SEE SHEET 2
FOR INDEX OF SHEETS

TDLR NOT REQUIRED

STATE OF TEXAS
TEXAS DEPARTMENT OF TRANSPORTATION

FED. RD. DIV. NO.	STATE	FEDERAL PROJECT NO.			HIGHWAY NO.
6	TEXAS	F 2024(900)			VARIOUS LOCATION
STATE DIST. NO.	COUNTY	CCSJ NO.			SHEET NO.
12	HARRIS	CONTROL NO.	SECTION NO.	JOB NO.	1
		0912	00	700	

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT
FEDERAL AID PROJECT

IH 45, IH 10 & IH 610

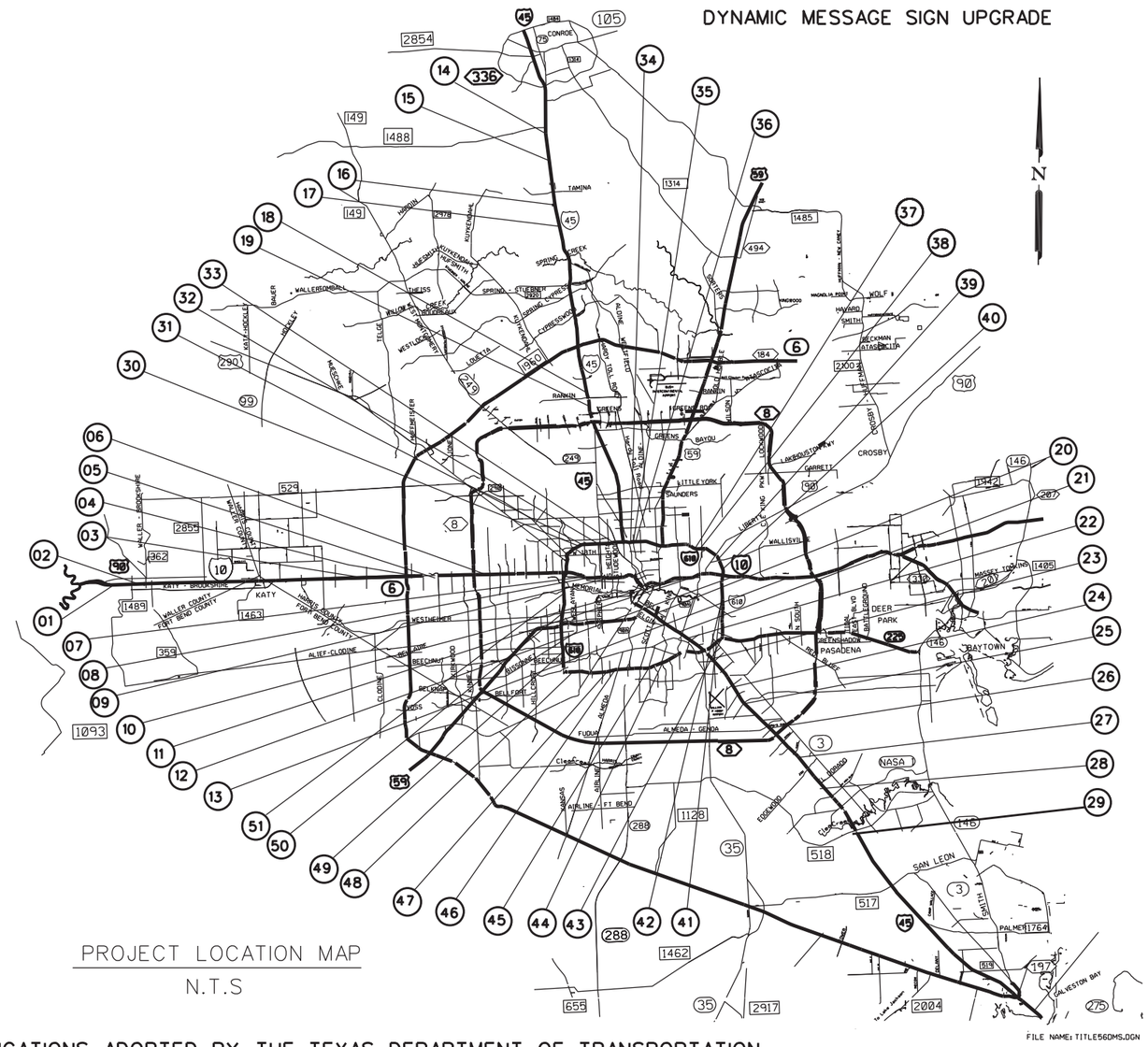
HARRIS COUNTY

CSJ: 0912-00-700

LIMITS: VARIOUS LOCATIONS DISTRICTWIDE

DYNAMIC MESSAGE SIGN UPGRADE

DESIGN SPEED : N/A
EXCEPTION : NONE
EQUATION : NONE
RAILROAD CROSSING : NONE



PROJECT LOCATION MAP

N.T.S

01. IH-10W/PEACH RIDGE (E.B)
02. IH-10W/FM 359 (W.B.)
03. IH-10W/PARK TEN (W.B.)
04. IH-10W/DAIRY ASHFORD (E.B.)
05. IH-10W/DAIRY ASHFORD (W.B.)
06. IH-10W/GESSNER (E.B.)
07. IH-10W/WASHINGTON (W.B.)
08. IH-10W/WASHINGTON (E.B.)
09. IH-10W/HEIGHTS BLVD (E.B.)
10. IH-10E/KRESS (W.B.)
11. IH-10E/LATHROP (E.B.)
12. IH-10E/JOHN RALSTON (W.B.)
13. IH-10E/MARKET (E.B.)
14. IH-45N/FM1488 (S.B.)
15. IH-45N/SH242 (N.B.)
16. IH-45N/RAYFORD (N.B.)
17. IH-45N/RAYFORD (S.B.)
18. IH-45N/RANKIN (S.B.)
19. IH-45N/RANKIN (N.B.)
20. IH-45S/SCOTT (S.B.)
21. IH-45S/TELEPHONE (N.B.)
22. IH-45S/BROAD (S.B.)
23. IH-45S/BROADWAY (N.B.)
24. IH-45S/BELLFORT (S.B.)
25. IH-45S/ALMEDA GENOA (N.B.)
26. IH-45S/FUQUA (S.B)
27. IH-45S/FM 1959 (N.B.)
28. IH-45S/EL DORADO BLVD (SB.)
29. IH-45S/SH 96 (N.B.)
30. IH-610N/ELLA BLVD (W.B.)
31. IH-610N/ELLA BLVD (E.B.)
32. IH-610N/N.SHEPHERD (W.B.)
33. IH-610N/N.MAIN (E.B.)
34. IH-610N/FULTON (E.B.)
35. IH-610N/JENSEN (E.B.)
36. IH-610N/JENSEN (W.B.)
37. IH-610N/LOCKWOOD (W.B.)
38. IH-610N/HOMESTEAD (E.B.)
39. IH-610S/McCARTY (S.B.)
40. IH-610S/GELLHORN (N.B.)
41. IH-610S/TURNING BASIN (S.B.)
42. IH-610S/TURNING BASIN (N.B.)
43. IH-610S/BROADWAY (W.B.)
44. IH-610S/M.L.KING (E.B.)
45. IH-610S/CULLEN (E.B.)
46. IH-610S/ALMEDA (E.B.)
47. IH-610S/FANNIN ST (W.B.)
48. IH-610S/STELLA LINK (E.B.)
49. IH-610W/EVERGREEN (S.B.)
50. IH-610W/WESTHEIMER (N.B.)
51. IH-610W/POSTOAK BLVD (N.B.)

2022 TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED FOR LETTING 1/24/2024

Kenneth Paradowski, P.E.

TRANSPORTATION ENGINEER

APPROVED FOR LETTING 1/26/2024

DocuSigned by:
Vanessa Shirley, P.E.
DD00BA93EE02450...

For DISTRICT ENGINEER

COUNTY HARRIS PROJ. NO. F 2024(900)
HWY. NO. VARIOUS LETTING DATE: APRIL 2024
DATE ACCEPTED

NOTE: SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1,2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23,2023)

FILE NAME: TITLE56DMS.DGN

GENERAL

1	TITLE SHEET
2	INDEX OF SHEETS
3-07	GENERAL NOTES
8	ESTIMATE & QUANTITY

TRAFFIC CONTROL PLAN

09-20	*BC(1)-21 THRU BC(12) -21 (12 SHEETS)
21	*TCP(6-1)-12 FREEWAY LANE CLOSURES
22	*TCP(6-2)-12 WORK AREA NEAR RAMP
23	*TCP(6-3)-12 WORK AREA BEYOND RAMP
24	*TCP(6-4)-12 WORK AREA AT EXIT RAMP

TRAFFIC ITEMS

25-75	COMPUTERIZED TRANSPORTATION MANAGEMENT SYSTEM LAYOUT (51 SHEETS)
76-82	*ELECTRICAL DETAILS ED (1) -14 THRU ED(7) -14 (7 SHEETS)
83	SIGN SUPPORT ELEVATIONS (1 SHEET)
84	*DMS(TM-1)-16
85	*DMS(TM-2)-16
86	*DMS(TM-3)-16

ENVIRONMENTAL ISSUES

87	TXDOT STORMWATER POLLUTION PREVENTION PLAN (SWP3) (HOU)
88	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)
89	*EC (1)-16

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE WITH AN ASTERISK (*) HAVE BEEN SELECTED BY ME OR UNDER MY SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

Kenneth Paradowski, P.E.
KENNETH PARADOWSKI

January 24, 2024
DATE

TEXAS DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS

FED. ROAD DIV. NO.	COUNTY	STATE CONTROL NO.	HIGHWAY NO.
6	HARRIS	0912-00-700	ETC
STATE DIST. NO.	STATE	PROJECT NO.	SHEET NO.
HOUSTON	TEXAS	F 2024 (900)	2

General Notes:

General:

Area Engineer contact information for this project follows:

Hamoon Bahrami, P.E. Hamoon.Bahrami@txdot.gov

Submit any questions about this project via the Letting Pre-Bid Q&A web page, located at:

https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

The Letting Pre-Bid Q&A web page for each project can be accessed by scrolling or filtering the dashboard using the controls on the left side to navigate to the project. Hover over the blue hyperlink of the project to view the Q&A and click on the link in the window that pops up.

Large files with relevant project documentation, such as Geotech reports, As-Built plans, and cross-sections will continue to be provided on the following FTP site:

Index of /pub/txdot-info/Pre-Letting Responses/Houston District (state.tx.us) or

https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/Houston%20District/

References to manufacturer's trade name or catalog numbers are for the purpose of identification only. Similar materials from other manufacturers are permitted if they are of equal quality, comply with the specifications for this project, and are approved, except for roadway illumination, electrical, and traffic signal items.

Procure permits and licenses, which are to be issued by the City, County, or Municipal Utility District.

Ensure the interconnection of new equipment to the existing system does not interfere with the operation of the remaining system components. Ensure the system remains completely operational between the hours of 6:00 a.m. Monday and 12:00 a.m. (midnight) Saturday.

Do not interrupt system operation without coordinating with the Department's operations personnel at Houston Transtar at (713) 881-3285.

General: Site Management

Do not mix or store materials, or store or repair equipment, on top of concrete pavement or bridge decks unless authorized by the Engineer. Permission will be granted to store materials on surfaces if no damage or discoloration will result.

Personal vehicles of employees are not permitted to park within the right of way, including sections closed to public traffic. Employees may park on the right of way at the Contractor's office, equipment, and materials storage yard sites.

Assume ownership of debris and dispose of at an approved location. Do not dispose of debris on private property unless approved in writing by the District Engineer.

General: Utilities

Consider the locations of underground utilities depicted in the plans as approximate and employ responsible care to avoid damaging utility facilities. Depending upon scope and magnitude of planned construction activities, advanced field confirmation by the utility owner or operator may be prudent. Where possible, protect and preserve permanent signs, markers, and designations of underground facilities.

If the Contractor damages or causes damage (breaks, leaks, nicks, dents, gouges, etc.) to the utility, contact the utility facility owner or operator immediately.

Be aware that an operational Computerized Transportation Management System (CTMS) exists within the limits of this project and that the system must remain operational throughout construction. If the Contractor damages or causes damage to this system, repair such damage within 8 hours of occurrence at no cost to the Department. In the event of system damage, notify the Director of Traffic Management Systems at 713-881-3283 within one hour of occurrence. Failure of the Contractor to repair damage to the main fiber optic cable and CCTV cable trunk lines, which convey all corridor information to TranStar, will result in the Contractor being billed for the full cost of emergency repairs.

At least 72 hours before starting work, make arrangements for locating existing Department-owned above ground and underground fiber optic, communications, power, illumination, and traffic signal cabling and conduit. Do this by calling the Department's Houston District Traffic Signal Operations Office at 713-802-5662, or by e-mailing the Department's Houston District Traffic Signal Operations Office at HOU-LocateRequest@txdot.gov, to schedule marking of underground lines on the ground. Use caution if working in these areas to avoid damaging or interfering with existing facilities.

If overhead or underground power lines need to be de-energized, contact the electrical service provider to perform this work. Costs associated with de-energizing the power lines or other protective measures required are at no expense to the Department.

If working near power lines, comply with the appropriate sections of Texas State Law and Federal Regulations relating to the type of work involved.

Perform electrical work in conformance with the National Electrical Code (NEC) and Department's standard sheets.

The Department may test using ultrasonic methods the anchor bolts for overhead sign supports, light standards and traffic signal poles after they are installed. Replace faulty anchor bolts as directed. Do not weld the anchor bolts.

When pulling cables or conductors through conduit, do not exceed manufacturer's recommended pulling tensions. Lubricate the cables or conductors with a lubricant as recommended by the cable manufacturer.

Test each wire of each cable or conductor after installation. Any incomplete circuit or any damage to any wire or any cable will be cause for immediate rejection of the entire cable being tested. Remove and replace the entire cable at no expense to the Department and test the replacement cable after installation.

Consistently color-code and permanently label all power conductors, twisted wire pair cables, shielded cables, signal cables, control cables and fiber optic cables between all connections and splices to ensure immediate identification. Submit a chart or list identifying all cables and conductors in a logical and sequential manner.

All circuits must test clear of faults, grounds and open circuits.

Perform all staking subject to the approval of the Engineer in the field.

Ensure that all conductors are continuous without splices from terminal point to terminal point or as otherwise directed by the Engineer. Do not splice cables in ground boxes.

Pull conductors in PVC conduit using nonmetallic pull rope.

The use of ready mix concrete will be permitted. Equipment and construction methods, satisfactory to the Engineer, which will produce the desired results, may be used in lieu of those specified. Hand finishing will be permitted.

Provide each cabinet and building with complete documentation for all conductors contained within the cabinet/building. Completely detail the routing, termination point(s), and color code of each conductor in this documentation. Also identify the origin, destination and function of the signal for each conductor of each cable.

Do not use ground fault circuit interrupter (GFCI) outlets to supply power to electronic equipment.

In cases where conduit is to be mounted on existing structures, review the structure and submit the mounting details to the Engineer for approval.

The plans show the conduits numbered and specific cables in specific conduits. The purpose of these notes is to instruct the Contractor on how to group the cables in the conduits and not to specify the exact conduit that is to carry the cables i.e., the numbering system is arbitrary and may be set by the Contractor.

Between intersections, restore all areas disturbed due to trenching, boring, drill shaft installation, conduit and ground box installation...etc. to a condition equivalent to the original condition within 14 working days from the time work begins in the area. Include all necessary planting, mulching, seeding, sodding, sidewalk, curb and riprap replacement.

At intersections, restore all areas disturbed due to trenching, boring, drill shaft installation, conduit and ground box installation, etc. to a condition equivalent to the original condition within 45 working days from the time work begins in the area. Include in this work all necessary planting, mulching, seeding, sodding, sidewalk, curb and riprap replacement.

In locations where conductors with greater than 50 VAC are routed through ground boxes with other cables, install a section of 2 inch flexible PVC conduit in the ground boxes and route the conductors through this conduit to keep it separate from other cables. The furnishing and installing of this flexible PVC conduit will not be paid for directly but will be incidental to the various pay items.

At locations where fiber optic cable is to be installed in the same conduit with other cables, enclose the fiber optic cable in an Engineer-approved innerduct. The innerduct will not be paid for directly but is considered incidental to the various bid items.

Maintain the median of the freeway in a serviceable condition, free of obstructions, and acceptable to the Engineer. Eliminate all hazards to the traveling public.

The Contractor may make the electrical grounding connections and permissible splices using the thermal fusion process, Cadweld, Thermaweld or equal, instead of bolted connections and splices.

After satisfactory completion of all tests, place all electronic equipment in operation. Final acceptance will not be made until the electronic equipment has operated satisfactorily for a period of not less than 90 days and in is full compliance with the requirements of the plans and specifications.

Assume full responsibility for the electronic equipment during the test period. Make any adjustments or repairs, which may be required and remedy any defects or damages that may occur at no expense to the Department.

Deliver all equipment removed, as shown in the plans, to a location specified by the Engineer.

Item 5: Control of Work

Submit shop drawings electronically for the fabrication of items as documented in Table 1. Information and requirements for electronic submittals can be viewed in the "Guide to Electronic Shop Drawing Submittal" which can be accessed through the following web link,

ftp://ftp.dot.state.tx.us/pub/txdot-info/library/pubs/bus/bridge/e_submit_guide.pdf.

References to 11 in. x 17 in. sheets in individual specifications for structural items imply electronic CAD sheets.

Table 1

2014 Construction Specification Required Shop/Working Drawing Submittals - TxDOT Generated Plans

Spec Item No.'s	Product	Submittal Required	Approval Required (Y/N)	Contractor/ Fabricator P.E. Seal Required	Reviewing Party	Shop or Working Drawing (Note 1)
7.16.1&.2	Construction Load Analyses	Y	Y	Y	B	WD
400	Excavation and Backfill for Structures (cofferdams)	Y	N	Y	A	WD
403	Temporary Special Shoring	Y	N	Y	C	WD
420	Formwork/Falsework	Y	N	Y	A	WD
423	Retaining Walls, (calcs req'd.)	Y	Y	Y	C	SD
425	Optional Design Calculations (Prstrs Bms)	Y	Y	Y	B	SD
425	Prestr Concr Sheet Piling	Y	Y	N	B	SD
425	Prestr Concr Beams	Y	Y	N	B	SD
425	Prestr Concr Bent	Y	Y	N	B	SD
426	Post Tension Details	Y	Y	N	B	SD
434	Elastomeric Bearing Pads (All)	Y	Y	N	B	SD
441	Bridge Protective Assembly	Y	Y	N	B	SD
441	Misc Steel (various steel assemblies)	Y	Y	N	B	SD
441	Steel Pedestals (bridge raising)	Y	Y	N	B	SD
441	Steel Bearings	Y	Y	N	B	SD
441	Steel Bent	Y	Y	N	B	SD
441	Steel Diaphragms	Y	Y	N	B	SD
441	Steel Finger Joint	Y	Y	N	B	SD
441	Steel Plate Girder	Y	Y	N	B	SD
441	Steel Tub-Girders	Y	Y	N	B	SD
441	Erection Plans, including Falsework	Y	N	Y	A	WD
449	Sign Structure Anchor Bolts	Y	Y	N	T	SD
450	Railing	Y	Y	N	A	SD
462	Concrete Box Culvert	Y	Y	N	C	SD
462	Concrete Box Culvert (Alternate Designs Only,calcs reqd.)	Y	Y	Y	B	SD
464	Reinforced Concrete Pipe (Jack and Bore only; ONLY when requested)	Y	Y	Y	B	SD
465	Pre-cast Junction Boxes, Grates, and Inlets	Y	Y	N	A	SD
465	Pre-cast Junction Boxes, Grates, and Inlets (Alternate Designs Only, calcs req'd.)	Y	Y	Y	B	SD
466	Pre-cast Headwalls and Wingwalls	Y	Y	N	A	SD
467	Pre-cast Safety End Treatments	Y	Y	N	A	SD
495	Raising Existing Structure (calcs reqd.)	Y	Y	Y	B	SD
610	Roadway Illumination Supports (Non-Standard only, calcs reqd.)	Y	Y	Y	BRG	SD
613	High Mast Illumination Poles (Non-standard only, calcs reqd.)	Y	Y	Y	BRG	SD
627	Treated Timber Poles	Y	Y	N	T	SD
644	Special Non-Standard Supports (Bridge Mounts, Barrier Mounts, Etc.)	Y	Y	Y	T	SD
647	Large Roadside Sign Supports	Y	Y	Y	T	SD
650	Cantilever Sign Structure Supports - Alternate Design Calcs.	Y	Y	Y	T	SD
650	Sign Structures	Y	Y	N	T	SD
680	Installation of Highway Traffic Signals	Y	Y	N	T	SD
682	Vehicle and Pedestrian Signal Heads	Y	Y	N	T	SD
684	Traffic Signal Cables	Y	Y	N	T	SD
685	Roadside Flashing Beacon Assemblies	Y	Y	N	T	SD
686	Traffic Signal Pole Assemblies (Steel) (Non-Standard only)	Y	Y	Y	T	SD
687	Pedestal Pole Assemblies	Y	Y	N	T	SD
688	Detectors	Y	Y	N	A	SD
784	Repairing Steel Bridge Members	Y	Y	Y	B	WD
SS	Prestr Concr Crown Span	Y	Y	N	B	SD
SS	Sound Barrier Walls	Y	Y	Y	A	SD
SS	Camera Poles	Y	Y	Y	TMS	SD
SS	Pedestrian Bridge (Calcs req'd.)	Y	Y	Y	B	SD
SS	Screw-In Type Anchor Foundations	Y	Y	N	T	SD
SS	Fiber Optic/Communication Cable	Y	Y	N	TMS	SD
SS	Spread Spectrum Radios for Signals	Y	Y	N	T	SD
SS	VIVDS System for Signals	Y	Y	N	T	SD
SS	CTMS Equipment	Y	Y	N	TMS	SD

Notes:

1. Document flow for Working Drawings differs from Shop Drawings in that Working Drawings must be submitted to the Engineer rather than the Engineer of Record and they are for the information of the Engineer only; an approval stamp and distribution to all project offices is not required.

HOUSTON DISTRICT MASTER GENERAL NOTES

County: Harris **Control:** 0912-00-700

Highway: Various

Key to Reviewing Party

Computerized Traffic Management Systems (CTMS)	HOU-CTMSShpDrwgs@txdot.gov

Item 6: Control of Materials

To comply with the latest provisions of the Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the Contractor must submit an original of the TxDOT Construction Material Buy America Certification Form for items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

The Buy America Material Classification Sheet is located at the below link.

https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html for clarification on material categorization.

Item 7: Legal Relations and Responsibilities

No significant traffic generator events have been identified.

Item 8: Prosecution and Progress

Working days will be computed and charged based on a standard workweek in accordance with Section 8.3.1.4.

Item 502: Barricades, Signs, and Traffic Handling

Use a traffic control plan for handling traffic through the various phases of construction. Follow the phasing sequence unless otherwise agreed upon by the Area Engineer and the Project Manager. Ensure this plan conforms to the latest "Texas Manual on Uniform Traffic Control Devices" and the latest Barricade and Construction (BC) Standard Sheets. The latest versions of Work Zone Standard Sheets WZ (BTS-1) and WZ (BTS-2) are the traffic control plan for the signal installations.

Submit changes to the traffic control plan to the Area Engineer. Provide a layout showing the construction phasing, signs, striping, and signalizations for changes to the original traffic control plan.

Furnish and maintain the barricades and warning signs, including the necessary temporary and portable traffic control devices, during the various phases of construction. Place and construct these barricades and warning signs in accordance with the latest "Texas Manual on Uniform Traffic Control Devices" for typical construction layouts.

Cover work zone signs when work related to the signs is not in progress, or when any hazard related to the signs no longer exists.

Keep the delineation devices, signs, and pavement markings clean. This work is subsidiary to the Item, "Barricades, Signs, and Traffic Handling."

Cover or remove the permanent signs and construction signs that are incorrect or that do not apply to the current situation for a particular phase.

Replace the overhead signs, informational signs, and exit signs to be removed, with temporary signs providing the correct information to the traveling public. Size the replacement signs and include them in the traffic control plan.

Do not mount signs on drums or barricades, except those listed in the latest Barricades and Construction standard sheets.

Use traffic cones for daytime work only. Replace the cones with plastic drums during nighttime hours.

Place positive barriers to protect drop-off conditions greater than 2 ft. within the clear zone that remain overnight.

Do not reduce the existing number of lanes open to traffic except as shown on the following time schedule:

One Lane Closure

Day	Daytime work	Nighttime work	Restricted Hours Subject to Lane Assessment Fee
Monday	9:00 AM – 3:00 PM	N/A	N/A
Tuesday	9:00 AM – 3:00 PM	N/A	N/A
Wednesday	9:00 AM – 3:00 PM	N/A	N/A
Thursday	9:00 AM – 3:00 PM	N/A	N/A
Friday	9:00 AM – 3:00 PM	N/A	N/A
Saturday	N/A	N/A	N/A
Sunday	N/A	N/A	N/A

County: Harris **Control:** 0912-00-700

Highway: Various

The above times are approved for the traffic control conditions listed. The Area Engineer may approve other closure times if traffic counts warrant. The Area Engineer may reduce the above times for special events.

Law enforcement assistance will be required for this project and is expected to be required for major traffic control changes and lane closures. Coordinate with local law enforcement and arrange for law enforcement as directed or agreed by the Engineer. Before payment will be made, complete the "Daily Report on Law Enforcement Force Account Work" (Form 318), provided by the Department and submit daily invoices that agree with this form for any day during the month in which approved services were provided.

Provide full-time, off-duty, uniformed, certified peace officers, as part of traffic control operations. The peace officers must be able to show proof of certification by the Texas Commission on Law Enforcement Officers Standards. The cost of the officers is paid for on a force account basis.

A minimum of 7 days in advance of any total closure, notify the Houston District Public Information Office of which roadways, ramps, intersections, or lanes will be closed, the dates they will remain closed, and when they will be opened again to traffic.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Item 6028: Installation of Dynamic Message System

Record Global Positioning System (GPS) location data for each Dynamic Message Sign (DMS) installed on this project and provide the data to the Engineer.

Include removal of existing DMS as part of this item.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0912-00-700 **DISTRICT** Houston **COUNTY** Harris
HIGHWAY Various

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0912-00-700**			
		PROJECT ID		**A00196585**			
		COUNTY		**Harris**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12.000		12.000	
	6028-6002	INSTALL DMS (FOUNDATION MTD CABINET)	EA	51.000		51.000	
	6032-6001	SYSTEM INTEGRATION	LS	1.000		1.000	
	06	MATERIAL FURNISHED BY THE STATE	LS	1.000		1.000	
	11	STATE FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	

DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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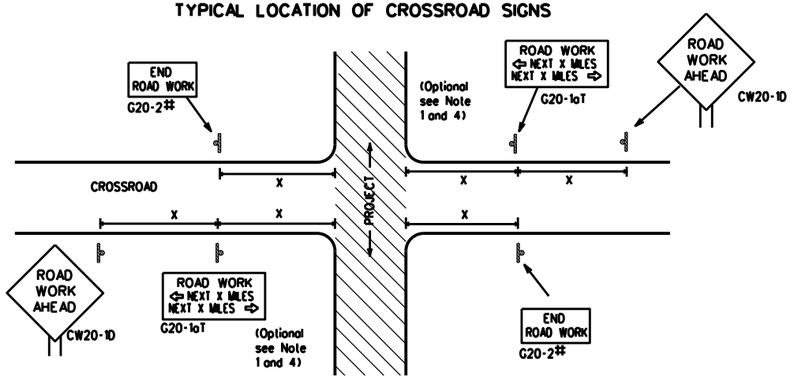
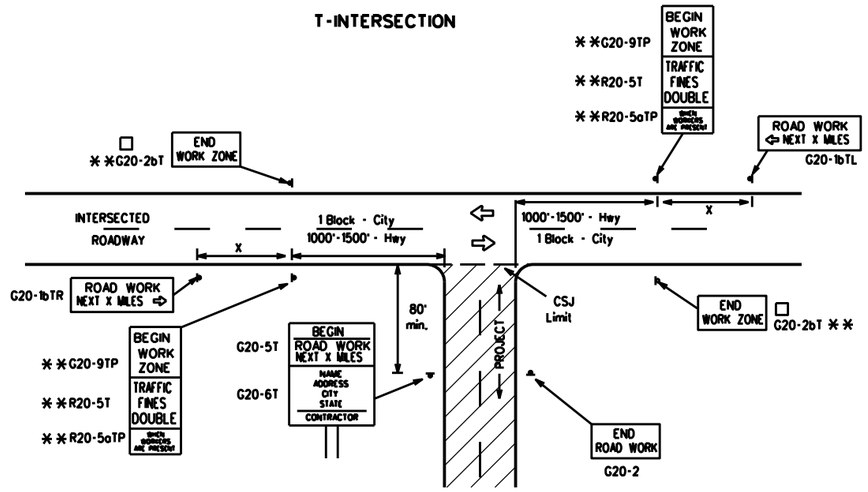
TYPICAL LOCATION OF CROSSROAD SIGNS



May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING

1.5.6

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4] CW21 CW22 CW23 CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign * Spacing "X"
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
*	*[3]

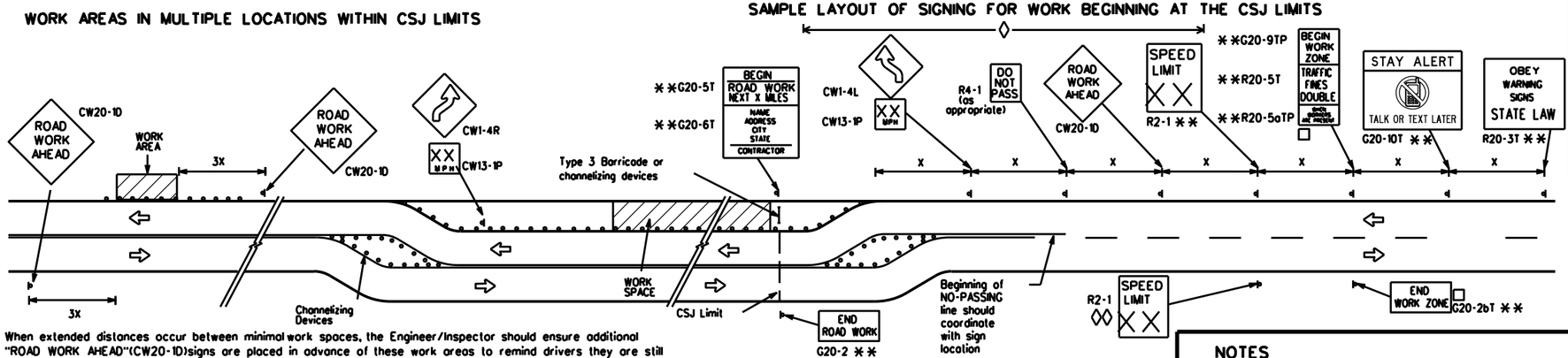
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

* Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

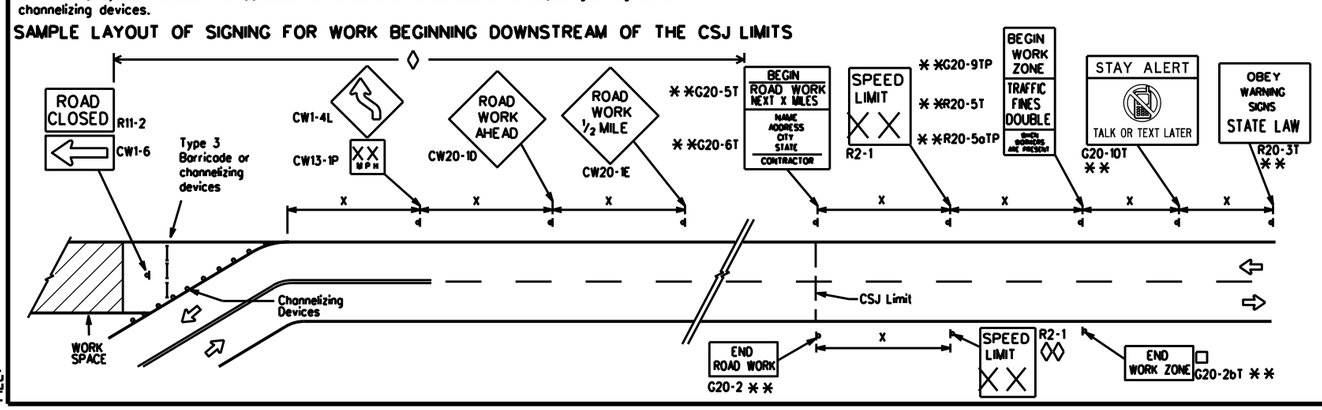
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND	
⊢⊣	Type 3 Barricade
○○○	Channelizing Devices
▬	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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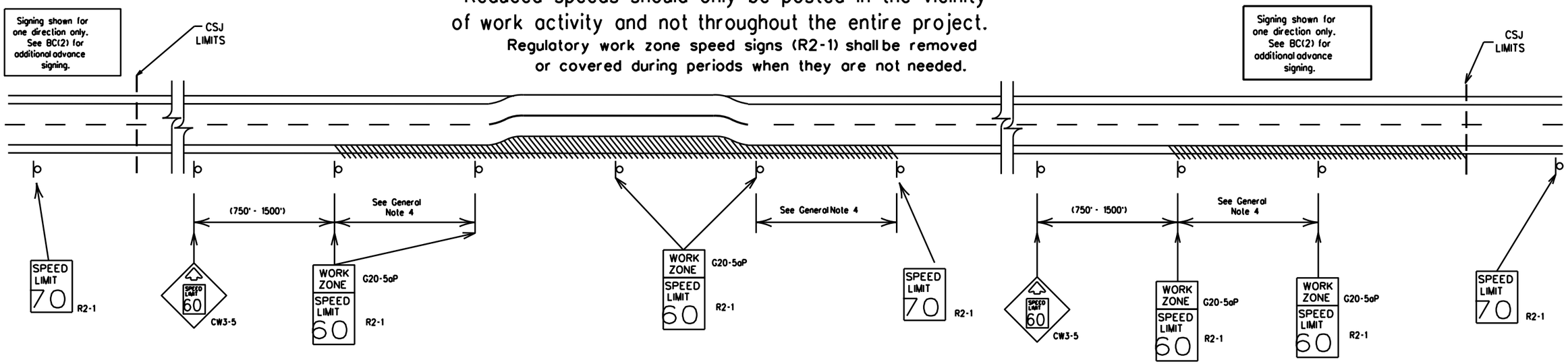
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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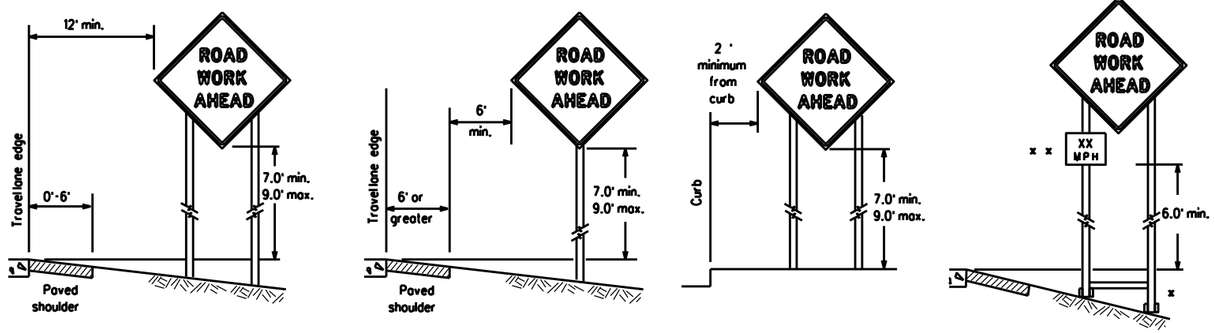
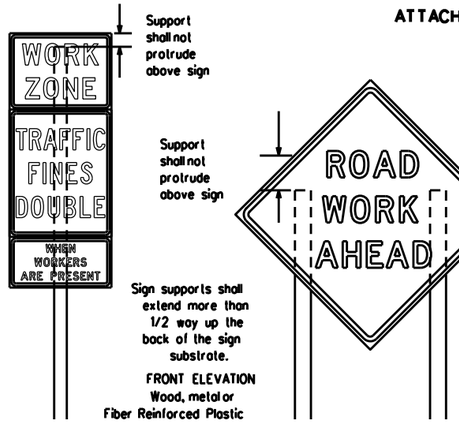
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



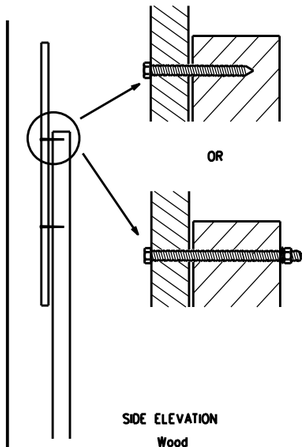
x When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

x x When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travellane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

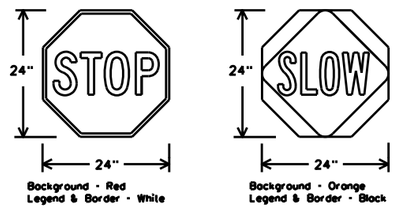


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the lightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type B or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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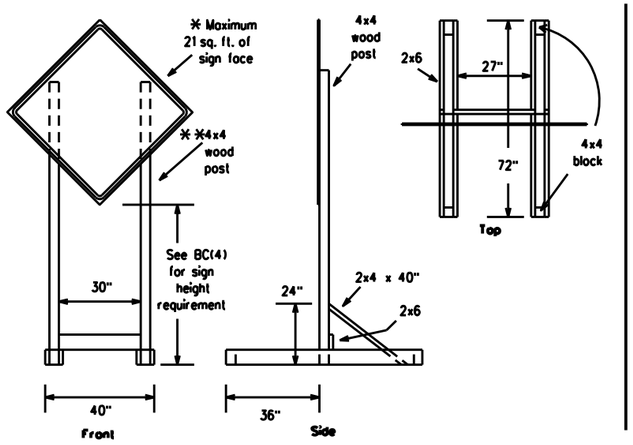
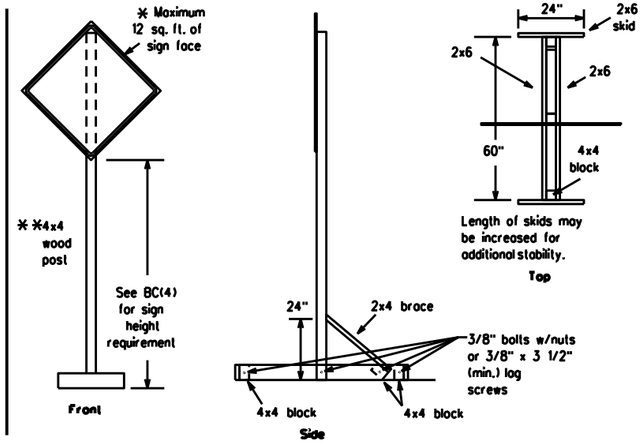
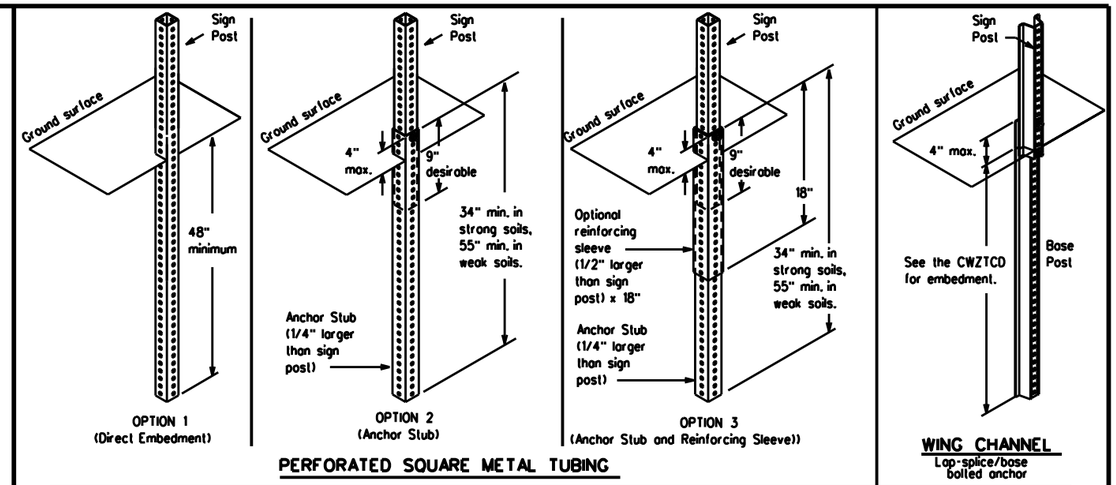




SKID MOUNTED WOOD SIGN SUPPORTS

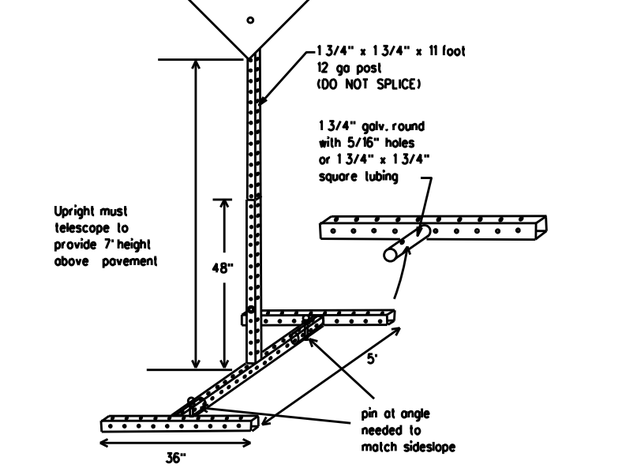
*** LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS**

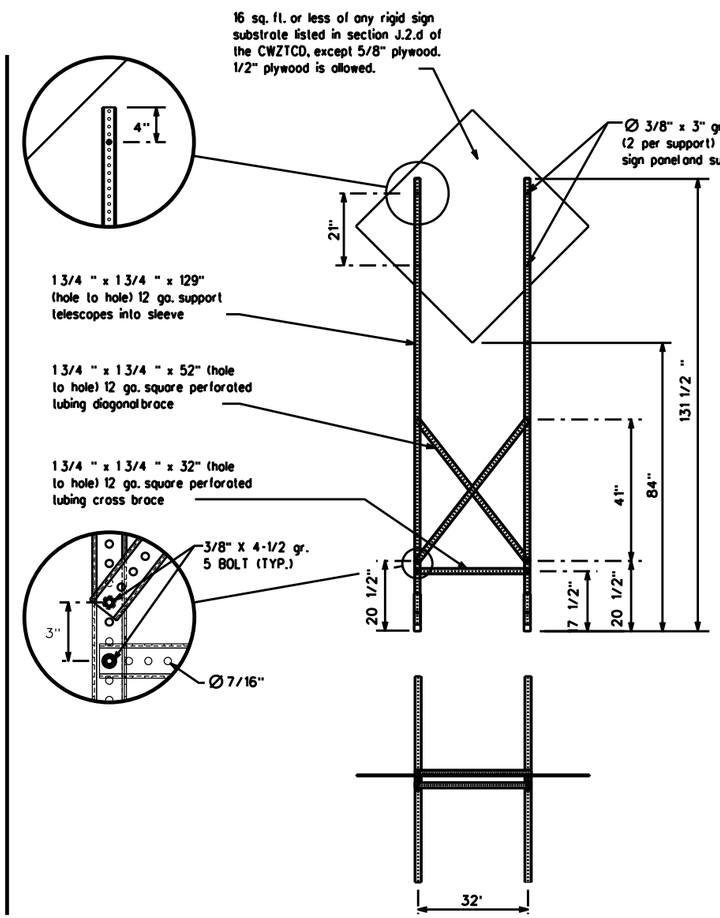


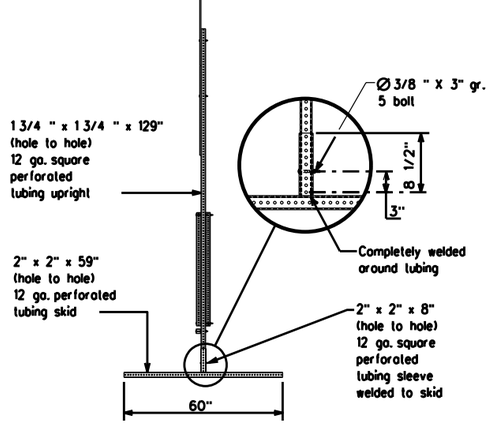
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

*** LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS**

WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

☐ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway: i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message: i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

Roadway designation = IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

- FREEWAY CLOSED X MILE
- FRONTAGE ROAD CLOSED
- ROAD CLOSED AT SH XXX
- SHOULDER CLOSED XXX FT
- ROAD CLSD AT FM XXXX
- RIGHT LN CLOSED XXX FT
- RIGHT X LANES CLOSED
- RIGHT X LANES OPEN
- CENTER LANE CLOSED
- DAYTIME LANE CLOSURES
- NIGHT LANE CLOSURES
- I-XX SOUTH EXIT CLOSED
- VARIOUS LANES CLOSED
- EXIT XXX CLOSED X MILE
- EXIT CLOSED
- RIGHT LN TO BE CLOSED
- MALL DRIVEWAY CLOSED
- X LANES CLOSED TUE - FRI
- XXXXXXXX BLVD CLOSED

Other Condition List

- ROADWORK XXX FT
- ROAD REPAIRS XXXX FT
- FLAGGER XXXX FT
- LANE NARROWS XXXX FT
- RIGHT LN NARROWS XXXX FT
- TWO-WAY TRAFFIC XX MILE
- MERGING TRAFFIC XXXX FT
- CONST TRAFFIC XXX FT
- LOOSE GRAVEL XXXX FT
- UNEVEN LANES XXXX FT
- DETOUR X MILE
- ROUGH ROAD XXXX FT
- ROADWORK PAST SH XXXX
- ROADWORK NEXT FRI-SUN
- BUMP XXXX FT
- US XXX EXIT X MILES
- TRAFFIC SIGNAL XXXX FT
- LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

- MERGE RIGHT
- FORM X LINES RIGHT
- DETOUR NEXT X EXITS
- USE XXXXX RD EXIT
- USE EXIT XXX
- USE EXIT I-XX NORTH
- STAY ON US XXX SOUTH
- USE I-XX E TO I-XX N
- TRUCKS USE US XXX N
- WATCH FOR TRUCKS
- WATCH FOR TRUCKS
- EXPECT DELAYS
- EXPECT DELAYS
- PREPARE TO STOP
- REDUCE SPEED XXX FT
- END SHOULDER USE
- USE OTHER ROUTES
- WATCH FOR WORKERS
- STAY IN LANE *

Location List

- AT FM XXXX
- BEFORE RAILROAD CROSSING
- NEXT X MILES
- PAST US XXX EXIT
- XXXXXXX TO XXXXXXX
- US XXX TO FM XXXX

Warning List

- SPEED LIMIT XX MPH
- MAXIMUM SPEED XX MPH
- MINIMUM SPEED XX MPH
- ADVISORY SPEED XX MPH
- RIGHT LANE EXIT
- USE CAUTION
- DRIVE SAFELY
- DRIVE WITH CARE

** Advance Notice List

- TUE-FRI XX AM- X PM
- APR XX-XX X PM-X AM
- BEGINS MONDAY
- BEGINS MAY XX
- MAY X-X XX PM - XX AM
- NEXT FRI-SUN
- XX AM TO XX PM
- NEXT TUE AUG XX
- TONIGHT XX PM- XX AM

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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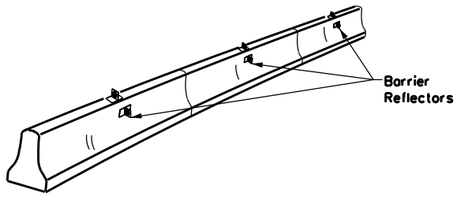
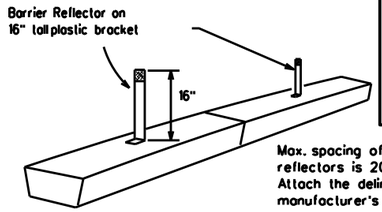
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.

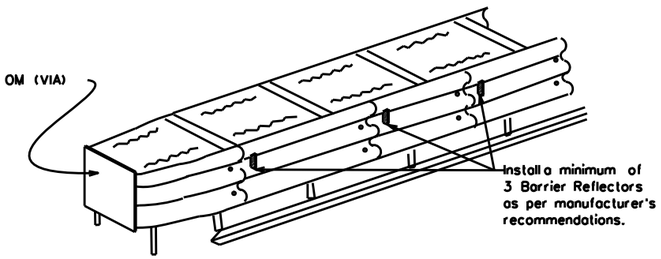


Max. spacing of barrier reflectors is 20 feet.
Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

LOW PROFILE CONCRETE BARRIER (LPCB)

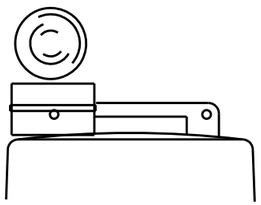


DELINEATION OF END TREATMENTS

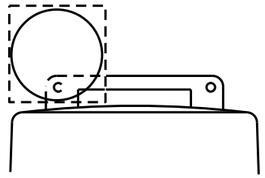
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B or C Sheeting, meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

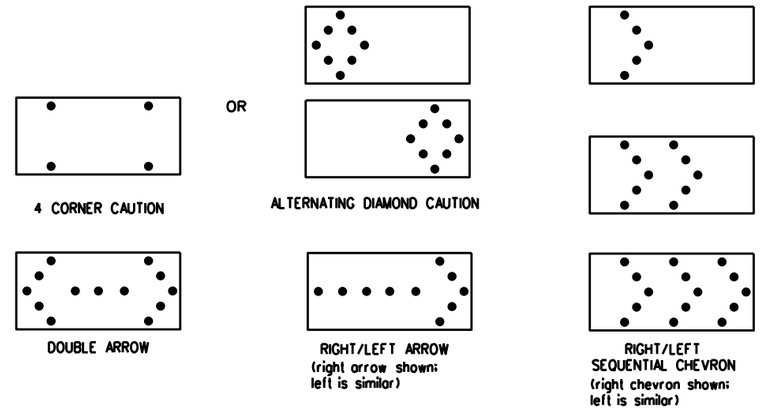
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

RIGHT/LEFT ARROW
(right arrow shown;
left is similar)

RIGHT/LEFT
SEQUENTIAL CHEVRON
(right chevron shown;
left is similar)

5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION
Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is on extended distance from the TMA.

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-21

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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

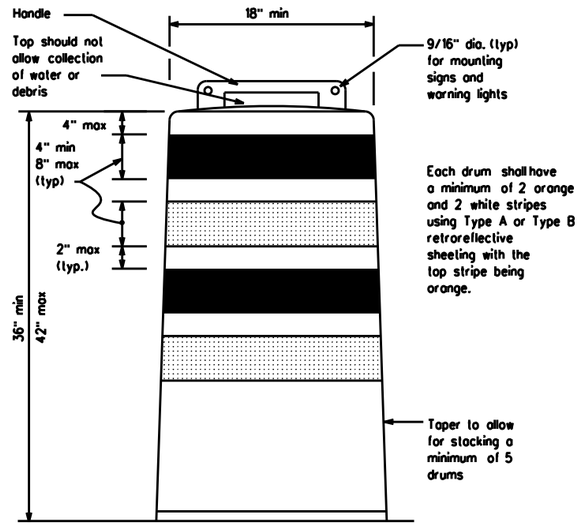
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

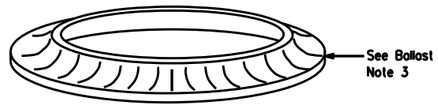
RETROREFLECTIVE SHEETING

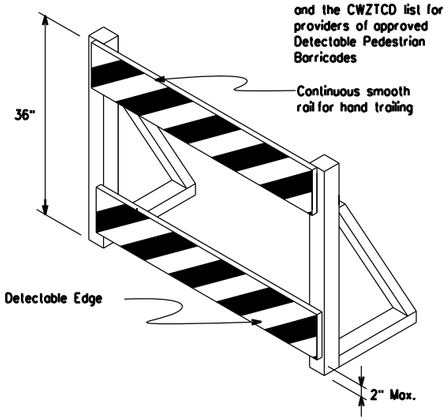
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.

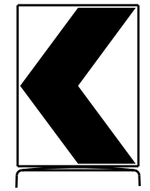




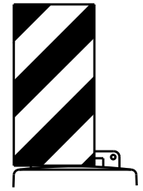


DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24"
Vertical Panel
mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B or Type C Orange_{FL} sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

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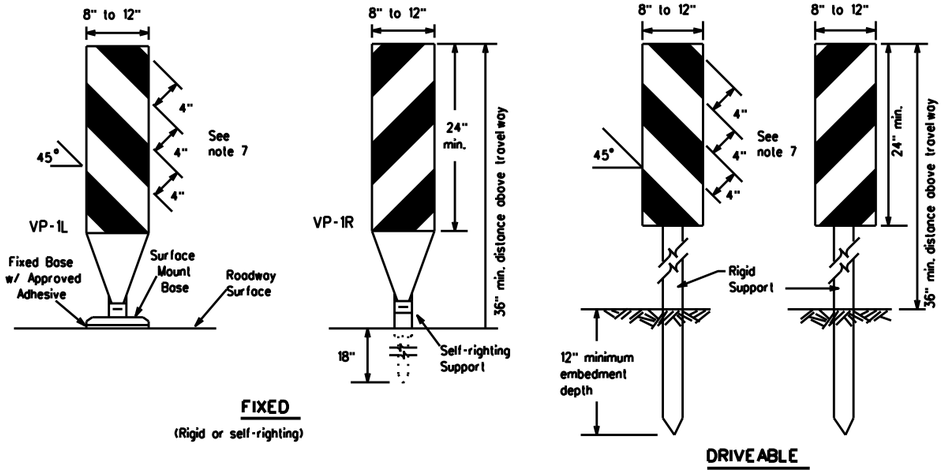
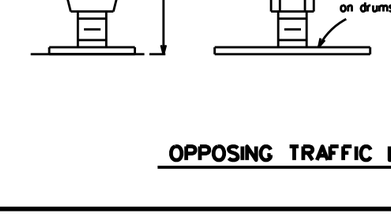


FIXED

(Rigid or self-righting)

DRIVEABLE

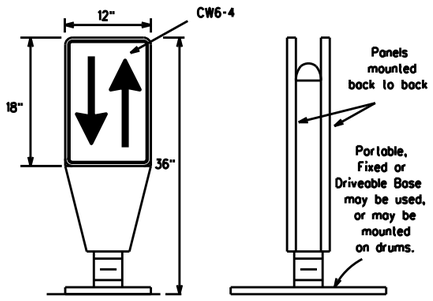


(Rigid or self-righting)

PORTABLE

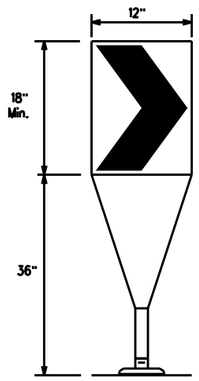
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



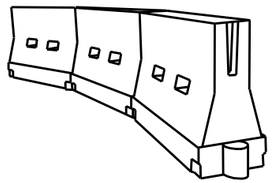
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

Posted Speed	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L=WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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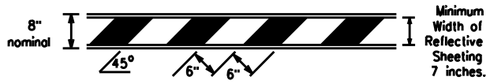
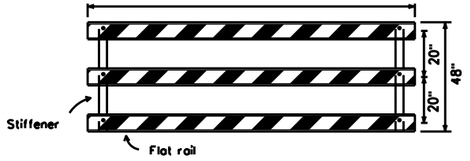
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



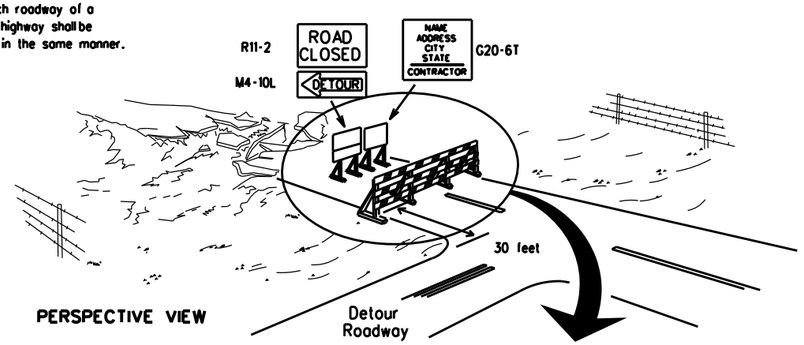
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

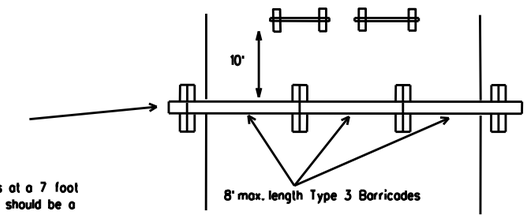
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

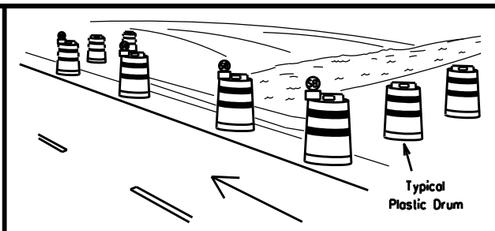
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

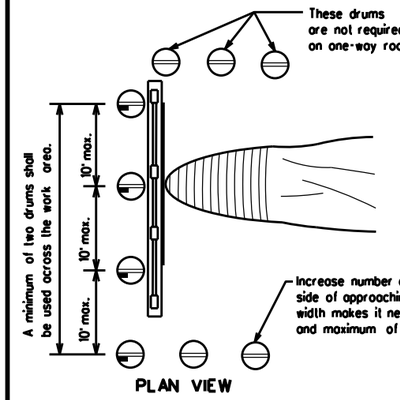
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

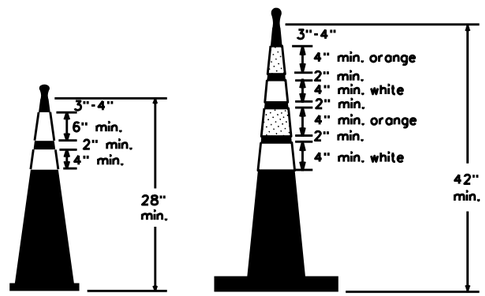
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



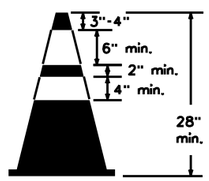
PLAN VIEW

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

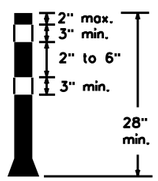
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

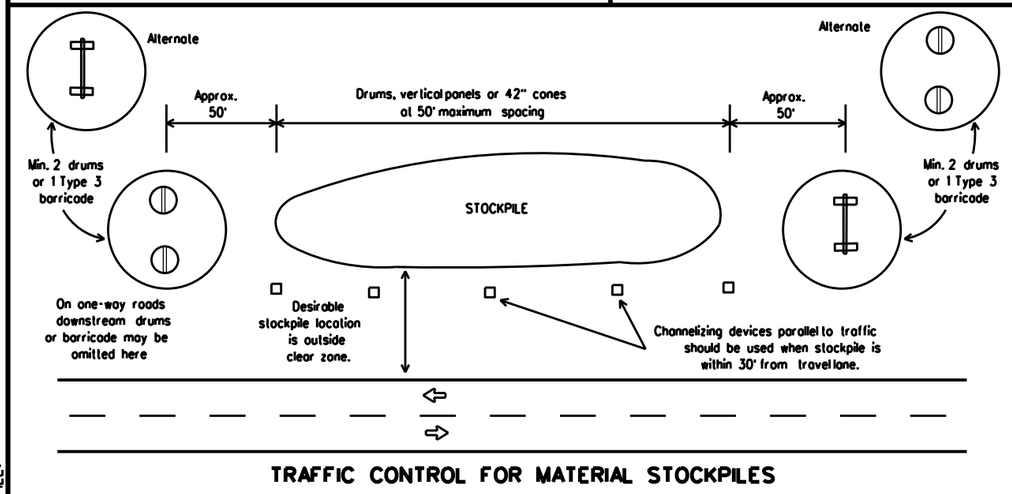


Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

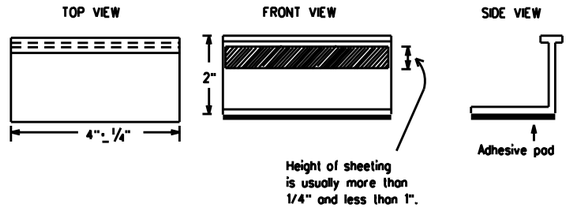
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	ETC
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	HOU	HARRIS		19
11-02 8-14				

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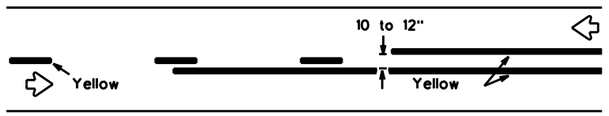
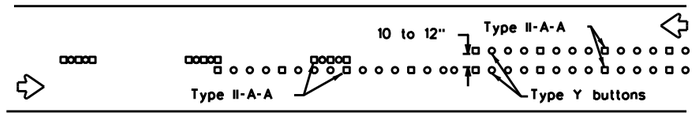
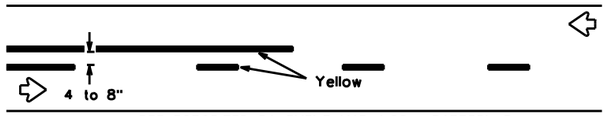
PAVEMENT MARKING PATTERNS



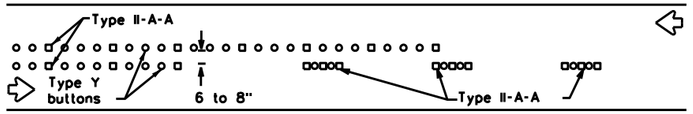
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



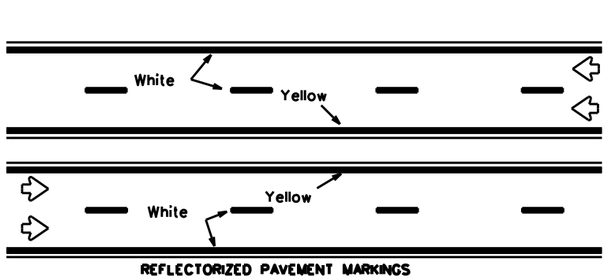
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



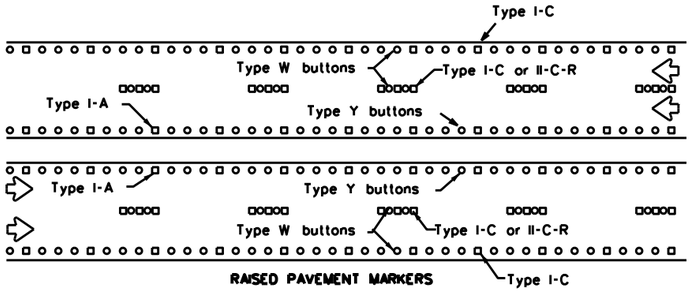
RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



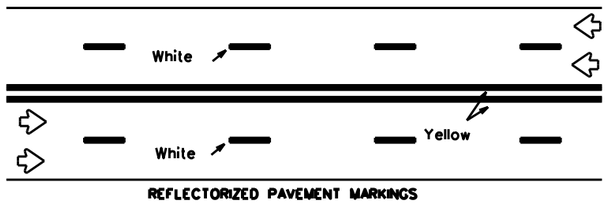
REFLECTORIZED PAVEMENT MARKINGS



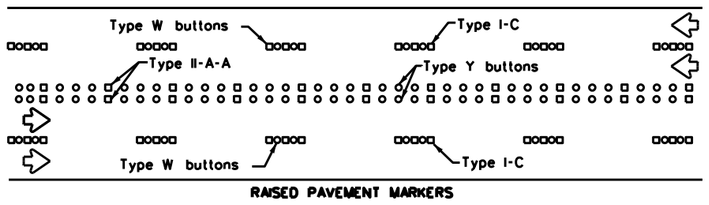
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



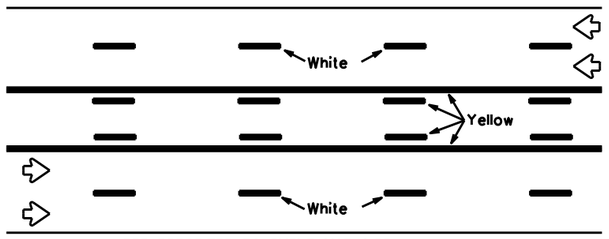
REFLECTORIZED PAVEMENT MARKINGS



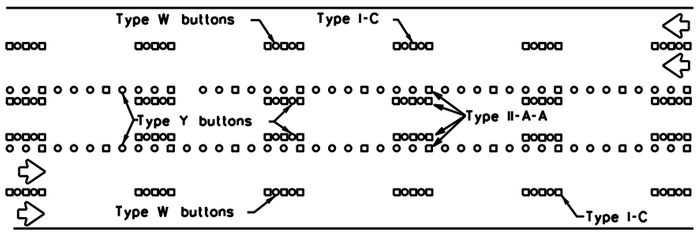
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

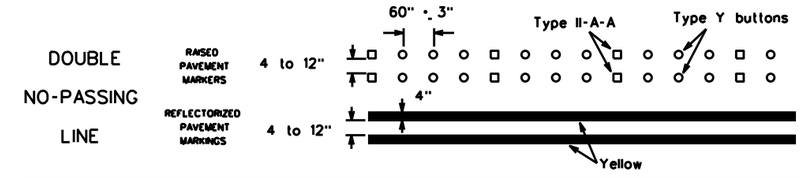
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

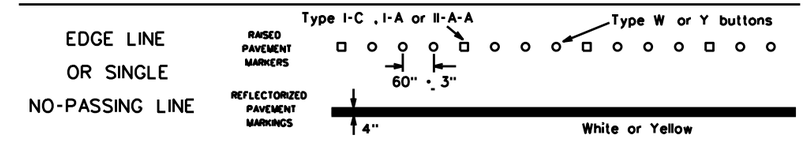
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

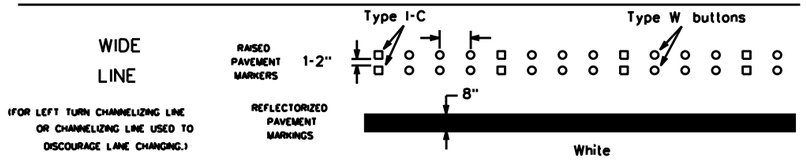


EDGE LINE OR SINGLE NO-PASSING LINE



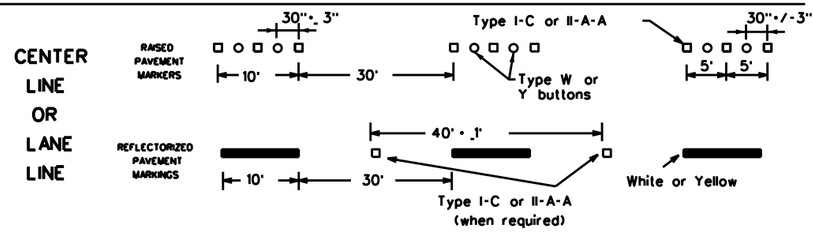
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

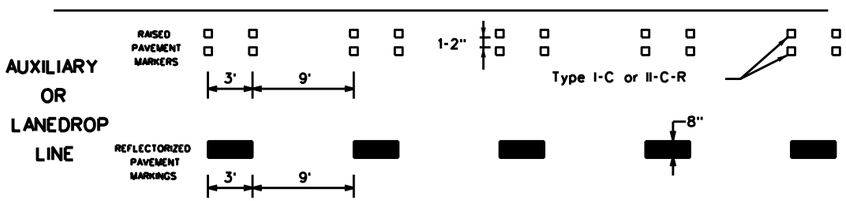


BROKEN LINES

CENTER LINE OR LANE LINE

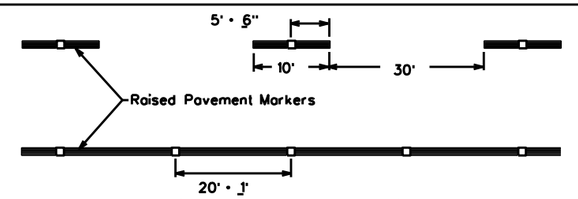


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0912	00	700	ETC
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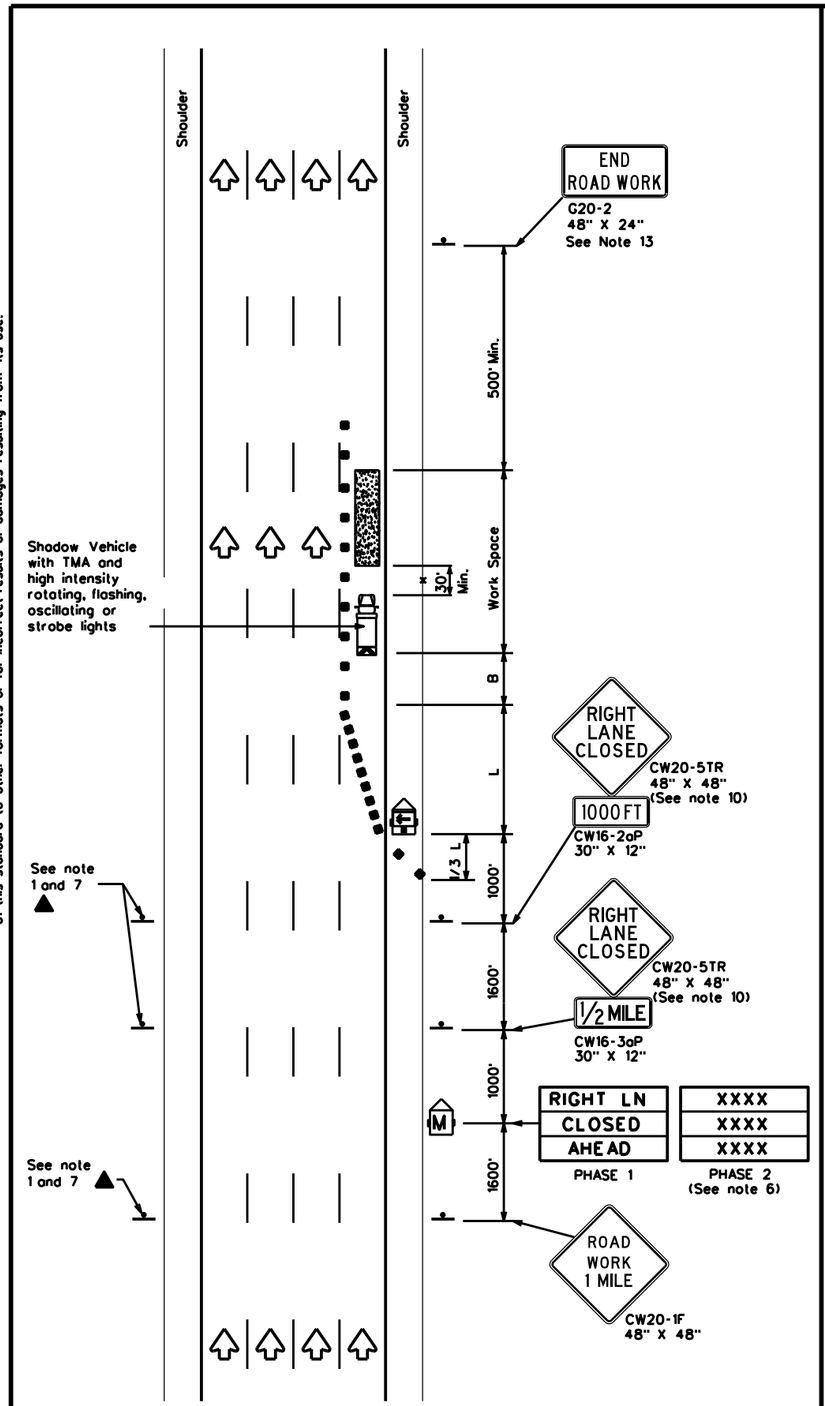
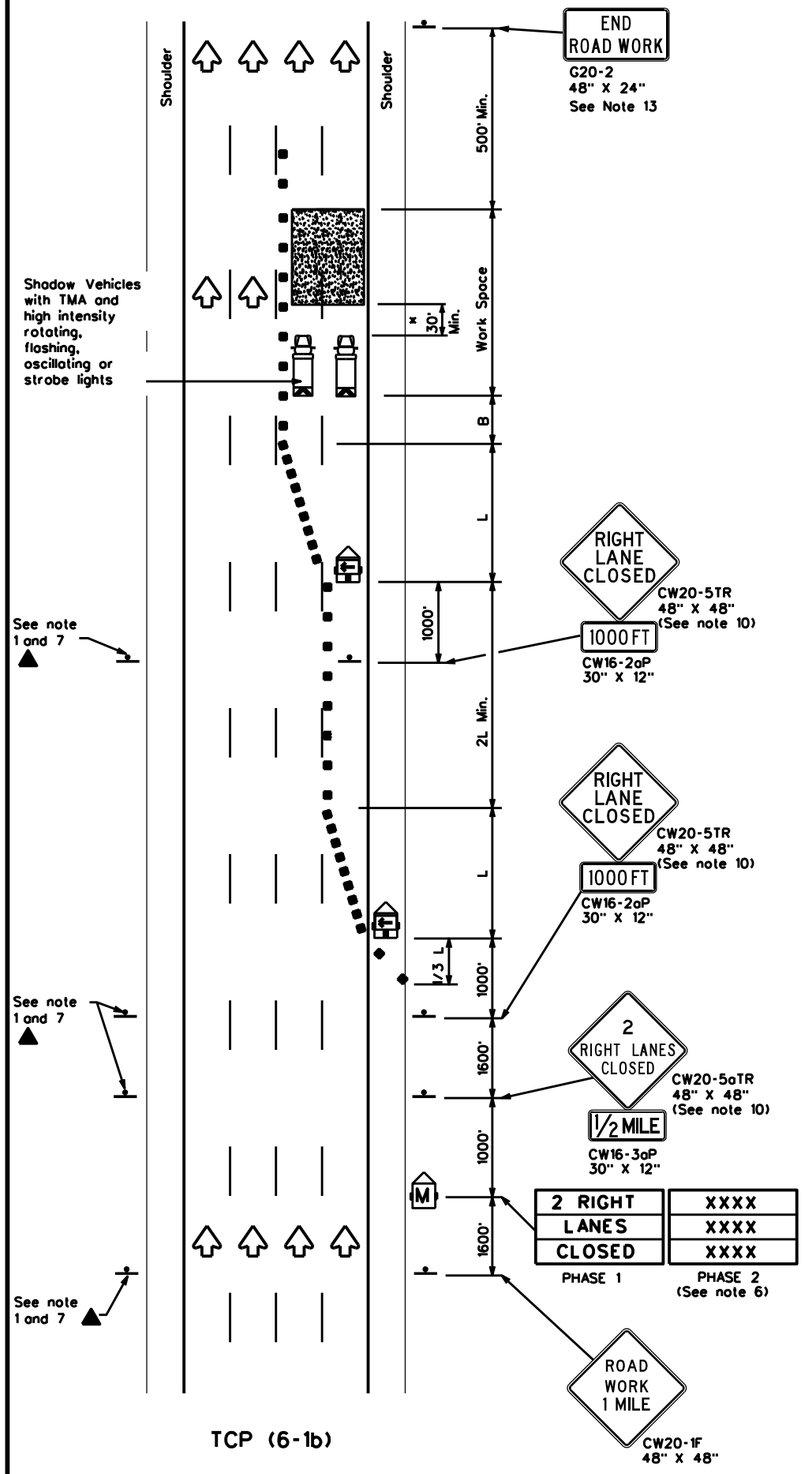
	HOU	HARRIS		20

106



TCP (6-1a)

TYPICAL FREEWAY ONE LANE CLOSURE



TCP (6-1b)

TYPICAL FREEWAY TWO LANE CLOSURE

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. Drums or 42"cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
3. All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
4. The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
5. Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
6. Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
7. Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
8. The number of closed lanes may be increased provided the spacing of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMUTCD.
9. Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
10. Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions shown in the SHSD for Texas with distances on the sign face rather than mounted on a ploque below the sign may be used.
11. When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
12. For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
13. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS 8-12	0912	00	700	ETC
	DIST	COUNTY		SHEET NO.
	HOU	HARRIS		21

DATE:
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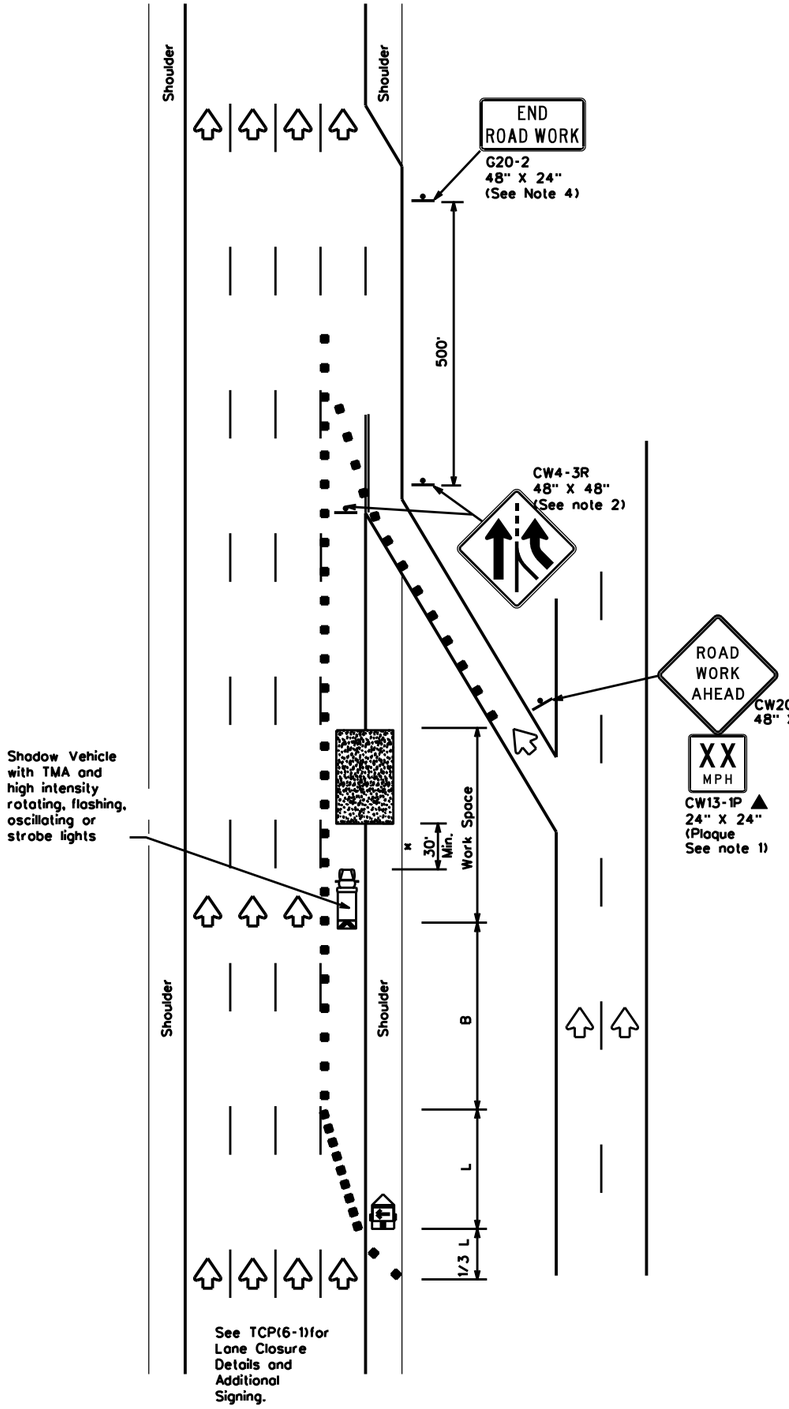
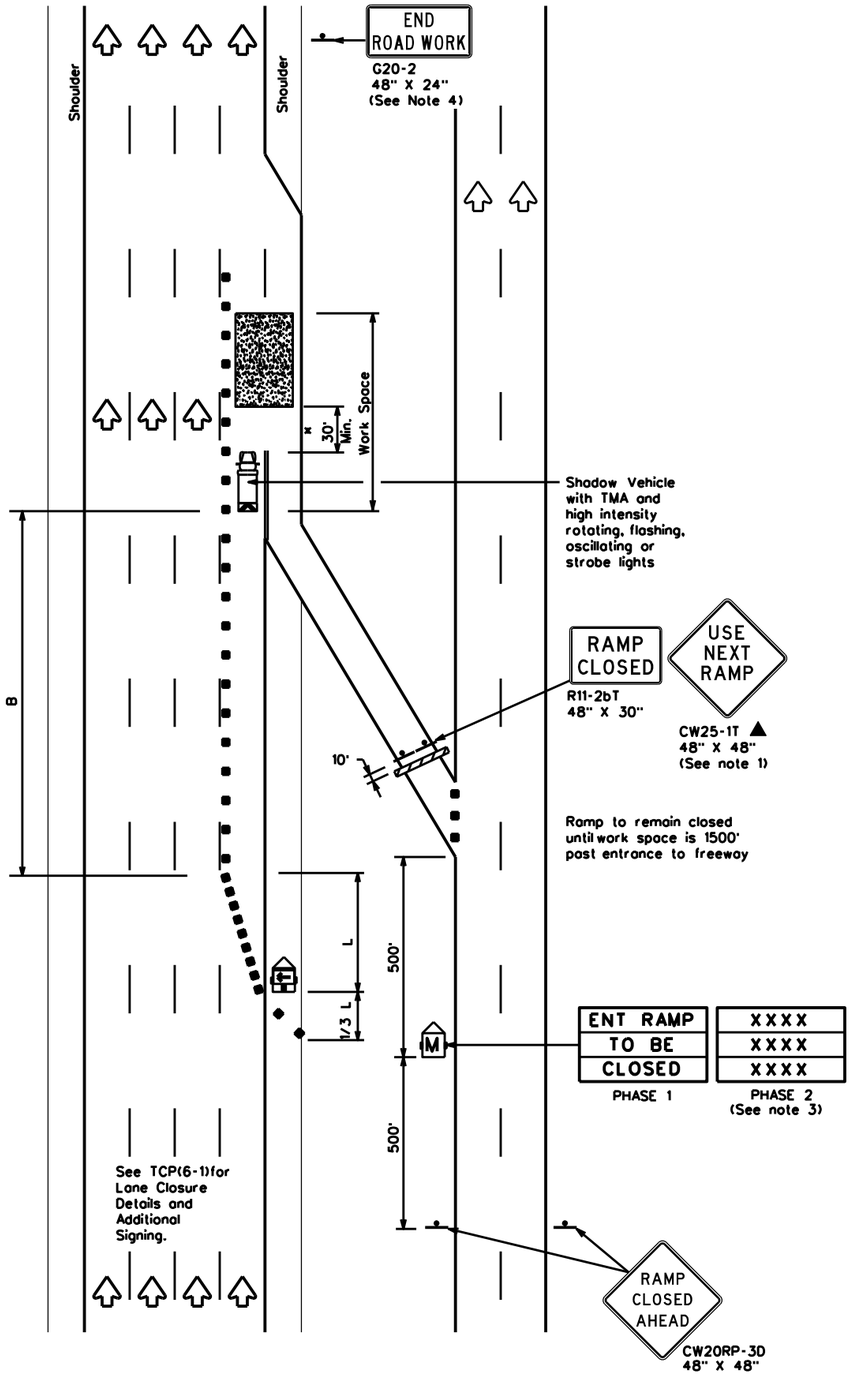


TCP (6-2a)

ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b)

ENTRANCE RAMP CLOSED

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. ADDED LANE Symbol (CW4-3) sign may be omitted when sign between ramp and mainlane can be seen from both roadways.
3. See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
4. The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

x A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP

TCP(6-2)-12

FILE: tcp6-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	HOU	HARRIS		22

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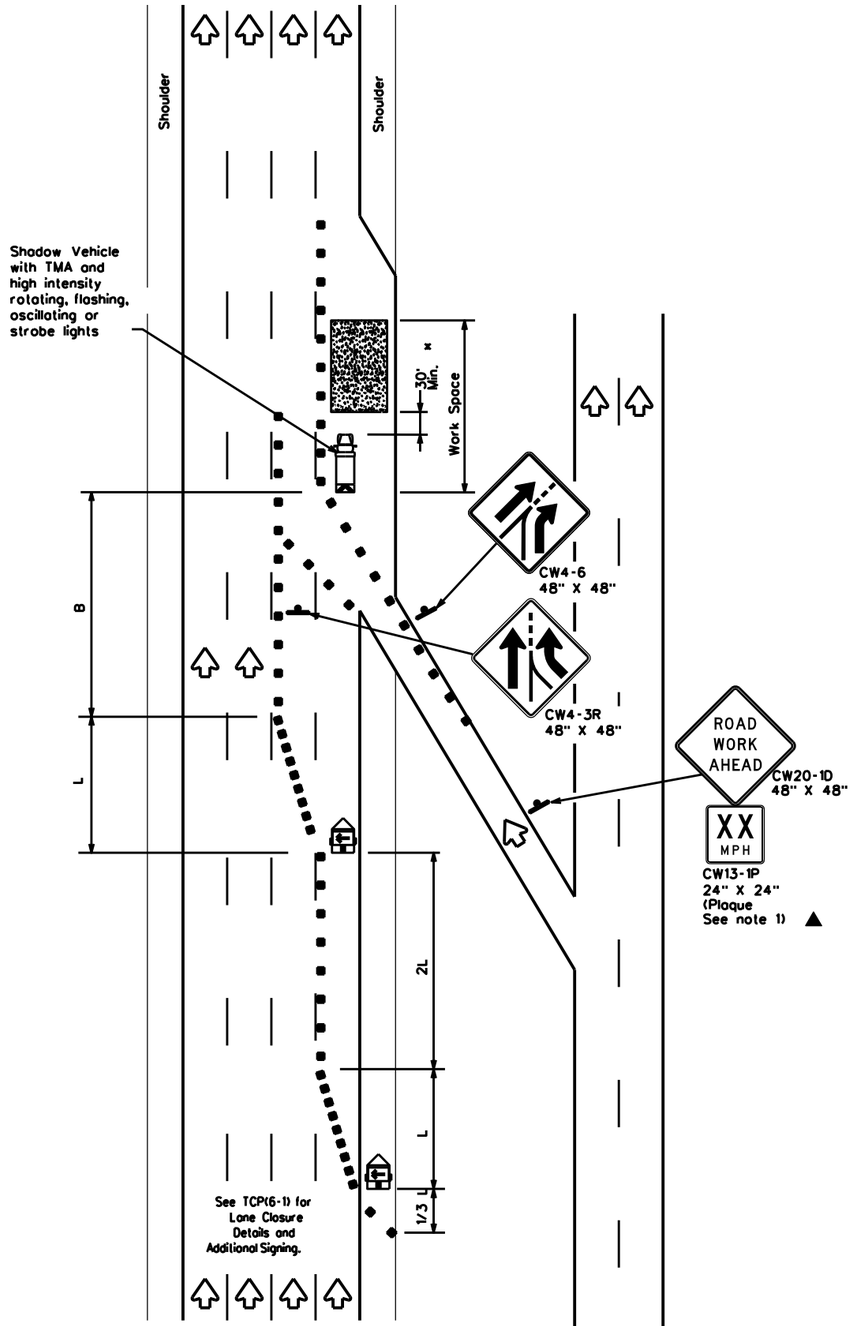
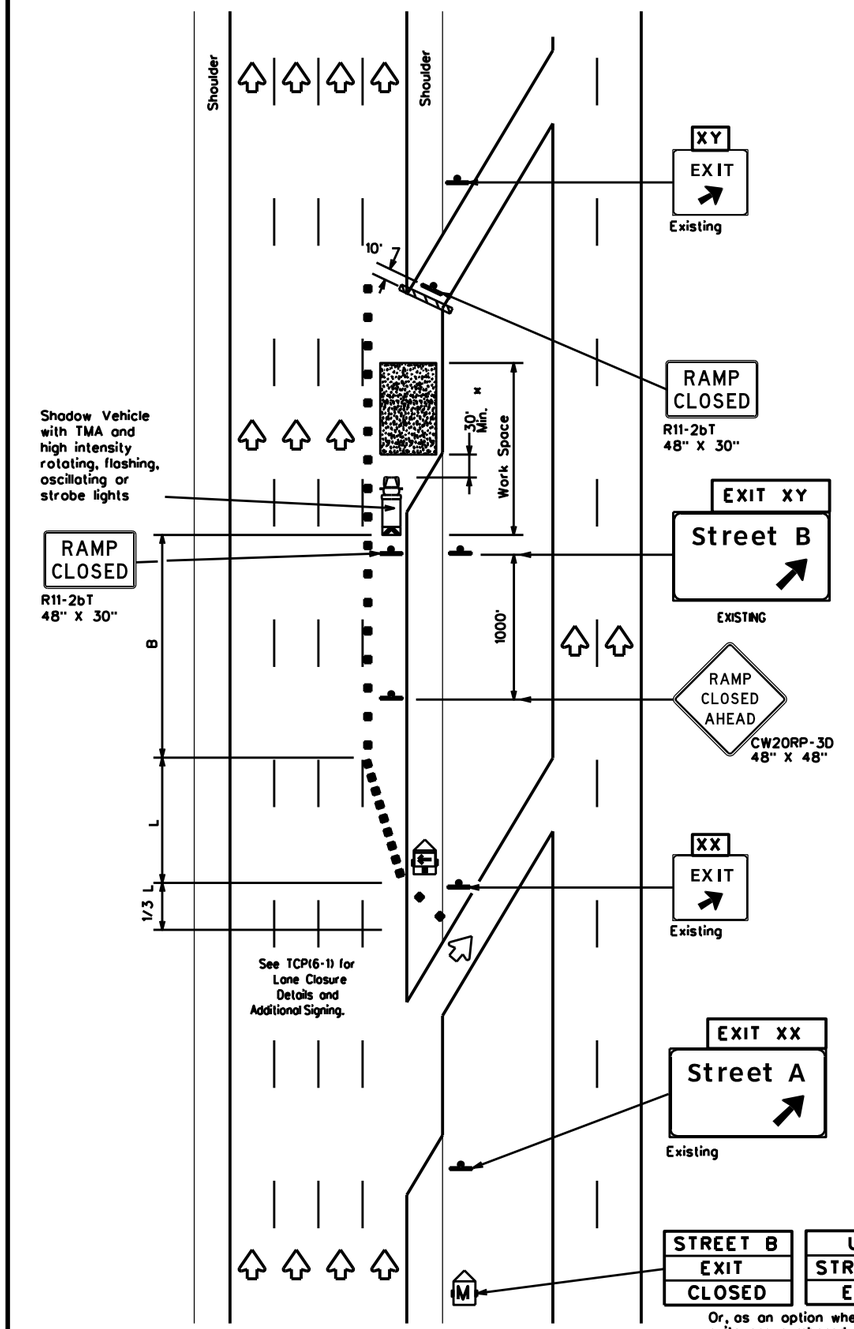


TCP (6-3a)

ENTRANCE RAMP OPEN



TCP (6-3b)

EXIT RAMP CLOSED

TRAFFIC EXITS PRIOR TO CLOSED RAMP

LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES:

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

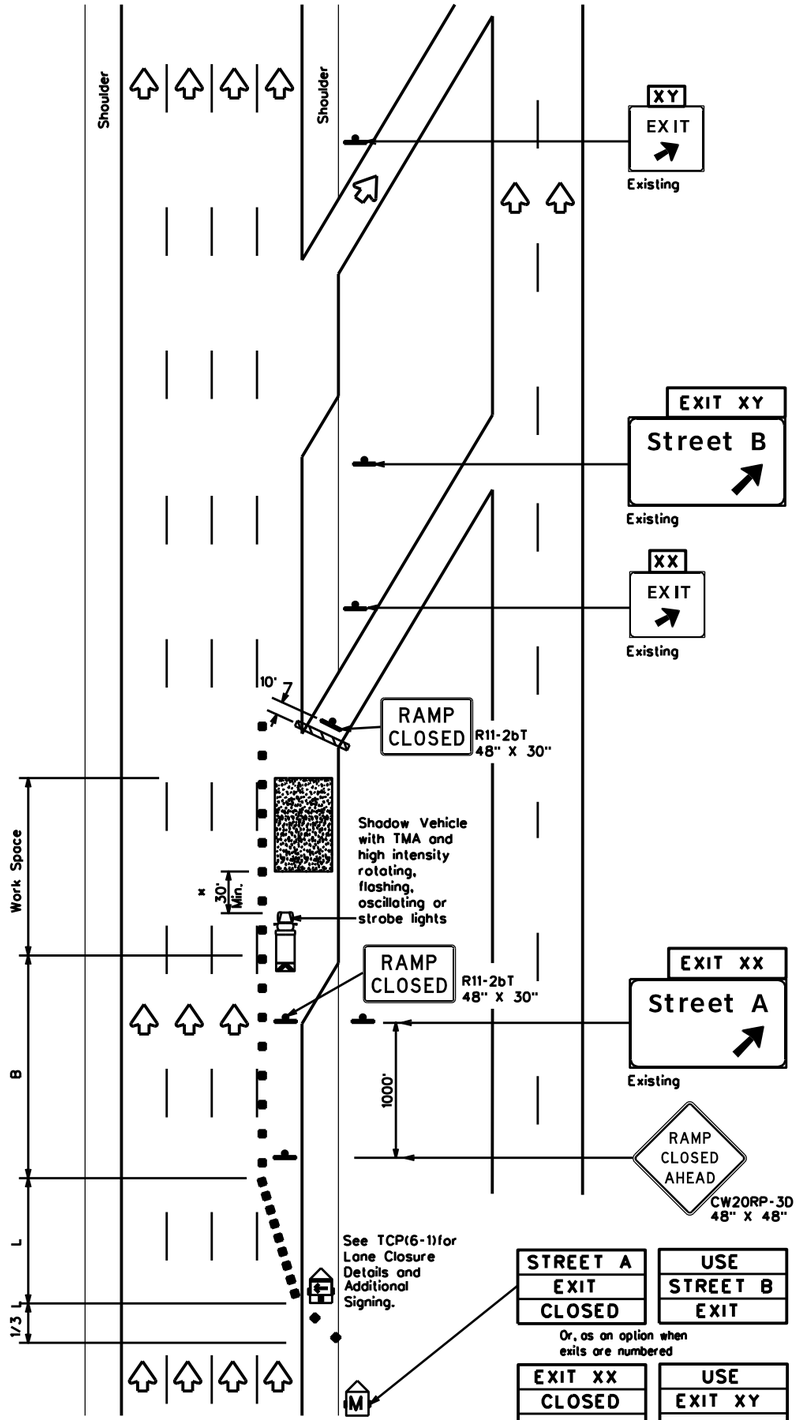
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP(6-3)-12

FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994 REVISIONS	CONT	SECT	JOB	HIGHWAY
1-97 8-98	0912	00	700	ETC
4-98 8-12	DIST	COUNTY		SHEET NO.
	HOU	HARRIS		23

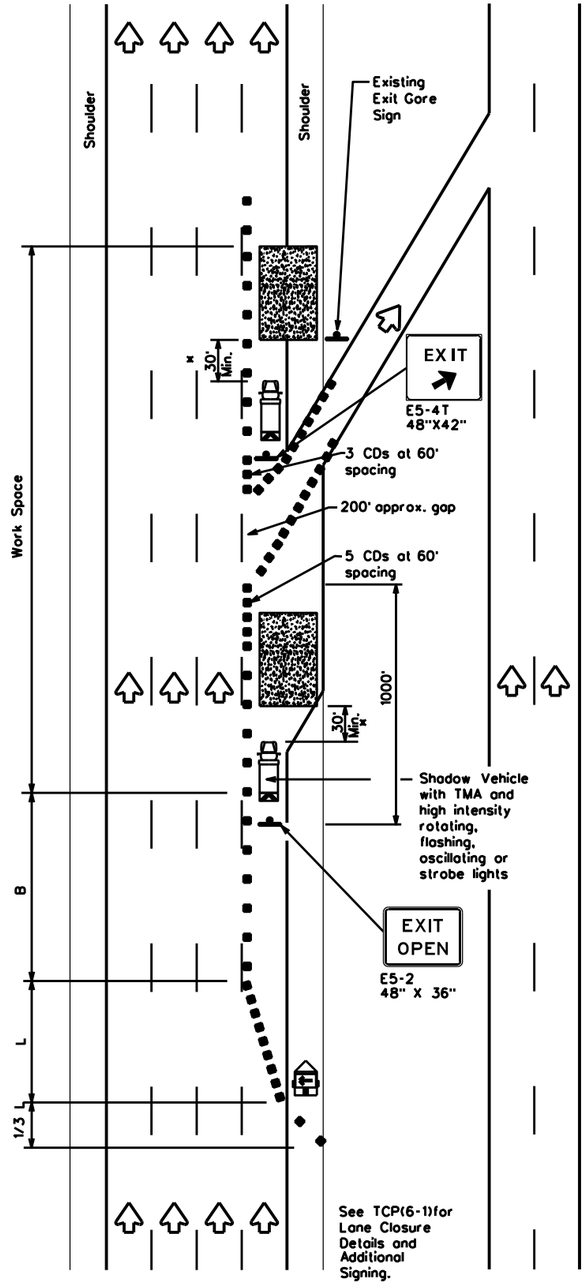
DATE:
FILE:



TCP (6-4a)

EXIT RAMP CLOSED

TRAFFIC EXITS PAST CLOSED RAMP



TCP (6-4b)

EXIT RAMP OPEN

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" **			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L=WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. See BC Standards for sign details.

x A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA AT EXIT RAMP

TCP(6-4)-12

FILE: tcp6-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	ETC
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	HOU	HARRIS		24

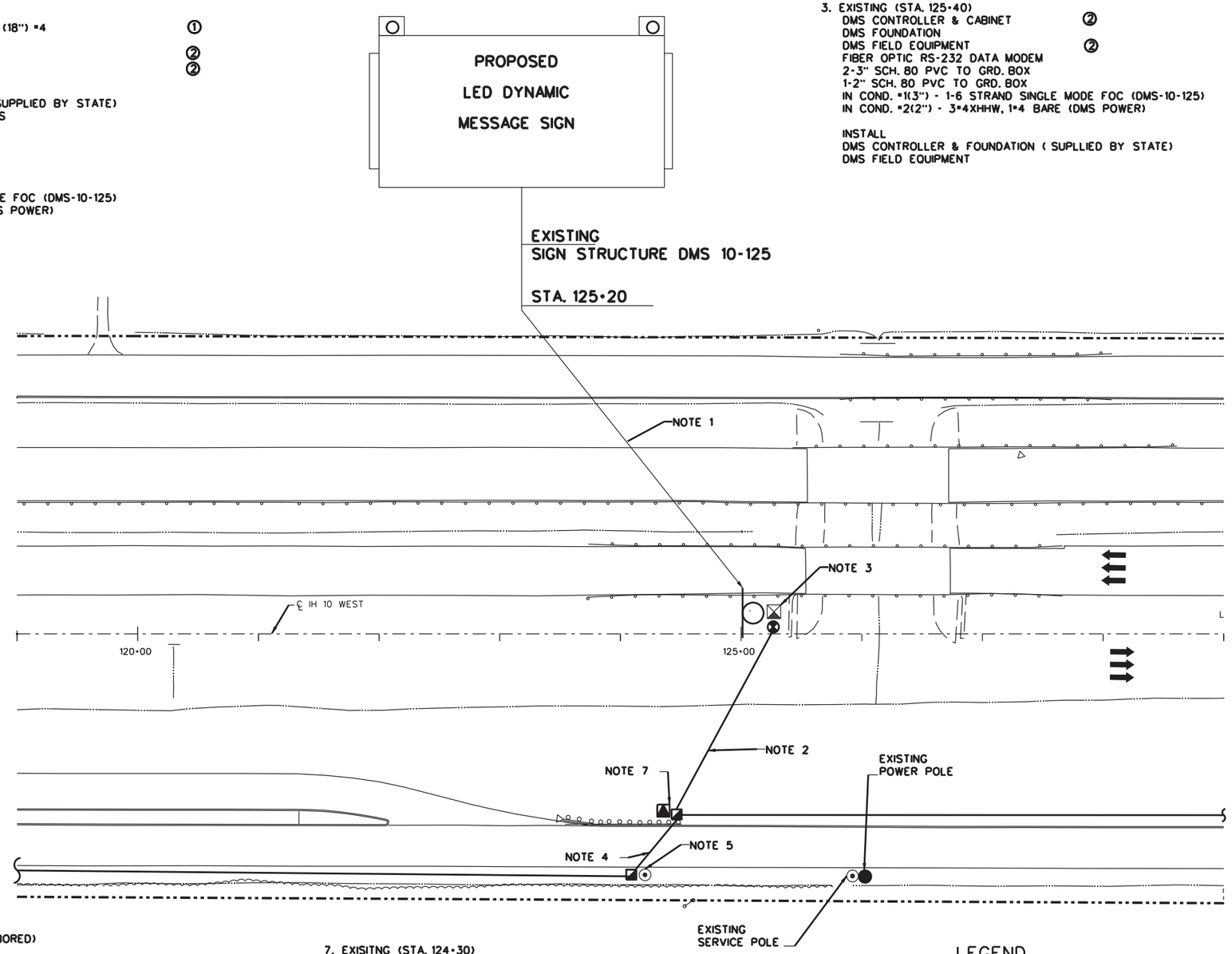
1. EXISTNG (STA. 125+20)
SIGN STRUCTURE DMS-10-125
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") #4 ①
2-4" SCH. 80 PVC TO CABINET
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 &2- DMS CONTROL CABLES

2. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 1-6 STRAND SINGLE MODE FOC (DMS-10-125)
IN COND. #2- 3#4XHHW, 1#4 BARE (DMS POWER)

3. EXISTING (STA. 125+40)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
FIBER OPTIC RS-232 DATA MODEM
2-3" SCH. 80 PVC TO GRD. BOX
1-2" SCH. 80 PVC TO GRD. BOX
IN COND. #1(3") - 1-6 STRAND SINGLE MODE FOC (DMS-10-125)
IN COND. #2(2") - 3#4XHHW, 1#4 BARE (DMS POWER)

INSTALL
DMS CONTROLLER & FOUNDATION (SUPLLIED BY STATE)
DMS FIELD EQUIPMENT



4. EXISTING
2-3" SCH. 80 PVC (BORED)
2-4" SCH. 80 MULTI-DUCT CONDUITS (BORED)
IN SCH. 40 STEEL CASING
IN COND. #1(3") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
IN COND. #2(3")- 3#6XHHW, 1#6 BARE (HUB BUILDING POWER)
3#4XHHW, 1#4 BARE (DMS POWER)
IN COND. #3(4")(INNERDUCT A) - 2-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV(2))

5. EXISTING
SERVICE POLE D-14
1-3" SCH. 80 PVC TO GRD. BOX
3#6XHHW, 1#6 BARE (HUB BUILDING POWER)
3#4XHHW, 1#4 BARE (DMS POWER)
2#2XHHW, 1#2 BARE (CCTV POWER)

7. EXISITNG (STA. 124+30)
COMMUNICATIONS HUB BUILDING
3 CODECS
2 TERMINAL SERVER
3 FIBER OPTIC VIDEO DATA RX'S (S/M)
ETHERNET SWITCH
FIBER OPTIC SPLICE ENCLOSURE (S/M)
4-3" SCH. 80 PVC TO GRD. BOX
4-4" SCH. 80 MULTI-DUCT CONDUITS TO GRD. BOX
1-2" SCH. 80 PVC TO GRD. BOX
IN COND. #1(3") - 2-144 STRAND SINGLE MODE FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
IN COND. #2(3") - 2-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV(2)
- 1-6 S TRAND SINGLE MODE FOC(DMS-10-125)
IN COND. #3(2") - 3#6XHHW, 1#6 BARE (HUB BUILDING POWER)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

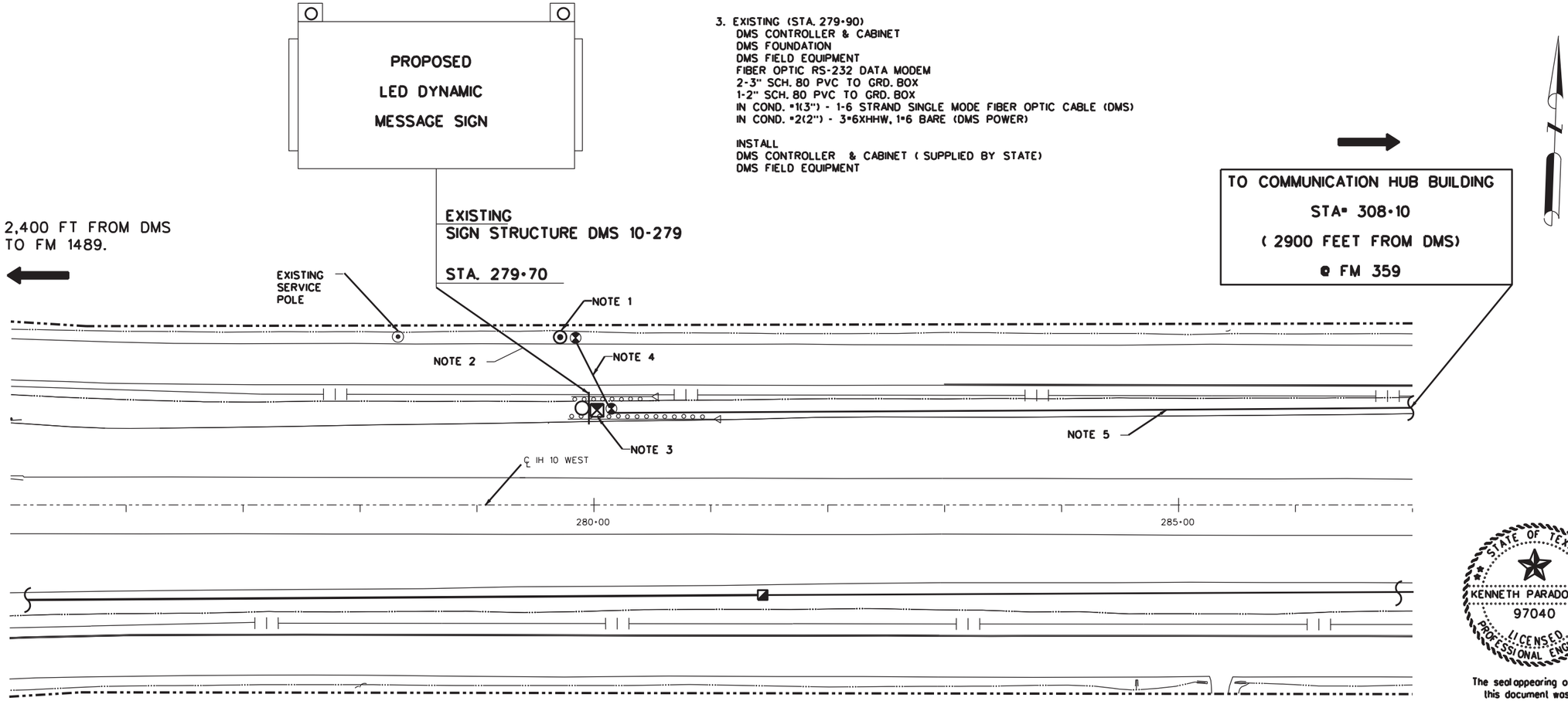
Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ PEACH RIDGE
(E.B)

SHEET 01 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		25



3. EXISTING (STA. 279+90)
   DMS CONTROLLER & CABINET
   DMS FOUNDATION
   DMS FIELD EQUIPMENT
   FIBER OPTIC RS-232 DATA MODEM
   2-3" SCH. 80 PVC TO GRD. BOX
   1-2" SCH. 80 PVC TO GRD. BOX
   IN COND. #1(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS)
   IN COND. #2(2") - 3#6XHHW, 1#6 BARE (DMS POWER)

   INSTALL
   DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

1. EXISTING
   SERVICE POLE D-9
   1-2" SCH. 80 PVC TO GRD. BOX
   3#6XHHW, 1#6 BARE (DMS POWER)

2. EXISTING (STA. 279+70)
   SIGN STRUCTURE DMS 10-279
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") #3 ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1&2- DMS CONTROL CABLES

4. EXISTING
   2-2" SCH. 80 PVC (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. #1 - 3#8XHHW, 1#8 BARE (DMS POWER)

5. EXISITING
   2-2" SCH. 80 PVC
   IN COND. #1 - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-10-279)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

FILE NAME: i 10 west 47.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

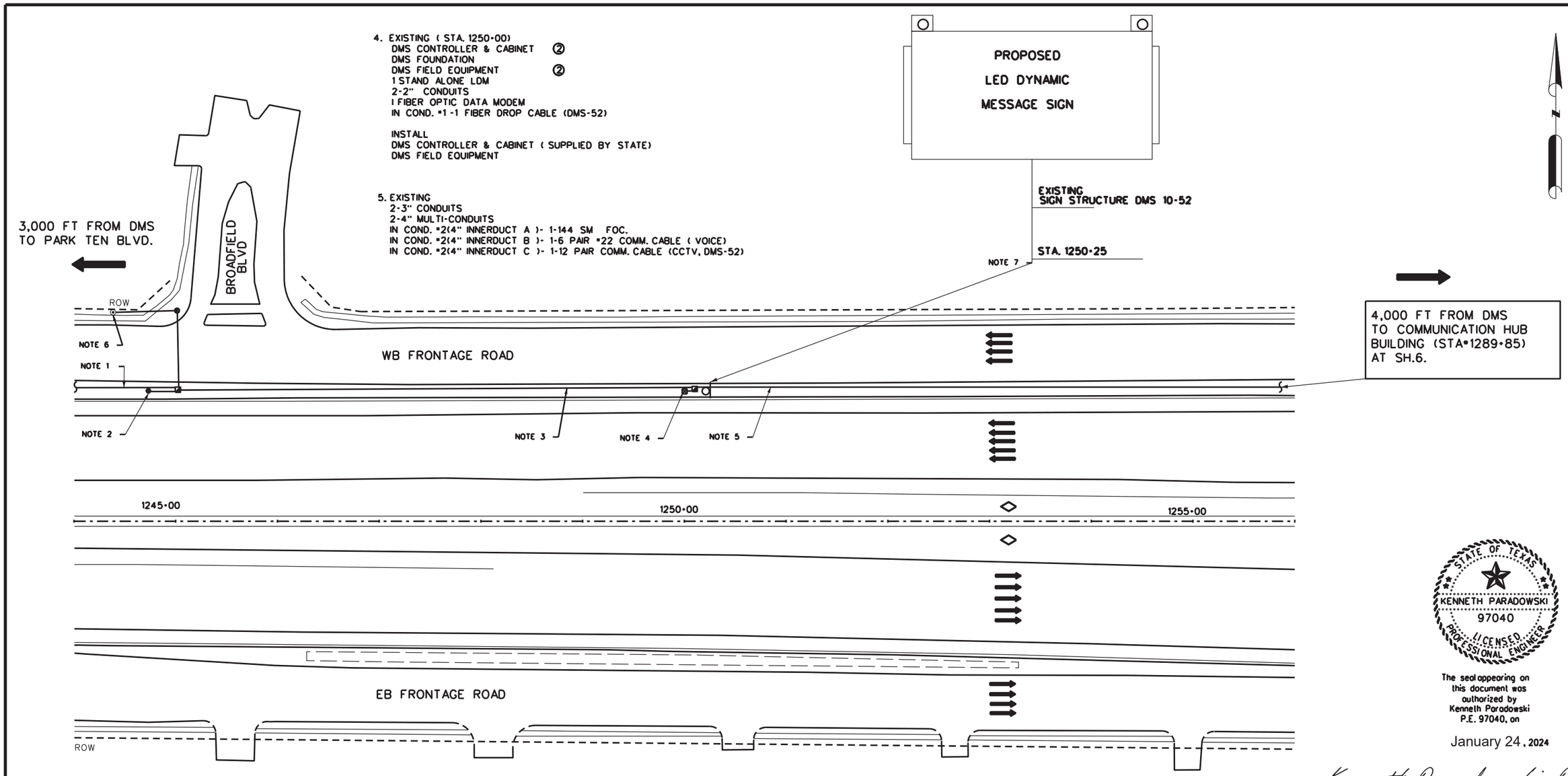
Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ FM 359
(W.B)

SHEET 02 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		26



4. EXISTING (STA. 1250+00)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE LDM
   2-2" CONDUITS
   1 FIBER OPTIC DATA MODEM
   IN COND. #1 -1 FIBER DROP CABLE (DMS-52)

   INSTALL
   DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

5. EXISTING
   2-3" CONDUITS
   2-4" MULTI-CONDUITS
   IN COND. #2(4" INNERDUCT A)- 1-144 SM FOC.
   IN COND. #2(4" INNERDUCT B)- 1-6 PAIR #22 COMM. CABLE (VOICE)
   IN COND. #2(4" INNERDUCT C)- 1-12 PAIR COMM. CABLE (CCTV, DMS-52)

1. EXISTING
   2-3" CONDUITS
   2-4" MULTI-CONDUITS
   IN COND. #2(4" INNERDUCT A)- 1-144 SM FOC.
   IN COND. #2(4" INNERDUCT B)- 1-6 PAIR #22 COMM. CABLE (VOICE)

2. EXISTING CCTV#54

3. EXISTING
   2-3" CONDUITS
   2-4" MULTI-CONDUITS
   IN COND. #2(4" INNERDUCT A)- 1-144 SM FOC.
   IN COND. #2(4" INNERDUCT B)- 1-6 PAIR #22 COMM. CABLE (VOICE)
   IN COND. #2(4" INNERDUCT C)- 1 FIBER DROP CABLE (DMS-52)
   IN COND. #3(3" 3#4 XHHW, 1#4 BARE (DMS POWER)

6. EXISTING
   SERVICE POLE (POWER 52)
   2-2" CONDUITS TO GRD.BOX
   IN COND. #1 -2#8XHHW, 1#8 BARE (CCTV POWER)
   IN COND. #2-3#4XHHW, 1#4 BARE (DMS POWER)

7. EXISTING (STA.1250+25)
   DMS SIGN STRUCTURE (18")
   FIBER OPTIC DYNAMIC MESSAGE (18") ①
   2-4" SCH.80 TO DMS CABINET
   IN COND. #1 (3") -DMS CONTROL CABLES ②
   IN COND. #2(3")- DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1 (3") -DMS CONTROL CABLES
   IN COND. #2(3")- DMS CONTROL CABLES

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

CTMS FILE NAME: IH10W@DMSPARKTEN_WB

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ PARK TEN
(W.B)

SHEET 03 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		27

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 10-71

STA. 1347+00

NOTE 1

1. EXISTING (STA.1347+00)
   DMS SIGN STRUCTURE (18")
   FIBER OPTIC DYNAMIC MESSAGE (18") ①
   2-4" SCH.80 TO DMS CABINET
   IN COND. #1(3") -DMS CONTROL CABLES ②
   IN COND. #2(3")- DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1(3") -DMS CONTROL CABLES
   IN COND. #2(3")- DMS CONTROL CABLES

2. EXISTING (STA. 1347+25)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE LDM
   2-2" CONDUITS
   1 FIBER OPTIC DATA MODEM
   IN COND. #1-1 FIBER DROP CABLE (DMS-71)

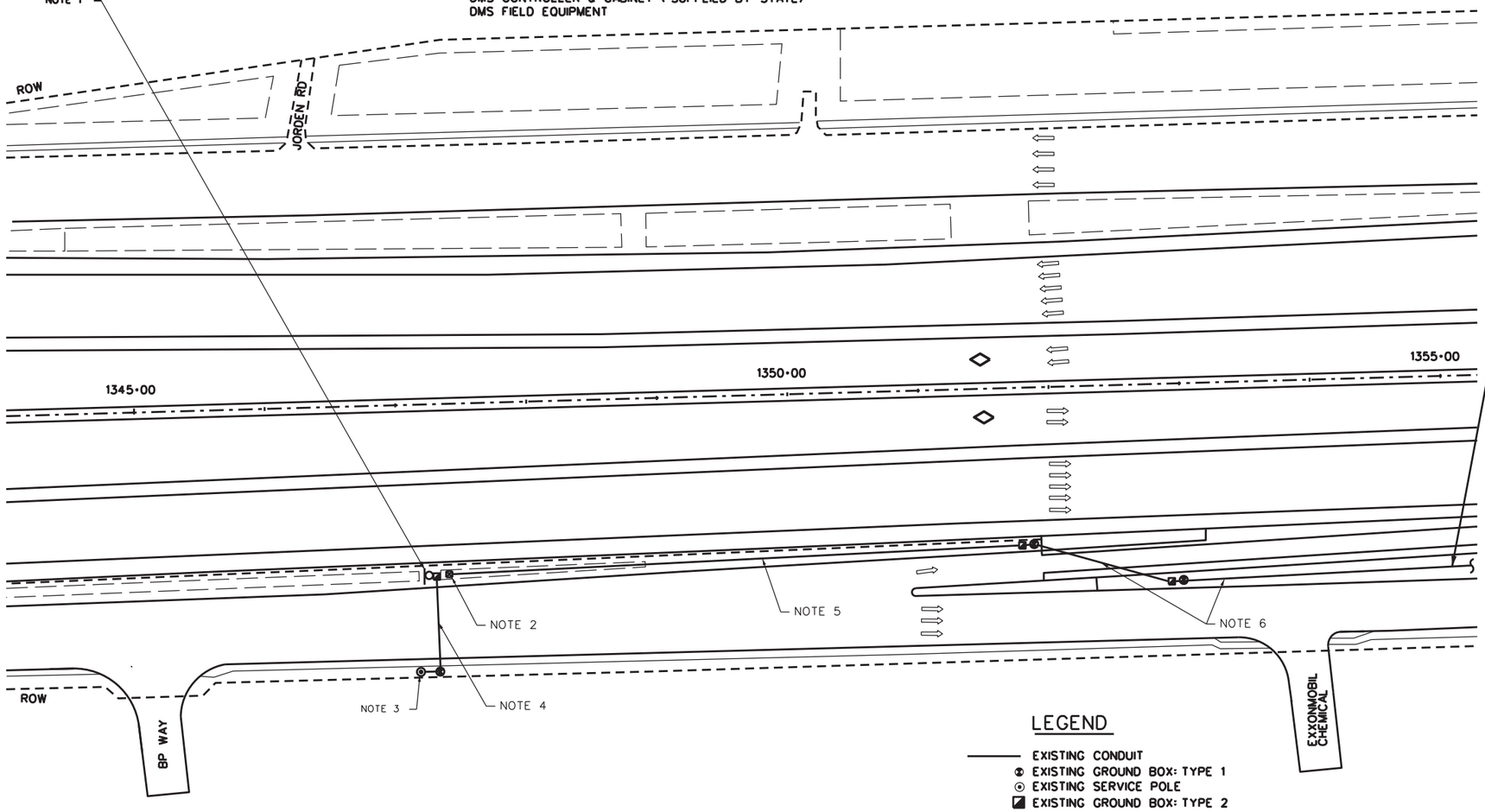
   INSTALL
   DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

3. EXISTING
   SERVICE POLE (POWER 71)
   2-2" SCH. 80 PVC TO GRD.BOX
   IN COND. #1-3#6XHHW, 1#6 BARE (DMS POWER)

4. EXISTING
   2-2" SCH. 80 PVC (BORED)
   IN COND. #1-3#6XHHW, 1#6 BARE (DMS POWER)

5. EXISTING
   3-2" SCH. 80 PVC/CCE
   IN COND. #1(3") - 1 FIBER DROP CABLE (DMS-71)

6. EXISTING
   3-2" SCH. 80 PVC
   1-4" SCH. 80 MULTI DUCT PVC (HCTRA)
   IN SCH. 40 STEEL CASING
   IN COND. #1(3")- 1 FIBER DROP CABLE (DMS-71)



5,500 FT FROM DMS
TO SH 6.

3,000 FT FROM DMS
TO COMMUNICATION HUB
BUILDING (STA#1376+00)
AT N.ELDRIDGE PKWY.

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING JUNCTION BOX (UNLESS OTHERWISE NOTED)
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

CTMS FILE NAME: IH10@DMSDAIRYASHFORD_EB

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ DAIRY ASHFORD
(E.B)

SHEET 04 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		28

1. EXISTING
   2-3" SCH. 80 PVC/CCE
   2-4" SCH. 80 MULTI DUCT PVC/CCE
   IN SCH. 40 STEEL CASING
   IN COND. "1(4" INNERDUCT A)- 1-144 SM FOC
   IN COND. "1(4" INNERDUCT B)- 1-6 PAIR COMM. CABLE (VOICE)
   IN COND. "1(4" INNERDUCT C)- 1-6 PAIR COMM. CABLE (DMS-81)

2. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH.40 MULTI DUCT PVC/CCE
   IN COND. "1(4" INNERDUCT A)- 1-144 SM FOC
   IN COND. "1(4" INNERDUCT B)- 1-6 PAIR COMM. CABLE (VOICE)
   IN COND. "1(4" INNERDUCT C)- 1-6 PAIR COMM. CABLE (DMS-81)

3. EXISTING
   3-2" SCH. 80 PVC (BORED)
   IN COND. "1-3"6XHHW, 1"6 BARE (DMS POWER)

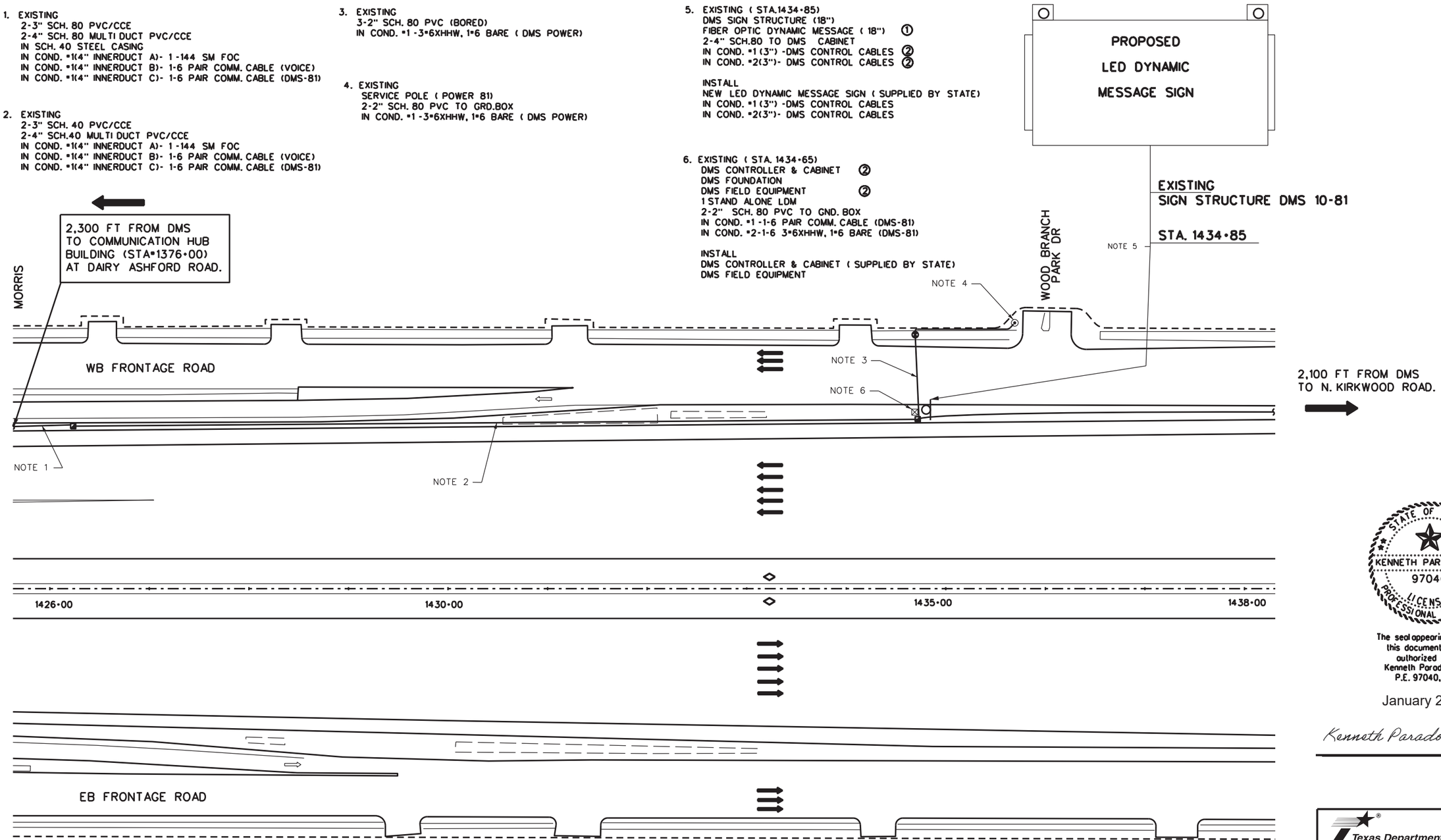
4. EXISTING
   SERVICE POLE (POWER 81)
   2-2" SCH. 80 PVC TO GRD.BOX
   IN COND. "1-3"6XHHW, 1"6 BARE (DMS POWER)

5. EXISTING (STA.1434+85)
   DMS SIGN STRUCTURE (18")
   FIBER OPTIC DYNAMIC MESSAGE (18") ①
   2-4" SCH.80 TO DMS CABINET
   IN COND. "1(3") -DMS CONTROL CABLES ②
   IN COND. "2(3")- DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. "1(3") -DMS CONTROL CABLES
   IN COND. "2(3")- DMS CONTROL CABLES

6. EXISTING (STA. 1434+65)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE LDM
   2-2" SCH. 80 PVC TO GND. BOX
   IN COND. "1-1-6 PAIR COMM. CABLE (DMS-81)
   IN COND. "2-1-6 3"6XHHW, 1"6 BARE (DMS-81)

   INSTALL
   DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT



LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'
CTMS FILE NAME: IH10W@DMSDAIRYASHFORD_WB

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ DAIRY ASHFORD
(W.B)

SHEET 05 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		29

1.EXISTING (1595+40

DMS SIGN STRUCTURE
FIBER OPTIC DYNAMIC SIGN (DMS 12-1) ①
2-4" SCH.80 TO DMS CONTROLLER CABINET
IN COND #1 - DMS CONTROL CABLES ②
IN COND #2 - DMS CONTROL CABLES ②

INSTALL

NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND #1 - DMS CONTROL CABLES
IN COND #2 - DMS CONTROL CABLES

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXIST
SIGN STRUCTURE
DMS 10-12

STA.1595+40

NOTE 1

4.EXISTING

3-2" SCH.80 PVC(BORED)
IN COND.#1-3#8XHHW,1#8 BARE (DMS POWER)

5.EXISTING

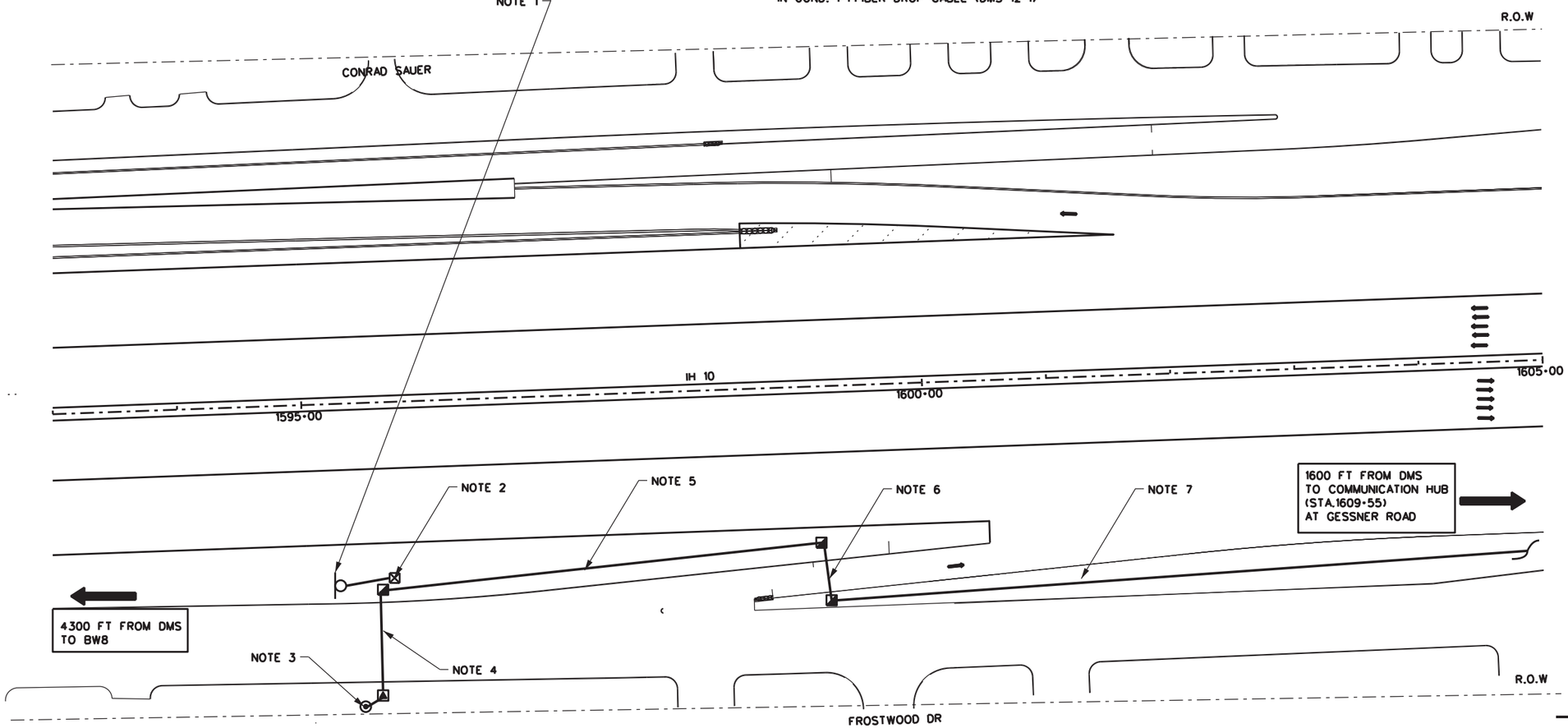
3-2" SCH.80 PVC/CCE TIED TO EXIST. TY1 GR.BOX
IN COND.#1-1 FIBER DROP CABLE (DMS 12-1)

6. EXISTING

3-2" CONDUITS
IN COND.#1-1 FIBER DROP CABLE (DMS 12-1)

7.EXISTING

2-2" SCH.80 PVC/CCE(HCTRA) TIED TO EXIST. TY1 GR.BOX
IN COND.#1-1 FIBER DROP CABLE (DMS 12-1)



2.EXISTING (1595+80

DMS CONTROLLER & CABINET
DMS FIELD EQUIPMENT (DMS#1)

1 STAND ALONE LOW
1 FIBER OPTIC DATA MODEM
2-2" SCH.80 PVC TIE TO GRD.BOX
IN COND #1 - FIBER DROP CABLE (DMS 12-1)
IN COND #2 - 3#8XHHW,1#8 BARE (DMS POWER)

INSTALL

DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT(DMS#1)

3.EXISTING

SERVICE POLE (POWER 12-2)
2-2" SCH.80 PVC
IN COND.#1-3#8XHHW,1#8 BARE (DMS POWER)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN

NOTE:
① TO BE REMOVED AND REPLACED NEW LED DMS SUPPLIED BY STATE
② TO BE REMOVED

SCALE: 1" = 100'

FILE NAME: SH288-120-22.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH 10 (WEST FREEWAY)

DYNAMIC SIGN
IH-10 GESSNER
(E.B)

SHEET 6 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH 10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		30

1. EXISTING (STA. 183+00)
SIGN STRUCTURE DMS-10-183
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
IN COND. #1 - DMS CONTROL CABLES
IN COND. #2- DMS CONTROL CABLES

3. EXISTING (183+50)
DMS CONTROLLER& CABINET ②
DMS FOUNDATION ②
DMS FIELD EQUIPMENT
1 STAND ALONE LDM

INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

8. EXISTING
4-3" CONDUITS
IN COND. #1 - 3 SINGLE MODE FIBER OPTIC CABLE
IN COND. #2 - 1 MULTI-MODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #3 - 1 MULTI-MODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #4 - 3#2XHHW, 1#2 BARE (DMS POWER)

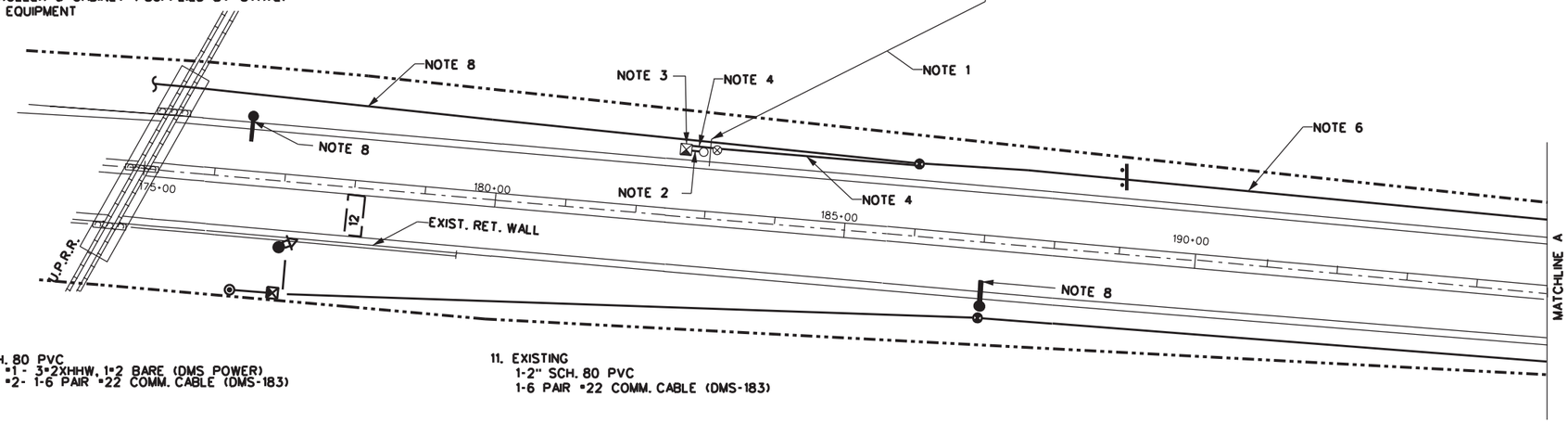
9. EXISTING
2-3" SCH. 80 PVC
IN COND. #1 - SENSOR UNIT POWER CONDRS.
IN COND. #2- FIBER DROP CABLE
- 1-6 PAIR #22 COMM. CABLE (FTM LCU)
1-2" SCH. 80 PVC
3#2XHHW, 1#2 BARE (DMS POWER)

10. EXISTING
1-2" SCH. 80 PVC
3#2XHHW, 1#2 BARE (DMS POWER)

PROPOSED
LED DYNAMIC
MESSAGE SIGN

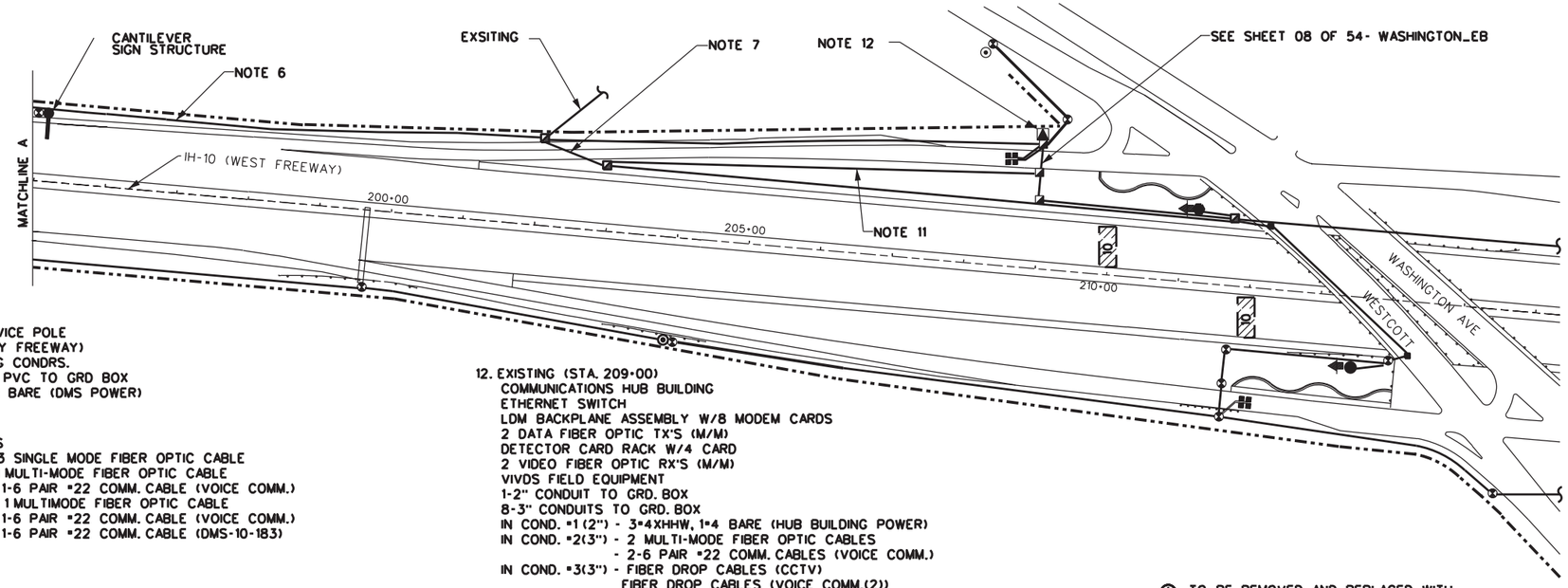
EXISTING
DMS SIGN STRUCTURE DMS 10-183

STA. 183+00



4. EXSTING
2-2" SCH. 80 PVC
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2- 1-6 PAIR #22 COMM. CABLE (DMS-183)

11. EXISTING
1-2" SCH. 80 PVC
1-6 PAIR #22 COMM. CABLE (DMS-183)



5. EXISTING
TYPE C SERVICE POLE
(7004 ½KATY FREEWAY)
SIGN LIGHTING CONDRS.
1-2" SCH. 80 PVC TO GRD BOX
3#2XHHW, 1#2 BARE (DMS POWER)

6. EXISTING
4-3" CONDUITS
IN COND. #1 - 3 SINGLE MODE FIBER OPTIC CABLE
IN COND. #2- 1 MULTI-MODE FIBER OPTIC CABLE
- 1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #3 - 1 MULTIMODE FIBER OPTIC CABLE
- 1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
- 1-6 PAIR #22 COMM. CABLE (DMS-10-183)

7. EXISTING
4-3" CONDUITS
IN COND. #1 - 3 SINGLE MODE FIBER OPTIC CABLES
IN COND. #2- 1-6 PAIR #22 COMM. CABLE (DMS-183)

12. EXISTING (STA. 209+00)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
2 DATA FIBER OPTIC TX'S (M/M)
DETECTOR CARD RACK W/4 CARD
2 VIDEO FIBER OPTIC RX'S (M/M)
VIVDS FIELD EQUIPMENT
1-2" CONDUIT TO GRD. BOX
8-3" CONDUITS TO GRD. BOX
IN COND. #1(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
IN COND. #2(3") - 2 MULTI-MODE FIBER OPTIC CABLES
- 2-6 PAIR #22 COMM. CABLES (VOICE COMM.)
IN COND. #3(3") - FIBER DROP CABLES (CCTV)
FIBER DROP CABLES (VOICE COMM.(2))
- 1-6 PAIR #22 COMM. CABLE (CCTV)
IN COND. #4(3") - 8 LOOP LEAD-IN CABLES
- 2-6 PAIR #22 COMM. CABLE (FTM LCU. LOOPS)
IN COND. #5(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))

IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS 10-183)
- 1-6 PAIR #22 COMM. CABLE (DMS 10-207)

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE

② TO BE REMOVED

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN.

SCALE:1"=200'
FILE NAME: WASHINGTON-110

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ WASHINGTON
(W.B)

SHEET 07 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		31

1. EXISTING (STA. 207+00)
SIGN STRUCTURE DMS 10-207
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
IN COND. #1 &2 - DMS CONTROL CABLES

3. EXISITNG (207+20)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

4. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-10-207)
IN COND. #2 - 3#8XHHW, 1#8 BARE (DMS POWER)

5. EXISTING
2-2" SCH. 80 PVC (BORED)
IN SCH. 40 STEEL CASING
IN COND. #1 - 3#8XHHW, 1#8 BARE (DMS POWER)

6. EXISTING
SERVICE POLE
6055 (KATY FREEWAY)
3#8XHHW, 1#8 BARE (DMS POWER)

7. EXISTING (STA. 209+00)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKLANE ASSEMBLY W/8 CARDS
DETECTOR CARD RACK W/4 CARDS
2 VIDEO FIBER OPTIC RX (M/M)
VIVDS-FIELD EQUIPMENT
1-2" CONDUIT TO GRD. BOX
8-3" CONDUITS TO GRD. BOX
IN COND. #1(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
IN COND. #2(3") - 2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM CABLES (VOICE COMM.)
IN COND. #3(3") - FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS(2))
1-6 PAIR #22 COMM. CABLE (CCTV)
IN COND. #4(3") - 8 LOOP LEAD-IN CABLES
2-6 PAIR #22 COMM. CABLES (FTM LCU, LOOPS)
IN COND. #5(3") - SENSOR UNIT POWER CONDRS. (VIVDS (2))
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-10-183)
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-10-207)

8. EXISTING
1-2" SCH. 80 PVC
1-6 PAIR #22 COMM. CABLE (DMS-10-207)

9. EXSTING
2-3" CONDUITS
IN COND. #1 - 2-6 PAIR #22 COMM. CABLES (FTM LCU, LOOPS)
IN COND. #2- 1-6 PAIR #22 COMM. CABLE (DMS-10-207)

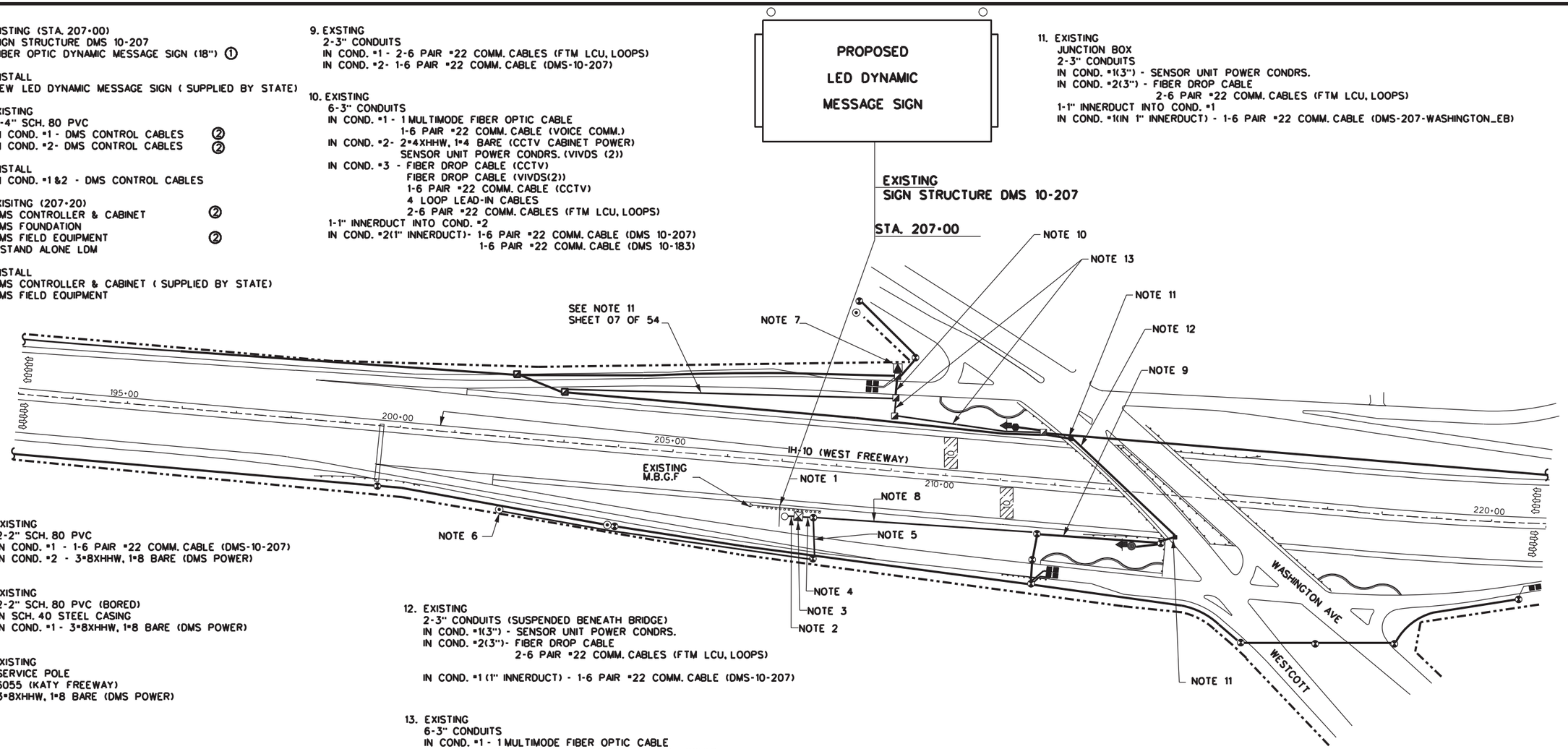
10. EXISTING
6-3" CONDUITS
IN COND. #1 - 1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2- 2#4XHHW, 1#4 BARE (CCTV CABINET POWER)
SENSOR UNIT POWER CONDRS. (VIVDS (2))
IN COND. #3 - FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS(2))
1-6 PAIR #22 COMM. CABLE (CCTV)
4 LOOP LEAD-IN CABLES
2-6 PAIR #22 COMM. CABLES (FTM LCU, LOOPS)
1-1" INNERDUCT INTO COND. #2
IN COND. #2(1" INNERDUCT)- 1-6 PAIR #22 COMM. CABLE (DMS 10-207)
1-6 PAIR #22 COMM. CABLE (DMS 10-183)

11. EXISTING
JUNCTION BOX
2-3" CONDUITS
IN COND. #1(3") - SENSOR UNIT POWER CONDRS.
IN COND. #2(3") - FIBER DROP CABLE
2-6 PAIR #22 COMM. CABLES (FTM LCU, LOOPS)
1-1" INNERDUCT INTO COND. #1
IN COND. #1(IN 1" INNERDUCT) - 1-6 PAIR #22 COMM. CABLE (DMS-207-WASHINGTON_EB)

12. EXISTING
2-3" CONDUITS (SUSPENDED BENEATH BRIDGE)
IN COND. #1(3") - SENSOR UNIT POWER CONDRS.
IN COND. #2(3")- FIBER DROP CABLE
2-6 PAIR #22 COMM. CABLES (FTM LCU, LOOPS)

IN COND. #1 (1" INNERDUCT) - 1-6 PAIR #22 COMM. CABLE (DMS-10-207)

13. EXISTING
6-3" CONDUITS
IN COND. #1 - 1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM)
IN COND. #2 - 2#4XHHW, 1#4 BARE (CCTV CABINET POWER)
SENSOR UNIT POWER CONDRS. (VIVDS (2))
IN COND. #3 - FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS(2))
1-6 PAIR #22 COMM. CABLE (CCTV)
4 LOOP LEAD-IN CABLES
1-6 PAIR #22 COMM. CABLES (FTM LCU, LOOPS)
IN COND. #2(IN 1" INNERDUCT) - 1-6 PAIR #22 COMM. CABLE (DMS-10-207)



① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE

② TO BE REMOVED.

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

SCALE: 1"=200'
FILE NAME: WASHEB.DGN

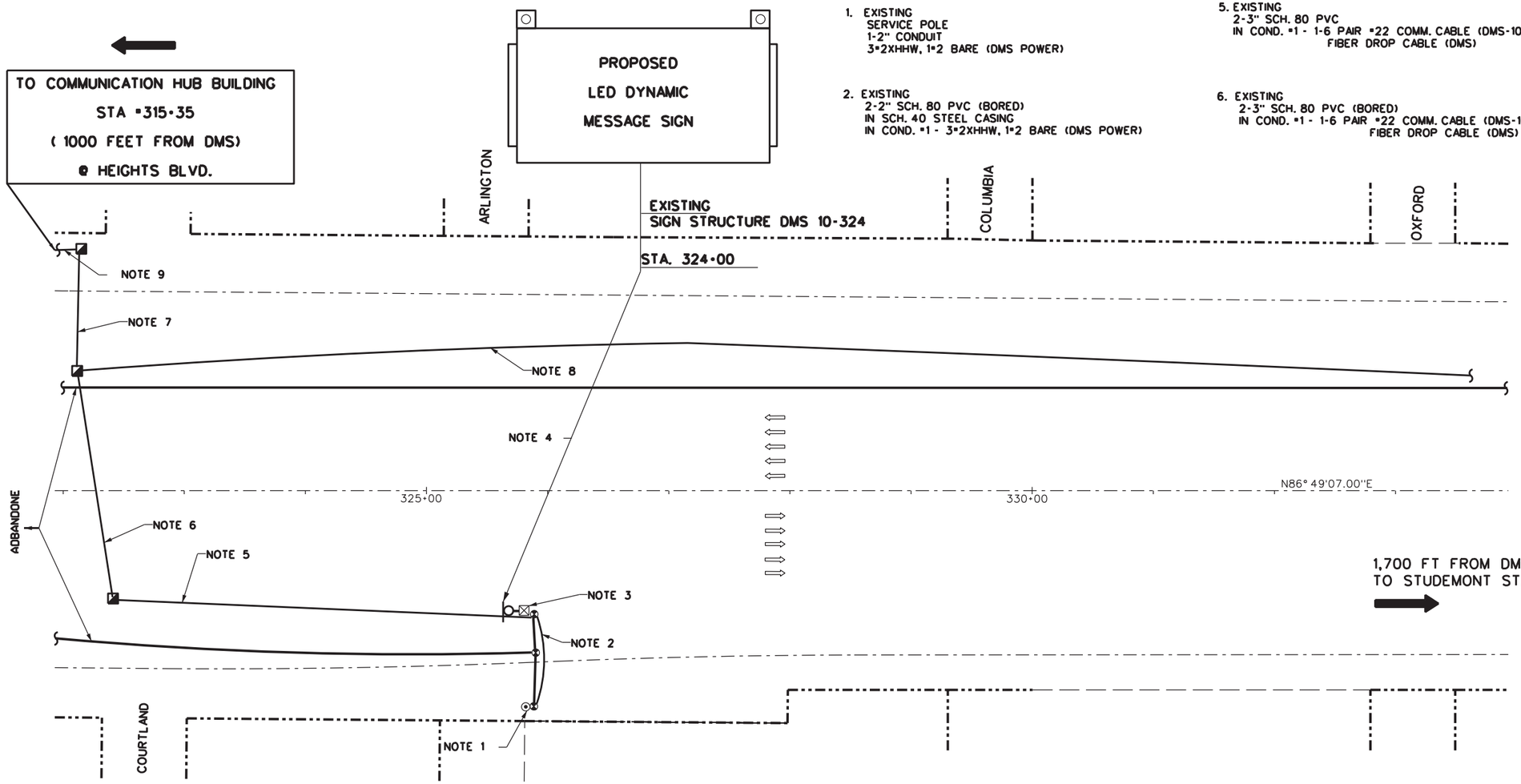
Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 WASHINGTON
(E.B)

SHEET 08 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		32



1. EXISTING
   SERVICE POLE
   1-2" CONDUIT
   3#2XHHW, 1#2 BARE (DMS POWER)

2. EXISTING
   2-2" SCH. 80 PVC (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)

5. EXISTING
   2-3" SCH. 80 PVC
   IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-10-324)
   FIBER DROP CABLE (DMS)

6. EXISTING
   2-3" SCH. 80 PVC (BORED)
   IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-10-324)
   FIBER DROP CABLE (DMS)

1,700 FT FROM DMS
TO STUDEMONT ST.

3. EXISTING
   DMS CONTROLLER CABINET ②
   DMS FOUNDATION ②
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE LDM
   2-2" CONDUITS TO GRD. BOX
   2-4" CONDUITS TO DMS
   IN COND. #1(2") - 3#2XHHW, 1#2 BARE (DMS POWER)
   IN COND. #2(2") - 1-6 PAIR #22 COMM. CABLE (DMS-10-324)
   FIBER DROP CABLE (DMS)
   IN COND. #3(4") - DMS CONTROL CABLES ②
   IN COND. #4(4") - DMS CONTROL CABLES ②

   INSTALL
   DMS CONTROLLER & CABNINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

   IN COND. #3(4")- DMS CONTROL CABLES
   IN COND. #4(4")- DMS CONTROL CABLES

4. EXISTING
   SIGN STRUCTURE DMS 10-324
   FIBER OPTIC DYNAMIC MESSAGE SIGN ①
   2-4" CONDUITS THROUGH FOUNDATION
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1-DMS CONTROL CABLES
   IN COND. #2-DMS CONTROL CABLES

7. EXISING
   2-3" SCH. 80 PVC (BORED)
   2-4" SCH. 80 MULTI-DUCT CONDUITS (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. #1(3") - 1-36 STRAND MULTIMODE FIBER OPTIC CABLE
   1-36 STRAND SINGLE MODE FIBER OPTIC CABLE
   IN COND. #2(3") - 2-144 STRAND SINGLE MODE FIBER OPTIC CABLES
   IN COND. #3(4")(INNERDUCT "A") - 1-6 PAIR #22 COMM. CABLE (DMS-10-324)
   FIBER DROP CABLE (DMS)

8. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
   IN COND. #1(3") - 1-36 STRAND MULTIMODE FIBER OPTIC CABLE
   1-36 STRAND SINGLE MODE FIBER OPTIC CABLE
   IN COND. #2(3")- 2-144 STRAND SINGLE MODE FIBER OPTIC CABLES

9. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
   IN COND. #1(3") - 1-36 STRAND MULTIMODE FIBER OPTIC CABLE
   1-36 STRAND SINGLE MODE FIBER OPTIC CABLE
   IN COND. #2(3") - 2-144 STRAND SINGLE MODE FIBER OPTIC CABLES
   IN COND. #3(4")(INNERDUCT "A") - 1-6 PAIR #22 COMM. CABLE (DMS-10-324)
   FIBER DROP CABLE (DMS)

LEGEND

- EXISTING CONDUIT
- ② EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

CTMS FILE NAME: 242 CTMS 12 P1.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

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January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (WEST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ HEIGHTS BLVD
(E.B)

SHEET 09 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		33

1. EXISTING
SIGN STRUCTURE DMS-10-613
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") *1 ①
2-4" CONDUITS TO CABINET
IN COND. *1 - DMS CONTROL CABLES ②
IN COND. *2- DMS CONTROL CABLES ②

INSTALL
LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. *1 - DMS CONTROL CABLES
IN COND. *2- DMS CONTROL CABLES

2. EXISTING
DMS CONTROL CABINET ②
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM
2-2" CONDUITS TO GRD. BOX

INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING
2-2" CONDUITS
IN COND. *1 - 3*6XHHW, 1*6 BARE
(DMS CABINET POWER)
IN COND. *2 - 1-6 PAIR *22 COMM. CABLE (DMS-10-613)

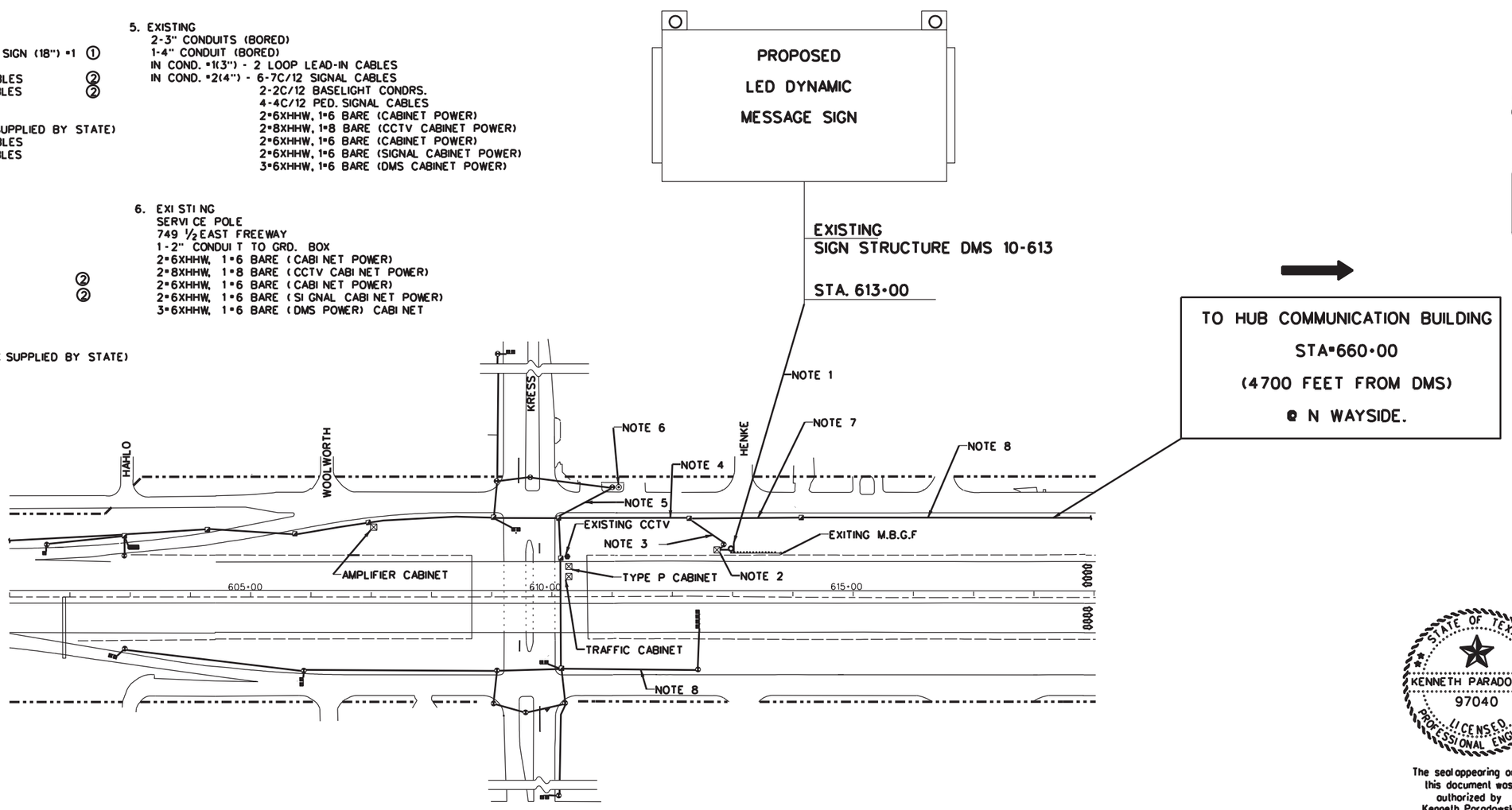
4. EXISTING
1-2" CONDUIT
4-3" CONDUITS
IN COND. *1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND. *2(3") - 3-6 PAIR *22 COMM. CABLE
(FTM,CCTV,SCS)
2 LOOP LEAD-IN CABLES
IN COND. *3(2") - 3*6XHHW, 1*6 BARE
(DMS CABINET POWER)

5. EXISTING
2-3" CONDUITS (BORED)
1-4" CONDUIT (BORED)
IN COND. *1(3") - 2 LOOP LEAD-IN CABLES
IN COND. *2(4") - 6-7C/12 SIGNAL CABLES
2-2C/12 BASELIGHT CONDRS.
4-4C/12 PED. SIGNAL CABLES
2*6XHHW, 1*6 BARE (CABINET POWER)
2*8XHHW, 1*8 BARE (CCTV CABINET POWER)
2*6XHHW, 1*6 BARE (CABINET POWER)
2*6XHHW, 1*6 BARE (SIGNAL CABINET POWER)
3*6XHHW, 1*6 BARE (DMS CABINET POWER)

6. EXISTING
SERVICE POLE
749 ½ EAST FREEWAY
1-2" CONDUIT TO GRD. BOX
2*6XHHW, 1*6 BARE (CABINET POWER)
2*8XHHW, 1*8 BARE (CCTV CABINET POWER)
2*6XHHW, 1*6 BARE (CABINET POWER)
2*6XHHW, 1*6 BARE (SIGNAL CABINET POWER)
3*6XHHW, 1*6 BARE (DMS POWER) CABINET

7. EXISTING
4-3" CONDUITS
IN COND. *1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND.*2 - 3-6 PAIR *22 COMM. CABLE (FTM,CCTV,SCS)
- 1-6 PAIR *22 COMM. CABLE (DMS-10-613)
2 LOOP LEAD-IN CABLES

8. EXISTING
4-3" CONDUITS
IN COND. *1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND. *2 - 3-6 PAIR *22 COMM. CABLE (FTM, CCTV, SCS)
IN COND. *2 - 1-6 PAIR *22 COMM. CABLE (DMS-10-613)



LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'
FILE NAME: 302-IH10E-02.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (EAST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ KRESS
(W.B)

SHEET 10 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		34

NAME:ENTER DATA

1. EXISTING
4-3" CONDUITS
IN COND. *1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND. *2- 3-6 PAIR *22 COMM. CABLE (FTM,CCTV,SCS)
IN COND. *2- 1-6 PAIR *22 COMM. CABLE (DMS-10-613)

2. EXISTING
4-3" CONDUITS (BORED)
IN COND. *1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND. *2- 3-6 PAIR *22 COMM. CABLE (FTM,CCTV,SCS)
2 LOOP LEAD-IN CABLES
IN COND. *2- 1-6 PAIR *22 COMM. CABLE (DMS-10-613)

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE
DMS 10-626

STA. 626+20

3. EXISTING
SIGN STRUCTURE DMS-10-626
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") *2 ①
2-4" CONDUITS TO CABINET
IN COND. *1 - DMS CONTROL CABLES
IN COND. *2- DMS CONTROL CABLES

INSTALL
LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. *1 - DMS CONTROL CABLES ②
IN COND. *2- DMS CONTROL CABLES ②

4. EXISTING
DMS CONTROLLER & CABINET ②
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
DMS CONTROLLER & CABINET
DMS FIELD EQUIPMENT

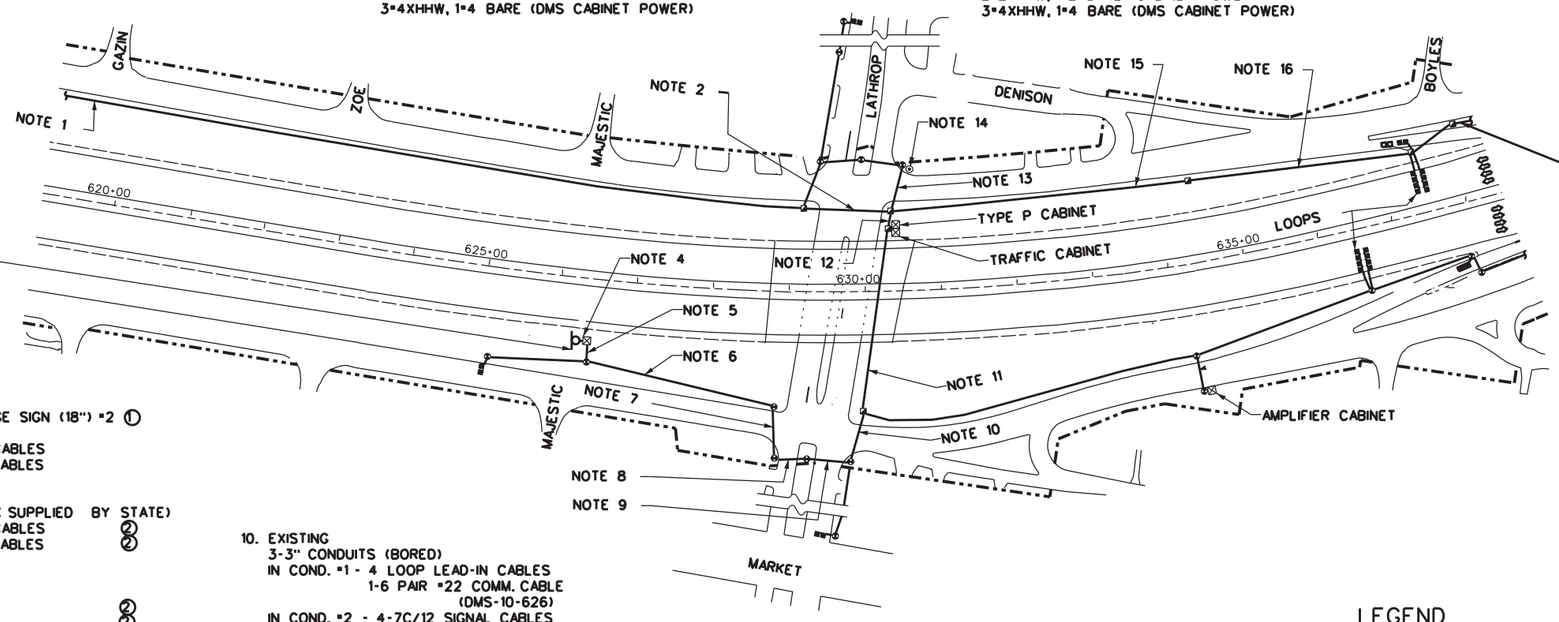
5. EXISTING
2-2" CONDUITS
IN COND. *1 - 3*4XHHW, 1*4 BARE (DMS CABINET POWER)
IN COND. *2 - 1-6 PAIR *22 COMM. CABLE
(DMS-10-626) ⑤

6. EXISTING
2-2" CONDUITS
IN COND. *1 - 2 LOOP LEAD-IN CABL
1-6 PAIR *22 COMM. CABLE
(DMS-10-626) ⑤
IN COND. *2 - 3*4XHHW, 1*4 BARE (DMS CABINET POWER)

7. EXISTING
2-2" CONDUTITS (BORED)
IN COND. *1 - 2 LOOP LEAD-IN CABLES
1-6 PAIR *22 COMM. CABLE (DMS-10-626)
IN COND. *2- 1-4C/12 SIGNAL CABLE
3*4XHHW, 1*4 BARE (DMS CABINET POWER)

8. EXISTING
2-2" CONDUITS (BORED)
IN COND. *1 - 2 LOOP LEAD-IN CABLES
1-6 PAIR *22 COMM. CABLE (DMS-10-626)
IN COND. *2 - 1-7C/12 SIGNAL CABLE
1-2C/12 BASELIGHT CONDR.
2-4C/12 PED. SIGNAL CABLES
3*4XHHW, 1*4 BARE (DMS CABINET POWER)

9. EXISTING
2-3" CONDUITS (BORED)
IN COND. *1 - 2 LOOP LEAD-IN CABLES
1-6 PAIR *22 COMM. CABLE (DMS-10-626)
IN COND. *2 - 4-7C/12 SIGNAL CABLES
1-2C/12 BASELIGHT CONDR.
3-4C/12 PED. SIGNAL CABLES
3*4XHHW, 1*4 BARE (DMS CABINET POWER)



10. EXISTING
3-3" CONDUITS (BORED)
IN COND. *1 - 4 LOOP LEAD-IN CABLES
1-6 PAIR *22 COMM. CABLE
(DMS-10-626)
IN COND. *2 - 4-7C/12 SIGNAL CABLES
1-2C/12 BASELIGHT CONDR.
4-4C/12 PED. SIGNAL CABLES
3*4XHHW, 1*4 BARE (DMS CABINET POWER)

11. EXISTING
2-3" CONDUITS
1-4" CONDUIT
IN COND. *1(3") - 6 LOOP LEAD-IN CABLES
1-25 PAIR *22 COMM. CABLE (FTM LOOPS)
1-12 PAIR *22 COMM. CABLE
(FOR FUTURE USE)
1-6 PAIR *22 COMM. CABLE (DMS-10-626)
IN COND. *2(4") - 6-7C/12 SIGNAL CABLES
2-2C/12 BASELIGHT CONDR.
4-4C/12 PED. SIGNAL CABLES
2*2XHHW, 1*2 BARE (CABINET POWER)
3*4XHHW, 1*4 BARE (DMS CABINET POWER)

12. EXISTING
3-3" CONDUITS
1-4" CONDUIT
IN COND. *1(3") - 2-6 PAIR *22 COMM. CABLE (FTM,SCS)
- 1-6 PAIR *22 COMM.CABLE (DMS-10-626)
IN COND. *2(3") - 16 LOOP LEAD-IN CABLES
IN COND. *3(4") - 5-7C/12 SIGNAL CABLE
3-2C/12 BASELIGHT CONDR.
4-4C/12 PED. SIGNAL CABLES
2*6XHHW, 1*6 BARE (CABINET POWER)
2*6XHHW, 1*6 BARE (SIGNAL CABINET POWER)
2*2XHHW, 1*2 BARE (CABINET POWER)
3*4XHHW, 1*4 BARE (DMS CABINET POWER)

13. EXISTING
2-3" CONDUITS (BORED)
1-4" CONDUIT (BORED)
IN COND. *1(3") - 2 LOOP LEAD-IN CABLES
IN COND. *2(4") - 5-7C/12 SIGNAL CABLES
3-2C/12 BASELIGHT CONDRS.
4-4C/12 PED. SIGNAL CABLES
2*6XHHW, 1*6 BARE (CABINET POWER)
2*6XHHW, 1*6 BARE (SIGNAL CABINET POWER)
2*2XHHW, 1*2 BARE (CABINET POWER)
3*4XHHW, 1*4 BARE (DMS CABINET POWER)

14. EXISTING
SERVICE POLE D-4
1-2" CONDUIT TO GRD. BOX
2*6XHHW, 1*6 BARE (CABINET POWER)
2*6XHHW, 1*6 BARE (SIGNAL CABINET POWER)
2*2XHHW, 1*2 BARE (CABINET POWER)
3*4XHHW, 1*4 BARE (DMS CABINET POWER)

15. EXISTING
4-3" CONDUITS (BORED)
IN COND. *1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND. *2-3-6 PAIR *22 COMM. CABLE (FTM,CCTV,SCS)
2 LOOP LEAD-IN CABLES
IN COND. *2-1-6 PAIR *22 COMM. CABLE
(DMS-10-KRESS)
IN COND. *3-2-6 PAIR *22 COMM. CABLE (FTM, SCS)
-1-6 PAIR *22 COMM.CABLE
(DMS-10-626)
IN COND. *4 -12 LOOP LEAD-IN CABLES

16. EXISTING
5-3" CONDUITS
IN COND. *1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND. *2-3-6 PAIR *22 COMM. CABLE (FTM,CCTV,SCS)
2 LOOP LEAD-IN CABLES
IN COND. *2-1-6 PAIR *22 COMM. CABLE
(DMS-10-613-KRESS)
IN COND. *3-2-6 PAIR *22 COMM. CABLE (FTM, SCS)
-1-6 PAIR *22 COMM.CABLE
(DMS-10-626)
IN COND. *4-10 LOOP LEAD-IN CABLES

TO COMMUNICATION HUB BUILDING
STA=660+00
(3500 FEET FROM DMS)
@ N WAYSIDE ST.

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: 302-IH10E-03.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (EAST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ LATHROP
(E.B)

SHEET 11 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		35

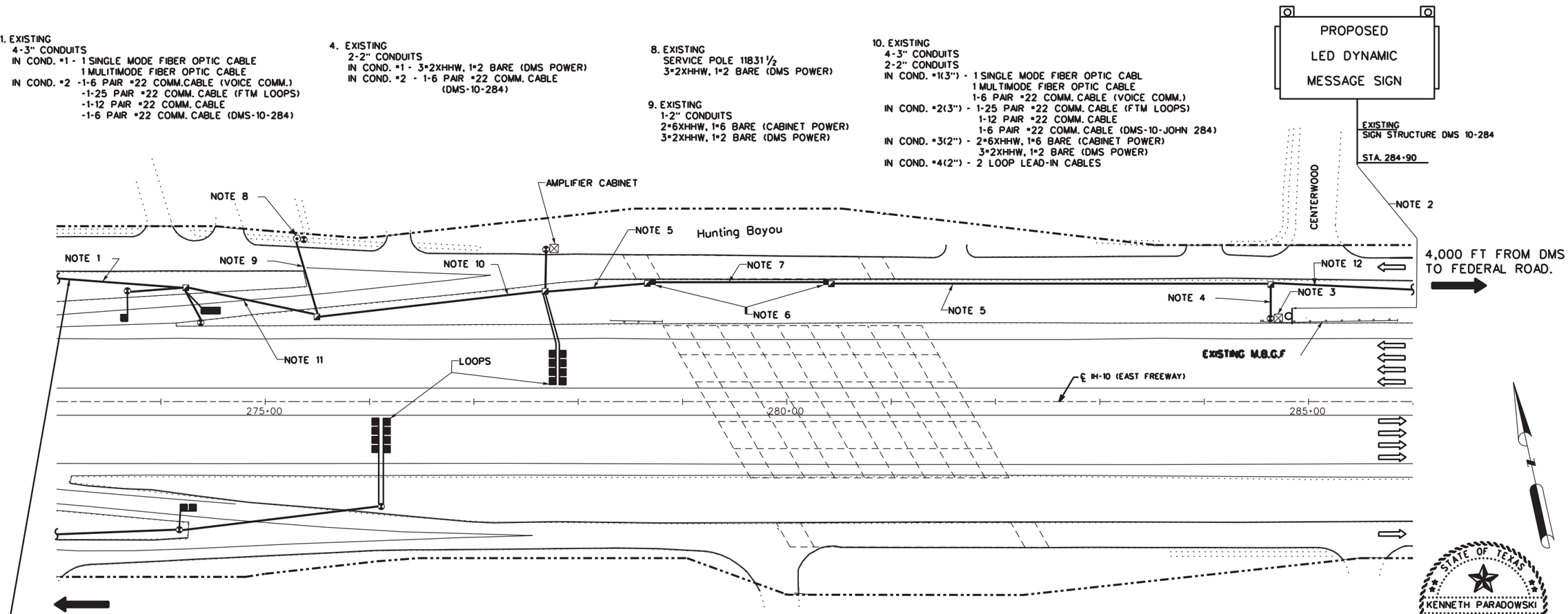
1. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULITIMODE FIBER OPTIC CABLE
IN COND. #2 -1-6 PAIR #22 COMM.CABLE (VOICE COMM.)
-1-25 PAIR #22 COMM. CABLE (FTM LOOPS)
-1-12 PAIR #22 COMM. CABLE
-1-6 PAIR #22 COMM. CABLE (DMS-10-284)

4. EXISTING
2-2" CONDUITS
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE
(DMS-10-284)

8. EXISTING
SERVICE POLE 11831½
3#2XHHW, 1#2 BARE (DMS POWER)

9. EXISTING
1-2" CONDUITS
2#6XHHW, 1#6 BARE (CABINET POWER)
3#2XHHW, 1#2 BARE (DMS POWER)

10. EXISTING
4-3" CONDUITS
2-2" CONDUITS
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABL
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(3") - 1-25 PAIR #22 COMM. CABLE (FTM LOOPS)
1-12 PAIR #22 COMM. CABLE
1-6 PAIR #22 COMM. CABLE (DMS-10-JOHN 284)
IN COND. #3(2") - 2#6XHHW, 1#6 BARE (CABINET POWER)
3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #4(2") - 2 LOOP LEAD-IN CABLES



TO COMMUNICATION HUB BUILDING
STA= 264+20
(2100 FEET FROM DMS)
@ JOHN RALSTON RD.

2. EXISTING (STA. 284+90)
SIGN STRUCTURE DMS-10-284
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
2-4" CONDUITS
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2 - DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 - DMS CONTROL CABLES
IN COND. #2- DMS CONTROL CABLES

3. EXISTING (STA. 284+70)
DMS CONTROLLER & CABINET ②
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM
2-2" CONDUITS
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE
(DMS-10-284)

INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

5. EXISTING
4-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
IN COND. #2(3") -1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
1-6 PAIR #22 COMM. CABLE
(DMS-10-284)
IN COND. #3(2") -3#2XHHW, 1#2 BARE (DMS POWER)

6. EXISTING
JUNCTION BOX
4-3" RMC TO GRD. BOX
1-2" RMC TO GRD. BOX

IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
IN COND. #2(2") - 1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #3(3") - 1-6 PAIR #22 COMM.CABLE
(DMS-10-284)

7. EXISTING
4-3" RMC (SUSPENDED BENEATH BRIDGE)
1-2" RMC (SUSPENDED BENEATH BRIDGE)
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
IN COND. #2(2") - 1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #3(3") - 1-6 PAIR #22 COMM. CABLE
(DMS-10-284)

11. EXISTING
4-3" CONDUITS
2-2" CONDUITS
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
IN COND. #2(3") - 1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
1-25 PAIR #22 COMM. CABLE (FTM LOOPS)
1-12 PAIR #22 COMM. CABLE
1-6 PAIR #22 COMM. CABLE
(DMS-10-284)
IN COND. #3(2") - 2 LOOP LEAD-IN CABLES

12. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
IN COND. #2 - 1-6 PAIR #22 CABLE (VOICE COMM.)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'
FILE NAME: IH10E 298 07.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (EAST FREEWAY)

DYNAMIC MESSAGE SIGN
IH-10 @ JOHN RALSTON
(W.B)

SHEET 12 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		36

1. EXISTING (STA. 408+03)
SIGN STRUCTURE DMS-10-408
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
2-4" CONDUITS
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 - DMS CONTROL CABLES
IN COND. #2- DMS CONTROL CABLES

2. EXISTING
DMS CONTROL CABINET ②
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM
2-2" CONDUITS TO GRD. BOX

INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE
DMS 10-408
STA. 408-03

NOTE 1

7. EXISTING
3-2" CONDUITS
IN COND. #1 - 3 LOOP LEAD-IN CABLES
IN COND. #2- 2#6XHHW, 1#6 BARE (CCTV POWER)
3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
3#2XHHW, 1#2 BARE (DMS POWER)

8. EXISTING
4-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
IN COND. #2(3") - 1-6 PAIR #22 COMM. CABLE (CCTV)
11 LOOP LEAD-IN CABLES
IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #4(3")- 1-25 PAIR #22 COMM. CABLE (FTM LOOPS)

LEGEND
- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

N

UVALDE BLVD

NOTE 6
NOTE 7
LOOPS
NOTE 8
TRAFFIC CABINET
EXISTING CCTV
℄ IH-10 (EAST FREEWAY)
405+00
410+00
415+00
NOTE 9
NOTE 2
NOTE 3
NOTE 4
NOTE 5
NOTE 4
MARKET ST
MARKET ST
EXISTING ROW

3. EXISTING
2-2" CONDUITS
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-10-408)

4. EXISTING
1-2" CONDUIT
1-3" CONDUIT
IN COND. #1(3") - 1-6 PAIR #22 COMM. CABLE (DMS-10-408)
1-12 PAIR #22 COMM. CABLE (FTM LOOPS)

5. EXISTING
2-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3")- 1-6 PAIR #22 COMM. CABLE (DMS-10-408)
1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE (FTM LOOPS)
IN COND. #2(2")- 3#2XHHW, 1#2 BARE (DMS POWER)

6. EXISTING
SERVICE POLE
1-2" CONDUIT
2#6XHHW, 1#6 BARE (CCTV POWER)
3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
3#2XHHW, 1#2 BARE (DMS POWER)

9. EXISTING (STA. 412+20)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
DETECTOR CARD W/5 CARDS
DETECTOR CARD RACK POWER SUPPLY
FIBER OPTIC SPLICE ENCLOSURE (S/M)
FIBER OPTIC SPLICE ENCLOSURE (M/M)
8-3" CONDUITS TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
FIBER DROP CABLE (CCTV)
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
IN COND. #2(3") - 2-6 PAIR #22 COMM. CABLES (CCTV,SCS)

IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
1-6 PAIR #22 COMM. CABLE (DMS-10-408)
IN COND. #4(3") - 2-25 PAIR #22 COMM. CABLES (FTM LOOPS(2))
1-12 PAIR #22 COMM. CABLE (FTM LOOPS)

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-10 (EAST FREEWAY)

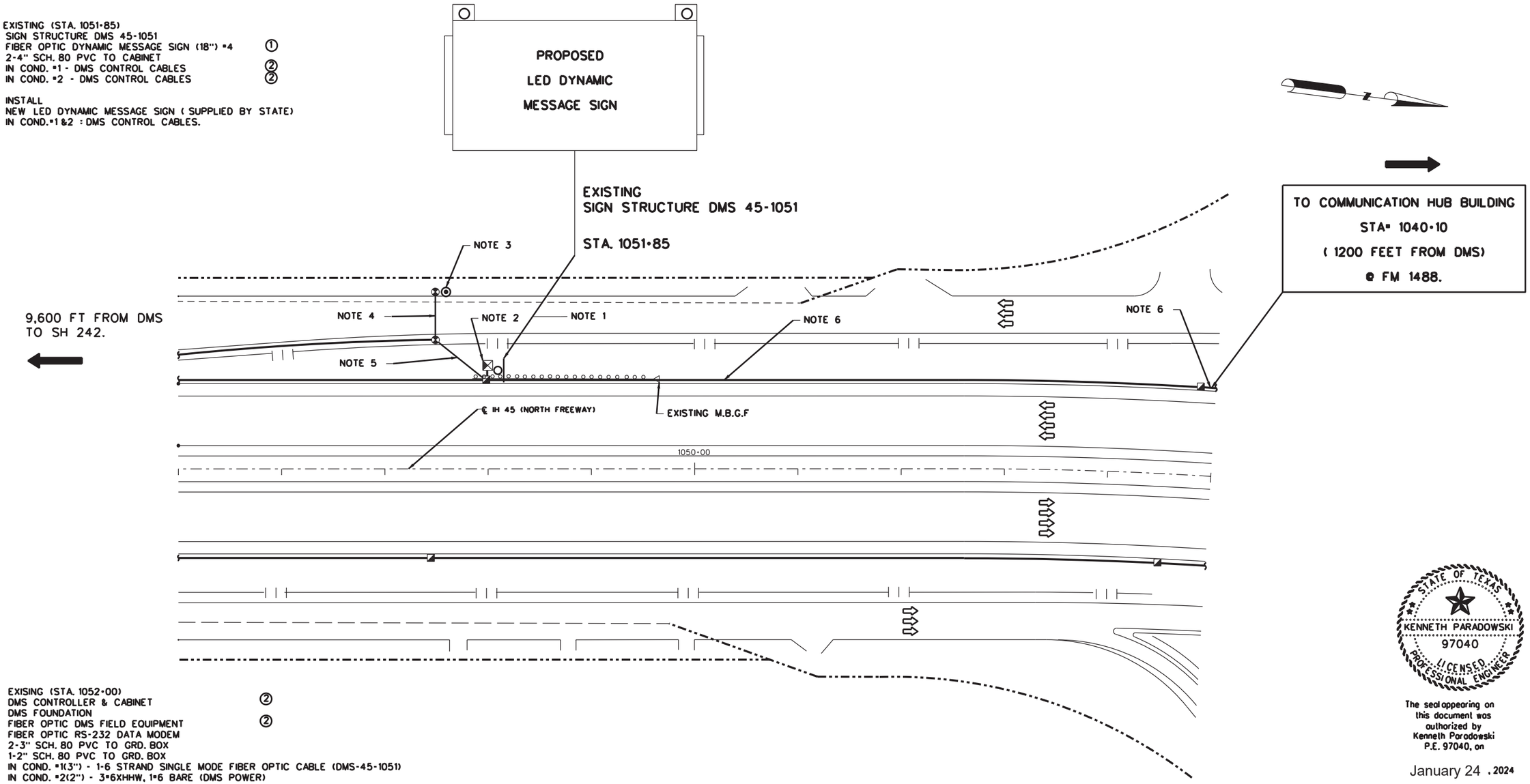
DYNAMIC MESSAGE SIGN
IH-10 @ MARKET
(E.B)

SHEET 13 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH10
DIST	COUNTY		SHEET NO.
HOU	HARRIS		37

1. EXISTING (STA. 1051+85)
   SIGN STRUCTURE DMS 45-1051
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") #4 ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2 - DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND.#1 &2 : DMS CONTROL CABLES.



2. EXISING (STA. 1052+00)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION ②
   FIBER OPTIC DMS FIELD EQUIPMENT
   FIBER OPTIC RS-232 DATA MODEM
   2-3" SCH. 80 PVC TO GRD. BOX
   1-2" SCH. 80 PVC TO GRD. BOX
   IN COND. #1(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-45-1051)
   IN COND. #2(2") - 3#6XHHW, 1#6 BARE (DMS POWER)

   INSTALL
   NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

3. EXISTING
   SERVICE POLE D-11
   1-2" SCH. 80 PVC TO GRD. BOX
   3#6XHHW, 1#6 BARE (DMS POWER)

4. EXISTING
   2-2" SCH. 80 PVC (BORED) TO EXISTING TYPE 1 GRD. BOX
   IN SCH. 40 STEEL CASING
   IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)

5. EXISTING
   2-2" SCH. 80 PVC
   IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)

6. EXISTING
   4-3" CONDUITS
   IN COND. #1 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   IN COND. #2- 2-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV(2)
   IN COND. #2- 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-45-1051)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

FILE NAME: IH45NFrwy 20 .DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH 45 (NORTH FREEWAY)

DYNAMIC MESSAGE SIGN
IH45 @ FM 1488
(S.B)

SHEET 14 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		38

1. EXISTING
   4-3" CONDUITS
   IN COND. #1 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   IN COND. #2- 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV)
   IN COND. #2- 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1116)

2. EXISTING
   2-3" CONDUITS
   IN COND. #1 -1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV)
   IN COND. #1- 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1116)

5. EXSITING
   2-2" SCH. 80 PVC (BORED) TO EXISTING TYPE 2 GRD. BOX
   IN SCH. 40 STEEL CASING
   IN COND. #1 - 3#4XHHW, 1#4 BARE (DMS POWER)
   2#2XHHW, 1#2 BARE (CCTV POWER)

6. EXISTING
   2-3" CONDUITS
   IN COND. #1 - 1-6 STRAND SINGLE MODE FOC (DMS-45-1116)
   IN COND. #2 - 2#2XHHW, 1#2 BARE (CCTV POWER)

7. EXISTING:(STA. 1116+00)
   SIGN STRUCTURE DMS 45-1116
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") #3 ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②

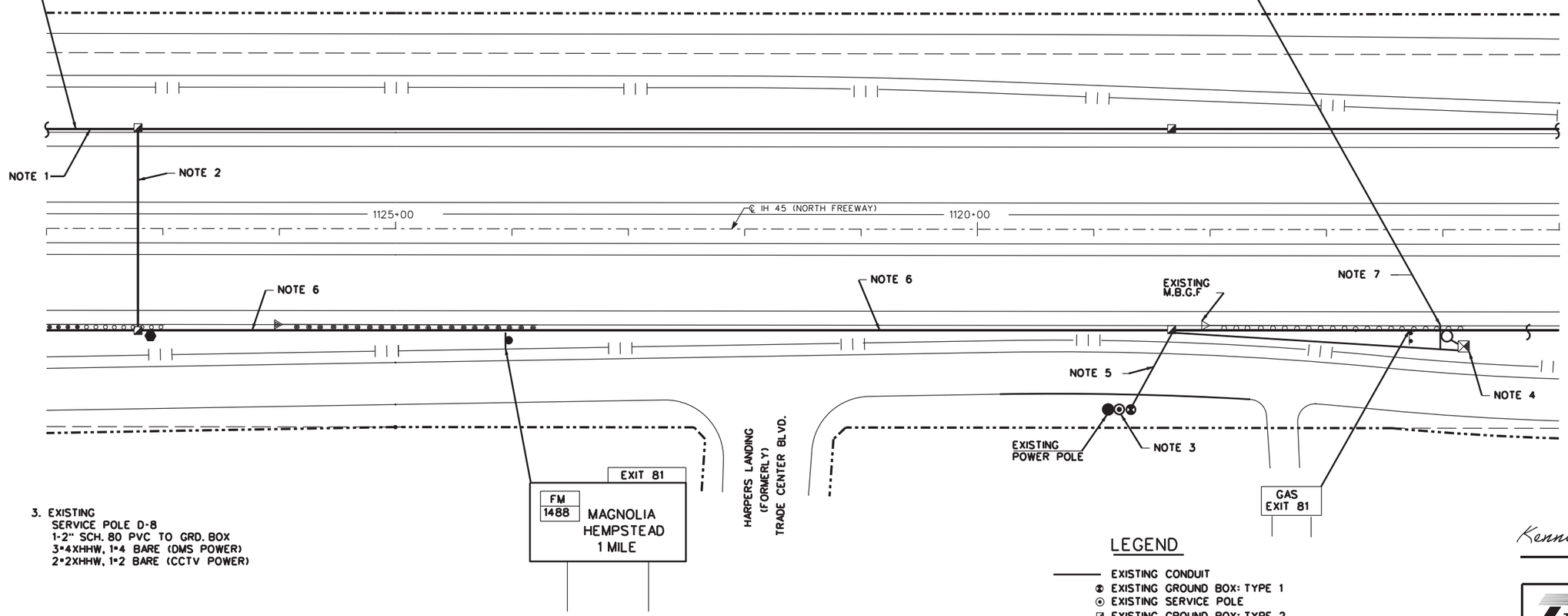
   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN(SUPPLIED BY STATE)
   IN COND. #1&2 DMS CONTROL CABLES

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 45-1116
STA. 1116+00

TO COMMUNICATION HUB BUILDING
STA=1147+90
(3,200 FEET FROM DMS)
@ SH 242

7,600 FT FROM DMS
TO FM 1488.



3. EXISTING
   SERVICE POLE D-8
   1-2" SCH. 80 PVC TO GRD. BOX
   3#4XHHW, 1#4 BARE (DMS POWER)
   2#2XHHW, 1#2 BARE (CCTV POWER)

4. EXSTING (1115+80)
   DMS CONTROLLER & CABINET
   DMS FOUNDATION
   FIBER OPTIC DMS FIELD EQUIPMENT
   FIBER OPTIC RS-232 DATA MODEM
   2-3" SCH. 80 PVC TO GRD. BOX
   1-2" SCH. 80 PVC TO GRD. BOX
   IN COND. #1(3") - 1-6 STRAND SINGLE MODE FOC (DMS-1116)
   IN COND. #2(2") - 3#4XHHW, 1#4 BARE (DMS POWER)

   INSTALL
   DMS CONTROLLER & CABNINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER
1/24/

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (NORTH LOOP)

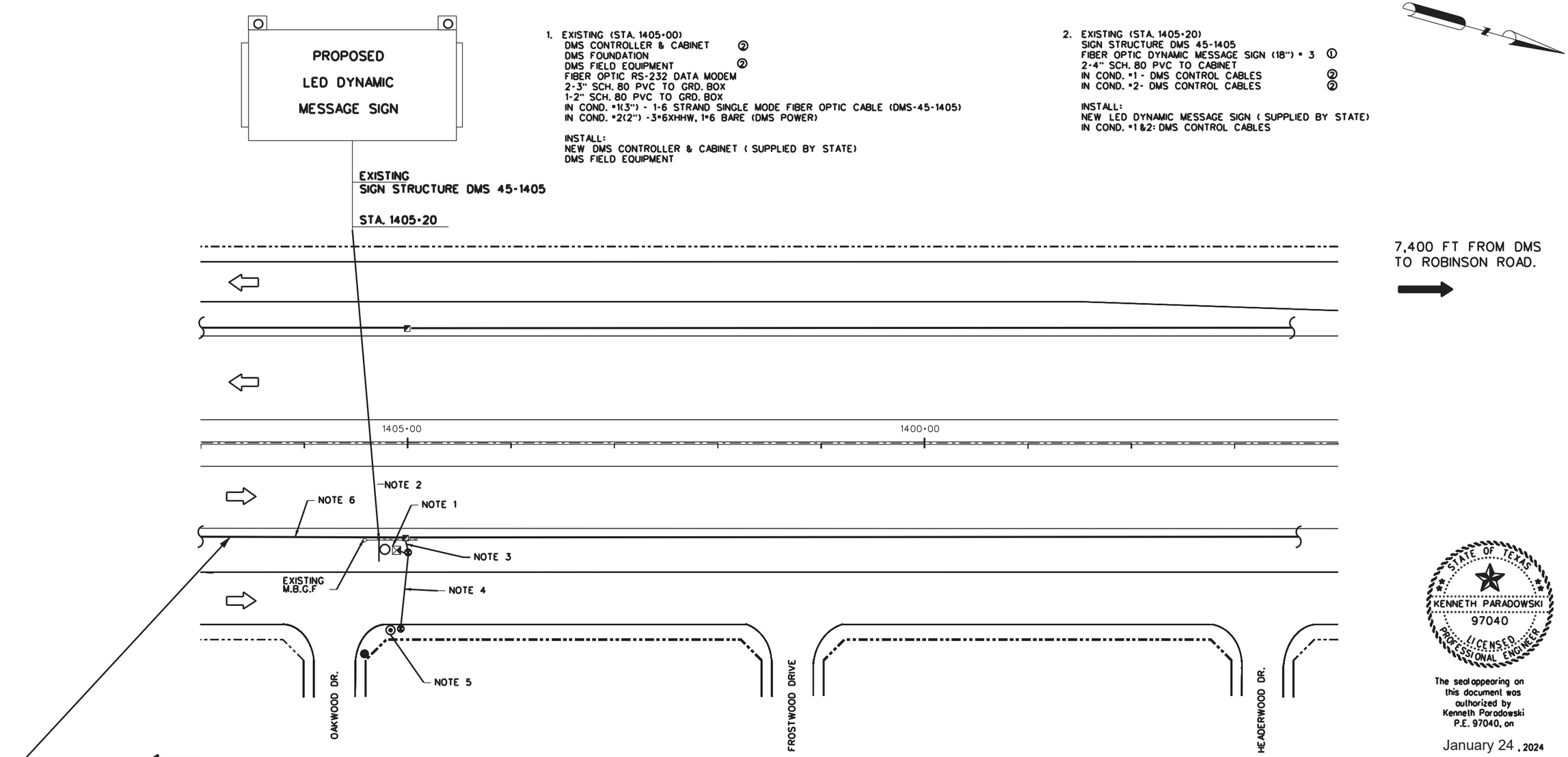
DYNAMIC MESSAGE SIGN
IH-45 @ SH 242
(N.B)

SCALE: 1" = 100'

FILE NAME: IH45NFrwy 13 .DGN

SHEET 15 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		39



1. EXISTING (STA. 1405+00)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②
   FIBER OPTIC RS-232 DATA MODEM
   2-3" SCH. 80 PVC TO GRD. BOX
   1-2" SCH. 80 PVC TO GRD. BOX
   IN COND. #1(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-45-1405)
   IN COND. #2(2") -3#6XHHW, 1#6 BARE (DMS POWER)

   INSTALL:
   NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

2. EXISTING (STA. 1405+20)
   SIGN STRUCTURE DMS 45-1405
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") # 3 ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②

   INSTALL:
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1 &2: DMS CONTROL CABLES

3. EXISTING
   2-2" SCH. 80 PVC
   IN COND. #1 - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-45-1405)

4. EXISTING
   2-2" SCH. 80 PVC (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)

5. EXISTING
   SERVICE POLE D-11
   1-2" SCH. 80 PVC TO GRD. BOX
   3#6XHHW, 1#6 BARE (DMS POWER)

6 . EXISTING
   2-3" CONDUITS
   IN COND. #1 - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-45-1405)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW DMS- SUPPLIED BY STATE

② TO BE REMOVED.

SCALE: 1" = 100'

FILE NAME: 45n100-29.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

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January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (NORTH FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ RAYFORD
(N.B)

SHEET 16 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		40

1. EXISTING (STA. 1440+00)
   SIGN STRUCTURE DMS 45-1440 ①

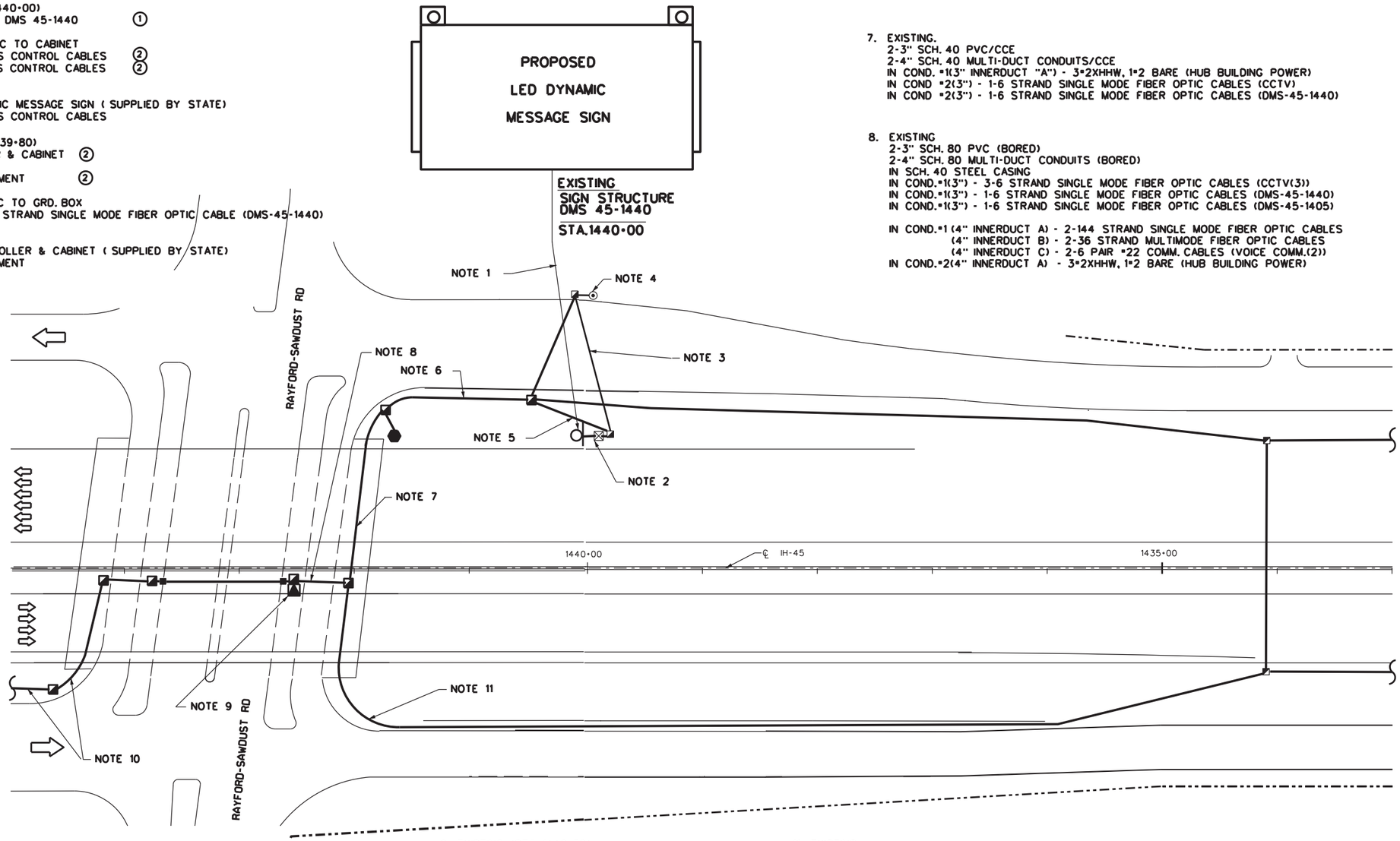
   2-3" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2 - DMS CONTROL CABLES ②

   INSTALL:
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. 1&2: DMS CONTROL CABLES

2. EXISTING (STA. 1439+80)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②

   3-2" SCH. 80 PVC TO GRD. BOX
   IN COND. #1 - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-45-1440)

   INSTALL:
   NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT



3. EXISTING
   2-1¼" CONDUITS
   IN COND. #1 - 2#8XHHW, 1#8 BARE (DMS POWER)
   IN COND. #2 - TELEPHONE DROP CABLE

4. EXISTING
   SERVICE POLE 25201 IH-45 (NORTH FREEWAY)
   1-1¼" CONDUIT
   2#8XHHW, 1#8 BARE (DMS POWER)
   2-2" SCH. 80 PVC TO GRD. BOX
   IN COND. #1 - 2#8XHHW, 1#8 BARE (CCTV CABINET POWER)
   3#2XHHW, 1#2 BARE (HUB BUILDING POWER)

5. EXISTING
   3-2" SCH. 80 PVC
   IN COND. #1 - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-45-1440)

6. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
   IN COND.#1(3" INNERDUCT "A") - 2#8XHHW, 1#8 BARE (CCTV CABINET POWER)
   3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
   IN COND#2(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1440)

7. EXISTING.
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
   IN COND. #1(3" INNERDUCT "A") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
   IN COND #2(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV)
   IN COND #2(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1440)

8. EXISTING
   2-3" SCH. 80 PVC (BORED)
   2-4" SCH. 80 MULTI-DUCT CONDUITS (BORED)
   IN SCH. 40 STEEL CASING
   IN COND.#1(3") - 3-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV(3))
   IN COND.#1(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1440)
   IN COND.#1(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1405)

   IN COND.#1 (4" INNERDUCT A) - 2-144 STRAND SINGLE MODE FIBER OPTIC CABLES
   (4" INNERDUCT B) - 2-36 STRAND MULTIMODE FIBER OPTIC CABLES
   (4" INNERDUCT C) - 2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
   IN COND.#2(4" INNERDUCT A) - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)

9. EXISTING (STA. 1442+50)
   COMMUNICATIONS HUB BUILDING
   ETHERNET SWITCH
   FIBER OPTIC SPLICE ENCLOSURE (S/M)
   FIBER OPTIC SPLICE ENCLOSURE (M/M)
   7 FIBER OPTIC RS-232 DATA MODEMS
   4-4" SCH. 80 MULTI-DUCT CONDUITS TO GRD. BOX
   4-3" SCH. 80 PVC TO GRD. BOX
   1-2" SCH. 80 PVC TO GRD. BOX
   IN COND.#1(4" INNERDUCT A) - 2-144 STRAND SINGLE MODE FIBER OPTIC CABLES
   (4" INNERDUCT B) - 2-36 STRAND MULTIMODE FIBER OPTIC CABLES
   (4" INNERDUCT C) - 2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
   IN COND.#1(3") - 3-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV(3))
   IN COND.#1(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1440)
   IN COND.#1(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-1405)
   IN COND.#2(3") - 2-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV,DMS-PRUITT-SB)
   IN COND.#1(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)

10. EXISTING
    2-3" SCH. 40 PVC/CCE
    2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
    IN COND.#1(3") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
    1-36 STRAND MULTIMODE FIBER OPTIC CABLE
    1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
    IN COND.#2(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV)
    IN COND.#2(3") - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLES (DMS-45-PRUITT-SB)

11. EXISTING
    2-3" SCH. 80 PVC
    IN COND. #1(3") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
    1-36 STRAND MULTIMODE FIBER OPTIC CABLE
    1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
    IN COND. #2(3")- 3-6 STRAND SINGLE MODE FIBER OPTIC CABLES (CCTV(2), DMS-45-1405)

① TO BE REMOVED AND REPLACED WITH NEW DMS, SUPPLY BY STATE
② TO BE REMOVED.

SEE SHEET 16 OF 54 FOR LEGEND

SCALE: 1" = 100'
FILE NAME: 45n100-26.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (NORTH FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ RAYFORD
(S.B)

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		41

1. EXISTING (STA.617+00)
SIGN STRUCTURE DMS 45-668
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") #1 ①
2-4" SCH. 80 PVC TO CABINET
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 - DMS CONTROL CABLES
IN COND. #2- DMS CONTROL CABLES

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 45-668

STA. 668+70

2. EXISING (STA. 617+20)
DMS CONTROLLER CABINET
DMS CONTROLLER CABINET FOUNDATION
DMS FIELD EQUIPMENT
1 STAND ALONE LDM
2-2" SCH. 80 PVC TO GRD. BOX
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-45-668)
IN COND. #2 - 3-#8XHHW, 1-#8 BARE (DMS CABINET POWER)

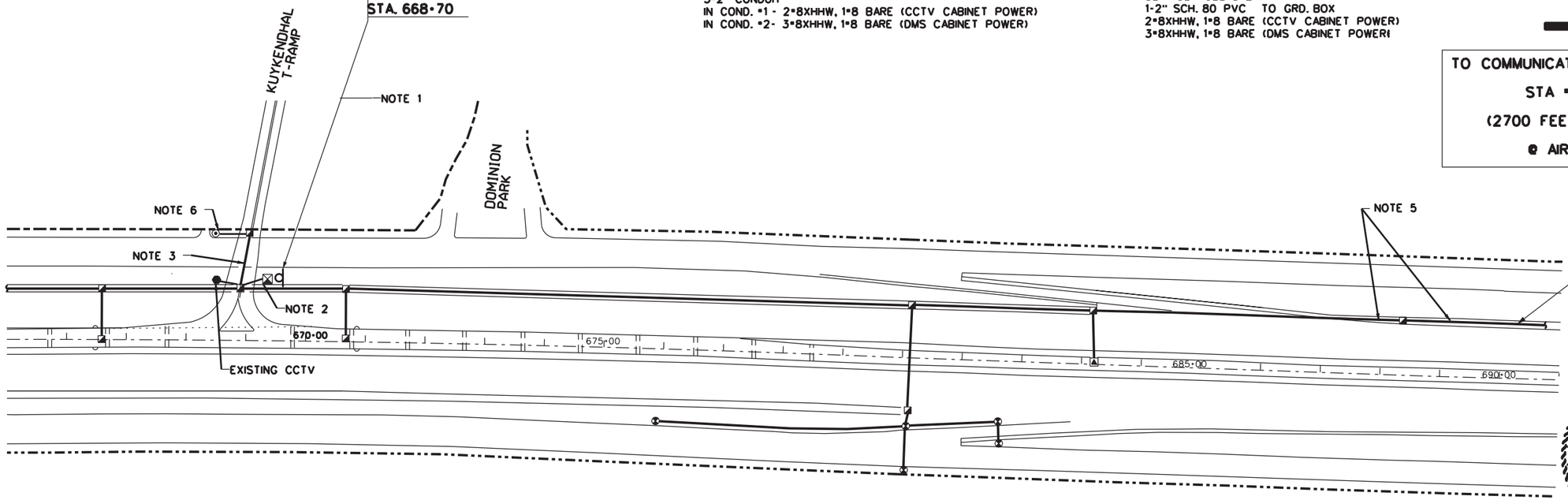
INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING
3-2" CONDUIT
IN COND. #1 - 2-#8XHHW, 1-#8 BARE (CCTV CABINET POWER)
IN COND. #2- 3-#8XHHW, 1-#8 BARE (DMS CABINET POWER)

5. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (CCTV)
FIBER OPTIC CABLE(CCTV)
- 1-6 PAIR #22 COMM.CABLE (DMS-45-668)

6. EXISTING
SERVICE POLE D-2
1-2" SCH. 80 PVC TO GRD. BOX
2-#8XHHW, 1-#8 BARE (CCTV CABINET POWER)
3-#8XHHW, 1-#8 BARE (DMS CABINET POWER)

TO COMMUNICATION HUB BUILDING
STA = 695+90
(2700 FEET FROM DMS)
@ AIRTEX DR.



3,200 FT FROM DMS
TO RANKIN ROAD.

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: northfrwy3.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
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PROFESSIONAL ENGINEER

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January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH -45 (NORTH FREEWAY)

DYNAMIC MESSAGE SIGN
IH 45 @ RANKIN
(S.B)

SHEET 18 OF 51

CONT	SECT	JOB	HIGHWAY
0962	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		42

1. EXISTING (STA.617+00)
SIGN STRUCTURE DMS 45-617
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") *1 ①
2-4" SCH. 80 PVC TO CABINET
IN COND. *1 - DMS CONTROL CABLES ②
IN COND. *2- DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. *1 - DMS CONTROL CABLES
IN COND. *2- DMS CONTROL CABLES

2. EXISING (STA. 617+20)
DMS CONTROLLER CABINET ②
DMS CONTROLLER CABINET FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM
2-2" SCH. 80 PVC TO GRD. BOX
IN COND. *1 - 1-6 PAIR *22 COMM. CABLE
(DMS-45-RANKIN_NB)
IN COND. *2 - 3*8XHHW, 1*8 BARE (DMS CABINET POWER)

INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

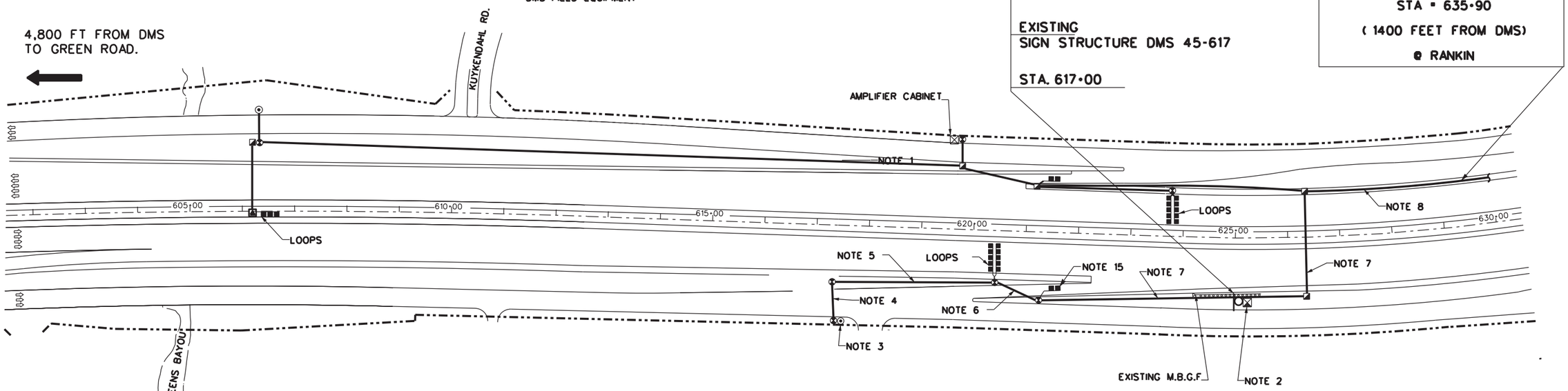
PROPOSED
LED DYNAMIC
MESSAGE SIGN

TO COMMUNICATION HUB BUILDING
STA = 635+90
(1400 FEET FROM DMS)
@ RANKIN

EXISTING
SIGN STRUCTURE DMS 45-617

STA. 617+00

4,800 FT FROM DMS
TO GREEN ROAD.



3. EXISITNG
SERVICE POLE TYPE D-1
1-2" SCH. 80 PVC TO GRD. BOX
3*8XHHW, 1*8 BARE (DMS CABINET POWER)

4. EXISTING
2-3" CONDUITS
IN COND. *1 - 3*8XHHW, 1*8 BARE (DMS CABINET POWER)

5. EXISTING
2-3" CONDUITS
IN COND. *1 - 3*8XHHW, 1*8 BARE (DMS CABINET POWER)

6. EXISTING
2-3" CONDUITS
IN COND. *1 - 10 LOOP LEAD-IN CABLES
IN COND. *1 - 3*8XHHW, 1*8 BARE (DMS CABINET POWER)

7. EXISTING
2-3" CONDUITS
IN COND. *1 - 12 LOOP LEAD-IN CABLES
IN COND. *2 - 1-6 PAIR *22 COMM. CABLE
(DMS-45-617)

8. EXISTING
4-3" SCH. 40 PVC/CCE
IN COND. *1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR *22 COMM. CABLE (VOICE COMM.)
IN COND. *2 - 1-6 PAIR *22 COMM. CABLE (HOV LOOPS)
1-25 PAIR *22 COMM. CABLE(FTM LOOPS)
IN COND. *3 - 1-6 PAIR *22 COMM. CABLE
(DMS-45-617)

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

SCALE 1"=200'
FILE NAME: nrthfrwyl.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

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January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH -45 (NORTH FREEWAY)

DYNAMIC MESSAGE SIGN
IH 45 @ RANKIN
(N.B)

SHEET 19 OF 51

CONT	SECT	JOB	HIGHWAY
0962	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		43

1. EXISTING (STA.58+00)
SIGN STRUCTURE DMS 45-58
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC
IN COND.#1 - DMS CONTROL CABLES ②
IN COND.#2- DMS CONTROL CABLES ②

INSTALL
IN COND.#1- DMS CONTROL CABLES
IN COND.#2- DMS CONTROL CABLES

3. EXISTING (STA. 57+80)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

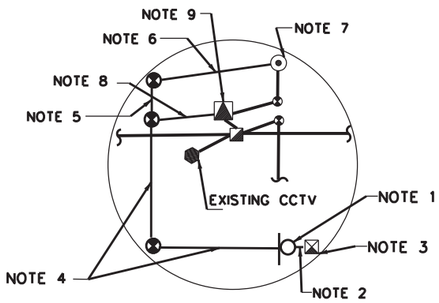
4. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-45-58)
IN COND. #2 - 3#2XHHW, 1#2 BARE (DMS POWER)

PROPOSED
LED DYNAMIC
MESSAGE SIGN

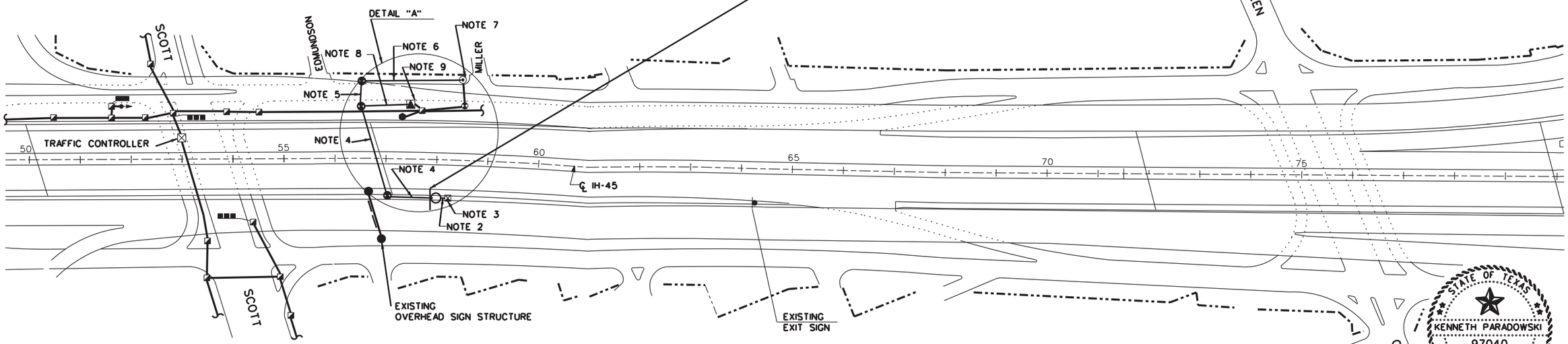
EXISTING
SIGN STRUCTURE DMS 45-58

STA. 58+00

NOTE 1



DETAIL "A" NTS



5. EXISTING
2-2" SCH 80 PVC (BORED)
IN SCH. 40 STEEL CASING
3#2XHHW, 1#2 BARE (DMS POWER)

6. EXISTING
1-2" SCH 80 PVC TO SERV. POLE
3#2XHHW, 1#2 BARE (DMS POWER)

7. EXISTING
SERVICE POLE
360 1/2 (GULF FREEWAY)
1-2" CONDUIT
W/2#10XHHW, 1#10 BARE (DMS POWER)

8. EXISTING
1-2" SCH. 80 PVC TO HUB BUILDING
1-6 PAIR #22 COMM. CABLE (DMS-45-58)

9. EXISTING (STA. 57+00)
COMMUNICATIONS HUB BUILDING
CCTV FIELD EQUIPMENT
ETHERNET SWITCH
VIDEO FO TX
LDM BACKPLANE ASSEMBLY W/6 LIMITED DISTANCE MODEM CARDS
4 LOOP AMPLIFIER
1 STAND ALONE LDM
5-3" CONDUITS TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(3") - 2-25 PAIR #22 COMM. CABLES
2-12 PAIR #22 COMM. CABLES (CCTV,LOOPS)
IN COND. #2(3") -1-6 PAIR #22 COMM. CABLE (LDM INTERCONNECT)
1-6 PAIR #22 COMM. CABLE (DMS-45-58)
1-25 PAIR #22 COMM. CABLE (LDM INTERCONNECT)
IN COND. #3(2") - 2#6XHHW, 1#6 BARE (HUB BUILDING POWER)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: dmsscott.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (GULF FREEWAY)
DYNAMIC MESSAGE SIGN
IH-45 @ SCOTT
(S.B)

SHEET 20 OF 51

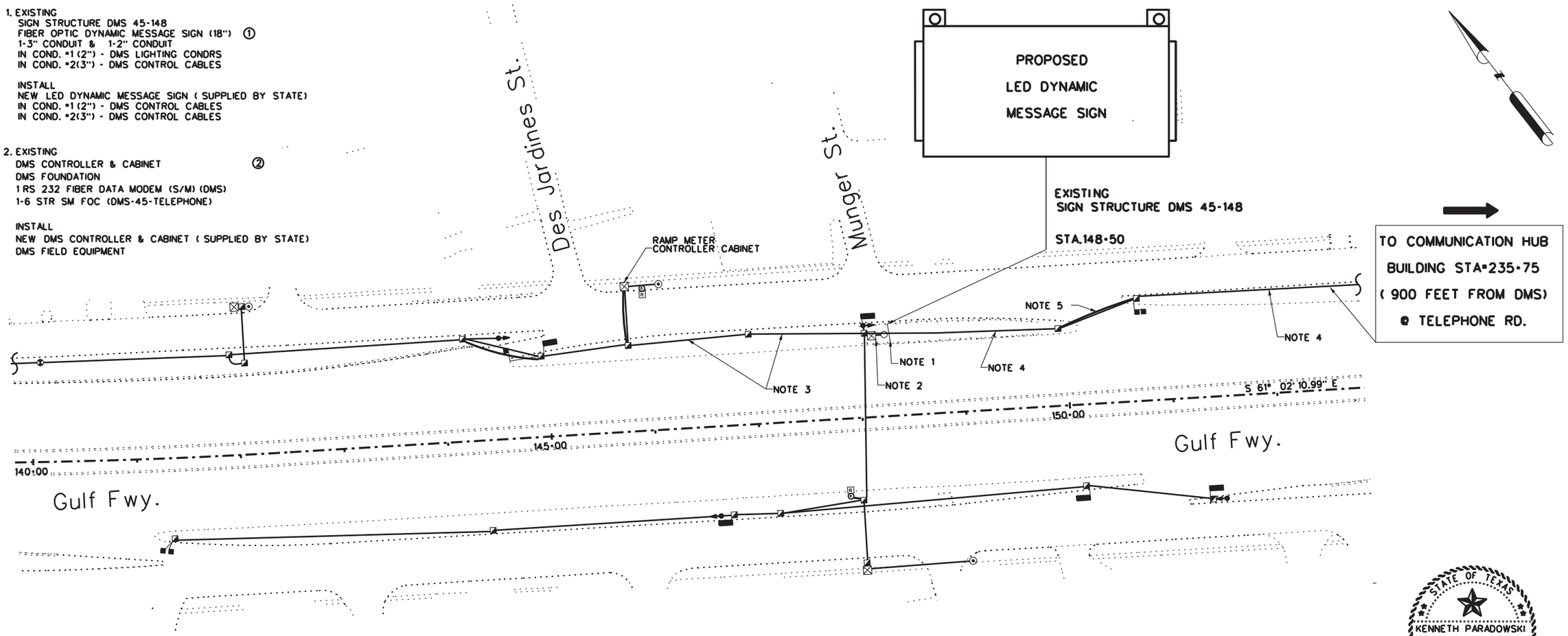
CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		44

1. EXISTING
SIGN STRUCTURE DMS 45-148
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
1-3" CONDUIT & 1-2" CONDUIT
IN COND. #1 (2") - DMS LIGHTING CONDRS
IN COND. #2(3") - DMS CONTROL CABLES

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 (2") - DMS CONTROL CABLES
IN COND. #2(3") - DMS CONTROL CABLES

2. EXISTING
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
1 RS 232 FIBER DATA MODEM (S/M) (DMS)
1-6 STR SM FOC (DMS-45-TELEPHONE)

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT



3. EXISTING
4-3" CONDUITS
IN COND. #1 - 2-6 STR SM FOC (RVSD)
2-6 STR SM FOC (RM)(DMS)
1-6 STR SM FOC (DMS-45-148)
IN COND. #2- 1-144 STR SM FOC (LOCKWOOD TO TELEPHONE)

4. EXISTING
4-3" CONDUITS
IN COND. #1 - 2-6 STR SM FOC (RVSD)
2-6 STR SM FOC (RM)
1-6 STR SM FOC (DMS-45-148)
IN COND. #2- 1-144 STR SM FOC (LOCKWOOD TO TELEPHONE)

5. EXISTING
4-3" SCH. 80 PVC/CCE
IN SCH. 40 STEEL CASING
IN COND. #1 - 1-144 STR SM FOC
(LOCKWOOD HUB TO TELEPHONE HUB)
IN COND. #2- 2-6 STR SM FOC (RVSD)
2-6 STR SM FOC (RM)
1-6 STR SM FOC (DMS-45-148)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

FILE NAME: IH45 580 CTMS_09.DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH45 (GUFL FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ TELEPHONE
(N.B)

SHEET 21 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		45

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING SIGN STRUCTURE
DMS-45-211

STA=211+20

1. EXISTING
SIGN STRUCTURE DMS-45-211
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
1-2" CONDUIT
1-3" CONDUIT
IN COND. #1(2") - DMS & LIGHTING CONDRS.
IN COND. #2(3") - DMS CONTROL CABLES

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1- DMS CONTROL CABLE ②
IN COND. #2- DMS CONTROL CABLE ②

2. EXISTING
TYPE 5 CABINET (DMS) ②
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM
2-2" CONDUITS
IN COND. #1 - 2#10XHHW, 1#10 BARE
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE
(DMS-45-211)

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

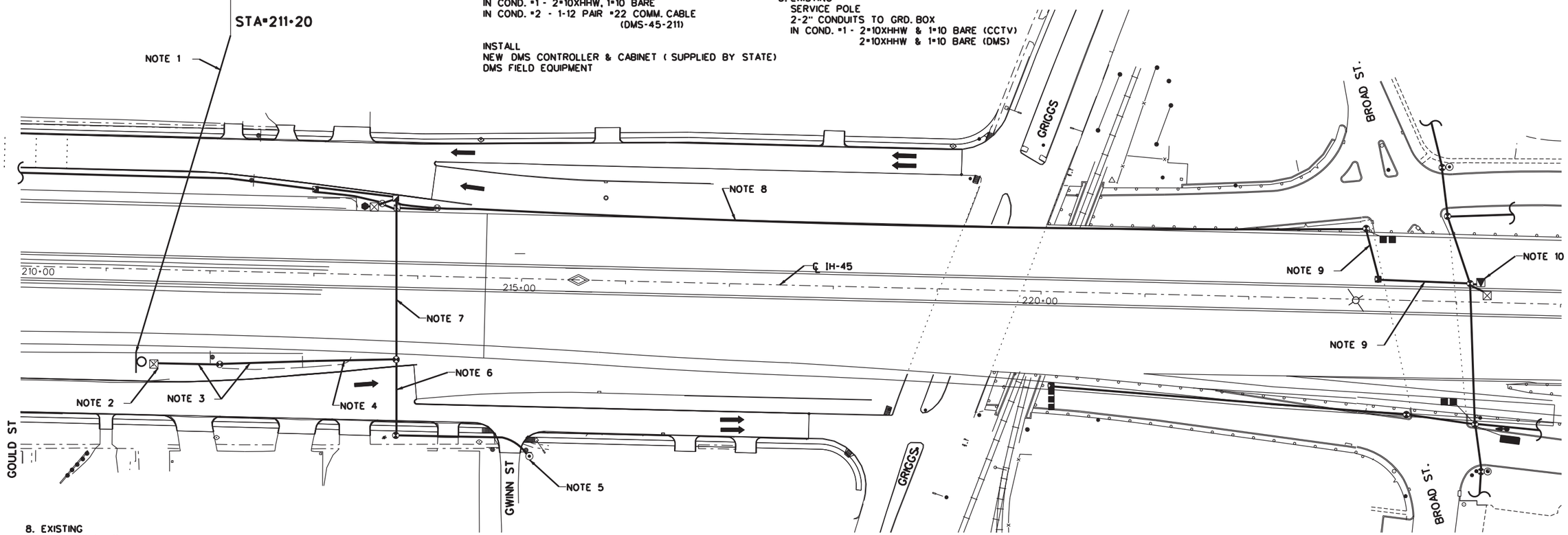
3. EXISTING
2-2" CONDUITS
IN COND. #1 - 2#10XHHW, 1#10 BARE
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE
(DMS-45-211)

4. EXISTING
2-2" CONDUITS
IN COND. #1 - 2#10XHHW, 1#10 BARE
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE
(DMS-45-211)

5. EXISTING
SERVICE POLE
2-2" CONDUITS TO GRD. BOX
IN COND. #1 - 2#10XHHW & 1#10 BARE (CCTV)
2#10XHHW & 1#10 BARE (DMS)

6. EXISTING
2-2" CONDUITS
IN COND. #1 - 2#10XHHW, 1#10 BARE (DMS)
2#10XHHW, 1#10 BARE (CCTV)

7. EXISTING
2-2" CONDUITS
IN COND. #1 - 1-12" PAIR #22 COMM. CABLE (DMS-45-211)
IN COND. #2 - 2#10XHHW, 1#10 BARE (CCTV)



8. EXISTING
4-3" CONDUITS

IN COND. #4 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1-36 STRAND MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE
IN COND. #3 - 1-12 PAIR #22 COMM. CABLES (CCTV)
1-12 PAIR #22 COMM. CABLES (DMS-45-211)
1-FIBER OPTIC DROP CABLE

9. EXISTING
4-3" CONDUITS
IN COND. #4 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1-36 STRAND MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE (CCTV)
1-FIBER OPTIC DROP CABLE
IN COND. #3 - 2 LOOP LEAD-IN CABLES
1-12 PAIR #22 COMM. CABLE (DMS-45-211)

10. EXISTING (STA. 224+20
COMMUNICATION HUB BUILDING
10 LOOP AMPLIFIERS
1 STAND ALONE LIMITED DISTANCE MODEM
2-25 PAIR #22 COMM. CABLES
3 LOOP AMPLIFIERS
1 STAND ALONE LIMITED DISTANCE MODEM
8-3" CONDUITS
1-2" CONDUIT

S/M FIBER OPTIC SPLICE ENCLOSURE
IN COND. #5 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1-36 STRAND MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE
IN COND. #2 - 3 LOOP LEAD-IN CABLES
IN COND. #3 - 1-12 PAIR #22 COMM. CABLE (CCTV)
1- FIBER OPTIC DROP CABLE
IN COND. #4 - 1-12 PAIR #22 COMM. CABLE
(DMS-45-211)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

SCALE: 1" = 100'

Texas Department of Transportation

IH-45 (GULF FREEAY)

DYNAMIC MESSAGE SIGN
IH-45 @ BROAD ST
(SB)

SHEET 22 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		46

1. EXISTING
SERVICE POLE (7811½GULF FREEWAY)
1-2" CONDUIT
POWER CONDUCTORS

2. EXISTING (STA. 336+25)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING
2-2" CONDUITS
2-3" CONDUITS
IN COND. #1(2") - DMS CONTROL CABLES ②
IN COND. #2(2") - POWER CONDUCTORS ②
IN COND. #3(3") - 1-12 PAIR #22 COMM. CABLE (DMS) ②

INSTALL
IN COND. #1(2") - DMS CONTROL CABLES
IN COND. #3(3")-1-6 STR SM FOC (DMS-45-BROADWAY)

4. EXISTING
RAMP METER CONTROLLER CABINET

5. EXISTING (STA. 336+70)
SIGN STRUCTURE DMS 45-336
DMS SIGN STRUCTURE FOUNDATION
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
DMS CONTROL CABLES ②

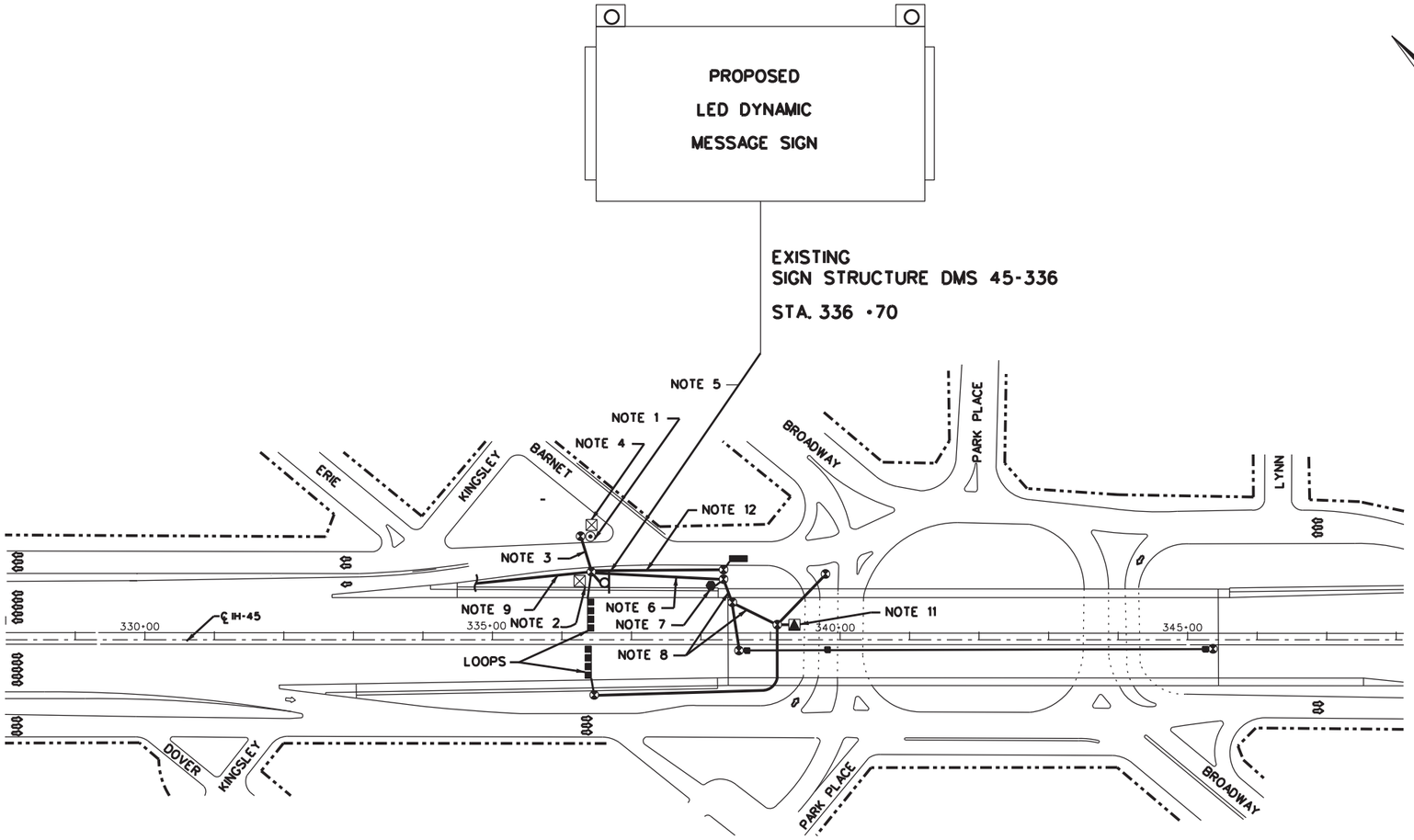
INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPLLIED BY STATE)
IN EXIST COND. - NEW DMS CONTROL CABLES

6. EXISTING
5-3" CONDUITS
IN COND. #1 - FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE
(DMS-45-336)
1-6 PAIR #22 COMM. CABLE (LDM INT)
IN COND. #3 - 5-7C/12 SIGNAL CABLES
1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (LOOPS)
IN COND. #4 - 2#6XHHW, 1#6 BARE
IN COND. #5 - 2-6 PAIR #22 COMM. CABLE (CCTV,DMS)
FIBER DROP CABLE (CCTV)

7. EXISTING (STA. 338+15)
CCTV CAMERA

8. EXISTING
5-3" CONDUITS
IN COND. #1 - FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 2#6XHHW, 1#6 BARE (HUB BLDG. POWER)
IN COND. #3 - COAXIAL DROP CABLE
1-6 PAIR #22 COMM. CABLE (LDM INT)
1-12 PAIR #22 COMM. CABLE (CCTV)
1-12 PAIR #22 COMM.CABLE
(DMS-45-336)
CCTV CONTROL CABLES
IN COND. #4 - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (LOOPS)
5-7C/12 SIGNAL CABLES
IN COND. #5 - 2-6 PAIR #22 COMM. CABLE (CCTV,DMS)
FIBER DROP CABLE (CCTV)

9. EXISTING
4-3" CONDUITS
IN COND. #1 - FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLES (VOICE COMM.)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (LDM INT)
2 LOOP LEAD-IN CABLES
IN COND. #3 - 7-7C/12 SIGNAL CABLES
IN COND. #4 - 2-6 PAIR #22 COMM. CABLE (CCTV,DMS)
FIBER DROP CABLE (CCTV)



11. EXISTING (STA. 339+40)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
CCTV FIELD EQUIPMENT
VIDEO FIBER OPTIC TX
LDM RACK
6 LOOP AMPLIFIERS
3 STAND ALONE LDM'S
7-3" CONDUITS
IN COND. #1 - FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 2#6XHHW, 1#6 BARE (HUB BLDG. POWER)
IN COND. #3 - COAXIAL DROP CABLE
1-6 PAIR #22 COMM. CABLE (LDM INT)
1-12 PAIR #22 COMM. CABLE (CCTV)
1-12 PAIR #22 COMM. CABLE
(DMS-45-336)
CCTV CONTROL CABLES
IN COND. #4 - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (LOOPS)
5-7C/12 SIGNAL CABLES
IN COND. #5 - 6 LOOP LEAD-IN CABLES
IN COND. #6 - FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #7 - 1-25 PAIR #22 COMM. CABLE
2-6 PAIR #22 COMM. CABLE
2 LOOP LEAD-IN CABLES
2-3" RMC TO GRD. BOX
IN COND. #8A - 2-6 PAIR #22 COMM. CABLE (CCTV,DMS)
FIBER DROP CABLE (CCTV)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'
FILE NAME: IH45S @Broadway

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (GULF FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ BROADWAY
(N.B)

SHEET 23 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		47

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 45-109

STA. 109+80

1. EXISTING (STA.109+80)
SIGN STRUCTURE DMS 45-BELLFORT
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①

INSTALL
NEW LED DYSNAMIC MESSAGAE SIGN
(SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC
IN COND.#1 - DMS CONTROL CABLES ②
IN COND.#2- DMS CONTROL CABLES ②

INSTALL
IN COND.#1&2- DMS CONTROL CABLES

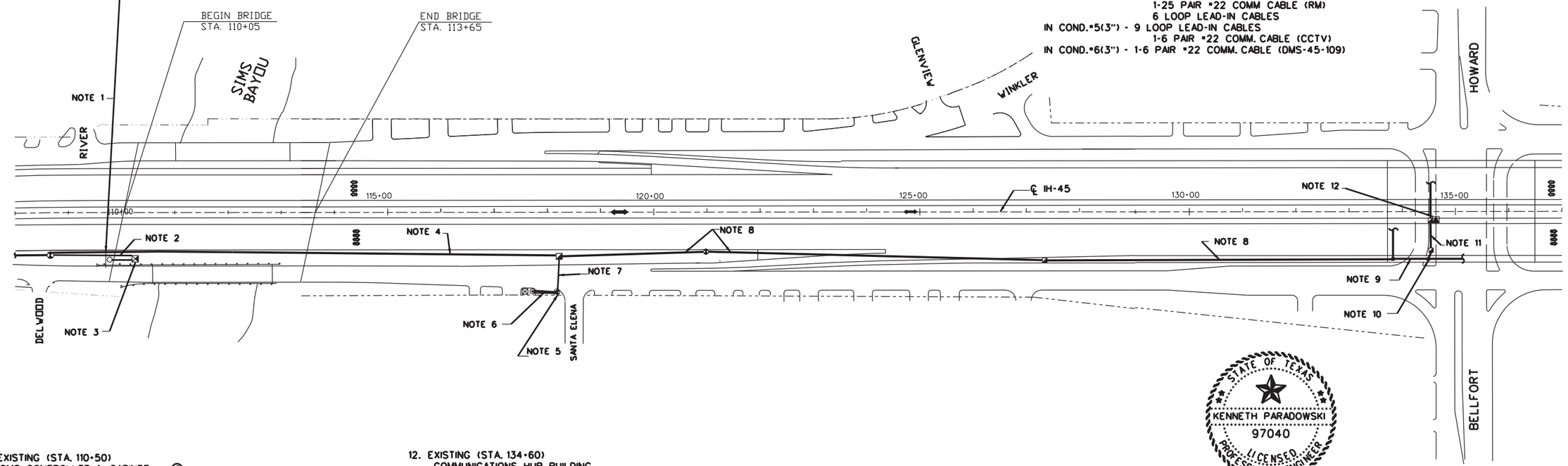
7. EXISTING
2-2" SCH. 80 PVC (BORED)
IN SCH. 40 STEEL CASING
IN COND.#1 - 3#4XHHW, 1#4 BARE (DMS POWER)

8. EXISTING
4-3" CONDUITS
IN COND.#1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTI-MODE FIBER OPTIC CABLE
1 6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND.#2 - 1-6 PAIR #22 COMM. CABLE (HOV LOOPS)
1-25 PAIR COMM. CABLE (RM)
IN COND.#3 - 1-6 PAIR #22 COMM. CABLE (DMS-45-109)

9. EXISTING
4-3" CONDUITS (SUSPENDED BENEATH BRIDGE)
IN COND.#1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTI-MODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND.#2-1-6 PAIR #22 COMM. CABLE (HOV LOOPS)
1-25 PAIR COMM. CABLE (RM)
6 LOOP LEAD-IN CABLES
IN COND.#3 - 1-6 PAIR #22 COMM. CABLE (DMS-45-109)

10. EXISTING
JUNCTION BOX
5-3" CONDUITS (DOWN BRIDGE COLUMN TO TYPE 2 GRD. BOX)
IN COND.#1 - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTI-MODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
IN COND.#2 - 1-6 PAIR #22 COMM. CABLE (HOV LOOPS)
1-25 PAIR COMM. CABLE (RM)
6 LOOP LEAD-IN CABLES
IN COND.#3 - 2-7C/12 SIGNAL CABLES
IN COND.#4 - HOV LANE CONTROL PANEL CABLE
9 LOOP LEAD-IN CABLES
IN COND.#5 - 1-6 PAIR #22 COMM. CABLE (DMS-45-109)

11. EXISTING
5-3" CONDUITS
1-2" CONDUIT
IN COND.#1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTI-MODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
FIBER DROP CABLE
IN COND.#2(3") - 9 LOOP LEAD-IN CABLES
HOV LANE CONTROL PANEL CABLE
IN COND.#3(2") - 2-7C/12 SIGNAL CABLES
3#2XHHW, 1#2 BARE (HUB BLDG. POWER)
IN COND.#4(3") - 1-6 PAIR #22 COMM. CABLE (HOV LOOPS)
1-25 PAIR #22 COMM CABLE (RM)
6 LOOP LEAD-IN CABLES
IN COND.#5(3") - 9 LOOP LEAD-IN CABLES
1-6 PAIR #22 COMM. CABLE (CCTV)
IN COND.#6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-45-109)



3. EXISTING (STA. 110+50)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

4. EXISTING
2-2" SCH. 80 PVC
IN COND.#1 - 1-6 PAIR #22 COMM. CABLE (DMS-45-109)
IN COND.#2 - 3#4XHHW, 1#4 BARE (DMS POWER)

5. EXISTING
SERVICE POLE
(8202½GULF FREEWAY)
1-2" SCH. 80 PVC TO GRD. BOX (BORED)
3#6XHHW, 1#6 BARE (RM CABINET POWER)

6. EXISTING
1-2" SCH. 80 PVC (BORED) FROM GRD. BOX TO SERVICE POLE
3#4XHHW, 1#4 BARE (DMS POWER)

12. EXISTING (STA. 134+60)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/6 MODEM CARDS
DETECTOR CARD RACK W/8 CARDS
8-3" CONDUITS TO GRD. BOX
1-2" CONDUIT TO TYPE 2 GRD. BOX
IN COND.#1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTI-MODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM. (2))
FIBER DROP CABLE
IN COND.#2(3") - 1-6 PAIR #22 COMM. CABLE (HOV LOOPS)
1-25 PAIR #22 COMM. CABLE (RM)
6 LOOP LEAD-IN CABLES
IN COND.#3(2") - 2-7C/12 SIGNAL CABLES
3#2XHHW, 1#2 BARE (HUB BLDG. POWER)
IN COND.#4(3") - HOV LANE CONTROL PANEL CABLE
9 LOOP LEAD-IN CABLES
IN COND.#5(3") - 2-6 PAIR #22 COMM. CABLES (SCS, CCTV)
IN COND.#6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-45-109)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING TYPE 1 LOOPS
- EXISTING M.B.G.F.
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS-SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (GULF FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ BELLFORT
(S.B)

SHEET 24 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		48

1. EXISTING (STA.330+00)
SIGN STRUCTURE DMS 45-330
FIBER OPTIC DYNAMIC MESAGE SIGN (18") ①

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
IN COND.#1 &2: DMS CONTROL CABLES

3. EXISTING (STA. 329+80)
DMS CONTROLLER & CABINET ②
DMA FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

4. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-45-330)
IN COND. #2 - 3#8XHHW, 1#8 BARE (DMS POWER)

5. EXISTING
2-2" SCH. 80 PVC (BORED)
IN SCH. 40 STEEL CASING
IN COND.#1 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-ALMEDA GENOA)
IN COND.#2 - 3#8XHHW, 1#8 BARE (DMS POWER)

6. EXISTING
1-2" SCH. 80 PVC
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

7. EXISTING
1-2" SCH. 80 PVC (BORED)
1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

8. EXISTING
SERVICE POLE D-7
1-2" SCH. 80 PVC TO GRD. BOX
3#8XHHW, 1#8 BARE (DMS POWER)

9. EXISTING
1-2" CONDUIT TO SERVICE POLE
2#6XHHW, 1#6 BARE (CABINET POWER)

10. EXISTING
SERVICE POLE (TYPE B)
(11415 1/2) GULF FREEWAY

11. EXISTING
2-3" CONDUITS (SUSPENDED BENEATH BRIDGE)
IN COND. #1 - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

12. EXISTING
2-3" CONDUITS
IN COND. #1 - 10 LOOP LEAD-IN CABLES
1-12 PAIR #22 COMM. CABLE
(FTM LOOPS)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

13. EXISTING
2-3" CONDUITS
IN COND. #1 - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

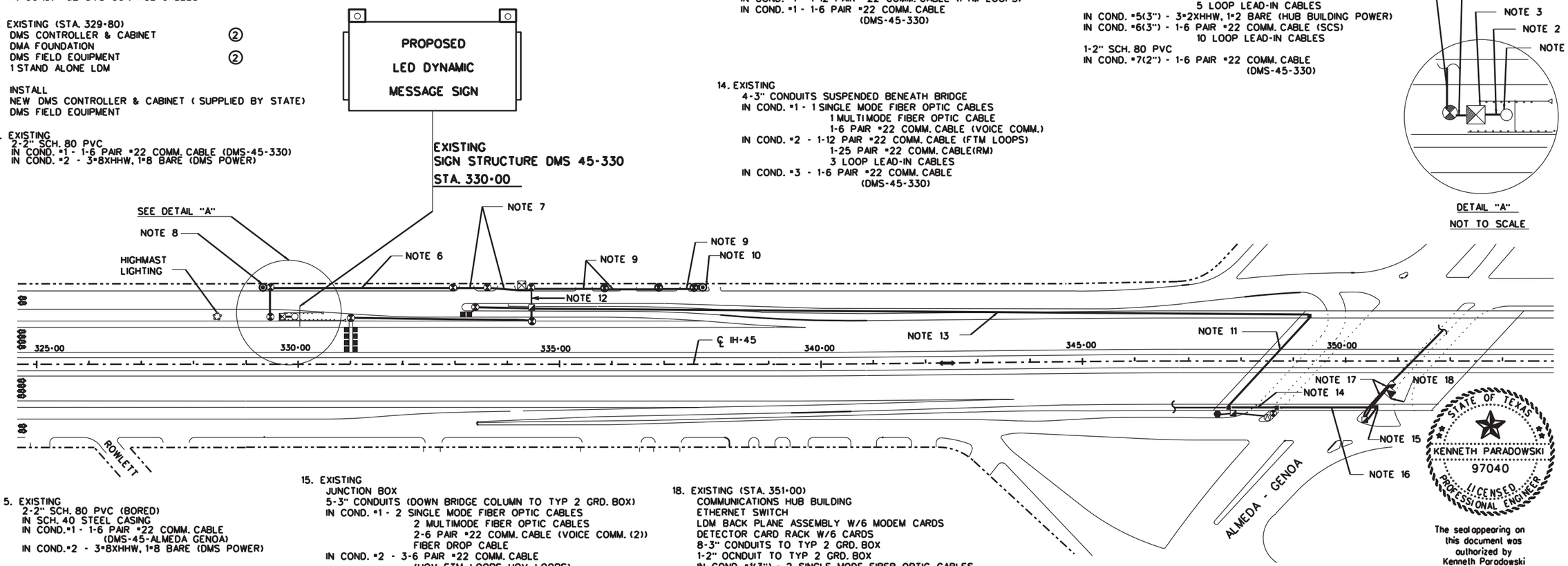
14. EXISTING
4-3" CONDUITS SUSPENDED BENEATH BRIDGE
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLES
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE(RM)
3 LOOP LEAD-IN CABLES
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

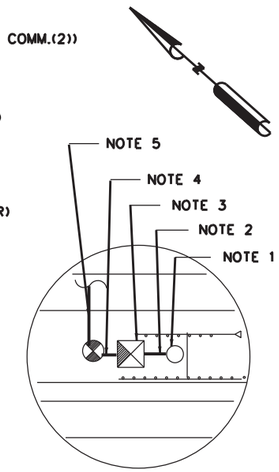
15. EXISTING
JUNCTION BOX
5-3" CONDUITS (DOWN BRIDGE COLUMN TO TYP 2 GRD. BOX)
IN COND. #1 - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLE (VOICE COMM. (2))
FIBER DROP CABLE
IN COND. #2 - 3-6 PAIR #22 COMM. CABLE
(HOV, FTM LOOPS, HOV LOOPS)
4 LOOP LEAD-IN CABLES
IN COND. #3 - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE(RM)
1-6 PAIR #22 COMM. CABLE (CCTV)
5 LOOP LEAD-IN CABLES
IN COND. #4 - 5 LOOP LEAD IN CABLES
1-25 PAIR #22 COMM. CABLE (RM)
IN COND. #5 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

16. EXISTING
4-3" CONDUITS SUSPENDED BENEATH BRIDGE
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLES
1 MULTIMODE FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE (RM)
1-6 PAIR #22 COMM. CABLE (CCTV)
5 LOOP LEAD-IN CABLES
IN COND. #3 - 2#2XHHW, 1#2 BARE (CCTV CABINET POWER)
IN COND. #4 - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

17. EXISTING
6-3" CONDUITS
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR # 22 COMM. CABLES (VOICE COMM.(2))
FIBER DROP CABLE
IN COND. #2(3") - 3-6 PAIR #22 COMM. CABLES
(HOV,FTM LOOPS, HOV LOOPS)
4 LOOP LEAD-IN CABLES
IN COND. #3(3") - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE (RM)
1-6 PAIR #22 COMM. CABLE (CCTV)
3 LOOP LEAD-IN CABLES
IN COND. #4(3") - 1-25 PAIR #22 COMM. CABLE (RM)
5 LOOP LEAD-IN CABLES
IN COND. #5(3") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (SCS)
10 LOOP LEAD-IN CABLES
1-2" SCH. 80 PVC
IN COND. #7(2") - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)

18. EXISTING (STA. 351+00)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACK PLANE ASSEMBLY W/6 MODEM CARDS
DETECTOR CARD RACK W/6 CARDS
8-3" CONDUITS TO TYP 2 GRD. BOX
1-2" OCNDUIT TO TYP 2 GRD. BOX
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
FIBER DROP CABLE
IN COND. #2(3") - 1-6 PAIR #22 COMM. CABLE (SCS)
1-25 PAIR #22 COMM. CABLE (RM)
5 LOOP LEAD-IN CABLES
IN COND. #3(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING.POWER)
IN COND. #4(3") - 3-6 PAIR #22 COMM. CABLE
(HOV,FTM LOOPS, HOV LOOPS))
4 LOOP LEAD-IN CABLES
IN COND. #5(3") - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE (RM)
1-6 PAIR #22 COMM. CABLE (CCTV)
3 LOOP LEAD-IN CABLES
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE
(DMS-45-330)





DETAIL "A"
NOT TO SCALE

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

SCALE: 1" = 200'

FILE NAME: dmsalmeda-genoa.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (GULF FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ ALMEDA-GENOA
(N.B)

SHEET 25 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		49

1. EXISTING (STA. 417+80)
SIGN STRUCTURE DMS 45-417
SIGN STRUCTURE FOUNDATION
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
2-4" CONDUITS
IN COND. #1 - DMS CONTROL CABLES
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND.#1&2- DMS CONTROL MESSAGE

2. EXISTING (STA. 416+40)
DMS CONTROLLER CABINET ②
DMS CONTROLLER CABINET FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM
2-4" CONDUITS
1-2" CONDUIT
IN COND. #1(4") - DMS CONTROL CABLES ②
IN COND. #2(4") - DMS CONTROL CABLES ②
1-6 PAIR #22 COMM. CABLE (DMS-45-417)
TELEPHONE DROP CABLE (TO REMAIN DISCONNECTED)
IN COND. #3(2") - 3#6XHHW, 1#6 BARE (DMS CABINET POWER)

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT
IN COND. #1 DMS CONTROL CABLES
IN COND. #2 DMS CONTROL CABLES

3. EXISTING
SERVICE POLE
(12926 ½ GULF FREEWAY)
1-2" CONDUITS TO GRD. BOX
3#2XHHW, 1#2 BARE (DMS POWER)
2#2XHHW, 1#2 BARE (DETECTOR CAB. POWER)

4. EXISTING
1-2" CONDUIT
3#2XHHW, 1#2 BARE (DMS POWER)
2#2XHHW, 1#2 BARE (DETECTOR CAB. POWER)

5. EXISTING
4-3" CONDUITS
IN COND. #1 - 2-7C/12 SIGNAL CABLES
IN COND. #2 - 2-6 PAIR #22 COMM. CABLES (HOV,HOV LOOP)
1-6 PAIR #22 COMM. CABLE (DMS-45-417) ②
3 LOOP LEAD-IN CABLES
HOV LANE CONTROL PANEL CABLE
TELEPHONE DROP CABLE
IN COND. #3 - DMS CONTROL CABLES ②
IN COND. #4 - DMS CONTROL CABLES ②

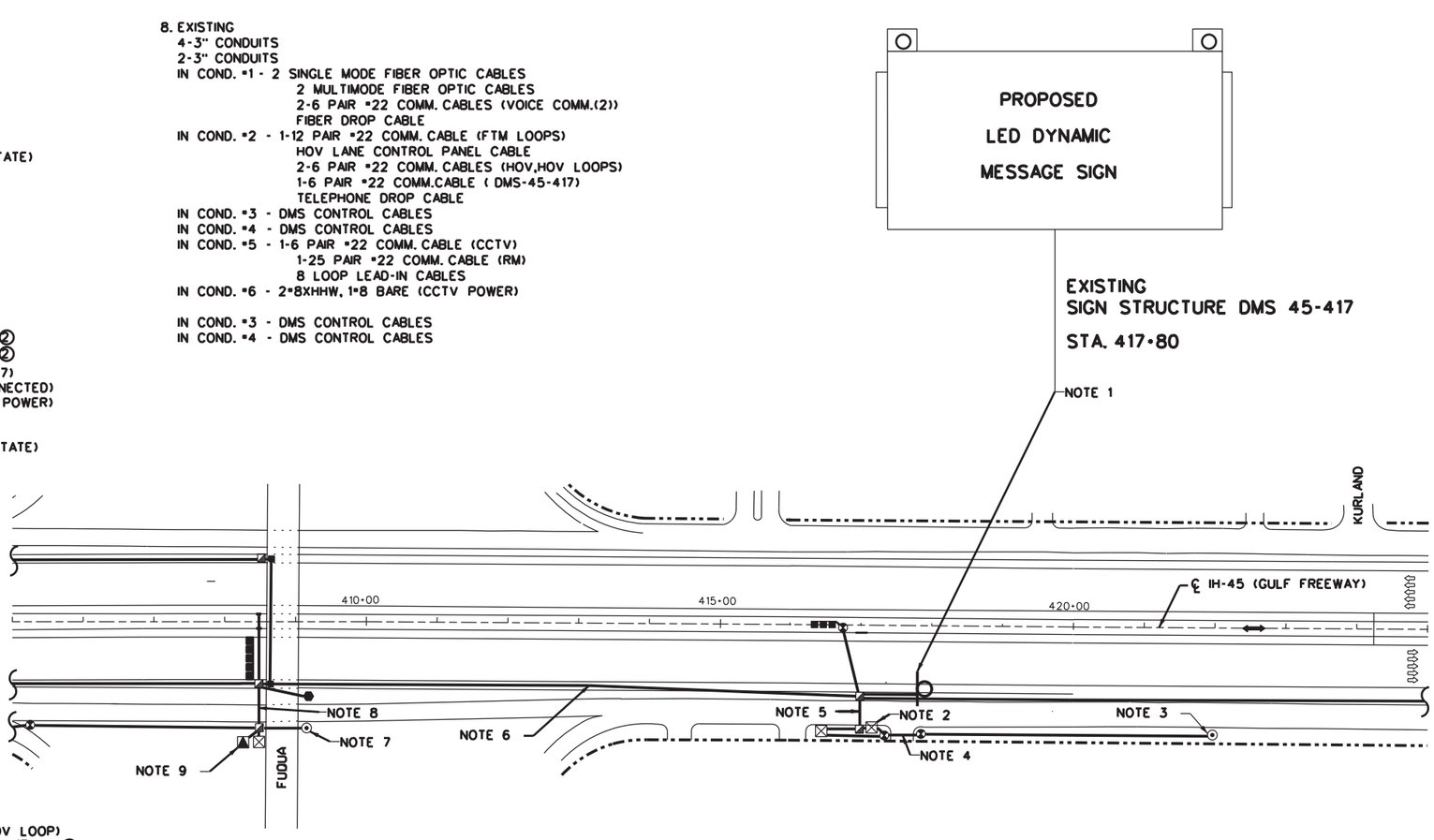
INSTALL
IN COND. #3 - DMS CONTROL CABLES
IN COND. #4 - DMS CONTROL CABLES

6. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLEMODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 2-6 PAIR #22 COMM. CABLE (HOV,HOV LOOPS)
1-6 PAIR #22 COMM.CABLE (DMS-45-417)
TELEPHONE DROP CABLE

7. EXISTING
SERVICE POLE
(12832 ½ GULF FREEWAY)
1-2" CONDUIT
3#6XHHW, 1#6 BARE (DMS POWER)
3#6XHHW, 1#6 BARE (HUB BUILDING POWER)
2#8XHHW, 1#8 BARE (CCTV POWER)

8. EXISTING
4-3" CONDUITS
2-3" CONDUITS
IN COND. #1 - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
FIBER DROP CABLE
IN COND. #2 - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
HOV LANE CONTROL PANEL CABLE
2-6 PAIR #22 COMM. CABLES (HOV,HOV LOOPS)
1-6 PAIR #22 COMM.CABLE (DMS-45-417)
TELEPHONE DROP CABLE
IN COND. #3 - DMS CONTROL CABLES
IN COND. #4 - DMS CONTROL CABLES
IN COND. #5 - 1-6 PAIR #22 COMM. CABLE (CCTV)
1-25 PAIR #22 COMM. CABLE (RM)
8 LOOP LEAD-IN CABLES
IN COND. #6 - 2#8XHHW, 1#8 BARE (CCTV POWER)

IN COND. #3 - DMS CONTROL CABLES
IN COND. #4 - DMS CONTROL CABLES



9. EXISTING (STA. 408+10)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/6 MODEM CARDS
DETECTOR CARD RACK W/4 CARDS
8-3" CONSDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
FIBER DROP CABLE
IN COND. #2(3") - 1-12 PAIR #22 COMM. CABLE (FTM LOOPS)
2-6 PAIR #22 COMM. CABLES (HOV, HOV LOOPS)
1-6 PAIR #22 COMM.CABLE
(DMS-45-417)
IN COND. #3(2") - 3#6XHHW, 1#6 BARE (HUB BUILDING POWER)
IN COND. #4(3") - 8 LOOP LEAD-IN CABLES
1-6 PAIR #22 COMM. CABLE (CCTV)
1-25 PAIR #22 COMM. CABLE (RM)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS-SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: IH45-FUQUA SB.DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

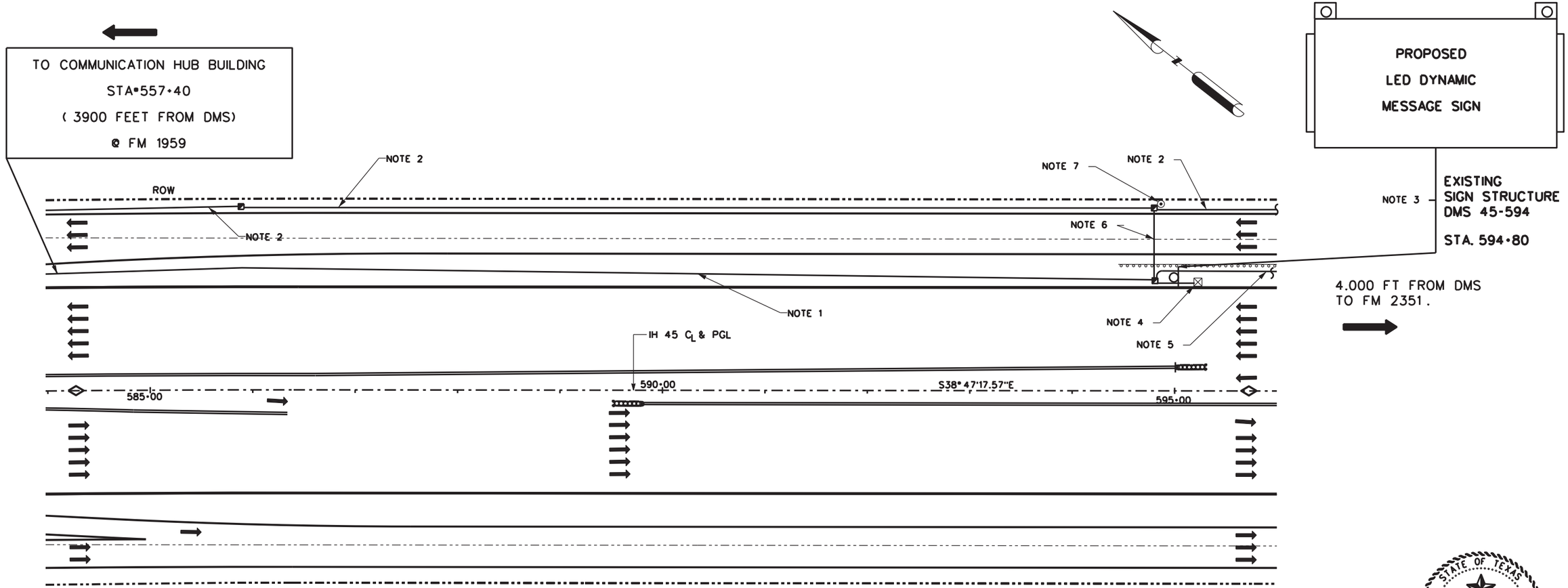
Texas Department of Transportation

IH-45 (GULF FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ FUQUA
(S.B)

SHEET 26 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		50



1. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUIT/CCE
   IN COND. •1(4" INNERDUCT "A") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
   (4" INNERDUCT "B") - 1-6 PAIR •22 COMM. CABLE (DMS-45-594)

2. EXISTING
   1-4" MULTI-DUCT CONDUIT

3. EXISTING: STA. 595•00)
   SIGN STRUCTURE DMS-45-594
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. •1 - DMS CONTROL CABLES ②
   IN COND. •2 -DMS CONTROL CABLES ②

   INSTALL:
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. •1 - NEW DMS CONTROL CABLES
   IN COND. •2 - NEW DMS CONTROL CABLES

4. EXISTING (STA. 594•80)
   DMS CONTROLLER CABINET ②
   1 STAND ALONE LDM
   DMS FIELD EQUIPMENT ②
   2-3" SCH. 80 PVC TO GRD. BOX
   1-2" SCH. 80 PVC TO GRD. BOX
   IN COND. •1(3") - 1-6 PAIR •22 COMM. CABLE (DMS-45-594)
   IN COND. •2(2") - 3•6XHHW, 1•6 BARE (DMS CABINET POWER)

   INSTALL
   DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

5. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUIT/CCE
   IN COND. •1(4" INNERDUCT "A") - 1-144 STRAND SINGLE MODE FOC

6. EXISTING
   2-2" SCH. 80 PVC (BORED)
   2-3" SCH. 80 PVC (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. •1(2") - 3•6XHHW, 1•6 BARE (DMS POWER)

7. EXISTING
   SERVICE POLE D-3
   1-2" SCH. 80 PVC TO GRD. BOX
   3•6XHHW, 1•6 BARE (DMS POWER)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE 1"=100'
FILE NAME: IH45 S 462_16.DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (GULF FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ FM 1959
(N.B)

SHEET 27 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		51

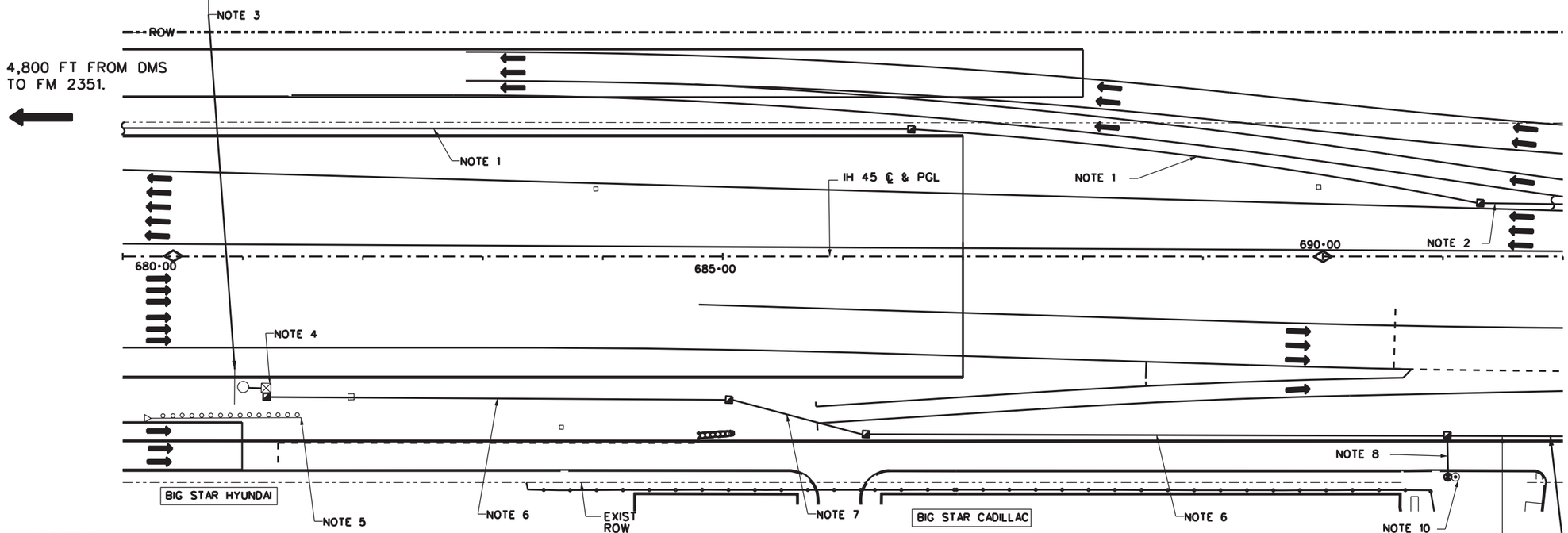
PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 45-681

STA. 681+00

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN



TO COMMUNICATION HUB BUILDING
STA•710+50
(2800 FEET FROM DMS)
@ EL DORADO

1. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUIT/CCE
   IN COND. •1(4" INNERDUCT "A") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE

2. EXISTING
   2-3" SCH. 80 PVC (BORED)
   2-4" SCH. 80 MULTI-DUCT CONDUIT (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. •1(4" INNERDUCT "A") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE

3. EXISTING (STA. 681+00)
   SIGN STRUCTURE DMS 45-681
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. •1 - DMS CONTROL CABLES ②
   IN COND. •2 - DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. •1 - DMS CONTROL CABLES
   IN COND. •2 - DMS CONTROL CABLES

4. EXISTING (STA. 682+20)
   DMS CONTROLLER CABINET ②
   1 STAND ALONE LDM
   DMS FIELD EQUIPMENT ②
   2-3" SCH. 80 PVC TO GRD. BOX
   1-2" SCH. 80 PVC TO GRD. BOX
   IN COND. •1(3") - 1-6 PAIR •22 COMM. CABLE (DMS-45-681)
   IN COND. •2(2") - 3•2XHHW, 1•2 BARE (DMS CABINET POWER)

   INSTALL
   NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

5. EXISTING
   125LF M.B.G.F.
   WITH S.G.T. AND TERMINAL ANCHOR SECTION

6. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
   IN COND. •1(4" INNERDUCT "A") - 1-6 PAIR •22 COMM. CABLE (DMS-45-681)
   IN COND. •2(4" INNERDUCT "B") - 3•2XHHW, 1•2 BARE (DMS POWER)

7. EXISTING
   2-3" SCH. 80 PVC (BORED)
   2-4" SCH. 80 MULTI-DUCT CONDUITS (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. •1(4" INNERDUCT "A") - 1-6 PAIR •22 COMM. CABLE (DMS-45-681)
   IN COND. •2(4" INNERDUCT "B") - 3•2XHHW, 1•2 BARE (DMS POWER)

8. EXITING
   2-2" SCH. 80 PVC TO GRD. BOX (BORED)
   IN SCH. 40 STEEL CASING
   IN COND. •2 - 3•2XHHW, 1•2 BARE (DMS POWER)

9. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
   IN COND. •1(4" INNERDUCT "A") - 1-6 PAIR •22 COMM. CABLE (DMS-45-681)

10. EXISTING
    SERVICE POLE
    18102 1/2 (GULF FREEWAY)
    3•2XHHW, 1•2 BARE (DMS POWER)

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE 1"=100'
FILE NAME: IH45 S 462_24.DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

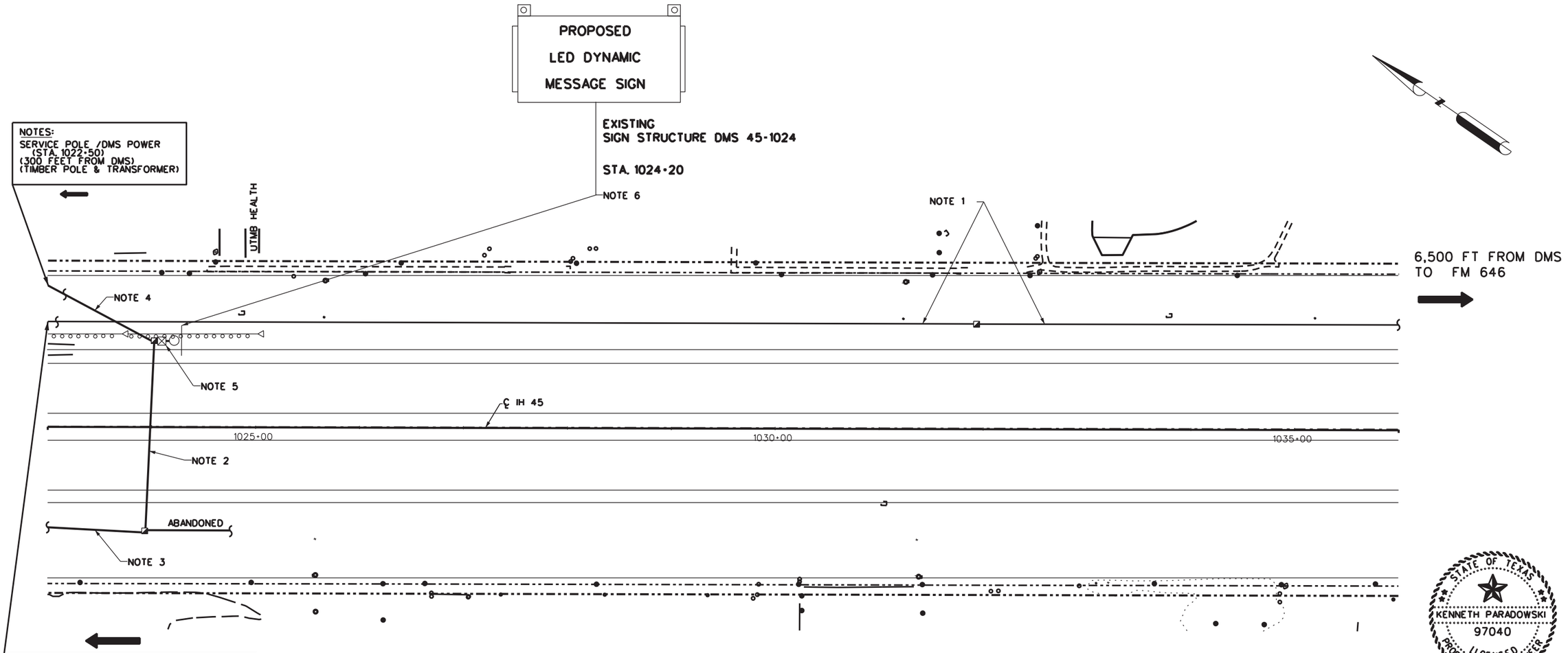
Texas Department of Transportation

IH-45 (GULF FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ EL DORADO BLVD
(S.B)

SHEET 28 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		52



1. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT CONDUITS/CCE
   IN COND. =1(4" INNERDUCT "A") - 1-144 STR SM FOC (SH 96 TO FM 646)
   (4" INNERDUCT "B") - 1-6 STR SM FOC (CCTV) (SH 96 S)
   (4" INNERDUCT "C") - 1=14 INSULATED CONDUCTOR
   1=8 BARE GROUNDING CONDUCTOR

2. EXISTING
   2-3" CONDUITS
   IN COND. =1 - 1-6 STR SM FOC (DMS-45-1024)
   IN COND. =2 - 1=14 INSULATED CONDUCTOR
   1=8 BARE GROUNDING CONDUCTOR

3. EXISTING
   1-4" MULTI-DUCT CONDUIT
   IN COND. =1(4" INNERDUCT "A") - 1-36 STR SM FOC (SH 96 TO FM 646)
   (4" INNERDUCT "B") - 1-6 STR SM FOC (DMS-45-1024)
   (4" INNERDUCT "C") - 1=14 INSULATED CONDUCTOR
   1=8 BARE GROUNDING CONDUCTOR

4. EXISTING
   2-3" CONDUITS
   IN COND. =1 - 3=6XHHW, 1=6 BARE (DMS POWER)

5. EXISTING (STA. 1024+10)
   DMS CONTROLLER CABINET & FOUNDATION
   DMS FIELD EQUIPMENT
   FIBER OPTIC RS-232 DATA MODEM
   2-3" CONDUITS TO GRD. BOX
   1-2" CONDUIT TO GRD. BOX
   IN COND. =1(3") - 1-6 STR SM FOC (DMS-45-1024)
   IN COND. =2(2") - 3=6XHHW, 1=6 BARE (DMS POWER)

   INSTALL
   DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

6. EXISTING (STA. 1024+20)
   DMS SIGN STRUCTURE DMS-45-1024
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   2-4" CONDUITS TO CABINET
   IN COND. =1 - DMS CONTROL CABLES ②
   IN COND. =2 - DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. =1 - NEW DMS CONTROL CABLES
   IN COND. =2 - NEW DMS CONTROL CABLES

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE 1" = 100'

FILE NAME: IH45S Ø96 Ø8 PH II.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-45 (GULF FREEWAY)

DYNAMIC MESSAGE SIGN
IH-45 @ SH 96
(N.B)

SHEET 29 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH45
DIST	COUNTY		SHEET NO.
HOU	HARRIS		53

1. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-265)

2. EXISTING
1-2" CONDUIT
1-6 PAIR #22 COMM.CABLE (DMS-610-265)

3. EXISTING
2-2" CONDUITS
IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)
IN COND. #2- 1-6 PAIR #22 COMM. CABLE (DMS-610-265)

6. EXISTING
2-2" CONDUITS
IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)

7. EXISTING (STA. 264+69) (RELOCATED TO 266+32.50)
SERVICE POLE
2-2" CONDUIT TO GRD. BOX
IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)

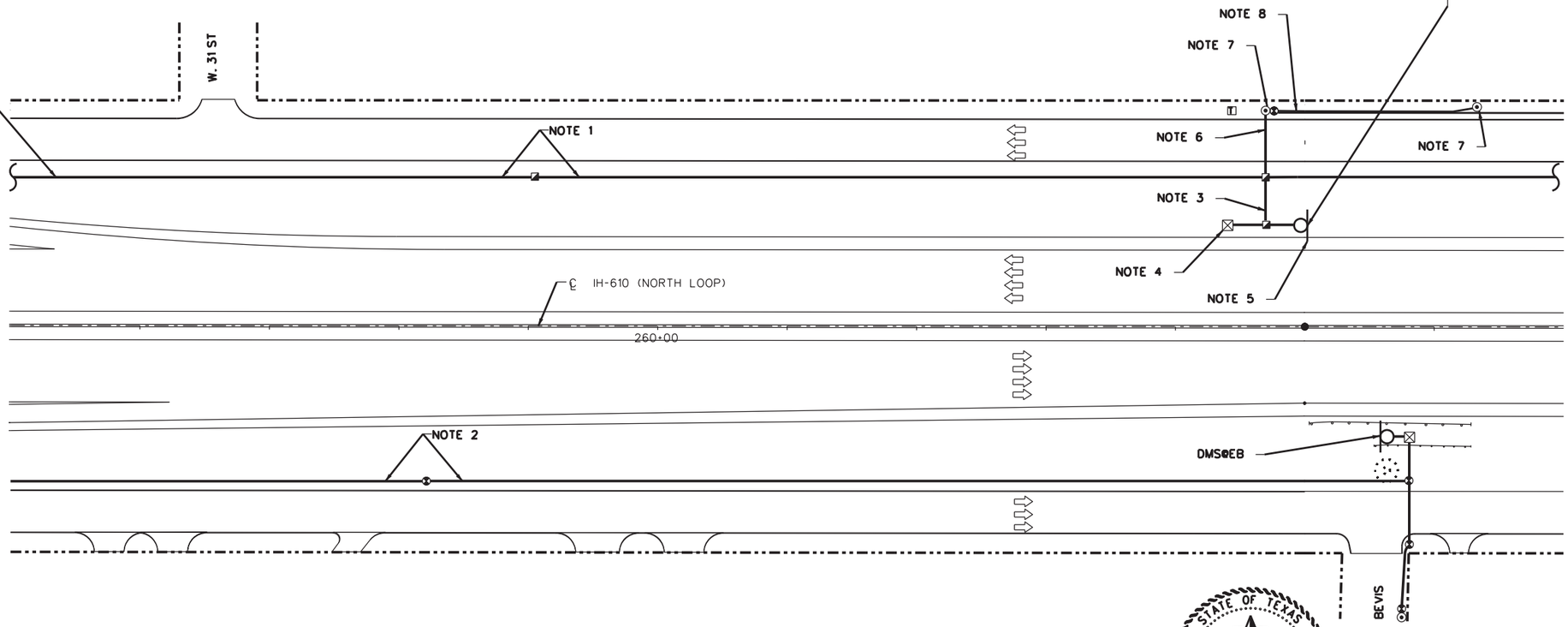
8. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)

TO HUB COMMUNICATION BUILDING
STA= 243+80
(2200 FT FROM DMS)
@ ELLA BLVD.

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE
DMS 610-265
STA.265+00

N



3,800 FT FROM DMS
TO N-SHEPHERD DR.

4. EXISTING (STA. 264+40)
DMS CONTROLLER CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM
2-4" CONDUIT TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(4") - DMS CONTROLLER CABLES ②
IN COND. #2(4") - DMS CONTROLLER CABLES ③
1-6 PAIR #22 COMM. CABLE (DMS-610-265)

IN COND. #3(2") - 3#6XHHW, 1#6 BARE (DMS POWER)

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT
IN COND. #1 (4") DMS CONTROL CABLES
IN COND. #2(4") DMS CONTROL CABLES

5. EXISTING (265+00)
SIGN STRUCTURE DMS-610-265
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
M.B.G.F.
2-4" CONDUIT TO GRD. BOX
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 - DMS CONTROL CABLES
IN COND. #2- DMS CONTROL CABLES

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

SCALE: 1" = 100'

FILE NAME: IH-610-206-03.DGN

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ ELLA BLVD
(W.B)

SHEET 30 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		54

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 610-265
STA. 265+70

1. EXISTING (STA. 265+70)
   SIGN STRUCTURE DMS-610-265
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①

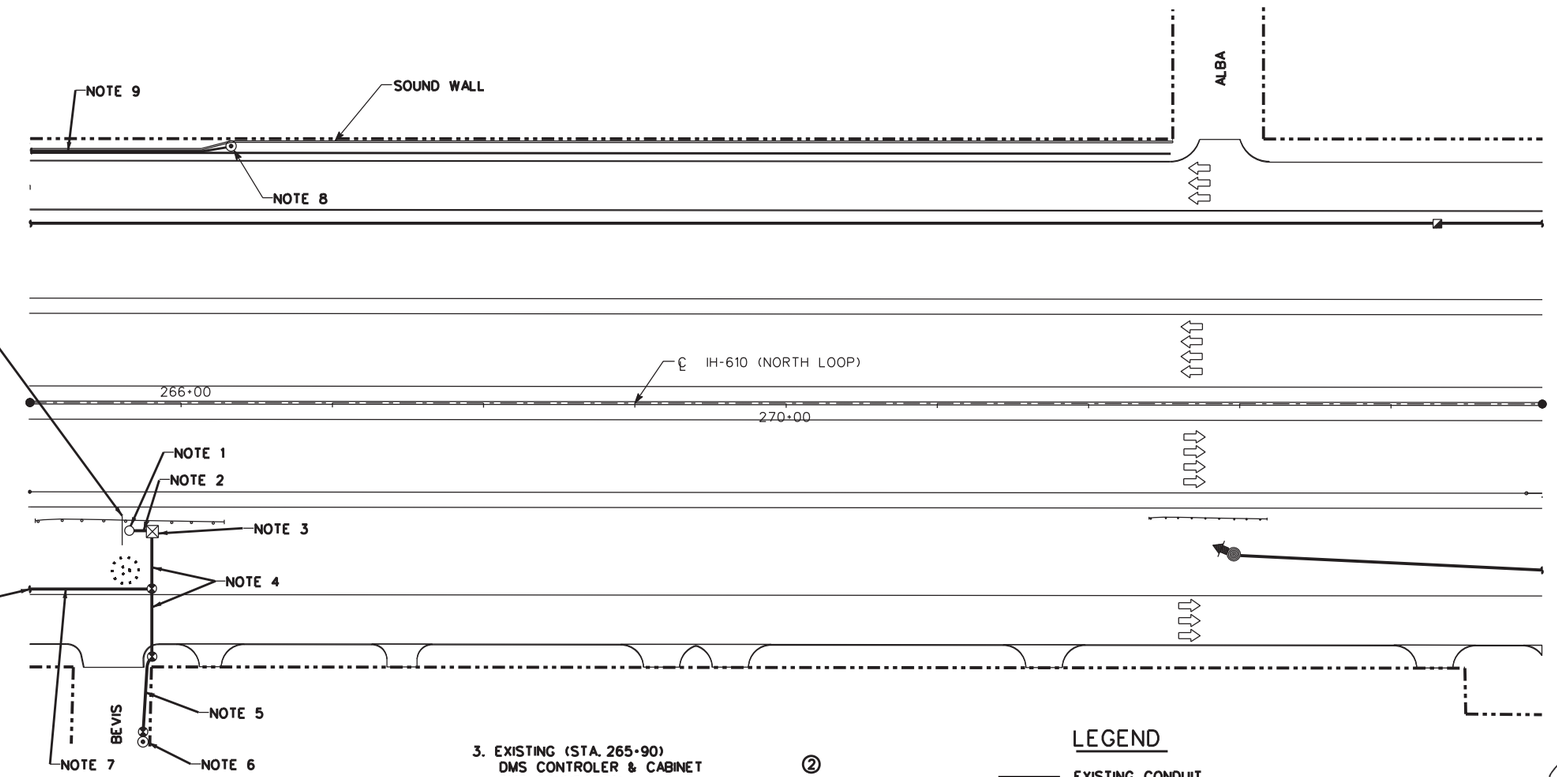
   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
   2-4" CONDUITS
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②

   INSTALL
   IN COND.#1 - DMS CONTROL CABLES
   IN COND.#2- DMS CONTROL CABLES

8. EXISTING (STA. 266+33)
   SERVICE POLE
   2-2" CONDUIT TO GRD. BOX
   IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS ELLA-WB-POWER)

9. EXISTING
   2-2" SCH. 80 PVC
   IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS-ELLA-WB POWER)



TO HUB COMMUNICATION BUILDING
STA. 243+80
(2200 FT FROM DMS)
@ ELLA BLVD.

3. EXISTING (STA. 265+90)
   DMS CONTROLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE LDM

   INSTALL
   NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

4. EXISTING
   2-2" CONDUITS
   IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-265)
   IN COND. #2 - 3#6XHHW, 1#6 BARE (DMS POWER)

5. EXISTING
   1-2" CONDUIT
   IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS POWER)

6. EXISTING
   SERVICE POLE
   1-2" CONDUIT TO GRD. BOX
   3#6XHHW, 1#6 BARE (DMS POWER)

7. EXISTING
   1-2" CONDUIT
   1-6 PAIR #22 COMM. CABLE (DMS-265)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'

N

3,880 FT FROM DMS
TO N-SHEPHERD DR.

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

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January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ ELLA BLVD
(E.B)

SHEET 31 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		55

FILE NAME: IH-610-206-04.DGN

1. EXISTING (STA. 324+60)
SIGN STRUCTURE DMS 610-324
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
2-4" SCH. 80 PVC TO CABINET
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL:
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 &2: DMS CONTROL CABLES

2. INSTALL (STA. 324+40)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD CABINET ②
1 STAND ALONE LDM
2-2" SCH. 80 PVC TO GRD. BOX
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-324)

INSTALL:
NEW DMS CONTROLLER & CABINET(SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING
SERVICE POLE
510½ IH610 (NORTH LOOP)
2-2" CONDUITS
IN COND. #1 - 2#6XHHW, 1#6 BARE (CABINET POWER)
IN COND. #2 - 2#2XHHW, 1#2 BARE (RM CABINET POWER)

4. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS)
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 2-6 PAIR #22 COMM. CABLE (CCTV, SCS)
2 LOOP LEAD-IN CABLES
1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
IN COND. #3 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #4 (1" INNERDUCT A)- 1-6 PAIR #22 COMM. CABLE (DMS-610-324)
(1" INNERDUCT B)- 3#2XHHW, 1#3 BARE (DMS POWER)

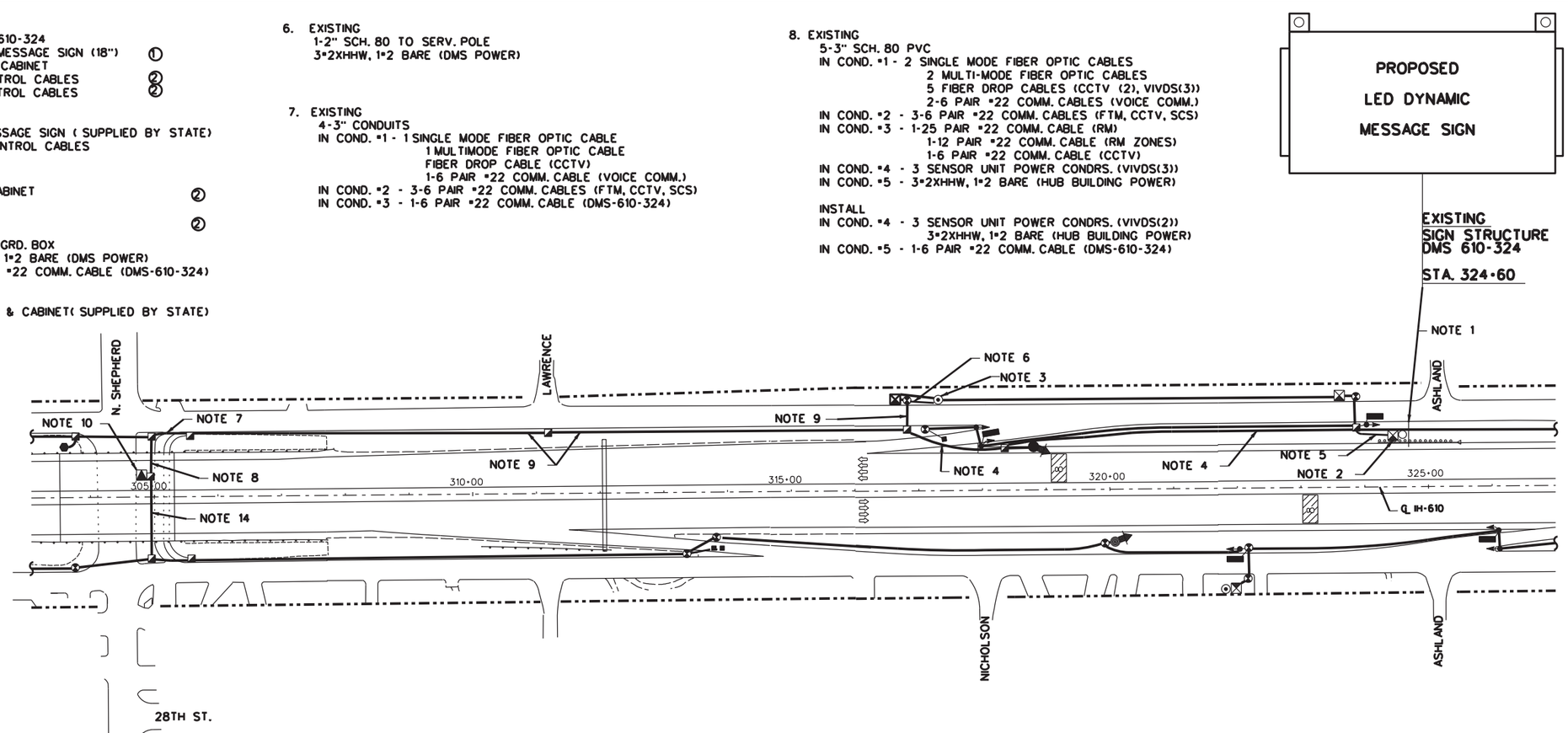
5. EXISTING:
2-2" SCH. 80 PVC
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2- 1-6 PAIR #22 COMM. CABLE (DMS-610-324)

6. EXISTING
1-2" SCH. 80 TO SERV. POLE
3#2XHHW, 1#2 BARE (DMS POWER)

7. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 3-6 PAIR #22 COMM. CABLES (FTM, CCTV, SCS)
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-324)

8. EXISTING
5-3" SCH. 80 PVC
IN COND. #1 - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTI-MODE FIBER OPTIC CABLES
5 FIBER DROP CABLES (CCTV (2), VIVDS(3))
2-6 PAIR #22 COMM. CABLES (VOICE COMM.)
IN COND. #2 - 3-6 PAIR #22 COMM. CABLES (FTM, CCTV, SCS)
IN COND. #3 - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
1-6 PAIR #22 COMM. CABLE (CCTV)
IN COND. #4 - 3 SENSOR UNIT POWER CONDRS. (VIVDS(3))
IN COND. #5 - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)

INSTALL
IN COND. #4 - 3 SENSOR UNIT POWER CONDRS. (VIVDS(2))
3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
IN COND. #5 - 1-6 PAIR #22 COMM. CABLE (DMS-610-324)



9. EXISTING
2-3" SCH. 80 PVC
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (FTM)
1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
FIBER DROP CABLE (VIVDS(2))
2 LOOP LEAD-IN CABLES
IN COND. #2 - 4 SENSOR UNIT POWER CONDRS. (VIVDS(4))
IN COND. #2 - 3#2XHHW, 1#2 BARE (DMS POWER)

10. EXISTING (STA. 305+00)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
VIVDS FIELD EQUIPMENT
3 VIDEO FIBER OPTIC RX'S (M/M)
DETECTOR CARD RACK W/1 CARD
8-3" CONDUITS TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTI-MODE FIBER OPTIC CABLES
5 FIBER DROP CABLES (CCTV (2), VIVDS(3))
2-6 PAIR #22 COMM. CABLES (VOICE COMM.)
IN COND. #2(3") - 3-6 PAIR #22 COMM. CABLES (FTM, CCTV, SCS)
IN COND. #3(3") - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
1-6 PAIR #22 COMM. CABLE (CCTV)
IN COND. #4(3") - 3 SENSOR UNIT POWER CONDRS. (VIVDS(3))
IN COND. #5(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (FTM)
1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
2 LOOP LEAD-IN CABLES

IN COND. #4(3") - 3 SENSOR UNIT POWER CONDRS. (VIVDS(3))
IN COND. #5(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
IN COND. #7(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-324)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

FILE NAME: NSHEPARD.DGN

SCALE: 1"=200'

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ N.SHEPHERD
(W.B)

SHEET 32 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		56

1. EXISTING (STA. 374+30)
SIGN STRUCTURE DMS 610-374
DYNAMIC MESSAGE SIGN (18") ①
DMS FOUNDATION
1-3" CONDUIT TO CABINET
DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN EXIST. COND. - DMS CONTROL CABLES

2. EXISTING (STA. 374+20)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
1 STAND ALONE LDM
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-374)

INSTALL
NEW DMS CONTROLLER & CABINET(SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING
SERVICE POLE
840 ½ 610 N LOOP (E.B.)
1-1/4" CONDUIT
IN EXIST. COND. - 3#6XHHW, 1#6 BARE
(DMS CABINET POWER)

4. EXISTING
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-374)

5. EXISTING
2-2" CONDUITS
IN COND. #1 - 1 LOOP LEAD-IN CABLE
1-6 PAIR #22 COMM. CABLE (DMS-610-374)

6. EXISTING
2-2" CONDUITS
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-374)
1 LOOP LEAD-IN CABLE
IN COND. #2 - 1-7C/12 SIGNAL CABLE

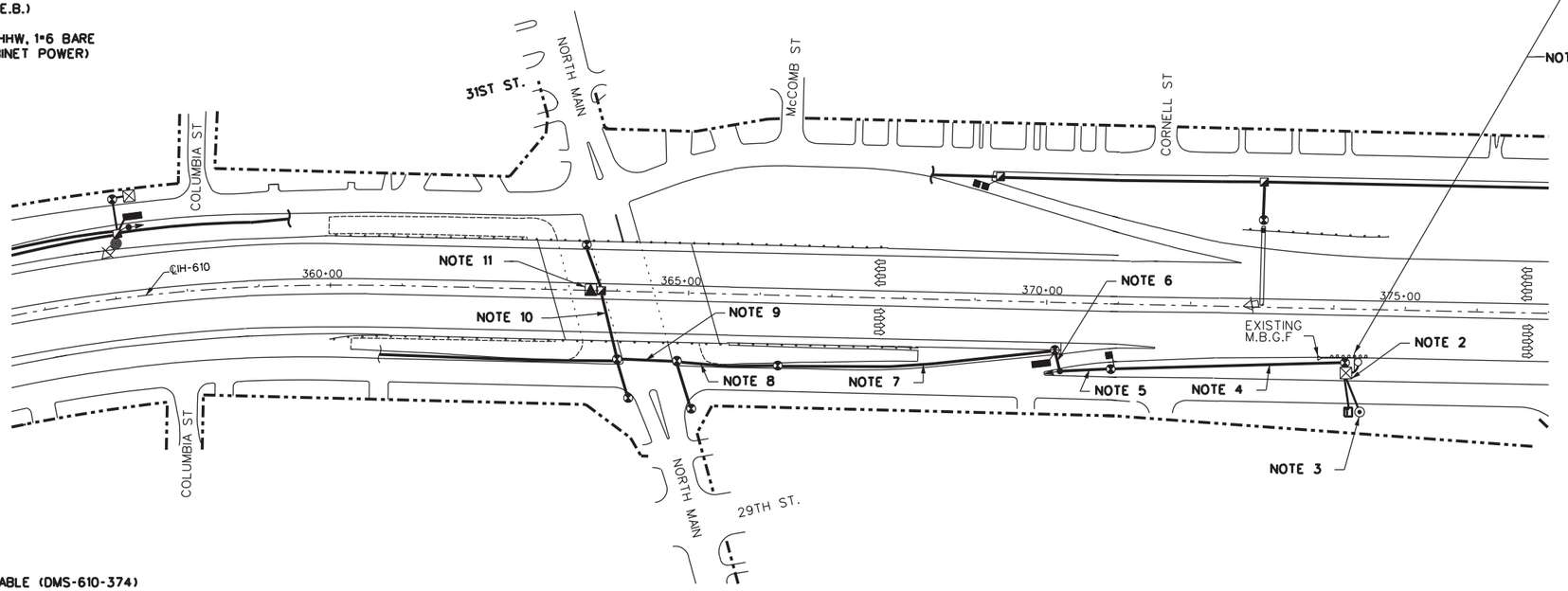
7. EXISTING
2-2" CONDUITS
IN COND. #1 - 2-7C/12 SIGNAL CABLES
IN COND. #2- 2 LOOP LEAD-IN CABLES
- 1-6 PAIR #22 COMM. CABLE (DMS-610-374)

8. EXISTING
2-3" CONDUITS
IN COND. #1 - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
1-6 PAIR #22 COMM. CABLE (DMS-610-374)
IN COND. #2 - 2#2XHHW, 1#2 BARE (RM CABINET POWER)

9. EXISTING
3-3" CONDUITS
IN COND. #1 - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
1-6 PAIR #22 COMM. CABLE (DMS-610-374)
5 LOOP LEAD-IN CABLES
IN COND. #2- 2#2XHHW, 1#2 BARE (RM CABINET POWER)
3-7C/12 SIGNAL CABLES
1-2C/12 BASELIGHT CONDR.

10. EXISTING
4-3" CONDUITS
IN COND. #1 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #2 - 2#2XHHW, 1#2 BARE (RM CABINET POWER)
6-7C/12 SIGNAL CABLES
2-2C/12 BASELIGHT CONDRS.
IN COND. #3 - FIBER DROP CABLE (VIVDS)
2 LOOP LEAD-IN CABLES
1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM LOOPS)
1-6 PAIR #22 COMM. CABLE (DMS-610-374)
IN COND. #4 - 8 LOOP LEAD-IN CABLES

11. EXISTING (STA. 363+60)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
VIVDS FIELD EQUIPMENT
DETECTOR CARD RACK W/2 CARDS
3 VIDEO FIBER OPTIC RX'S (M/M)
8-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
FIBER DROP CABLE (CCTV(2))
FIBER DROP CABLE (VIVDS(3))
2-6 PAIR #22 COMM. CABLE (VOICE COMM.(2))
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS (3))
IN COND. #3(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
IN COND. #4(3") - 5-6 PAIR #22 COMM. CABLE (FTM, CCTV(2), SCS(2))
2 LOOP LEAD-IN CABLES
IN COND. #5(3") - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
IN COND. #6(3") - 1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
2 LOOP LEAD-IN CABLES
1-6 PAIR #22 COMM. CABLE (DMS-610-374)



LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: 610NE.B.@NORTH MAIN1

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ NORTH MAIN
(E.B)

SHEET 33 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		57

1. EXISTING
SERVICE POLE
402 1/2(610 NORTH LOOP EAST)
1-1¼" CONDUIT TO CABINET
3-6XHHW, 1-6 BARE (DMS CABINET POWER)

2. EXISTING
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
1 STAND ALONE LDM
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-249)

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING (STA. 249+00)
SIGN STRUCTURE DMS 610-249
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
DMS FOUNDATION
DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
DMS CONTROL CABLES

4. EXISTING
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-249)

5. EXISTING
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-249)

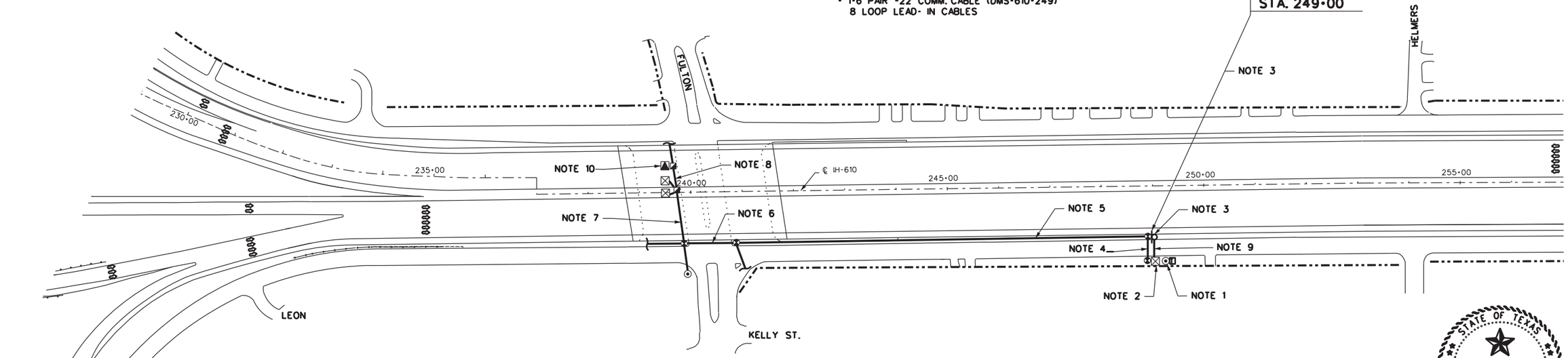
6. EXISTING
2-3" CONDUITS
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-249)
5 LOOP LEAD-IN CABLES

7. EXISTING
3-3" CONDUITS
IN COND. #1 - SENSOR UNIT POWER CONDRS (VIVDS)
IN COND. #2 - 3-4XHHW, 1-4 BARE (HUB BUILDING POWER)
- 2-6XHHW, 1-6 BARE (CCTV CABINET POWER)
IN COND. #3 - FIBER DROP CABLE (VIVDS)
- 1-6 PAIR #22 COMM. CABLES (DMS-610-249)
8 LOOP LEAD- IN CABLES

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 610-249

STA. 249+00



8. EXISTING
3-3" CONDUITS
IN COND. #1 - SENSOR UNIT POWER CONDRS (VIVDS)
IN COND. #2 - 3-4XHHW, 1-4 BARE (HUB BUILDING POWER)
- 2-6XHHW, 1-6 BARE (CCTV CABINET POWER)
IN COND. #3- FIBER DROP CABLE (VIVDS)
- 1-6 PAIR #22 COMM. CABLE (DMS-610-249)
- 1-6 PAIR #22 COMM.CABLE (SCS)
- 8 LOOP LEAD- IN CAB

9. EXISTING
1-3" CONDUIT
DMS CONTROL CABLES ②

INSTALL
DMS CONTROL CABLES

10. EXISTING (STA.239+50)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
VIVDS FIELD EQUIPMENT
2 VIDEO FIBER OPTIC RX'S (M/M)
8-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
FIBER DROP CABLE (CCTV(2))
FIBER DROP CABLE (VIVDS(2))
2-6 PAIR #22 COMM. CABLES (VOICE COMM. (2))
IN COND. #2(3") - 5-6 PAIR #22 COMM. CABLES (FTM, CCTV (2), SCS(2))
1-6 PAIR #22 COMM. CABLE (DMS-610-249)
IN COND. #3(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
IN COND. #4(2") - 3-4XHHW, 1-4 BARE (HUB BUILDING POWER)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'
FILE NAME: 610N E.B. FULTON4.DG

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

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January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ FULTON
(E.B)

SHEET 34 OF 51

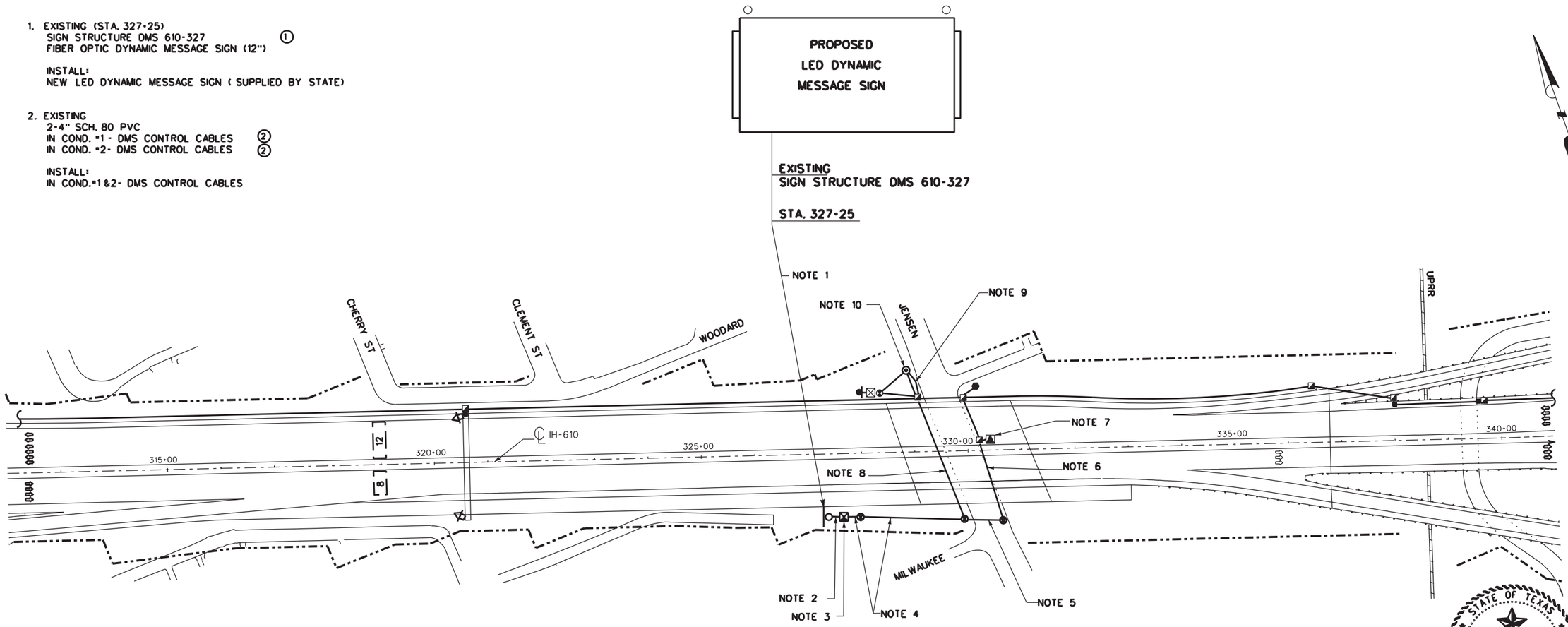
CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		58

1. EXISTING (STA. 327+25)
SIGN STRUCTURE DMS 610-327 ①
FIBER OPTIC DYNAMIC MESSAGE SIGN (12")

INSTALL:
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL:
IN COND.#1&2- DMS CONTROL CABLES



3. EXISITING (327+45)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL:
DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT.

4. EXISTING:
2-2" SCH. 80 PVC
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-327)
IN COND. #2 - 3#2XHHW, 1#2 BARE (DMS POWER)

5. EXISTING:
2-2" SCH. 80 PVC (BORED)
IN SCH. 40 STEEL CASING
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-327)

6. EXISTING
1-2" SCH. 80 PVC
1-6 PAIR #22 COMM. CABLE (DMS-610-327)

7. EXISTING (STA. 330+40)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
VIVDS FIELD EQUIPMENT
2 VIDEO FIBER OPTIC RX'S (M/M)
8-3" CONDUIT TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS(2))
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(3") - 1-6 PAIR #22 COMM. CABLE (CCTV)
1-6 PAIR #22 COMM. CABLE (CMS)
(FOR FUTURE USE)
IN COND. #3(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
IN COND. #4(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)

IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-327)

8. EXISTING
1-2" SCH. 80 PVC
3#2XHHW, 1#2 BARE (DMS POWER)

9. EXISTING
1-2" SCH. 80 PVC TO SERVICE POLE
3#2XHHW, 1#2 BARE (DMS POWER)

10. EXISTING
SERVICE POLE
(5501½ NORTH LOOP)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: jensen.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ JENSEN
(E.B)

SHEET 35 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		59

1. EXISTING
SERVICE POLE
(5501½ NORTH LOOP)
3-6XHHW, 1-6 BARE (DMS CABINET POWER)

2. EXISTING
1¼" CONDUIT
3-6XHHW, 1-6 BARE (DMS CABINET POWER)

3. EXISTING
1-2" SCH.80 PVC
1-6 PAIR #22 COMM. CABLE (DMS-610-328)

4. EXISTING (STA. 328+20)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
1 STAND ALONE LDM
1-2" CONDUIT TO GRD. BOX
1-6# PAIR COMM.CABLE (DMS-610-328)

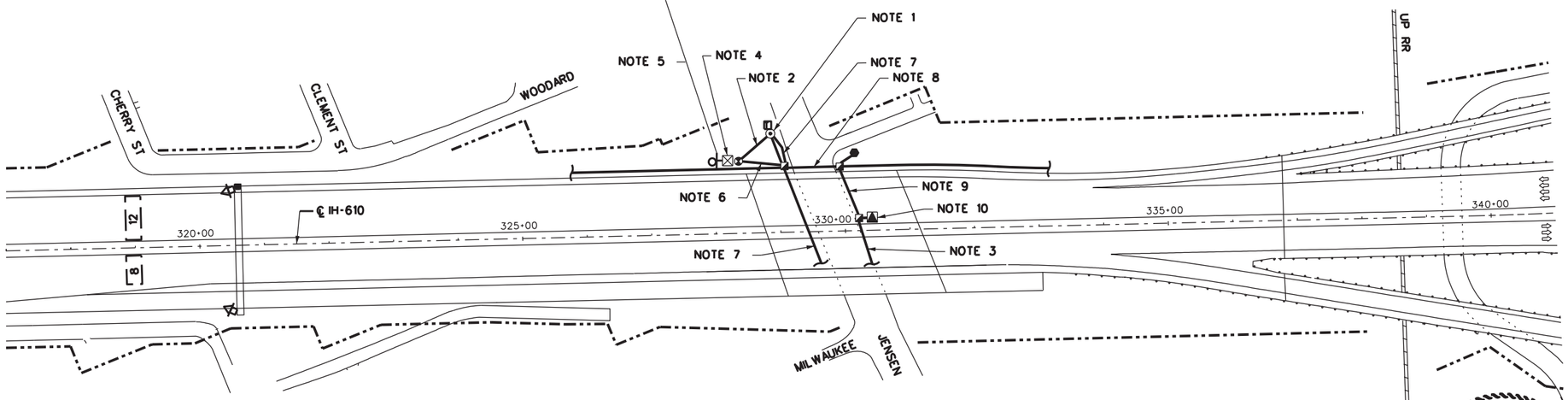
INSTALL
NEW DMS CONTROLLER CABINET (SUPPLIED BY STATE)
NEW DMS FIELD EQUIPMENT

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE
DMS 610-328

STA. 328+00

9. EXISTING
5-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS(2))
IN COND. #2(3") - 1-6 PAIR #22 COMM. CABLE (CCTV)
1-6 PAIR #22 COMM. CABLE (DMS-610-328)
IN COND. #3(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
IN COND. #4(2") - 3-2XHHW, 1-2 BARE (HUB BUILDING POWER)
IN COND. #5(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)



5. EXISTING (STA 328+00)
SIGN STRUCTURE DMS 610-328
FIBER OPTIC DYNAMIC MESSAGE SIGN (12") ①
DMS FOUNDATION
1-3" CONDUITS
DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN EXIST. COND. DMS CONTROL CABLES

6. EXISTING
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-328)

7. EXISTING
1-2" CONDUIT
3-2XHHW, 1-2 BARE (DMS POWER)
(FOR DMS AT STA. 327+25 E.B.)

8. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS(2))
IN COND. #2 - SENSOR UNIT POWER CONDRS.
IN COND. #3 - 3-2XHHW, 1-2 BARE(HUB BUILDING POWER)
2-8XHHW, 1-8 BARE (CCTV CABINET POWER)
IN COND. #4 - 1-6 PAIR #22 COMM. CABLE (DMS-610-328)

10. EXISTING (STA. 330+40)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
VIVDS FIELD EQUIPMENT
2 VIDEO FIBER OPTIC RX'S (M/M)
8-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS(2))
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(3") - 1-6 PAIR #22 COMM. CABLE (CCTV)
1-6 PAIR #22 COMM. CABLE (DMS-610-328)
IN COND. #3(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
IN COND. #4(2") - 3-2XHHW, 1-2 BARE (HUB BUILDING POWER)
IN COND. #5(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-327)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: jensen610W.B.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ JENSEN
(W.B)

SHEET 36 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		60

1. EXISTING (STA. 399+00)
SIGN STRUCTURE 610-399
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
DMS FOUNDATION
1-4" CONDUIT
DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN EXIST. COND. - DMS CONTROL CABLES

2. EXISTING (STA. 399+30)
DMS CONTROLLER CABINET ②
DMS CONTROLLER CABINET FOUNDATION
1-STAND ALONE LDM
1-2" CONDUIT
1-4" CONDUIT
2-1¼CONDUIT
IN COND. #1(4") - DMS CONTROL CABLES ②
IN COND. #2(2") - 1-6 PAIR COMM. CABLE (DMS-610-399)
IN COND. #3(1¼") - CABINET POWER CONDRS.

INSTALL
NEW DMS CONTROLLER &CABINET (SUPLIED BY STATE)
DMS FIELD EQUIPMENT
IN COND. #1(4") -DMS CONTROL CABLE

3. EXISTING
SERVICE POLE
4915 ½ 610N LOOP EAST
3#6XHHW, 1#6 BARE (DMS CABINET POWER)

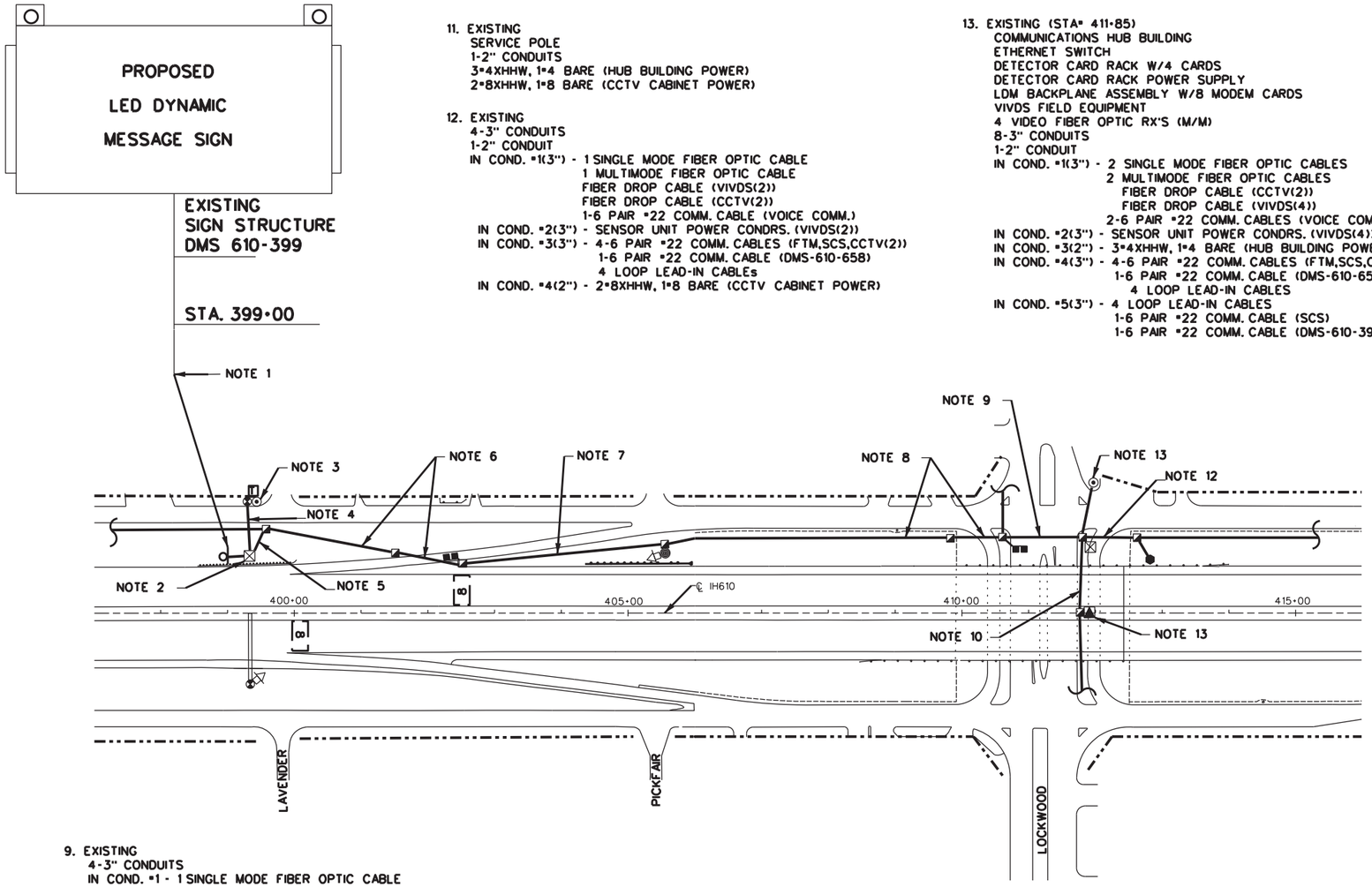
4. EXISTING
2-1¼" CONDUITS
IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS CABINET POWER)

5. EXISTING
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-399)

6. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-399)

7. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2- 1-6 PAIR #22 COMM. CABLE (DMS-610-399)
2 LOOP LEAD-IN CABLES

8. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS)
IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-399)
2 LOOP LEAD-IN CABLES



9. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS)
IN COND. #2 - SENSOR UNIT POWER CONDRS.(VIVDS)
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-399)
6 LOOP LEAD-IN CABLES

10. EXISTING
5-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
FIBER DROP CABLE (VIVDS(3))
FIBER DROP CABLE (CCTV(2))
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS(3))
IN COND. #3(3") - 4-6 PAIR #22 COMM. CABLES (FTM,SCS,CCTV(2))
- 1-6 PAIR #22 COMM. CABLE (DMS-610-658)
4 LOOP LEAD-IN CABLES
IN COND. #4(3") - 6 LOOP LEAD-IN CABLES
-1-6 PAIR #22 COMM. CABLE (SCS)
1-6 PAIR #22 COMM. CABLE (DMS-610-399)
IN COND. #5(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)

11. EXISTING
SERVICE POLE
1-2" CONDUITS
3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
2#8XHHW, 1#8 BARE (CCTV CABINET POWER)

12. EXISTING
4-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
FIBER DROP CABLE (VIVDS(2))
FIBER DROP CABLE (CCTV(2))
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
IN COND. #3(3") - 4-6 PAIR #22 COMM. CABLES (FTM,SCS,CCTV(2))
1-6 PAIR #22 COMM. CABLE (DMS-610-658)
4 LOOP LEAD-IN CABLES
IN COND. #4(2") - 2#8XHHW, 1#8 BARE (CCTV CABINET POWER)

13. EXISTING (STA# 411+85)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
DETECTOR CARD RACK W/4 CARDS
DETECTOR CARD RACK POWER SUPPLY
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
VIVDS FIELD EQUIPMENT
4 VIDEO FIBER OPTIC RX'S (M/M)
8-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
FIBER DROP CABLE (CCTV(2))
FIBER DROP CABLE (VIVDS(4))
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS(4))
IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
IN COND. #4(3") - 4-6 PAIR #22 COMM. CABLES (FTM,SCS,CCTV(2))
1-6 PAIR #22 COMM. CABLE (DMS-610-658)
4 LOOP LEAD-IN CABLES
IN COND. #5(3") - 4 LOOP LEAD-IN CABLES
1-6 PAIR #22 COMM. CABLE (SCS)
1-6 PAIR #22 COMM. CABLE (DMS-610-399)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: IH610NOLOCKWOOD.DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ LOCKWOOD
(W.B)

SHEET 37 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		61

NAME:ENTER DATA

1. EXISTING
SIGN STRUCTURE DMS 610-658
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
2-4" CONDUITS TO CABINET
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL:
NEW LED DYNAMIC MESSGAGE SIGN (SUPPLIED BY STATE)
IN COND#1 &2: DMS CONTROL CABLES

2. EXISTING
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②

2-2" CONDUITS TO GRD. BOX
IN COND. #1 - 3#2XHHW 1#2 BARE (DMS POWER)
IN COND. #2- 1-6 PAIR #22 COMM. CABLE (DMS-610-658)

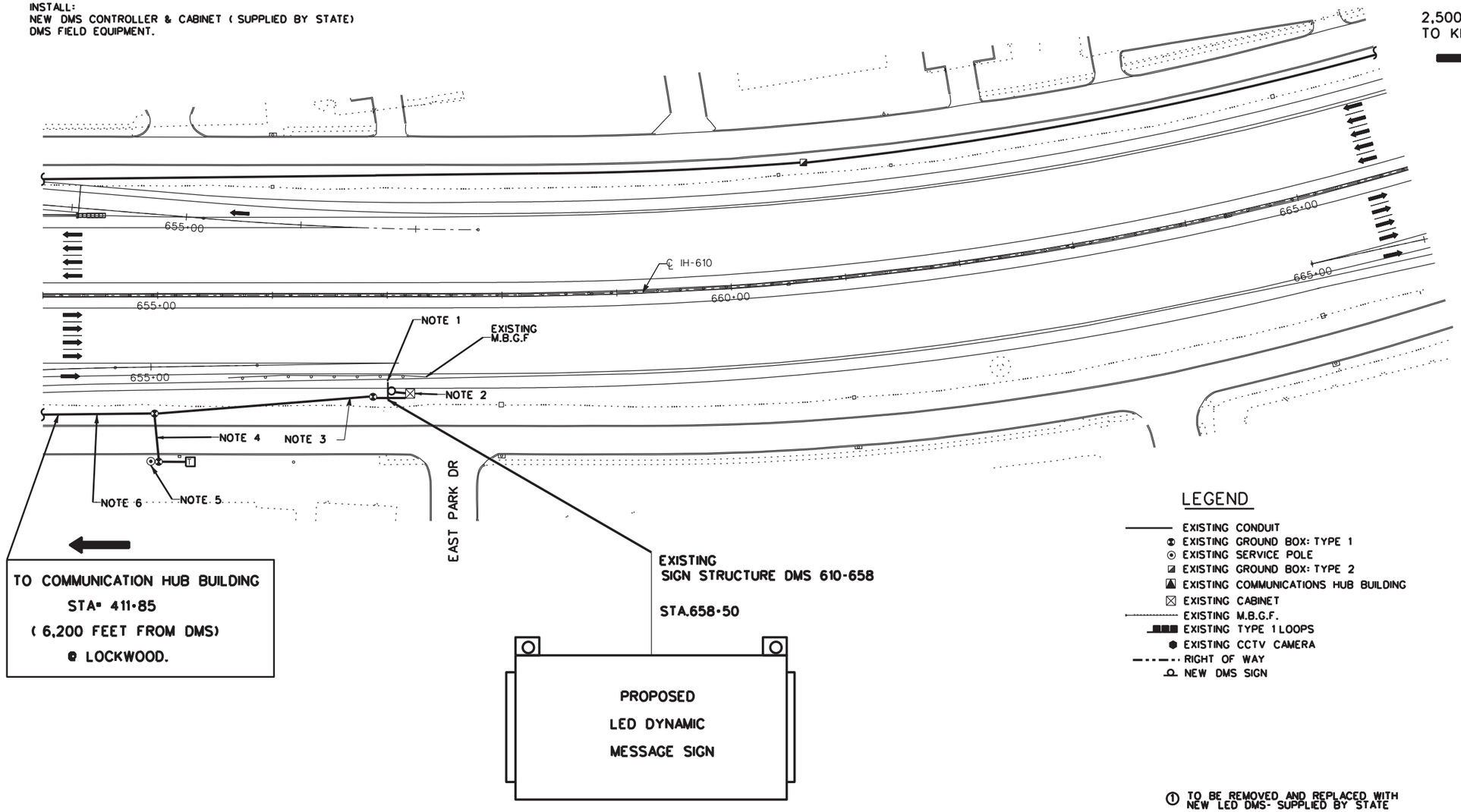
INSTALL:
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT.

3. EXISTING
2-2" CONDUITS
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2- TELEPHONE DROP CABLE
- 1-6 PAIR #22 COMM. CABLE (DMS-610-658)

4. EXISTING
2-2" CONDUITS
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2- TELEPHONE DROP CABLE

5. EXISTING
SERVICE POLE
1-2" CONDUIT TO GRD. BOX
3#2XHHW, 1#2 BARE (DMS POWER)

6. EXISTING
1-2" CONDUIT
1-6 PAIR #22 COMM. CABLE (DMS-610-658)



LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE 1" = 100'

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

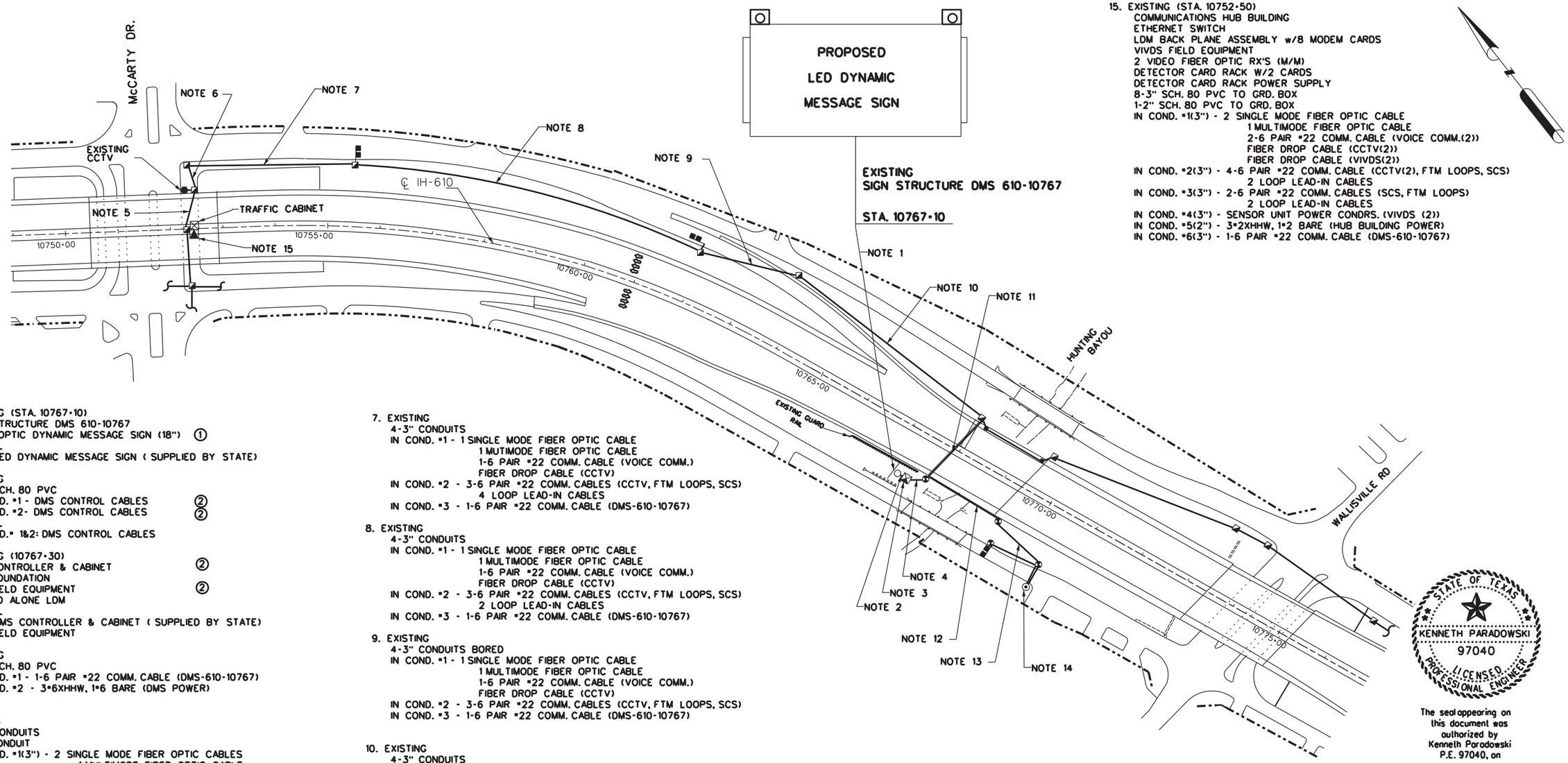
Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ HOMESTEAD
(E.B)

SHEET 38 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		62



1. EXISTING (STA. 10767·10)
   SIGN STRUCTURE DMS 610-10767
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
   2-4" SCH. 80 PVC
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②
   INSTALL
   IN COND.# 1&2: DMS CONTROL CABLES

3. EXISTING (10767·30)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE LDM
   INSTALL
   NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

4. EXISTING
   2-2" SCH. 80 PVC
   IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)
   IN COND. #2 - 3#6XHHW, 1#6 BARE (DMS POWER)

5. EXISTING
   5-3" CONDUITS
   1-2" CONDUIT
   IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
   1 MULTIMODE FIBER OPTIC CABLE
   2-6 PAIR #22 COMM. CABLES (VOICE COMM. (2))
   FIBER DROP CABLE (CCTV(2))
   FIBER DROP CABLE (VIVDS)
   IN COND. #2(3") - 4-6 PAIR #22 COMM. CABLES (CCTV(2), FTM LOOPS, SCS)
   4 LOOP LEAD-IN CABLES
   IN COND. #3(3") - SENSOR UNIT POWER CONDRS. (VIVDS)
   IN COND. #4(3") - 4 LOOP LEAD-IN CABLES
   IN COND. #5(2") - 2#4XHHW, 1#4 BARE (CCTV CABINET POWER)
   IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

6. EXISTING
   4-3" CONDUITS
   IN COND. #1 - 2 SINGLE MODE FIBER OPTIC CABLES
   1 MULTIMODE FIBER OPTIC CABLE
   2-6 PAIR #22 COMM. CABLES (VIOICE COMM. (2))
   FIBER DROP CABE (CCTV)
   IN COND. #2 - 3-6 PAIR #22 COMM. CABLE (CCTV, FTM LOOPS, SCS)
   4 LOOP LEAD-IN CABLES
   IN COND. #3 - 4 LOOP LEAD-IN CABLES
   IN COND. #4 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

7. EXISTING
   4-3" CONDUITS
   IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
   1 MUTIMODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   FIBER DROP CABLE (CCTV)
   IN COND. #2 - 3-6 PAIR #22 COMM. CABLES (CCTV, FTM LOOPS, SCS)
   4 LOOP LEAD-IN CABLES
   IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

8. EXISTING
   4-3" CONDUITS
   IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
   1 MULTIMODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   FIBER DROP CABLE (CCTV)
   IN COND. #2 - 3-6 PAIR #22 COMM. CABLES (CCTV, FTM LOOPS, SCS)
   2 LOOP LEAD-IN CABLES
   IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

9. EXISTING
   4-3" CONDUITS BORED
   IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
   1 MULTIMODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   FIBER DROP CABLE (CCTV)
   IN COND. #2 - 3-6 PAIR #22 COMM. CABLES (CCTV, FTM LOOPS, SCS)
   IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

10. EXISTING
    4-3" CONDUITS
    IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
    1 MULTIMODE FIBER OPTIC CABLE
    1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
    FIBER DROP CABLE (CCTV)
    IN COND. #2 - 3-6 PAIR #22 COMM. CABLES (CCTV, FTM LOOPS, SCS)
    IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

11. EXISTING
    1-2" RMC (ATTACH TO BRIDGE ABUTMENT)
    1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

12. EXISTING
    1-2" RMC (STRAP TO SIDE OF BRIDGE)
    3#6XHHW, 1#6 BARE (DMS POWER)

13. EXISTING
    1-2" SCH. 80 PVC
    3#6XHHW, 1#6 BARE (DMS POWER)

14. EXISTING
    SERVICE POLE
    1-2" CONDUIT TO GRD. BOX (BORED)
    2#2XHHW, 1#2 BARE (CCTV CABINET POWER)
    2#4XHHW, 1#4 BARE (CABINET POWER)

    1-2" SCH. 80 PVC FROM GRD. BOX TO SERVICE POLE (BORED)
    3#6XHHW, 1#6 BARE (DMS POWER)

15. EXISTING (STA. 10752·50)
    COMMUNICATIONS HUB BUILDING
    ETHERNET SWITCH
    LDM BACK PLANE ASSEMBLY w/8 MODEM CARDS
    VIVDS FIELD EQUIPMENT
    2 VIDEO FIBER OPTIC RX'S (M/M)
    DETECTOR CARD RACK W/2 CARDS
    DETECTOR CARD RACK POWER SUPPLY
    8-3" SCH. 80 PVC TO GRD. BOX
    1-2" SCH. 80 PVC TO GRD. BOX
    IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLE
    1 MULTIMODE FIBER OPTIC CABLE
    2-6 PAIR #22 COMM. CABLE (VOICE COMM.(2))
    FIBER DROP CABLE (CCTV(2))
    FIBER DROP CABLE (VIVDS(2))
    IN COND. #2(3") - 4-6 PAIR #22 COMM. CABLE (CCTV(2), FTM LOOPS, SCS)
    2 LOOP LEAD-IN CABLES
    IN COND. #3(3") - 2-6 PAIR #22 COMM. CABLES (SCS, FTM LOOPS)
    2 LOOP LEAD-IN CABLES
    IN COND. #4(3") - SENSOR UNIT POWER CONDRS. (VIVDS (2))
    IN COND. #5(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
    IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-10767)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: dmsnmcarty.dgn
REV IH610 197 228

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (NORTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ McCARTY DR
(S.B)

SHEET 39 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		63

1. EXISTING (STA. 10796+10)
SIGN STRUCTURE DMS 610-10796 ①
2-4" SCH.80 PVC TO CABINET
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL:
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. #1 &2: DMS CONTROL CABLES

2. EXISTING (STA. 10795+90)
DMS CONTROLLER & CABINET ②
DMA FOUNDATION ②
DMS FIELD EQUIPMENT
1 STAND ALONE LDM
2-2" SCH.80 PVC TO GRD. BOX
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10796)

INSTALL:
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT.

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 610-10796

STA. 10796+10

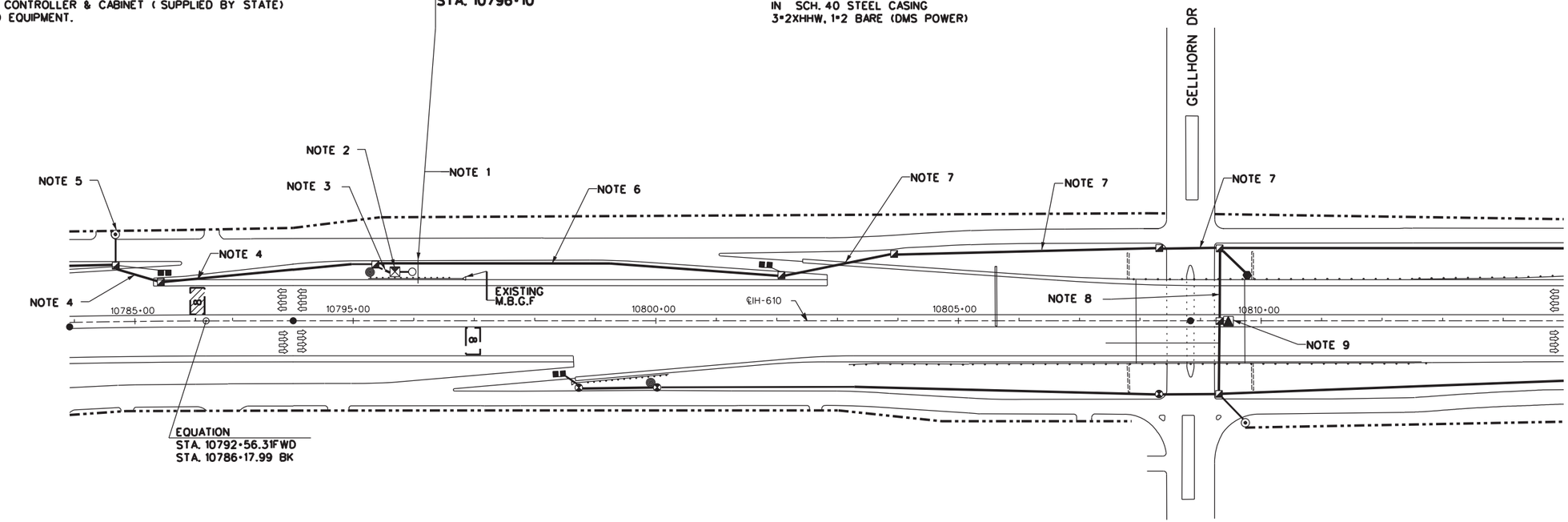
3. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10796)

4. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2 - 3#2XHHW, 1#2 BARE (DMS POWER)

5. EXISTING
SERVICE POLE D-11
2-2" SCH.80 PVC TO GRD. BOX (BORED)
IN SCH. 40 STEEL CASING
3#2XHHW, 1#2 BARE (DMS POWER)

8. EXISTING
4-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
FIBER DROP CABLE (VIVDS)
FIBER DROP CABLE (CCTV)
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #3(3") - 1-6 PAIR #22 COMM. CABLE (CCTV)
2 LOOP LEAD-IN CABLES
IN COND. #4(2") - 2#6XHHW, 1#6 BARE (CCTV CABINET POWER)

IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-10796)



6. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS)
IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10796)

7. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS)
IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #3 - 2 LOOP LEAD-IN CABLES
IN COND. #4 - 1-6 PAIR # 22 COMM. CABLE (DMS-610-10796)

9. EXISTING (STA. 10809+50)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
VIVDS FIELD EQUIPMENT
4 VIDEO FIBER OPTIC RX'S (M/M)
DETECTOR CARD RACK W/2 CARDS
DETECTOR CARD RACK POWER SUPPLY
8-3" CONDUITS TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.(2))
FIBER DROP CABLE (VIVDS(4))
FIBER DROP CABLE (CCTV(2))
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS(4))
IN COND. #3(3") - 2-6 PAIR #22 COMM. CABLES (CCTV(2))
4 LOOP LEAD-IN CABLES
IN COND. #4(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)

IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-10796)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: dmsgelhrn.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (EAST LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ GELLHORN
(N.B)

SHEET 40 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		64

1. EXISTING (STA. 10268+00)
SIGN STRUCTURE DMS 610-10268
2-4" CONDUITS TO CABINET

L.E.D. CHANGEABLE MESSAGE SIGN (18") *3 ①
IN COND. *1 - CMS CONTROL CABLES ②
IN COND. *2- CMS CONTROL CABLES ②

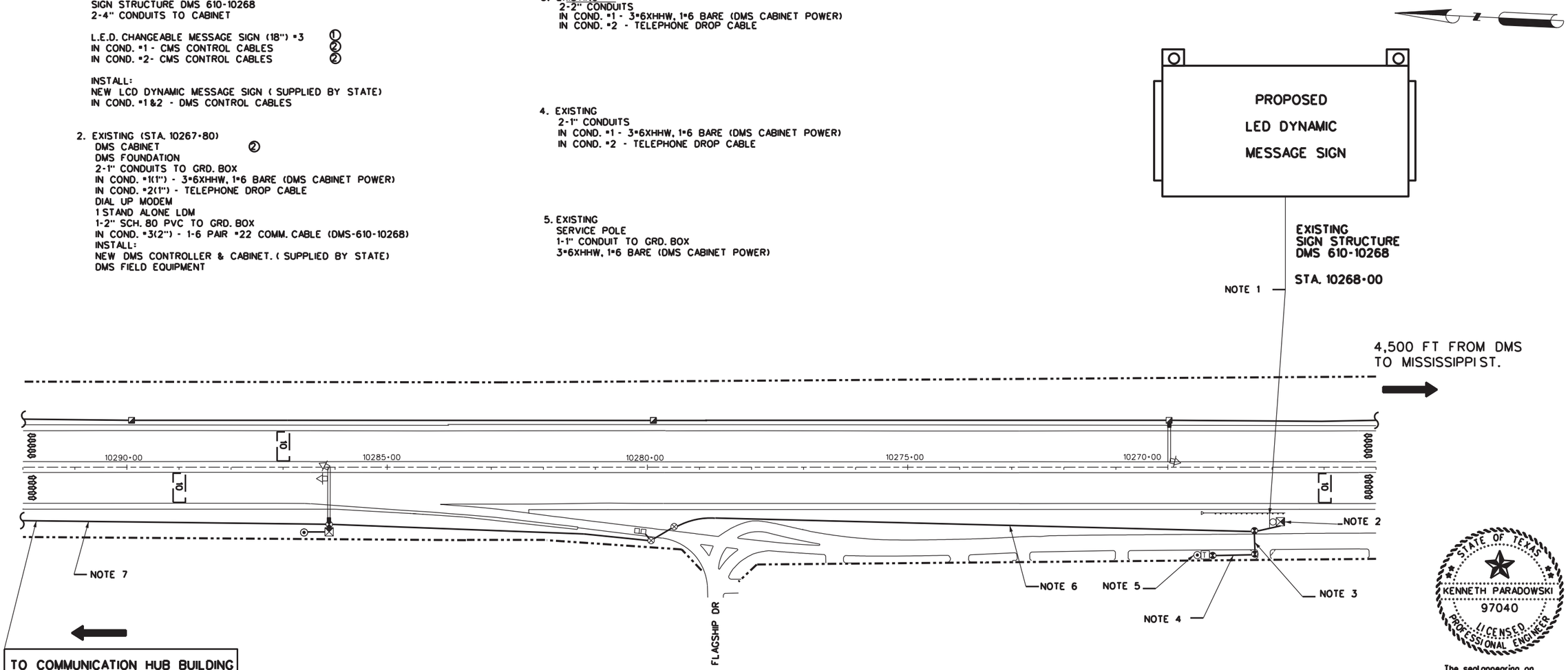
INSTALL:
NEW LCD DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN COND. *1 &2 - DMS CONTROL CABLES

2. EXISTING (STA. 10267+80)
DMS CABINET ②
DMS FOUNDATION
2-1" CONDUITS TO GRD. BOX
IN COND. *1(1") - 3*6XHHW, 1*6 BARE (DMS CABINET POWER)
IN COND. *2(1") - TELEPHONE DROP CABLE
DIAL UP MODEM
1 STAND ALONE LDM
1-2" SCH. 80 PVC TO GRD. BOX
IN COND. *3(2") - 1-6 PAIR *22 COMM. CABLE (DMS-610-10268)
INSTALL:
NEW DMS CONTROLLER & CABINET. (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING
2-2" CONDUITS
IN COND. *1 - 3*6XHHW, 1*6 BARE (DMS CABINET POWER)
IN COND. *2 - TELEPHONE DROP CABLE

4. EXISTING
2-1" CONDUITS
IN COND. *1 - 3*6XHHW, 1*6 BARE (DMS CABINET POWER)
IN COND. *2 - TELEPHONE DROP CABLE

5. EXISTING
SERVICE POLE
1-1" CONDUIT TO GRD. BOX
3*6XHHW, 1*6 BARE (DMS CABINET POWER)



6. EXISTING
1-2" SCH. 80 PVC
1-6 PAIR *22 COMM. CABLE (DMS-610-10268)

7. EXISTING
1-2" SCH. 80 PVC
1-6 PAIR *22 COMM. CABLE (FTM)
1-6 PAIR *22 COMM. CABLE (DMS-610-10268)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'-0"

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (EAST LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ TURNING BASIN
(S.B)

SHEET 41 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		65

LP21.DGN

1. EXISTING (STA. 10260+00)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION ②
   DMS FIELD EQUIPMENT
   DIAL UP MODEM
   1 STAND ALONE LDM
   2-2" SCH. 80 PVC TO GRD. BOX
   IN COND. #1 - 3#2XHHW, 1#2 BARE (CMS CABINET POWER)
   IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10259)
   TELEPHONE DROP CABLE

   INSTALLL:
   DMS CONTROLLER & CABINET. (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

2. EXISTING (STA. 10259+60)
   SIGN STRUCTURE DMS 610-10259
   L.E.D. CHANGEABLE MESSAGE SIGN (18") #4 ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - CMS CONTROL CABLES ②
   IN COND. #2- CMS CONTROL CABLES ②

   INSTALL:
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND, #1&2 : DMS CONTROL CABLES.

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE
DMS 610-10259

STA. 10259+60

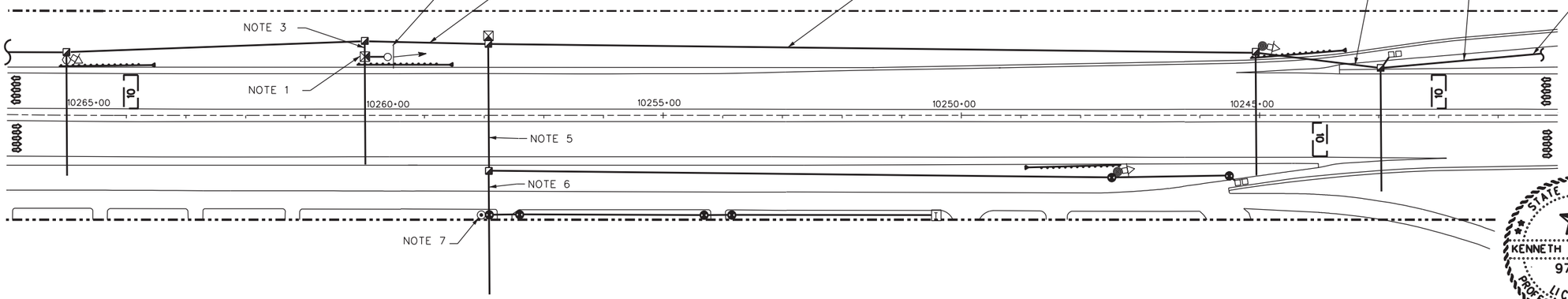
7. EXISTING
   SERVICE POLE D-15
   1-2" SCH. 80 PVC TO GRD. BOX
   2#2XHHW, 1#2 BARE (CCTV CABINET POWER)
   2#4XHHW, 1#4 BARE (CABINET POWER)
   3#2XHHW, 1#2 BARE (DMS CABINET POWER)

8. EXISTING
   4-3" SCH. 40 PVC/CCE
   IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
   1 MULTIMODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   FIBER DROP CABLE (VIVDS)
   FIBER DROP CABLE (CCTV)
   IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS)
   IN COND. #3 - 2-6 PAIR #22 COMM. CABLE (FTM,CCTV)
   IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10259)
   2 LOOP LEAD-IN CABLES

9. EXISTING
   4-3" SCH. 80 PVC (BORED)
   IN 10" DIA. SCH. 40 STEEL CASING
   IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
   1 MULTIMODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   FIBER DROP CABLE (CCTV)
   IN COND. #2 - 2-6 PAIR #22 COMM. CABLE (FTM,CCTV)
   IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10259)
   2 LOOP LEAD-IN CABLES

TO COMMUNICATION HUB BUILDING
STA = 10224+30
(3,700 FEET FROM DMS)
@ MISSISSIPPI STREET.

5,800 FT FROM DMS
TO MARKET ROAD.



3. EXISTING
   2-2" SCH. 80 PVC
   IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS CABINET POWER)
   IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10259)
   TELEPHONE DROP CABLE

4. EXISTING
   4-3" SCH. 40 PVC/CCE
   1-2" SCH. 40 PVC/CCE
   IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
   1 MULTIMODE FIBER OPTIC CABLE
   1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
   FIBER DROP CABLE (CCTV)
   FIBER DROP CABLE (VIVDS(2))
   IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
   IN COND. #3(2") - 2#2XHHW, 1#2 BARE (CCTV CABINET POWER)
   3#2XHHW, 1#2 BARE (DMS CABINET POWER)
   IN COND. #4(3") - 1-6 PAIR #22 COMM. CABLE (CCTV)
   IN COND. #4(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-10259)
   TELEPHONE DROP CABLE

5. EXISTING
   2-3" SCH. 80 PVC (BORED)
   2-2" SCH. 80 PVC (BORED)
   IN 8" DIA. SCH. 40 STEEL CASING
   IN COND. #1(2") - 2#2XHHW, 1#2 BARE (CCTV CABINET POWER)
   2#4XHHW, 1#4 BARE (CABINET POWER)
   3#2XHHW, 1#2 BARE (DMS CABINET POWER)
   IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS)
   IN COND. #3(3") - FIBER DROP CABLE (VIVDS)
   TELEPHONE DROP CABLE
   2 LOOP LEAD-IN CABLES

6. EXISITNG:
   2-2" SCH. 80 PVC (BORED)
   IN 6" DIA. SCH. 40 STEEL CASING
   IN COND. #1 - 2#2XHHW, 1#2 BARE (CCTV CABINET POWER)
   2#4XHHW, 1#4 BARE (CABINET POWER)
   3#2XHHW, 1#2 BARE (DMS CABINET POWER)
   IN COND. #2 - TELEPHONE DROP CABLE

10. EXISTING
    4-3" SCH. 40 PVC/CCE
    IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
    1 MULTIMODE FIBER OPTIC CABLE
    1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
    FIBER DROP CABLE (CCTV)
    IN COND. #2 - 2-6 PAIR #22 COMM. CABLE (FTM,CCTV)
    IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-10259)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (EAST LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ TURNING BASIN
(N.B)

SHEET 42 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		66

1. EXISTING (STA.10036+00)
   SIGN STRUCTURE DMS-610-10036
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2 - DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1&2- DMS CONTROL CABLES

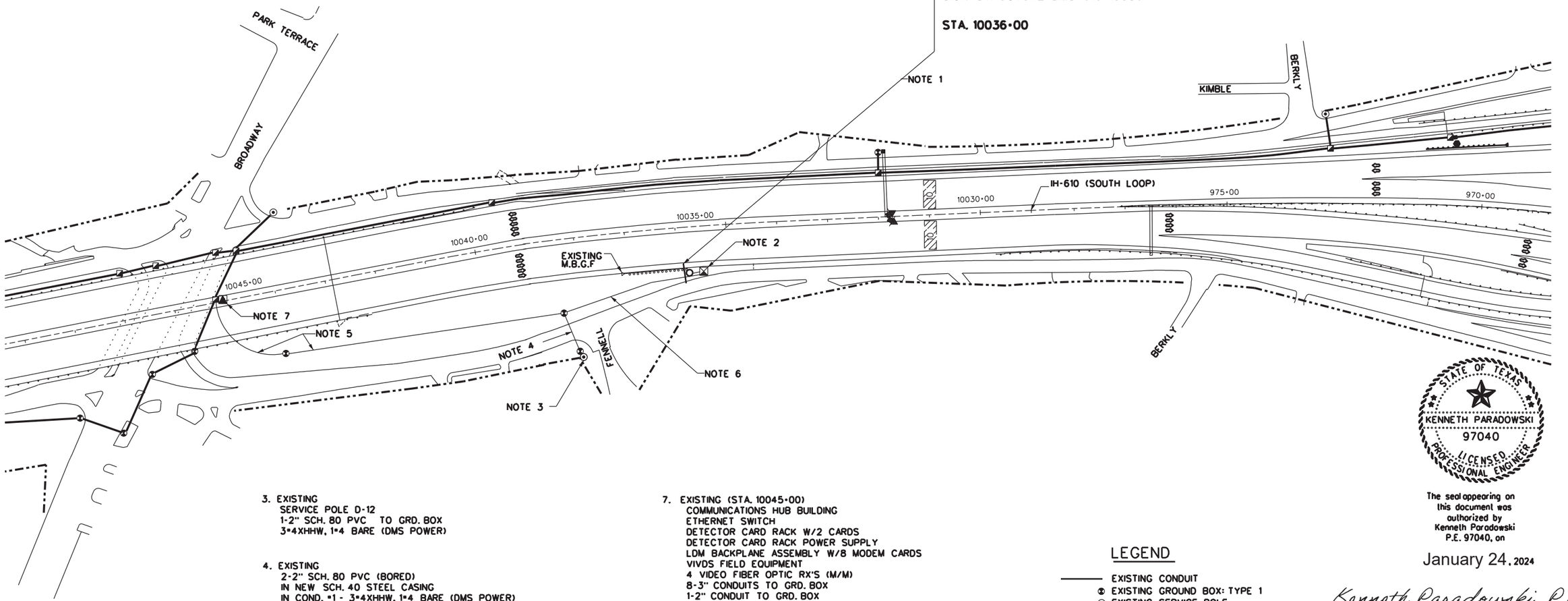
2. EXISTING (STA. 10034+80)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION ②
   DMS FIELD EQUIPMENT
   1 STAND ALONE LDM

   INSTALL
   NEW DMS CONTROLLER @ CABNINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXSITNG
SIGN STRUCTURE DMS 610-10036

STA. 10036+00



3. EXISTING
   SERVICE POLE D-12
   1-2" SCH. 80 PVC TO GRD. BOX
   3#4XHHW, 1#4 BARE (DMS POWER)

4. EXISTING
   2-2" SCH. 80 PVC (BORED)
   IN NEW SCH. 40 STEEL CASING
   IN COND. #1 - 3#4XHHW, 1#4 BARE (DMS POWER)

5. EXISTING
   1-2" SCH. 80 PVC
   1-6 PAIR #22 COMM. CABLE (DMS-610-10036)

6. EXISTING
   2-2" SCH. 80 PVC
   IN COND. #1 - 3#4XHHW, 1#4 BARE (DMS POWER)
   IN COND. #2 - 1-6 PAIR #22 COMM. CABLES (DMS-610-10036)

7. EXISTING (STA. 10045+00)
   COMMUNICATIONS HUB BUILDING
   ETHERNET SWITCH
   DETECTOR CARD RACK W/2 CARDS
   DETECTOR CARD RACK POWER SUPPLY
   LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
   VIVDS FIELD EQUIPMENT
   4 VIDEO FIBER OPTIC RX'S (M/M)
   8-3" CONDUITS TO GRD. BOX
   1-2" CONDUIT TO GRD. BOX
   IN COND. #1(3") - 4 SINGLE MODE FIBER OPTIC CABLES
   2 MULTIMODE FIBER OPTIC CABLES
   2-6 PAIR #22 COMM. CABLE (VOICE COMM.(2))
   4 FIBER DROP CABLE (VIVDS(4))
   2 FIBER DROP CABLE (CCTV(2))
   IN COND. #2(3") - 4SENSOR UNIT POWER CONDRS. (VIVDS(4))
   IN COND. #3(3") - 4-6PAIR (CCTV(2), RM LOOPS (2))
   4 LOOP LEAD-IN CABLES
   IN COND. #4(2") - 3#2XHHW, 1#2 BARE (HUB BUILDING POWER)
   IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-10036)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: BROADWAY.DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (SOUTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ BROADWAY
(W.B)

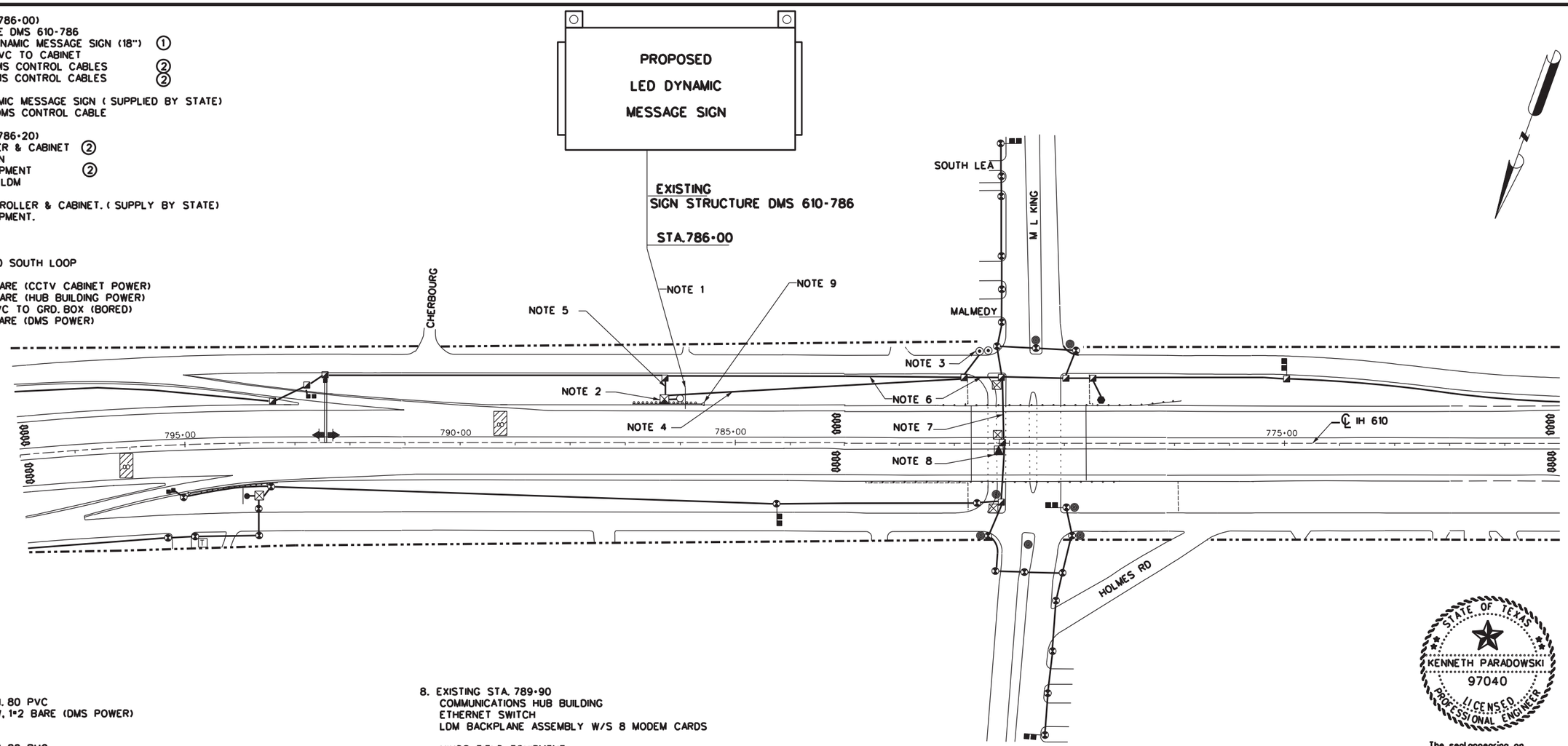
SHEET 43 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		67

1. EXISTING (STA. 786+00)
   SIGN STRUCTURE DMS 610-786
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②
   INSTALL:
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND.#1 &2: DMS CONTROL CABLE

2. EXISTING (STA. 786+20)
   DMS CONTROLLER & CABINET ②
   DMS FOUNDATION
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE LDM
   INSTALL:
   NEW DMS CONTROLLER & CABINET. (SUPPLY BY STATE)
   DMS FIELD EQUIPMENT.

3. EXISTING
   SERVICE POLE
   5304 ½ IH 610 SOUTH LOOP
   1-2" CONDUIT
   2#8XHHW, 1#4 BARE (CCTV CABINET POWER)
   3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
   1-2" SCH. 80 PVC TO GRD. BOX (BORED)
   3#2XHHW, 1#2 BARE (DMS POWER)



4. EXISTING
   1-2" SCH. 80 PVC
   3#2XHHW, 1#2 BARE (DMS POWER)

5. EXISTING
   1-2" SCH. 80 PVC
   1-6 PAIR #22 COMM. CABLE (DMS-610-786)

6. EXISTING
   4-3" CONDUITS
   IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
   - 1 MULTIMODE FIBER OPTIC CABLE
   - 1-6 PAIR #22 COMM. CABLE (VOICE COMM.
   FIBER DROP CABLE (VIVDS(2))
   IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS(2))
   IN COND. #3 - 2 LOOP LEAD-IN CABLES
   IN COND. #4 - 1-6 PAIR #22 COMM. CABLE (DMS-610-786)

7. EXISTING
   5-3" CONDUITS
   IN COND. #1 - 2 SINGLE MODE FIBER OPTIC CABLES
   2 MULTIMODE FIBER OPTIC CABLES
   2-6 PAIR #22 COMM. CABLE (VOICE COMM.
   2 FIBER DROP CABLE (VIVDS(2))
   FIBER DROP CABLE (CCTV)
   IN COND. #2 - 2 SENSOR UNIT POWER CONDRS. (VIVDS(2))
   IN COND. #3 - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
   2#6XHHW, 1#6 BARE (SIGNAL CABINET POWER)
   IN COND. #4 - 1-6 PAIR #22 COMM. CABLE (CCTV)
   8 LOOP LEAD-IN CABLES

   IN COND. #5 - 1-6 PAIR #22 COMM. CABLE (DMS-610-786)

8. EXISTING STA. 789+90
   COMMUNICATIONS HUB BUILDING
   ETHERNET SWITCH
   LDM BACKPLANE ASSEMBLY W/S 8 MODEM CARDS

   VIVDS FIELD EQUIPMENT
   2 VIDEO FIBER OPTIC RX'S (M/M)
   DETECTOR CARD RACK W/2 CARDS
   DETECTOR CARD RACK POWER SUPPLY
   8-3" CONDUITS TO GRD. BOX
   1-2" CONDUIT TO GRD. BOX
   IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
   2 MULTIMODE FIBER OPTIC CABLES
   2-6 PAIR #22 COMM. CABLE (VOICE COMM. (2))
   2 FIBER DROP CABLES (VIVDS(2))
   FIBER DROP CABLE (CCTV)
   IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
   IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
   IN COND. #4(3") - 2-6 PAIR #22 COMM. CABLE (CCTV, SCS)
   1-6 PAIR #22 COMM. CABLE (CMS)
   (FOR FUTURE USE)
   4 LOOP LEAD-IN CABLES

   IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-786)

9. EXISTING
   125LF OF M.B.G.F. W/S.G.T.-97
   & TERM ANCHOR SECTION

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1"=200'

FILE NAME: MLKING.DGN

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Parodowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (SOUTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ M.L.KING
(E.B)

SHEET 44 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		68

NAME:ENTER DATA

1. EXISTING (STA. 713+00)
SIGN STRUCTURE DMS-610-713
FIBER OPTIC DYNAMIC SIGN (18") ①

INSTALL:
NEW LED DYNAMIC MESSGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH.80 PVC
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2 - DMS CONTROL CABLES ②

INSTALL:
IN COND. #1&2- DMS CONTROL CABLES

3. EXSITING (STA. 713+20)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL:
NEW DMS CONTROLLER & CABNINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

4. EXISTING
1-2" SCH. 80 PVC
1-6 PAIR #22 COMM. CABLE (DMS-610-713)

8. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS)
IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #3 - 4 LOOP LEAD-IN CABLES
IN COND. #4(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-713)

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 610-713

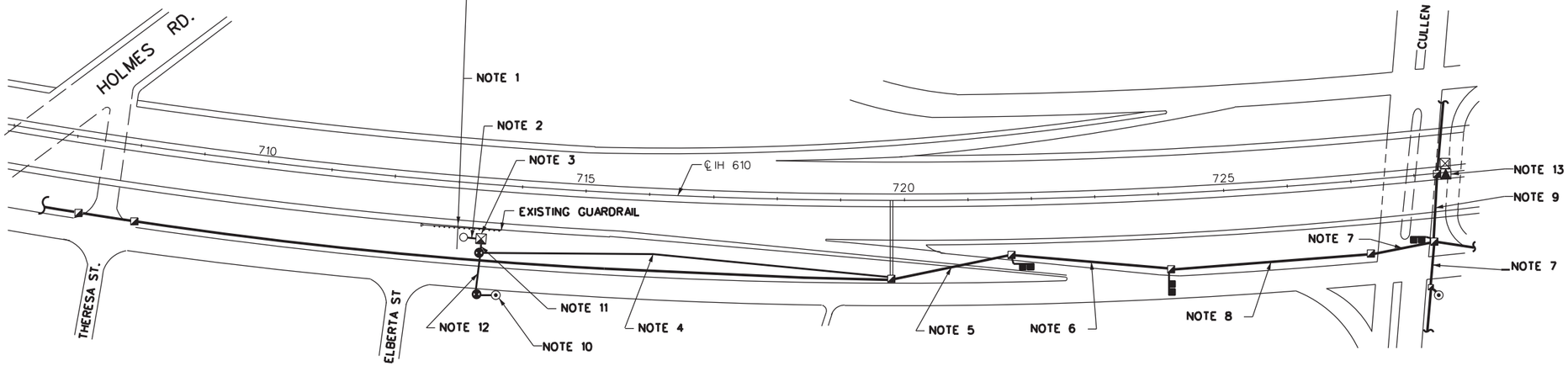
STA.713+00

9. EXISTING
5-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTIC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.)
FIBER DROP CABLE (CCTV)
FIBER DROP CABLES (VIVDS(2))
IN COND. #2(3") - 3-6 PAIR #22 COMM. CABLES (FTM,CCTV,SCS)
2 LOOP LEAD-IN CABLES
IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BLDG. POWER)
IN COND. #4(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
IN COND. #5(3") - 8 LOOP LEAD-IN CABLES
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-713)

10. EXISTING
SERVICE POLE D-13
1-2" SCH. 80 PVC TO GRD. BOX
3#8XHHW, 1#8 BARE (DMS POWER)

11. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 3#8XHHW, 1#8 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-713)

12. EXISTING
2-2" SCH. 80 PVC (BORED)
IN SCH. 40 STEEL CASING
3#8XHHW, 1#8 BARE (DMS POWER)



5. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS)
IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-713)

6. EXISTING
4-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
FIBER DROP CABLE (VIVDS)
IN COND. #2 - SENSOR UNIT POWER CONDRS. (VIVDS)
IN COND. #3 - 2 LOOP LEAD-IN CABLES
IN COND. #4(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-713)

7. EXISTING
3-2" CONDUITS
IN COND. #1 - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
2#8XHHW, 1#8 BARE (CCTV CABINET POWER)
IN COND. #2- 2 LOOP LEAD-IN CABLES

13. EXISTING (STA. 728+80)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACKPLANE ASSEMBY W/8 MODEM CARDS
VIVDS FIELD EQUIPMENT
2 VIDEO FIBER OPTIC Rx's (M/M)
DETECTOR CARD RACK W/3 CARDS
DETECTOR CARD RACK POWER SUPPLY
8-3" CONDUITS TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
2 MULTIMODE FIBER OPTC CABLES
2-6 PAIR #22 COMM. CABLES (VOICE COMM.)
FIBER DROP CABLE (CCTV)
FIBER DROP CABLES (VIVDS(2))
IN COND. #2(3") - 3-6 PAIR #22 COMM. CABLES (FTM,CCTV,SCS)
2 LOOP LEAD-IN CABLES
IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BLDG. POWER)
IN COND. #4(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (SCS)
4 LOOP LEAD-IN CABLES
IN COND. #6(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-713)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: dmscullen.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (SOUTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ CULLEN
(E.B)

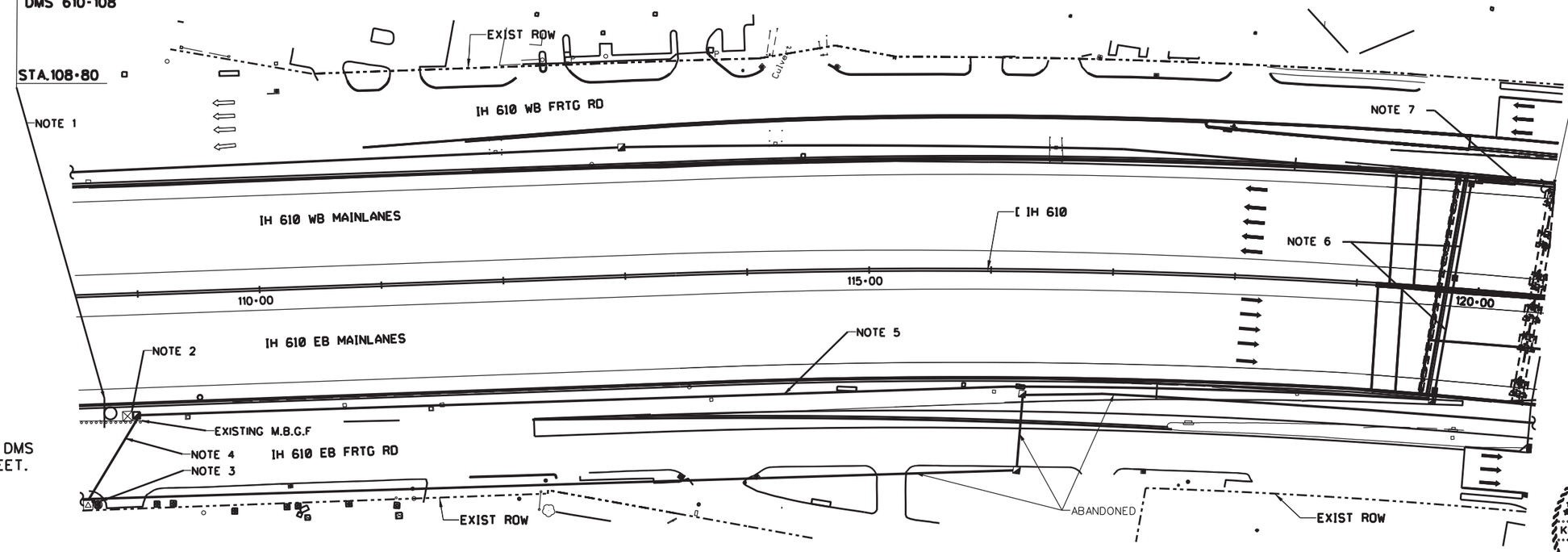
SHEET 45 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		69

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE
DMS 610-108

TO COMMUNICATION HUB BUILDING
STA = 127+80
(2,000 FEET FROM DMS)
@ ALMEDA ROAD.



1,400 FT FROM DMS
TO FANNIN STREET.

1. EXISTING (STA. 108+80)
   SIGN STRUCTURE DMS 610-108
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   2-4" SCH. 80 PVC TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2 - DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1&2- DMS CONTROL CABLES

2. EXISTING (STA. 108+90)
   DMS CONTROLLER & CABINET ②
   DMS FIELD EQUIPMENT ②
   1 STAND ALONE RS232 FIBER OPTIC TRANSCEIVER
   FOUNDATION

   INSTALL
   NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
   NEW DMS FIELD EQUIPMENT

3. EXISTING
   SERVICE POLE D-1
   1-2" RMC TO GRD. BOX
   2#8XHHW,1#8 BARE (DMS CABINET POWER)

4. EXISTING
   2-3" SCH. 80 PVC (BORED)
   IN COND. #1 - 2#8XHHW, 1#8 BARE (DMS CABINET POWER)

5. EXISTING
   2-3" SCH 80 PVC
   IN COND. #1- 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-610-108)

6. EXISTING
   2-3" RMC (ATTACHED BENEATH BRIDGE)
   IN COND. #1 - 1-6 STRAND SINGLE MODE FIBER OPTIC CABLE (DMS-610-108)

7. EXISTING
   2-3" SCH. 40 PVC/CCE
   2-4" SCH. 40 MULTI-DUCT PVC/CCE
   IN COND. #1(3") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
   1#14 INSULATED CONDUCTOR
   IN COND. #2 (4" INNERDUCT A) - 1-6 STRAND SINGLE MODE FOC (DMS-610-108)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE 1" = 200'
FILE NAME: IH610S_0271 16 140_02

NAME:ENTER DATA

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (SOUTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ ALMEDA
(E.B)

SHEET 46 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		70

1. EXISTING (STA.584+20)
SIGN STRUCTURE DMS 610-103
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①

INSTALL:
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC
IN COND.#1 - DMS CONTROL CABLES ②
IN COND.#2- DMS CONTROL CABLES ②

INSTALL
IN COND. #1&2 - DMS CONTROL CABLES

3. EXISTING (STA. 584+00)
DMS CONTROLLER & CABINET ②
DMS FOUNDATION
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

4. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-103)
IN COND. #2 - 3#2XHHW, 1#2 BARE (DMS POWER)

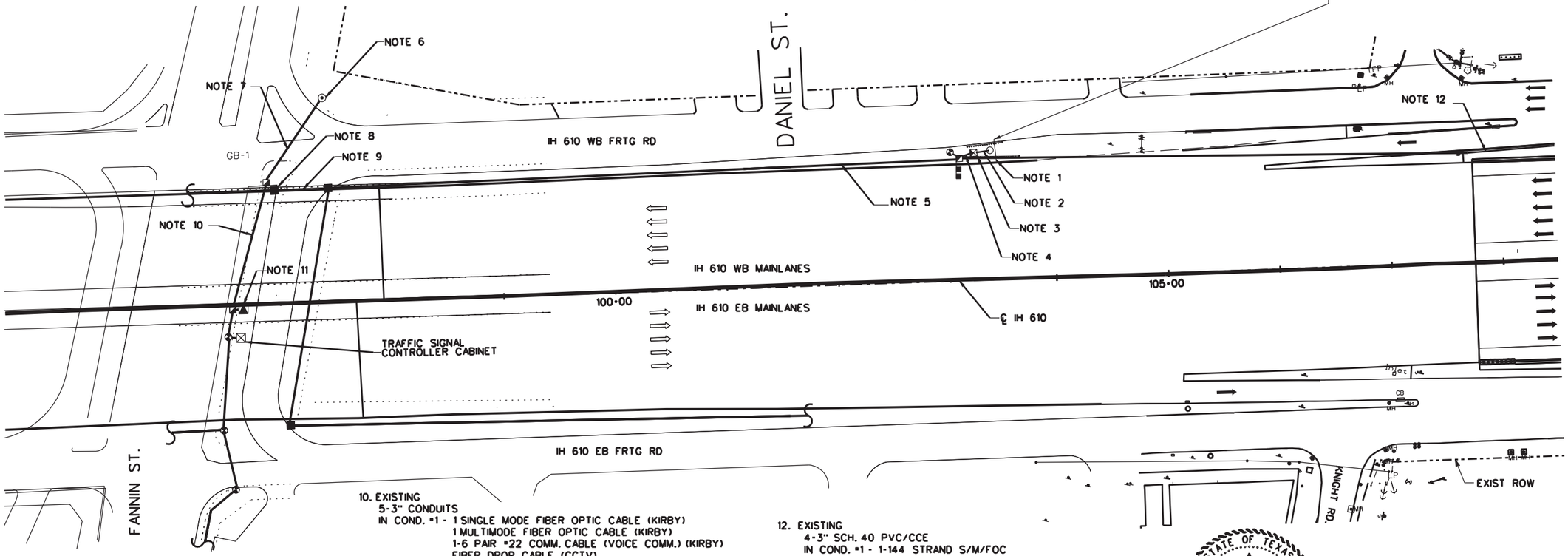
5. EXISTING
4-3" CONDUITS
IN COND. #1 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1#14 INSULATED CONDUCTOR
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND.#2 - 2 LOOP LEAD-IN CABLES
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-103)
IN COND. #4 - 3#2XHHW, 1#2 BARE (DMS POWER

6. EXISTING
SERVICE POLE
1638½IH610 (SOUTH LOOP)
1-2" CONDUIT TO GRD. BOX
3#4XHHW, 1#4 BARE (HUB BLDG. POWER)
2#6XHHW, 1#6 BARE (CCTV CABINET POWER)
2-2" SCH. 80 PVC TO GRD. BOX (BORED)
IN SCH. 40 STEEL CASING
IN COND. #1 - 3#2XHHW, 1#2 BARE (DMS POWER)

PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 610-103

STA. 103+50



7. EXISTING
1-2" CONDUIT
IN COND. #1 - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
- 2#6XHHW, 1#6 BARE (CCTV CABINET POWER)
- 3#2XHHW, 1#2 BARE (DMS POWER)

8. EXISTING
4-3" RMC (DOWN BRIDGE TO COLUMN TO GRD. BOX)
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE (KIRBY)
1 MULTIMODE FIBER OPTIC CABLE (KIRBY)
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)(KIRBY)
FIBER DROP CABLE (CCTV)
IN COND. #2- 6 LOOP LEAD-IN CABLES
2 LOOP LEAD-IN CABLES (ALMEDA RD)
IN COND. #3- 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1#14 INSULATED CONDUCTOR
IN COND. #4- 1-6 PAIR #22 COMM. CABLE (DMS-610-FANNIN)
3#2XHHW, 1#2 BARE (DMS POWER)

9. EXISTING
4-3" RMC (SUSPENDED BENEATH THE BRIDGE)
IN COND. #1 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1#14 INSULATED CONDUCTOR
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND.#2 - 2 LOOP LEAD-IN CABLES
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-FANNIN)
IN COND. #4 - 3#2XHHW, 1#2 BARE (DMS POWER)

10. EXISTING
5-3" CONDUITS
IN COND. #1 - 1 SINGLE MODE FIBER OPTIC CABLE (KIRBY)
1 MULTIMODE FIBER OPTIC CABLE (KIRBY)
1-6 PAIR #22 COMM. CABLE (VOICE COMM.) (KIRBY)
FIBER DROP CABLE (CCTV)
IN COND. #2 - 8 LOOP LEAD-IN CABLES
1-6 PAIR #22 COMM. CABLE (CCTV)
IN COND. #3 - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
IN COND. #4 - 8 LOOP LEAD-IN CABLES
IN COND. #5 - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1#14 INSULATED CONDUCTOR
1-6 PAIR #22 COMM. CABLE (DMS-610-103)

11. EXISTING
COMMUNICATIONS HUB BUILDING
1 STAND ALONE VIDEO DATA FIBER OPTIC RX (M/M)
2 SERIAL SERVERS
1 ETHERNET SWITCH
1 ENCODER
8-3" CONDUITS
1-2" CONDUIT
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE (KIRBY)
1 MULTIMODE FIBER OPTIC CABLE (KIRBY)
1-6 PAIR #22 COMM. CABLE (VOICE COMM.) (KIRBY)
FIBER DROP CABLE (CCTV)
IN COND. #2(3") - 8 LOOP LEAD-IN CABLES
2-6 PAIR #22 COMM. CABLE (CCTV, SCS)
IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
1-144 STRAND FIBER OPTIC ENCLOSURE
IN COND. #4(3") - 1-144 STRAND SINGLE MODE FIBER OPTIC CABLE
1#14 INSULATED CONDUCTOR
IN COND. #5(3")- 1-6 PAIR #22 COMM. CABLE (DMS-610-103)

12. EXISTING
4-3" SCH. 40 PVC/CCE
IN COND. #1 - 1-144 STRAND S/M/FOC
1#14 INSULATED CONDUCTOR

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

SCALE 1" = 100'
FILE NAME: IH610S_0271 16 140_01_PII

Texas Department of Transportation

IH-610 (SOUTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ FANNIN ST.
(W.B)

SHEET 47 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		71

1. EXISTING
   1-2" CONDUIT
   1-6 PAIR #22 COMM. CABLE (DMS-610-453) ②

2. EXISTING (STA. 453+60)
   DMS CONTROLLER & CABINET ①
   DMS FOUNDATION
   1 STAND ALONE LDM
   2-2" CONDUITS
   IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-453) ②

   INSTALL
   NEW DMS CONTROLLER CABINET (SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT

3. EXISTING (STA. 453+30)
   SIGN STRUCTURE DMS 610-STELLA LINK
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   DMS FOUNDATION
   2-4" CONDUITS TO CABINET
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②

   INSTALL
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. #1 &2 - DMS CONTROL CABLES

4. EXISTING
   SERVICE POLE
   4015 ½ 610S LOOP
   1-2" CONDUIT
   3#6XHHW, 1#6 BARE (DMS CABINET POWER)

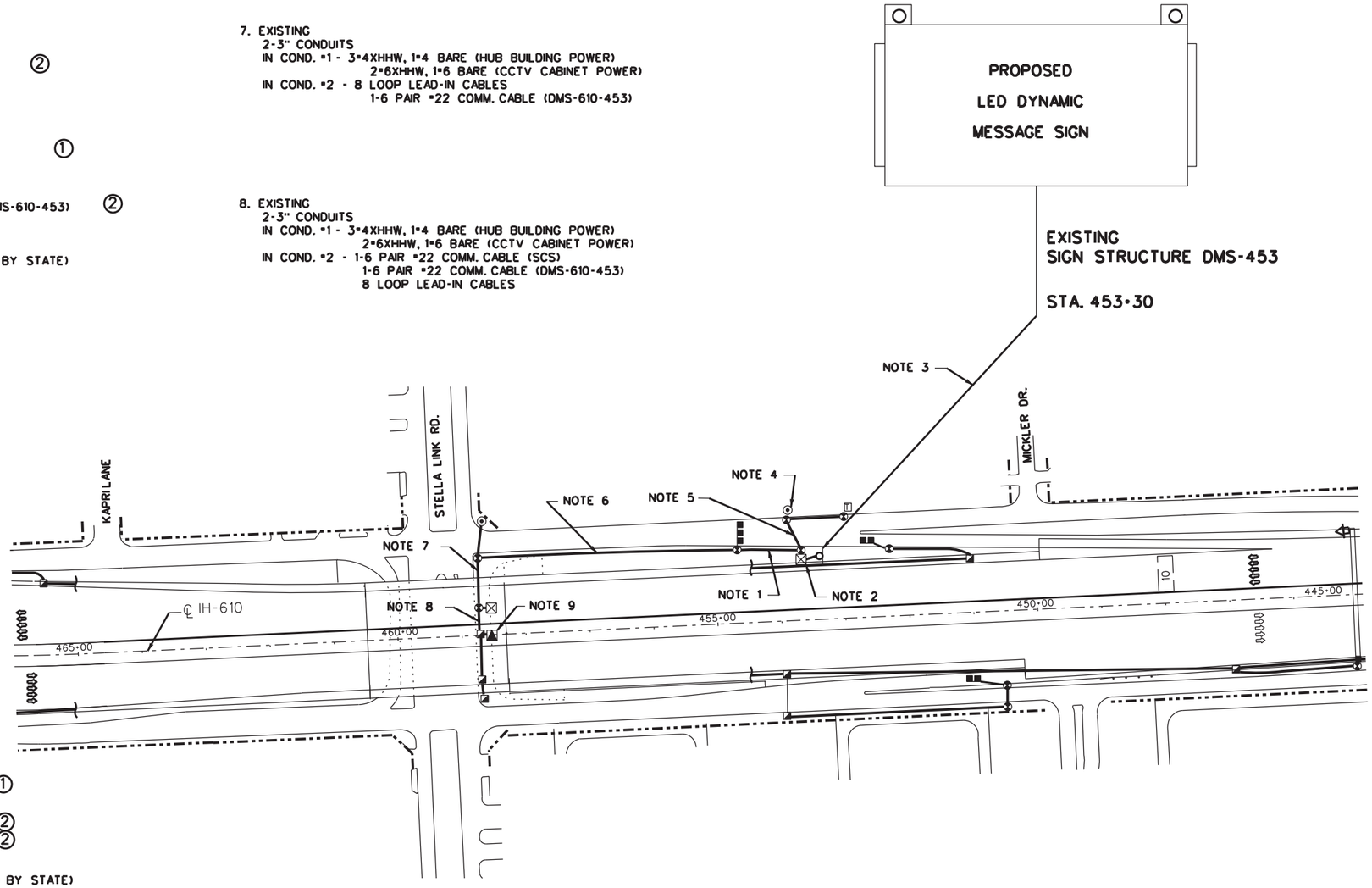
5. EXISTING
   2-2" CONDUITS
   IN COND. #1 - 3#6XHHW, 1#6 BARE (DMS CABINET POWER)

6. EXISTING
   1-3" CONDUIT
   3 LOOP LEAD-IN CABLES
   1-6 PAIR #22 COMM. CABLE (DMS-610-453)

7. EXISTING
   2-3" CONDUITS
   IN COND. #1 - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
   2#6XHHW, 1#6 BARE (CCTV CABINET POWER)
   IN COND. #2 - 8 LOOP LEAD-IN CABLES
   1-6 PAIR #22 COMM. CABLE (DMS-610-453)

8. EXISTING
   2-3" CONDUITS
   IN COND. #1 - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
   2#6XHHW, 1#6 BARE (CCTV CABINET POWER)
   IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (SCS)
   1-6 PAIR #22 COMM. CABLE (DMS-610-453)
   8 LOOP LEAD-IN CABLES

9. EXISTING
   COMMUNICATIONS HUB BUILDING
   ETHERNET SWITCH
   DETECTOR CARD RACK W/3 CARDS
   LDM BACKPLANE ASSEMBLY W/8 MODEM CARDS
   VIVDS FIELD EQUIPMENT
   2 VIDEO FIBER OPTIC RX'S (M/M)
   8-3" CONDUITS
   1-2" CONDUIT
   IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
   2 MULTIMODE FIBER OPTIC CABLES
   FIBER DROP CABLE (CCTV)
   FIBER DROP CABLE (VIVDS(2))
   2-6 PAIR #22 COMM. CABLES (VOICE COMM. (2))
   IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS(2))
   IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
   IN COND. #4(3") - 2-6 PAIR #22 COMM. CABLES (FTM, CCTV)
   6 LOOP LEAD-IN CABLES
   IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (SCS)
   1-6 PAIR #22 COMM. CABLE (DMS-610-453)



LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'
FILE NAME: 610S @Stella1.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24, 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (SOUTH LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ STELLA LINK
(E.B)

SHEET 48 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		72

1. EXISTING
4-3" CONDUITS
IN COND. #1 - FIBER DROP CABLE (CCTV)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLES (CCTV)
IN COND. #3 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE(VOICE COMM.)
IN COND. #4 - 1-6 PAIR #22 COMM. CABLE (N.B. DMS)

2. EXISTING (STA. 721+90)
DMS CONTROLLER CABINET FOUNDATION ②
DMS FIELD EQUIPMENT ②
2-2" CONDUITS TO GRD. BOX
IN COND. #1 - 1-6 PAIR #22 COMM. CABLE (DMS-610-722)

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPLIED BY STATE)
DMS FIELD EQUIPMENT

3. EXISTING (STA. 722+00)
SIGN STRUCTURE DMS 610-722
DMS SIGN STRUCTURE FOUNDATION
FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
2-4" CONDUITS TO CABINET
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2- DMS CONTROL CABLES ②

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
IN EXIST. COND. #1 - DMS CONTROL CABLES
IN EXIST. COND. #2- DMS CONTROL CABLES

4. EXISTING
4-3" CONDUITS
IN COND. #1 - SENSOR UNIT POWER CONDRS. (VIVDS (2))
IN COND. #2 - FIBER DROP CABLE (VIVDS (2))
1-6 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM ZONES)
2 LOOP LEAD-IN CABLES
IN COND. #3 - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)

5. EXISTING
4-3" CONDUITS
IN COND. #1 - FIBER DROP CABLE (CCTV)
IN COND. #2 - 2-6 PAIR #22 COMM. CABLE (CCTV, DMS(2))
IN COND. #3 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #4 - 1-6 PAIR #22 COMM. CABLE (DMS-610-722)

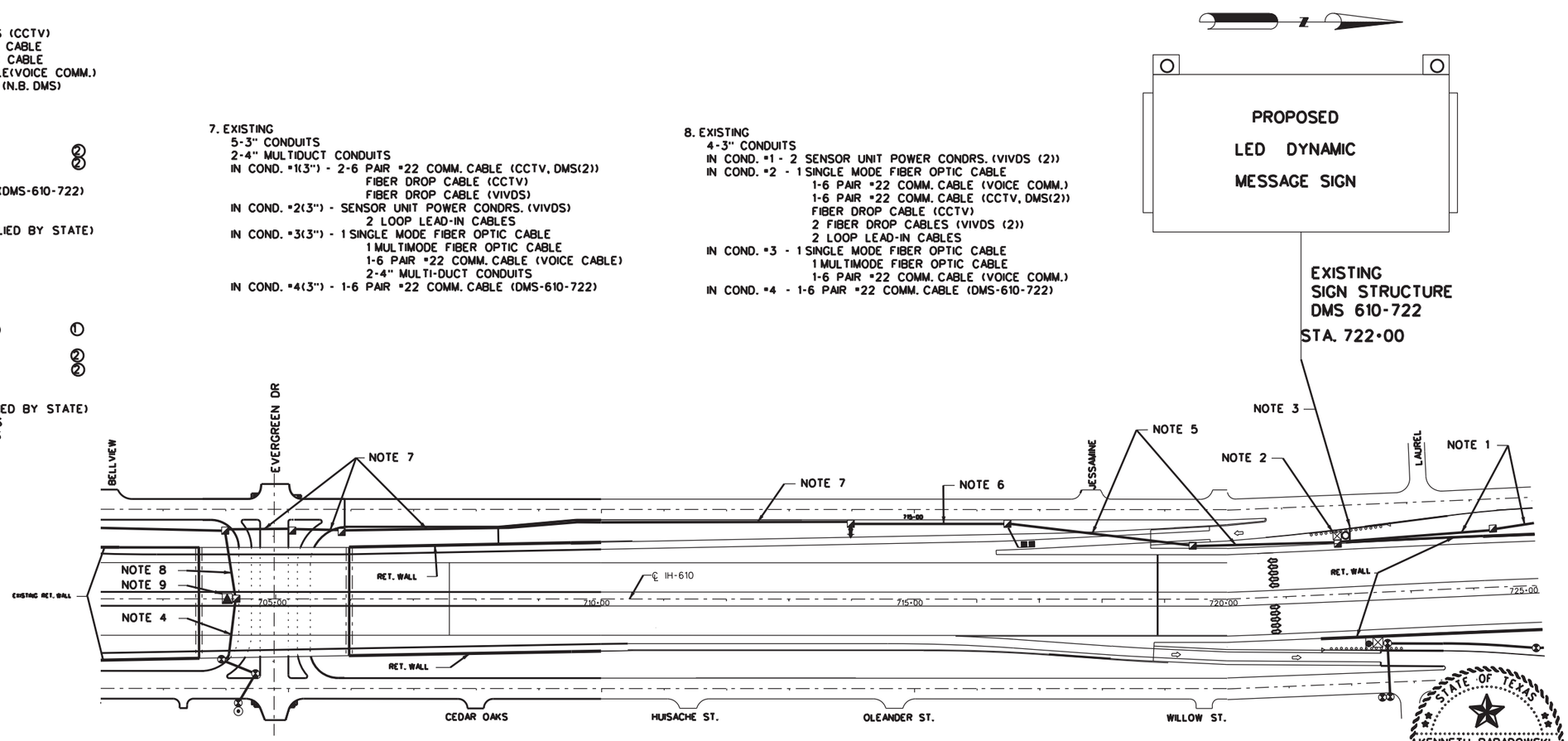
6. EXISTING
3-3" CONDUITS
IN COND. #1 - 2-6 PAIR #22 COMM. CABLE (CCTV, DMS(2))
FIBER DROP CABLE (CCTV)
2 LOOP LEAD-IN CABLES
IN COND. #2 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #3 - 1-6 PAIR #22 COMM. CABLE (DMS-610-EVERGREEN)

7. EXISTING
5-3" CONDUITS
2-4" MULTIDUCT CONDUITS
IN COND. #1(3") - 2-6 PAIR #22 COMM. CABLE (CCTV, DMS(2))
FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS)
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS)
2 LOOP LEAD-IN CABLES
IN COND. #3(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE CABLE)
2-4" MULTI-DUCT CONDUITS
IN COND. #4(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-722)

8. EXISTING
4-3" CONDUITS
IN COND. #1 - 2 SENSOR UNIT POWER CONDRS. (VIVDS (2))
IN COND. #2 - 1 SINGLE MODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
1-6 PAIR #22 COMM. CABLE (CCTV, DMS(2))
FIBER DROP CABLE (CCTV)
2 FIBER DROP CABLES (VIVDS (2))
2 LOOP LEAD-IN CABLES
IN COND. #3 - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #4 - 1-6 PAIR #22 COMM. CABLE (DMS-610-722)

9. EXISTING (STA.704+00)
COMMUNICATIONS HUB BUILDING
ETHERNET SWITCH
LDM BACK PLANE ASSEMBLY W/8 MODEM CARDS
DETECTOR CARD RACK W/1 CARD
VIVDS FIELD EQUIPMENT
4 VIDEO FIBER OPTIC RX'S (M/M)
8-3" CONDUITS TO GRD. BOX
1-2" CONDUIT TO GRD. BOX
IN COND. #1(3") - 1 SINGLE MODE FIBER OPTIC CABLE
FIBER DROP CABLE (CCTV)
FIBER DROP CABLE (VIVDS (4))
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(3") - SENSOR UNIT POWER CONDRS. (VIVDS) (4))
IN COND. #3(2") - 3#4XHHW, 1#4 BARE (HUB BUILDING POWER)
IN COND. #4(3") - 1-6 PAIR #22 COMM. CABLE (FTM LOOPS)
1-25 PAIR #22 COMM. CABLE (RM)
1-12 PAIR #22 COMM. CABLE (RM LOOPS)
IN COND. #5(3") - 1-6 PAIR #22 COMM. CABLE (CCTV)
1-6 PAIR #22 COMM. CABLE (FTM LOOPS)
2 LOOP LEAD-IN CABLES
1-6 PAIR #22 COMM. CABLE (N.B.DMS)
IN COND. #6(3") - 1 SINGLE MODE FIBER OPTIC CABLE
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE)

IN COND. #7(3") - 1-6 PAIR #22 COMM. CABLE (DMS-610-722)



LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 200'

FILE NAME: 11-610S @evergreen.d

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (WEST LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ EVERGREEN
(S.B)

SHEET 49 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		73

USER NAME-ENTER DATA

1. EXISTING (STA. 875+50)
SIGN STRUCTURE DMS 610-875
FIBER OPTIC DYNAMIC MESSAGE SIGN. ①

INSTALL
NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)

2. EXISTING
2-4" SCH. 80 PVC TO CABINET
IN COND. #1 - DMS CONTROL CABLES ②
IN COND. #2 - DMS CONTROL CABLES ②

INSTALL
IN COND. #1&2: DMS CONTROL CABLES

5. EXISTING
3-2" SCH. 80 PVC (BORED)
IN SCH. 40 STEEL CASING
IN COND. #1 - 3#4XHHW, 1#4 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-875)

6. EXISTING
1-3" SCH. 40 PVC/CCE
1-2" SCH. 40 PVC/CCE
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(2") - 3#2XHHW, 1#2 BARE (DMS POWER)

7. EXISTING
1-3" SCH. 80 PVC (BORED)
1-2" SCH. 80 PVC (BORED)
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(2") - 3#2XHHW, 1#2 BARE (DMS POWER)

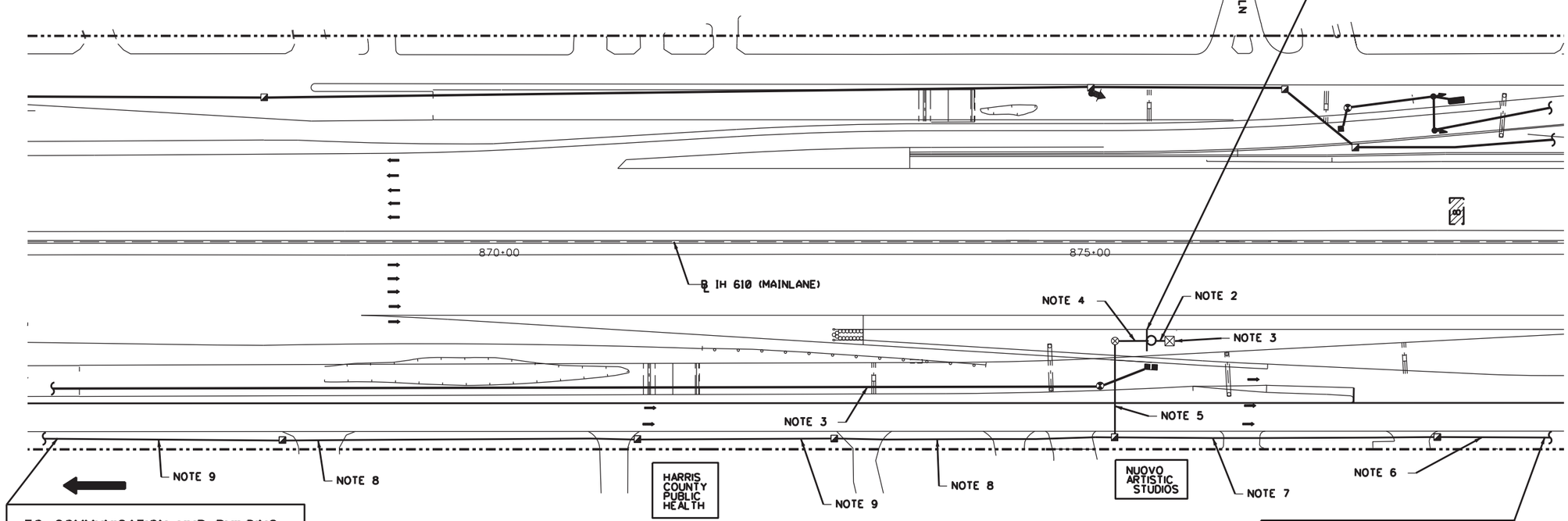
PROPOSED
LED DYNAMIC
MESSAGE SIGN

EXISTING
SIGN STRUCTURE DMS 610-875

STA. 875+50

NOTE 1

900 FT FROM DMS
TO SAN FILIPE.



TO COMMUNICATION HUB BUILDING
STA=859+50
1600 FEET FROM DMS
@ WESTHEIMER ST.

TO SERVICE POLE D-26 / DMS POWER
STA= 881+90
(700 FEET FROM DMS)
@ SAN FELIPE

3. EXISTING @ (STA. 875+30)
DMS CONTROLLER CABINET ②
DMS FIELD EQUIPMENT ②
1 STAND ALONE LDM

INSTALL
NEW DMS CONTROLLER & CABINET (SUPPIED BY STATE)
DMS FIELD EQUIPMENT

4. EXISTING
2-2" SCH. 80 PVC
IN COND. #1 - 3#4XHHW, 1#4 BARE (DMS POWER)
IN COND. #2 - 1-6 PAIR #22 COMM. CABLE (DMS-610-875)

8. EXISTING
1-3" SCH. 80 PVC (BORED)
1-2" SCH. 80 PVC (BORED)
IN SCH. 40 STEEL CASING
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
1 MULTIMODE FIBER OPTIC CABLES
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(2") - 1-6 PAIR #22 COMM. CABLE (DMS-610-875)

9. EXISTING
1-3" SCH. 40 PVC/CCE
1-2" SCH. 40 PVC/CCE
IN COND. #1(3") - 2 SINGLE MODE FIBER OPTIC CABLES
1 MULTIMODE FIBER OPTIC CABLE
1-6 PAIR #22 COMM. CABLE (VOICE COMM.)
IN COND. #2(2") - 1-6 PAIR #22 COMM. CABLE (DMS-610-875)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW LED DMS- SUPPLIED BY STATE
② TO BE REMOVED.

SCALE: 1" = 100'
FILE NAME: 610pp2.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

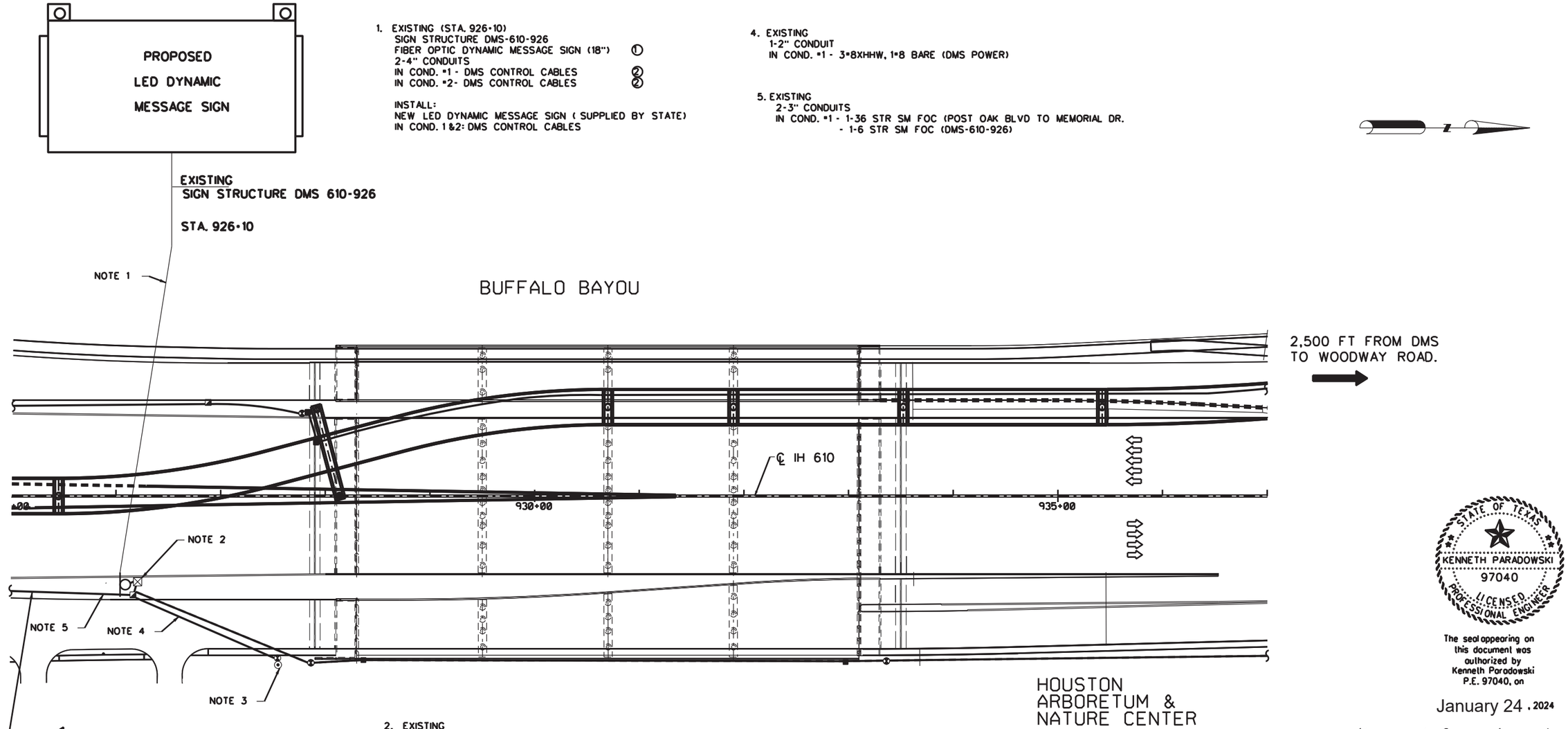
Texas Department of Transportation

IH-610 (WEST LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ WESTHEIMER
(N.B)

SHEET 50 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		74



1. EXISTING (STA. 926+10)
   SIGN STRUCTURE DMS-610-926
   FIBER OPTIC DYNAMIC MESSAGE SIGN (18") ①
   2-4" CONDUITS
   IN COND. #1 - DMS CONTROL CABLES ②
   IN COND. #2- DMS CONTROL CABLES ②

   INSTALL:
   NEW LED DYNAMIC MESSAGE SIGN (SUPPLIED BY STATE)
   IN COND. 1 &2: DMS CONTROL CABLES

2. EXISTING
   DMS CONTROLLER CABINET ②
   DMS FIELD EQUIPMENT ②
   1 DMS COMM. SWITCH (DMS NB)
   2-4" CONDUITS
   IN COND. #1 - DMS CONTROL CABLES ②
   - 1-6 STR SM FOC (DMS-610-926)
   IN COND. #2 - DMS CONTROL CABLES ②

   INSTALL:
   IN COND, 1 &2 : DMS CONTROL CABLE
   NEW DMS CONTROLLER AND CABINET.(SUPPLIED BY STATE)
   DMS FIELD EQUIPMENT.

3. EXISTING
   SERVICE POLE
   1-2" CONDUIT
   IN COND. # - 3#8XHHW, 1#8 BARE (DMS POWER)

4. EXISTING
   1-2" CONDUIT
   IN COND. #1 - 3#8XHHW, 1#8 BARE (DMS POWER)

5. EXISTING
   2-3" CONDUITS
   IN COND. #1 - 1-36 STR SM FOC (POST OAK BLVD TO MEMORIAL DR.
   - 1-6 STR SM FOC (DMS-610-926)

LEGEND

- EXISTING CONDUIT
- EXISTING GROUND BOX: TYPE 1
- EXISTING SERVICE POLE
- EXISTING GROUND BOX: TYPE 2
- EXISTING COMMUNICATIONS HUB BUILDING
- EXISTING CABINET
- EXISTING M.B.G.F.
- EXISTING TYPE 1 LOOPS
- EXISTING CCTV CAMERA
- RIGHT OF WAY
- NEW DMS SIGN

① TO BE REMOVED AND REPLACED WITH NEW DMS- SUPPLY BY STATE

② TO BE REMOVED

SCALE: 1" = 200'

FILE NAME: ih610_163_03.dgn

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED
PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation

IH-610 (WEST LOOP)

DYNAMIC MESSAGE SIGN
IH-610 @ POSTOAK BLVD
(N.B)

SHEET 51 OF 51

CONT	SECT	JOB	HIGHWAY
0912	00	700	IH610
DIST	COUNTY		SHEET NO.
HOU	HARRIS		75

DATE:
FILE:

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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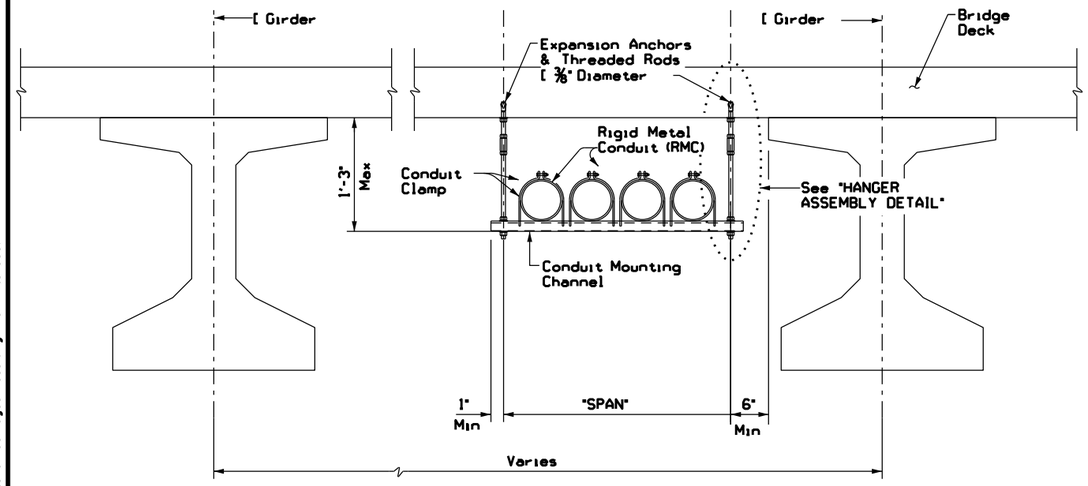
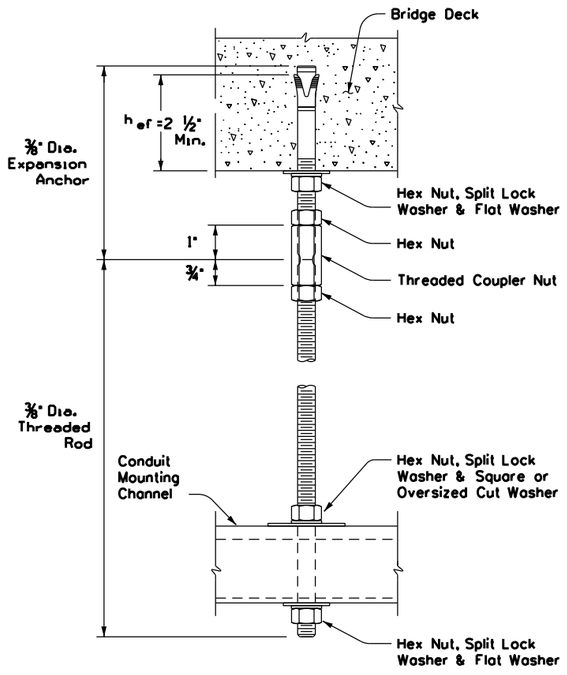
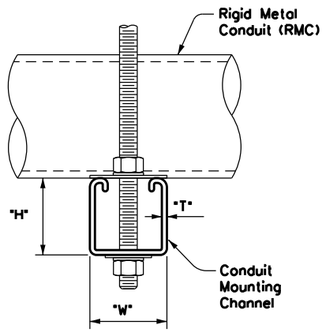


CONDUIT HANGING DETAIL

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

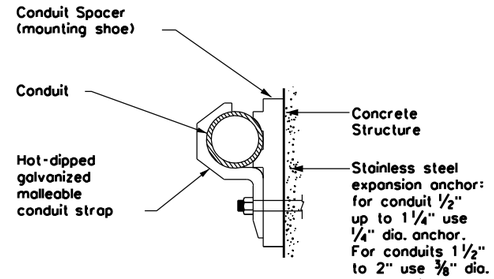
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.

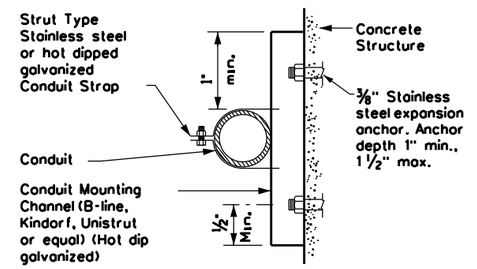




HANGER ASSEMBLY DETAIL

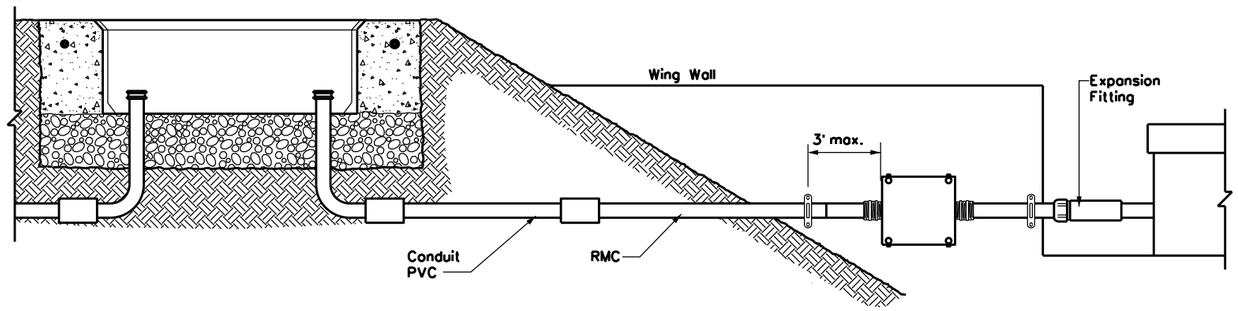
ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT





CONDUIT MOUNTING OPTIONS

Attachment to concrete surfaces
See ED(1)B.2



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.

2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.

3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.

4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.

5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (ef) as shown. Increase (ef) as needed to ensure sufficient thread length for proper torqueing and tightening of anchors.

6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (ef). No lateral loads shall be introduced after conduit installation.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
CONDUIT SUPPORTS

ED(2)-14

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

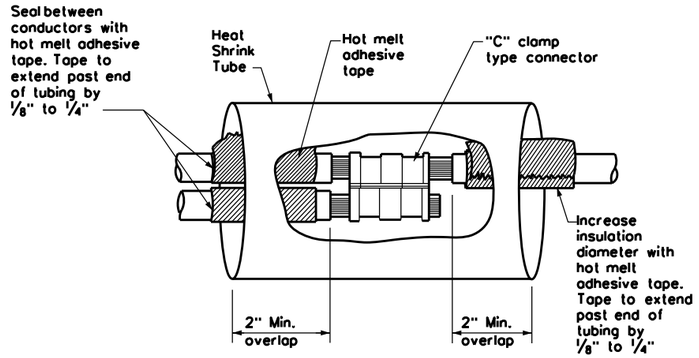
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

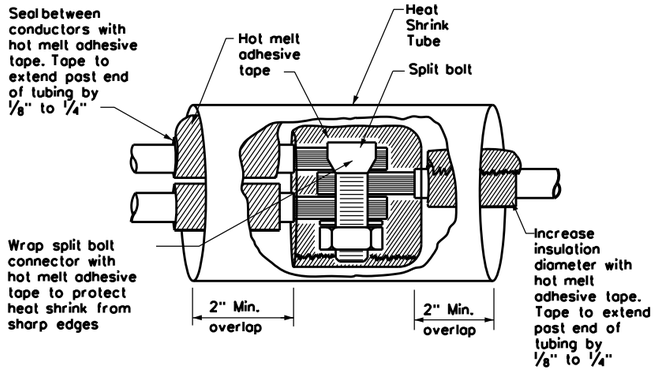
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

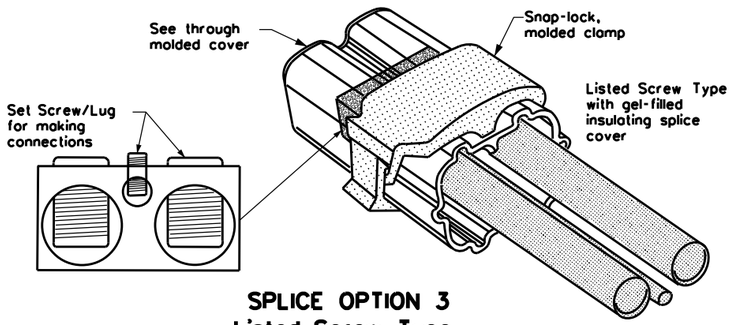
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

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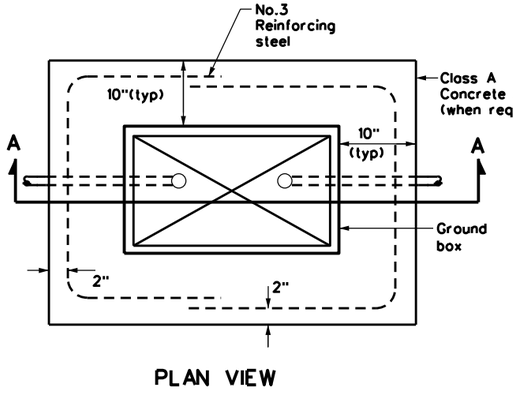
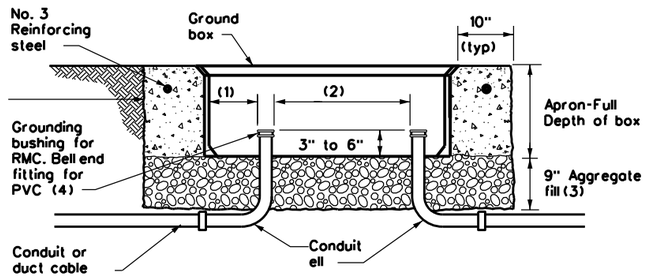


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

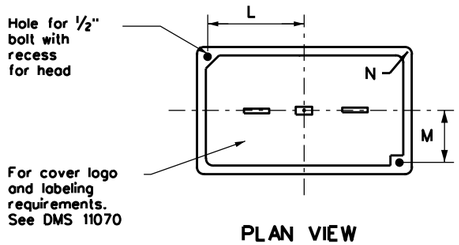
(2) Maintain sufficient space between conduits to allow for proper installation of bushings.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

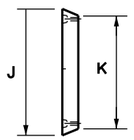
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

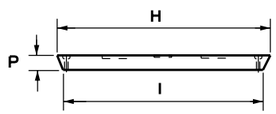
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed "2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock "2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock "2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75° C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit * * Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/*2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/*6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/*6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

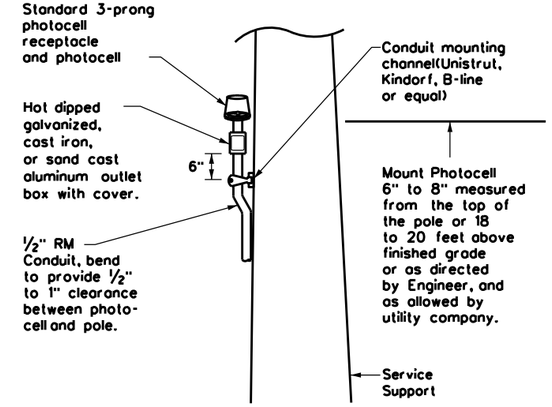
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

* * Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

- Schematic Type
- Service Voltage V / V
- Disconnect Amp Rating
  000 indicates main lug only/
  Typically Type T
- (SS)* Safety Switch Ahead of Meter-Check with Utility
- (NS)* No safety Switch Ahead of Meter-Check with Utility
- Enclosure Type
  - GS* Galvanized steel("off the shelf")
  - SS* Stainless steel(Custom Enclosure)See MPL
  - AL* Aluminum (Custom Enclosure)See MPL
- Photocell Mounting Location
  - (E)* Inside Service/Enclosure Mounted
  - (T)* Top of pole
  - (L)* Luminaire mounted
  - (N)* None/No Photocell or Lighting Contactor Required
- Service Support Type
  - GC* Granite concrete
  - OC* Other concrete
  - TP* Timber pole
  - SP* Steel pole
  - SF* Steel frame
  - OT* Pole by others or paid for separately
  - EX* Existing pole
  - TS* Service on traffic signal pole
  - PS* Pedestal Service
- O* Overhead Service Feed from Utility
- U* Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation

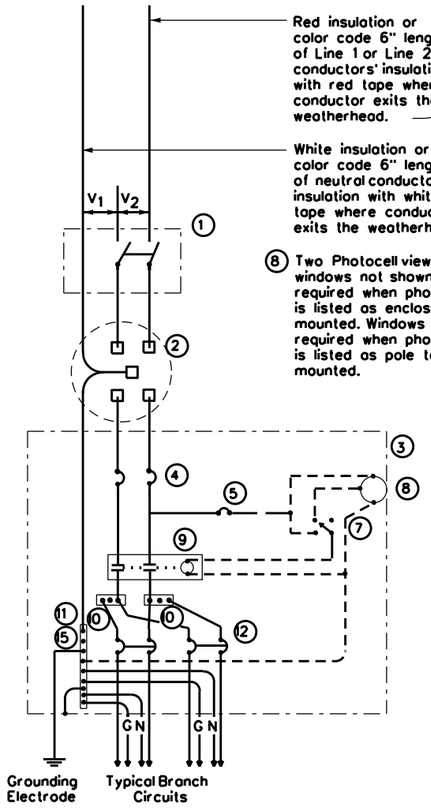
Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

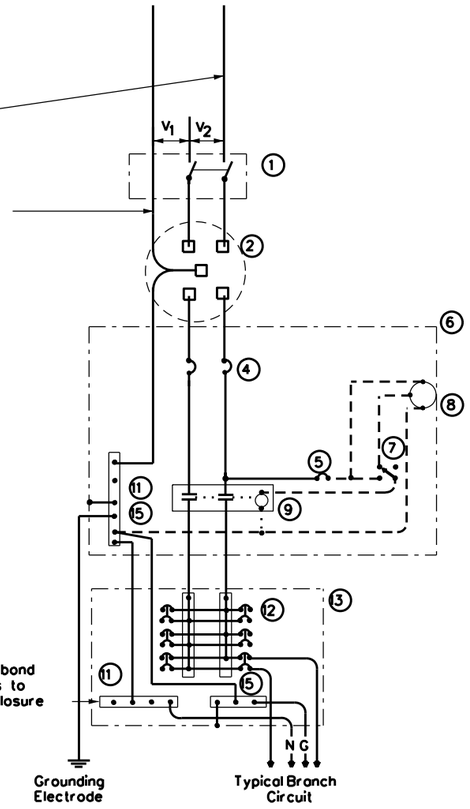
ED(5)-14

FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	ETC
	DIST	COUNTY		SHEET NO.
	HOU	HARRIS		80

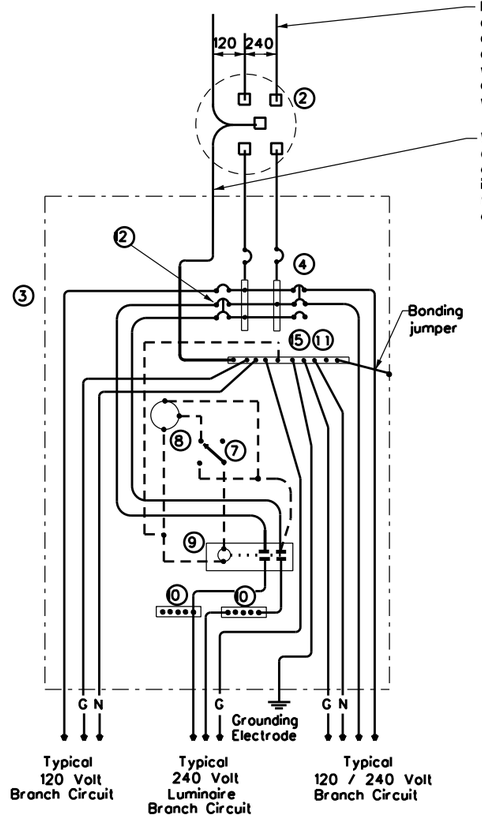
71E



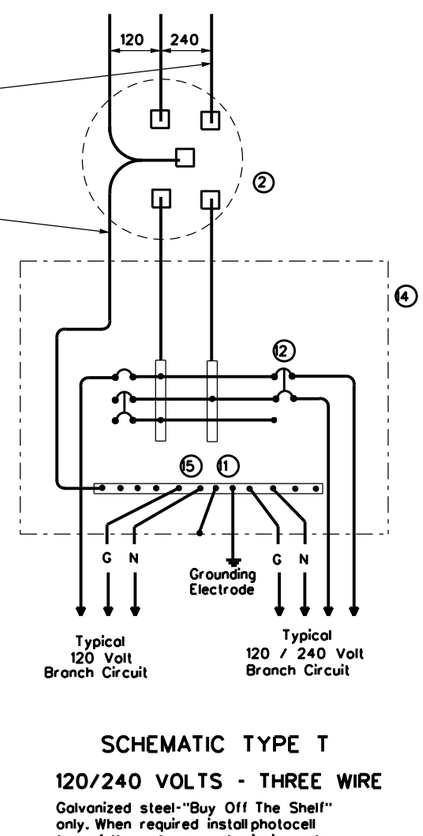
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
· - - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

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

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

FILE: ed6-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	ETC
	DIST	COUNTY		SHEET NO.
	HOU	HARRIS		81

DATE:
FILE:

71F

SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

1. Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 1/2 in. or 1 5/8 in. wide by 1 in. up to 3 3/4 in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.

2. Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.

3. Provide and install galvanized 3/4 in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized 3/4 in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 1/4 in. to 3 1/2 in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.

4. Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.

5. Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.

6. Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.

7. Drill and tap steel poles and frames for 1/2 in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.

8. If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.

9. Provide 1/4" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.

10. Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.

11. Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

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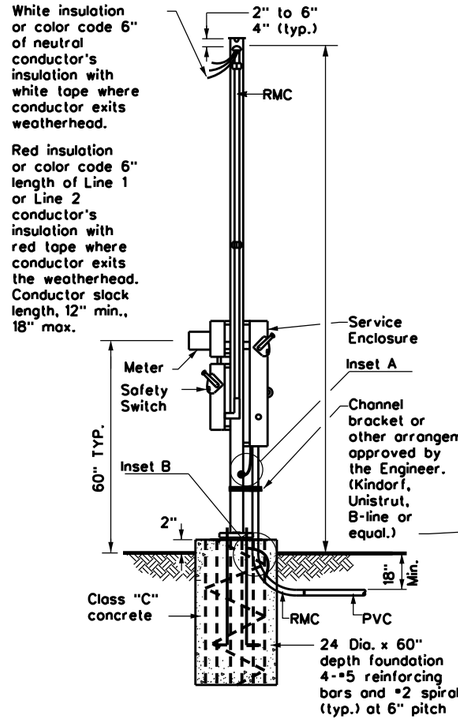
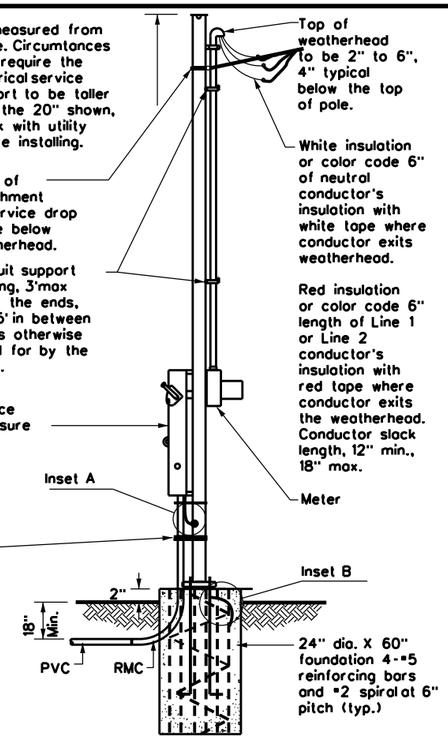
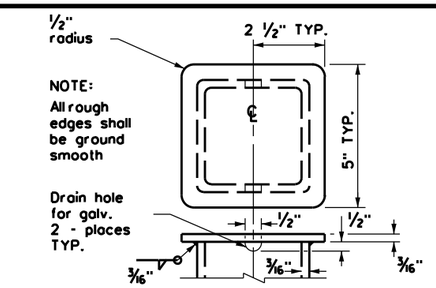


WITH SAFETY SWITCH

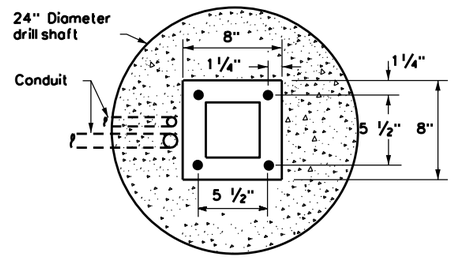


WITHOUT SAFETY SWITCH

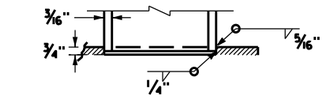
SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE



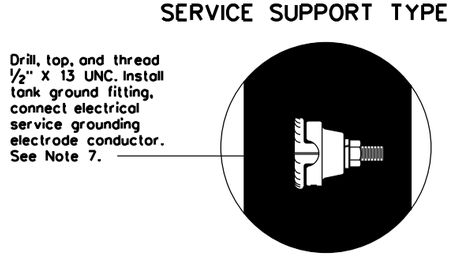
POLE TOP PLATE



BASE PLATE DETAIL

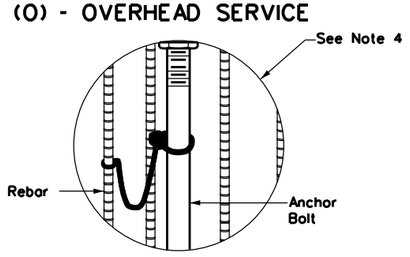


BOTTOM OF POLE



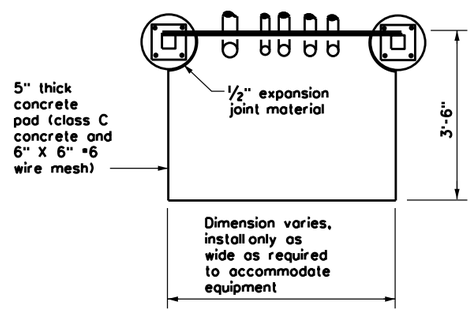
FRONT VIEW

INSET A



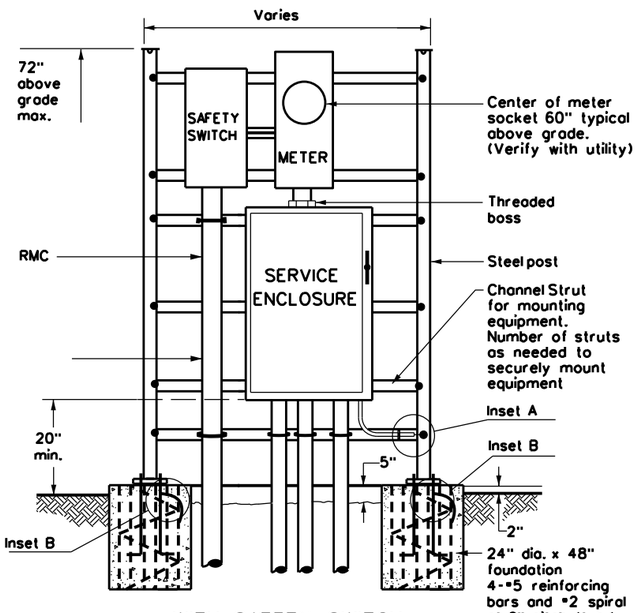
INSET B

SERVICE SUPPORT TYPE SF & SP

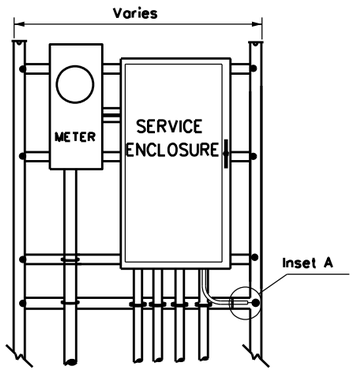


TOP VIEW

SERVICE SUPPORT TY SF (O) & SF (U)

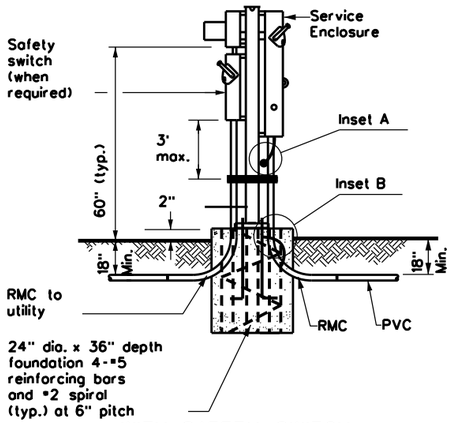


WITH SAFETY SWITCH
FRONT VIEW

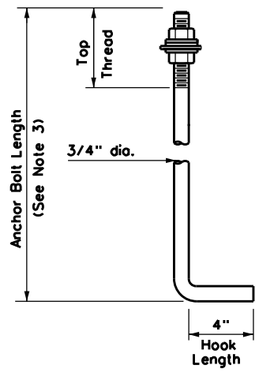


WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SF(U) - UNDERGROUND SERVICE



WITH SAFETY SWITCH



HOOKED ANCHOR DETAIL

SERVICE SUPPORT TYPE SP(U) - UNDERGROUND SERVICE

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP

ED(7)-14

FILE: ed7-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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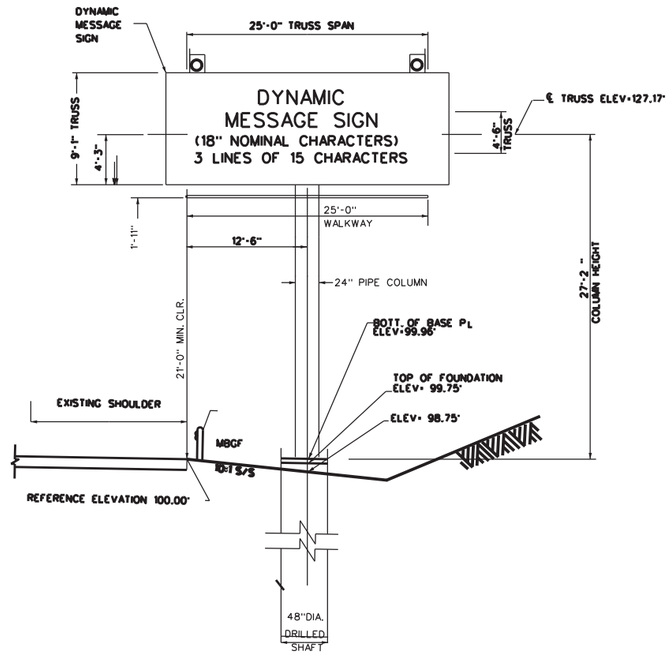
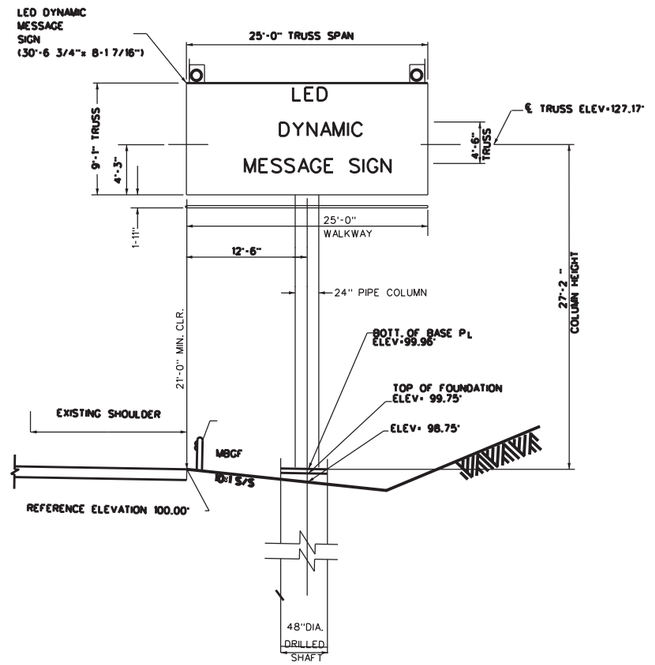
	HOU	HARRIS		82



EXISTING DYNAMIC MESSAGE SIGN
AND STRUCTURE
(TYPICAL)



PROPOSED LED DYNAMIC MESSAGE SIGN
MOUNTED ON EXISTING STRUCTURE
(TYPICAL)

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

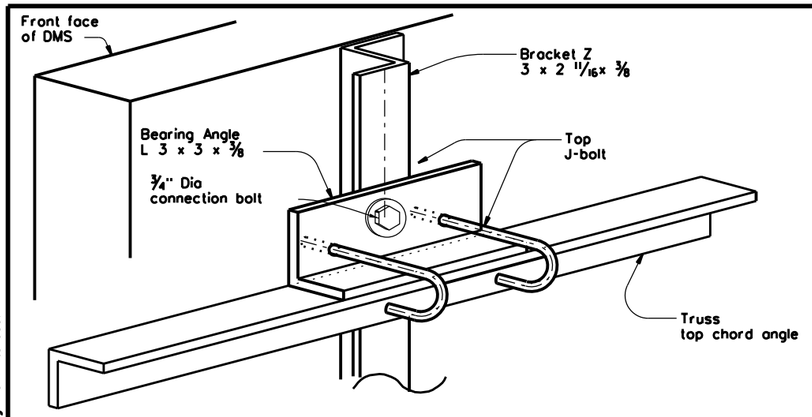
Texas Department of Transportation

IH- 10 / IH -45 / IH- 610

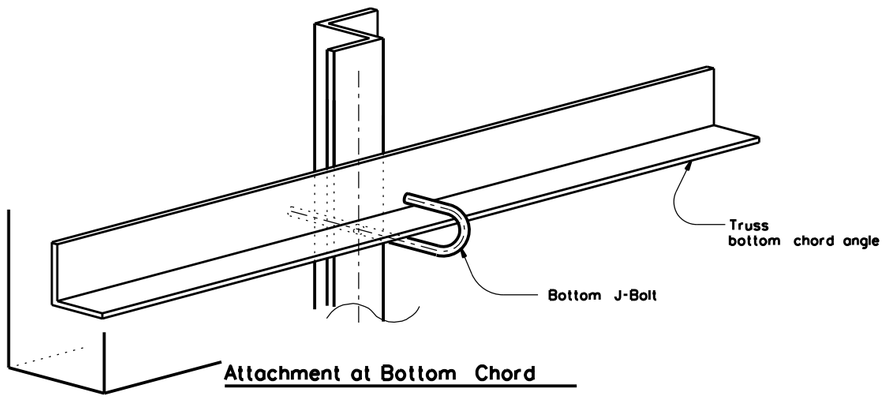
SIGN
SUPPORT
ELEVATIONS

SHEET 01 OF 01

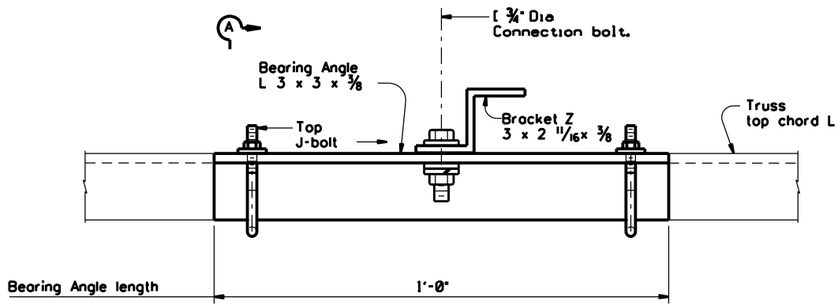
CONT	SECT	JOB	HIGHWAY
0912	00	700	ETC
DIST	COUNTY		SHEET NO.
HOU	HARRIS		83



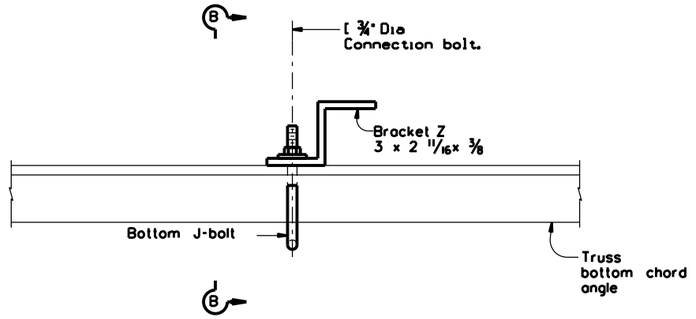
Attachment at Top Chord
(Showing Chord Angle 3")



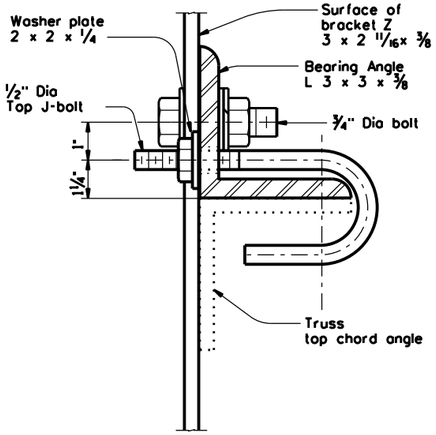
Attachment at Bottom Chord
ISOMETRIC VIEW



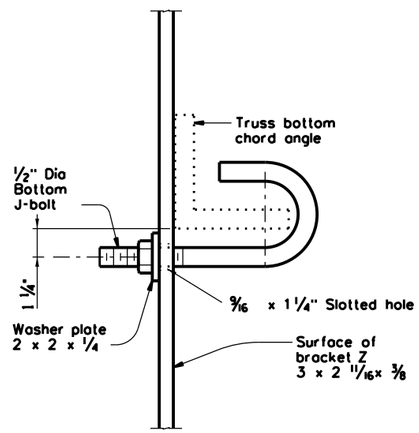
Attachment at Top Chord
(Showing Chord Angle 3")



Attachment at Bottom Chord
PLAN VIEW



SECTION A-A



SECTION B-B

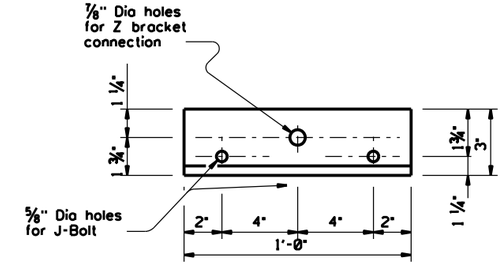
GENERAL NOTES:

1. Application of the mounting detailed on Sheet 1 of 3 is limited to a dynamic message sign (DMS) attachment that is not in conflict with the truss connection bolts at the point(s) of attachment. The overhead sign structure must have adequate capacity to support the DMS. A determination of adequacy shall be made prior to attaching the DMS supports to the truss.

2. Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. The Design Sustained Wind Velocity is 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3600 lbs and a design Effective Projected Area (EPA) of 441 sq ft, with the EPA based on a DMS nominal width of 30.5 feet and nominal depth of 8.25 feet plus four top and bottom 1'-8" square flashing beacons. The EPA includes drag coefficients of 1.7 (applied to sign area) and 1.2 (applied to flashing beacon area). A horizontal eccentricity of 1.0 ft from the face of the truss to the center of gravity of the DMS for attachment of DMS is assumed. An even number of Z brackets, spaced at 5 ft max., is assumed to transfer forces through the connection.

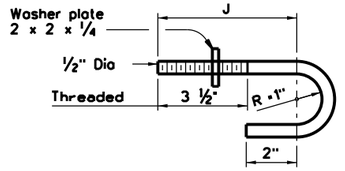
3. All structural steel shall conform to ASTM A36, A572 Gr 50 or A588. Connection bolts shall conform to ASTM A325 or A449. Each connection bolt shall be provided with 1 heavy hex nut, 2 flat washers, and 1 lock washer. J bolts and washer plate both shall be Type 304 stainless steel, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. All parts except stainless steel shall be galvanized.

4. Contractor shall verify applicable field dimensions before fabrication.



BEARING ANGLE 3 x 3 x 3/8

Chord Angle	J
3", 3 1/2", 4"	5 1/2"
5" and 6"	7 1/2"



TOP & BOTTOM J-BOLT

SHEET 1 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS (NON BUILD-UP)

DMS(TM-1)-16

FILE: dms-tm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
© TxDOT June 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	ETC
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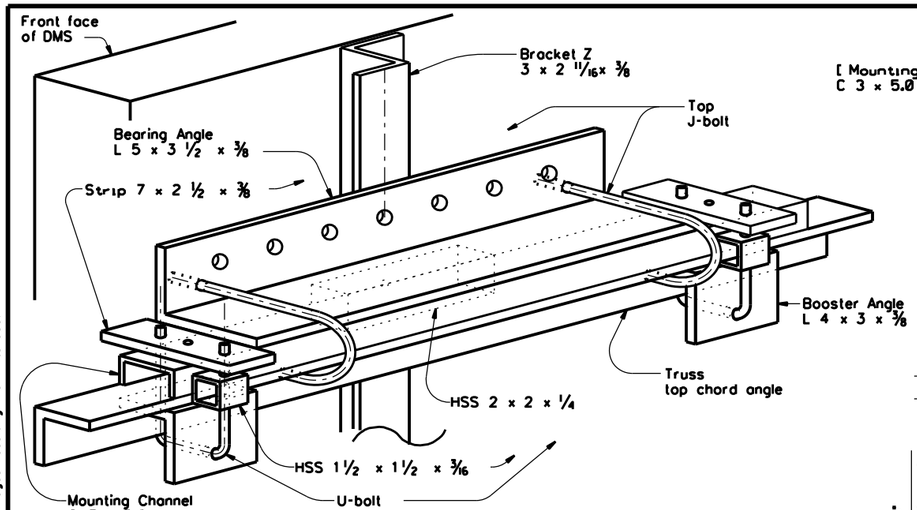
	HOU	HARRIS		84

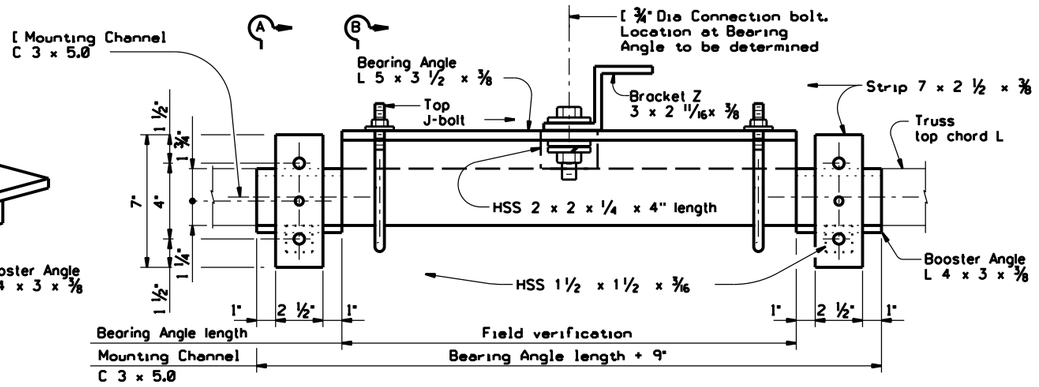
29C

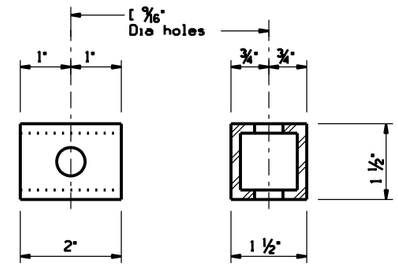
DATE: $DATE$
FILE: $FILE$
$TIME$



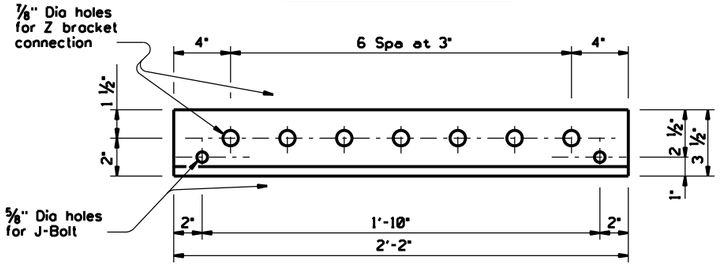
Built-up Attachment at Top Chord

(Showing Chord Angle 3")

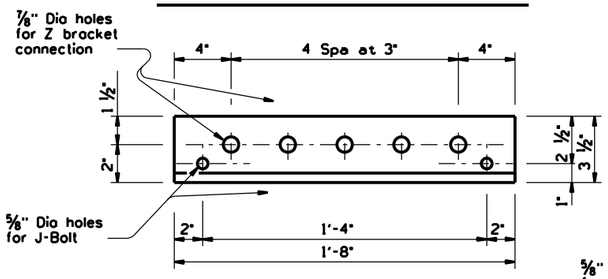




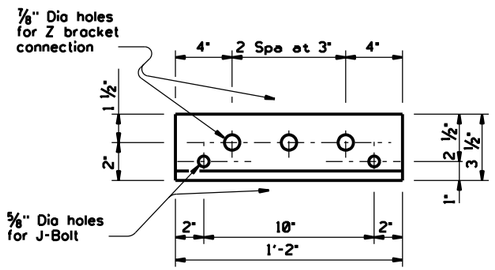
ISOMETRIC VIEW



BEARING ANGLE 5 x 3 1/2 x 3/8



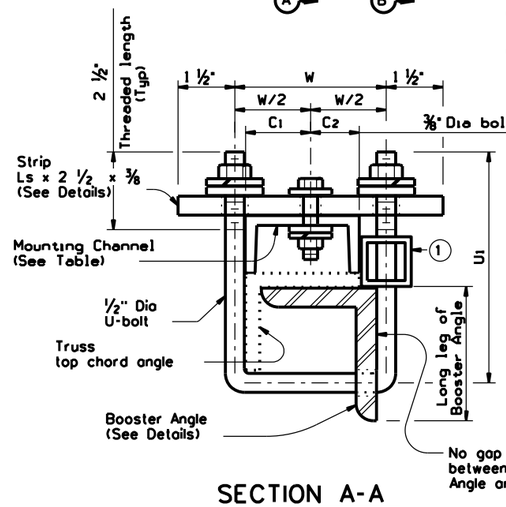
BEARING ANGLE 5 x 3 1/2 x 3/8



BEARING ANGLE 5 x 3 1/2 x 3/8

PLAN VIEW (AT TOP CHORD)

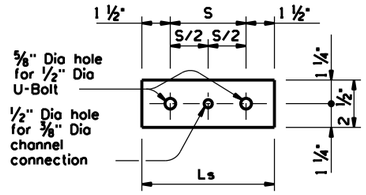
(Showing Chord Angle 3")



SECTION A-A

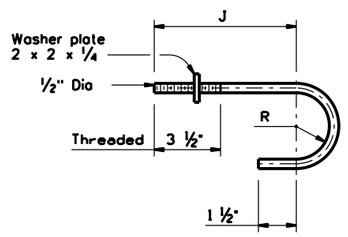
(Showing Chord Angle 3",4",5" & 6")

Chord Angle	U1	W	C1	C2	Mounting Channel
3"	7"	4"	1 3/4"	1 1/4"	C3 x 5.0
4"	8"	5"	2 1/4"	1 3/4"	C4 x 7.25
5"	9"	6"	2 3/4"	2 1/4"	C5 x 9.0
6"	10 1/2"	7"	3 1/4"	2 3/4"	C6 x 13



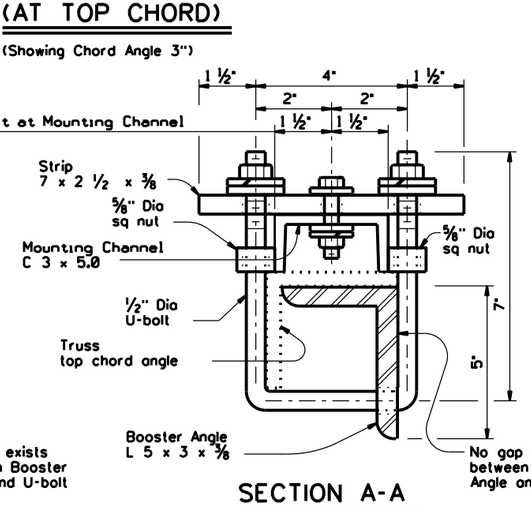
Strip Ls x 2 1/2 x 3/8

Chord Angle	S	Ls
3"	4"	7"
3 1/2"	4"	7"
4"	5"	8"
5"	6"	9"
6"	7"	10"



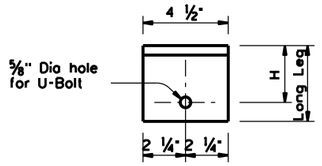
TOP J-BOLT

Chord Angle	J	R
3 & 3 1/2"	7"	1 3/4"
4 & 5"	8"	2"
6"	9"	2 1/4"



SECTION A-A

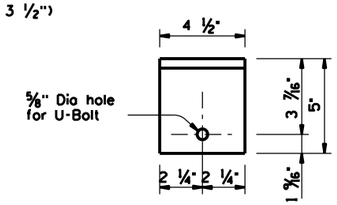
(Showing Chord Angle 3 1/2")



BOOSTER ANGLE

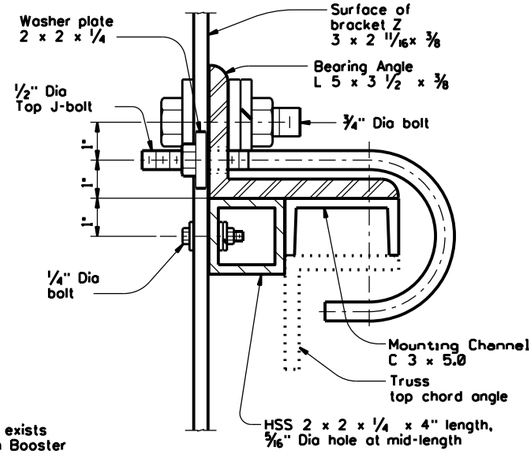
(For Chord Angle 3",4",5" and 6")

Chord Angle	Booster Angle	H
3"	4 x 3 x 3/8	3"
4"	5 x 3 1/2 x 3/8	3 13/16"
5"	6 x 4 x 3/8	4 13/16"
6"	7 x 4 x 3/8	5 5/8"



BOOSTER ANGLE 5 x 3 x 3/8

(For Chord Angle 3 1/2")



SECTION B-B

SHEET 2 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS (WITH BUILD-UP)

DMS(TM-2)-16

FILE: dms-tm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
© TxDOT JUNE 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	ETC
	DIST	COUNTY		SHEET NO.
	HOU	HARRIS		85

29D

DATE: $DATE$
FILE: $FILE$
$TIME$

DATE: $DATE$
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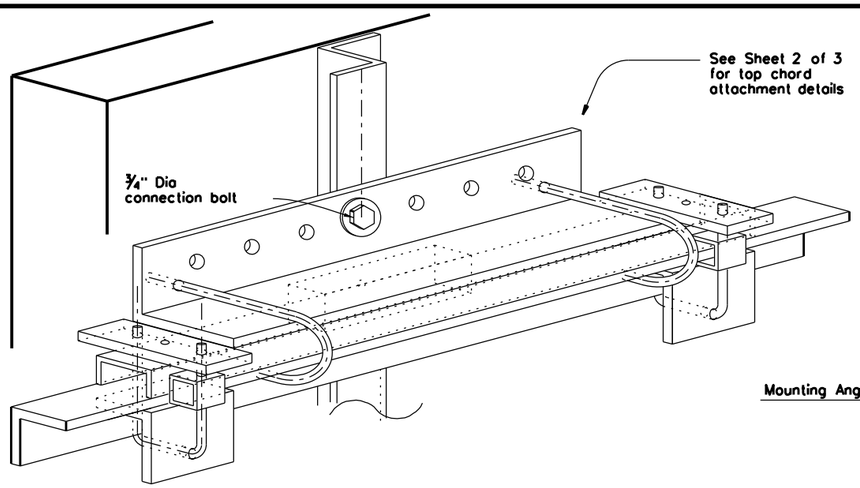
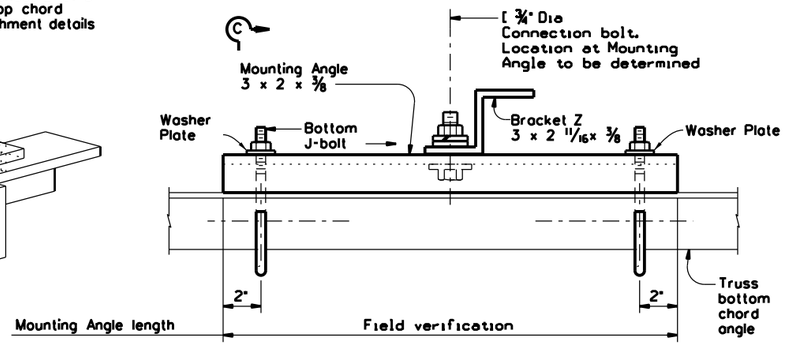
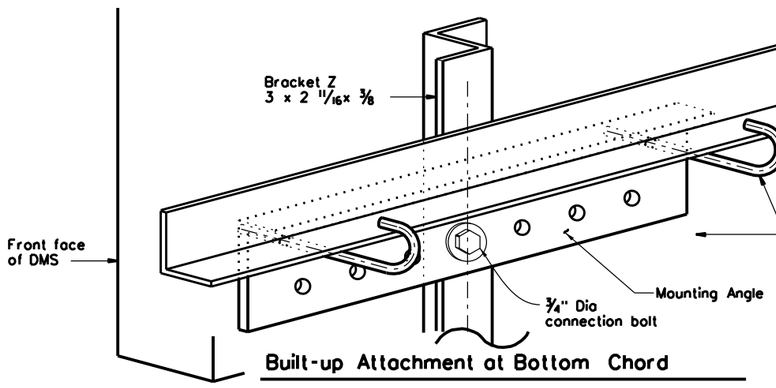


Built-up Attachment at Top Chord

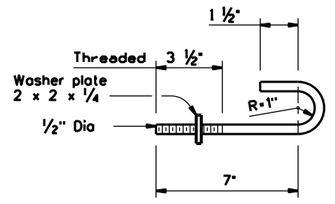




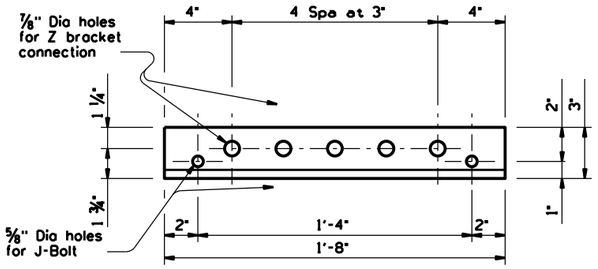
Built-up Attachment at Bottom Chord

ISOMETRIC VIEW

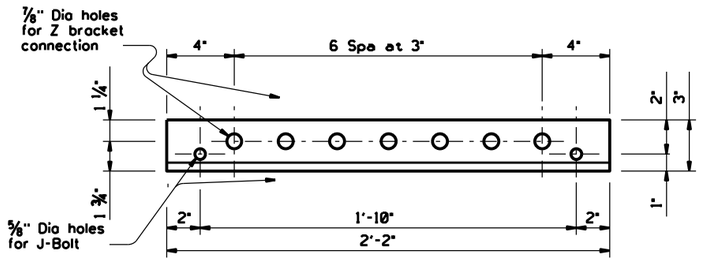
PLAN VIEW
(AT BOTTOM CHORD)



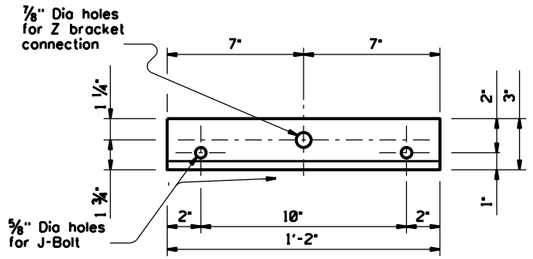
BOTTOM J-BOLT



MOUNTING ANGLE 3 x 2 x ⅜



MOUNTING ANGLE 3 x 2 x ⅜



MOUNTING ANGLE 3 x 2 x ⅜

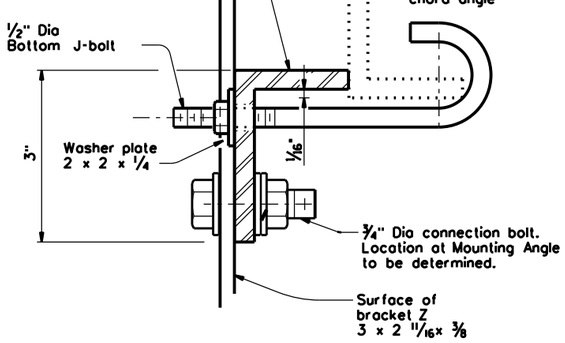
GENERAL NOTES:

1. Application of the built-up detailed on Sheet 2 and 3 of 3 is limited to the dynamic message sign (DMS) attachment which is in conflict with the truss connection bolts at the point(s) of attachment. The overhead sign structure must have adequate capacity to support the DMS. A determination of adequacy shall be made prior to attaching the DMS supports to the truss.

2. Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Revisions thereto. The Design Sustained Wind Velocity is 100 mph with a gust factor of 1.3. Connections are designed for a DMS weight of 3600 lbs and a design Effective Projected Area (EPA) of 441 sq ft, with the EPA based on a DMS nominal width of 30.5 feet and nominal depth of 8.25 feet plus four top and bottom 1'-8" square flashing beacons. The EPA includes drag coefficients of 1.7 (applied to sign area) and 1.2 (applied to flashing beacon area). A horizontal eccentricity of 1.0 ft from the face of the truss to the center of gravity of the DMS for attachment of DMS is assumed. An even number of Z brackets, spaced at 5 ft max., is assumed to transfer forces through the connection.

3. All structural steel shall conform to ASTM A36, A572 Gr 50 or A588. Connection bolts shall conform to ASTM A325 or A449. Each connection bolt shall be provided with 1 heavy hex nut, 2 flat washers, and 1 lock washer. U bolts shall conform to ASTM A307 with 2 hex nuts, 2 flat washers and 2 lock washers. Hollow structural section (HSS) shall conform to ASTM A500, A501, or A847. J bolts and washer plate both shall be Type 304 stainless steel, with bolt minimum yield strength of 50 ksi and an elongation of 16 percent in 2 inches. All parts, except stainless steel shall be galvanized.

4. Contractor shall verify applicable field dimensions before fabrication. Various lengths of bearing and mounting angle are provided for suitable mounting. Contractor shall determine the proper bearing and mounting angle length, and the connection along the length at Z bracket to accommodate J-bolt hook. Contractor may substitute HSS for the mounting channel as long as the HSS has equal or greater thickness at the mounting channel. Limit HSS height to achieved mounting clearance.



SECTION C-C

SHEET 3 OF 3

Texas Department of Transportation

Traffic Operations Division Standard

DMS-TO-TRUSS MOUNTING AT OVERHEAD SIGN SUPPORTS (WITH BUILD-UP)

DMS(TM-3)-16

FILE: dms-tm-16.dgn	DN: TxDOT	CK:	DW: TxDOT	CK:
©TxDOT JUNE 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	ETC
	DIST	COUNTY		SHEET NO.
	HOU	HARRIS		86

29E

SITE DESCRIPTION

PROJECT LIMITS: VARIOUS LOCATIONS

PROJECT DESCRIPTION: DYNAMIC MESSAGE SIGN UPGRADE

MAJOR SOIL DISTURBING ACTIVITIES: NOT APPLICABLE

TOTAL PROJECT AREA: NOT APPLICABLE

TOTAL AREA TO BE DISTURBED: NOT APPLICABLE

WEIGHTED RUNOFF COEFFICIENT:
(AFTER CONSTRUCTION): NOT APPLICABLE

EXISTING CONDITION OF SOIL & VEGETATIVE
COVER AND % OF EXISTING VEGETATIVE COVER: NOT APPLICABLE

NAME OF RECEIVING WATERS: NOT APPLICABLE

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

____ TEMPORARY SEEDING
____ PERMANENT PLANTING, SODDING, OR SEEDING
____ MULCHING
____ SOIL RETENTION BLANKET
____ BUFFER ZONES
____ PRESERVATION OF NATURAL RESOURCES

OTHER: SEDIMENT CONTROL FENCE

STRUCTURAL PRACTICES:

_X_ SILT FENCES
____ HAY BALES
____ ROCK BERMS
____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
____ DIVERSION DIKE AND SWALE COMBINATIONS
____ PIPE SLOPE DRAINS
____ PAVED FLUMES
____ ROCK BEDDING AT CONSTRUCTION EXIT
____ TIMBER MATTING AT CONSTRUCTION EXIT
____ CHANNEL LINERS
____ SEDIMENT TRAPS
____ SEDIMENT BASINS
____ STORM INLET SEDIMENT TRAP
____ STONE OUTLET STRUCTURES
____ CURBS AND GUTTERS
____ STORM SEWERS
____ VELOCITY CONTROL DEVICES
____ EROSION CONTROL LOGS

OTHER: ____

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES: ____

NOT APPLICABLE

STORM WATER MANAGEMENT: NOT APPLICABLE

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The area adjacent to creeks and drainageways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: All inspections will be performed by a TxDOT inspector per one of the options below as directed by the Area Engineer
1. At least every 7 calendar days
2. At least every 14 days or after 0.5 inches or more of rainfall
An inspection and maintenance report should be made for each inspection. Based on the inspection results, the controls shall be revised according to the inspection report.

WASTE MATERIALS: The dumpster used to store all waste material will meet all state and local city solid waste management regulations. All trash and construction debris will be deposited in the dumpster. The dumpster will be emptied as necessary or as required by local regulation and the trash will be hauled to a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): In the event of a spill which may be considered hazardous, the Houston District Safety Office shall be contacted immediately at 713-802-5962.

SANITARY WASTE: ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NECESSARY OR AS REQUIRED BY LOCAL REGULATIONS BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

OFFSITE VEHICLE TRACKING:

____ HAUL ROADS DAMPENED FOR DUST CONTROL
____ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
____ EXCESS DIRT ON ROAD REMOVED DAILY
____ STABILIZED CONSTRUCTION ENTRANCE

OTHER: NOT APPLICABLE

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the sediment that may enter receiving waterways. Disposal areas shall not be located in any waterway, waterbody or streambed. Construction staging areas and vehicle maintenance areas shall be constructed by the contractor in a manner which minimizes the runoff of all pollutants. All waterways shall be cleared as soon as practical of temporary embankments, temporary bridges, matting, falsework, piling, debris, and other obstructions placed during construction operations that are not part of the finished work.

STATE OF TEXAS
KENNETH PARADOWSKI
97040
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by Kenneth Paradowski P.E. 97040, on

January 24 , 2024

Kenneth Paradowski, P.E.

Texas Department of Transportation
Houston District

TxDOT STORM WATER POLLUTION PREVENTION PLAN

SWP3

FILE: STDG1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
©TxDOT JANUARY 2007	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS	HOU	6		87
9/2010 INSPECTION NOTE 9/2013 INSPECTION NOTE 11/2013 SB39 TO SWP3 03/2015 2014 SPECS	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	HARRIS	0912	00	700	ETC

STD G-1

I. STORMWATER POLLUTION PREVENTION

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit is required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506. Refer to the TxDOT SWP3 Summary Sheets, SWP3 Binder Template, and Form 2118.

No Additional Comments

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS

United States Army Corps of Engineers (USACE) Permit is required for filling, dredging, excavating or other work in water bodies, rivers, creeks, streams, wetlands or wet areas. The Contractor must adhere to all of the terms and general conditions associated with the following permit(s). If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Army Corps (USACE) Permit Required

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) without a Pre-Construction Notification (PCN). Project specific permit was not issued by USACE, therefore is not in the plan set. The USACE general conditions are in the “General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Nationwide Permit (NWP) with a Pre-Construction Notification (PCN). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set. The USACE general conditions are in the “General Notes."

☐ Work is authorized by the United States Army Corps of Engineers (USACE) under a Individual Permit (IP). The project specific permit issued by the United States Army Corps of Engineers (USACE) is included in the plan set.

☐ Work would be authorized by the United States Army Corps of Engineers (USACE) permit. The project specific permit issued by the USACE will be provided to the contractor.

United States Coast Guard (USCG) Permit is required for projects that involve the construction or modification (including changes to lighting) of a bridge or causeway across a water body determined to be navigable by the United States Coast Guard (USCG) under Section 9 of the Rivers and Harbors Act. If additional work not represented in the plans is required, contact the Engineer immediately.

☒ No United States Coast Guard (USCG) Coordination Required

☐ United States Coast Guard (USCG) Permit

☐ United States Coast Guard (USCG) Exemption

No Additional Comments

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the area and contact the Engineer immediately.

No Additional Comments

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Refer to TxDOT Standard Specifications in order to comply with requirements for invasive species, beneficial landscaping and tree/brush removal.

No Additional Comments

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS

If any of the listed species below are observed, cease work in the area, do not disturb species or habitat and contact the Engineer immediately.

The work may not remove active nests (from bridges, structures, or vegetation adjacent to the roadway, etc.) during nesting season (February 15 to October 1). If removal of structures or vegetation is necessary during the nesting season, the Contractor shall conduct a bird survey no more than 3 days in advance of the clearing/demolish start date. All bird surveys shall be conducted by a Field Biologist and adhere to the guidance document “Avoiding Migratory Birds and Handling Potential Violations” found in the TxDOT Environmental Compliance Toolkits at the time of the survey. (See below for Field Biologist and Ornithologist qualifications)

No Additional Comments

Field Biologist, Ornithologist – a field biologist is defined as an individual qualified to perform field investigations, presence/absence surveys and habitat surveys for protected avian species or species of concern. A mandatory bachelor’s degree in biology or a related science is required. At a minimum, the Field Biologist, Ornithologist, shall have completed and reported a minimum of three presence/absence and habitat surveys for protected avian species in the past five years. A minimum of three projects must have been conducted in Texas. Surveys shall have been performed for documentation of species in accordance with a protocol approved by USFWS or TPWD, or following generally accepted methodologies.

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

Refer to TxDOT Standard Specifications in the event potentially contaminated materials are observed, such as dead or distressed vegetation, trash disposal areas, drums, canisters, barrels, leaching or seepage of substances, unusual smells or odors, or stained soil, cease work in the area and contact the Engineer immediately.

No Additional Comments

VII. OTHER ENVIRONMENTAL ISSUES

Comments:

DATE: Oct 30, 2023
FILE:

Version 2.2

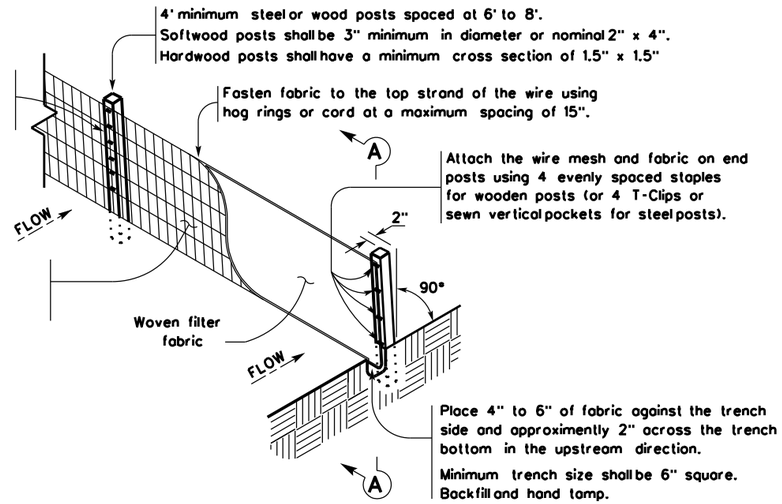
Texas Department of Transportation

TxDOT Houston District

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

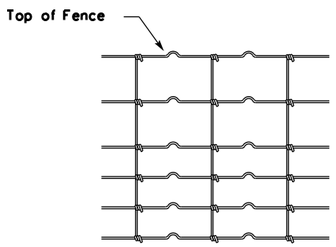
EPIC

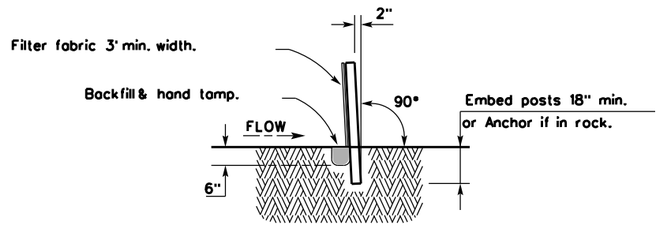
FILE: EPIC Sheet.dgn	DN:	CK:	DW:	CK:
© TxDOT: March 2017	CONT	SECT	JOB	HIGHWAY
REVISIONS	0912	00	700	VA
UPDATED section V. text and added definition (10/17) ADDED USCG and USACE notes in Section VII (04/18)	DIST	COUNTY		SHEET NO.
	12	Harris		88



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

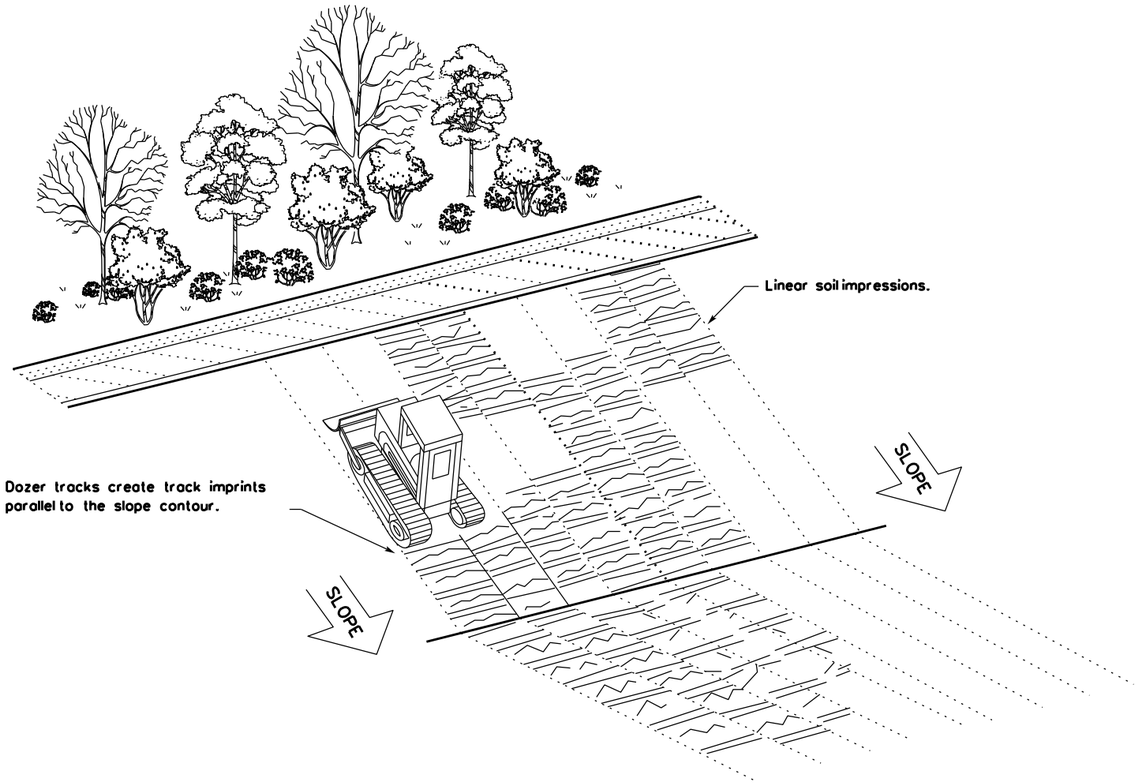
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB			HIGHWAY	
REVISIONS	0912	00	700			ETC	
	DIST	COUNTY					SHEET NO.
	HOU	HARRIS					89