THE COUNTY OF GALVESTON

RUFUS G. CROWDER, CPPO, CPPB
PURCHASING AGENT

COUNTY COURTHOUSE
722 Moody (21st Street)
Fifth (5th) Floor
GALVESTON, TEXAS 77550

PROJECT NAME: **Jackson Ave Drainage Improvement – Phase II (9th St. to North of 14th St.)**

SOLICITATION NO: **ITB #B231025**

RE: **ADDENDUM #1**

To All Prospective Bidders:

The following information is being provided to aid in the preparation of your ITB submittal(s):

Item No. 1 ***The Project Manual Cover Sheet is revised and replaced with the attached Project Manual Cover Sheet labeled Addendum No. 1.***

Item No. 2 ***The Bid Form is revised and replaced with the attached Bid Form labeled Addendum No. 1.***

Item No. 3 ***The Technical Specifications Table of Contents is revised and replaced with the attached Technical Specifications Table of Contents labeled Addendum No. 1.***

Item No. 4 ***Construction Plan Set Sheet Nos. 2, 8, 9, 12, 15, 16, 17, 18, and 20 are revised and replaced with the attached Construction Plan Set Sheet Nos. 2, 8, 9, 12, 15, 16, 17, 18, and 20 labeled Addendum No. 1***

Question #1: ***Page 7 of the General Provision encourages Contractors to submit their bid proposals online via Bonfire. Will the County put this job on Bonfire to allow for electronic submission?***

Response: All proposers are to disregard any mention of Bonfire in the solicitation document. That paragraph was entered in error. All responses must be delivered to the Purchasing Department by the submission deadline of Tuesday, July25, 2023 at 2:00 p.m.

Question #2: ***Will an executed CIQ Form need to be on file with the Galveston County Clerk prior to the Bid or will an executed CIQ form submitted with the Bid be acceptable?***

Response: The executed CIQ Form needs to be on file with the Galveston County Clerk by the submission deadline.

Question #3 ***Tensar InterAx with Flexible Base can provide a stable roadway while potentially eliminating Lime Stabilization. InterAx can help mitigate expansive soils with the use of mechanical interlock. This can reduce project costs, speed up construction schedule and improve safety. Would Tensar InterAx Geogrid be considered an equal to Lime Stabilization in order to provide a more competitive bid? Can we submit an alternate typical section for the pavement for approval and use as an alternate? Brian with GeoSolutions, 832-372-6737, brian.goad@geosolutionsinc.com***

Response: For this project, Tensar InterAx with Flexible Base is not considered an approved road base.

Question #4 ***Will the prebid sign in sheet get posted?***

Response: Yes.

If you have any further questions regarding this bid, please address them to the representative listed below, via e-mail at purchasing.bids@co.galveston.tx.us, or contact the Purchasing Department at (409) 770-5371.

Rufus G. Crowder, CPPO CPPB
Galveston County Purchasing Agent
722 Moody, Fifth (5th) Floor
Galveston, Texas 77550
E-mail: purchasing.bids@co.galveston.tx.us

Please excuse us for any inconvenience that this may have caused.

Sincerely,

Rufus G. Crowder, CPPO CPPB
Purchasing Agent
Galveston County

COUNTY OF GALVESTON

SPECIFICATIONS AND CONTRACT DOCUMENTS

JACKSON AVE DRAINAGE IMPROVEMENTS- PHASE II
(9TH ST. TO NORTH OF 14TH ST.)

ITB #B231025

STATE OF TEXAS
RICHARD A. FULLER
90951
LICENSED
PROFESSIONAL ENGINEER

06/20/2023

IDS Engineering Group
Firm 2726 | TxSurv Firm 1011070

June 2023

ADDENDUM NO. 1

IDS Engineering Group

JACKSON AVE DRAINAGE IMPROVEMENTS - PHASE II
(9th St. to North of 14th St.)

BID PROPOSAL

Base Bid:

Item No.	Item Bid Code	Spec #	Description [1]	Unit of Measure	Quantity	Unit Price [2]	TOTAL
1	0105-6097	105	REMOVING STAB BASE AND ASPH PAV (10")	SY	4881		
2	0105-6097	105	ASPHALT SAWCUT	LF	255		
3	0105-6097	105	CONCRETE SAWCUT	LF	128		
4	0162-6002	162	BLOCK SODDING	SY	199.5		
5	0247-6312	247	FL BS (CMP IN PLC)(TY D GR1-2)(8")	SY	4450		
6	0340-6106	340	D-GR HMA(SQ) TY-D PG64-22 (2")	TON	449		
7	0402-6001	402	TRENCH EXCAVATION PROTECTION	LF	1823		
8	0462-6014	400, 462	FURNISH AND INSTALL CONC BOX CULV (7 FT X 3 FT) (COMPLETE IN PLACE INCLUDING ALL EXCAVATIONS AND BACKFILL MATERIAL)	LF	1539		
9	0464-6004	400, 464	FUNISH AND INSTALL RC PIPE (CL III)(18 IN) (COMPLETE IN PLACE INCLUDING ALL EXCAVATIONS AND BACKFILL MATERIAL)	LF	214		
10	0464-6005	400, 464	FUNISH AND INSTALL RC PIPE (CL III)(24 IN) (COMPLETE IN PLACE INCLUDING ALL EXCAVATIONS AND BACKFILL MATERIAL)	LF	324		
11	0465-6071	465	FURNISH AND INSTALL INLET (COMPL)(PSL)(RC)(4FTX4FT) (COMPLETE IN PLACE INCLUDING ALL EXCAVATIONS AND BACKFILL MATERIAL)	EA	14		
12	0496-6007	496	REMOVE 18" RCP (PIPE)	LF	249		
13	0496-6007	496	REMOVE 24" RCP (PIPE)	LF	33		
14	0500-6001	500	MOBILIZATION	LS	1		
15	0502-6001	502	BARRICADES, SIGNS AND TRAFFIC HANDLING	LS	1		
16	0506-6041	506	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	280		
17	0506-6041	506	BIODEG EROSN CONT LOGS (REMOVE) (12")	LF	280		
18	0506-6038	506	TEMP SEDMT CONT FENCE (INSTALL)	LF	420		
19	0506-6039	506	TEMP SEDMT CONT FENCE (REMOVE)	LF	420		
20	0000-0560	560	RELOCATE MAILBOX	EA	4		
21	7017-6017	7017	FURNISH AND INSTALL SANITARY SEWER (8 IN) (PVC) (SDR 26) (COMPLETE IN PLACE)	LF	237		
22	7017-XXXX	7017	STEEL CASING (PIPE) (14 IN)	LF	10		
23	7049-XXXX	7049	FURNISH AND INSTALL WATER MAIN PIPE (PVC) (3IN) (SCHEDULE 40)* (COMPLETE IN PLACE)	LF	263		
24	7049-6012	7049	WATER MAIN PIPE (PVC) (10IN) (C-900)* (COMPLETE IN PLACE)	LF	43		
25	7136-6014	7136	ABANDON/REMOVE EXISTING WATER LINE (ALL SIZES)	LF	306		

Item No.	Item Bid Code	Spec #	Description [1]	Unit of Measure	Quantity	Unit Price [2]	TOTAL
26	7197-6011	7197	REMOVE EXISTING SEWER LINE 2"-12"	LF	237		
27	COH 02081	2081	FURNISH AND INSTALL RCB MANHOLE (COMPLETE IN PLACE INCLUDING ALL EXCAVATION AND BACKFILL MATERIAL)	EA	13		
28	COH 02082	2082	SANITARY MANHOLE DROPS; 8-INCH DIAMETER, ALL DEPTHS	EA	4		
29	COH 02082	2082	FURNISH AND INSTALL 4-FOOT DIAMETER PRECAST SANITARY DROP MANHOLE (COMPLETE IN PLACE)	EA	4		
30	COH 02082	2082	FURNISH AND INSTALL EXTRA DEPTH, 4-FOOT DIAMETER SANITARY MANHOLE (COMPLETE IN PLACE)	VF	14		
31	COH 02526	2526	ADJUST WATER METER TO GRADE	EA	5		
32	HC 473	473	REPAIR SANITARY MANHOLES	EA	4		
33	PLANS	DWG	REMOVE PRECAST RCB PLUG	EA	1		
34	PLANS	DWG	FURNISH AND INSTALL PRECAST RCB PLUG	EA	1		
35	PLANS	DWG	PROJECT SIGN	EA	1		
						Total Base Bid:	**$**

Alternate 1 Bid Items:

Item No.	Item Bid Code	Spec #	Description	Unit of Measure	Estimated Quantity	Unit Price	TOTAL
36	0260-6060	260	LIME (HYDRATED OR COMMERCIAL)(SLURRY)(3%)	TON	50		
37	0260-6060	265	FLY ASH (7%)	TON	115		
38	0265-6073	265	LIME AND FLY ASH TREATMENT (SUBGRADE) (8")	SY	4881		
						Alternate 1 Bid Total :	**$**
						Total Base Bid + Alternate 1 Bid Total:	**$**

Alternate 2 Bid Items:

Item No.	Item Bid Code	Spec #	Description	Unit of Measure	Estimated Quantity	Unit Price	TOTAL
39	275-6001	275	CEMENT (6%)	TON	98		
40	275-6004	275	CEMENT TREATMENT (SUBGRADE) (8")	SY	4881		
						Alternate 2 Bid Total:	**$**
						Total Base Bid + Alternate 2 Bid Total:	**$**

Notes:

[1] The intent of the Contract Documents is for the Contractor to include all items necessary for the proper execution and completion of the Work described in the Contract Documents. No separate measurement and payment shall be made for any work unless identified as a pay item in the BID. Include the cost of work not identified as a separate pay item in Contract price bid for items of which this work is a component. In case of discrepancy between measurement and payment within the BID and Technical Specification Section, the BID shall govern.

[2] In the event of a discrepancy, this column shall govern.

TECHNICAL SPECIFICATIONS

JACKSON AVENUE PHASE II DRAINAGE IMPROVEMENTS

The work covered by this contract is to be constructed in accordance with the specifications listed below. City of Houston specifications shall apply as if fully repeated and bound herein, except as modified by the specifications included in this contract. All references to City of Houston Division 1 specifications included herein shall be considered to reference applicable portions of this contract. Harris County and Texas Department of Transportation (TxDOT) specifications shall apply as if fully repeated and bound herein. Where conflict between specifications occurs, the most restrictive shall govern.

ITEM 1 City of Houston "Standard Construction Specifications" (latest revision); Division 2: Site Construction. The current City of Houston specifications may be found at the COH website https://www.houstonpermittingcenter.org/media/3071/download ,

City of Houston "Standard Construction Details" (latest revision).

ITEM 2 Harris County Engineering Department's "2017 Standard Specifications for Construction and Maintenance of Roads and Bridges." The current HCED specifications may be found at the HCED website: www.eng.hctx.net.

ITEM 3 Texas Department of Transportation (TxDOT) 2014 Standard Specifications Book. The current TxDOT specifications may be found at the TxDOT website http://www.dot.state.tx.us/business/specifications.html

ITEM 4 Whenever the word(s) "Project Manager" is used in the technical specifications, it shall be understood to mean Galveston County ("Owner").

ITEM 5 Whenever the word(s) "City or City of Houston" is used in the technical specifications, it shall be understood to mean Galveston County ("Owner").

Special Provisions To TxDOT

Items	Title
SP 1	Abbreviations and Definitions
SP 2	Instructions to Bidders
SP 3	Award and Execution of Contract
SP 4	Scope of Work
SP 5	Control of the Work
SP 6	Control of Materials
SP 7	Legal Relations and Responsibilities
SP 8	Prosecution and Progress
SP 9	Measurement and Payment
SP 400	Excavation and Backfill for Structures
SP 462	Concrete Box Culverts and Drains
SP 464	Reinforced Concrete Pipe

Special Specifications To TxDOT Items	Title
SS7017	Sanitary Sewers
SS7049	Water Mains
SS7136	Water Mains and Appurtenances

TxDOT Items	Title
105	Removing Treated and Untreated Base and Asphalt Pavement
162	Sodding for Erosion Control (168)
164	Seeding for Erosion Control (166) (162) (164) (166)
166	Fertilizer
247	Flexible Base (210) (216) (105) (204) (520)
260	Lime Treatment (132) (204) (210) (216) (247) (300) (520)
265	Fly Ash or Lime-Fly Ash Treatment (204) (210) (216) (247) (310) (520)
275	Cement Treatment (Road Mixed) (204) (210)(216)(247)(300)(310)(520)
276	Cement Treatment (Plant Mixed) (247) (300) (210) (216) (204) (520) (310)
340	Dense-Graded Hot-Mix Asphalt (6) (300) (520) (585)
400	Excavation and Backfill for Structures (401) (421) (402) (403) (132) (416)
402	Trench Excavation Protection (132) (400) (416) (420) (421) (423)
420	Concrete Substructures (5) (404) (421) (422) (426) (427) (440) (448)
462	Concrete Box Culverts and Drains (420) (421) (440) (464) (424) (462) (476) (467) (402) (403)
464	Reinforced Concrete Pipe (467) (476) (402) (403) (400)

TxDOT Items	Title
465	Junction Boxes, Manholes, and Inlets (420) (421) (440) (471) (424) (400)
466	Headwalls and Wingwalls (420) (421) (440) (464) (432)
496	Remove Existing Pipe Culvert (460) (464) (400) (402) (403) (476)
500	Mobilization
502	Barricades, Signs, and Traffic Handling (161) (432) (556)
506	Temporary Erosion, Sedimentation, and Environmental Controls (161) (432) (556)
760	Cleaning and Reshaping Ditches

COH SPECS	
02081	Cast-In-Place Concrete Manholes (City of Houston Standard Specification)
02082	Precast Concrete Manholes
02221	Removing Existing Pavements, Structures, Wood, and Demolition Debris
02526	Water Meters

HARRIS COUNTY ITEM	
473	Adjusting Manholes and Inlets

GENERAL CONSTRUCTION NOTES

1. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES TO EXISTING PUBLIC OR PRIVATE UTILITY LINES, INCLUDING BUT NOT LIMITED TO WATERLINES, WASTEWATER COLLECTION SYSTEMS, STORM SEWERS, AND TRAFFIC CONTROL DEVICES DURING CONSTRUCTION. ALL DAMAGES SHALL BE REPAIRED IN ACCORDANCE WITH SPECIFICATIONS. NO SEPARATE PAY.
2. DRAINAGE SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD DETAILS.
3. CONSTRUCT WASTEWATER COLLECTION SYSTEMS, WATERLINES, AND STORM DRAINAGE AND STREET PAVING IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
4. 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.
5. CONTRACTOR SHALL PROVIDE A TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM, THE REQUIREMENTS OF OSHA SAFETY AND HEALTH REGULATION, PART 1926, SUBPART P AS PUBLISHED IN THE FEDERAL REGISTER, VOLUME 54, NO. 209, DATED OCTOBER 31, 1989. CONTRACTOR SHALL COMPLY WITH THE LATEST EDITION OF OSHA REGULATIONS AND THE STATE OF TEXAS LAWS CONCERNING EXCAVATION.
6. ALL STREET SIGNS AND POLES WITHIN THE PROJECT LIMITS SHALL BE REUSED UNLESS THE SIGN IS DAMAGED PRIOR TO THE CONTRACTORS ARRIVAL. IF SIGN IS NOT REUSABLE, CONTRACTOR SHALL NOTE CONDITION OF SIGN AND POLE PRIOR TO REMOVAL. CONTRACTOR SHALL REMOVE SIGN AND POLE, STORE IN A SAFE LOCATION, AND REPLACE WHEN ROADWAY SEGMENT IS COMPLETE.
7. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION WITHIN RIGHT-OF-WAY SHALL BE REPLACED TO COUNTY STANDARDS.
8. CONDITION OF ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.
9. ALIGNMENT, CENTERLINE CURVE DATA AND STATIONING TO BE VERIFIED BY ON-THE-GROUND SURVEY AND ELEVATIONS OF ALL CONNECTIONS TO EXISTING FACILITIES TO BE CONFIRMED PRIOR TO WORK START. CONTRACTOR TO NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
10. CONTRACTOR SHALL MAINTAIN A SET OF REDLINE DRAWINGS RECORDING AS-BUILT CONDITIONS DURING CONSTRUCTION. THESE REDLINE MARKED UP DRAWINGS WILL BE SUBMITTED TO THE DESIGN CONSULTANT WHO WILL MAKE THE CHANGES ON CONSTRUCTION DRAWINGS, LABELING EACH SHEET IN THE SET AS "RECORD DRAWINGS", AND RETURNING SAME TO THE COUNTY AND ONE SET OF COPIES TO BACLIFF MUD.
11. CONTRACTOR SHALL GIVE NO LESS THAN 48-HOURS NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS, OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES OR RAILROADS AFFECTED BY HIS OPERATIONS PRIOR TO COMMENCEMENT OF WORK.
12. CONTRACTOR SHALL ASSURE HIMSELF THAT ALL CONSTRUCTION PERMITS HAVE BEEN OBTAINED PRIOR TO COMMENCEMENT OF WORK. REQUIRED PERMITS THAT CAN BE ISSUED TO CONTRACTOR WILL BE OBTAINED AT HIS EXPENSE.
13. ALL UTILITY TRENCHES TO BE BACKFILLED TO 95 PERCENT STANDARD PROCTOR DENSITY UNLESS OTHERWISE NOTED.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO STOCKPILE MATERIAL AS NECESSARY AT NO ADDITIONAL EXPENSE TO THE COUNTY.
15. THE CONTRACTOR SHALL FIELD DETERMINE THE EXACT LOCATIONS OF UNDERGROUND FACILITIES PRIOR TO COMMENCING CONSTRUCTION. HE SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES CAUSED BY FAILURE TO EXACTLY LOCATE AND MAINTAIN THESE UNDERGROUND FACILITIES.
16. THERE WILL BE NO SEPARATE PAYMENT FOR WORK SHOWN ON THESE PLANS, UNLESS SPECIFICALLY ESTABLISHED IN THE BID PROPOSAL SECTION OF THE CONTRACT DOCUMENTS. INCLUDE COST OF THIS WORK IN THE CONTRACT UNIT PRICE FOR ITEMS OF WHICH THIS WORK IS A COMPONENT OR INCIDENTAL.
17. THE CONTRACTOR SHALL OBTAIN PHOTOS OF THE PROJECT AREA PRIOR TO CONSTRUCTION TO BE SUBMITTED TO THE ENGINEER.

TRAFFIC CONTROL

1. THE TRAFFIC CONTROL PLAN/DETAILS INCLUDED IN THE PLAN DRAWINGS ARE PROVIDED AS A GUIDE TO THE CONTRACTOR AND ARE THE MINIMUM REQUIREMENTS.
2. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH PART VI OF THE MOST RECENT EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND THE APPROVED TRAFFIC CONTROL PLAN.
3. MEASUREMENT AND PAYMENT FOR TRAFFIC CONTROL AND REGULATION IS ON A LUMP SUM BASIS, INCLUDING COORDINATING WITH AND OBTAINING APPROVALS BY GOVERNING AUTHORITIES, PREPARATION AND SUBMITTAL OF A REVISED TRAFFIC CONTROL PLAN IF IMPLEMENTED DIFFERENTLY (DUE TO FIELD CONDITIONS) FROM WHAT IS SHOWN ON DRAWINGS, AND SUBSEQUENT APPROVAL FROM COUNTY AND ANY OTHER ENTITY PRIOR TO COMMENCING WORK IN THEIR RIGHT-OF-WAY.
4. MEASUREMENT AND PAYMENT FOR BARRICADES, SIGNS, AND TRAFFIC HANDLING WILL BE MEASURED BY THE MONTH INCLUDING INSTALLATION, MAINTENANCE, ADJUSTMENTS, REPLACEMENTS, REMOVAL, MATERIALS, EQUIPMENT, LABOR, TOOLS, AND INCIDENTALS.
5. DETOURS REQUIRE PRIOR APPROVAL OF THE FIELD ENGINEER AND COUNTY. DETOUR PLANS, IF ALLOWED, MUST INCLUDE APPROPRIATE DETOUR SIGNAGE, PUBLIC NOTICE VIA SIGNAGE TWO WEEKS IN ADVANCE STATING THE DATES OF THE AGREED UPON DATE OF CLOSURE AND DATE THE ROAD WILL RE-OPEN TO TRAFFIC.
6. ANY ADJUSTING INCLUDING PROVISION OF ADDITIONAL TRAFFIC CONTROL DEVICES AND SIGNAGE BY THE CONTRACTOR, AS REQUESTED BY THE COUNTY, TO FACILITATE SMOOTH FLOW OF TRAFFIC AND TO ACCOMMODATE FIELD CONDITIONS WILL NOT BE PAID FOR SEPARATELY AND MUST BE INCLUDED IN THE TRAFFIC CONTROL AND REGULATION BID ITEM. THE AMOUNT INVOICED SHALL BE DETERMINED BASED ON THE APPROVED SCHEDULE OF VALUES FOR TRAFFIC CONTROL AND REGULATION. THIS ITEM SHALL ALSO COVER THE COST OF ANY ADDITIONAL TRAFFIC CONTROL MEASURES WHICH THE CONTRACTOR MAY FEEL IS NECESSARY FOR SMOOTH FLOW OF TRAFFIC AND PUBLIC SAFETY.
7. NO WORK ON RESIDENTIAL STREETS FROM 7:00 P.M. TO 7:00 A.M., SEVEN DAYS A WEEK.

WASTEWATER CONSTRUCTION NOTES

1. PRIOR TO SANITARY SEWER CONSTRUCTION, CONTRACTOR SHALL COMPLY WITH REQUIREMENTS FOR ISSUANCES OF NECESSARY PERMITS/WORK ORDERS.
2. SEPARATION DISTANCES FOR ALL SANITARY SEWER AND WATER MAIN CONSTRUCTION SHALL BE GOVERNED BY THE "TEXAS COMMISSION ON ENVIRONMENTAL QUALITY," SECTION 217.53, LATEST PRINTING.
3. MAINTAIN 12-INCH MINIMUM VERTICAL CLEARANCE AT CROSSINGS BETWEEN SANITARY SEWERS AND CULVERTS, UNLESS OTHERWISE NOTED.
4. SANITARY SEWER LEADS UNDER OR WITHIN 1-FOOT OF EXISTING OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND UP TO WITHIN 1-FOOT OF TOP OF PAVING SUBGRADE.
5. ALL LEADS SHALL BE LAID AT MINIMUM 0.70% GRADE, UNLESS OTHERWISE NOTED.
6. WHEN MAKING A CONNECTION TO AN EXISTING SANITARY SEWER MANHOLE, CONTRACTOR SHALL PLUG DOWNSTREAM END OF PROPOSED SANITARY SEWER. THE SEWER SHALL REMAIN PLUGGED UNTIL FINAL ACCEPTANCE BY THE CITY.
7. CONTRACTOR SHALL PROVIDE RECORD OF LOCATION OF ALL STACKS, STUBS, LEADS, ETC. TO IDS ENGINEERING GROUP.

WATER CONSTRUCTION NOTES

1. SEPARATION DISTANCES FOR ALL WATER MAIN AND SANITARY SEWER MAIN CONSTRUCTION SHALL BE GOVERNED BY THE "TEXAS COMMISSION ON ENVIRONMENTAL QUALITY," SECTION 290.44, LATEST PRINTING.
2. WATER LINE TRENCHES UNDER OR WITHIN 1-FOOT OF PAVEMENT SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND COMPACTED TO 95% STANDARD PROCTOR DENSITY TO WITHIN 1 FOOT OF TOP OF SUBGRADE. INCLUDE COST OF BANK SAND BACKFILL IN UNIT PRICE BID PER LINEAR FOOT FOR WATER LINE IN APPROPRIATE SIZES.
3. WATER LINE TRENCHES NOT UNDER OR WITHIN 1 FOOT OF PAVEMENT SHALL BE BACKFILLED WITH NATIVE SOIL COMPACTED TO 95% STANDARD PROCTOR DENSITY ABOVE BANK SAND BEDDING. (1)
4. 4-INCH THROUGH 12-INCH LINES TO HAVE A MINIMUM OF 4'-0" COVER BELOW TOP OF ROADWAY, UNLESS OTHERWISE NOTED VARY FLOWLINE UNIFORMLY FROM DEPTH SHOWN ON PLANS.

CONTACT INFORMATION

OPERATOR: BACLIFF MUD - MR JAMES WISTINGHAUSEN (281) 642-9298

STORM SEWER CONSTRUCTION NOTES

1. PRIOR TO STORM SEWER CONSTRUCTION, CONTRACTOR SHALL COMPLY WITH REQUIREMENTS FOR THE ISSUANCE OF NECESSARY PERMIT/WORK ORDERS.
2. LEADS SHALL BE REINFORCED CONCRETE PIPE, C-76, CLASS III WITH RUBBER GASKETED JOINTS, AND SHALL BE INSTALLED, BEDDED, AND BACKFILLED IN ACCORDANCE WITH THE DETAILS.
3. ALL SEWER TRENCHES, INCLUDING TRENCHES FOR LEADS AND STUBS UNDER PAVEMENT, SHALL BE BACKFILLED WITH CEMENT-STABILIZED SAND TO A POINT 1-FOOT BELOW THE SUBGRADE TREATMENT. THE REMAINING DEPTH OF TRENCH SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL IN 6-INCH LAYERS 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 DESIGNATION D-698/AASHTO T99). MOISTURE CONTENT OF CEMENT STABILIZED BACKFILL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CEMENT-STABILIZED SAND SPECIFICATION.
4. CEMENT STABILIZED SAND BACKFILL REQUIRED FOR STORM SEWERS UNDER PAVEMENT SHALL NOT BE PAID FOR SEPARATELY. INCLUDE COST OF CEMENT STABILIZED SAND IN UNIT PRICE BID PER LINEAR FOOT FOR STORM SEWER IN APPROPRIATE SIZES.
5. PROVIDE A MINIMUM OF 1-FOOT CLEARANCE AT STORM SEWER AND WATER LINE CROSSINGS.

GEOTECHNICAL NOTES

1. ALL GRADING, BACKFILL, SUBGRADE PREPERATION, COMPACTION AND PAVING SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND ANY ADDENDUMS AS PREPARED BY GEOSCIENCE ENGINEERING AND TESTING, INC. DATED APRIL 25TH 2022, PROJECT NO. 22G11051.
2. EARTH BACKFILL SHALL BE COMPACTED BY MECHANICAL MEANS TO PRODUCE A DENSITY EQUAL TO THAT OF THE SURROUNDING UNDISTURBED SOIL OR IN ACCORDANCE WITH THE OWNERS GEOTECHNICAL CONSULTANT RECOMMENDATIONS, WHICHEVER IS MORE RESTRICTIVE.
3. ALL AREAS TO BE FILLED SHALL BE FREE OF VEGETATION, DEBRIS, PONDING WATER, LOOSE SOILS, MUD & MUCK. CLEARING, GRUBBING, STRIPPING & PROOF ROLLING SHALL BE PER THE GEOTECHNICAL REPORT.

PAVING CONSTRUCTION NOTES

1. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
2. CONTRACTOR RESPONSIBLE FOR MAINTAINING BARRICADES TO PREVENT TRAFFIC FROM USING NEW PAVEMENT UNTIL PROJECT IS COMPLETED AND ACCEPTED BY PROPER AUTHORITY OR AS AUTHORIZED BY ENGINEER. .
3. ALL SUBGRADE TO BE COMPACTED TO 95% OF STD. PROCTOR DENSITY.

UTILITY NOTES

1. PROVIDE 1-FOOT MINIMUM CLEARANCE BETWEEN GAS LINES AND ALL OTHER UTILITIES (NEW OR EXISTING).
2. IN THE EVENT A GAS LINE IS EXPOSED DUE TO EXCAVATION AND IS IN NEED OF RELOCATION, THE APPROPRIATE GAS COMPANY SHALL BE CONTACTED BY THE CONTRACTOR TO HAVE STATUS OF THE LINE VERIFIED PRIOR TO ANY DAMAGE OF THAT LINE. CONTRACTOR IS RESPONSIBLE FOR MAKING THE GAS COMPANY RELOCATE THE GAS LINES.
3. LOCATION OF EXISTING UNDERGROUND UTILITY SERVICE LINES (WATER, SEWER, GAS, TELEPHONE, ELECTRICAL, ETC.) ARE DETERMINED FROM AVAILABLE RECORDS. CONTRACTOR SHALL FIELD VERIFY AND LOCATE LINES AND/OR OBSTRUCTIONS PRIOR TO EXCAVATION.
4. CONTRACTOR SHALL USE CAUTION WHEN CROSSING ALL EXISTING FACILITIES, ANY DAMAGE TO BE REPAIRED AT THE CONTRACTOR'S EXPENSE WITH NO SEPARATE PAY. (1)

CENTERPOINT ENERGY NOTES

CAUTION: UNDERGROUND GAS FACILITIES

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) 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 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.

WARNING: 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, SPECIFICALLY:

- 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 SURVEY & RIGHT OF WAY DIVISION AT (713) 207-6348 OR (713) 207-5769.

FRONTIER COMMUNICATIONS NOTES

THE LOCATION OF FRONTIER FACILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. SERVICE LINES ARE NOT SHOWN. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION BEFORE COMMENCING WORK. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE FAILURE TO EXACTLY LOCATE AND PRESERVE THESE UNDERGROUND FACILITIES. THE CONTRACTOR SHALL CONTACT DIGTESS @ 800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND TELEPHONE LINES FIELD LOCATED. WHEN EXCAVATING WITHIN EIGHTEEN INCHES (18") OF THE INDICATED LOCATION OF FRONTIER FACILITIES, ALL EXCAVATION MUST BE ACCOMPLISHED USING NON-MECHANIZED EXCAVATION PROCEDURES. WHENEVER FRONTIER FACILITIES ARE EXPOSED, SUFFICIENT SUPPORT SHOULD BE PROVIDED TO THE FACILITIES TO PREVENT EXCESSIVE STRESS ON CABLE AND / OR CONDUIT DUCTS. CONTACT NETWORK ENGINEERING @ 281-338-2221 OR 281-229-0849 FOR QUESTIONS REGARDING FRONTIER FACILITIES.

EXISTING SYMBOL LEGEND

	ADVERTISEMENT SIGN		GAS LAMP		SERVICE POLE
B	'B' INLET	G	GAS METER		SIGN STANDARD
B - B	'B-B' INLET		GAS SERVICE LINE MARKER	SWBT	S.W.B.T. M H
	BRICK PILLAR		GAS VALVE		STORM M H
	BUSH		GATE		STREET BARRICADE
C	'C' INLET (ALL)	GT	GREASE TRAP		STREET LIGHT STANDARD
T V	CABLE TV JUNCTION BOX		GUY WIRE		TELEPHONE POLE
	CABLE TV MARKER	H L P	CENTERPOINT MANHOLE	T	TELEPHONE JUNCTION BOX
	CABLE TV UNDG. MARKER		CENTERPOINT TOWER LEG		TRAFFIC SIGN
A	CATCH BASIN		CENTERPOINT UNDG. CABLE MARKER	T C B	TRAFFIC SIGNAL CONTROL BOX
℄	CENTER LINE OF STREET		LIGHT		TRAFFIC LIGHT STANDARD
	CORE BORE		MAIL BOX		TRANSFORMER BOX
	'E' INLET		METAL POST (BOLLARD)		TREE
E/B	ELECTRICAL JUNCTION BOX	R	NOT FIELD VERIFIED - FROM RECORD DRAWINGS		UNDG. TELE. CABLE MARKER
	EXIST. SANITARY M H		OVERHEAD POWER LINES		VENT PIPE
	FENCE CORNER		PIPELINE MARKER	W M	WATER METER
//	FENCE LINE(CHAIN LINK)		POWER POLE		WATER VALVE
	FENCE LINE(WOOD)		PUBLIC PHONE	WW	WATER WELL
	FIRE HYDRANT	R R M	RADIO RELAY MAST	WH	WELLHEAD
	FLAG POLE		SANITARY CLEAN OUT		DECORATIVE STREET LIGHT

ABBREVIATIONS

ASPH - ASPHALT	LT. - LEFT
MH - MANHOLE	LT. - LEFT
SAN - SANITARY	C.L. - CENTER LINE
STM - STORM	T.C. - TOP OF CURB
EXIST - EXISTING	E.P. - EDGE OF PAVEMENT
EG - EXISTING GROUND	W.L. - WATER LINE
STA - STATION	W - WEST
B.L. - BASELINE OR BUILDING LINE	E - EAST
	S - SOUTH
SWR. - SEWER	N - NORTH
DIA. - DIAMETER	F.V. - FLUSHING VALVE
EL. - ELEVATION	CONC. - CONCRETE
ROW - RIGHT-OF-WAY	PVMT - PAVEMENT
L.F. - LINEAR FEET	F.L. - FLOW LINE
N.G. - NATURAL GROUND	G.V. - GATE VALVE
RT. - RIGHT	PC - POINT OF CURVATURE
RP - RADIUS POINT	PT - POINT OF TANGENCY
S.S.E. - SANITARY SEWER EASEMENT	R - RADIUS
	E.O.P. - END OF PROJECT
W.L.E. - WATER LINE EASEMENT	P.R.C. - POINT OF REVERSE CURVE
U.E. - UTILITY EASEMENT	P.O.C. - POINT ON CURVE
D.E. - DRAINAGE EASEMENT	O.P.R.R.P. - OFFICIAL PUBLIC RECORDS OF REAL PROPERTY.
RED - REDUCER	
B/F - BLIND FLANGE	S.S. - SIDE SLOPE
S/O - SLIP ON	MOD. - MODIFIED
PVT - PRIVATE	N.F.V. - NOT FIELD VERIFIED
B.W. - BOTTOM WIDTH	P.A.E./P.U.E. - PUBLIC ACCESS EASEMENT PUBLIC UTILITY EASEMENT
B.O.V. - BLOW OFF VALVE	
P.C.C. - POINT OF COMPOUND CURVATURE	CMP - CORRUGATED METAL PIPE
ESMT. - EASEMENT	CPP - CORRUGATED PLASTIC PIPE
R.J.P. - RESTRAINED JOINT PIPE	B.O. w/BOX - BLOW OFF VALVE WITH BOX
AB - ALL BELL	L.T.D. - LOAD TRANSFER DEVICE
RPM - RAISED PAVEMENT MARKING	T.P. - TOP PAVEMENT
PROP - PROPOSED (1)	EGL - EXISTING GRADE LINE

MK	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM NO.1	7/14/23	JP	RF

STATE OF TEXAS — RICHARD A. FULLER — 90951 — LICENSED PROFESSIONAL ENGINEER — 06/14/2023

IDS Engineering Group
13430 NW. Freeway
Suite 700
Houston, Tx. 77040
713.462.3178
TxEng Firm 2726
TxSurv Firm 10110700

THE STATE OF TEXAS — COUNTY OF GALVESTON

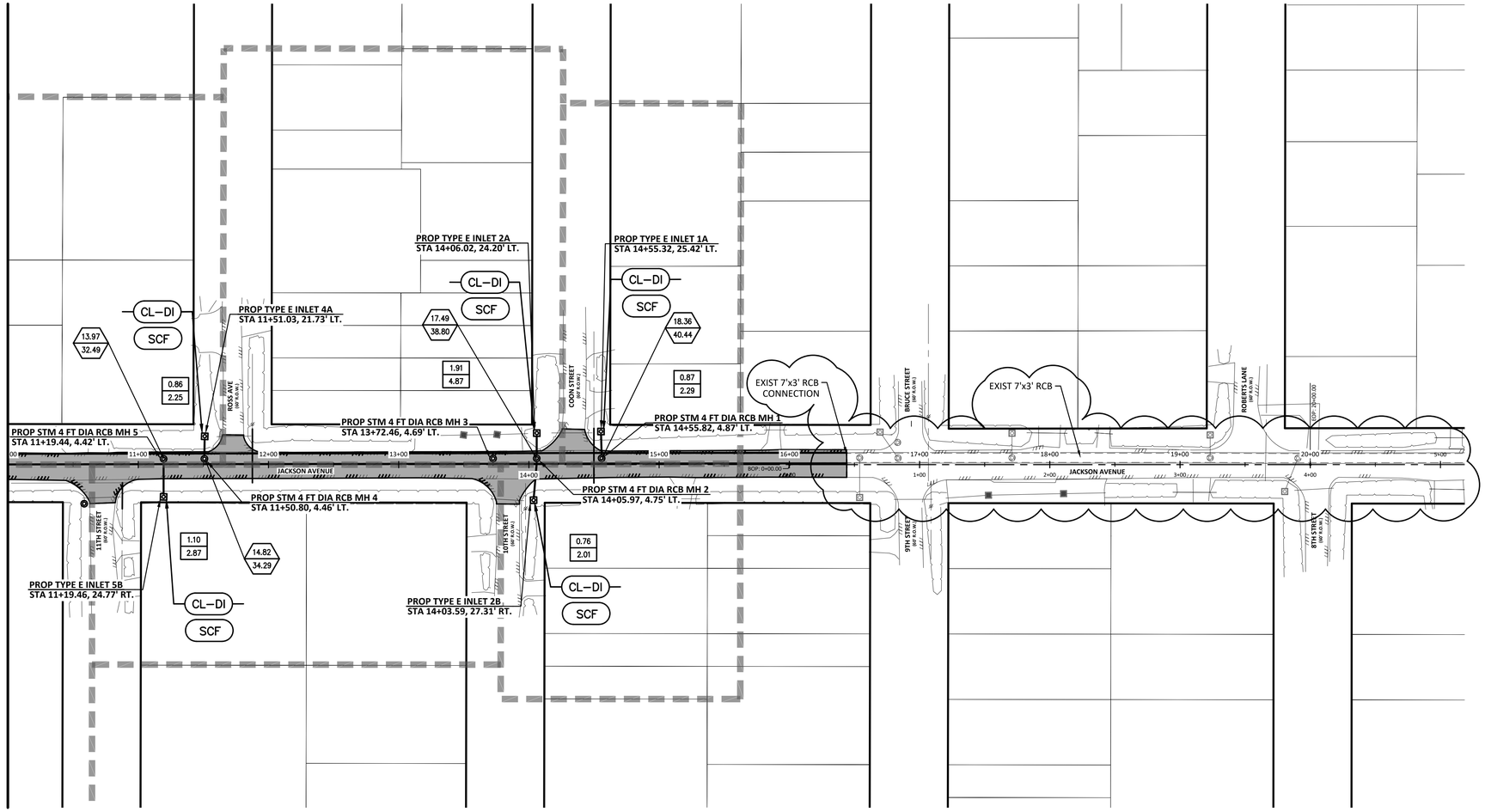
JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

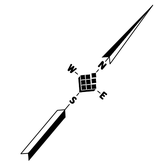
CONSTRUCTION NOTES

Project No.: 1306-009-00	Scale: HORZ : VERT :	SHEET 2
Date: 7-01-2022		
Dwn By: J.M.P.		
Chkd By: J.P.		OF 26

ADDENDUM NO. 1

MATCHLINE: STA 10+00



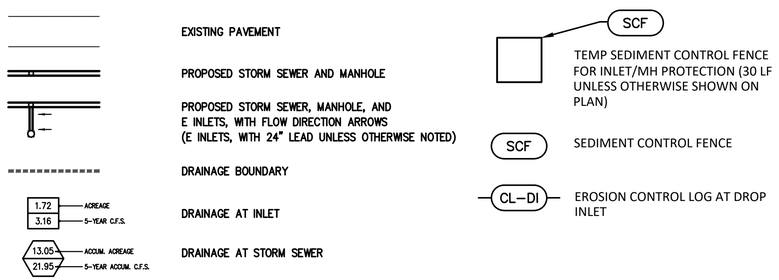


50' 0' 50'

SCALE

1"=50'

DRAINAGE AREA MAP AND SWPPP LEGEND



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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown.
(Gas service lines are not shown). This signature not to be used for conflict verification.

Signature valid for six months.

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONLY.
(This signature verifies existing underground facilities - not to be used for conflict verification)

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STATE OF TEXAS
RICHARD A. FULLER
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LICENSED PROFESSIONAL ENGINEER
06/14/2023

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THE STATE OF TEXAS
COUNTY OF GALVESTON

JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

DRAINAGE AREAS AND SWPPP
SHEET 2 OF 2

Project No.: 1306-009-00	Scale: HORZ : 1"=50' VERT :	SHEET 8
Date: 7-01-2022		OF 26
Dwn By: J.M.P.		
Chkd By: J.P.		

ADDENDUM NO. 1

STORM SEWER CALCULATIONS

IDS ENGINEERING GROUP

CLIENT NAME: **GALVESTON COUNTY**
PROJECT NAME: **Jackson ave Phase II**
IDS JOB NO: **1306-009-00**
DATE PRINTED: July 6, 2023
DATE REVISED: July 6, 2023 BY: JP

SELECT STORM EVENT FREQUENCY: 5 year
SELECT APPROPRIATE LAND USE: SFR (< ¼ ac. lots)
ENTER DESIGN CURB HEIGHT (inches): 0

Manhole or Inlet Number			Reach Length	Diameter or Rise	Span	No. of	Pipe	Pipe Grade	Pipe Grade	Area	Sum of Area	Runoff	Sum of C x Area	Travel Time	Time of Concentration	Intensity	Sum of Flows	Design		Actual Velocity	Hydraulic Gradient	Change in Head	Upstream Top of Curb	Hydraulic Grade		Manhole Drop (D/S)	Pipe Flowline		Depth from Gutter to HGL
Line	U / S	D / S	(feet)	(inches)	(inches)	Barrels	Material	Minimum (%)	Actual (%)	(acres)	(acres)	Coeff.	(acres)	(minutes)	(minutes)	(in./hr.)	(cfs)	Flow (cfs)	Velocity (fps)	(fps)	(%)	(feet)	(feet)	Upstream (feet)	Downstream (feet)	(feet)	Upstream (feet)	Downstream (feet)	(feet)
I	14(CAP)_	13	8.00	36	84	1	RCB	0.082%	0.082%		0.00	0.55	0.00	0.00	15.0	6.02	0.00	60.45	3.01	0.00	0.000%	0.00	16.14	10.50	10.50	0.00	7.51	7.50	5.64
I	13	12	61.08	36	84	1	RCB	0.082%	0.082%	2.75	2.75	0.55	1.51	2.25	15.0	6.02	9.10	60.45	3.01	0.45	0.002%	0.00	16.14	10.45	10.45	0.00	7.50	7.45	5.69
I	12	11	72.46	36	84	1	RCB	0.082%	0.082%	1.72	4.47	0.55	2.46	1.74	17.2	5.67	13.94	60.45	3.01	0.69	0.004%	0.00	16.28	10.40	10.39	0.00	7.45	7.39	5.88
I	11	10	170.43	36	84	1	RCB	0.082%	0.082%	1.40	5.87	0.55	3.23	3.26	19.0	5.43	17.53	60.45	3.01	0.87	0.007%	0.01	16.35	10.26	10.25	0.00	7.39	7.25	6.09
I	10	9	59.65	36	84	1	RCB	0.082%	0.082%	1.30	7.17	0.55	3.94	1.01	22.3	5.04	19.86	60.45	3.01	0.99	0.009%	0.01	16.4	10.21	10.20	0.00	7.25	7.20	6.19
I	9	8	149.91	36	84	1	RCB	0.082%	0.082%	1.10	8.27	0.55	4.55	2.24	23.3	4.93	22.42	60.45	3.01	1.11	0.011%	0.02	16.43	10.13	10.11	0.00	7.20	7.08	6.30
I	8	7	166.41	36	84	1	RCB	0.082%	0.082%	1.76	10.03	0.55	5.52	2.15	25.5	4.71	25.96	60.45	3.01	1.29	0.015%	0.03	16.57	10.11	10.09	0.00	7.08	6.94	6.46
I	7	6	137.79	36	84	1	RCB	0.082%	0.082%	1.98	12.01	0.55	6.61	1.55	27.6	4.51	29.81	60.45	3.01	1.48	0.020%	0.03	16.28	10.09	10.06	0.00	6.94	6.83	6.19
I	6	5	184.98	36	84	1	RCB	0.082%	0.082%	0.86	12.87	0.55	7.08	2.00	29.2	4.38	31.02	60.45	3.01	1.54	0.022%	0.04	16.15	10.06	10.02	0.00	6.83	6.68	6.09
I	5	4	31.37	36	84	1	RCB	0.082%	0.082%	1.10	13.97	0.55	7.68	0.32	31.2	4.23	32.49	60.45	3.01	1.62	0.024%	0.01	16.45	10.02	10.01	0.00	6.68	6.65	6.43
I	4	3	221.66	36	84	1	RCB	0.082%	0.082%	0.86	14.82	0.55	8.15	2.17	31.5	4.21	34.29	60.45	3.01	1.70	0.026%	0.06	16.41	10.01	9.95	0.00	6.65	6.47	6.40
I	3	2	33.15	36	84	1	RCB	0.082%	0.082%	0.00	14.82	0.55	8.15	0.32	33.7	4.05	34.29	60.45	3.01	1.70	0.026%	0.01	16.61	9.95	9.95	0.00	6.47	6.45	6.66
I	2	1	49.85	36	84	1	RCB	0.082%	0.082%	2.67	17.49	0.55	9.62	0.43	34.0	4.03	38.80	60.45	3.01	1.93	0.034%	0.02	16.74	9.95	9.93	0.00	6.45	6.40	6.79
I	1	***OF***	188.18	36	84	1	RCB	0.082%	0.082%	0.87	18.36	0.55	10.10	1.56	34.4	4.00	40.44	60.45	3.01	2.01	0.037%	0.07	16.86	9.93	9.86	0.00	6.40	6.25	6.93
																								9.86					
I	1A	1	17.06	24		1	RCP	0.180%	0.180%	0.87	0.87	0.55	0.48	0.39	24.8	4.78	2.29	9.60	3.06	0.73	0.010%	0.00	14.83	9.93	***9.93***	0.00	7.19	7.15	4.90
I	2A	2	15.95	24		1	RCP	0.180%	0.180%	1.91	1.91	0.55	1.05	0.17	26.2	4.64	4.87	9.60	3.06	1.55	0.046%	0.01	14.13	9.95	***9.95***	0.00	7.22	7.20	4.18
I	2B	2	28.67	24		1	RCP	0.180%	0.180%	0.76	0.76	0.55	0.42	0.75	24.5	4.80	2.01	9.60	3.06	0.64	0.008%	0.00	14.42	9.95	***9.95***	0.00	7.25	7.20	4.47
I	4A	4	13.77	24		1	RCP	0.180%	0.180%	0.86	0.86	0.55	0.47	0.32	24.7	4.78	2.25	9.60	3.06	0.72	0.010%	0.00	14.31	10.01	***10.01***	0.00	7.43	7.40	4.30
I	5B	5	25.69	24		1	RCP	0.180%	0.180%	1.10	1.10	0.55	0.61	0.47	25.2	4.74	2.87	9.60	3.06	0.91	0.016%	0.00	13.65	10.02	***10.02***	0.00	7.48	7.43	3.63
I	6A	6	15.10	24		1	RCP	0.180%	0.180%	0.86	0.86	0.55	0.47	0.35	24.7	4.78	2.25	9.60	3.06	0.72	0.010%	0.00	12.75	10.06	***10.06***	0.00	7.61	7.58	2.69
13	7B	7	25.42	24		1	RCP	0.180%	0.180%	1.98	1.98	0.55	1.09	0.26	26.3	4.63	5.05	9.60	3.06	1.61	0.050%	0.01	13.38	10.10	***10.09***	0.00	7.74	7.69	3.28
I	8A	8	20.00	24		1	RCP	0.180%	0.180%	1.76	1.76	0.55	0.97	0.23	26.0	4.65	4.51	9.60	3.06	1.43	0.040%	0.01	13.56	10.12	***10.11***	0.00	7.87	7.83	3.44
I	9B	9	23.00	24		1	RCP	0.180%	0.180%	1.10	1.10	0.55	0.61	0.42	25.2	4.74	2.87	9.60	3.06	0.91	0.016%	0.00	13.21	10.13	***10.13***	0.00	8.00	7.95	3.08
I	10A	10	20.00	24		1	RCP	0.180%	0.180%	1.30	1.30	0.55	0.72	0.31	25.5	4.71	3.37	9.60	3.06	1.07	0.022%	0.00	13.42	10.21	***10.21***	0.00	8.04	8.00	3.21
I	11B	11	22.00	24		1	RCP	0.180%	0.180%	1.40	1.40	0.55	0.77	0.32	25.6	4.70	3.62	9.60	3.06	1.15	0.026%	0.01	12.82	10.27	***10.26***	0.00	8.18	8.14	2.55
I	12A	12	25.00	24		1	RCP	0.180%	0.180%	1.72	1.72	0.55	0.95	0.30	26.0	4.66	4.41	9.60	3.06	1.40	0.038%	0.01	12.92	10.41	***10.40***	0.00	8.25	8.20	2.51
I	13A	13	22.00	24		1	RCP	0.180%	0.180%	1.73	1.73	0.55	0.95	0.26	26.0	4.66	4.43	9.60	3.06	1.41	0.038%	0.01	12.31	10.46	***10.45***	0.00	8.29	8.25	1.85
I	13B	13	24.00	24		1	RCP	0.180%	0.180%	1.02	1.02	0.55	0.56	0.47	25.0	4.75	2.66	9.60	3.06	0.85	0.014%	0.00	13.26	10.46	***10.45***	0.00	8.30	8.25	2.80

NOTES:
1. This spreadsheet has been developed using the City of Houston criteria outlined in the July 2022 Infrastructure Design Manual and the Galveston County Subdivision Regulations. The Rational Method has been used to calculate flows, and Manning's Formula for pipes flowing full has been used to calculate velocities.
2. This spreadsheet calculates rainfall intensity using the b, d, and e constants for Galveston County, as established by NOAA Atlas 14, Volume 11 Version 2.0.
3. Minimum storm sewer grades and maximum velocities as established in the City of Houston design criteria have been used to establish the grades used in this system.
4. Land Use "SFR" represents Single-Family Residential development. Land Use "MFR" represents Multi-Family Residential development.
5. Design flow and velocity are based entirely on pipe grade and represent the condition when pipe is flowing full with the hydraulic grade line equal to the pipe grade, and are used to demonstrate that the pipe slopes used in the calculations conform to the City of Houston minimum and maximum standards.
6. Starting Hydraulic Grade Line of the system is from Jackson Ave Phase I per Galveston County Drainage Design Requirements, Subsection C, Item 5.

1

Runoff Coefficient Table	
Land Use	C
SFR (> ½ ac. lots)	0.35
SFR (¼ - ½ ac. lots)	0.45
SFR (< ¼ ac. lots)	0.55
MFR (< 20 d.u./ac.)	0.65
MFR (>= 20 d.u./ac.)	0.80
Business Districts	0.80
Light Industrial	0.65
Heavy Industrial	0.75
Railroad Yard Areas	0.30
Parks/Open Areas	0.18
Land Use Varies	ENTER

Pipe Material	Mannings "n" Value	Pipe Description
CLAY	0.012	Extra Strength Vitrified Clay Pipe
CMP	0.024	Corrugated Metal Pipe
CMPSI	0.013	CMP w/ Smooth Interior
HDPE	0.013	High Density Polyethylene Pipe
PVC	0.013	Polyvinyl Chloride Pipe
RCA	0.013	Reinforced Concrete Arch Pipe
RCB	0.015	Reinforced Concrete Box Culvert
RCE	0.013	Reinforced Concrete Elliptical Pipe
RCP	0.013	Reinforced Concrete Pipe

Rainfall Freq. (yrs)	b	d	e
2 year	66.15	13.16	0.8048
5 year	***80.12***	***13.18***	***0.7755***
10 year	90.16	13.24	0.7576
25 year	102.99	13.42	0.7367
50 year	110.99	13.44	0.7202
100 year	120.52	13.86	0.7060
500 year	161.97	17.66	0.6936

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MK	DESCRIPTION	DATE	DWN.	CHK.

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LICENSED PROFESSIONAL ENGINEER
06/14/2023

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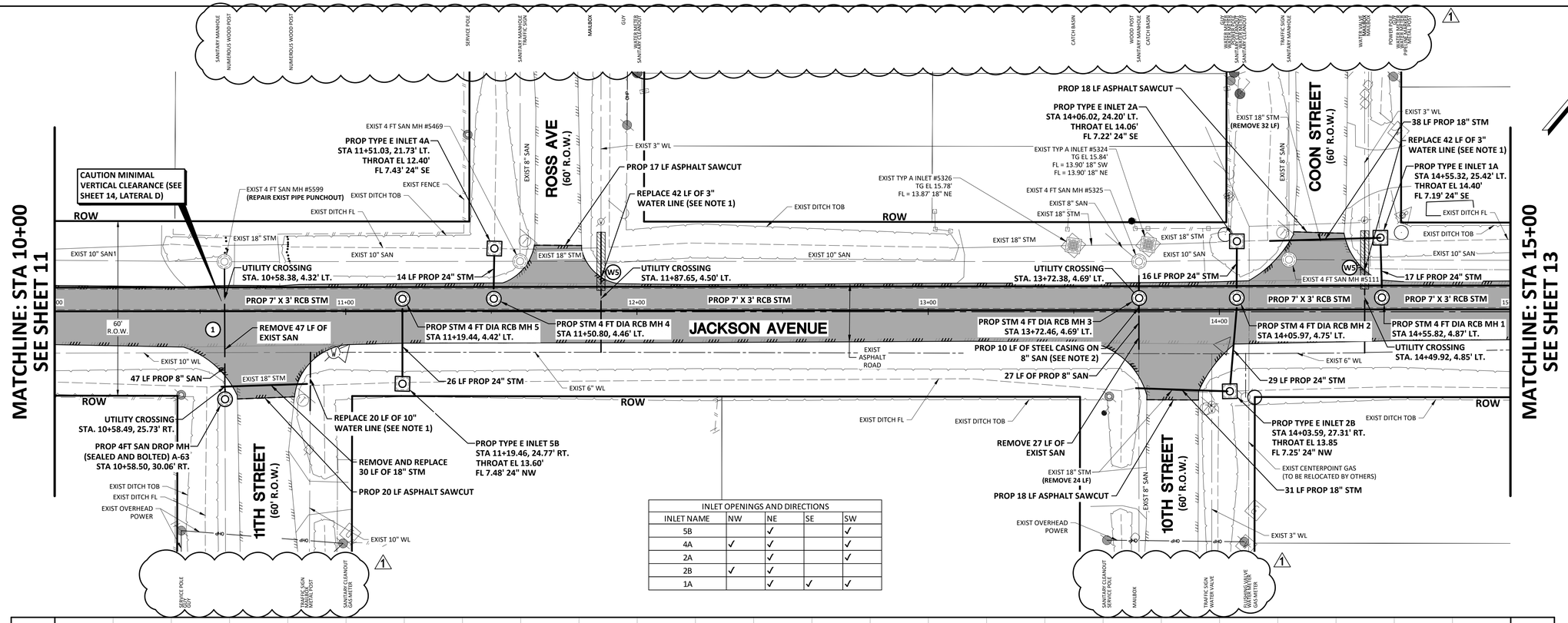
THE STATE OF TEXAS
COUNTY OF GALVESTON

JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

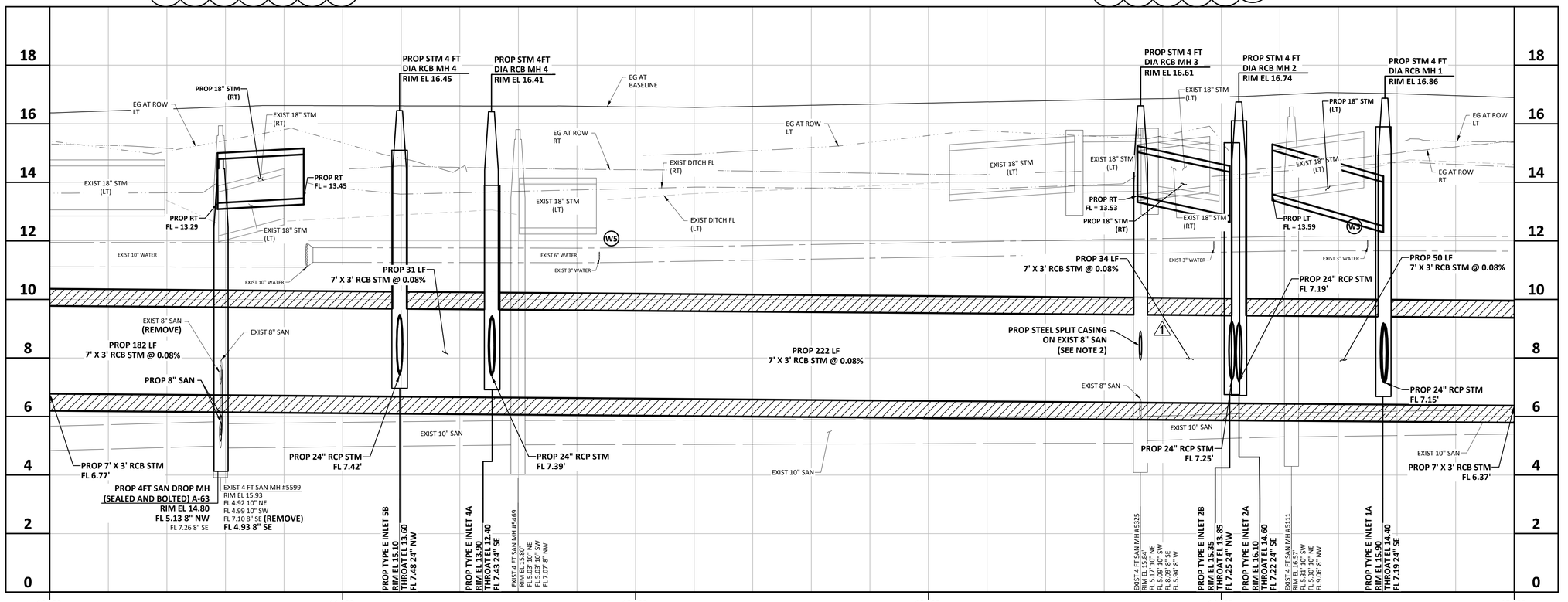
STORM SEWER CALCULATIONS

Project No.: 1306-009-00	Scale: HORZ : VERT :	SHEET 9
Date: 7-01-2022		
Dwn By: J.M.P.		
Chkd By: J.P.		OF 26

ADDENDUM NO. 1



INLET OPENINGS AND DIRECTIONS				
INLET NAME	NW	NE	SE	SW
5B		✓		✓
4A	✓	✓		✓
2A		✓		✓
2B	✓	✓		
1A		✓	✓	✓



20' 0' 20'
SCALE
1"=20'

NOTES:

1. WATER LINE TO BE REPLACED WITH NEW PVC MATCHING EXISTING O.D. NEW PIPING TO EXTEND 2' PAST EDGE OF PAVEMENT WITH NEW QUANTAM COUPLINGS (STYLE 461).
2. IF EXISTING SAN IS CLAY REPLACE WITH PVC SDR26 MATCHING EXISTING O.D. AND ENCASE WITH STEEL CASING. IF EXISTING SAN IS PVC, SAN TO REMAIN IN PLACE AND ADD SPLIT STEEL CASING. SEE DETAIL 5 ON SHEET 19.
3. REGRADE DITCHES AROUND PROP INLETS AND CULVERTS FOR POSITIVE DRAINAGE. BOTH SIDES TO MATCH INLET FLOW LINES (NO SEPARATE PAY).
4. NO SEPARATE PAY ITEM FOR DE-WATERING. DE-WATERING IS INCIDENTAL TO ITEM 402 "TRENCH EXCAVATION PROTECTION".
5. ANY WORK DONE OUTSIDE THE LIMITS SHOWN WILL BE AT THE CONTRACTORS EXPENSE.

(1) SEE SHEET 14 FOR CROSSING PROFILE VIEW

(W5) PROP. WL OVER EXISTING SS WITH MIN. 2 FT. VERTICAL CLEARANCE:

CENTER FULL 20 FT SECTION OF WL AT SS CROSSING WITH RESTRAINED JOINTS ON WL SPACED AT LEAST 9 FT FROM CENTERLINE OF SS. IF EXISTING SS IS DISTURBED OR THERE IS EVIDENCE OF LEAKING, REPLACE 20 FT SECTION OF EXISTING SS WITH 150 PSI PRESSURE-RATED PVC PIPE WITH ADAPTERS AND RESTRAINED JOINTS CENTERED AT WL CROSSING, AND EMBED SS WITH CEMENT STABILIZED SAND FOR TOTAL LENGTH OF 1 PIPE SEGMENT PLUS 1 FT BEYOND JOINTS AT EACH END.

PROP ASPHALT PAVEMENT

NOTICE:

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VERIFICATION OF PRIVATE UTILITY LINES

Date

CenterPoint Energy natural gas utilities shown.
(Gas service lines are not shown). This signature not to be used for conflict verification.

Signature valid for six months.

Date

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MK	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM NO.1	7/14/23	JP	RF

STATE OF TEXAS
RICHARD A. FULLER
90951
LICENSED PROFESSIONAL ENGINEER
06/14/2023

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THE STATE OF TEXAS
COUNTY OF GALVESTON

JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

JACKSON AVENUE PLAN AND PROFILE STA. 10+00 TO STA. 15+00

Project No.: 1306-009-00	Scale: HORZ : 1"=20' VERT : 1"=2'	SHEET	12
Date: 7-01-2022		OF	26
Dwn By: J.M.P.			
Chkd By: J.P.			

ADDENDUM NO. 1

1	ROAD WORK AHEAD	CW20-1 (36"x36")	5	DETOUR	M4-10 (48"X18")
2	ROAD CLOSED AHEAD	CW20-3 (36"x36")	6	DETOUR	M4-10 (48"X18")
3	DETOUR AHEAD	CW20-2D (36"x36")	7	ROAD CLOSED	R11-2 (36"X18")
4	END DETOUR	M4-8A (24"X18")	8	STREET NAME	M4-12T (30"X12")

N
W E
S

200' 0' 200'

SCALE
1"=200'

LEGEND

- TRAFFIC FLOW - FOR TCP
- WORK ZONE
- SIGNS

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1		ADDENDUM NO.1	7/14/23	JP	RF

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THE STATE OF TEXAS
COUNTY OF GALVESTON

JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

DETOUR PLAN
PHASE 1

Project No.: 1306-009-00	Scale: HORZ : VERT :	SHEET 15 OF 26
Date: 7-01-2022		
Dwn By: J.M.P.		
Chkd By: J.P.		

ADDENDUM NO. 1

1	ROAD WORK AHEAD	CW20-1 (36"x36")
2	ROAD CLOSED AHEAD	CW20-3 (36"x36")
3	DETOUR AHEAD	CW20-2D (36"x36")
4	END DETOUR	M4-8A (24"X18")
5	DETOUR	M4-10 (48"X18")
6	DETOUR	M4-10 (48"X18")
7	ROAD CLOSED	R11-2 (36"X18")
8	STREET NAME	M4-12T (30"X12")

N
W E
S

100' 0' 100'
SCALE
1"=100'

LEGEND

- TRAFFIC FLOW - FOR TCP
- WORK ZONE
- SIGNS

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1	ADDENDUM NO.1	7/14/23	JP	RF
MK	DESCRIPTION	DATE	DWN.	CHK.

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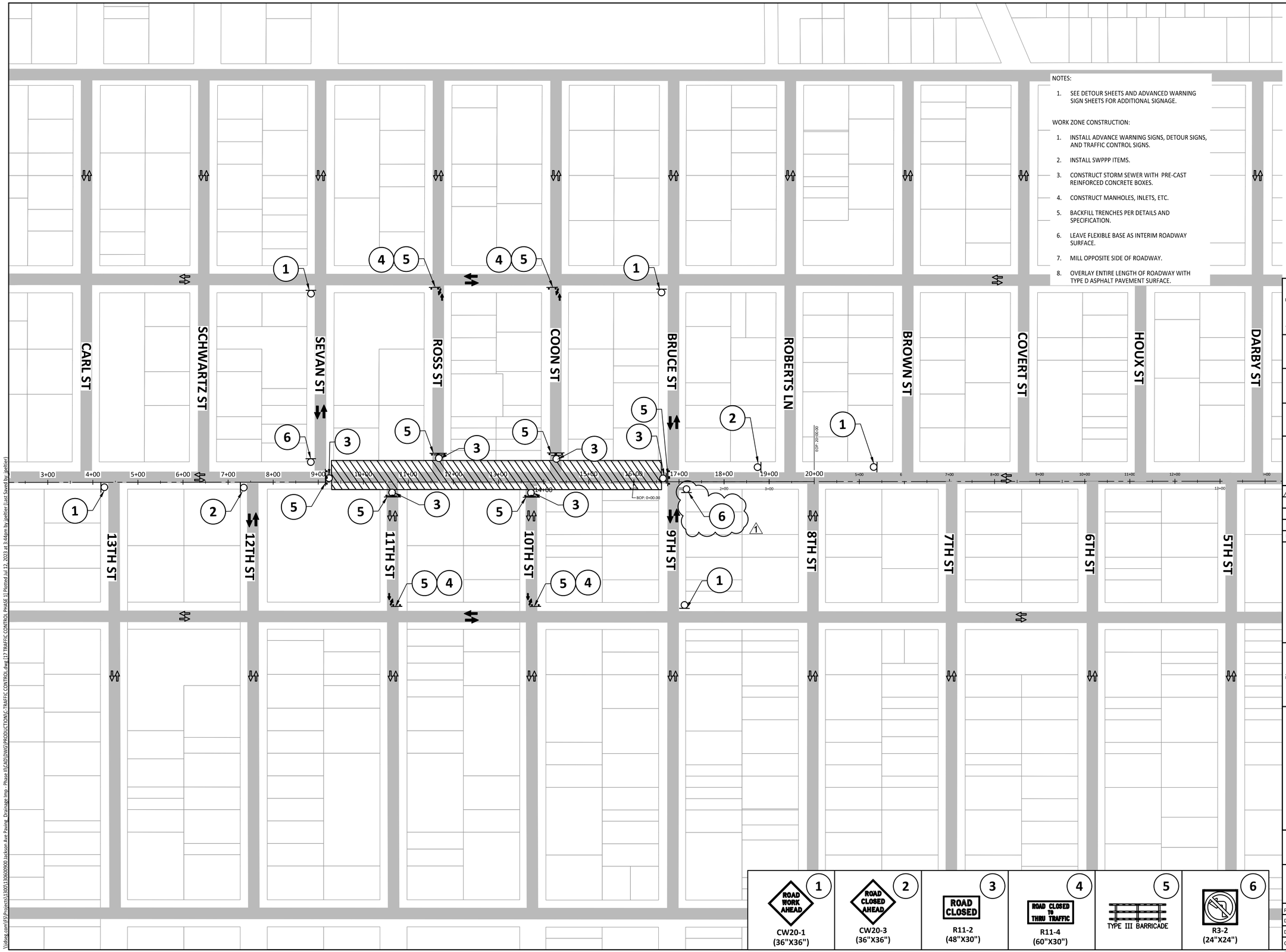
THE STATE OF TEXAS
COUNTY OF GALVESTON

JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

DETOUR PLAN
PHASE 2

Project No.: 1306-009-00	Scale: HORZ : VERT :		SHEET 16 OF 26
Date: 7-01-2022			
Dwn By: J.M.P.			
Chkd By: J.P.			

ADDENDUM NO. 1



NOTES:

1. SEE DETOUR SHEETS AND ADVANCED WARNING SIGN SHEETS FOR ADDITIONAL SIGNAGE.

WORK ZONE CONSTRUCTION:

1. INSTALL ADVANCE WARNING SIGNS, DETOUR SIGNS, AND TRAFFIC CONTROL SIGNS.
2. INSTALL SWPPP ITEMS.
3. CONSTRUCT STORM SEWER WITH PRE-CAST REINFORCED CONCRETE BOXES.
4. CONSTRUCT MANHOLES, INLETS, ETC.
5. BACKFILL TRENCHES PER DETAILS AND SPECIFICATION.
6. LEAVE FLEXIBLE BASE AS INTERIM ROADWAY SURFACE.
7. MILL OPPOSITE SIDE OF ROADWAY.
8. OVERLAY ENTIRE LENGTH OF ROADWAY WITH TYPE D ASPHALT PAVEMENT SURFACE.

N W E S

60' 0' 60'

SCALE 1"=60'

LEGEND

- TRAFFIC FLOW - FOR TCP
- TRAFFIC FLOW - EXISTING
- WORK ZONE 1
- SIGNS
- DRUMS
- TYPE III BARRICADE

NOTICE:

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MK	DESCRIPTION	DATE	DWN.	CHK.

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THE STATE OF TEXAS
COUNTY OF GALVESTON

JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

TRAFFIC CONTROL PLAN
PHASE 1

Project No.: 1306-009-00	Scale:	SHEET	
Date: 7-01-2022	HORZ :	17	
Dwn By: J.M.P.	VERT :	OF	26
Chkd By: J.P.			

1 CW20-1 (36"X36") ROAD WORK AHEAD

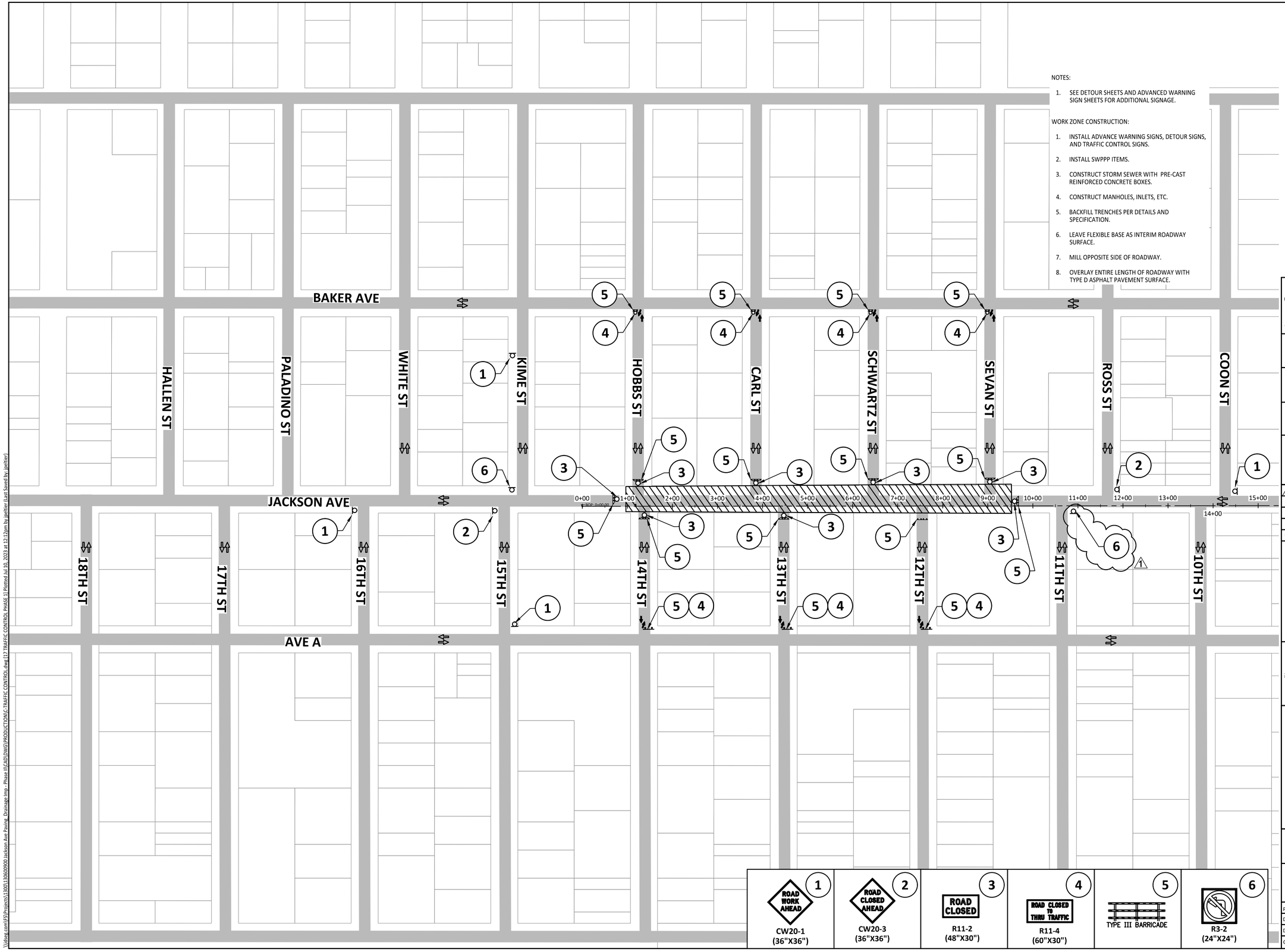
2 CW20-3 (36"X36") ROAD CLOSED AHEAD

3 R11-2 (48"X30") ROAD CLOSED

4 R11-4 (60"X30") ROAD CLOSED TO THRU TRAFFIC

5 TYPE III BARRICADE

6 R3-2 (24"X24")



NOTES:

1. SEE DETOUR SHEETS AND ADVANCED WARNING SIGN SHEETS FOR ADDITIONAL SIGNAGE.

WORK ZONE CONSTRUCTION:

1. INSTALL ADVANCE WARNING SIGNS, DETOUR SIGNS, AND TRAFFIC CONTROL SIGNS.
2. INSTALL SWPPP ITEMS.
3. CONSTRUCT STORM SEWER WITH PRE-CAST REINFORCED CONCRETE BOXES.
4. CONSTRUCT MANHOLES, INLETS, ETC.
5. BACKFILL TRENCHES PER DETAILS AND SPECIFICATION.
6. LEAVE FLEXIBLE BASE AS INTERIM ROADWAY SURFACE.
7. MILL OPPOSITE SIDE OF ROADWAY.
8. OVERLAY ENTIRE LENGTH OF ROADWAY WITH TYPE D ASPHALT PAVEMENT SURFACE.

60' 0' 60'
SCALE
1"=60'

LEGEND

- TRAFFIC FLOW - FOR TCP
- TRAFFIC FLOW - EXISTING
- WORK ZONE 1
- SIGNS
- DRUMS
- TYPE III BARRICADE

NOTICE:

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1	ADDENDUM NO.1	7/14/23	JP	RF

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THE STATE OF TEXAS
COUNTY OF GALVESTON

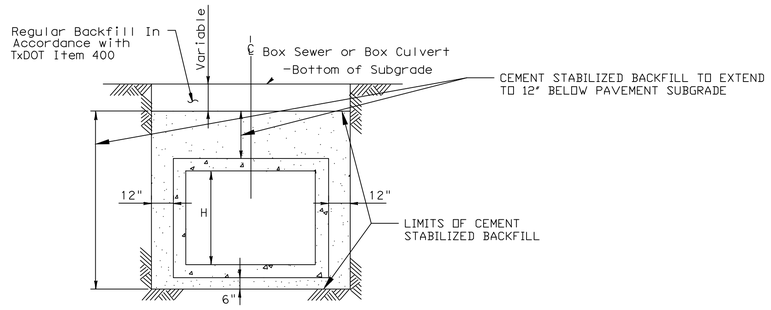
JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

TRAFFIC CONTROL PLAN
PHASE 2

Project No.: 1306-009-00	Scale: HORZ : VERT :	SHEET	18
Date: 7-01-2022		OF	26
Dwn By: J.M.P.			
Chkd By: J.P.			

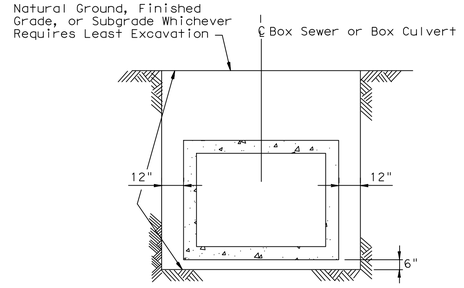
1. ROAD WORK AHEAD — CW20-1 (36"X36")
2. ROAD CLOSED AHEAD — CW20-3 (36"X36")
3. ROAD CLOSED — R11-2 (48"X30")
4. ROAD CLOSED TO THRU TRAFFIC — R11-4 (60"X30")
5. TYPE III BARRICADE
6. R3-2 (24"X24")

ADDENDUM NO. 1



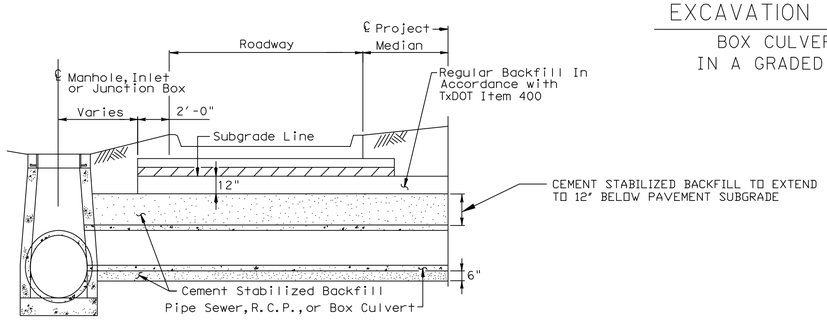
BACKFILL DETAIL

BOX CULVERTS
IN A GRADED OR PAVED AREA
INCLUDING DETOURS



EXCAVATION DETAIL

BOX CULVERTS
IN A GRADED AREA

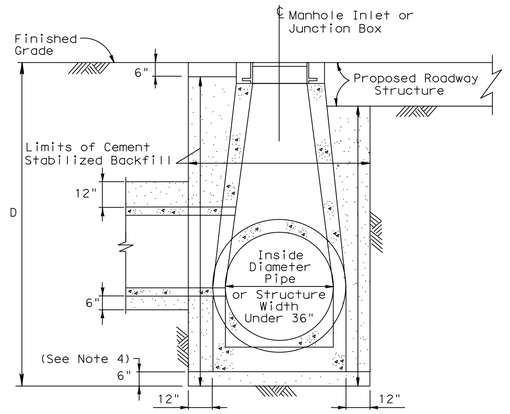


BACKFILL DETAIL

AT MANHOLE, INLET OR JUNCTION BOX

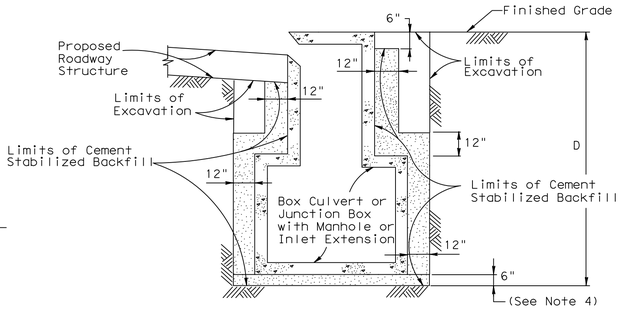
D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

1	BACKFILL DETAIL 1 OF 2	Scale: N.T.S.
		File:



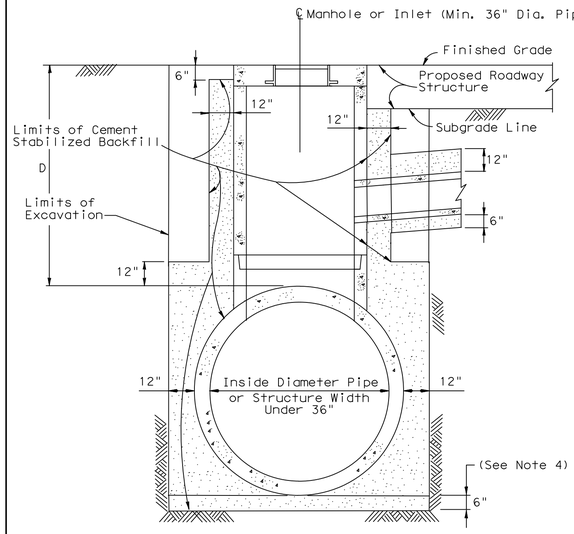
EXCAVATION AND BACKFILL DETAIL

MANHOLES SMALLER THAN 36 IN.
IN A PAVED OR GRADED AREAS
N.T.S.



EXCAVATION AND BACKFILL DETAIL

INLET EXTENSIONS ON A BOX CULVERT
IN A PAVED OR GRADED AREA
N.T.S.



EXCAVATION AND BACKFILL DETAIL

MANHOLES 36 IN. AND GREATER
IN A PAVED OR GRADED AREA
N.T.S.

D = Depth
H = Height
T = Thickness
R = Radius
Dia = Diameter

2	BACKFILL DETAIL 2 OF 2	Scale: N.T.S.
		File:

MK	DESCRIPTION	DATE	DWN.	CHK.
1	ADDENDUM NO.1	7/14/23	JP	RF

STATE OF TEXAS
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06/14/2023

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THE STATE OF TEXAS
COUNTY OF GALVESTON

JACKSON AVENUE DRAINAGE IMPROVEMENTS PHASE II

STORM SEWER BACKFILL DETAILS

Project No.: 1306-009-00	Scale:	SHEET
Date: 7-01-2022	HORZ :	20
Dwn By: J.M.P.	VERT :	OF 26
Chkd By: J.P.		

ADDENDUM NO. 1

ITB #B231025
DATE: 07/05/2023
TIME: 10:00 AM

PRE-BID CONFERENCE
JACKSON AVE DRAINAGE IMPROVEMENTS – PHASE II (9TH ST. TO NORTH OF 14TH ST.)
GALVESTON COUNTY, TEXAS

The Pre-Bid Conference for ITB #B231025 will be held on Wednesday, July 5, 2023 at 10:00 a.m. at the Galveston County Courthouse, 722 Moody, (21st Street), 5th Floor, Purchasing Department, Galveston, TX 77550

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Jerry Orozco		"	jerryo@sp-surveying.com	409.594.6308
Tammy Dickey	Tammy Dicky	Purchasing	tammy.dickey@co.galveston.tx.us	409 770.5373
Jacquelyn Perez		Purchasing		409 770.5371
Rufus Crowder		Purchasing	rufus.crowder@co.galveston.tx.us	409 770.5372
Zach Branda				
Chris New		E.P. Brady Ltd.	Chris@epbradyltd.com	
Elizabeth Robertson		Engineering	elizabeth.robertson@galvestoncountytx.gov	
Michael Shannon		Galv. Cnty Engineering	michael.shannon@galvestoncountytx.gov	
Travis Sellers				