIREMENTS OF TEXAS ADMINISTRATIVE CODE, TITLE 30 CHAPTER 217, "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEMS" SHALL GOVERN WHERE CONFLICTS EXIST EXCEPT WHERE CITY REQUIREMENTS ARE MORE STRINGENT.
- ALL MANHOLES ARE TO BE PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02082-01, 02082-02, 02082N-02, 02082-03, AND 02082N-03 UNLESS OTHERWISE NOTED. USE 2019 VERSION AS APPLICABLE. SANITARY SEWER MANHOLES WILL HAVE BEDDING AND BACKFILL PER CITY OF HOUSTON STANDARD DETAILS DRAWING
- NO. 02317-08 UNLESS OTHERWISE NOTED. THE SANITARY SEWER PVC PIPE SHALL BE ASTM D 3034 TYPE PSM SDR 26 GRAVITY SEWER PIPE, ASTM D2241 SDR 26 PRESSURE RATED SEWER PIPE OR AWWA C-900 DR-18 GREEN PVC PRESSURE RATED SEWER PIPE BASED ON CONSTRUCTION CONDITION REQUIREMENT AND CONFORMING TO ASTM D1784 AND CITY OF HOUSTON STANDARD
- SPECIFICATION SECTION 02506 POLYVINYL CHLORIDE PIPE WHEN SS PRESSURE RATED PVC PIPE IS USED ON WATERLINE (WL) CROSSING UNDER CONDITION 1 OF COH IDM TABLE 7.3, THE SAME TYPE OF D2241 SDR 26 PVC PIPE OR C-900 GREEN DR-18 PVC GREEN PRESSURED TO BE
- UTILIZING IN-BETWEEN TWO SS MH'S. OR TO UTILIZE A DI TRANSITION ADAPTER FOR THE CONNECTING OF ASTM D-3034 PVC GRAVITY PIPE TO DI-OD AWWA C-900 PVC PIPE CENTERED AT WL WHEN CONNECTING TWO DIFFERENT TYPES OF PVC PIPES FOR SEWER CONSTRUCTION. AWWA C-900 DR-18 PVC PIPE USES EITHER AWWA C900 DR-18 PVC FITTINGS OR DIP FITTINGS.
- ALL SANITARY SEWER LINES UNDER PROPOSED OR FUTURE PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF AL PROPOSED OR FUTURE CURBS SHALL HAVE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBERS 02317-01, 02317-02, OR 02317-03 AS APPLICABLE, WITH 1 1/2 SACK CEMENT/CY STABILIZED SAND BACKFILL UP
- TO THE BOTTOM OF THE PAVEMENT SUBGRADE, 100 PSI PERFORMANCE RESULTS ARE STILL REQUIRED. ALL SANITARY SEWERS CROSSING WATER LINES WITH A CLEARANCE BETWEEN 12 INCHES AND 9 FEET SHALL HAVE MINIMUM OF ONE 18' JOINT OF 150 PSI DUCTILE IRON OR (GREEN) C900 PVC PIPE MEETING ASTM SPECIFICATION D2241 CENTERED ON WATER LINE. WHEN WATER LINE IS BELOW SANITARY SEWER, PROVIDE MINIMUM 2 FOOT SEPARATION
- CONTRACTOR SHALL PROVIDE A MINIMUM HORIZONTAL CLEARANCE OF 9'FEET BETWEEN WATER LINES AND SANITAR SEWER MANHOLES AND LINES.
- SANITARY SEWER MANHOLE RIMS OUTSIDE OF PROPOSED PAVING WILL BE SET 3"- 6"ABOVE THE SURROUNDING LEVEL FINISHED GRADE AFTER PAVING WITH SLOPED BACKFILL ADDED FOR STORM WATER TO DRAIN AWAY FROM
- . IN WET STABLE TRENCH AREAS USE BEDDING PER CITY OF HOUSTON STANDARD DETAILS DRAWING NUMBER
- 12. DEFLECTION TEST: DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE AND SEMI-RIGID SEWER PIPE. THE EST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS. NO PIPE SHAL EXCEED A DEFLECTION OF 5% IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID MANDREL, IT SHALL HAVE A DIAMETER EQUAL TO 95% OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED AS PER 30 TAC 217.57 LATEST AMENDMENT AND WITHOUT MECHANICAL PULLING DEVICES. NO BALL-TYPE MANDREL IS ALLOWED. INFILTRATION. EXFILTRATION OR LOW-PRESSURE AIR TEST: EITHER OF THE FOLLOWING TESTS SHALL BE PERFORMED
- AS PER TAC, TITLE 30 217.57 WITHIN THE SPECIFIED TOLERANCES ON ALL GRAVITY SEWERS. INFILTRATION OR EXFILTRATION TEST: TOTAL LEAKAGE AS DETERMINED BY A HYDROSTATIC HEAD TEST SHALL NOT EXCEED 50 GALLONS PER INCH DIAMETER PER MILE OF PIPE PER 24 HOURS AT A MINIMUM TEST HEAD OF TWO (2
- LOW-PRESSURE AIR TEST: PERFORM TEST ACCORDING TO UNI-B-6-90 OR OTHER APPROPRIATE PROCEDURES. FOR SECTIONS OF PIPE LESS THAN 36" (INCH) AVERAGE INSIDE DIAMETER, THE MINIMUM ALLOWABLE TIME FOR PRESSURE DROP FROM 3.5 P.S.I.G. TO 2.5 P.S.I.G. SHALL BE AS FOLLOWS:
- 6"340 SECONDS OR 0.855(L) FOR TEST LENGTHS GREATER THAN 398'
- 8"454 SECONDS OR 1.520(L) FOR TEST LENGTHS GREATER THAN 298' 10"567 SECONDS OR 2.374(L) FOR TEST LENGTHS GREATER THAN 239'
- 12"680 SECONDS OR 3.419(L) FOR TEST LENGTHS GREATER THAN 199" 15"850 SECONDS OR 5.342(L) FOR TEST LENGTHS GREATER THAN 159"

18"1020 SECONDS OR 7.693(L) FOR TEST LENGTHS GREATER THAN 133" WHERE L = LENGTH OF LINE OF SAME PIPE SIZE IN FEET.

14. "SAN. S. E." INDICATES "SANITARY SEWER EASEMENT" 15. FOR SANITARY MANHOLE (MH) RIMS SET INSIDE OF OR @ CURB & GUTTER PAVEMENT AND/OR BELOW T.C., MH RIMS WILL BE SET FLUSHED WITH AN ABUTTING PAVED SURFACE. THE (VALCUN, NEENAH OR EQUAL) HEAVY DUTY BOLTED SOLID MH COVER SHALL BE PROPERLY (AND SECURELY) ATTACHED AND SEALED TO ITS COMPATIBLE GASKETED FRAME BY USING BOTH A NEOPRENE GASKET AND (AT LEAST) 4 COUNTER-SUNK HEX-HEAD COARSE THREADED ½"-13 UNC STAINLESS STEEL BOLTS. THE HEAVY DUTY FRAME MH COVER SHALL BE SOLID (NO AIR HOLES). SAID FRAME SHALL BE BOTH EMBEDDED INTO THE MH'S TOP ALSO SECURELY ANCHORED TO THE UNDERLYING MH STRUCTURE WITH EITHER SECURELY ATTACHED EMBEDDED ANCHOR BOLTS OR THE CONCRETE MH'S EXPOSED REBAR WELDED TO THE FRAME OR OTHER EQUALLY SECURED METHODS TO PREVENT MH COVER/FRAME BLOW-OFFS/EJECTIONS.

WATER LINES

REGULATIONS

- WATER LINES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST CITY OF HOUSTON INFRASTRUCTURE DESIGN MANUAL STANDARD SPECIFICATION, AND CONSTRUCTION DETAILS
- ALL 4"THROUGH 12" WATER LINE TO BE AWWA C-900 PVC DR-18 BLUE PRESSURE RATED WATER MAIN WITH 2"ANI SMALLER WATER SERVICE LINE TO BE CONTINUOUS TYPE K COPPER TUBING PER COH STANDARD SPECIFICATION SECTION 02503. ALL 4"THRU 54"DI PIPE WATER LINES SHALL BE AWWA C151 WITH INSIDE LINING WITH AWWA C104 AND DOUBLE WRAPPED WITH 8-MIL POLYETHYLENE SHEETS.

CONCRETE THRUST BLOCKS SHALL BE PROVIDED AS NECESSARY TO PREVENT PIPE MOVEMENT. USE RESTRAINED

ALL WATER LINES UNDER PROPOSED OR FUTURE PAVING AND TO A POINT OF ONE (1) FOOT BACK OF ALL PROPOSED OR FUTURE CURBS SHALL BE ENCASED IN BANK SAND TO 12" OVER PIPE AND BACKFILLED WITH

JOINTS WHERE PREVENTING MOVEMENT OF 16"OR GREATER PIPE IS NECESSARY DUE TO THRUST.

- CEMENT STABILIZED SAND TO WITHIN ONE (1) FOOT OF SUBGRADE. ALL WATER LINE AND SEWER LINE CROSSINGS SHALL BE CONSTRUCTED PER CITY OF HOUSTON AND TCEQ
- ALL WATER VALVES SHALL BE SUPPLIED AND INS TALLED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA C-500 AND SHALL BE OF THE RESILIENT SEAT TYPE.
- ALL WATER LINES TO BE DISINFECTED IN CONFORMANCE WITH AWWA C-651 AND THE TEXAS STATE DEPARTMENT OF HEALTH. AT LEAST ONE BACTERIOLOGICAL SAMPLE SHALL BE COLLECTED FOR EVERY 1,000 LINEAR FEET OF WATER LINE AND SHALL BE REPEATED IF CONTMINATION PERSISTS
- ALL BELOW GRADE VALVES SHALL BE GASKETED, HUB-END GATE VALVES WITH A CAST IRON BOX, EXCEPT WHERE FLANGES ARE CALLED OUT ON THE PLANS. 4"THRU 12" FIT TINGS SHALL BE CEMENT MORTAR LINED COMPACT DUCTILE IRON PRESSURE FITTINGS PER ANSI
- A21.53, OR PUSH ON FITTINGS PER ANSI A21.10 PRESSURE RATED AT 250 PSIG. HYDROSTATIC TESTING: ALL WATER PIPE SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH THE LATEST (

OF HOUSTON STANDARD CONSTRUCTION SPECIFICATIONS. TESTS ARE TO BE PERFORMED ON THE ENTIRE FOOTAGE

- OF WATER PIPE LINE INCLUDED IN THE PROJECT. ALL WATER LINES TO HAVE 4' MINIMUM COVER TO FINISHED GRADE AND MINIMUM 12" CLEARANCE TO OTHER UTILITIES AT CROSSING UNLESS OTHERWISE NOTED ON PLANS. ALL WATER LINE INSTALLED OVER 8' DEEP SHALL
- UTILIZE RESTRAINED JOINT FITTINGS CONTRACTOR SHALL KEEP WATER PIPE CLEAN AND CAPPED (OR OTHERWISE EFFECTIVELY COVERED) OPEN PIPE ENDS TO EXCLUDE INSECTS, ANIMALS OR OTHER SOURCES OF CONTAMINATION FROM UNFINISHED PIPE LINES AT TIMES WHEN CONSTRUCTION IS NOT IN PROGRESS.

STORM CONSTRUCTION NOTES

- STORM SEWER SHALL BE REINFORCED CONCRETE PIPE (C-76, CLASS III), AND SHALL BE INSTALLED, BEDDED, AND BACK FILLED IN ACCORDANCE WITH THE CITY OF HOUSTON DRAWING NOS. 2317-02, 02317-3, 02317-05, 02317-06, AND 02317-07 (OCT. 2002) AS APPLICABLE UNLESS OTHERWISW SHOWN ON THE DRAWINGS. ALL STORM SEWER CONSTRUCTED IN SIDELOT EASMENT SHALL BE R.C.P (C-76, CLASSIII) AND SHALL BE EMBEDDED 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. STABLIZED SAND TO WITHIN ONE (1) FOOT C SUBGRADE. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL. ALL TRENCH BACKFILL SHALL BE IN 8"LIFTS, WITH TESTS TAKEN AT 100 FOOT INTERVALS IN EACH LIFT, AND
- MECHNICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMACTION TEST (ASTM D-698/AASHTO T99). CIRCULAR AND ELLIPTICAL REINFORCED CONCRETE PIPE SHALL BE INSTALLED USING RUBBER GASKET JOINT CONFORMING TO ASTM C443 AND ASTM C877 RESPECTIVELY.
- ALL STORM SEWER PIPES AND INLET LEADS SHALL BE 24" AND LARGER R.C.P. (C-76, CLASSIII). ALL PRPOSED PIPE STUB-OUTS FROM MANHOLES AND INLET LEADS ARE TO BE PLUGGED WITH 8"BRICK WALLS
- UNLESS OTHERWISE NOTED. MINIMUM HORIZONTAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALL BE AT LEAST 48-INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES. MINIMUM VERTICAL CLEARANCE BETWEEN ANY STORM PIPE AND BOX SHALI BE AT LEAST 18—INCHES FROM EXTERIOR OF THE STORM PIPE OR BOX TO THE EXTERIOR OF THE EXISTING OR PROPOSED PUBLIC OR PRIVATE UTILITY AND OTHER APPURTENANCES
- ADJUST MANHOLE COVERS TO GRADE CONFORMING TO REQUIREMENTS OF SECTION 02086-ADJUSTING MANHOLES, INLETS, AND VALAVE BOXES TO GRADE.). THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING, MAINTAINING, AND RESTORING ANY BACK SLOPE
- DRAINAGE SYSTEM DISTURBED AS A RESULT OF THIS WORK. ALL DITCHES SHALL BE GRADED TO PROPOSED ELEVATIONS TO INSURE PROPER DRAINAGE. ALL OUTFALLS SHALL BE PROPERLY BACKFILLED AND COMPACTED. ALL DISTURBED AREA SHALL BE REGRADED, SEEDED, AND FERTILIZED. ALL DRIVEWAYS WILL BE LOCATED TO AVOID EXISTING CURB INLET STRUCTURES.

SWPPP CONSTRUCTION NOTES

- CONTRACTOR SHALL IMPLEMENT INLET PROTECTION DEVICES AND REINFORCED FILTER FABRIC BARRIER ALONG ROAD AND SIDE DITCHES AT LOCATIONS SHOWN ON THE TYPICAL STORM WATER POLLUTION PREVENTION (SWPP) PLANS TO KEEP SILT AND OR EXCAVATED MATERIALS FROM ENTERING INTO THE STORM WATER INLETS AND DITCHES EVENTUALLY POLLUTING THE RECEIVING STORM. DURING THE EXCAVATION PHASE OF THE PROJECT, CONTRACTOR SHALL SCHEDULE THE WORK IN SHORT SEGMENTS S
- THAT EXCAVATION MATERIAL CAN BE QUICKLY HAULED AWAY FROM THE SITE AND TO PREVENT IT FROM STAYING UNCOLLECTED ON THE EXISTING PAVEMENT. ANY LOOSE EXCAVATED MATERIAL WHICH FALLS ON PAVEMENTS OR DRIVEWAYS SHALL BE SWEPT BACK INTO THE EXCAVATED AREA. CONTRACTOR SHALL CLEAN UP THE EXISTING STREET INTERSECTIONS AND DRIVEWAYS DAILY, AS NECESSARY, TO
- REMOVE ANY EXCESS MUD, SILT OR ROCK TRACKED FORM THE EXCAVATED AREA. CONTRACTOR SHALL FOLLOW GOOD HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT, ALWA' CLEANING UP DIRT AND LOOSE MATERIAL AS CONSTRUCTION PROGRESSES.
- . CONTRACTOR TO INSPECT AND MAINTAIN THE AREAS LISTED BELOW AT LEAST ONCE EVERY FOURTEEN (14) CALENDAI DAYS 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. AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION.
- STRUCTURAL CONTROL MEASURES. · LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. CONTRACTOR TO BE RESPONSIBLE TO MAINTAIN EXISTING DITCHES AND OR CULVERTS FOR UNOBSTRUCTED DRAINAGE AT ALL TIMES. WHERE SODDING IS DISTURBED BY EXCAVATION ON BACKFILLING OPERATIONS, SUCH AREAS SHALL BE

REPLACED BY SEEDING OR SODDING. SLOPES 4:1 OR STEEPER SHALL BE REPLACED BY BLOCK SODDING.

TRAFFIC AND TRANSPORTATION

CONTRACTOR OR OWNER SHALL SUBMIT TRAFFIC CONTROL PLANS WITH THE MOBILITY PERMIT APPLICATION. THE PLANS SHALL BE DRAWN TO SCALE AND SEALED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. THE GENERAL NOTES THAT SHALL BE INCLUDED ON THE TRAFFIC CONTROL PLAN CAN BE FOUND IN CHAPTER 15 (15.12 TRAFFIC CONTROL PLAN) OF THE CITY OF HOUSTON'S (CITY) INFRASTRUCTURE DESIGN MANUAL (IDM). BELOW ARE SEVERAL KEY NOTES FROM THE IDM TO BE AWARE OF:

- THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) LATEST EDITION WITH REVISIONS DURING THE ENTIRE CONSTRUCTION PERIOD.
- NO WORK SHALL BE PERFORMED IN RESIDENTIAL AREAS FROM 7:00PM TO 7:00AM. CONTRACTOR SHALL MAINTAIN APPROVED NUMBER OF LANES OF TRAFFIC IN EACH DIRECTION DURING CONSTRUCTION WORKING HOURS. TRAFFIC CONTROL PLANS SHALL INCLUDE ONE-WAY AND/OR DETOUR PLANS. CONTRACTOR SHALL MAINTAIN ADA COMPLAINT PEDESTRIAN ACCESS TO BUS STOPS AND ADEQUATE BUS ACCESS TO THE BUS STOP. CONTRACTOR SHALL COVER OPEN PAVEMENT EXCAVATIONS FOR MINOR UTILITY WORK WITH ANCHORED STEEL PLATES DURING NON-WORKING HOURS. OPEN LANES FOR NORMAL TRAFFIC FLOW WHEN FEASIBLE
- CONTRACTOR SHALL SECURE LANE/SIDEWALK/BICYCLE FACILITY CLOSURE PERMITS FROM TRANSPORTATION & DRAINAGE OPERATIONS (MOBILITY PERMIT SECTION AT WWW.GIMS.HOUSTONTX.GOV) BEFORE IMPLEMENTING THE TRAFFIC CONTROL PLAN. THE APPLICATION MUST BE SUBMITTED AT LEAST TEN BUSINESS DAYS PRIOR TO THE IMPLEMENTATION OF THE TRAFFIC CONTROL PLAN AND/OR BEGINNING CONSTRUCTION WORK. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL PLANS, CONSTRUCTION SEQUENCING, AND CONSTRUCTION SCHEDULE WITH THE
- APPLICATION. CONTRACTOR SHALL HAVE APPROVED TRAFFIC CONTROL PLAN AND PERMIT AT THE JOB SITE FOR INSPECTION AT A
- ACCESS TO DRIVEWAYS ADJACENT TO THE CONSTRUCTION WORK ZONE SHALL BE MAINTAINED AT ALL TIMES AS MUCH AS POSSIBLE. ADDITIONAL CONES AND/OR DELINEATORS MAY BE REQUIRED TO DELINEATE THE DRIVEWAY ACCESS ROUTE THROUGH THE CONSTRUCTION WORK ZONE. A MINIMUM OF ONE TRAVEL LANE SHALL BE MAINTAINED ACROS THE DRIVEWAY, UNLESS PRIOR WRITTEN APPROVAL IS OBTAINED FROM THE CITY OF HOUSTON. 8. ADDITIONAL OFF DUTY POLICE OFFICERS/FLAGGERS MAY BE REQUESTED TO DIRECT TRAFFIC WHEN LANES ARE

BLOCKED AT THE DIRECTION OF THE CITY EVEN IF THEY ARE NOT SPECIFICALLY IDENTIFIED ON THE PROJECT PLANS

AT&T TEXAS/SWBT FACILITIES

- THE LOCATIONS OF AT&T TEXAS/SWBT FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LÓCATION BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THIS FAILURE TO EXACTLY LOCATE AND PRESERVE THES UNDERGROUND UTILITIES
- THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF AT&T TEXAS/SWBT FACILITIES.
- ALL EXCAVATIONS MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHEN BORING, TH CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SBC 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 PRESENCE OR ABSENCE OF AT&T TEXAS/SWBT UNDERGROUND CONDUIT FACILITIES OR BURIED CABLE FACILITIES SHOWN ON THESE PLANS DOES MEAN THAT THERE ARE NO DIRECT BURIED CABLES OR OTHER CABLES IN CONDUIT
- PLEASE CONTACT THE ATT&T TEXAS DAMAGE PREVENTION MANAGER MR. ROOSEVELT LEE JR. AT (713) 567-4552 OR EMAIL HIM AT RL7259@ATT.COM, IF THERE ARE QUESTIONS ABOUT BORING OR EXCAVATING NEAR OUR ATT&T TEXAS/SWBT FACILITIES.

CAUTION: UNDERGROUND 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

-WHEN CENTERPOINT ENERGY PIPE LINE MARKINGS ARE NOT VISIBLE, CALL (713) 207-5463 OR (713) 945-8037 (7:00 AM TO 4:30 PM). FOR STATUS OF LINE LOCATION REQUEST BEFORE EXCAVATION BEGINS.

-WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF CENTER POINT ENERGY FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES.

-WHEN CENTER POINT 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 FAILURES TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES.

WARNING: OVERHEAD ELECTRICAL FACILITIES

OVERHEAD LINES MAY FXIST ON THE PROPERTY. WE HAVE NOT ATTEMPTED TO MARK THOSE LINES SINCE THEY ARE CLEARLY VISIBLE, BUT YOU SHOULD LOCATE THEM PRIOR TO BEGINNING ANY CONSTRUCTION. TEXAS LAW, SECTION 752 HEALTH AND SAFETY CODE, FORBIDS THAT OCCUR IN CLOSE PROXIMITY TO HIGH VOLTAGE LINES, SPECIFICALLY: -ANY ACTIVITY WHERE PERSON OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES;

-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

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) 207-6348 OR (713)

CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. TO ARRANGE FOR

CITY OF HOUSTON (C/H) NOTES

CONTRACTOR SHALL CONTACT 1002 WASHINGTON AVE., AND/OR THE APPROPRIATE ON-LINE C/H HOUSTON PUBLIC WORKS (HPW) WEB PAGES TO OBTAIN ALL APPROPRIATE C/H HPW-TYPE PERMIT(S) REQUIRED BY THE PROPOSED WORK SHOWN ON THESE PLANS.

DOCUMENTS REQUIRED FULL-SIZE PLAN SETS ARE REQUIRED TO OBTAIN THE APPROPRIATE C/H HPW-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 SUPPLEMENTAL PLAN SHEET(S) OR SET(S).

BORE-AND-JACK, OR OPEN-CUT METHOD THIS APPROVAL IS FOR CONSTRUCTION UTILIZING AUGER/BORE-AND-JACK METHOD ONLY. FOR ANY REASON, IF OPEN-CUT METHOD IS REQUIRED, APPROPRIATE PAVEMENT RESTORATION TYPICAL SHEET SHALL BE SUBMITTED FOR REVIEW AT LEAST 48 HOURS IN ADVANCE BEFORE STARTING CONSTRUCTION. THESE TYPICAL RESTORATION DETAILS SHALL BE DRAWN ON MYLAR, SEALED, SIGNED AND DATED BY A PROFESSIONAL ENGINEER IN THE STATE OF TEXAS. PIPE MATERIAL FOR BORE-AND-JACK METHOD SHALL BE D.I.P., THK. CL. 50 - 54.

PRIOR TO THE CONSTRUCTION OF WATER MAINS CONTRACTOR SHALL OBTAIN THE PROPER BONDS AND EXECUTE THE PROPER DOCUMENTS SUPPLIED BY THE PLAN REVIEW OR WATER PERMIT SECTION OF HOUSTON PUBLIC WORKS. FAILURE TO DO SO MAY RESULT IN THE REMOVAL AND RECONSTRUCTION OF THOSE PORTIONS OF THE PUBLIC WATER MAIN INSTALLED PRIOR TO THE ISSUANCE OF THE WORK ORDER GIVEN BY THE APPROPRIATE WATER ENGINEERING BRANCH. 5. <u>FILL DEPTH/GRADING PERMIT</u> FILL EXCEEDING 1 (ONE) FOOT IN HEIGHT ABOVE NATURAL GRADE REQUIRES A GRADING PERMIT IN COMPLIANCE WITH

PROPERTIES SHALL BE APPROVED AND PERMITTED BY THE CODE ENFORCEMENT BRANCH OF HOUSTON PUBLIC WORKS IN CASE OF ENCROACHMENT INTO STREET PAVEMENT, TRAFFIC PLAN SHALL BE SUBMITTED BY CONTRACTOR, FOR APPROVAL BY C/H.

APPENDIX E 2003 INTERNATIONAL BUILDING CODE (IBC), UNLESS EXEMPTED BY SECT. E103.2. GRADING IN PRIVATE

PARKS & RECREATION NOTES

CONTRACTOR'S BOND AND DOCUMENTATION

CONTRACTOR IS TO PRESERVE AND PROTECT EXISTING TREES AND PLANTS FROM FOLIAGE, BRANCH, TRUNK AND/OR ROOT DAMAGE THAT COULD RESULT FROM CONSTRUCTION OPERATIONS AS PER THE CITY OF HOUSTON STREET TREE ORDINANCE AND CITY OF HOUSTON SPECIFICATION 01562, INSIDE OF THE CITY'S EXISTING PAVED PUBLIC ROAD R-O-WS AND ANY AFFECTED COMMERCIAL B.L. SETBACK AREAS. 2. <u>TREE-CUTTING PERMIT(S)</u>

FOR ANY TREE-CUTTING PERMITS, CONTACT C/H FORESTRY (PARKS & RECREATION DEPARTMENT) @ PHONE NO. 311 OR (713) 867-0379.

GRADING NOTES

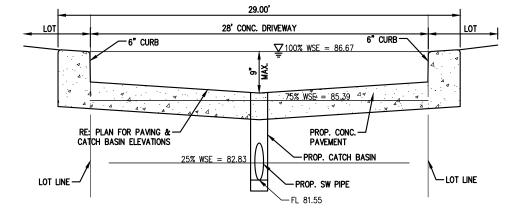
- GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE STARTING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BEFORE STARTING CONSTRUCTION, CONTRACTOR SHALL VERIFY BENCHMARK ELEVATION AND NOTIFY ENGINEER IF AN
- DISCREPANCY AND OR CONFLICT IS FOUND. CONTRACTOR SHALL ENSURE THERE IS POSITIVE DRAINAGE FROM THE PROPOSED BUILDINGS AND NO PONDING IN PAVED AREAS. AND SHALL NOTIFY ENGINEER IF ANY GRADING DISCREPANCIES ARE FOUND IN THE EXISTING AND PROPOSED GRADES PRIOR TO PLACEMENT OF PAVEMENT OR UTILITIES
- CONTRACTOR SHALL PROTECT ALL MANHOLE COVERS, VALVE COVERS, VAULT LIDS, FIRE HYDRANTS, POWER POLES, GUY WIRES, AND TELEPHONE BOXES THAT ARE TO REMAIN IN PLACE AND UNDISTURBED DURING CONSTRUCTION. ALL EXISTING CONCRETE PAVING, SIDEWALK, AND CURB DEMOLITION SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR. DISPOSAL SHALL BE AT AN APPROVED OFF-SITE, LAWFUL LOCATION, UNLESS DIRECTED OTHERWISE B THE OWNER.

GENERAL NOTES-INSIDE CITY LIMITS

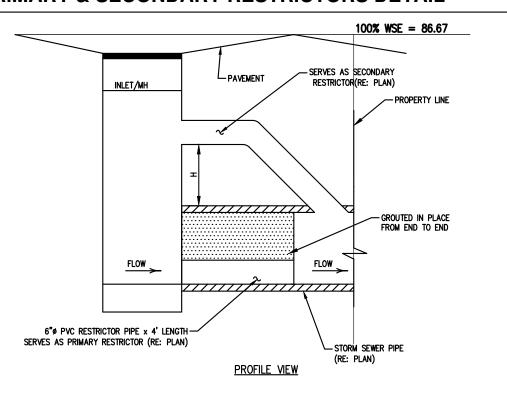
- CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH THE LATEST EDITION OF THE PUBLICATIONS STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES, STORM DRAINAGE AND STREET PAVING, AND STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS. WATER LINES, STORM DRAINAGE, AND STREET PAVING PUBLISHED BY HOUSTON
- THE GEOTECHNICAL INVESTIGATION FOR THIS PROJECT WAS CONDUCTED IN ACCORDANCE WITH CHAPTER 11 OF THE LATEST EDITION OF THE PUBLICATION INFRASTRUCTURE DESIGN MANUAL, PUBLISHED BY HOUSTON PUBLIC WORKS. SOILS REPORT WAS PREPARED BY [GEOTECHNICAL ENGINEERING FIRM] REPORT NO. [NO. OF REPORT], DATED [DATE OF REPORT] UTILITIES PRESENTED ON THESE DRAWINGS ARE SHOWN BASED ON THE BEST AVAILABLE INFORMATION. CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTRACTOR SHALL NOTIFY TEXAS ONE CALL AT 713-223-4567/811 OR 800-344-8377 AND LONE STAR NOTIFICATION CENTER AT 800-669-8344 AT LEAST 48 HOURS BEFORE PROCEEDING WITH ANY EXCAVATION, UTILITIES MARKED WITHIN THE PUBLIC RIGHT OF WAY OF IN EASEMENTS SHALL COMPLY WITH TAC TITLE 16, PART 1, CHAPTER 18, RULE §18.6 AND THE AMERICAN PUBLIC WORKS ADMINISTRATION (APWA) UNIFORM COLOR CODE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING WATER, WASTEWATER, STORM WATER LINES AND TRAFFIC CONTROL DEVICES. DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH THE HOUSTON PUBLIC WORKS, STANDARD CONSTRUCTION SPECIFICATIONS FOR WASTEWATER COLLECTION SYSTEM, WATER LINES, STORM DRAINAGE, AND STREET <u>MNG</u> AND <u>STANDARD CONSTRUCTION DETAILS FOR WASTEWATER COLLECTION SYSTEMS, WATER LINES,</u> STORM DRAINAGE, AND STREET PAVING, REFERENCED ABOVE, AT NO ADDITIONAL COS CONTRACTOR SHALL NOTIFY THE OFFICE OF THE CITY ENGINEER, HOUSTON PUBLIC WORKS @ 832-394-9098 OR VIA
- FAX AT 832-395-4424 FOR INSPECTION AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITIONS OR BETTER. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS. PLANTS AND TREES
- CONTRACTOR SHALL COMPLY WITH LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS AND RECORD AS-BUILT CONDITIONS DURING CONSTRUCTION
- THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON THE ORIGINAL TRACINGS, LABEL EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURN IT TO THE OFFICE OF THE CITY ENGINEER.

TYPICAL PAVEMENT DETENTION

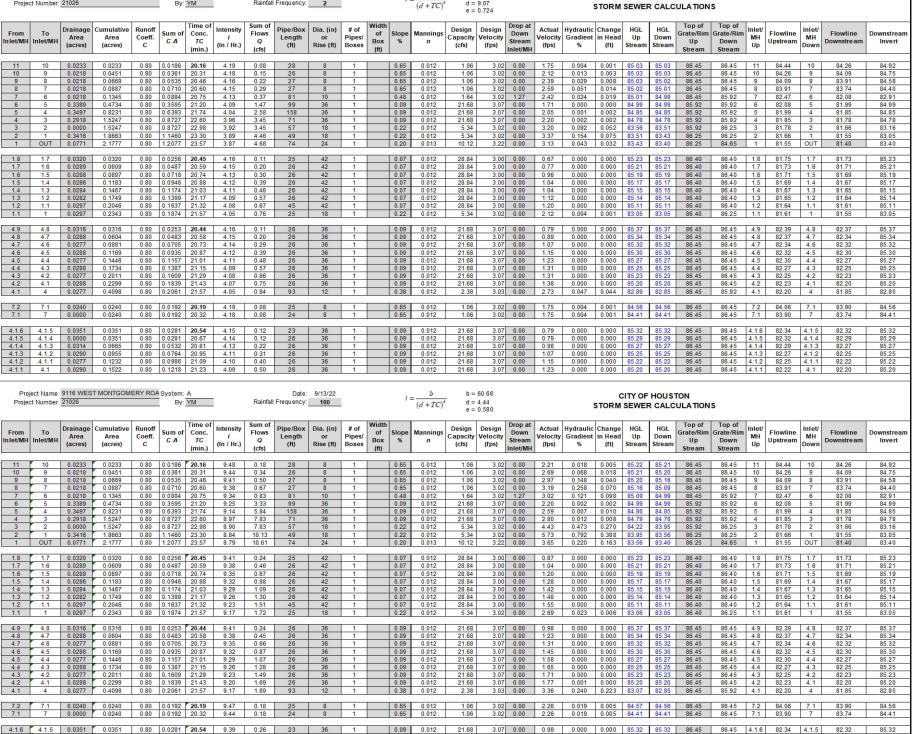
ALONG THE AREA OF EXCAVATION.

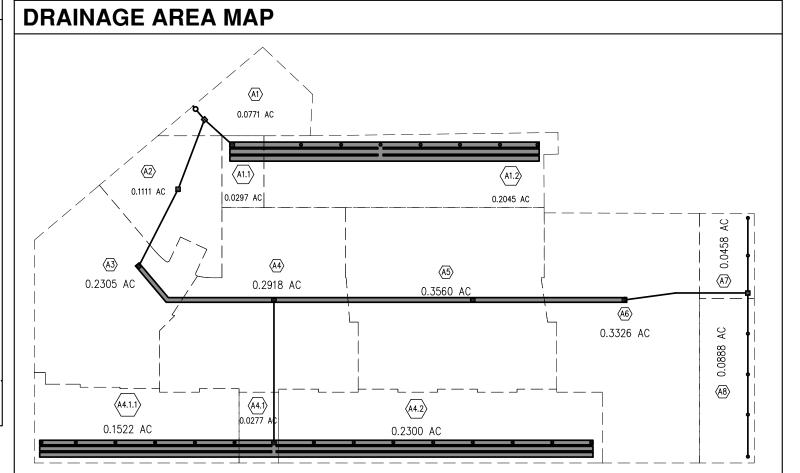


PRIMARY & SECONDARY RESTRICTORS DETAIL



STORM SEWER CALCULATIONS





DETENTION SUMMARY

Project Name: 9116 West Montgomery Road Project Number: 21026 9/16/2022 **DETENTION SUMMARY**

Total Service Area	=	2.1777	ac
Proposed Impervious Area	=	1.2857	ac
Increase Impervious Cover	=	1.2857	ac
Detention Rate Required	=	0.5	ac-ft/ac
Detention Rate Provided	=	0.5	ac-ft/ac
Detention Volume Required	=	28,003.44	cf
Detention Volume Provided	=	29,600.29	cf
Detention Depth	=	5.12	ft
100% Capacity W.S.E.	=	86.67	ft
75% Capacity W.S.E.	=	85.39	ft
25% Capacity W.S.E.	=	82.83	ft
Outflow Rate Allowed for Low Level (0.5 CFS/AC)	=	1.09	cfs
Outflow Rate Allowed for High Level (2.0 CFS/AC)	=	4.36	cfs
Outflow Rate Provided for Low Level	=	0.96	cfs
Outflow Rate Provided for High Level	=	3.72	cfs
Primary Restrictor Size	=	6.00	in
Secondary Restrictor Size	=	8.00	in

RESTRICTOR CALCULATIONS Project Name: 9116 West Montgomery Road

Project Number: 21026

TOTAL COMBINED DISCHARGE

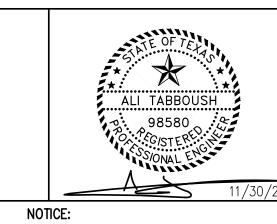
2/10/2021

RESTRICTOR CALCULATION: 100-Yr W S F Flowline at Restricte Depth of detention at 100-Yr W.5 25% W.S.E.

2070			02.00	1.5				
75% W.S.E.		=	85.39	ft				
LOW LEVEL	RESTRICTOR CALCULATIONS				HIGH LEVEL RESTRICTOR CALCULATIONS			
Primary Orifice at 25% of Detention Depth					Second Orifice at 75% of Detention Depth			
Q _{Allowable} (0.5*Total Acreage)		= 1.09		cfs	Q _{Total Allowable} (2*Total Acreage)	=	4.36	
					Q _{Allowable} (High level) (Q _{Total Allowable} - Q _{Total Dischage at Low Level Restrictor})	=	2.27	
	Assumed Restrictor Size	=	6.00	in	Assumed Restrictor Size	=	8.00	
H (Depth of 25% W.S.E Center of	Restrictor at Outfall)	=	1.03	ft	H (Depth of 100% W.S.E Center of Restrictor at Outfall)	=	0.95	
A (Q _{Allowable} / [C * (64.4 x H) ^{1/2}])		=	0.17	ft²	$A (Q_{Allowable} / [C * (64.4 \times H)^{1/2}])$	=	0.36	
C = 0.8	Short segment of pipe				C = 0.8 Short segment of pipe			
D (Q _{Allowable}) ^{1/2} / (2.25H ^{1/4})		=	5.52	in	D (Q _{Allowable}) ^{1/2} / (2.25H ^{1/4})	=	8.14	
	Use	=>	6.00	in	Use	=>	8.00	
A (Actual Orifice Area)		=	0.20	ft²	A (Actual Orifice Area)	=	0.35	
Q (Actual Discharge)		=	0.96	cfs	Q (Actual Discharge)	=	1.64	
Primary Orifice at 100% of Detenti	on Depth				Secondary Orifice at 100% of Detention Depth			
H (100-Yr W.S.E Center of Restric	etor)	=	4.87	ft	H (100-Yr W.S.E Center of Restrictor)	=	0.95	
Q Total Discharge From Low Level Restrictor		=	2.09	cfs	Q Total Discharge From HIGH Level Restrictor	=	1.64	

= 3.72 cfs

DETENTION CALCULATIONS oject Name: Project Number: DETENTION CALCULATIONS City of Houston Detention Rate: Property area is 2.1777 acres, which is larger than 1 acre. Detention will be provided at a rate of 0.5 acre-feet per acre of proposed impervious cover. Area of Proposed Impervious Cov 30.795.33 s.f. Shared Drive/Garage Approach/ Parking 23,829.85 s.f. - ROW Pavement 1.381.70 1.2857 Acres - Total Area= 56.006.88 s.f. = Required Detention Volume: $V_{T} = [43,560 \text{ x } (0.5 \text{ acre-feet per acre x } 1.2857 \text{ acres})]$ 28,003.44 c.f. **Provided Detention Volume** Maximum Water Surface Elevation Non-Curb Depth Volume (c.f.) Area (s.f.) Curb Depth (in) 23,142.19 3.00 13,499.61 13,499,61 c.f. Underground Detention System (Pi Length (ft) Diameter (in) Vol. (c.f./ft) Vol. (c.f.) 130.00 9,945.50 16 100 68 c.f 29.600.29 c **Total Detention Provided**



FOR YOUR SAFETY, YOU ARE REQUIRED BY TEXAS LAW TO CALL 811 AT LEAST 48 HOURS BEFORE YOU DIG SO THAT UNDERGROUND LINES CAN BE MARKED. THIS SIGNATURE DOES NOT FULFILL YOUR OBLIGATION TO CALL 81°

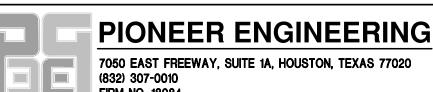
VERIFICATION OF PRIVATE UTILITY LINES

Mike Brower DATE 09-19-22 CENTERPOINT ENERGY/GAS FACILITIES/ENTEX INCORPORATED (GAS SERVICE LINES ARE NOT SHOWN). THIS SIGNATURE NOT BE USED FOR CONFLICT VERIFICATION.

SIGNATURE VALID FOR SIX MONTHS. Mike Brower DATE 09-19-22

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

64te29/2021 John Cowart PPROVED FOR AT&T UNDERGROUND CONDUIT FACILITIES ONLY.



SIGNATURE VALID FOR ONE YEAR.

7050 EAST FREEWAY, SUITE 1A, HOUSTON, TEXAS 77020

FIRM NO. 18084 PEPN: 21026 ISSUED: SEPTEMBER 2021 DRAWN BY: MG CHECKED BY: AC

> 9116 W. MONTGOMERY ROAD **HOUSTON, TX 77088**

> > HOUSTON PUBLIC WORKS

CONSTRUCTION PLANS TO SERVE

GENERAL NOTES

NOTE: CITY SIGNATURES VALID FOR ONE YEAR ONLY AFTER DATE OF SIGNATURES OF HOUSTON

STORM WATER QUALITY WASTE WATER FACILITIES STORM WATER TRAFFIC & TRANSPORTATION/ STREET & BRIDGE

FILE NO. HORIZ: NOT TO SCALE VERT: NOT TO SCALE SHEET NO. 2 OF 6 DRAWING SCALE

FOR CITY OF HOUSTON USE ONLY

HOUSTON **PUBLIC WORKS** ACCEPTED AND FILED 74186 ITY DRAWING NUMBER Approval Date 10/31/22 HOUSTON TX

