

90% SUBMISSION

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT.
CSJ: 0902-90-119
CSJ: 0902-90-192
CITY PROJECT NO.: 101572

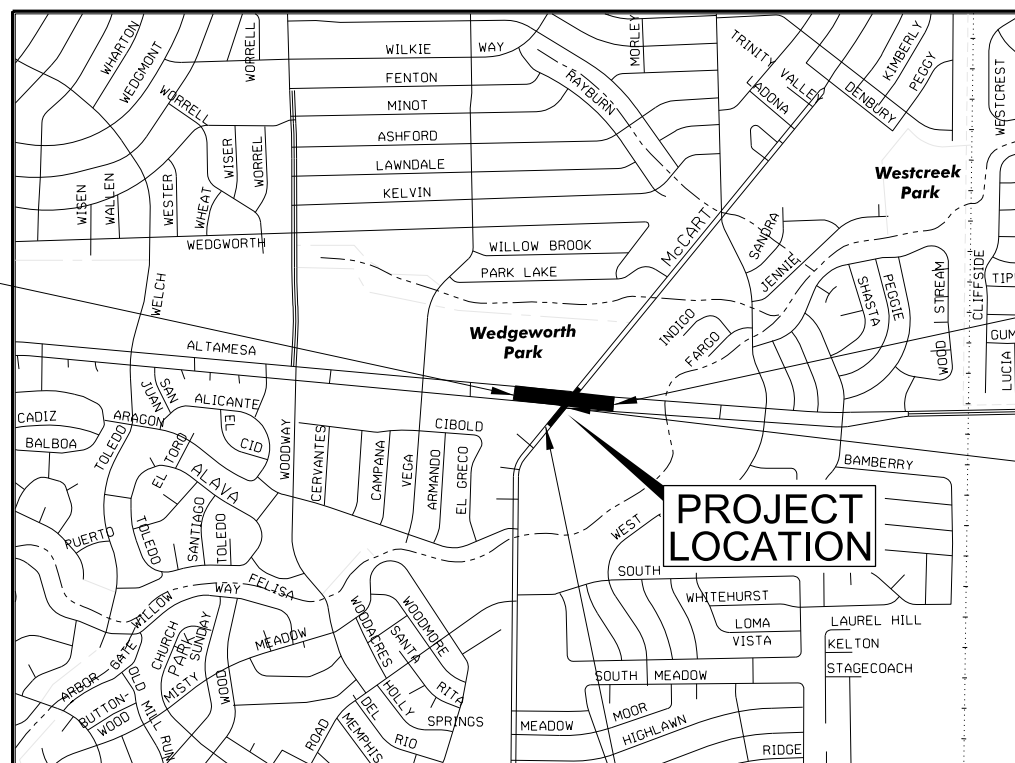
NET LENGTH OF PROJECT= 0.100 MI.

McCART AVENUE AT ALTAMESA BOULEVARD
FORT WORTH

LIMITS: INTERSECTION OF McCART AND ALTAMESA

FOR THE CONSTRUCTION OF TRAFFIC SIGNAL INTERSECTION

WORK CONSISTING OF INSTALLATION OF A FULL TRAFFIC-ACTUATED TRAFFIC SIGNAL,
PAVING, GRADING, SIGNING AND PAVEMENT MARKINGS



FHWA TEXAS DIVISION	STATE TEXAS	SHEET NO. 1
DISTRICT FTW	COUNTY TARRANT	
CONTROL 0902 0902	SECTION 90 90	JOB 119 192
HIGHWAY NO. McCART		

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS COMPLETED & ACCEPTED: _____

FINAL CONTRACT COST: \$ _____

CONTRACTOR : _____

DESIGN CLASSIFICATION:
DESIGN SPEED: McCART = 35 MPH
ALTAMESA = 40 MPH
TERRAIN: LEVEL



90% REVIEW SUBMITTAL

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UNDER AUTHORITY OF ERIC A. CAHALES P.E. 90103
ON MAY 4, 2021. IT IS NOT TO BE USED FOR
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SUBMITTED FOR LETTING:

DIRECTOR, TRANSPORTATION OPERATIONS, DISTRICT

RECOMMENDED FOR LETTING:

DISTRICT DIRECTOR OF TRANSPORTATION
PLANNING AND DEVELOPMENT

RECOMMENDED FOR LETTING:

DISTRICT ENGINEER

APPROVED FOR LETTING:

DIRECTOR, TRAFFIC OPERATIONS DIVISION

CONCURRENCE:

DIRECTOR OF TRANSPORTATION & PUBLIC WORKS
CITY OF FORT WORTH

CONCURRENCE:

CITY MANAGER
CITY OF FORT WORTH

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

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SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF
TRANSPORTATION, JUNE 1, 2004 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, MARCH 1994)

- CONVENTIONAL SIGNS
- STATE OR NATIONAL LINE
- CITY OR VILLAGE LINE
- COUNTY LINE
- BASE OR SURVEY LINE
- RIGHT OF WAY LINE
- RIGHT OF WAY MARKERS
- FENCE LINE
- RAILROAD
- TRAVELLED WAY
- CULVERT OR BRIDGE
- POWER LINE
- TELEGRAPH OR TELEPHONE

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SANITARY SEWER		
MANHOLE		
CONTROL POINT		
TEMP. BENCH MARK		
FIRE HYDRANT		
PROPERTY LINE AND R.O.W.		
BASELINE STATIONING		
SIDEWALK		
UNDERGROUND ELECTRIC		
UNDERGROUND CABLE		
UNDERGROUND TELEPHONE		
GAS MAIN		
OVERHEAD ELECTRIC		
WATER METER		
GAS METER		
BURIED TELE. CABLE OR BOX		
YARD LIGHT		
MAIL BOX		
SIGN		
POWER POLE		
WIRE FENCE		
CHAIN LINK FENCE		
WOODEN FENCE		
TREES AND SHRUBS		
TREES REMOVAL		

* THE STANDARD SHEETS SPECIFICALLY IDENTIFIED IN THIS INDEX OF SHEETS, HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

ERIC A. CANALES, PE _____, P.E. _____ DATE _____

** THE STANDARD SHEETS SPECIFICALLY IDENTIFIED IN THIS INDEX OF SHEETS, HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

ZEE KEBEDE, PE, PTOE _____, P.E. _____ DATE _____

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SHEET INDEX & LEGEND

REVISIONS	FED.RD. DIV.NO.	STATE AID PROJECT NO.		SHEET NO.
		6	SEE TITLE SHEET	
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	HIGHWAY NO.
	0902	90	119	McCART
	0902	90	192	

horizontal Alignment Name: ALTAMESA

Element: Linear	STATION	NORTHING	EASTING
POB ()	0+00.00	6921369.05	2315516.37
PI ()	15+63.62	6921213.86	2317072.28
Tangent Direction:	S 84°18'14" E		
Tangent Length:	1563.62		

Element: Linear	STATION	NORTHING	EASTING
PI ()	15+63.62	6921213.86	2317072.28
POE ()	29+94.20	6921071.87	2318495.79
Tangent Direction:	S 84°18'14" E		
Tangent Length:	1430.58		

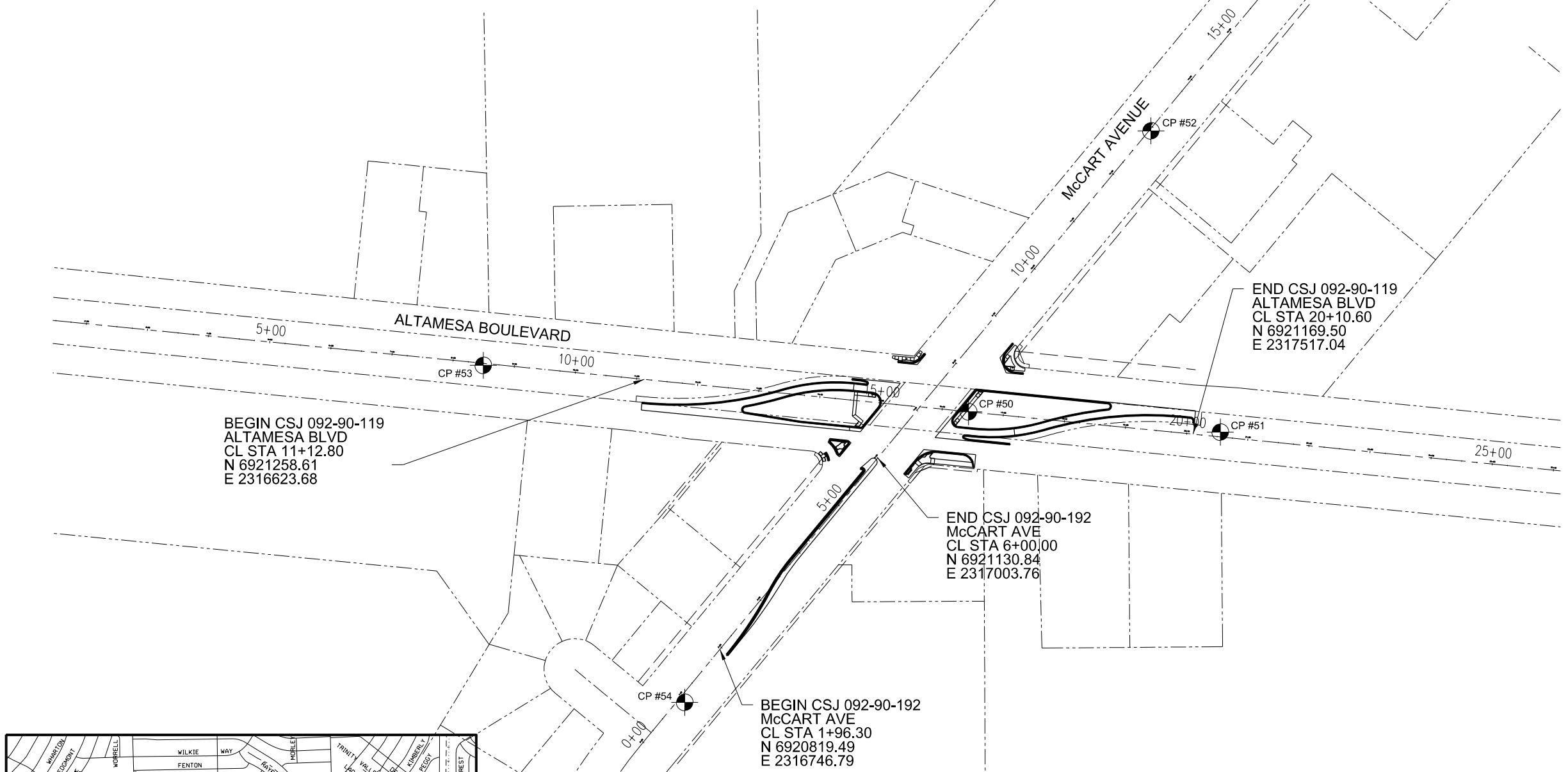
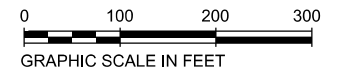
Horizontal Alignment Name: MCCART

Element: Linear	STATION	NORTHING	EASTING
POB ()	0+00.00	6920668.09	2316621.84
PI ()	7+07.64	6921213.86	2317072.28
Tangent Direction:	N 39°32'02" E		
Tangent Length:	707.64		

Element: Linear	STATION	NORTHING	EASTING
PI ()	7+07.64	6921213.86	2317072.28
POE ()	19+58.10	6922175.85	2317871.16
Tangent Direction:	N 39°42'29" E		
Tangent Length:	1250.46		

PROJECT BENCHMARKS

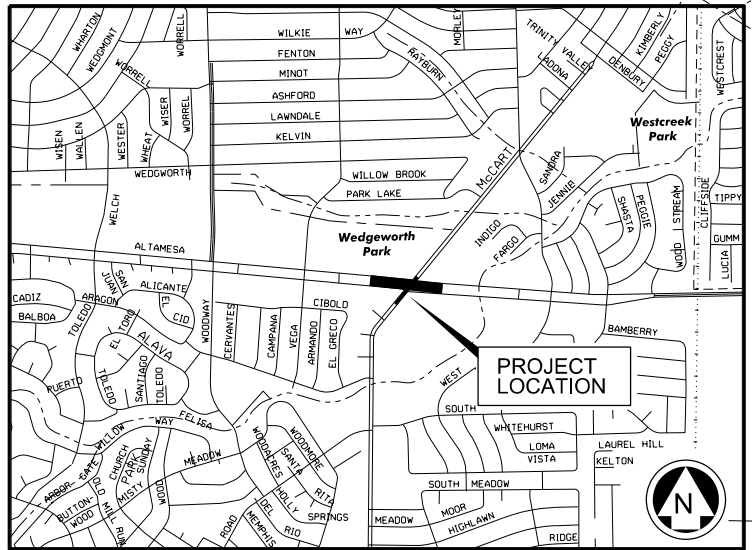
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CP #50 CAPPED IRON ROD SET N 6921186.877 E 2317156.838 EL = 749.04	CP #53 CAPPED IRON ROD SET N 6921270.052 E 2316408.297 EL = 769.59
CP #51 CAPPED IRON ROD SET N 6921134.478 E 2317579.184 EL = 738.81	CP #54 CAPPED IRON ROD N 6920747.072 E 2316690.133 758.90



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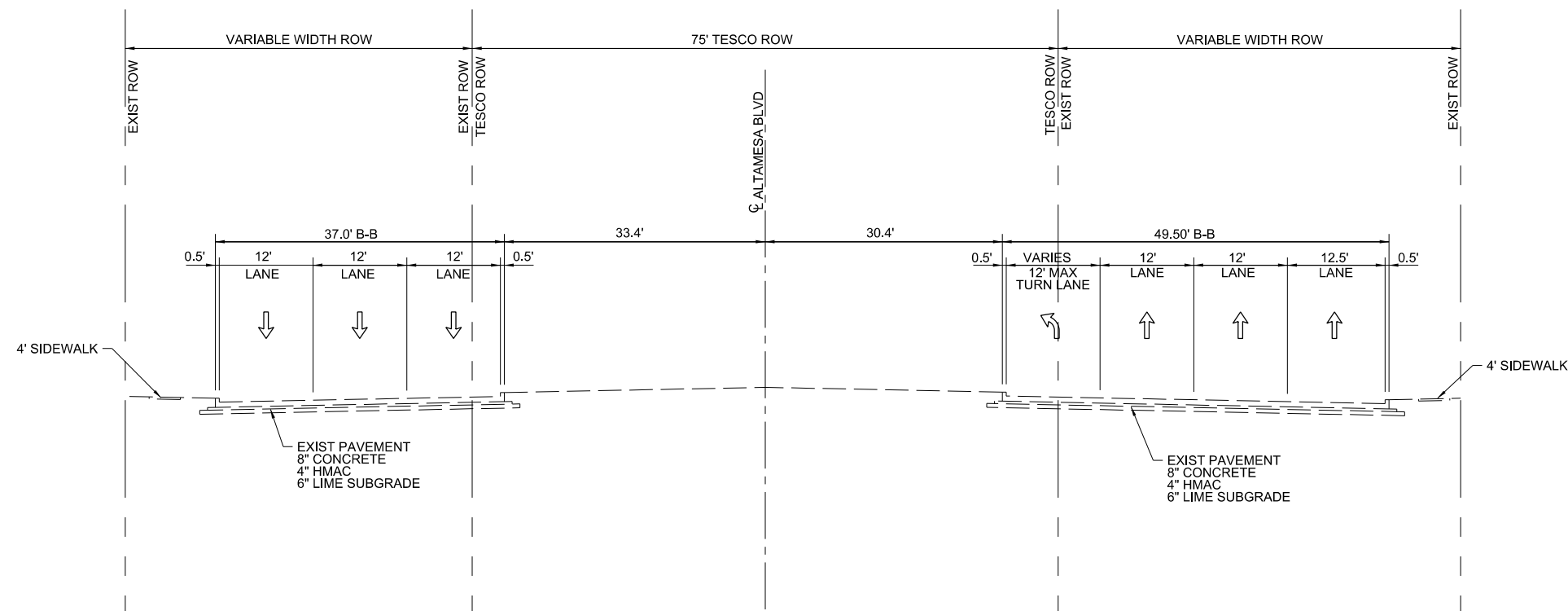
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PROJECT LAYOUT

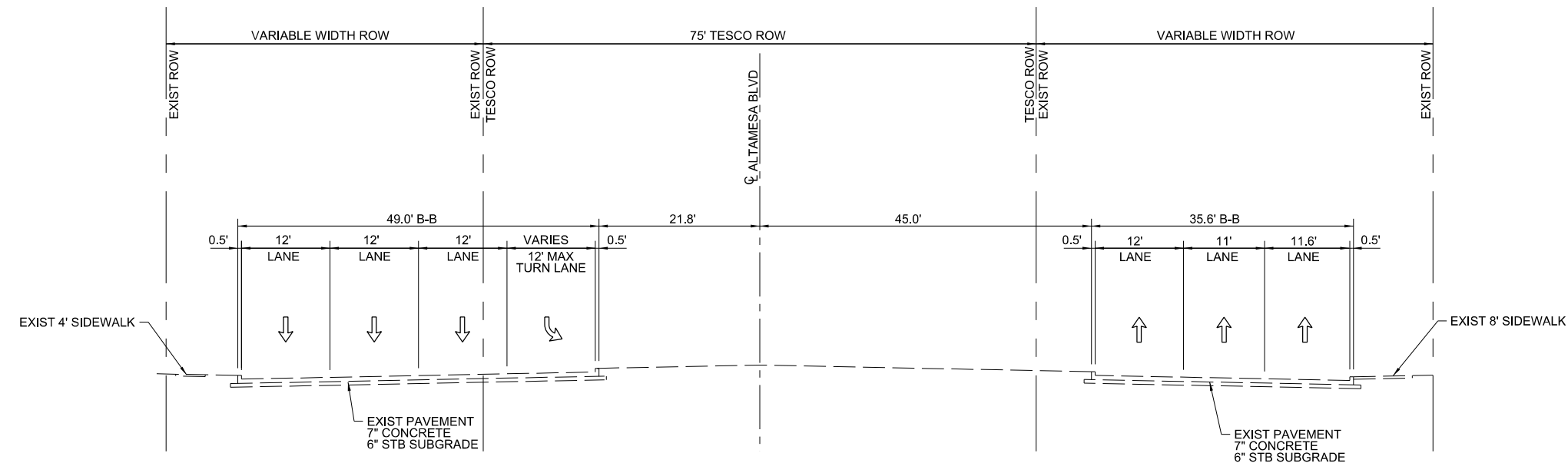
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		6	SEE TITLE SHEET	
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	
	0902	90	119	HIGHWAY NO. MCCART
	0902	90	192	

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ALTAMESA BOULEVARD
STA 11+12.80 TO STA 14+49.09

NOTES:
1. TYPICAL SECTION STATIONS ARE FROM CENTERLINE ALTAMESA BLVD UNLESS OTHERWISE NOTED.



ALTAMESA BOULEVARD
STA 16+94.09 TO STA 20+10.60

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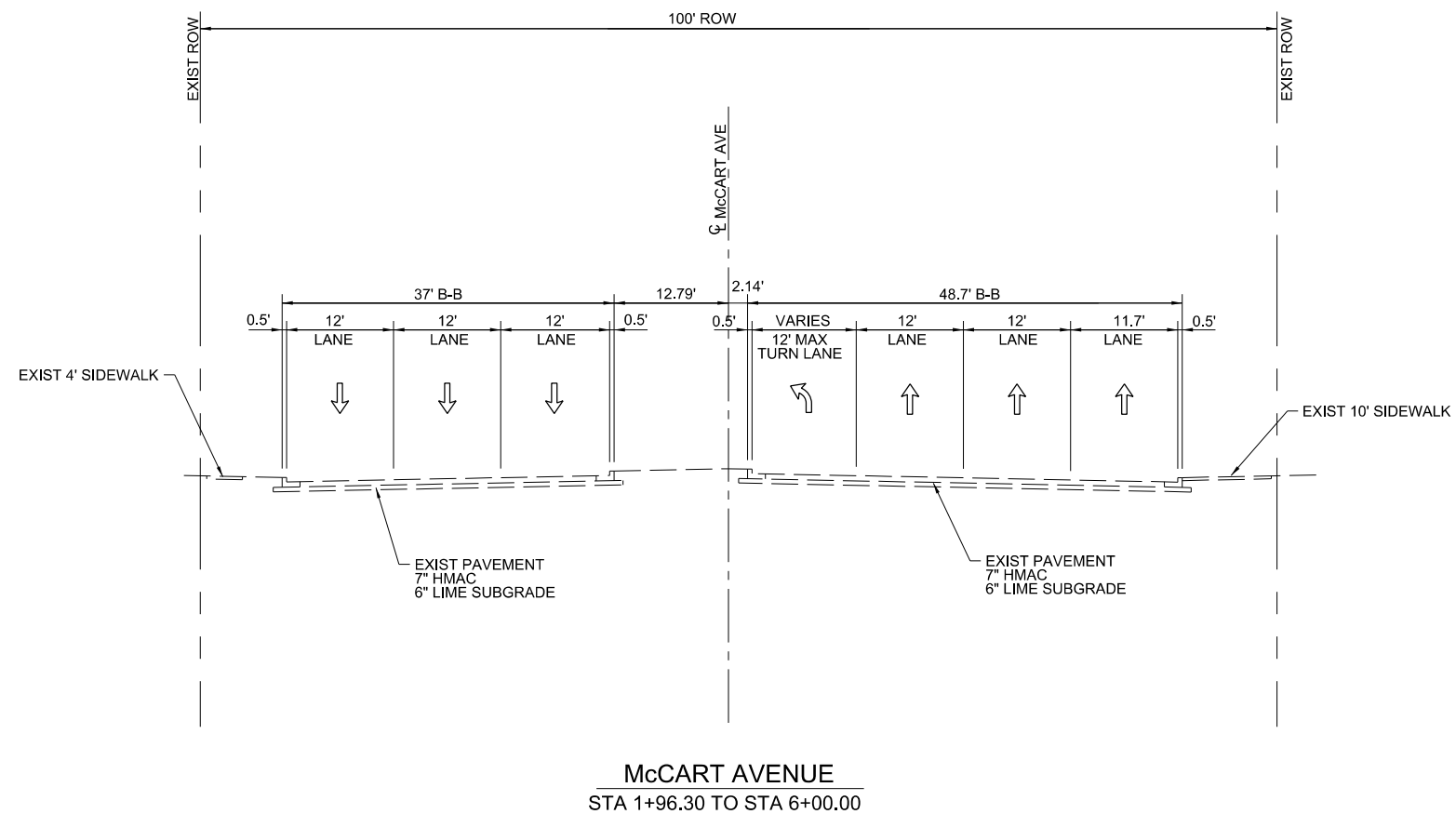
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EXISTING TYPICAL SECTION
ALTAMESA BLVD

REVISIONS	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		5
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	HIGHWAY NO.
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	0902	90	192	

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NOTES:
 1. TYPICAL SECTION STATIONS ARE FROM CENTERLINE McCART AVE UNLESS OTHERWISE NOTED.

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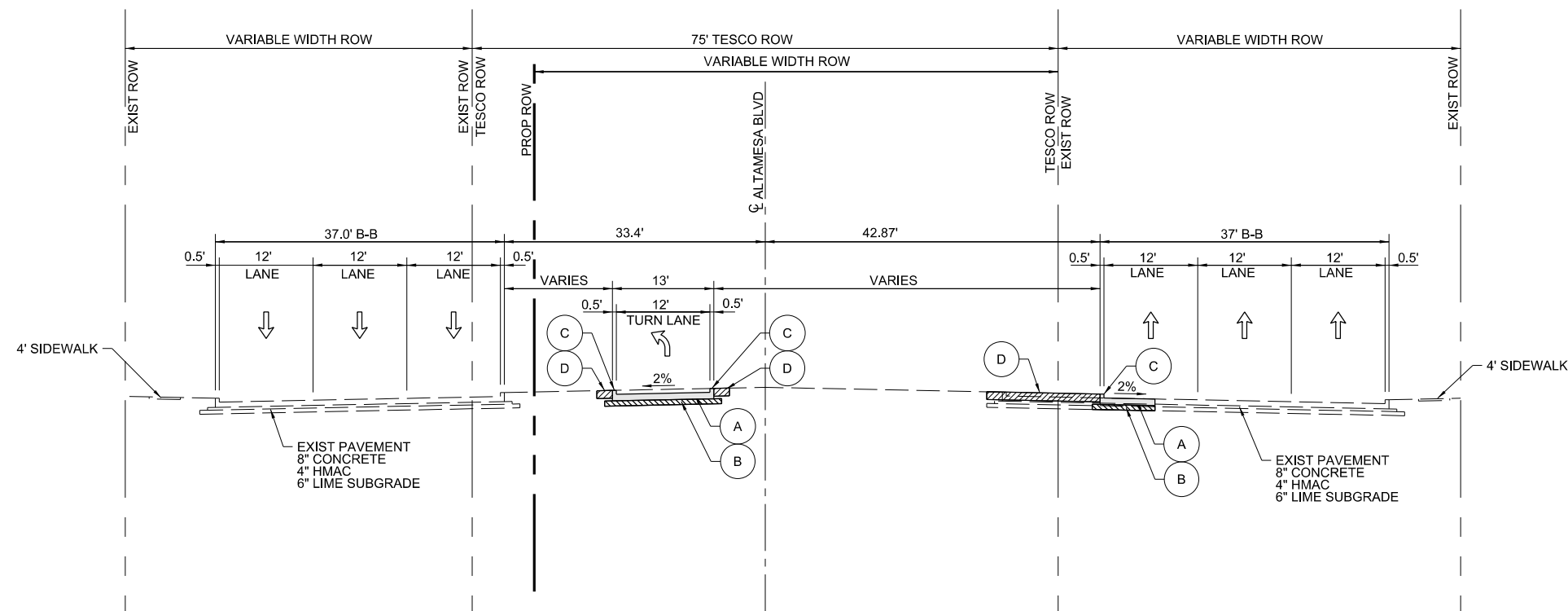
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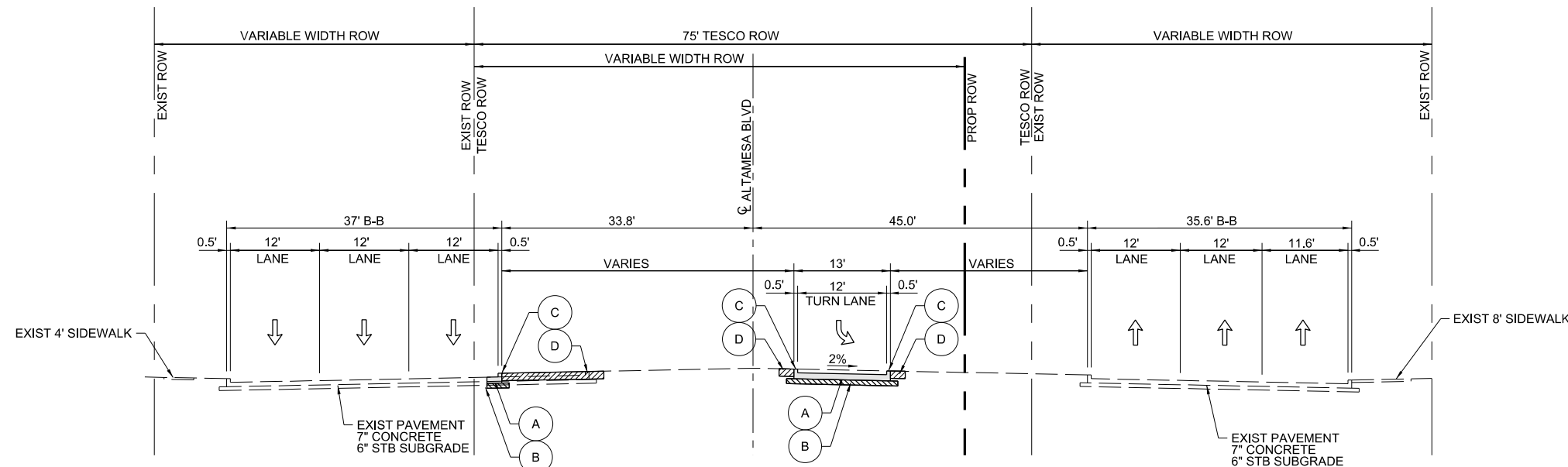
**EXISTING TYPICAL SECTION
 McCART AVE**

REVISIONS	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
		6	SEE TITLE SHEET	
	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	HIGHWAY NO.
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	0902	90	192	

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ALTAMESA BOULEVARD
 STA 11+12.80 TO STA 14+49.09



ALTAMESA BOULEVARD
 STA 16+94.09 TO STA 20+10.60

LEGEND

- (A) CONC PVMT (JOINTED-CPCD) (10")
- (B) LIME STABILIZED SUBGRADE (8")
38 LBS/SY
- (C) CONC CURB (TY II) (6")
- (D) BLOCK SODDING

NOTE:
 CONCRETE PAVEMENT IS TO HAVE
 3600psi 28-DAY MIN. COMPRESSIVE
 STRENGTH WITH NO. 4 BARS SPACED ON
 18-INCH INTERVALS IN BOTH DIRECTIONS.

NOTES:
 1. TYPICAL SECTION STATIONS ARE
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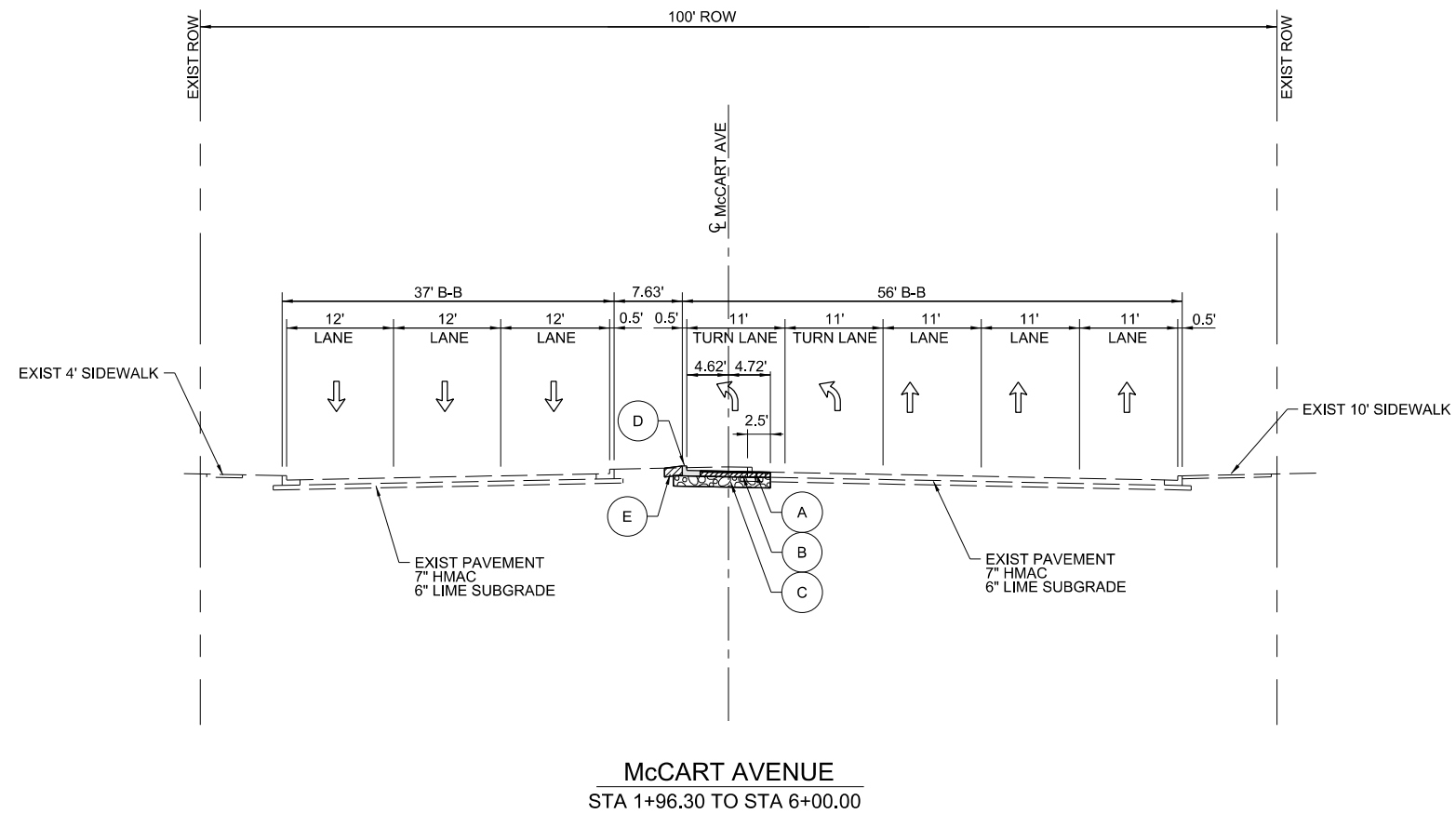
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**PROPOSED TYPICAL SECTIONS
 ALTAMESA BLVD**

	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		7
REVISIONS	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	HIGHWAY NO.
	0902	90	119	McCART
	0902	90	192	

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LEGEND

- (A) HMA TYPE D SURFACE COURSE (1-1/2")
- (B) HMA TYPE B BASE COURSE (6")
- (C) FLEXBASE (14")
- (D) CONC CURB & GUTTER (TY II) (6")
- (E) BLOCK SODDING

NOTES:
 1. TYPICAL SECTION STATIONS ARE FROM CENTERLINE McCART AVE UNLESS OTHERWISE NOTED.

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**PROPOSED TYPICAL SECTION
 McCART AVE**

	FED. RD. DIV. NO.	STATE AID PROJECT NO.		SHEET NO.
	6	SEE TITLE SHEET		8
REVISIONS	STATE	DISTRICT	COUNTY	
	TEXAS	FTW	TARRANT	
	CONTROL	SECTION	JOB	HIGHWAY NO.
	0902	90	119	McCART
	0902	90	192	

Project Number:

Sheet A

County: TARRANT

Control: 0902-90-119
0902-90-192

Highway: McCART AVENUE AT ALTAMESA BOULEVARD

Contractor questions on this project are to be emailed to the following individual(s):

Theresa Poer, P.E. theresa.poer@txdot.gov

Korin Adkins, P.E. korin.adkins@txdot.gov

Contractor questions will be accepted through email, phone, and in person to the above individuals. All contractor questions will be reviewed by the Director. Once a response is developed, it will be posted to TxDOT's Public FTP at the following address:

<https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting Responses/>

All questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

Special Notes:

The TxDOT Signal Shop can be reached at 817-370-3664. Contact the Signal Shop for notification of pre-construction or work order meetings, delivery of equipment, request for electrical inspection, placing signals into flash or turn on, or set up of signal detection.

Provide a qualified technician, approved by the Engineer, on the project site to place the traffic signals in flash or in full operation. A qualified TxDOT signal technician must also be present.

Electronic submittal of shop drawings, working drawings, equipment manuals and product brochures is permitted for this project.

The contractor is responsible for picking up materials furnished by the State. Contact the TxDOT Signal Shop 48 hours in advance of picking up to make arrangements.

No work will be permitted to commence on the road before sunrise or after sunset. Single lane closures, except as otherwise shown in the plans, will be restricted to off-peak hours as defined in the following table:

Peak Hours		Off-Peak Hours	
6 to 9 AM Monday through Friday	4 to 7 PM Monday through Friday	9 AM to 4 PM and	All day Saturday and Sunday

Existing storm sewers and utilities are shown from the best available information. Verify the location of all underground facilities prior to starting work

Project Number:

Sheet B

County: TARRANT

Control: 0902-90-119
0902-90-192

Highway: McCART AVENUE AT ALTAMESA BOULEVARD

For dimensions of right of way not shown on the plans, see right of way map on file at the TxDOT District Office.

Take care that existing curb and curb and gutter is not discolored or damaged during construction operations. In the event of discoloration or damage, clean or repair as directed.

Remove any obstructions to existing drainage due to the contractor's operations, as required, at the Contractor's expense.

Item 5. Control of Work

The locations of all signal related items, pavement markings, signing, etc. are diagrammatic only and may be adjusted to accommodate field conditions or as directed by Engineer.

Item 7. Legal Relations and Responsibilities

No significant traffic generator events identified.

Item 8. Prosecution and Progress.

Working days will be computed and charged in accordance with Section 8.3.1.4, 'Standard Workweek.'

Contractor shall submit Critical Path Method (CPM) schedule in bar chart format in accordance to 8.5.5.2. Submit preliminary schedule in accordance to 8.5.5.2.1. Submit progress schedule in accordance with 8.5.5.2.3. The Estimate will be held if monthly update is not submitted. If the schedule for the work changes in any way, a new schedule is required in accordance with Item 8.5.5.2.3.

The start of work will be delayed 90 calendar days after the authorization date to begin work to allow time for the procurement of signal equipment.

Item 400. Excavation and Backfill for Structures

Drilling, boring, and trenching through rock is subsidiary to the various bid items. No additional compensation will be paid to the contractor for the removal of rock or any other obstruction during excavation, trenching, jacking, boring, or drilling and for any additional equipment, materials, labor, tools, or incidentals required to complete the work.

Project Number:

Sheet C

County: TARRANT

Control: 0902-90-119
0902-90-192

Highway: McCART AVENUE AT ALTAMESA BOULEVARD

Item 416. Drilled Shaft Foundations

Stake foundation as shown on plans. Calculate signal head clearance and report to the Engineer.

Obtain Engineer's approval of location before installing foundation.

Item 421. Hydraulic Cement Concrete

Notify the TxDOT Signal Shop 48 hours in advance of placing concrete. Do not place concrete without an inspector present unless approved.

Contractor personnel performing job-control (QC) testing on concrete must be ACI certified and maintain certification. Provide a copy of all personnel certification papers to the Engineer at the preconstruction meeting. The Engineer may require the Contractor's testers to provide the certification papers upon arrival and before testing at the job site. Certified testers will be required to participate with certified TxDOT personnel annually for slump (Tex-415-A), air content (Tex-416-A), compression testing (Tex-418-A), and capping cylinders (Tex-450-A) to retain their certification on TxDOT projects.

Furnish a hard copy of all testing equipment calibration reports at the preconstruction meeting when non-TxDOT equipment is used to test concrete. Furnish updated reports as equipment is calibrated through the project contract. The calibration frequency will match TxDOT's and will apply for each piece of equipment as follows:

- Slump Cone - Annual
- Air Meter - Every 3 months
- Compression Tester - Annual
- Beam breaker - Annual

The Engineer may allow the use of local commercial laboratories under contract to provide these services. The Commercial Laboratory must fulfill requirements listed above prior to performing any work.

Item 502. Barricades, Signs, and Traffic Handling

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 typically not be foreseen in the project's 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.

General Notes

Sheet C

Project Number:

Sheet D

County: TARRANT

Control: 0902-90-119
0902-90-192

Highway: McCART AVENUE AT ALTAMESA BOULEVARD

Permanent signs may be installed when construction in an area is complete and they will not conflict with the traffic control plan for the remainder of the job.

Existing signs are to remain as long as they do not interfere with construction and they do not conflict with the traffic control plan.

Any sign not detailed in the plans but called for in the layout will be as shown in the current "Standard Highway Sign Designs for Texas".

When traffic is obstructed, arrange warning devices in accordance with the latest edition of the "Texas Manual on Uniform Traffic Control Devices".

Cover or remove any work zone signs when work or condition referenced is not occurring.

Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets. Provide access to all driveways during all phases of construction unless otherwise noted in the plans or as directed.

Item 506. Temporary Erosion, Sedimentation, and Environmental Controls

It is not anticipated that erosion control devices will be needed. The storm water prevention plan (SW3P) for this project will consist of utilizing existing vegetation. However, in the event devices are needed, the SW3P shall consist of the control measures approved by the Department. Depending on the type and amount of work, payment will be handled with the individual pay item listed below or with through an established unique change order item:

Biodegradable Erosion Control Logs Install

Biodegradable Erosion Control Logs Remove

Remove accumulated sediment and replace SW3P controls when the capacity has been reduced by 50% or when the depth of sediment at the control structure exceeds one foot.

Items 530 and 531. Intersections, Driveways and Turnouts, and Sidewalks

The furnishing and installation of the sand cushion in proposed sidewalks, sidewalk ramps, and driveways will not be paid for directly but will be subsidiary to this bid item.

Item 618. Conduit

After installing conduit and pulling conductor, leave a high tensile strength polyester fiber pull tape in the conduit for future use.

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Item 620. Electrical Conductors

Clearly and permanently mark each illumination conductor installed in a signal pole as “ILLUMINATION” where it can be clearly seen from the hand hole. Use plastic zip ties with labeling plate to mark conductor.

Item 624. Ground Boxes

Slack conductors required by Standard Sheet ED(3)-14 will be subsidiary to Item 624.

Concrete removal required for installation of ground boxes will be subsidiary to Item 624.

Ground all junction boxes mounted on bridges and underpasses with a ground rod in the nearest ground box.

Item 628. Electrical Services

Before installing any electrical service, consult with the appropriate utility company before beginning work and verify all metering equipment requirements with the provider have been met. Provide a commercial grade, meter base with by-pass switch if required by the utility company.

Obtain 911 address and EISD from electric utility company. TXDOT will make application to the Electric Utility Company for service.

Item 656. Foundations for Traffic Control Devices

Stake foundations as shown on plans. Obtain Engineer’s approval of location before installing foundation.

For traffic signal controller foundation, use reinforcing bars or deformed Welded Wire Reinforcing (WWR). Provide #3 reinforcing bars spaced at 16” Spaced Center-Center. Provide deformed Welded Wire Reinforcing (WWR) as 6x6-D3xD3. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.

Item 666. Reflectorized Pavement Markings with Retroreflective Requirements

Notify Engineer 48 hours prior to installation of pavement markings.

All testing is waived from Type I Pavement Markings for locations with less than 1000 LF per bid item.

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Item 680. Installation of Highway Traffic Signals

Furnish and install all required materials, incidentals and equipment necessary for a fully operational traffic signal. The proposed equipment shall be compatible with the existing systems in the area.

Provide all illumination fixtures to be installed in this contract. Use 250W equivalent LED luminaires.

Where work requires the removal of power from the controller and cabinet assembly, erect temporary stop signs. Remove the stop signs after the traffic signals are in operation.

Deliver the cabinet, controller, accessories, and three complete sets of signal construction plans to the TxDOT Signal Shop, 2501 SW Loop 820 at McCart Street, Fort Worth for testing. Notify the Signal Shop two working days prior to delivery of the cabinet.

Wire the signal installation to operate in accordance with phase diagrams in these plans. Timing and phasing will be maintained by the operating agency. Deliver a copy of all revisions to the original timing and phasing plans to the TxDOT Signal Shop. One copy is to stay in the controller cabinet at the completion of the project.

Project Inspection. Contact the TxDOT Signal Shop in advance of needed inspections. At the time of the final electrical inspection, the Inspector will create a discrepancy list to be corrected and repaired before signal is put into flash mode.

Signal Flash. Upon the satisfactory completion of repairs or corrections, contact the TxDOT Signal Shop at least one week prior to placing in flash. Schedule signal flash for Monday thru Thursday between 9:00 AM – 12:00 PM. Operate the signal in flash mode for 2-3 days prior to turning on to full actuation. The TxDOT signal inspector and technician must be present when the signals are placed in flash.

Signal Turn-On. Upon completion of the signal flash, schedule the date and time for the turn on of the traffic signal on Monday thru Thursday between 9:00 AM – 12:00 PM. Place the traffic signal into full operation only after all required striping is complete and all conflicting signing is removed. The TxDOT signal inspector and technician must be present when the signals are placed in full color operation.

Test Period. During the 30-day test period, the Contractor will be the first responders to all trouble calls. They will, in turn contact the TxDOT Signal Shop. Provide qualified personnel to respond to these and all trouble calls. Provide a local telephone number, not subject to frequent changes and available to receive calls on a 24-hour basis. Respond to reported calls within a maximum of two hours. Make appropriate repairs within 24 hours or at engineer’s direction.

Place a logbook in each controller cabinet and keep a record of each trouble call reported. Notify the Engineer of each trouble call. The error log in the conflict monitor shall not be cleared during

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the thirty-day test period without approval. If it is necessary to replace equipment, such as a controller, in order to return the signals to normal operation, TxDOT will provide temporary replacement equipment until the original equipment is repaired and/or replaced at the engineer's direction.

Removal. Salvageable signal controllers and related equipment shall remain the property of the City of Fort Worth. Deliver to the TXDOT Signal Shop at 2501 SW Loop 820, Fort Worth.

Item 681. Temporary Traffic Signals

Maintain and operate the temporary traffic signals for the duration of the Contract as defined in Item 681.3.1.

Reconfigure temporary traffic signals in accordance with the plan, and within the requirements for Item 681.3.2 or as directed.

Provide qualified personnel reachable by telephone and available to receive calls on a 24-hour basis. Respond to reported calls and make field assessment within 2 hours and make appropriate repairs within 24 hours.

Reconfiguration of temporary traffic signals including changes in signal operation and phasing, lane assignment or signal timing must be in accordance with plans. If changes are made to plans, they must be reviewed and approved by City of Fort Worth prior to implementation.

Item 682. Vehicle and Pedestrian Signal Heads

Vehicle signal heads shall be yellow aluminum with 5 inch, black, aluminum, vented back plates unless otherwise shown on plans.

Signal heads shall be installed level and plumb and aimed as directed. Cover all signal faces until placed in operation.

All new mast arm mounted signal heads to be mounted horizontally.

Item 684. Traffic Signal Cables

Clearly and permanently mark each cable as shown on the plans (CABLE 1, etc.) at each signal head, ground box, terminal block, pole base and controller. Use plastic zip ties with labeling plate to mark cable.

Provide an extra 10' for each cable terminating in the controller cabinet.

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Terminate all electrical conductors from the controller (including spares) at the termination block in the signal pole hand hole.

Item 686. Traffic Signal Pole Assemblies (Steel)

Provide all signal poles from the same manufacturer.

Install mast arm damping plates at the end of SMA and DMA standard poles in accordance with the details shown in the MA-DPD standard sheet. Dampers for LMA poles may be required as directed by the Engineer.

Plug any unused openings in the mast arms or poles with an approved material.

Item 688. Pedestrian Detectors and Vehicle Loop Detectors

For Accessible Pedestrian Signals. Provide a completed final system operational check list, completed schematic diagram for pushbutton station locations, and a completed default and field settings sheet as provided in the APS manufacturer's manual. Provide a factory certified representative for testing and set up of the equipment at the time of signal flash and turn on.

Item 6001. Portable Changeable Message Sign

Provide all portable changeable message signs and arrow panels with a photoelectric device to allow for automatic dimming of operations to approximately 50% of their normal brightness when ambient light drops to approximately five-foot candles, and then increase back again for daytime operations.

Two electronic portable changeable message sign units will be required. Individual or collective use of signs will be required by the Engineer when deemed necessary to supplement the traffic control plan.

Each sign must have programmed in its permanent memory the following 18 messages:

1. Exit Closed Ahead
2. Use Other Routes
3. Right Lane
4. Left Lane
5. Closed Ahead
6. Two Lane
7. Detour Ahead
8. Thru Traffic
9. Prepare To Stop
10. Merging Traffic

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- 11. Expect 15 Minute Delay
- 12. Max Speed ** MPH
- 13. Merge Right
- 14. Merge Left
- 15. No Exit Next ** Miles
- 16. Various Lanes Closed
- 17. Two Left Lanes Closed
- 18. Two Right Lanes Closed

Item 6058. Battery Back-Up System (External Batt Cabinet)

Install a Battery Back-Up System (BBU System) for traffic signals that will provide reliable emergency power in the event of utility power failure or interruption. The system will also function as a power conditioner and/or voltage regulation device.

A BBU System consists of inverter/charger, manual bypass switch, power transfer switch or automatic bypass switch, batteries, battery monitoring device, wiring, external cabinet or stand-alone cabinet, concrete pad, all necessary hardware and software, and all associated equipment required to operate in a field environment.

The BBU System shall be capable of operating an "LED only" signalized intersection (700W load) for 4 hours of full runtime when utility power is disabled and under ambient temperatures of 25oC. The BBU System shall switch the intersection to flash mode of operation when approximately 40% of battery charge is remaining, via relay contact connection points on the front panel of the unit. The BBU system shall operate the intersection in the flash mode of operation (300W load) for an additional 2 hours. BBU system components shall be rated for a minimum 1400W load capacity.

The BBU shall be designed for outdoor applications in accordance with NEMA TS2-2003, Section 2. All components of the BBU system shall be rated to operate under temperature extremes of -34oC to +74oC

Displays, Controls, Diagnostics and Maintenance. The BBU system shall include a front panel display. All applicable programmable functions of the operational methods described in this specification shall be viewable from the front panel display.

The BBU system software shall be programmable from the front panel of the inverter/charger by means of a keyboard or momentary buttons allowing user to step through menu driven software.

A 10/100 Ethernet port shall be provided on the front panel of the inverter/charger.

A RS232 port shall be provided on the front panel of the inverter/charger.

The BBU system software shall be provided for the operational needs of the BBU system. The user/operator shall be able to access all system software via the Ethernet and RS232 ports on the front panel of the inverter/charger. The user shall be able to read logged events and change programmable parameters from the keyboard, laptop or local area network via the Ethernet port.

System software shall be upgradeable via the RS232 port on the front panel of the inverter/charger.

Manual Bypass Switch. The manual bypass switch shall be provided as a separate unit external to the inverter/charger unit. The manual bypass switch shall consist of housing, two position switch, terminal blocks, internal wiring, service outlet, circuit breakers and mounting hardware. All components shall be rated at a minimum of 240VAC / 30 amp. Provide the manual bypass switch with # 8 terminal blocks. The manual bypass switch shall be 2 position and allow the user to switch utility line power directly to the cabinet service panel. The switch positions will provide the following functions. In the "Bypass" position the inverter is bypassed, utility power is removed from the BBU and passed directly to the signal power panel. In the "UPS" position the inverter / switch is powered and the signal circuits are supplied by the output of the inverter. When the manual bypass switch is in the "Bypass" position the user may replace the automatic bypass switch (or transfer switch) and the inverter/charger without interrupting power to the intersection. Provide the manual bypass switch with over current protection (20 Amp circuit breaker).

Power Transfer Switch. These requirements are for BBU systems provided with a power transfer switch. The power transfer switch will operate such that the inverter/charger input and cabinet power panel are supplied with power from the utility line, in the event that the utility line power is lost or requires conditioning (buck or boost) the power transfer switch will automatically connect the inverter/charger output to the cabinet power panel such that the inverter/charger output provides the power. In the event of inverter/charger failure, battery failure, or complete battery discharge, the power transfer shall revert to the NC (de-energized) state, where utility line power is connected to the cabinet service panel.

Item 6292. Radar Vehicle Detection System (Presence Detector Only)

The Traffic Management Section of the Traffic Operations Division (TRF-TM) maintains the Prequalified Products Master List (QPL) of all RVDS conforming to the requirements of this Specification. New materials appearing on the QPL for TO-8000 require no further sampling and testing before use unless deemed necessary by the Project Engineer or TRF-TM. Provide prequalified RVDSs from the Division's QPL.

Provide each RVDS sensor with a mounting bracket designed to mount directly to a pole, mast-arm, or other structure. Ensure bracket is designed such that the sensor can be tilted both vertically and horizontally for alignment and then locked into place after proper alignment is

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achieved. All hardware must be designed to support the load of the RVDS sensor and mounting bracket.

Configuration. Ensure the RVDS will provide vehicle detection as required on the plans, or as directed.

Ensure the RVDS does not require tuning or recalibration to maintain performance once initial calibration and configuration is complete. RVDS must not require cleaning or adjustment to maintain performance. RVDS must self-recover from power failure once power is restored.

Cabling. Provide appropriate length of all cables necessary to complete the work (of making the RVDS fully operational) at each installation site.

Software. Ensure the RVDS manufacturer includes all software required to configure and monitor operation of RVDS field equipment locally and remotely. RVDS software must be a stable production release.

Software must allow the user to configure, operate, exercise, diagnose, and read current status of all RVDS features and functions using a laptop computer.

Software must include the ability to save a local copy of RVDS field device configurations, and load saved configurations to RVDS field devices.

Ensure all licenses required for operation and use of software are included at no additional cost.

Software updates must be provided at no additional cost during the warranty period.

System Installation. Install RVDS system devices according to the manufacturer's recommendations to provide properly functioning detection as required. This will include the installation of sensors on signal poles or mast-arms, controller interface modules, power and surge protection panels, cabling and all associated equipment, software, serial and Ethernet communication ports, connectors and hardware required to setup and operate. Ensure that the supplier of the RVDS provides competent on-site support representative during installation to supervise installation and testing of the RVDS. Ensure the radar sensor locations are optimal for system operation and operate as required. Maintain safe construction practices during equipment installation.

Item 6396. CFW Emergency Vehicle (EV) Preempt (Installation Only)

Emergency Vehicle (EV) preempt detectors can be mounted on mast arms, signal head framework, pedestals, span wire, or other appropriate locations in line of sight of controlled approaches.

Mounting Location The typical recommended location of a detector is centered over the approaching traffic on the opposite side of the intersection. Before installing a detector at

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design location, be sure there are no obstructions limiting the view of the detector. If it is found that the position of trees, hills, curves etc. causes obstructions to limit the view of the detector please contact with the engineer for alternative location.

Mounting Emergency Vehicle (EV) preempt detectors can be configured for either upright or inverted mounting by simply rotating the tube shells. Upright position on a pedestal or mast arm is the recommended configuration where possible. It is recommended that inverted mounting only be used when mounting on span wire.

Install the EV detector cable, in a continuous run, from the detectors to the traffic signal controller. Leave 5 ft. coiled inside controller cabinet. Identify cable runs on each end of the cable with a different color tape for each run.

Before installing a detector, punch out the correct weep holes. Use pipe thread tape to waterproof the joint. Do not open the hole any larger than the detent or it may become an entry point for insects. For upright mount, screw the detector into the threaded NPT mount. The tubes should be facing in the direction of approaching traffic. Tighten the locknuts to secure the detector so it will not move. A span wire installation requires a span wire clamp. Depending on span wire Use appropriate size of span wire clamps.

Aiming Tube Assemblies After installing the Emergency Vehicle (EV) preempt Detector, the tube assemblies must be aimed for proper system operation. Loosen the cap assembly. Rotate the tube assemblies to their proper positions. Tubes should be aimed to vehicles approaching the intersection.

Install dual-input single-output detector for all approached on the mast arm. In dual-input single-output detector, one tube may be aimed to cover a curved approach while the other tube covers the straight part of the road. If the road is straight, aim one tube slightly to the left of the center of the road and the other tube slightly to the right. If proper alignment cannot be achieved because of contact with the internal stops, change the position of the detector on the mounting hardware by slightly loosening the base and realigning the unit.

Install dual-input dual-output detector for all approaches on the span wire intersection. Dual-input dual-output detector is used when two approaches to the intersection will be controlled independently. One tube will be aimed to cover one approach of the main line and the other tube will be aimed to cover one of the cross street approach. Location of the detector will be adjusted so that both tubes align to the center of their respective approach as much as possible. When the tube assemblies are aimed properly, firmly tighten the cap screw so the tube assemblies cannot rotate.

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Electrical Connections. Use appropriate detector cable for wiring the detector. The detector cable is a three-conductor cable with yellow, orange, and blue conductor wires. It also has a bare shield drain wire. Use of other detector cable may result in improper operation.

Each detectors have a four-position terminal strip located in the base of the detector. All four wires must be connected to their designated terminals inside the detector. Insulate the bare wire with electrical tape to prevent it from shorting to other wiring.

For dual-input single-output detector, the yellow wire carries the signal from the tube nearest the detector base. For dual-input single-output detector, the blue wire carries the signal from the tube nearest the detector cap and the yellow wire carries the signal from the tube nearest the detector base. Terminate wires in phase selector in appropriate channel based on the position and direction of the tube assemblies. Store excess wire in the base of the detector.

Each detector input should be connected to its own input into the phase selector inside of the traffic cabinet. Combine the blue and the bare wires in one terminal at the cabinet/phase selector end for dual-input single-output detector. Twist the blue and bare wires together, and insulate the pair with electrical tape to prevent them from shorting to other wiring. Connect the detector cable power ground connection to earth ground to allow dissipation of static charges on the detector cable

Item 6421. CFW Cellular Router (Installation Only)

Provide all materials not supplied by the City of Fort Worth necessary for the Cellular Router installation. All materials provided by the Contractor must be new. Provide a minimum of 30 days' notice to the City of Fort Worth for pick-up of City of Fort Worth furnished materials. Unless otherwise shown on the plans, Cellular Router will be stored by the City of Fort Worth for pick up at location identified by the Engineer.

Install Cellular Router in equipment cabinets in accordance with this Item and details and dimensions as shown on the plans or as directed. Maintain safe construction practices. Equipment will be installed in a neat and workmanlike manner.

Adjustments or additions of attachment hardware, support brackets, and appurtenances may be necessary for compatibility, as shown on the plans, or as directed.

Prevent damage to all components. Do not use any materials furnished by the City of Fort Worth on any work which is not required by and which does not constitute a part of the contract. Materials not used which were furnished by the City of Fort Worth must be returned undamaged to the location from which the materials were obtained upon completion of the work. Any unused or removed material deemed salvageable by the Engineer will remain the

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property of the City of Fort Worth and must be delivered to a designated site. Accept ownership of unsalvageable materials and dispose of in accordance with federal, state, and local regulations.

Make all arrangements for connection to the power supply and telecommunications source including any required permits. Supply and install any required materials not provided by the utility companies (power or communications service provider).

Cellular Routers and all related accessories will be assembled on an equipment rack. All items need to be tied to the rack. Screw the equipment rack in the suitable location in the cabinet. Cabinet adjustments or additions of attachment hardware, support racks or brackets may be necessary. All adjustments or additional materials will not be paid for directly but will be subsidiary to this Item.

Install external antennas of the modem on the top of the cabinet at both left and right side slopped surface. Please follow the manufacture instruction carefully to water seal the antenna to prevent water leaking.

After all Cellular Routers have been installed, the City of Fort Worth will conduct approved continuity, stand alone, and Cellular Router tests on the installed field equipment with central, remote, and laptop equipment. A final acceptance test will be conducted to demonstrate all control, monitor, and communication requirements for 90 days. The Engineer will furnish a letter acknowledging the final acceptance testing commencement date stating the first day of the final acceptance test. The completion of the final acceptance test occurs when system downtime due to mechanical, electrical, or other malfunctions to equipment furnished or installed does not exceed 72 hrs. and any individual points of failure identified during the test period have operated free of defects. Assume responsibility only for test failures directly related to the work in accordance with this Item.

CONFLICT RESOLUTIONS

A form of a Conflict Resolution Schedule is shown below. This schedule will be addressed at the pre-work meeting held prior to the implementation of this Contract. This conflict resolution/communication format will make a positive contribution to communication and performance evaluation.

Conflict Resolution Schedule

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