TISD RFP 976-24 CONSTRUCTION PLANS FOR TRAFFIC SIGNAL INSTALLATION AT: MUESCHKE ROAD AT DESTINATION DRIVE & TS-01 & 03 JUERGEN ROAD AT CYPRESS HEIGHTS DRIVE

PREPARED FOR:





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SUBMITTED BY: VOIGT ASSOCIATES, INC. TBPE FIRM F-5333

ALL SHEETS DATED 11/16/23 FOR INTERIM REVIEW ONLY. -DOCUMENT INCOMPLETE-NOT INTENDED FOR PERMIT, BIDDING, OR CONSTRUCTION.

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 lease 48 hours before you dig so that underground line can be marked. This Verification does not fulfill your obligation to call 811

VERIFICATION OF PRIVATE UTILITY LINES.

CenterPoint Energy/Natural Gas Facilities Verification ONLY. (This Signature verifies that you have shown CNP Natudral gas lines correctly-not to be used for conflict verification.) (gas service lines are not shown.) Signature Valid for six months.

Date

Date

CenterPoint Energy/UNDERGROUND Electrical Facilities Verification ONL (This Signature verifies existing underground facilities-not to be used for conflict verification) Signature Valid for six months

Date

pproved for AT&T TEXAS/SWBT underground conduit facilities only Signature valid for one year

UTILITY CONTACTS CENTERPOINT ENERGY – ASHANA WEBSTER – 832–773–6080 – Ashana Webster@centerpointenergy.com AT&T – LAKESHA UPCHURCH – 713–660–5328 COMCAST – MARGIE BLACKWELL – 281–624–3021

48 HOUR NOTICE:

CONTACT THE HARRIS COUNTY ENGINEERING DEPARTMENT PERMIT OFFICE - 48 HOURS PRIOR TO THE START OF CONSTRUCTION OF UTILITIES OR PAVING WITHIN HARRIS COUNTY RIGHT-OF-WAY AT (713)-274-3931

CONSTRUCTION OF FACILITIES AND/OR PAVING WORK WITHIN PUBLIC RIGHT-OF-WAY

NOTIFICATIONS (PERMIT) ISSUED BY HARRIS COUNTY PUBLIC INFRASTRUCTURE DEPARTMENT - PERMITS OFFICE - IS REQUIRED FOR PROPOSED WORK WITHIN HARRIS COUNTY RIGHT-OF-WAY. THE PROJECT MUST BE APPROVED PRIOR TO OBTAINING THE REQUIRED NOTIFICATION. BE ADVISED THAT A NOTIFICATION MUST BE OBTAINED SEPARATELY FROM SITE DEVELOPMENT PERMIT PACKAGE. FOR ADDITIONAL INFORMATION, PLEASE VISIT HTTP://WWW.ENG.HCTX.NET/PERMITS/PUBLIC-REVIEW-CODE/PUBLIC-REVIEW/NOTIFICATION-OF-CONSTRUCTION-IN-THE-ROW OR CONTACT PUBLIC REVIEW INSPECTIONS DEPARTMENT @ (713)-274-3931





EET AND INDEX REVIEW SHEET - HCED REVIEW SHEET - HCFCD NOTES FOR PRECINCT 3 NOTES - PRIVATE UTILITIES SIGNAL BASIS OF ESTIMATE CONDITIONS - MUESCHKE RD AT DESTINATION DR SIGNAL LAYOUT - MUESCHKE RD AT DESTINATION DR SIGNAL LEGEND - MUESCHKE RD AT DESTINATION DR SIGNAL ELEVATIONS - MUESCHKE RD AT DESTINATION DR AND PAVEMENT MARKINGS - MUESCHKE RD AT DESTINATION DR CONDITIONS - JUERGEN RD AT CYPRESS HEIGHTS DR SIGNAL LAYOUT - JUERGEN RD AT CYPRESS HEIGHTS DR SIGNAL LEGEND - JUERGEN RD AT CYPRESS HEIGHTS DR SIGNAL ELEVATIONS - JUERGEN RD AT CYPRESS HEIGHTS DR AND PAVEMENT MARKINGS - JUERGEN RD AT CYPRESS HEIGHTS DR DETAIL DRAWINGS

HARRIS COUNTY MAY HAVE EXISTING UNDERGROUND/OVERHEAD UTILITIES WITHIN THE PROPOSED PROJECT LIMITS. PLEASE CONTACT THE CALL CENTER AT (713) 881-3210, OR SUBMIT A WORK ORDER REQUEST THROUGH HTTP: //WWW.ENG.HCTX.NET/SIGNALOUT TO OBTAIN FIELD LOCATES.

Approved:

HCPID - Permit Group Flood Plain Management

SHEET 1 OF 38

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REVIEW SHEET

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PROVED H.C. PRJ NO /: DETENTION POND SERVICE AREA NAP IS PROVIDED ON SHEET NOTE: SEPTIC SYSTEMS REQUIR	S H.C. WASTE WATER REVIEW
OUTFALL TO D H.C. ROADSIDE DITCH	OSED UTILITIES MUST BE
Construction of the second secon	D ON THE SITE PLANS.
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	WATER SYSTEMS
(JFS), CA CULATIONS PROVIDED ON SHEET CAPACITY ALLOLATED TO THACL FROM D. A. MAP: (CFS)	JUAL OSSF
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NOTE: ALL ROADSIDE DITCH OUTFALLS REQUIRE EROSION CONTROL MEASURES. RIPRAP IS NOT ALLOWED AS AN EROSION CONTROL MEASURE IN HARRIS COUNTY ROW.	YES NO
LOW FROM ADJACENT PROPERTIES MUST BE	C WASTEWATER TREATMENT FLANT EXI LETED ACCORDING TO INSTRUCTIONS: YES □ NO □
ACCOUNTED FOR IN THE PROJECT. THE SIGNINO S THAT THESE AREAS HAVE BEEN ADDRESSED.	WATER/REGULATIONS-STANDARDS-DET
1/4/ ITY 7 FLOOD PLAIN STATUS	
FASURES (Complete for ALL projects)	
And Complete for the projector Firm PANEL(S) FOR PROPERTY: 482010215L N & DETAILS ON SHEET(S) Firm PANEL(S) DATE: 6/18/2007	
	FOR PROJECTS LOCATED IN ANY FLOO
VENT FEATURES. (must be completed on all projects)	No net fill is allowed in the flood plain
L (A COMMON PLAN OF DEVELOPMENT) LESS THAN 5 ACRES. (0.2% BASE FLOOD LEVEL)	All water heaters, furnaces, air condi
SITE REMOVED FROM FLOODPLAIN BY LOWR, LOWR-F, LOWA CASE NO REVISED FLOODPLAIN IS SHOWN ON SHEET	Any electrical circuit serving a light s
IFIE DEFINITION OF SIGNIFICANT REDEVELOPMENT (Port A, ELEVATION INFORMATION of Harris County, Texas for Stormwater Quality Management) BENCHMARK USED	FEMA Technical Bulletin 1-08 for four Critical facilities located in the 0.2% of
	24 inches above the crown of the adj Floodproofing and sealing measures
UIRECTET INTO AN EXISTING DRAINAGE SISTEM PRIOR TO DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT (2001 ADJ.), RM 110985,110975,110970	Access routes elevated to or above th A completed as-built certificate must
DE ORIGINAL DRAINAGE AREA MAP INCLUDING CALCULATIONS) From the intersection of US 290 and Mueschke Road, North along Mueschke 3.0 miles to bridge, and benchmark on the right side. ELEV=173.03	The County Engineer's Office will pos No fill may be used to elevate structu
MENTS FALL WITHIN THE JURISDICTION OF: MARRIS COUNTY DEPERMINATION BASED ON GROUND ELEVATION	All structures shall be designed to wi
AND IN SHADED ZONE "X" AIT REQUIREMENT IS COVERED BY AN EXISTING SWQMP WITHIN DEPOPENTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD	is required once construction is finish
NO & SWQ PERMIT NO	TRAFFIC SIGNAL FOR THE INTERSECTIO
A. TIOLA VOLUME OF MATERIAL PREMISED TO BE MOVED OR PLACED WITHIN EMENT PLAN; THE FIRM DELIVERATED FLOODPLAIN THE, BASE, CONCETE, ASPHALT, ETC.): PELIDW 0.2% BASE FLOOD FLEVATION	TRAFFIC SIGNAL FOR THE INTERSECTION
ES. (COMPLETE IF NOT EXEMPT) B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODEVENT.	HARRIS COUNTY ENGINEERING DEPARTM
ED: (FILTER STRIP, GRASSY SWALE, UBBAN FORESTRY) BELOW 0.2% BASE PLOOD ELEVATION	THE PERMIT MANAGER SIGNATURE REPRI
IS APPEAR ON SHEET(S)	THE FOLLOWING: • THE COMPLETION OF REVIEW OF TH PLANS
	INTERPOSE NO OBJECTION TO THE P DESIGN ON PRIVATE PROPERTY APPROVAL OF WORK IN HARPIS COL
ARATOR MODEL:	MAINTAINED RIGHT OF WAY APPROVAL OF WORK IN PROPOSED F
A. ARE CURB RAMPS THAT CONNECT TO PUBLIC STREETS PROPOSED	ACCEPTED BY THE COUNTY
	HCED SIGNATURE BLOCK:
IN THIS SET OF PLANS? X YES [] NO	
IN THIS SET OF PLANS? [] NO 9. <u>LANDSCAPING</u> REQUIRED AND SHOWN ON SHEFT(S)	
IN THIS SET OF PLANS? X YES [] NO 9. <u>LANDSCAPING</u> REQUIRED AND SHOWN ON SHEET(S) NOT REQUIRED	
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IN THIS SET OF PLANS? WYES [] NO 9. <u>LANDSCAPING</u> REQUIRED AND SHOWN ON SHEET(S) NOT REQUIRED HARRIS COUNTY	DATE SHEET NO.

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	<u>, , , , , , , , , , , , , , , , , , , </u>			10.	DOES TI	HE PROPERTY HAVE ANY VIOLATIONS? IF SO PL	EASE PROVIL	θE
C	AND/OR	PROPOSED	UTILITIES?		ALL VIO			-
U Al	P <i>PLIES TO :</i> RY	THIS PROJI	ECT					
T	SEPTIC SY	STEM	/			(EXISTING) SEPTIC (PROPOSED)		
	PUBLIC SA		/			E WORK (PHASE II PERMIT CLASS I (non-floo	dplain))	
Ţ	RE A LETTE		HE DISTRICT/		DRIVEWA	'E WORK (PHASE PERMIT CLASS (floodploi Y WITH CULVERT CURB AND GUTTER _	n)) 	
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۱ Р		F.			UTILITY I	NORK		
/ E	WATER S	YSTEMS			X OTHER C	CONSTRUCTION _PROPOSED_TRAFFIC_SIGNAL, A	DA RAMPS, I	<u></u>
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4	CEOR PRIVAT	EWATER &		A R.O.W. N REFER TO	WWW.eng.hctx.	S REQUIRED FOR EACH SCOPE OF WORK IN H net/permits FOR EACH SCOPE OF WORK IN HC	C OR HCFCI	D ROW. CD ROW.
ž	D FOR PLAN	APPROVAL.						
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T. fl	IC WASTEWAT PLETED ACCO	ER TREATME RDING TO IN YES	NT PLANT EXPRESS STRUCTIONS?					
E	WATER/REGU	LATIONS-STA	NDARDS-DETAILS	`		BENCHMARK REQ	UIREMENT	S FOR
				\		PROPOSED BRIDGES AND OR NE When the County Engineer has determined that a new	w RESIDEN	TIAL SUBIDIVISIONS
						the proposed project, the developer shall be required Harris County Infrastructure Regulations.	to install a ben	chmark per section 8.0, part 2 of the
						Is a new Benchmark required for this project? (to be	determined by	Harris County) [_] yes [_] no
						If a new Benchmark is required, the proposed bench	mark informat	on is shown on sheets
	No net fill is FOUNDATIC All water he Section 4.00 Any electric All material FEMA Techn FEMA Techn FEMA Techn FEMA Techn Critical facil 24 inches al Floadproofi Access rout A completed 15 required of 77092 TRAFTC 5 TRAFTC 5 TRA	allowed in t allowed in t arters, furnars of Harris Co al circuit sen is of Harris Co al circuit sen is of Harris Co al circuit sen is deviated t as bout the cross of a day and the asolutit cert schement of the "Elevation Co once construit scoul, FOR TH Scoul, FOR TH	he flood plain and no; piplies to only buildin ces, air conditioning u unty Floodphain regul ving a light switch or a the (100-year) base f 1-08 for foundation o in the 0.2% or 500yr [f u or of box et algacent roo or above the level oj tificate must be subm ffice will post a findance tificate must be subm ffice will post a findance wate structures in the and located openings signed to withstand a ertificates to be <u>subm</u> tition is finished. *(PEI te INTERSECTION OF AUE E INTERSECTION OF AUE ING DEPARTMENT- VATURE REPRESENTS REVIEW OF THESE FION TO THE PROPOSED	Ill is allowed in the jloo ger obuilding addition ritos. externations. utlet located below the lood elevation are on a ennings. oodplain or 1% or 1000, d, which ever results in aken to ensure that too the base flood shall be tited after the structure spection notice on the structure specta on the structure specta of the st	adway. Is requiring a ison panels, ar is requiring a pproved FEM vr floodplain s a higher elev tic substances provided to a is complete (structure onc n. Structures equired to be is complete (structure onc n. Structures equired to be is wind speed to the Harr NON DRWE HEGENTS DRWE VIEWED, HOWEN VIEWED, HOWEN V	class II permit) Id any other mechanical or electrical equipment ear) flood elevation shall be dropped from abc A Technical Bulletin 2-08 as Class 5 water-resisi- shall have the lowest floor elevated to 3 feet or ariaon. swill not be displaced by or released into flooc all critical facilities to the extent possible. and before it is occupied. te all requirements have been met. may be constructed on an open foundation, s designed by a registered professional enginee of 120mph. Ter the slab is poured or sub-floor is installed of is County Engineering Department, 10555 Nor PLETELY CHECKED NAD VERIFICD. THESE DRAWINGS UNESD TO PRACTCE IN THE STATE OF TEXAS, WHICH THIS DOES NOT MEAN THE ENTIRE PROJECT, IN PLETELY CHECKED NAD VERIFICD. THESE DRAWINGS UNESD TO PRACTCE IN THE STATE OF TEXAS, WHICH THIS DOES NOT RELEVE ANY PARTY FROM COMPU- THE CITY SCINATURES ARE REQUIRED BY ORDINANCE IN ACCOR	nt must be e ove and be o stant, and a r more abov lwaters. uch as piers, r. <u>and before ti</u> thwest Free kCLUDING ALL ARE SIGNED, THEREFORE E, COUNTY PE DAOFED REG, E, COUNTY PE DAOFED REG,	levated in accordance with n a separate breaker. proved in accordance with e the 0.2% flood elevation, or or on continuous foundation ne framing starts, and a third way, Suite 120, Houston, TX SUPPORTING DATA DATED AND SEALED OWEYS THE ENGINER'S ROPPATE FEDERAL, STATE JUITON OR ORDINANCE RANJER VIEL NOT BE ESSED OLL GOVERNMENT CODE CH. 245.
	INTERPO DESIGN APPROV	ON PRIVATE P	I ION TO THE PROPOSED ROPERTY N HARRIS COUNTY E WAY			ENGINEER'S CERTIFICATIO	<u>DN</u>	
	APPROV COUNTY ACCEPT	AL OF WORK I	N PROPOSED HARRIS Y THAT IS TO BE UNTY	I, ANTHONY VOIG	T, A LICENSE	D PROFESSIONAL ENGINEER IN THE STATE OF SHEET IS TRUE AND CORRECT TO THE BEST (CURRENT TEXAS ENGINEERING DRACTICE ACT	TEXAS, DO H	HEREBY CERTIFY THAT THE LEDGE AND THAT I AM NOT
	HCED SIGN	ATURE BLOG	CK:	ENGINEERING AND PROVIS	DESIGNED PER	NGINEERING LICENSURE. I CERTIFY TO THE BE R THE HARRIS COUNTY ENGINEERING STANDARD	ST OF MY K	NOWLEDGE THAT THE PLANS IN ONS, AND GUIDELINES UNLESS
				PROVIDED A VARIANCE PLANS DO NOT MEET NOT RECEIVE AN APPI	. BY THE COU THE COUNTY ROVED VARIAN	INIT ENGINEER OR HIS DESIGNEE. SHOULD IT S STANDARDS, REGULATIONS AND GUIDELINES ICE, THE APPROVAL OF SAID PLANS BECOMES	I BE DEEMEI AND DID NULL AND	SEAL
				VOID AND THE DESIGN THE COMPLETED PRO.	I PLANS MUS	T BE CORRECTED AT NO CHARGE TO THE COU S OF DRAWING SHEETS <u>01</u> THRU 3	JNTY. 58	
					SIGNATU	II/16/2023 DATE		ANTHONY P. VOIGT
					R E	VISIONS	NDF.	Bussel
	DATE				R PLANS H	AVE BEEN APPROVED BY HARRIS COUNTY.	11/16	
	DAIL	SHEEL NU.		DES	UN ION		r∴c. INITIAL	D.C. APPROVED DAIL

HCFCD PROJECT NO.

SHEET NUMBER 02A OF 38



4. FLOOD PLAIN STATUS
FIRM PANEL(S) FOR PROPERTY: <u>110980R</u> FIRM PANEL(S) DATE: <u>7/27/2014</u>
STATUS OF PROPERTY ON MAP ☐ ENTIRELY LOCATED IN UNSHADED ZONE "X" ☐ LOCATED PARTIALLY OR ENTIRELY IN ANY "A" ZONE OR SHADED ZONE "X", DELINEATE FLOODPLAIN BOUNDARY ON CONSTRUCTION DRAWINGS (DRAINAGE LAYOUT PG. NO) (1% BASE FLOOD LEVEL) (0.2% BASE FLOOD LEVEL)
SITE REMOVED FROM FLOODPLAIN BY LOMR, LOMR-F, LOMA CASE NO REVISED FLOODPLAIN IS SHOWN ON SHEET
ELEVATION INFORMATION BENCHMARK USED MI 110985,110975,110970 HARRIS-COUNTY FLOODPLAIN REFERENCE MARK HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT BENCHMARK (FOR COASTAL AREAS) DESCRIPTION OF BENCHMARK INCLUDING ELEVATION, DATUM AND YEAR OF ADJUSTMENT (2001 ADJ.) Tom the interaction of US 200 ond basechine Rood, North along Mussichine 320 mbles to brody, and set of the room set. ELEVATION
U. FLOOD PLAIN DETERMINATION BASED ON GROUND ELEVATION
PROPERTY LIES ENTIRELY ABOVE THE BASE FLOOD LEVEL AND IN SHADED ZONE "X" PROPERTY LIES PARTIALLY OR ENTIRELY BELOW THE BASE FLOOD LEVEL
III. FLOODPLAIN STORAGE SUMMARY (APPLIES ONLY TO PORTION OF LAND LOCATED WITHIN FEMA REGULATORY FLOODPLAIN). A. TOTAL VOLUME OF MATERIAL PROPOSED TO BE MOVED OR PLACED WITHIN THE FIRM DELINEATED FLOODPLAIN (FILL, BASE CONCRETE, ASPHAIT, ETC.): BELOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) B. TOTAL VOLUME OF MATERIAL PROPOSED TO BE REMOVED FROM THE FIRM DELINEATED FLOODPLAIN: BETOW 0.2% BASE FLOOD ELEVATION (2001 ADJ.) CUBIC VARDS INCLUDING CALCULATIONS) C. FILL AREA & VOLUME CALCULATIONS ARE SHOWN ON SHEET
HCFCD SIGNATURE BLOCK
PROJECT NAME:
ADDRESS:
WAS ACCEPTED BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR THE PURPOSES LISTED BELOW:
HARRIS COUNTY FLOOD CONTROL DISTRICT

ADDRESS:				-
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WAS ACCEPTED	BY HARRIS COUNTY FLOOD CONTROL DISTRICT FOR	R THE PURPOS	SES LISTED	BELOW:
	HARRIS COUNTY FLOOD CONTRO	L DISTRIC	CT	
	INTERPOSE NO OBJECTION			
BY	FOR ITEMS LOCATED OUTSIDE OF HCFCD RIGHT-OF-	WAY		
	APPROVED:			
BY	FOR ITEMS LOCATED WITHIN EXISTING HCFCD RIGHT-	OF-WAY		
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BY	FOR ITEMS LOCATED WITHIN PROPOSED HCFCD RIGHT-C	OF-WAY		
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ADDITIONAL COMMEN	ITS:			
AND LOCAL ENVIRONMEN RELATED TO LAND DEVEL UNTIL SUCH SIGNATURES	TAL RULES, LAWS, AND RECULATIONS AND ANY OTHER LEGALLY OPMENT, IF THE CITY SIGNATURES ARE REQUIRED BY ORDINANCE ARE OBTAINED. PLAN APPROVAL EXPIRATION TO BE IN ACCORD <u>ENGINEER'S CERTIFICAT</u>	ADOPTED REGULAT E, COUNTY PERMIT DANCE WITH LOCAT	ION OR ORDIN IS WILL NOT E L GOVERNEMEN	IANCE BE ISSUED NT CODE CH.
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GENERAL

- 1. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE BEGINNING CONSTRUCTION.
- 2. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SECURITY TO PROTECT THE PROJECT SITE, CONTRACTOR PROPERTY, EQUIPMENT, AND WORK
- THE CONTRACTOR IS RESPONSIBLE FOR CLEANING STREETS OF CONSTRUCTION DIRT AND 3. DEBRIS AT CLOSE OF EACH WORK DAY.
- THE CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF THE JOB SHALL 4 BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK.
- PRIOR TO CONSTRUCTION. THE CONTRACTOR, ALONG WITH CONCURRENCE FROM THE FIELD 5. ENGINEER, SHALL DETERMINE HIS/HER LAY-DOWN AND/OR STAGING AREA LOCATIONS.
- 6. THE CONTRACTOR SHALL NOTIFY ALL PROPERTY OWNERS A MINIMUM OF 24 HOURS PRIOR TO BLOCKING DRIVEWAYS OR ENTERING UTILITY EASEMENTS.
- 7. TRAFFIC INGRESS AND EGRESS FOR DRIVEWAYS AND PEDESTRIAN ACCESS FACILITIES SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
- THE CONTRACTOR SHALL REMOVE ANY FENCES, POSTS, MAILBOXES, PLANTERS, PERMANENT 8. TRASH CONTAINERS, CULVERTS, ETC. OR SECTIONS THEREOF, THAT ENCROACH WITHIN THE COUNTY'S RIGHT-OF-WAY. NOTE: PRIOR TO CONSTRUCTION, THE PROPERTY OWNER WAS PAID TO RELOCATE OR REPLACE THESE ITEMS OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY. IF THE OWNER HAS FAILED TO DO SO, THE CONTRACTOR WILL REPLACE THEM WITH THE MINIMUM LEVEL OF QUALITY NEEDED TO SECURE THE PROPERTY AND/OR MAINTAIN MAIL DELIVERY. IN THAT CASE, PAYMENT FOR THESE INSTALLATIONS WILL BE INCLUDED AS EXTRA WORK ITEMS OR AS OVERRUNS TO EXISTING PAY ITEMS.

ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS LOCATED OUTSIDE OF THE COUNTY'S RIGHT-OF-WAY, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

ALSO, IF THESE ITEMS ARE LOCATED WITHIN THE PROJECT RIGHT-OF-WAY AND ARE DESIGNATED TO REMAIN, ANY DAMAGE CAUSED BY THE CONTRACTOR TO SUCH ITEMS, SHALL BE REPLACED WITH LIKE-KIND OR BETTER AT THE CONTRACTOR'S EXPENSE.

TREES, BUSHES, SHRUBBERY AND OTHER DAMAGED PLANTINGS DESIGNATED TO REMAIN SHALL BE REPLACED WITHIN 72 HOURS OF REMOVAL AND ARE TO BE THOROUGHLY WATERED-IN. NO SEPARATE PAY

- 9. PAVED SURFACES, PAVEMENT MARKERS AND MARKINGS SHALL BE PROTECTED FROM DAMAGE BY TRACKED EQUIPMENT.
- 10. IRON RODS DISTURBED DURING CONSTRUCTION ARE TO BE REPLACED BY A REGISTERED PROFESSIONAL LAND SURVEYOR FOR THE ORIGINAL PROPERTY OWNER AT NO SEPARATE PAY.
- 11. CONSTRUCTION STAKING WILL BE PROVIDED BY THE CONTRACTOR. TWO COPIES OF STAKING NOTES TO BE PROVIDED TO THE ENGINEER PRIOR TO CONSTRUCTION.
- 12. THE COUNTY OR THE COUNTY'S SURVEYOR SHALL PROVIDE A BENCHMARK OR TEMPORARY BENCHMARK AND SURVEY CONTROLS.
- 13. THE CONTRACTOR SHALL MAINTAIN UPDATED RED-LINED RECORD DRAWINGS ON SITE FOR INSPECTION BY THE ENGINEER.
- 14. MOWING, MAINTENANCE, AND CLEAN-UP OF THE PROJECT SHALL MEET THE REQUIREMENT OF SPECIFICATION ITEM 560 (NO SEPARATE PAY). MOWING, MAINTENANCE, AND CLEAN-UP IS REQUIRED FOR THE PROJECT LIMITS AND DURATION, REGARDLESS OF THE CONTRACTOR'S SCOPE OF ACTIVITIES WITHIN THE PROJECT LIMITS.
- 15. THE REMOVAL OF ANY ABANDONED UTILITIES REQUIRED TO COMPLETE THE WORK SHALL BE INCIDENTAL AND NO SEPARATE PAYMENT SHALL BE MADE.
- 16. IT IS THE CONTRACTOR'S RESPONSIBILITY TO STOCKPILE NECESSARY MATERIAL ON-SITE OR AT A SECURED OFF-SITE LOCATION AT NO ADDITIONAL EXPENSE TO HARRIS COUNTY. ANY SUITABLE EXCAVATED MATERIAL ON THE PROJECT WHICH IS AVAILABLE AT THE TIME OF NEED; WHETHER FROM STORM SEWER, ROADWAY, AND/OR CHANNEL EXCAVATION, SHALL BE USED BEFORE BORROW IS BROUGHT ON-SITE
- 17. MANHOLES, JUNCTION BOXES, INLETS, AND RISERS ARE TO BE PRE-CAST OR CAST IN PLACE.

TRAFFIC SIGNAL

- 1. ALL ITEMS RELATING TO THE CONSTRUCTION OF TRAFFIC SIGNAL INSTALLATIONS, EXCEPT FOR PUNCHLIST ITEMS, SHALL BE COMPLETED PRIOR TO THE ACTIVATION OF THE SIGNAL SYSTEM(S), UNLESS OTHERWISE REQUIRED BY THE CONTRACT.
- 2. THE CONTRACTOR SHALL MEET WITH THE HARRIS COUNTY TRAFFIC SIGNAL MAINTENANCE GROUPS FIELD INSPECTOR, HEREAFTER REFERRED TO AS THE TRAFFIC INSPECTOR, ONE-WEEK PRIOR TO THE DESIRED ACTIVATION OF ANY NEW TRAFFIC SIGNALS. THE CONTRACTOR SHALL OBTAIN VERBAL CONCURRENCE FROM THE TRAFFIC INSPECTOR THAT ADEQUATE PROGRESS HAS BEEN ACHIEVED AND THAT ADEQUATE PREPARATIONS ARE IN PLACE TO SCHEDULE A PRE-"TURN ON" WALK-THROUGH INSPECTION MEETING. IF IN THE OPINION OF THE TRAFFIC INSPECTOR, REQUIRED PROGRESS AND ADEQUATE PREPARATIONS ARE NOT COMPLETE. THE PRE-"TURN ON" WALK-THROUGH INSPECTION MEETING WILL BE POSTPONED TO ALLOW ADEQUATE TIME FOR INCOMPLETE CONSTRUCTION ITEMS AND PREPARATIONS TO BE COMPLETED. AFTER THE CONTRACTOR HAS COMPLETED ALL INCOMPLETE ITEMS AND PREPARATIONS, THE CONTRACTOR SHALL REQUEST THE TRAFFIC INSPECTOR REVIEW AND APPROVE ITEMS PREVIOUSLY IDENTIFIED. IF, IN THE OPINION OF THE TRAFFIC INSPECTOR, ALL ITEMS HAVE BEEN ADDRESSED SATISFACTORILY, THE DATE OF THE PRE-"TURN ON" WALK-THROUGH INSPECTION SHALL BE ESTABLISHED. TIME EXTENSIONS TO THE CONTRACT TIME WILL NOT BE GRANTED FOR DELAYS CAUSED BY INCOMPLETE CONSTRUCTION OR INADEQUATE CONTRACTOR PREPARATIONS REQUIRED TO COMPLETE TRAFFIC SIGNAL SYSTEM WITHIN THE TIMEFRAME SET FORTH IN THE CONTRACT.
- 3. PRIOR TO ACTIVATING A NEW TRAFFIC SIGNAL, THE CONTRACTOR SHALL REQUEST A PRE-"TURN ON" WALK-THROUGH INSPECTION MEETING, IN ACCORDANCE WITH ITEM 2. THE PURPOSE OF THE MEETING WILL BE TO ESTABLISH THAT THE TRAFFIC SIGNAL SYSTEM HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT, AND IN A MANNER THAT DOES NOT ADVERSELY IMPACT PUBLIC SAFETY. THIS MEETING SHALL BE ATTENDED BY THE TRAFFIC INSPECTOR, THE ENGINEER OF RECORD, AND THE CONTRACTOR. AS A MINIMUM, ANY DEFICIENCIES THAT ADVERSELY IMPACT PUBLIC SAFETY WILL BE IDENTIFIED FOR CORRECTION PRIOR TO ESTABLISHING THE "TURN ON" DATE FOR THE TRAFFIC SIGNAL SYSTEM. ITEMS THAT HAVE AN IMPACT ON PUBLIC SAFETY INCLUDE, BUT ARE NOT LIMITED TO: PAVEMENT MARKINGS AND SIGNAGE, PROPER AND ACCEPTABLE BONDING OF EARTH GROUNDS, PROPERLY ALIGNED TRAFFIC SIGNALS, FULLY OPERATIONAL VEHICULAR AND PEDESTRIAN DETECTION, COMPLETED CABINET-TO-FIELD WIRING, AND PROPERLY TERMINATED ELECTRICAL SERVICE CONDUCTORS. FAILURE TO ADDRESS THE PUNCHLIST ITEMS IDENTIFIED AS BEING CRITICAL TO PUBLIC SAFETY PRIOR TO THE PRE-"TURN ON" WALK-THROUGH MEETING WILL RESULT IN THE TURN ON BEING POSTPONED TO ALLOW ADEQUATE TIME FOR THE INCOMPLETE ITEMS TO BE COMPLETED. AT SUCH TIME AS MEETING ATTENDEES AGREE THAT THE TRAFFIC SIGNAL HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT, AND THAT THE TRAFFIC SIGNAL, AS IT EXISTS, IS NOT A THREAT TO PUBLIC SAFETY, A TURN ON DATE WILL BE ESTABLISHED.
- 4. THE CONTRACTOR SHALL HAVE 10 DAYS FROM THE DATE THE TRAFFIC SIGNAL SYSTEM IS TURNED ON TO COMPLETE ANY PUNCHLIST ITEMS IDENTIFIED AT THE PRE-"TURN ON" WALK-THROUGH MEETING OR AT THE TIME THE SIGNAL SYSTEM IS ACTIVATED THAT ARE NOT OTHERWISE ADDRESSED PRIOR TO ACTIVATION OF THE TRAFFIC SIGNAL SYSTEM.
- 5. THE CONTRACTOR'S ATTENTION IS DIRECTED TO STANDARD SPECIFICATION ITEM 1000, TRAFFIC SIGNAL INSTALLATION AND MODIFICATION, WHICH INCLUDES PROCEDURES AND REQUIREMENTS REGARDING ACTIVATION OF TRAFFIC SIGNAL CONTROL SYSTEMS. THE PROJECT MANUAL MAY INCLUDE SPECIAL SPECIFICATIONS AND/OR SPECIAL PROVISIONS RELATED TO PROPOSED TRAFFIC CONTROL SIGNAL SYSTEM INSTALLATION(S) AND MODIFICATION(S) REQUIRING THE CONTRACTOR'S ADHERENCE TO DEFINED CHECKLISTS, PROCEDURES AND/OR REPORTS AT NO ADDITIONAL COST TO THE COUNTY BEYOND THE ESTABLISHED BID ITEMS OF THE CONTRACT.

TRAFFIC CONTROL

IF THE CONTRACTOR CHOOSES TO USE A DIFFERENT TCP, HE/SHE SHALL PREPARE AND SUBMIT THE ALTERNATIVE TCP TO THE COUNTY FOR APPROVAL NO LESS THAN 10 WORKING DAYS PRIOR TO THE PROPOSED IMPLEMENTATION DATE. THE TCP SHALL BE DRAWN TO SCALE AND SIGNED & SEALED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS. UPON APPROVAL BY HARRIS COUNTY, THE ALTERNATIVE PLAN SHALL BECOME THE BASIS FOR A "CHANGE IN CONTRACT" TO REVISE THE TRAFFIC CONTROL BID ITEMS ACCORDINGLY AND BECOME PART OF THE CONTRACT DOCUMENTS.

- REASONABLY CLEAN.
- RELOCATIONS.
- NON-PAVED AREAS
- NO REVISIONS DATE NAME HARRIS COUNTY 📕 Amani Engineering, Inc. Engineers ENGINEERING DEPARTMEN 11011 RICHMOND AVE. SUITE 700 HOUSTON, TX. 77042 Tel (713) 270-5700 Fox (713) 271-3487 VOIGT ASSOCIATES, INC F-5333

1. THE CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES AND THE APPROVED TRAFFIC CONTROL PLAN.

2. THE CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS EXCEPT DURING FLAGGING OPERATION OR PROVIDE DETOURS AROUND THE CONSTRUCTION SITE AND PROVIDE PUBLIC NOTIFICATION.

3. LANE CLOSURES SHALL BE DURING OFF-PEAK HOURS ONLY (MONDAY THROUGH FRIDAY 9 A.M. TO 4 P.M.) UNIFORMED PEACE OFFICERS OR FLAGGERS IN RADIO CONTACT ARE REQUIRED TO DIRECT TRAFFIC DURING LANE CLOSURES.

4. DETOURS REQUIRE PRIOR APPROVAL OF THE FIELD ENGINEER AND PRECINCT. 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. CONTRACTOR TO USE (WITH PRIOR APPROVAL OF THE FIELD ENGINEER) HIGH EARLY STRENGTH CONCRETE AND OTHER RELATED CONSTRUCTION METHODS TO MINÍMIZE THE DURATION OF THE DETOUR AND TO ENSURE THAT THE ROADWAY IS OPEN ON, OR PRIOR TO, THE AGREED UPON DATE.

5. ONE DAY PRIOR TO THE IMPLEMENTATION OF A TRAFFIC CONTROL PLAN PHASE OR STEP. OR THE IMPLEMENTATION OF AN ADDITIONAL, REVISED, OR NEW TRAFFIC CONTROL ELEMENT, THE CONTRACTOR SHALL MEET WITH THE ENGINEER TO GIVE A DETAILED DESCRIPTION OF THE CONTRACTOR'S PLAN AND PREPARATIONS. THE CONTRACTOR SHALL OBTAIN WRITTEN CONCURRENCE FROM THE ENGINEER THAT ADEQUATE PROJECT PROGRESS HAS BEEN ACHIEVED AND THAT ADEQUATE PREPARATIONS ARE IN PLACE PRIOR TO SWITCHING TRAFFIC. IF, IN THE OPINION OF THE ENGINEER, REQUIRED PROGRESS AND ADEQUATE PREPARATIONS ARE NOT COMPLETE, THE CONTRACTOR SHALL NOT IMPLEMENT THE NEXT PHASE, STEP, OR ELEMENT OF TRAFFIC CONTROL UNTIL INCOMPLETE CONSTRUCTION ITEMS OR PREPARATIONS ARE COMPLETED. TIME EXTENSIONS WILL NOT BE GRANTED FOR DELAYS CAUSED BY THE INCOMPLETE CONSTRUCTION ITEMS OR INADEQUATE CONTRACTOR PREPARATIONS REQUIRED TO IMPLEMENT TRAFFIC CONTROL.

6. TRAFFIC CONTROL PER THE CONTRACT IS REQUIRED FOR THE ENTIRE DURATION OF THE PROJECT, INCLUDING THE PUNCHLIST PERIOD. PAYMENT FOR TRAFFIC CONTROL THAT IS PROPERLY INSTALLED FOR LESS THAN A FULL MONTH SHALL BE BASED ON A PERCENTAGE BASIS OF THE TIME INSTALLED. TRAFFIC CONTROL PAYMENTS TO THE CONTRACTOR SHALL END 10 DAYS AFTER SUBSTANTIAL COMPLETION, ALTHOUGH PROPER TRAFFIC CONTROL MUST BE MAINTAINED UNTIL PUNCHLIST COMPLETION.

7. THE PURPOSE OF THE CONSTRUCTION SEQUENCE AND TRAFFIC HANDLING OUTLINED HEREIN IS TO DOCUMENT A VIABLE TCP THAT CAN BE UTILIZED TO CONSTRUCT THE PROJECT. IT IS THE BASIS OF ESTIMATION FOR THE TRAFFIC CONTROL BID ITEMS, AND IS TO BE UTILIZED AND IMPLEMENTED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

PRECINCT 3 SPECIFIC NOTES

1. ALL TRAFFIC SIGNS (STOP SIGNS, SPEED LIMIT SIGNS, ETC.) THAT ARE REMOVED IN PRECINCT 3 SHALL BE DELIVERED AT NO EXTRA PAY TO THE SPRING SERVICE CENTER AT 4603 SPRING CYPRESS ROAD, SPRING, TEXAS 77388. CALL 713-274-3100 TO MAKE DELIVERY ARRANGEMENTS. ALL SIGNS MUST BE REMOVED FROM POLES AND RETURNED

2. TREE PRESERVATION - CONTRACTOR SHALL PROVIDE PRECINCT 3 WITH CLEAR ACCESS TO ANY TREE DESIGNATED FOR PRESERVATION. CONTRACTOR IS RESPONSIBLE FOR SUCH TREES. CONTRACTOR SHALL CONTACT PRECINCT 3 PARKS ADMINISTRATION OFFICE AT (713) 274-0930, TWO WEEKS PRIOR TO CONSTRUCTION FOR TREE AND LANDSCAPING

3 PROVIDE PRECINCT 3 WITH A DRAWING OR DESCRIPTION FOR ANY PROPOSED "AS AUTHORIZED BY ENGINEER" OR "EXTRA WORK ITEMS" CONCERNING FENCE OR GATE CONSTRUCTION OR RELOCATION AND OBTAIN WRITTEN PRECINCT APPROVAL FOR THE WORK

4. MANHOLES SHOULD BE FLUSH TO NO MORE THAN 3" ABOVE SURROUNDING GROUND IN

5. USE THE MAXIMUM ALLOWED SPACING BETWEEN RAIL POSTS WHERE THE COMBINATION OF TRAFFIC AND PEDESTRIAN RAIL IS SPECIFIED.

PROJECT TITL	e: Tomba	ALL ISD	TRAFFIC	SIGNAL	DESIGNS
SHEET DESCR	GENERAL	NOTES	- PRECI	NCT 3	
DRAWN BY: DWQ					DATE: 11/16/23
CK'D BY: DWQ	SCALE: NTS				SHEET NO: 03 / 38

HCFCD NOTES

- 1. FENCES AND/OR OTHER ENCROACHMENTS IN THE HCFCD RIGHT-OF-WAY ARE NOT TO BE REMOVED UNLESS OTHERWISE STATED ON THE PLANS. IN CASES WHERE FENCE REMOVAL IS INDICATED ON THE PLANS, THE FENCE SHALL BE REMOVED AND PLACED NEATLY ON THE ADJACENT PROPERTY AT THE START OF CONSTRUCTION. WHERE THERE IS NOT ASEPARATE ITEM LISTED ON THE UNIT PRICE SCHEDULE, THE ENCROACHMENT REMOVAL IS INCIDENTAL TO SITEPREPARATION AND RESTORATION.
- DO NOT ENTER PRIVATE PROPERTY WITHOUT PROPER WRITTEN AUTHORIZATION FROM THE OWNER. PROVIDE COPY OF WRITTEN PERMISSION TO HCFCD.
- 3. STRIP VEGETATION AND TOPSOIL AND STOCKPILE FOR REUSE ONSITE. MATERIAL FOUND UNACCEPTABLE BY THE ENGINEER WILL BE REMOVED AND PAID AS EXCAVATION AND OFFSITE DISPOSAL. NO SEPARATE MEASUREMENT AND PAYMENT WILL BE MADE FOR STRIPPING, STOCKPILING AND PLACING ON-SITE TOPSOIL THE COST FOR THIS WORK WILL BE INCIDENTAL TO RELATED PAY ITEMS UNDER SPECIFICATION SECTION NUMBER 02315 LISTED ON THE UNIT PRICE SCHEDULE.
- 4. RIPRAP AND GRANULAR FILL MATERIAL REMOVED DURING EXCAVATION, MEETING SPECIFICATION SECTION NUMBER 02378, SHALL BE REUSED AS DIRECTED BY THE ENGINEER. REUSED MATERIAL WILL BE MEASURED AND PAID FOR AS EXCAVATION AND ON-SITE FILL UNDER SPECIFICATION NUMBER 02315. NO SEPARATE MEASUREMENT OR PAYMENT WILLBE MADE FOR PROCESSING, HANDLING, STOCKPILING, AND PLACING MATERIAL FOUND TO BE ACCEPTABLE FOR REUSE. UPON APROVAL OF THE ENGINEER, DISPOSAL OF NONCONFORMING RIPRAP AND GRANULAR FILL MATERIAL WILL BE MEASURED AND PAID FOR AS REMOVE AND DISPOSE OF CONCRETE RUBBLE UNDER SPECIFICATION NUMBER 02120, MATERIAL DISPOSAL.
- 5. THE LOCATION AND GRADE OF THE BACKSLOPE INTERCEPTOR STRUCTURES AND SWALES MAY BE
- 6. ADJUSTED IN THE FIELD BY THE ENGINEER AT THE TIME OF CONSTRUCTION. UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, THE BACKSLOPE INTERCEPTOR STRUCTURE SHALL BE SET AT A MAXIMUM DEPTH OF 2.5 FEET AND THE MINIMUM GRADE FOR BACKSLOPE SWALES SHALL BE 0.2%. ADJUST AND/OR EXTEND YARD DRAINS TO OUTFALL AT TOE OF CHANNEL PER STANDARD OUTFALL DETAILS. PAYMENT WILL BE INCIDENTAL TO SITE PREPARATION AND RESTORATION.
- COMPLETED SECTIONS OF THE CHANNEL WILL BE TURNED OVER FOR VEGETATION ESTABLISHMENT IN MAXIMUM 1500 LINEAR FOOT SEGMENTS. CONTRACTOR MAY NOT DISTURB GREATER THAN 1500 LF OF CHANNEL AT A TIME.
- 8. CLEAR AND REMOVE ALL SILT FROM CULVERTS, PIPES AND UNDER BRIDGES TO THE PROPOSED DESIGN GRADES TO PROVIDE POSITIVE FLOW.
- 9. LENGTHS AND DIAMETERS REPRESENTED ON PLANS ARE APPROXIMATE. CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFICATION PRIOR TO ORDERING MATERIALS.
- 10. ACTIVITIES THAT DISTURB BIRD HABITAT, INCLUDING BUT NOT LIMITED TO CLEARING, GRUBBING, AND IMPACTS TO STRUCTURES WHERE MIGRATORY BIRDS AND BALD EAGLES MIGHT NEST, REQUIRE A NEST HABITAT SURVEY, DO NOT PROCEED UNTL HARRIS COUNTY FLOOD CONTROL DISTRICT HAS CONDUCTED A NEST HABITAT SURVEY TO VERIFY ACTIVE MIGRATORY BIRD NESTS AND BALD EAGLE NESTS ARE NOT PRESENT. THE HARRIS COUNTY FLOOD CONTROL DISTRICT MUST PROVIDE WRITTEN AUTHORIZATION TO PROCEED.
- 11. WHEN BANK EROSION REPAIRS CALL FOR THE PLACEMENT OF 3"X5" GRANULAR FILL IN THE CHANNEL BOTTOM TO ESTABLISH A BASE FOR REBUILDING THE SLOPE. THE 3"X5" GRANULAR FILL SHALL BE LIMITED TO AN ELEVATION 6-INCHES ABOVE THE NORMAL WATER SURFACE ELEVATION LEVEL.
- 12. THE CONTRACT CONTAINS UNIT ITEMS FOR THE ESTABLISHMENT OF BEST MANAGEMENT PRACTICES FOR STORM WATER QUALITY PURPOSES. WHEN NOT CALLED FOR IN THE PROJECT PLANS, COORDINATE THE NEED AND LOCATION OF THESE UNIT ITEMS WITH THE DISTRICT REPRESENTATIVE ON SITE PRIOR TO PLACEMENT. THESE UNIT ITEMS INCLUDE, BUT ARE NOT LIMITED TO, REINFORCED SLIT FENCE FOR MATERIAL STOCKPILES, ANCHORED SODDING FOR DISTURBED EARTHEN AREAS OR AROUND CONCRETE AND CONCRETE INTERCEPTOR, AND STABILIZED CONSTRUCTION ACCESS FOR PROJECT SITE INGRESS/EORESS.
- 13. WHEN INCLUDED IN THE SCOPE OF WORK, THE PURPOSE OF DEEP PLOWING THE SLOPE OR BERM OF A CHANNEL IS TO BREAK UP THE DESICCATED SOILS AND TO ELIMINATE ANY VOIDS, OR RILLING CLOSE TO THE SURFACE OF THE SLOPE OR BERM. THE CONTRACTOR WILL DEEP PLOW THE SLOPE OR BERM TO A MINIMUM DEPTH OF 2 FEET IN AREAS CONTAINING VOIDS AND/OR RILLING, IN AREAS OF YOLDS ONLY, THE SURFACE FROM WHICH THE 2 FEET DEPTH IS MEASURED WILL FIRST BE KNOCKED DOWN AND LEVELED OFF. THE 2 FEET DEPTH OF 2 FEET DEPTH SE MEASURED FROM THIS NEW SURFACE. THE CONTRACTOR WILL THER BE MEASURED FROM THIS NEW SURFACE. THE CONTRACTOR WILL DETERMINE THE MEANS AND METHODS FOR DEEP PLOWING.)
- 14. TREES AND PLANTS LOCATED WITHIN A DESIGNATED TREE PROTECTION ZONE (TPZ) SHALL BE PRESERVED. REFER TO SPECIFICATION SECTION 01566 - TREE AND PLANT PROTECTION, FOR DETAILED INFORMATION ON TREE AND PLANT PRESERVATION PRACTICES AND PROCEDURES INCLUDING, BUT NOT LIMITED TO, ROOT PRUNING, VEGETATION TRIMMING, FENCING AND OTHER PRESERVATION OPERATIONS.
- 15. IF APPLICABLE, CONTRACTOR SHALL AVOID ANY WETLAND AREAS BEYOND THE LIMITS OF EXCAVATION AND CLEARING. AS THE FIRST WORK ITEM CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING FENCING OR OTHER MATERIAL TO IDENTIFY AND PROTECT THE IDENTIFIED WETLAND AREAS, UNLESS WETLANDS HAVE BEEN IDENTIFIED AND FENCED BY HOFCD PRIOR TO CONSTRUCTION AND CONTRACTOR HAS WRITTEN ENDENCE OF SUCH.

PRIVATE UTILITY NOTES

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 LOCATION 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 THESE UNDERGROUND UTILITIES.
- 2. THE CONTRACTOR SHALL CALL 1-800-344-8377 A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION TO HAVE UNDERGROUND LINES FIELD LOCATED.
- 3. 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, THE CONTRACTOR SHALL EXPOSE THE AT&T TEXAS/SWBT FACILITIES.
- 4. WHEN AT&T TEXAS/SWBT FACILITES 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.
- 5. 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 BURIED CABLES OR OTHER CABLES IN THE AREA. FOLLOW THE DIRECT BURIED CABLE PROCEDURES TO LOCATE THE AT&T TEXAS/SWBT DIRECT BURIED CABLES AS INDICATED IN THE AT&T TEXAS RESEARCH AND SIGNATURE PROCESS FOR AT&T TEXAS/SWBT FACILITIES.
- PLEASE CONTACT THE AT&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 EXCAVATION NEAR OUR AT&T TEXAS/SWBT FACILITIES.

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 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.

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

48 HOUR NOTICE:

CONTRACTOR SHALL NOTIFY HARRIS COUNTY PRIOR TO COMMENCING CONSTRUCTION AND/OR BACKFILLING ANY UTILITIES. CONTRACTOR(S) TO CONTACT PUBLIC REVIEW DEPARTMENT © (713-274-3931) OR (PUBLIC.REVIEW@HCPID.ORG).

NO.	REVISIONS	DATE	NAME			ALS CON		TATE OF TEX
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\square				ENGINEERING	DEPARIMENT	7.836 C	Tei (713) 270–5700 Fax (713) 271–3487 TBPE Firm Reg. No.: F-4528 TBPLS Firm Reg. No.: 100282-00	11/16/2023
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SHEET DESCR	GENERAL	NOTES -	PRIVATE	UTILITIES	
DRAWN BY:					DATE:
DWQ					11/16/23
CK'D BY:	SCALE:				SHEET NO:
DWQ	NTS				04/38

TOMBALL ISD TRAFFIC SIGNAL DESIGNS

PROJECT TITLE:

		Mueschke Rd at	Juergen Rd at		
		Destination Dr	Cypress Heights Dr	_	
arris County Specification	Description	Quantity	Quantity	Total	Unit
677, 1000	Furnish and Install 1" Schedule 40 PVC Conduit	180	0	180	LF
677, 1000	Furnish and Install 2" Schedule 40 PVC Conduit	1300	50	1350	LF
677,1000	Furnish and Install 3" Schedule 40 PVC Conduit	200	30	230	LF
677,1000	Furnish and Install 4" Schedule 40 PVC Conduit	250	30	280	LF
680, 1000	Furnish and Install HC10034 (34') Steel Strain Pole	3	0	3	EA
680, 1000	Furnish and Install 44' Steel Mast Arm	2	0	2	EA
680, 1000	Furnish and Install 20' Steel Mast Arm	1	0	1	EA
680, 1000	Furnish and Install 30' Steel Mast Arm	1	0	1	EA
680, 1000	Furnish and Install 40' Wood Strain Pole	0	4	4	EA
680, 1000	Furnish and Install Meter Pole, Service Loop and Safety Switch [Type D(MOD 1) (120/240) 000 (NS) SS (N) SP (O)]	1	1	2	EA
680, 1000	Furnish and Install Meter Pole, Disconnect [Type D(MOD 2) (120/240) 070 (NS) SS (E) SP (O)]	1	1	2	EA
411, 1000, DWGS	Furnish and Install Reinforced Concrete Pole Foundation (Class B2), (TYPE 10036), Including Anchor Bolts	60	0	60	VF
1000, DWGS	Furnish and Install Polymer Concrete Pull Box (Type D) with Lid and Apron	18	0	18	EA
1000, DWGS	Furnish and Install Polymer Concrete Ground Box with Lid and Apron	1	1	2	EA
686, 1000	Furnish and Install 15' Luminaire Arm with LED Luminaire Fixture with Shorting Cap	2	2	4	EA
692, 699, 1000	Furnish and Install LED (AC Input Voltage) Single Section Symbolic Pedestrian (Countdown) Signal Assembly, All Hardware	4	2	6	EA
692, 1000	Furnish and Install Pedestrian Push Button Station (Right Arrow, Left Arrow, Double Arrow)	4	2	6	EA
689, 690, 1000	Furnish and Install 12", One Way, 3 Section LED (AC Input Voltage) Horizontal Signal Assembly, All Hardware	8	6	14	EA
689, 690, 1000	Furnish and Install 12", One Way, 4 Section LED (AC Input Voltage) Horizontal Signal Assembly, All Hardware	1	1	2	EA
1000, DWGS	Furnish and Install Accuscan 300 Detection Cameras	1	3	4	EA
624, 648, 1000	Furnish and Install Span Wire Mounted "Street Name Sign (VARIES X 18")	4	3	7	EA
1000, 1210, SS2071	Furnish and Install Harris County ATC Controller	1	1	2	EA
1000, 1210, SS2071	Furnish and Install Ground Mount ITS Controller Cabinet Assembly (HC)(Housing 3) with Side Mounted Battery Backup Syster	1	1	2	EA
660, 1000	Furnish and Install 4" Solid White - Type 1 Reflectorized Pavement Markings	80	0	80	LF
660, 1000	Furnish and Install 24" Solid White - Type 1 Reflectorized Pavement Markings	93	73	166	LF
679, 1000	Furnish and Install #4 AWG, XHHW (Stranded) Wire	140	100	240	LF
679, 1000	Furnish and Install #8 AWG, Bare Copper (Solid) Wire with Grounding Hardware	1200	1100	2300	LF
679, 1000	Furnish and Install 2/C #14 AWG (IMSA 20-1) (Stranded) Cable	1300	1100	2400	LF
679, 1000	Furnish and Install 2/C #14 AWG (IMSA 50-2) (Stranded) Cable	6500	0	6500	LF
679, 1000	Furnish and Install 4/C #14 AWG (IMSA 20-1) (Stranded)Cable	400	350	750	LF
679, 1000	Furnish and Install 7/C #14 AWG (IMSA 20-1) (Stranded) Cable	1400	1400	2800	LF
SS678	Furnish and Install 1/4" 7 Wire Strand (Siemens-Martin) Zinc Coated Steel Wire Strand with Hardware	0	900	900	LF
679, 1000	Furnish and Install 5/16" 7 Wire Strand (Siemens-Martin) Zinc Coated Steel Wire Strand with Hardware	0	1300	1300	LF
SS 6009	Furnish and Install and Integrate Wireless Router For Traffic Signals	1	1	2	EA
SS 6010	Furnish and Install Cellular LTE Antenna For Traffic Signals	1	1	2	EA
SS 6011	Furnish and Install and Integrate Field Hardened Ethernet Switch For Traffic Signals	1	1	2	EA
SS 6011	Furnish and Install Rack Mounting Bracket For Field Hardened Ethernet Switch For Traffic Signals	1	1	2	EA
	Furnich and Install CATEE Patchcord With Poot	Λ	4	8	FΔ

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\square				DEPARIMENT	7.836 C	Tel (713) 270–5700 Fox (713) 271–3487 TBPE Firm Reg. No.: F-4528 TBPLS Firm Reg. No.: 100282-00	Correction and the second
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PROJECT TITL	E:	TOMBALL	ISD	TRAFFIC	SIGNAL	DESIGNS	
SHEET DESCR	IPTION:	BASIS	OF	ESTIMAT	Ε		
DRAWN BY: DWQ						DATE: 11/16	6/23
CK'D BY: DWQ	SCALE:	NTS				SHEET 05	NO: / 38



PROJECT TITL	E: TOMBALL ISD TRAFFIC SIGNAL DES	IGNS
	MUESCHKE RD AT DESTINATION DR	
SHEET DESCR	EXISTING CONDITIONS	
DRAWN BY: DWQ	SHEET 1 OF 1	DATE: 11/16/23
CK'D BY: DWQ	SCALE: 1"=40'	SHEET NO: 06 / 38





				ELECTRIC	CAL SERVIC	E DATA							
	ELECTRICAL SERVICE	SERVICE	SERVICE	SAFETY MAIN DISCONNECT			TWO-POLE PANELBD./		CIRCUIT	BRANCH	KVA		
	DESCRIPTION(SEE ELECTRICAL DETAILS – SERVICE SUPPORT SF & SP	CONDUIT SIZE (RMC)	CONDUCTORS NO./SIZE	SWITCH AMPS	SWITCH AMP/FUSES	CKT. BRK. POLE/AMP	CONTACTOR AMPS	LOADCENTER AMP RATING (MIN)	NO.	CKT. BRK. POLE/AMPS	LOAD		
	TY D (120/240)070(NS)SS(E)SP(0)	1 1/4"	3/#4	N/A	N/A	2P/70	20	70	TRAFFIC SIGNAL LIGHTING	1P/50 2P/20	<7.1		
				ots con				STATE OF TEXAS		PROJECT TIT	_E:	TOMBALL ISD TRAFFIC SIGNAL DE	SIGNS
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-NGINEE	RING DEPAR	IME		1836	11011 RIC Tel	CHMOND AVE. SUITE 700 HO (713) 270-5700 Fax (713) TBPE Firm Reg. No.: F-45 TBPIS Firm Reg. No.: 10075	USTON, TX. 77042) 271-3487 128 120	Ascento	, E	DRAWN BY: DWQ		SHEET 1 OF 1	DATE: 11/16/23
				EXAN		191201100 Aug. 10. 1002		VOIGT ASSOCIATES, INC. F-5333	/16/2023	CK'D BY: DWQ	SCALE:	1"=40'	SHEET NO: 08 / 38

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\square					DEPARIMENT	1836	Tei (713) 270–5700 Fox (713) 271–3487 TBPE Firm Reg. No.: F-4528 TBPLS Firm Reg. No.: 100282-00	1 Conterior
\Box						EXAP		VOIGT ASSOCIATES, INC. F-5333

TEC	TOR CHART			
	LOOP	SIZE	SETTING	FUNCTION
	L6-1D	6'X6'	PULSE	CALL AND EXTEND Ø6
	L6-2D	6'X6'	PULSE	CALL AND EXTEND Ø6
	L7-18	6'X40'	PRESENCE	CALL AND EXTEND Ø7
	L7-1C	6'X20'	PRESENCE	CALL AND EXTEND Ø7
	L8-1B	6'X40'	PRESENCE	CALL AND EXTEND Ø8
	L8-2B	6'X40'	PRESENCE	CALL AND EXTEND Ø8
	L8-1C	6'X6'	PULSE	CALL AND EXTEND Ø8
	L8-2C	6'X6'	PULSE	CALL AND EXTEND Ø8
	L8-1D	6'X6'	PULSE	CALL AND EXTEND Ø8
	L8-2D	6'X6'	PULSE	CALL AND EXTEND Ø8
	L8-11	6.XQ.	PULSE	SYSTEM DETECTOR
	L8-12	6'X6'	PULSE	SYSTEM DETECTOR

SEE "DETAIL A" IN CASE PRESENCE LOOPS CROSS CONC. EXPANSION JOINT

PROPOSED PEDESTRIAN SIGNAL UNITS

LED COUNTDOWN PEDESTRIAN SIGNAL HEADS



W1, W2 W3, W4





Pb1, Pb3

R10-3eL



Pb2, Pb4

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	2	3			1
	2	3			1
	2	4	3		5
	1	1	1		1
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	8	15			8
			1	1	
	1	1			1





PROJECT IIIL	TOMBALL ISD TRAFFIC SIGNAL DES	SIGNS
	MUESCHKE RD AT DESTINATION DR	
SHEET DESCR	IPTION: SIGNING AND PAVEMENT MARKINGS	
DRAWN BY: DWQ	SHEET 1 OF 1	DATE: 11/16/23
CK'D BY: DWQ	SCALE: 1"=40'	SHEET NO: 10 / 38



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	SHEET DESCR	IPTION: FXISTING CONDITIONS	
	DRAWN BY:	SHEET 1 OF 1	DATE: 11/16/23
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	PROJECT TITL	E: TOMBALL ISD TRAFFIC SIGNAL DE	SIGNS
	JU SHEET DESCR	JERGEN RD AT CYPRESS HEIGHTS DR	
	DRAWN BY:	SHEET 1 OF 1	DATE:
	CK'D BY: DWQ	SCALE: 1"=40'	SHEET NO: 12 / 38



10. CONTRACTOR	SHALL	RETURN	ALL	SALVAGEABLE	ITEMS	то	HARRIS	COUNTY
AS DIRECTED								

<u>CONTROLLER</u>

PROPOSED 2070LCS ADVANCED TRANSPORTATION CONTROLLER ASSEMBLY

CROSSWALK AND STOP LINE LOCATIONS.

Signal Phasing Diagram shall comply with Harris County Standard detection sequence and shall be determined during signal turn-on.

Phase 1	Phase 2	Phase 3	Phase 4
Westbound Left Turn	Eastbound Thru	Northbound Left Turn	Southbound Thru
Phose 5	Phase 6	Phase 7	Phase 8
Eastbound Left Turn	Westbound Thru	Southbound Left Turn	Northbound Thru

	ELECTRICAL	CH	ART												
ITEM	RUN NUMBER	(1)	2	3	4	5	6	\bigcirc	8	9	\bigcirc	(1)	12	(13)	1
LUMINAIRE & SIGN LIGHT	2/C #14 (IMSA 20-1)(STRANDED)			2	2		1			1	1	1	1		
PUSH BUTTON	2/C #14 (IMSA 20-1)(STRANDED)				2	2	1								
PED. SIGNAL	4/C #14 (IMSA 20-1)(STRANDED)				2	2	1								
VEH. SIGNAL	7/C #14 (IMSA 20-1)(STRANDED)				7	7	2	2	2	5	4	3	2	2	2
GROUND BARE	#8 BARE COPPER			1	1	1	1	1	1	1	1	1	1	1	1
POWER	1/C-#4 AWG XHHW (STRANDED)	2	2												
	2~#14 XHHW STRAND														
EOOI DETECTOR	2/C #14 (IMSA 50-2) (STRANDED)														
ACCUSCAN DETECTOR	4/C #18 AWG				3	3	1			2	2	2	2	1	1
	1 INCH PVC														
CONDUIT	2 INCH PVC			1											
CONDON	3 INCH PVC	1	1												
	4 INCH PVC				1	1									

ELECTRICAL SERVICE DATA

ELECTRICAL SERVICE	SERVICE	SERVICE	SAFETY	MAIN DIS	CONNECT	TWO-POLE	PANELBD./	CIRCUIT	BRANCH	KVA
DESCRIPTION(SEE ELECTRICAL DETAILS – SERVICE SUPPORT SF & SP	SIZE (RMC)	NO./SIZE	AMPS	SWITCH AMP/FUSES	CKT. BRK. POLE/AMP	AMPS	AMP RATING (MIN)	NO.	CKT, BRK, POLE/AMPS	LOAD
TY D (120/240)070(NS)SS(E)SP(0)	1 1/4"	3/#4	N/A	N/A	2P/70	20	70	TRAFFIC SIGNAL LIGHTING	1P/50 2P/20	<7.1

NO.	REVISIONS	DATE	NAME			RIS CON		STATE OF TEXAS
				HARRIS	COUNIY		Amani Engineering, Inc.	ANTHONY P. VOIGT
\square								B4845
\Box					DEPARIMENT	1836	Tel (713) 270–5700 Fox (713) 271–3487 TBPE Firm Reg. No.: F-4528 TBPLS Firm Reg. No.: 100282-00	11/16/2023
\square								VOIGT ASSOCIATES, INC. F-5333

N 300 E	DETECTOR CHART
SETTING	FUNCTION
ESENCE	CALL AND EXTEND ø1
ESENCE	CALL AND EXTEND Ø2
ESENCE	CALL AND EXTEND Ø6
ESENCE	CALL AND EXTEND Ø8
ESENCE	CALL AND EXTEND Ø8

PROPOSED PEDESTRIAN SIGNAL UNITS

ACCESSIBLE PEDESTRIAN PUSH BUTTONS





PROJECT TITL	^{E:} TOMBALL ISD TRAFFIC SIGNAL DES	SIGNS							
JUERGEN RD AT CYPRESS HEIGHTS DR									
SHEET DESCR	IPTION: TRAFFIC SIGNAL LEGEND								
DRAWN BY: DWQ	SHEET 1 OF 1	DATE: 11/16/23							
CK'D BY: DWQ	SCALE: 1"=40'	SHEET NO: 13/38							





LOOKING WEST ON JUERGEN RD AT CYPRESS HEIGHTS DR NTS

SPECIAL NOTES:

- I. SIGNAL CABLE LASHED TO MESSENGER WIRE WITH STAINLESS STEEL SUPPORTS (2 EVERY 18" C-C), PANDUIT CATALOG
 MLT 4H-LP OR APPROVED EQUAL.
 2. ONE (1) 5/16" 7 WIRE STRAND (SIEMENS MARTIN) GALVANIZED STEEL CATENARY SYSTEM (ONE PER SIGNAL) AND TWO (2) 1/4" 7 WIRE STRAND GALVANIZED STEEL CATENARY SYSTEM (HORIZONTAL).
 3. SADUE TYPE CLAND (TYPICAL FOR ALL SIGNAL CONNECTION)
- •3. SADDLE TYPE CLAMP (TYPICAL FOR ALL SIGNAL CONNECTION AND MESSENGER CROSSINGS).
- •4. LED LUMINAIRE ON 15' ARM.

DATE NAME

- •5. 40' WOOD POLE (TYPICAL ALL POLES).
- •6. POLE CAP.

NO.

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REVISIONS

7. ALL HARDWARE SHALL BE GALVANIZED PER THE APPROPRIATE HARRIS COUNTY SPECIFICATION.

HARRIS COUNTY

ENGINEERING DEPARTMEN

- 8. ALL POLES, CONTROLLER AND METER SHALL BE GROUNDED WITH
 8 BARE SOLID COPPER WIRE CONNECTED TO %" DIA.
 COPPER CLAD STEEL GROUND ROD BURIED 8' INTO THE GROUND.
- SEE TRAFFIC SIGNAL LAYOUT SHEETS FOR CONDUITS REQUIRED. •9.
- SEE HARRIS COUNTY SPECIFICATIONS FOR ADDITIONAL INFORMATION •10. ON WOOD POLE DETAILS. • 11.
- CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE ALL UTILITIES AND CULVERTS IN THE WAY OF CONSTRUCTION. •12. PHOTOELECTRIC CELL FOR OPERATION OF LUMINAIRES AND
- LEFT TURN SIGN LIGHTS (ENCLOSURE MOUNTED).



Amani Engineering, Inc. Engineers Construct 11011 RICHMOND AVE. SUITE 700 HOUSTON, TX. 77042 Tel (713) 270-5700 Fax (713) 271-3487 TBPE Firm Reg. No.: F-4528



CONTROLLER CABINET.

•14. STREET NAME SIGNS, SIGN CLAMPS SHALL BE SUBMITTED TO HARRIS COUNTY FOR APPROVAL. •15. SIGNAL CABLES SHALL GO TO THE FURTHEST SIGNAL HEAD FROM THE

•13. ALL PEDESTRIAN SIGNALS SHALL BE LED COUNTDOWN TYPE.

•16. SIGNAL CABLES SHALL ALWAYS ENTER THE RIGHT SIDE OF THE SIGNAL HEAD (ADJACENT TO THE GREEN INDICATION) AND EXIT THE LEFT SIDE (ADJACENT TO THE RED INDICATION) WHEN NECESSARY.

PROJECT TITL	E: TOMBALL ISD TRAFFIC SIGNAL DES	SIGNS								
JUERGEN RD AT CYPRESS HEIGHTS DR										
SHEET DESCR	IPTION: TRAFFIC SIGNAL ELEVATIONS									
DRAWN BY: DWQ	SHEET 1 OF 1	DATE: 11/16/23								
CK'D BY: DWQ	SCALE: 1"=40'	SHEET NO: 14 / 38								



PROJECT TITL	E: TOMBALL ISD TRAFFIC SIGNAL DES	SIGNS							
JUERGEN RD AT CYPRESS HEIGHTS DR									
SHEET DESCR	IPTION: SIGNING AND PAVEMENT MARKINGS								
DRAWN BY: DWQ	SHEET 1 OF 1	DATE: 11/16/23							
CK'D BY: DWQ	SCALE: 1"=40'	SHEET NO: 15 / 38							



0.0	MD 1	NI MAST ADV/C	STRAIN D		1.1162/01/21		(1 050 55		
NOM		ISHID FACH CLAME	- STRAIN PO		NOMINAL	<u>re arms</u> _ arm l	ENGTH Q	UANTITY	
AF	RM	AND STRAIN POLE	WITH THE	ARM	15' ARM	1		2	
LEN	IGTH	FOLLOWING HARD	VARE ATTAC	HED:					
Lc	Lc	HANDHOLE AT BA	SE, POLE C	AP, ETC.	ANCHO			S (1 DF	P POLE)*
FT.	FT.	DESCRIPTION	QUAN	VTITY	ANC	CHOR	BOLT		(TOLL)
20		20 - HC10030			BC	DLT	HOLE		
0.5		25 - HC10030	1		DIAN	1ETER	DIAMETE	R QI	JANTITY
25		25 - HC10034			2)	Y4"	6'-3 ½"		4
30		30 - HC10030							
		30 - HC10034							
35		35 - HC10030			* EACH	ANCHO	R BOLT ASS	SEMBLY	CONSIST OF
		35 - HC10034			TOP	- OLLOWI AND BO	NG: TTOM TEMP	LATES 4	ANCHOR
40		40 - HC10030			BOLTS	S, 8 NU	TS, 8 FLAT	, WASHE	RS, 4 LOCK
		42 - HC10030			WASH	ERS AN	ID 4 NUT A	NCHOR [DEVICES
42		42 - HC10034			POLE	FOUND	r standar Ation Deta	u urawi Ils.	NG STRAIN
4.4		44 - HC10030			(TEMF	PLATES	MAY BE RE	MOVED F	FOR
		44 - HC10034	2	2	SHIPN	MENT)			
20	20	20/20 - HC1003	0		MATER				
	20	20/20 - HC1003 25/20 - HC1003	4		ROUND		-ON MAST	ASTM /	570 CR50 OR
	20	25/20 - HC1003	4		ARM A	ND STR	AIN POLE	ASTM A	4572 GR50
25	25	25/25 - HC1003	0		OR OC	TAGONA	L MAST		
	25	25/25 - HC1003	4		ARM A	ND SIR	AIN PULE		
	20	30/20 - HC1003	0		PLATE:	S (1)		ASTM A	436 OR
	20	30/20 - HC1003	4					AS/2 C	K5U
30	25	30/25 - HC1003	0		STEEL	CABLE		ASIM A	A475, 7 WIRL,
1	20	30/30 - HC1003	0				-		
1	30	30/30 - HC1003	4		(1) EITH PLATES	HER OF M∆∨ ⊏	IHE MATER	IALS LIS	DRAWINGS
	20	35/20 - HC1003	0		DO NOT	T SPECI	TY A PARTI	CULAR A	STM
	20	35/20 - HC1003	4		DESIGN	ATION.			
	25	35/25 - HC1003	0		VIBRA		WARNIN	NG.	
35	25	35/25 - HC1003	4		CLAMP-	ON MA	ST ARMS S	TRUCTUR	ES OF
	30	35/30 - HC1003	4		APPROX	(IMATEL)	Y 40 FEET	OR LONG	er are
	35	35/35 - HC1003	0		SUBJEC	T TO H.	ARMONIC VE	RTICAL	VIBRATIONS IN
	35	35/35 - HC1003	4		AFROFI	ASTIC C	HARACTERI	STICS OF	A FFW OF
	20	40/20 - HC1003	0		THE MY	RIADS (OF POSSIBLE	COMBIN	VATION OF
	20	40/20 - HC1003	34		THE FO	LLOWING	: SIGNAL N	UMBERS	, WEIGHTS
	25	40/25 - HC100	0		AND PC	SHIONS	; PRESENCE	L OF AD	DITIONAL
40	30	40/30 - HC1003	50		AND CA	MERAS:	ARM-WIND) ORIENT	ATION: AND
10	30	40/30 - HC1003	34		ARM-P0	DLE STI	FNESS.		
	35	40/35 - HC1003	50		SUCH V	IBRATIO	NS MAY CA	USE FA	NGUE DAMAGE
	35	40/35 - HC1003	54		GALLOP	STRUC	NODERATE	WAY LEA WIND CO	D IU NDITIONS
	40	40/40 - HC1003	54		WHICH I	MAY FU	RTHER DAM	AGE THE	STRUCTURE
	20	42/20 - HC100	0		AND AL	ARM TH	E PUBLIC.		
	20	42/20 = HC1003 42/25 = HC1003	50		THE TR	AFFIC S	IGNAL CLAN	IP-ON N	IAST ARMS
	25	42/25 - HC1003	54		MPH WI	ND CON	DITIONS AF	TFR INST	ALLATION OF
42	30	42/30 - HC1003	50		SIGNAL	HEADS	AND ANY A	ATTACHM	ENTS. IF
	30	42/30 - HC1003	54		VERTICA	AL MOVE	MENTS WITH	на тот	AL EXCURSION
	35	42/35 - HC1003	54		(MAXIMU	JM UPW	ARD EXCUR	SION TO	MAXIMUM
	40	42/40 - HC100	о4 ки			ARD EXU	VRSION) U V R" ADE C	F MORE	IHAN AT THE ADM
	20	44/20 - HC1003	30		TIP, A		G PLATE SH	IALL BE	FITTED TO
	20	44/20 - HC1003	54		THE AR	м.			
	25	44/25 - HC1003	54		THIS VI	SUAL IN	SPECTION S	SHALL BE	E REPEATED
44	30	44/30 - HC1003	34		THAT C	ouid a	FFECT ITS	AFROFIA	STRUCTURE
	35	44/35 - HC100.	54 M		RESPON	ISE. EXC	CESSIVE VIB	RATIONS	SHALL NOT
	40	44/40 = HC1003	34		BE ALL	OWED T	O CONTINUE	FOR MO	ORE THAN
	44	44/44 - HC1003	54		IWO DA	YS.			
CLA	MP-C	ON MAST ARM(S) (TYPES) – S	TRAIN POL	.E				
	-	TYPE I MAST ARM	(1 SIGNAL)	IYPE II M	AST ARM	(2 SIGN	AL) TYPE T	MASTA	RM (1 SIGNAL)
NOM	IINAL	ARM AND STRAN	POLE WITH	ARM AND	STRAIN F	POLE WI	TH ARM A	ND STRA	IN POLE WITH
AF	RM IGTH	THE FOLLOWING H	ARDWARE	THE FOLL	OWING HA	RDWARE	THE FC	LLOWING	HARDWARE
(L	.c)	1-CLAMP WITH BO	CONNECTOR	ATTACHEL	J:1-SIGNA ES. 2-CG	R BRAC	ASSEM	HED: 2—S BLIES 3-	IGNAL BRACKEI
		WASHES	210 1010	CONNECT	OR, 1-CLA	MP WIT	H CONNE	CTOR, 1-	-CLAMP WITH
		DESCRIPTION	OLIANITITY	BOLTS AN	ND WASHE	S	BOLTS	AND WA	SHES
	1.	20 - HOLDORD	QUANIIIY	DESCR	IF HUN	QUANT	DES	URIP HON	QUANIIIY
		20 - HC10033	1						
		25 - HC10030		25 - H	C10030				
		25 - HC10034		25 — H	C10034	1			
				30 - H	C10030				
				30 - H	C10034		75	1101007	
				1 35 - H	C10030		35 -	HC1003	4
				<u> </u>	0.0004		40 -	HC1003	0
							40 -	HC1003	4
							42 -	HC1003	0
							42 -	HC1003	4
							44 -	HC1003	
L							44 -	101003	
NO	IE:	ENGINEER S	HALL C	OMPLE	IL SHI	PHNG	PARTS		TABLES
		PROJECT TITLE:	TOMRA	LL ISD	TRAF	FIC	SIGNAI	DESIC	SNS
			10000					52010	
			S	IANDA	ARD DE	<u>I AIL</u>	S		STANDARD
		SHEET DESCRIPT	ION:	1.4.1.4.4					
		DRAWN BY	AND DI	JAL M	ADIA	rw A	ASSEMB		JUNA
ER 20, 2	2023	BSH	DETAI	LS (10	O MPH	H WIN	D ZON	E)	8/18/17
		CK'D BY: SC	ALE:	、 -				,	SHEET NO:
		BSH	NON	E					16 / 38

SHIPPING PARTS LIST



		BE	ND	RISE UNDER	DEVIATIO	n from	CL/	AMP	MAST	ARM (CUT AN	ID ANGLE	
		RA	DIUS	LOAD HORIZONT		ORIZONTAL (UNLOADED)		ANGLE		FOR CLAMI		P ATTACHMENT	
	"b ₁ "	"C"	"c1"	"Y"	"Z"	"β"	"ø"	"ø ₁ "	Lc	CUT	В	D ₁	
	FT.	FT.	FT.	FT.	IN.	DEG.	DEG.	DEG.	FT.	IN.	ANGLE	DIA.(IN.)	
"	±1.0'	21.5'	±1.0'	3'-10"	3 ¼"±½"	±2.0*	29'	±1.0°	20	3 %"	24°	8"	
"	±1.0'	21.5'	±1.0'	3'-10"	3 ¼"±½"	±2.0*	29'	±1.0°	20	3 %"	24°	8"	
"	±1.0'	27.0'	±1.0'	3'-10"	3 ¼"±½"	±2.0*	24'	±1.0°	25	3 %"	24°	9"	
"	±1.0'	27.0'	±1.0'	3'-10"	3 ¼"±½"	±2.0*	24'	±1.0°	25	3 %"	24°	9"	
,,	±1.0'	27.0'	±1.0'	3'-10"	6 ¼"±½"	±2.0'	24'	±1.0°	30	4 %6"	25'	10"	
**	±1.0'	27.0'	±1.0'	3'-10"	6 ¼"±½"	±2.0*	24'	±1.0°	30	4 %16"	25°	10"	
	±2.0'	27.0'	±1.0'	3'-10"	8 ½"±¾"	±2.0°	24'	±1.0°	35	4 %16"	25'	10"	
	±2.0'	27.0'	±1.0'	3'-10"	8 ½"±¾"	±2.0°	24'	±1.0°	35	4 %16"	25.	10"	
%"	±2.0'	46.0'	±1.0'	3'-10"	4 ¼ ₆ "±¾"	±2.0*	15°	±1.0°	40	2 3⁄4"	8.	11"	
8"	±2.0'	46.0'	±1.0'	3'-10"	4 ¼ ₆ "±¾"	±2.0*	15*	±1.0°	40	2 ¾"	8.	11"	
"	±2.0'	46.0'	±1.0'	3'-10"	10 %"±¾"	±2.0*	14.5	±1.0°	42	3 ¼6"	15°	11"	
32	±2.0'	46.0'	±1.0'	3'-10"	10 %"±¾"	±2.0'	14.5	±1.0°	42	3 ¼6"	15	11"	
**	±2.0'	46.0'	±1.0'	3'-10"	10 %"±¾"	±2.0*	14.5	±1.0°	44	3 ¼6"	15	11.5"	
"	±2.0'	46.0'	±1.0'	3'-10"	10 %"±¾"	±2.0*	14.5	±1.0*	44	3 ¼6"	15°	11.5"	

	PROJECT TITL	NS	
		STANDARD DETAILS	TRAFFIC STANDARD
	SHEET DESCR	MAC	
MBER 20, 2023	DRAWN BY: BSH	FABRICATION DETAILS (100 WIND ZONE)	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 17 / 38



- 1. Luminaire conductors shall not be looped through
- 2. Electrical system to include an equipment grounding conductor noted here as "G". All exposed metal parts, lightning arrestors and surge protectors are to be bonded to grounding conductor.
- 3. Bond neutral bus to cabinet bonding lug when required
- elsewhere on the plans or when required by the Engineer. 4. Photocell, when required, shall be mounted at top of pole or in enclosure as shown on Electrical Details - Service Schematics and Support Type TP (overhead) and Electrical Details — Service Enclosure & Notes and as required by descriptive code.
- 5. Roadway lighting fixtures, when required, shall be in accordance with the material and construction methods of the Item, "Roadway Illumination Assemblies" except for the test period for proper operation of the luminaires, Installed roadway lighting luminaires and internally lighted street name signs shall be tested for proper operation as a part of the associated traffic signal system. 6. Internally lighted street name signs (ILSN), when
- required, shall be in accordance with the Item "Internally Lighted Street Name Signs". Because of the electrical isolation of ILSN hinges, a #12 green
- grounding conductor shall be run to the ILSN fixture. 7. Install ground rod at alternate location when directed by the Engineer. Maintain a minimum of 8 ft in contact with the earth.

	PROJECT TITL	^{E:} TOMBALL ISD TRAFFIC SIGNAL DESIG	NS
		TRAFFIC STANDARD	
	SHEET DESCR	IPTION: CTRICAL DETAILS: TYPICAL TRAFFIC	ED-TS
MBER 20, 2023	DRAWN BY: BSH	SIGNAL SYSTEM DETAILS	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 18 / 38

SERVICE ENCLOSURE NOTES:

- VI. Service Assembly Enclosures. All service assemblies and enclosures shall be UL Listed for the intended purpose.
 - A. Shop built or shop assembled service assemblies (all types except Type T and Type D without lighting contactor) shall be built or assembled by a UL Listed Industrial Control Panel shop and shall have a unique serial numbered UL Label with the words "LISTED ENCLOSED INDUSTRIAL CONTROL PANEL". The same or an additional label shall have the name, location, and phone number of the shop, the UL file number of the shop, the shop order or drawing number, date of manufacture or assembly, and the line voltage. The enclosure shall also be labeled "SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT".

B. Conduit entries into the top of all enclosures shall have threaded hubs.

- C. All enclosures shall be permanently labeled on the front door "DANGER HIGH VOLTAGE" and the equipment supplied (i.e. LIGHTING, LANDSCAPING, SIGNALS, TRAFFIC MANAGEMENT). Unless otherwise approved by the Engineer, the labeling shall be minimum 1 inch letters and shall be applied by stenciled paint or stick-on decal.
- D. Type GS enclosures for service types D, T, and the circuit breaker panelboard of service type C shall be made from pre-galvanized steel sheeting, hot dipped galvanized steel, or powder coat painted steel. Painted enclosures shall be painted inside and outside; galvanized enclosures may be painted. Unless otherwise approved by the engineer, painted enclosures shall be gary, beige, or white. Ponelboard/loadcenter enclosures shall be UL type 3R, shall have a dead front trim, and shall have a door with provisions for padlocking. Auxiliary enclosures, when required for illumination or other control equipment, shall be UL type 12 as described in ILP below for service types A and C. in III.E. below for service types A and C.
- E. Type GS enclosures for service types A and C shall meet the requirements of type GS in III.D. above for service types D and T except that the enclosure shall be a UL type 12 enclosure conforming to UL 50 and shall meet additional requirements of this paragraph. The enclosure door shall have a rolled lip around all sides of the enclosure opening, a continuous hinge, and a padlock handle. The door shall have a mechanically attached data packet constructed of either thermoplastic or metal and measuring at least 12 inches by 12 inches. The main disconnect operator shall be flange-mounted, shall interlock the door when in the "on" position, and shall be padlockable in both the "on" or the "off" positions. Enclosure shall include an equipment mounting panel installed inside the enclosure on collar studs or tapped bosses, and constructed of either 12-gauge steel or 0.10 inch thick aluminum. Enclosure shall be padlock Color shall be white or gray. Condensation drainage shall be provided through 0.25 inch drain holes drilled in the bottom of the enclosure at two diagonal opposing corners. The contractor shall place in the service enclosure a laminated copy of the "as built" electrical plans showing the equipment supplied by that electrical service and applicable wiring diagrams. "as built" electrical plans showing the equipment supplied by that electrical service and all applicable wiring diagrams, layouts, and ED and RID standard sheets.
- F. Type SS Stainless steel enclosure shall be meet all the requirements above for the respective type GS except that the enclosure shall be UL type 4X conforming to UL 50. Type GS circuit breaker panel housed in a stainless steel UL type 4X enclosure conforming to UL 50 shall be considered complying with the Type SS requirements for Service types D & T.
- G. Type PS enclosure shall be as detailed and specified on ED(8).
- VII. Powder Coat Paint. Powder coating shall be either a polyester thermosetting resin, a zinc rich primer with a TGIC (triglycidyl isocyanurate) powder overcoating, or a zinc-rich epoxy powder, applied by either electrostatic spray or fluidized bed immersion, high temperature oven cured, high density, low gloss, 4 mil thick (minimum), coating. Adhesion shall meet the 5A or 5B classifications of ASTM D3359. Finish shall be uniform in appearance and free of scratches.
- VIII. Main Disconnect. Main disconnect device shall be either a fusible switch or a circuit breaker, as specified in the Electrical Service Data, shall be two pole, and rated for the voltage and amperage specified.
 - A. Switch shall be UL and NEMA Type HD (heavy duty) flange-mounted in the service assembly enclosure. Switch shall have clips for Class R fuses.
 - B. Circuit breaker shall be a UL Listed thermal-magnetic circuit breaker flange-mounted in the service assembly enclosure. Circuit breakers shall have a minimum interrupting rating of 14,000 Amps. Contractor shall verify that the available fault current is less than the circuit breaker amps interrupting capacity (AIC) rating and shall provide documentation from the Utility to the Engineer. Documentation shall be submitted at the same time as other electrical submittals. Circuit breaker shall be UL Listed to UL489.
- IX. Lightning Arrester. Arresters shall be MOV-type secondary surge arresters rated 650 volts for 240/480 volt services or 175 volts for 120/240 volt services and shall meet ANSI, IEEE, UL, and NEMA standards. Mounting brackets shall be provided for mounting the arresters inside the service assembly enclosures, unless otherwise specified by the Engineer. Lightning arrester leads shall be run as straight and shared as practical. straight and short as practical
- X. Control Circuit. Control circuit protection shall be either a 10 or 15 amp circuit breaker.
- XI. Control Station ("H-O-A" Switch). Control station shall be a maintained-contact, three position selector switch in a UL type enclosure. Switch shall be rated 600 volts and shall be fitted with "Hand-Off-Auto" legend.
- XII. Photo Electric Control. Photo electric control shall consist of a photocell, internal lightning arrester, and relay or bimetallic switch mounted inside a weatherproof enclosure with standard 3-prong twist lock photocell plug and receptacle. The enclosure shall be made of poly-acrylic with clear acrylic window. Enclosure chassis shall be molded phenolic plastic. The photocell shall have a polyethylene gasket, and shall have a hermetically sealed cadmium sulfide cell. The arrester shall have an enclosed type explusion arrester rated 2.0 kV spark over with 10,000 amps follow-through. Relay or switch shall be time delay type with normally closed contacts. Photo electric control shall be rated 1800 VA, 105-285 volts.

Enclosure mounted photocells shall be the same as above except that the photocell shall be mounted inside the enclosure. The enclosure shall have two acrylic paned windows, or other material approved by the Engineer, one on each side of the enclosure. Each window shall be rectangular approximately 1 inch by 2 inch, round 2 inch diameter, or as otherwise approved by the Engineer. The photocell shall be mounted in a position to receive light from one window. Top of pole mounted photocells shall be mounted as shown on Electrical Details - Service Enclosure & Notes.

The Contractor shall be responsible for proper operation of the photo-electric control. The Contractor shall move and/or adjust or shield the photocell from stray or ambient nightime light or shall make any other adjustments required for proper operation. The photocell shall face North when practicable. Unless otherwise shown on the plans, the photocell shall turn on the illumination system at 1.0 +(-) 0.5 footcandle and turn off the illumination system at 2 footcandle higher than turn on.

- XIII. Lighting Contactor. Lighting contactor shall be a UL Listed lighting contactor, two-pole or multipole as required, electrically held type designed to control high pressure sodium lighting loads, with silver alloy double break contacts rated at 480 volts or 600 volts.
- XIV. Power Distribution Terminal Blocks. Power distribution terminal blocks shall be rated for 600 volts and shall be used for line side connections to branch circuit breakers where more than one circuit breaker is required. Lugs on blocks shall be properly sized for conductors being used. Only one conductor shall be placed under each lug.
- XV. Neutral/Ground Bus. Neutral/ground bus shall be a factory made bus permanently bonded to the enclosure with properly sized lugs for grounding and neutral conductors.

SCHEMATIC LEGEND

- Safety Switch (when required)
- Meter (when required)
- 2 Meter (when required)
 3 Service Assembly Enclosure
 4 Main Disconnect (Switch or Breaker, (See Electrical Service Data)
 5 Lightning Arrestor
 6 Circuit Breaker, 15A
 7 Auxiliary Enclosure
 8 Control Station ("H-O-A" Switch)
 9 Photo Electric Control (enclosure-mounted shown)
 10 Lighting Contactor

11	_	Power	Distribution	Terminal	Blocks	
12	_	Neutro	/Ground Bu	is is		

- 12 Neutral/Ground Bus
 13 Branch Circuit Breaker (See Electrical Service Data)
 14 Circuit Breaker Panelboard (See Electrical Service Data)
 15 Load Center











84845 OBJEN NOVE VOIGT ASSOCIATES, INC. F-5333



TYPE D SERVICE NOTES:

Photocell and lighting contactor shall be located in the same UL type 3R enclosure. Photocells shall have a window on each side of enclosure to allow operation. Photocell/contactor and breaker area shall have separate dead front trim. Enclosure, except for RT and PS supports, shall not exceed 36 inches in height or 15 inches in width unless approved by the engineer.

	PROJECT TITL	^{E:} TOMBALL ISD TRAFFIC SIGNAL DESIG	NS
		STANDARD DETAILS	TRAFFIC STANDARD
	SHEET DESCR	IPTION: RICAL DETAILS: SERVICE ENCLOSURE	ED-SE
MBER 20, 2023	DRAWN BY: BSH	AND NOTES	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 19 / 38



1. Support type SP and SF: Fabricated from 4" x 4" x 3/16 " square structural tubing, ASTM A500 Grade A or G or equal. Base plate shall be 3/4 " plate, ASTM A36 or equal. All equipment and conduit shall be mounted on galvanized channel strut, 1 1/2 " x 1 5/8 " x 12 gauge galvanized steel channel (Unistrut, Kindorf, B-line or equal) clamped with channel hardware, bolted or welded to vertical member as approved by the Engineer.

3. All Steel Poles (SP and SF) shall be hot-dip galvanized after fabrication. Poles for overhead service shall be fitted with eyeblot or similar fitting, as approved by the utility company, for

4. All conduit and conductors attached to the electrical service and within 12 inches of the electrical service will not be poid for directly, but shall be subsidiary to the electrical service. All conduit and conductors from the utility company pole to the point 12 inches from the electrical service, including conduit and conductors required for the utility pole riser when furnished by

5. All mounting hardware and installation details of services shall be in accordance with utility

6. Anchor bolts for underground service supports shall be 3/4 " x 18" x 4" (dia. x length x hook length). Anchor bolts for overhead services shall be 3/4 " x 56" x 4". Anchor bolts shall be

7. Conduit for grounding electrode conductor (ground rod wire) shall be 1/2 " PVC all other conduit on electrical services shall be rigid metal conduit. Service entrance conduit size shall be as shown elsewhere. Conduit for branch circuit entry to enclosure shall be the same size as that shown on the layout sheets for branch circuit conduit. Rigid metal conduit shall extend to the rigid metal elbow and then be coupled to the type conduit shown on the layout for that particular branch circuit. RMC

8. If pole is painted, each separate painted piece shall have a bonding jumper attached to a drill and

	FROJECT IIIL	- TON	MBALL	ISD	TRAFFIC	SIGNAL	DESIG	NS
			STA	NDA	RD DETAI	LS		TRAFFIC STANDARD
	SHEET DESCR	RICAL	DETA	ILS:	SERVICE	SUPPOR	TS	ED-SFSP
/BER 20, 2023	DRAWN BY: BSH		٦	TYPE	SF AND	SP		DATE: 8/18/17
	CK'D BY: BSH	SCALE:	NONE					SHEET NO: 20 / 38

ELECTRICAL SERVICE NOTES

All work, materials, services, and incidentals, whether or not specifically shown on the plans, which may be necessary for a complete and proper electrical service installation as specified in the plans to obtain electrical power (except extending primary lines to electrical service) shall be paid for, performed, furnished and installed by the Contractor. The Contractor shall contact the Utility for metering and shall comply with all Utility requirements.

Primary line extensions, when required, shall be paid for under Force Account work. The Contractor shall consult with the appropriate Utility to determine costs and requirements, and shall coordinate the Utility's work as approved by the Engineer. The contractor shall be reimbursed only the amount billed by the Utility. No additional amount for supervision of the Utility's work will be paid.

Materials shall be new and unused, and materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards and shall be Underwriters Laboratories (UL) Listed. Electrical Service conduits, conductors, disconnects, contactors, circuit breaker panel sizes, and branch circuit breakers, shall be as shown in the Electrical Service Data elsewhere in the plans. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection.

The Contractor shall submit for approval no less than five (5) copies of catalog cut sheets on electrical service materials. Submittals shall be legible and shall be marked to indicate which product on a cut-sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, Contractor shall furnish to the County such warranties or guarantees.

- I. Safety Switch. A safety switch, placed ahead of the meter, shall only be used when specified by the Utility and is shown on the Electrical Service Data. The switch shall be UL Listed, heavy duty type, 600 volt, unfused, with a UL type 3R enclosure and equipped with a solid neutral (s/n) assembly. The switch shall be padlockable in the "on" position.
- II. Service Type. Electrical service types A, C, D, and T shall be as schematically detailed on ED(4). Other service types shall be as detailed elsewhere on the plans.
- III. Branch Circuit Breakers. Circuit breakers shall be thermal magnetic and have a minimum interrupting capacity of 10,000 amps and a voltage rating compatible with their use. Circuit breakers shall be sized as shown on electrical service data table. Circuit breakers in panelboards and load centers shall be full size and designed exclusively for the panelboard or load center in use. Tandem and half-width breakers shall not be used. All circuit breakers shall be permonently and clearly marked identifying the circuit or device attached. Circuit breakers shall be UL Listed to UL489. Circuit breakers shall be switch duty.
- IV. Circuit Breaker Panelboard. Panelboards shall be UL Listed and shall meet Federal Specification W-P-115b, Type 1, Class 1 requirements. Panelboards shall have copper busses, a minimum of 12 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Panelboards shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be bolt-in type only.
- V. Circuit Breaker Load Center. Load centers shall be UL Listed, and shall meet Federal Specification W-P-115c, Type 1, Class 2 requirements. Load centers shall have copper busses, a minimum of 4 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Load centers shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be plug-in type only. Load centers for type T services shall accommodate a maximum of 6 one-pole breakers.



NO.

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SERVICE SUPPORT TYPE I 120/240 VOLTS - THREE WIRE (INSTALL PHOTOCELL AND LIGHTING CONTACTORS WHEN SHOWN ON ELECTRICAL SERVICE DATA)

SCHEMATIC LEGEND

- 1 Safety Switch (when required)
- 2 Meter (when required)
- 3 Service Assembly Enclosure
 4 Main Disconnect (Switch or Breaker,
- See Electrical Service Data)
- 5 Lightning Arrestor
- 6 Circuit Breaker, 15A
- 7 Auxiliary Enclosure
- 8 Control Station ("H-O-A" Switch) 9 - Photo Electric Control (enclosure-
- mounted shown)
- 10 Lighting Contactor
- 11 Power Distribution Terminal Blocks
- 12 Neutral/Ground Bus
- 13 Branch Circuit Breaker
- (See Electrical Service Data) 14 - Circuit Breaker Panelboard
- (See Electrical Service Data) 15 - Load Center
- (See Electrical Service Data)
- ------ Power Wiring ------ Control Wiring





TIMBER POLE NOTES

- Conduit and conductors attached to service pole and underground within 12 inches of service pole shall not be paid for directly but shall be subsidiary to the service pole.
- Install photo electric control on north side of pole or in service enclosure as required. See Electrical Service Data.
- Attach service enclosure with galvanized channel (Unistrut, Kindorf, or equal). Gain pole two places to provide flat surfaces. Paint ends of channel with zinc rich paint.
- Embedment depth shall be as required in Item 627 Treated Timber Poles.
- 5. Poles trimmed for excess length shall be trimmed from the top end only.

	PROJECT TITL	^{E:} TOMBALL ISD TRAFFIC SIGNAL DESIG	NS
		STANDARD DETAILS	TRAFFIC STANDARD
	SHEET DESCR	IPTION: RICAL DETAILS: SERVICE SCHEMATICS	ED-TP
MBER 20, 2023	DRAWN BY: BSH	AND SUPPORT TYPE TP (OVERHEAD)	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 21 / 38



MATERIALS	
LUMINAIRE ARM	ASTM A53 GR A OR B OR A501 OR 595 (2) ALUMINUM 6061-T6
LUMINAIRE ARM PLATES (3)	ASTM A36 OR A572 GR50 (1) OR A595 GR A
MISCELLANEOUS	ASTM DESIGNATIONS AS NOTED

 IF A595 GR A MATERIAL IS USED, ARM NEED NOT BE COLD WORKED TO A595 REQUIREMENTS, BUT MATERIAL MUST HAVE 40 KSI MINIMUM YIELD PRIOR TO FABRICATION.

2.) EITHER OF THE MATERIALS LISTED FOR PLATES MAY BE USED WHERE THE DRAWINGS DO NOT SPECIFY A PARTICULAR ASTM DESIGNATION.

3.) ALL MATERIAL FOR TENSION ROD LUMINAIRE ARM EXCEPT BOLTS SHALL BE ALUMINUM 6061-T6.

<u>GENERAL NOTES:</u>

- 1.) DESIGN SHALL CONFORM TO HIGHWAY SIGNS, AASHTO STANDARD SPECIFICATIONS FOR STRUCTURE SUPPORTS FOR LUMINAIRES AND TRAFFIC SIGNALS, LATEST EDITION. DESIGN WIND SPEED EQUALS 90 MPH PLUS A 1.3 GUST FACTOR. ARMS ARE DESIGNED AREA TIMES DRAG COEFFICIENT) OF 1.5 SQ. FT.
- 2.) MATERIALS AND FABRICATION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND WITH THE DETAILS, DIMENSIONS, AND WELD PROCEDURES OF THE "AMERICAN NATIONAL STANDARD INSTITUTE/AMERICAN WELDING SOCIETY" ANSI/AWS D1.1, LATEST REVISION.
- 3.) WELD REFERENCES CALL FOR PREAPPROVED WELD PROCEDURES WHICH THE FABRICATOR MUST OBTAIN PRIOR TO FABRICATION. IN THE ABSENCE OF SPECIFIED FABRICATION TOLERANCES, DIMENSIONS SHALL BE WITHIN THE TOLERANCES GENERALLY OBTAINABLE IN NORMAL FABRICATION PRACTICE.
- 4.) UNLESS OTHERWISE NOTED, ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123.
- 5.) SUBMISSION OF SHOP DRAWINGS TO HARRIS COUNTY ENGINEER ON LUMINAIRE ARMS IS REQUIRED.

	PROJECT TITL	^{e:} Tomball isd traffic signal desig	NS
		STANDARD DETAILS	TRAFFIC STANDARD
	SHEET DESCR	LUMINAIRE ARM DETAILS	LUM-A
MBER 20, 2023	DRAWN BY: BSH	(100 MPH WIND ZONE)	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 22 / 38





NOTES:

- 1. ALL PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST EDITION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS (TMUTCD).
- ALL TRAFFIC BUTTONS AND MARKERS SHALL BE INSTALLED ADJACENT TO STRIPES (APPROXIMATELY 2").
 LEFT TURN STORAGE BAYS SHALL BE A MIN. OF 100' ON MINOR
- STREETS AND A MIN. 150' ON MAJOR STREETS REPEAT ARROWS AT APPROXIMATELY 1000' INTERVALS WITHIN TWO-WAY LEFT TURN SECTION.
- 5. WHEN PAVEMENT MARKINGS EXTEND INTO OR CONTINUE THROUGH AN INTERSECTION AREA, THEY SHALL BE THE SAME COLOR AND AT LEAST THE SAME WIDTH AS THE LINE MARKINGS THEY EXTEND.
- WHEN CROSSWALK MARKINGS ARE USED WITHIN AN ESTABLISHED SCHOOL ZONE AREA, CONTINENTAL TYPE MARKINGS SHALL BE USED.
 ADDITIONAL SET OF "WORD" AND "ARROW" PAVEMENT MARKINGS
- SHALL BE USED WHEN TURN LANE STORAGE LENGTH IS 160 FEET OR GREATER.



ROJECT TITLE: TOMBALL ISD TRAFFIC SIGNAL DESIGNS TRAFFIC STANDARD STANDARD DETAILS SHEET DESCRIPTION: PAVEMENT MARKING DETAILS (1 OF 2) ΡМ DRAWN BY OVEMBER 20, 2023 12/14/17 JDZ DBY SHEET NO: 24 / 38 SCALE BSH NONE

OUTSIDE E.O.T.

OR SHOULDER

4" SQ. PAVEMENT MARKER

2" FROM STRIPE

(TYPE I-C OR TYPE II C-R)-







		STANDARD DETAILS	STANDARD
	SHEET DESCR	IPTION: INTROLLER CABINET FOUNDATION	CCF
/BER 20, 2023	DRAWN BY: BSH	DETAILS	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 27 / 38



			<u>SHIP</u>	PING P	<u>arts list</u>		
STRAIN	POLE(S) (WITHOUT	TRAFFIC SIGN	AL ARM)			
	STRAI	IN POLE(S) V	WITH LUMINAIR	E	STRAIN POLE	S) WITHOUT LUMI	NAIRE
POLE	SHIP	EACH STRAIN	N POLE WITH	THE	SHIP EACH ST	RAIN POLE WITH	THE
TYPE		DWING HARDV	VARE ATTACH	ED: P FTC	FOLLOWING HA	RDWARE ATTACH	ED: P FTC
			DESIGNATION				
нс10030	30' S	TRAIN POLE	HC10030	QUANTIT	30' STRAIN PO	DLE HC10030	QUANTIT
HC10034	34' S	TRAIN POLE	HC10034	2	34' STRAIN PO	DLE HC10034	2
ARM LE	NGTH RM	QUANTITY 2					
ANCHOR	BOLT	ASSEMBLIES	(1 PER POL	E)*			
ANCH	OR	BOLT					
BOL DIAME	T TER	HOLE	OUANTIT	~			
2 1/	'4"	6'-3 1/2'	• QUANTIT	<u> </u>			
		,					
* EACH TOP A WASHE FOUND (TEMPI	ANCHO ND BO IRS AN ATION LATES	OR BOLT ASS DTTOM TEMPL ND 4 NUT AN DETAILS. MAY BE REN	EMBLY CONSI ATES, 4 ANC NCHOR DEVICE MOVED FOR S	ST OF THE HOR BOLTS ES (TYPE 2 HIPMENT)	FOLLOWING: 5, 8 NUTS, 8 F) PER STANDA	LAT, WASHERS, A RD DRAWING STR	4 LOCK AIN POLE
MATERIA	LS						
ROUND S	STRAIN	N POLE OR TRAIN POLE	ASTM A570 ASTM A572	GR50 OR GR50			
PLATES	(1)		ASTM A36 C	OR A572 G	250		
STEEL C	ABLE		ASTM A475,	7 WIRE, U	TILITIES GRADE		
(1) EITHE THE DRA	R OF WINGS	THE MATERIA DO NOT SPE	ALS LISTED FO	OR PLATES TICULAR AS	MAY BE USED TM DESIGNATIO	WHERE N.	
IOTE:	ENG	INEER SH	HALL CON	1PLETE	SHIPPING	PARTS LIS	T TABLE

GENERAL NOTES:

- DESIGN SHALL CONFORM TO 2001 OR LATEST ADDITION TO AASHTO STANDARD SPECIFICATIONS FOR THE STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS AND INTERIM SPECIFICATIONS DESIGN WIND SPEED EQUALS 100 MPH PLUS A 1.3 GUST FACTOR.
- 2.) STRAIN POLES ARE DESIGNED TO SUPPORT SPAN WIRE WITH ONE CLAMP-ON MAST ARM. THE SPECIFIED SIGNAL LOAD APPLIED AT THE END OF THE TRAFFIC SIGNAL ARM EQUALS 180 LBS. VERTICAL DEAD LOAD PLUS THE HORIZONTAL WIND LOAD ON AN EFFECTIVE PROJECTED AREA OF 32.4 SO. FT. THE MAXIMUM PERMISSIBLE SPAN WIRE DESIGN LOADS TABULATED ARE CALCULATED AT A STRESS LOAD OF 1.40 TIMES THE BASIC ALLOWABLE STRESS. A SIMULTANEOUS WIND ON THE POLE, MAST ARM, AND LUMINAIRE IS ALSO INCLUDED. DESIGNS ARE BASED ON A SPAN WIRE AND ARM INCLUDED ANGLE OF 90 DEG. ANGLES OF LESS THAN 75 DEG. OR MORE THAN 105 DEG. WILL REQUIRE A SPECIAL DESIGN.
- 3.) FABRICATION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND THE WITH THE DETAILS AND DIMENSIONS. ALL WELDING SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS OF THE AMERICAN WIELDING SOCIETY STRUCTURAL WELDING CODE AWS LATEST EDITION.
- 4.) SEE SINGLE AND DUAL MAST ARM ASSEMBLIES DETAILS AND MAST ARM CONNECTIONS AND FABRICATIONS DETAILS STANDARD SHEETS FOR DETAILS OF CLAMP-ON MAST ARMS.
- 5.) SEE LUMINAIRE ARM DETAILS STANDARD SHEET FOR DETAILS OF LUMINAIRE ARM AND CONNECTION.
- 6.) SEE STRAIN POLE FOUNDATION DETAILS STANDARD SHEET FOR DETAILS OF ANCHOR BOLTS AND FOUNDATION.
 7.) UNLESS OTHERWISE NOTED, ALL STEEL PARTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 REQUIREMENTS WITH A MINIMUM
- AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 REQUIREMENTS WITH A MINIMUM OF 2 OUNCES PER SQUARE FOOT OF GALVANIZED COATING. 8.) ALL SMALL STEFL HARDWARE ITEMS SHALL BE HOT DIPPED GALVANIZED AFTER
- 8.) ALL SMALL STEEL HARDWARE ITEMS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A153 REQUIREMENTS.
 9.) SPECIAL DESIGNS REQUIRE SUBMISSION OF SHOP DRAWINGS IN ACCORDANCE WITH
- THE SPECIFICATION ITEM 680 "STEEL MAST ARM AND STEEL STRAIN POLE ASSEMBLIES".
- ALL BOLTS SHALL HAVE TWO FULL DIAMETER THREADS EXPOSED ABOVE THE NUT.
 CONTRACTOR SHALL INSTALL A CLOSE NIPPLE WITH LOCKNUTS AND METAL BUSHINGS (SIZE AS REQUIRED) TO PREVENT ABRASION WHERE CABLE(S) ENTER ANY PORTION OF THE STRAIN POLE.
- 12.) CONTRACTOR SHALL INSTALL AND/OR ADJUST CATENARY SYSTEM AND TRAFFIC SIGNAL HEADS. AND SHALL LEVEL ALL SIGNAL HEADS, PRIOR TO ATTACHING BOTTOM TETHER SPAN.

	PROJECT TITL	^{e:} Tomball isd traffic signal desig	NS
		STANDARD DETAILS	TRAFFIC STANDARD
	SHEET DESCR	IPTION: TRAIN POLE ASSEMBLY DETAILS	SP-100
EMBER 20, 2023	DRAWN BY: BSH	(100 MPH WIND ZONE)	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 28 / 38



	DIMENSIONS				
TYPE	А	В	С		
L BOX (TYPE D)	32-1/4"±1"	19-1/4"±1"	22"±1"		
DUND BOX	37-5/8"±1"	26"±1"	30"±1"		



GENERAL NOTES:

- 1.) MACHINE CUT PAVEMENT TO DEPTH AND WIDTH RECOMMENDED IN SECTION A-A ABOVE.
- 2.) CORNERS OF THE LOOP SHALL HAVE A ONE FOOT MACHINE CUT CHAMFER AT A 45' ANGLE.
- 3.) DETECTOR WIRES SHOULD BE WOUND FOR PROPER LOOP TUNING, SEE TABLE 3 ON STANDARD DETAIL FOR STANDARD INTERSECTION LOOP DETECTOR PLACEMENT AND SIZE DETAILS OR DIAMOND INTERSECTION LOOP PLACEMENT AND SIZE DETAILS (SHEET 2 OF 2), OR USE RECOMMENDATIONS OF MANUFACTURER. IT MAY BE NECESSARY TO ADD MORE TURNS TO INCREASE SENSITIVITY.
- 4.) THE LEAD IN WIRES ARE TO BE TWISTED A MINIMUM OF FIVE TIMES PER FOOT AND REMAIN UNDISTURBED AFTER THE LOOP HAS BEEN TUNED.
- 5.) MINIMUM 1" CONDUIT SHALL BE BURIED A MINIMUM 30" TO PULL BOX, CONTROLLER OR POLE AS SPECIFIED IN DRAWINGS.
- 6.) WHEN CUTTING IN ASPHALT, IF MACHINE CUT CLOSES DUE TO HIGH ATMOSPHERIC TEMPERATURE, CUTTING WILL BE HALTED UNTIL TEMPERATURE PERMITS.
- 7.) THE LOOP WIRE SHALL BE HELD IN PLACE WITH STRIPS OF RUBBER NEOPRENE FLEXIBLE TUBING OR POLYETHYLENE FOAM APPROXIMATELY ONE (1) INCH IN LENGTH EVERY TWO FEET. THESE STRIPS SHALL BE LEFT IN PLACE AND THE SLOT FILLED WITH ONE PART LOOP SEALANT (3M OR EQUIVALENT).
- 8.) DETECTOR LOOP LEAD-IN CABLE FROM PULL BOX TO CONTROLLER CABINET SHALL BE 2/C #14 (IMSA 50-2).
- 9.) LOCATION OF CONDUIT AND LOOP LEAD WIRES SUBJECT TO CHANGE.

NO.	REVISIONS	DATE	NAME				IN OF TEXA
\triangle				HARRIS COUNTY	CRUD CON		
\triangle				TANNIS COUNTI	F A F	Amani Engineering, Inc.	ANTHONY P. VOIGT
\triangle						11011 RICHMOND AVE. SUITE 700 HOUSTON, TX. 77042	Ros (ICENSED
\triangle				ENGINEERING DEPARTMENT	1836	Tel (713) 270–5700 Fax (713) 271–3487 TBPE Firm Reg. No.: F-4528 TBPLS Firm Reg. No.: 100282-00	OTHEFICE NOVEN
\triangle					EXAS		VOIGT ASSOCIATES, INC. F-5333

- 10.) LOOP WIRES SHALL BE MINIMUM 14 GAUGE XHHW TYPE.
- 11.) NO EXPANSION JOINT SLOT SHALL BE USED IN LIEU OF SAW
- ACROSS EXPANSION JOINTS SHALL HAVE SLACK CABLE FOR 12.) THE SAWCUT SHALL BE CLEANED AND DRIED WITH AN AIR C
- INSTALLATION OF LOOP DETECTOR WIRE. 13.) ALL LOOPS SHALL BE TESTED WITH A MEGGER AT THE TIME
- OHNS AND WIRE RESISTANCE MUST BE LESS THAN ONE MEG 14.) ALL CONNECTIONS SHALL BE SOLDERED. THE SOLDER JOINT
- ACCEPTABLE TO THE ENGINEER. 15.) PRIOR APPROVAL MUST BE ATTAINED FROM HARRIS COUNTY
- 16.) INSTALLATION OF THE LOOPS ARE TO BE MADE IN THE SHO
- BE SCHEDULED DURING THE OFF-PEAK HOURS TO MINIMIZE DELAY IN VEHICULAR TRAFFIC.

PA	AVEMENT~	MACHINE CUT (REQUIRED)	
ONE (3M OR	PART LOO SEALAN EQUIVALEN SEE NO SEE NO	OP T T T T T T T T T T T T T	LENT
	* M 0	D *1-1/2" * 2" W 5/16" 5/16" NIMUM 3" FOR LEAD LINE N MULTIPLE LOOPS	
		<u>Section A-A</u>	
	-		
LOOP WIRE (#14 XHHW)	*	25	
* AREA F MACHIN WITH FI	REMOVED S IE CUT FOF BERGLASS	HALL BE THE SAME DEPTH AS THE THE LOOP WIRE. PROTECT LOOP WIRE ROPE WHEN FILLING WITH HOT ASPHALT. DETAIL "B"	
CUT SLOTS EXPANSION COMPRESSO	FOR VEHI N (SEE DE R TO REM(CLE DETECTOR WIRE PLACEMENT. LOOPS CUT TAIL "A" AND "B"). DVE ALL DEBRIS AND MOISTURE PRIOR TO	
OF INSTAL G OHM.	LATION. IN	SULATION RESISTANCE MUST EXCEED 50MEG	
SHALL BE	SEALED W	TH SCOTCHCAST A31 OR OTHER METHOD	
' BEFORE L' RTEST TIME DELAY SCH	OOP WIRES PRACTICA HEDULED D	CAN CROSS AN EXPANSION JOINT. IL, NOT TO EXCEED FOUR HOURS AND SHALL URING THE OFF-PEAK HOURS TO MINIMIZE	
	PROJECT TITL	^{E:} TOMBALL ISD TRAFFIC SIGNAL DESIG	NS
		STANDARD DETAILS	TRAFFIC STANDARD
	DRAWN BY:	DETECTOR INSTALLATION DETAILS	LDI DATE:
ıвек 20, 2023	BSH CK'D BY: BSH	SCALE:	8/18/17 SHEET NO: 30 / 38
			/





NOVE COFE, VOIGT ASSOCIATES, INC. F-5333

4.)

FOUNDATION SELECTION FOR STANDARD CLAMP-ON MAST ARM ASSEMBLIES

	FOUNDATION TYPE	HC10030	HC10036
100 MPH	MAXIMUM SINGLE CLAMP-ON MAST ARM LENGTH	44'	44'
WIND SPEED	MAXIMUM DUAL CLAMP-ON	35' x 35'	44' x 44'
		40' x 35'	
	MAST ARM LENGTH	42' x 30'	
		44' x 20'	

STRAIN POLE FOUNDATION SUMMARY TABLE

LOCATION IDENTIFICATION	FOUNDATION TYPE	NUMBER (EA)	DRILLED SHA (FE HC10030	AFT LENGTH ET) HC10036	EXPOSED FOUNDATION (FEET)	TOTAL SHAFT LENGTH (FEET)
POLE 1 - MUESCHKE AT DESTINATION	10036	1		14.0	1.0	15.0
POLE 2 - MUESCHKE AT DESTINATION	10036	1		14.0	1.0	15.0
POLE 3 - MUESCHKE AT DESTINATION	10036	1		14.0	1.0	15.0
POLE 4 - MUESCHKE AT DESTINATION	10036	1		14.0	1.0	15.0
			1	1		
					. <u> </u>	
LTOTA	L URILLED SH	AF I LENGTHS				60.0
NOTE: ENGINEER SHALL C	OMPLETE	STRAIN	POLE FOU	JNDATION	TABLE	

<u>GENERAL NOTES:</u>
1.) DESIGN SHALL CONFORM TO 2001 OR LATEST ADDITION TO AASHTO STANDARD SPECIFICATIONS FOR THE STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS AND INTERIM SPECIFICATIONS DESIGN WIND SPEED EQUALS 100 MPH PLUS A 1.3 GUST FACTOR. 2.) REINFORCING STEEL SHALL CONFORM TO THE PERTINENT HARRIS COUNTY STANDARD

SPECIFICATION ITEM NUMBER 440 - REINFORCING STEEL. 3.) STRAIN POLE FOUNDATION SHALL BE INSTALLED WITH CLASS B2 CONCRETE.

THREADS FOR ANCHOR BOLTS AND NUTS SHALL BE ROLLED OR CUT THREADS OF UNIFIED NATIONAL COARSE THREAD SERIES EXCEPT FOR A193B7 BOLTS WHICH SHALL HAVE 8 PITCH THREAD SERIES. BOLTS AND NUTS SHALL HAVE CLASS 2A AND 2B FIT TOLERANCES.

GALVANIZED NUTS SHALL BE TAPPED AFTER GALVANIZING.

5.) THREADS FOR ANCHOR BOLTS SHALL BE COATED WITH PIPE JOINT COMPOUND PRIOR TO INSTALLATION OF UPPER NUTS WHEN ERECTING STRAIN POLE. AFTER STRAIN POLE IS PLUMBED AND IN PERMANENT ALIGNMENT, THE REMAINING EXPOSED THREADS OF PAINTED BOLTS SHALL BE CLEANED AND AN ADDITIONAL COATING OF ZINC-RICH PAINT SHALL BE APPLIED TO SEAL THE BOLT THREAD-NUT JOINT.

6.) ALL ANCHOR BOLTS SHALL CONFORM TO ASTM A193B7, A687 OR A36M55. ANCHOR BOLTS SHALL BE GALVANIZED THE ENTIRE LENGTH OF THE BOLT. NUTS FOR ANCHOR BOLTS SHALL CONFORM TO ASTM A563 GR A OR BETTER HEAVY HEX. EXPOSED NUTS AND WASHERS SHALL ALSO BE GALVANIZED. TEMPLATES AND EMBEDDED NUTS SHALL ALSO BE GALVANIZED.

7.) TOP OF STRAIN POLE FOUNDATION SHALL BE NO LOWER THAN THE PAVEMENT SURFACE ELEVATION. TYPICAL STRAIN POLE FOUNDATION SHOULD BE 6" ABOVE CROSS-SECTION CROWN OF MAJOR ROADWAY.

8.) ALL ANCHOR BOLTS SHALL HAVE A MINIMUM OF TWO FULL DIAMETER THREADS EXTENDED BEYOND THE NUTS.

9.) ANCHOR BOLT DESIGN DEVELOPS THE FOUNDATION CAPACITY GIVEN UNDER FOUNDATION DESIGN LOADS.

10.) STRAIN POLE FOUNDATION DESIGN LOADS ARE THE ALLOWABLE MOMENTS AND SHEARS AT THE BASE OF THE STRUCTURE.

11.) STRAIN POLE FOUNDATIONS MAY BE LISTED SEPARATELY OR GROUPED ACCORDING TO SIMILARITY OF LOCATION AND TYPE. QUANTITIES ARE FOR THE CONTRACTOR'S INFORMATION ONLY. 12.) STRAIN POLE FOUNDATION DESIGN IS BASED UPON UNDRAINED SHEAR STRENGTH OF 1500 PSF.

	PROJECT TITL	^{E:} TOMBALL ISD TRAFFIC SIGNAL DESIG	NS
		STANDARD DETAILS	TRAFFIC STANDARD
	SHEET DESCR	IPTION: RAIN POLE FOUNDATION DETAILS	SPF
MBER 20, 2023	DRAWN BY: BSH		DATE: 7/19/22
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 32 / 38



ACCESSIBLE CURB RAMPS AND LANDINGS GENERAL NOTES:

1. THE DESIGN AND CONSTRUCTION OF ALL ELEMENTS OF PEDESTRIAN FACILITIES SHALL MEET THE CRITERIA ESTABLISHED IN THE CURRENT EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS), AS PREPARED AND ADMINISTERED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR), UNLESS

2. PEDESTRIAN FACILITIES AT SIGNALIZED INTERSECTION SHALL BE IN ACCORDANCE WITH APPLICABLE TRAFFIC

3. ADJUSTMENT TO SIDEWALKS THAT CONNECT TO WHEELCHAIR RAMPS AND LANDINGS MAY BE NECESSARY TO MATCH BOTH THE GRADE AND THE WIDTH OF THE LANDING. THESE ADJUSTMENTS MAY NOT BE SHOWN ON THE DRAWINGS. WHEN DEEMED NECESSARY BY THE ENGINEER, FIELD ADJUSTMENT TO THE SIDEWALK SHALL BE MADE AS DIRECTED BY THE ENGINEER AND PAID FOR SEPARATELY, AS DIRECTED BY THE

4. ALL ITEMS NECESSARY FOR THE CONSTRUCTION OF THE WHEELCHAIR RAMPS AND LANDINGS WITHIN THE "LIMITS OF PAYMENT" INDICATED ON APPROPRIATE WHEELCHAIR RAMP DETAILS AND DESIGN DRAWINGS (I.E., SAW CUT OF PAVEMENT. REMOVAL OF MATERIAL, EXCAVATION, DISPOSAL OF MATERIALS, ETC.) SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE WHEELCHAIR RAMP FOR PROJECTS THAT ARE DESIGNED AND/OR CONSTRUCTED USING HARRIS COUNTY RESOURCES.

5. FLATTER SLOPES THAT WILL STILL DRAIN PROPERLY MAY BE USED WHERE APPROPRIATE, SUBJECT TO THE

6. RAMPS AND LANDINGS WITH DROP-OFFS GREATER THAT 6 INCHES IN HEIGHT SHALL HAVE CURB, RAILINGS, OR PROJECTING SURFACES. REFER TO TEXAS ACCESSIBILITY STANDARDS (TAS) AND THE

7. ALL SLOPES SHOWN ARE MAXIMUM ALLOWABLE. THE CROSS SLOPE OF AN ACCESSIBLE ROUTE AND/OR LANDING MUST NOT EXCEED 1:50 (2%). ANY PART OF THE ACCESSIBLE ROUTE WITH A SLOPE GREATER

8. IF A RAMP HAS A RISE GREATER THAT 6 INCHES, OR A HORIZONTAL PROJECTION GREATER THAT 72 INCHES, THEN IT SHALL HAVE HANDRAILS ON BOTH SIDES. THE ONLY EXCEPTIONS SHALL BE AT CURB HANDRAILS ARE NOT REQUIRED ON CURB RAMPS.

9. RAMP LENGTH OF GRADE OF APPROACH SIDEWALK SHALL BE SUBJECT TO ADJUSTMENT IN THE FIELD BY

10. THE MAXIMUM ALLOWABLE CROSS SLOPE ON A SIDEWALK SHALL BE 2%.

11. THE MINIMUM THICKNESS FOR CURB RAMPS SHALL BE 4-1/2 INCHES.

12. CURB RAMPS WITH RETURN CURB MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. OTHERWISE, FLARED SIDES SHALL BE PROVIDED.

13. CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS. FLARED SIDES ASSOCIATED WITH CURB RAMPS ARE EXCLUDED FROM THIS REQUIREMENT.

14. A SMOOTH TRANSITION, IN ACCORDANCE WITH APPROPRIATE CONSTRUCTION DETAILS OR AS DIRECTED BY THE ENGINEER, AND SHALL BE PROVIDED WHERE CURB RAMPS CONNECT TO ADJACENT ROADWAY.

15. MANEUVERING SPACES AT THE BOTTOM OF THE CURB RAMPS SHALL BE A MINIMUM 4 FOOT X 4 FOOT CLEAR AREA, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK OUTSIDE OF THE PARALLEL

16. A MINIMUM WIDTH OF 36 INCHES SHALL BE PROVIDED LANDINGS AROUND OBSTRUCTIONS (I.E., SIGN SUPPORTS, SIGNAL SUPPORTS, POLES, ETC.) LOCATED TO ADJACENT TO THE PEDESTRIAN ROUTE.

17. MINIMUM SIDEWALK WIDTH OF 4 FEET UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

18. CROSSWALKS WILL NOT BE REQUIRED AT UNSIGNALIZED INTERSECTIONS, UNLESS DIRECTED BY THE

19. DETECTABLE WARNINGS ARE PLACED WHERE A PEDESTRIAN ACCESS ROUTE ENTERS THE ROADWAY,

20. A MINIMUM OF 32 INCHES OF CLEARANCE IS REQUIRED FOR OBSTRUCTIONS LESS THAN 24 INCHES IN LENGTH, AND A MINIMUM OF 36 INCHES OF CLEARANCE IS REQUIRED FOR OBSTRUCTIONS GREATER THAN

	PROJECT TITL	NS	
	CIVIL STANDARD		
	SHEET DESCR	ADAR	
BER 20, 2023	DRAWN BY: JDZ		DATE: 8/15/17
	CK'D BY: PDG	SCALE: AS NOTED	SHEET NO: 33 / 38



TRAFFIC CONTROL PLAN SECTION SHALL BE COMPLETED BY ENGINEER									
POSTED SPEED	TAPER LENGTH	SPACING CHANNELIZING DEVICES		SIGN SPACING	BUFFER SPACE				
45 MPH	540'	45'	90'	320'	195'				
45 MPH	540'	45'	90'	320'	195'				
	ITROL MPLE TE POSTED SPEED 45 MPH 45 MPH	ITROL PLAN S MPLETED BY POSTED TAPER SPEED LENGTH 45 MPH 540' 45 MPH 540'	ITROL PLAN SECTIO MPLETED BY ENGINE POSTED TAPER LENGTH CHANN 45 MPH 540' 45' 45 MPH 540' 45'	ITROL PLAN SECTION SHA MPLETED BY ENGINEER POSTED TAPER SPACING CHANNELIZING DEVICES 45 MPH 540' 45' 90' 45 MPH 540' 45' 90' 45 MPH 540' 45' 90'	ITROL PLAN SECTION SHALL BE MPLETED BY ENGINEER SPACING SIGN POSTED TAPER CHANNELIZING SIGN DEVICES TAPER TANGENT SIGN 45 MPH 540' 45' 90' 320' 45 MPH 540' 45' 90' 320' 45 MPH 540' 45' 90' 320'				

	LEGEND									
	Type 3 Barricade		Channelizing Devices							
□‡	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)							
Ē	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)							
<u> </u>	Sign	$\langle \cdot \rangle$	Traffic Flow							
\bigtriangleup	Flag	LO	Flagger							

Posted Speed	Minimum Desirable Formula Taper Lengths "L"		י s "L"	Suggested Spacii Chann Devi	l Maximum ng of elizing ices	Minimum Sign Spocing "x"	Suggested Longitudinal Buffer Space	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	Distance	"В"
30	2	150'	165'	180'	30'	60'	120'	90'
35	$L = \frac{WS^{-1}}{CO}$	205'	225'	245'	35'	70'	160'	120'
40	60	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	1-ws	550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900,	75'	150'	900'	540'

* Conventional Roads Only

 $\star\star$ Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

GENERAL NOTES

- 3
- Flags attached to signs where shown are OPTIONAL.
 All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol are OPTIONAL.
 Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
 A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of arew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA. the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces. Contractor shall provide and install traffic control devices in conformance with 6. part VI of Texas Manual on Uniform Traffic Control Devices (TMUTCD - Latest edition with revisions) during construction. No lanes shall be blocked from 7am to 9am and 4pm to 6:30pm Monday thru
- Friday.
- Off duty police officers/flaggers are required to direct traffic when applicable.
 If project is within 400 feet from a signalized intersection, the Contractor shall contact Harris County Engineering Department, Traffic Signal Maintenance at (713) 881-3210 five (5) days prior to the start of construction.

	PROJECT TITL	NS	
		TRAFFIC STANDARD	
	SHEET DESCR	TCP-RL	
MBER 20, 2023	DRAWN BY: BSH	(RIGHT LANE CLOSURE)	DATE: 8/18/17
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 34 / 38

UNE LANE CLOSURE W/ LEFT TURN LANE CLOSED FOR HANGING SIGNALS OR STRAPPING CABLE	Image: Strapping Cable, or insalling loop detectors	
Image: State of the state	WRESS WRESS SPACED • (SEE CHART) CONESS SPA	MEDIAN NOSE MODIFICATION DEPICAL TRANSITION LENGTHS AND SUGGESTED MAXIMUM SPACING OF DEVICES Minimum Desirable Spacing of Device Posted Formula 10' 11' 12' On a On a 30 150' 165' 180' 30' 60'-75' 35 L= WS ² 205' 225' 245' 35' 70'-90' 40 265' 295' 320' 40' 80'-100' 10'
Image: A contract of the contra	SO'-+++ SO'-+++ CONES SPACED © (SEE CHART) CONES SPACED	 Toper lengths have been rounded off. CONSTRUCTION WARNING SIGN SPACING Posted X Beed or Min. B5% Speed (reet) 30 or less 120 35 160 40 240 45 320 50 400 55 550 65 750 X=SIGN SPACING L=TAPER MEAVY WORK VEHICLE NOTES: ALL TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES', LATEST REVISION. THE MINIMUM LANE WIDTH ALLOWED IS 10 FEET. THE MINIMUM BUFFER ZONE BETWEEN THE WORK ZONE AN ADJACENT TRAFFIC IS 2 FEET. FLORESSCHUT ORANGE SHALL BE THE BACK GROUND COLOR ON ALL WORK ZONE SINGS.
NO. REVISIONS DATE NAME HARRIS	COUNTY DEPARTMENT USE A Construction Managers 1011 Rick-Monto Adv. State	PROJECT TITLE: TOMBALL ISD TRAFFIC SIGNAL DESIGNS STANDARD DETAILS TRAFFIC STANDARD DETAILS STANDARD SHEET DESCRIPTION: TRAFFIC CONTROL PLAN DRAWN BY: BSH TRAFFIC SIGNAL INSTALLATION DETAILS 8/18/17 CKTD BY: SCALE: BSH NONE SHEET NO: 35 / 38



		Minimu Tape	m Desira er Length	ble s **	Suggested Maximum Spacing of Device		
Posted * Speed	Formula	10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30		150'	165'	180'	30'	60'-75'	
35	$L = \frac{WS^2}{60}$	205'	225'	245'	35'	70'–90'	
40		265'	295'	320'	40'	80'-100'	
45		450'	495'	540'	45'	90'-110'	
50		500'	550'	600'	50'	100'-125'	
55	L=WS	550'	605'	660'	55'	110'–140'	
60		600'	660'	720'	60'	120'-150'	
65	r	650'	715'	780'	65'	130'-175'	

SIGN SPACING						
Posted	X					
Speed or	Min.					
85% Speed	Distance					
(MPH)	(feet)					
30 or less	120					
35	160					
40	240					
45	320					
50	400					
55	500					
65	750					



TRAFFIC CONTROL PLAN SECTION SHALL BE COMPLETED BY ENGINEER									
ROADWAY	POSTED SPEED	TAPER LENGTH	SPACING CHANNELIZING DEVICES		SIGN SPACING	BUFFER SPACE			
			TAPER	TANGENT					
MUESCHKE ROAD	45 MPH	540'	45'	90'	320'	195'			
JUERGEN ROAD	45 MPH	540'	45'	90'	320'	195'			
L	1			1					

	LEGEND									
	Type 3 Barricade		Channelizing Devices							
Шþ	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)							
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)							
_	Sign	$\langle \cdot \rangle$	Traffic Flow							
\bigtriangleup	Flag	LO	Flagger							

Posted Speed	Posted Formula		Minimum Desirable Taper Lengths "L"			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	Distance	"В"
30	2	150'	165'	180'	30'	60'	120'	90'
35	$L = \frac{WS}{60}$	205'	225'	245'	35'	70'	160'	120'
40	60	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55	1 – WS	550'	605'	660'	55'	110'	500'	295'
60	L=#5	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70		700'	770'	840'	70'	140'	800'	475'
75		750'	825'	900,	75'	150'	900'	540'

* Conventional Roads Only

 $\star\star$ Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

GENERAL NOTES

- 3
- Flags attached to signs where shown are OPTIONAL.
 All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol are OPTIONAL.
 Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
 A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of arew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA. the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces. Contractor shall provide and install traffic control devices in conformance with 6. part VI of Texas Manual on Uniform Traffic Control Devices (TMUTCD - Latest edition with revisions) during construction. No lanes shall be blocked from 7am to 9am and 4pm to 6:30pm Monday thru
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- Off duty police officers/flaggers are required to direct traffic when applicable.
 If project is within 400 feet from a signalized intersection, the Contractor shall contact Harris County Engineering Department, Traffic Signal Maintenance at (713) 881-3210 five (5) days prior to the start of construction.

	PROJECT TITL	NS					
		TRAFFIC STANDARD					
	SHEET DESCR	SHEET DESCRIPTION: TRAFFIC CONTROL PLAN					
MBER 20, 2023	DRAWN BY: BSH	(LEFT LANE CLOSURE)	DATE: 8/18/17				
	CK'D BY: BSH	SCALE: NONE	SHEET NO: 36 / 38				



	PROJECT TITL	^{E:} TOMBALL ISD TRAFFIC SIGNAL DESIG	NS
		STANDARD DETAILS	TRAFFIC STANDARD
	SHEET DESCR	CONSTRUCTION DETAILS FOR	CD/TS/WP
MBER 20, 2023	DRAWN BY:	TRAFFIC SIGNALS (WOOD POLE)	DATE: 8/18/17
	CK'D BY:	SCALE: NONE	SHEET NO: 37 / 38



TERMINAL BLOCK SCHNEIDER ELECTRIC PART # NYSTRAABV35 PHOENIX CONTACT PART # 0800886

	PROJECT TITL	ROJECT TITLE: TOMBALL ISD TRAFFIC SIGNAL DESIGNS	
		STANDARD DETAILS	TRAFFIC STANDARD
EMBER 20, 2023	SHEET DESCRIPTION: SIGNAL MODEM ASSEMBLY		CD/TS/WP
	DRAWN BY:		DATE: 8/18/17
	CK'D BY:	SCALE: NONE	SHEET NO: 38 / 38