



Meeting Agenda

Capital Investment Committee

Thursday, April 27, 2023

3:30 PM

Board Room

CALL TO ORDER

APPROVAL OF MINUTES

1. Consideration Of Approval Of Minutes
March 23, 2023 Capital Investment Committee Meeting

NEW BUSINESS

2. Consideration To Deny Sewer Availability For 4360 Columbia Pike (Map 132, Parcel 00616)

Sponsors: Michelle Hatcher, Scott Andrews

3. Consideration To Grant Water Availability For 2483 Hidden River Lane (Map 026, Parcel 03224)

Sponsors: Michelle Hatcher, Scott Andrews

4. Consideration Of Final Change Order To COF 2021-0069, A Construction Contract With Haren Construction Company, Inc. For The Southeast Pilot Plant And Red Wing Reclaimed Water Pump Station At A Cost Decrease Of \$62,958.66 And A Time Increase Of 233 Calendar Days

Sponsors: Michelle Hatcher, Brian Goodwin, Patricia McNeese

5. Consideration Of DRAFT Resolution 2022-70, A Resolution To Award The Construction Contract (COF Contract No. 2022-0116) For The SR-96 (Murfreesboro Road) Traffic Signal Improvements Project (TDOT PIN 127913.00) To Stansell Electric Company, Inc In The Amount Of \$969,844

Sponsors: Paul Holzen, Adam Moser

6. Capital Projects Dashboard And Status Updates For April 2023

Sponsors: Paul Holzen, Jonathan Marston

OTHER BUSINESS

ADJOURN

Anyone needing accommodations due to disabilities please contact the ADA Coordinator at 615-791-3277 at least 24 hours prior to the meeting.



Meeting Minutes

Capital Investment Committee

Thursday, March 23, 2023

3:30 PM

Board Room

CALL TO ORDER

Chair Matt Brown called the meeting to order at 03:31 PM

Board Members Present: Brandy Blanton, Gabrielle Hanson, Matt Brown, Beverly Burger

Board Members Absent:

APPROVAL OF MINUTES

1. **Consideration Of Approval Of Minutes**
February 23, 2023 Capital Investment Committee Meeting

Sponsors:

A motion was made by Alderman Gabrielle Hanson, seconded by Alderman Beverly Burger to Approve the Minutes. The motion Passed 4-0.

NEW BUSINESS

2. **Consideration Of Ordinance 2023-05, An Ordinance To Establish A No-Parking-Anytime Zone Within The Entire Extents Of The Southerly Cul-De-Sac Of Windcross Court**

Sponsors: Paul Holzen, Adam Moser

A motion was made by Alderman Beverly Burger, seconded by Alderman Brandy Blanton to Recommend Approval to the Board of Mayor and Aldermen the Ordinance. The motion Passed 4-0.

3. **Consideration Of DRAFT Amendment 3 To COF Contract No. 2019-0139, With Barge Design Solutions, Inc. For The Design Of The Southeast Multipurpose Complex (Park) At A Lump Sum Cost Increase Of \$114,500**

Sponsors: Paul Holzen, Lisa Clayton, Jonathan Marston, Shahad Abdulrahman

A motion was made by Alderman Brandy Blanton, seconded by Alderman Beverly Burger to Recommend Approval to the Board of Mayor and Aldermen the Contract / Agreement. The motion Passed 4-0.

4. **Consideration Of DRAFT Change Order 1 (Final) To COF Contract No. 2020-0261, A Construction Contract With Bell & Associates Construction, LLC For Carothers Parkway Widening And Southeast Municipal Complex Entrance At A Cost Increase Of \$27,714.72.**

Sponsors: Paul Holzen, Jonathan Marston, David Hodnett

A motion was made by Alderman Gabrielle Hanson, seconded by Alderman Brandy Blanton to Recommend Approval to the Board of Mayor and Aldermen the Contract / Agreement. The motion Passed 4-0.

5. **Consideration Of Change Order 1 (Final) To COF Contract 2021-0078, With Sain Construction Company For The Freedom Ball Fields For Cost Decrease Of \$201,333 And A Time Extension Of 30 Calendar Days**

Sponsors: Paul Holzen, Lisa Clayton, Jonathan Marston, Shahad Abdulrahman

A motion was made by Alderman Brandy Blanton, seconded by Alderman Beverly Burger to Recommend Approval to the Board of Mayor and Aldermen the Contract / Agreement. The motion Passed 4-0.

6. **Consideration Of DRAFT Resolution 2023-21, A Resolution Awarding The Construction Contract (COF Contract No. 2022-0310) To Insituform Technologies, Inc. In The Amount Of \$592,000 For The Sewer Main Line Rehabilitation Term Contract**

Sponsors: Michelle Hatcher, Brian Goodwin, Patricia McNeese

A motion was made by Alderman Gabrielle Hanson, seconded by Alderman Beverly Burger to Recommend Approval to the Board of Mayor and Aldermen the Resolution. The motion Passed 4-0.

7. **Consideration Of DRAFT Change Order 1 To COF Contract No. 2022-0182, With Haren Construction For The Water Treatment Plant Valve Access Improvements Project**

Sponsors: Michelle Hatcher, Brian Goodwin, Patricia McNeese

A motion was made by Alderman Beverly Burger, seconded by Alderman Gabrielle Hanson to Recommend Approval to the Board of Mayor and Aldermen the Contract / Agreement. The motion Passed 4-0.

8. **Consideration Of COF Contract No. 2023-0051, With CDM Smith For On-Call Professional Services To Include Optimization As Part Of The Biological Process Upgrades With The New Water Reclamation Facility**

Sponsors: Michelle Hatcher

A motion was made by Alderman Beverly Burger, seconded by Alderman Brandy Blanton to Recommend Approval to the Board of Mayor and Aldermen the Contract / Agreement. The motion Passed 4-0.

9. **Capital Projects Dashboard And Status Updates For March 2023**

Sponsors: Paul Holzen

The item was acknowledged.

OTHER BUSINESS

ADJOURN

A motion was made by Alderman Brandy Blanton, seconded by Alderman Beverly Burger to Adjourn the Meeting. The motion Passed 4-0.

Matt Brown, Chair



File #: 21-04573

DATE: April 14, 2023
TO: Capital Investment Committee
FROM: Michelle Hatcher, Director of Water Management
Scott Andrews, Utilities Engineer II

SUBJECT:

Consideration To Deny Sewer Availability For 4360 Columbia Pike (Map 132, Parcel 00616)

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning a recommendation for denial of a request for sewer availability for the above referenced property.

BACKGROUND/STAFF COMMENTS:

Date of Request: 4/11/2023.
SFUE's Requested: 14.
Domestic Water Meter Size(s): 2" (HB&TS).

This property is located outside of the City limits, between Columbia Pike and Goose Creek Bypass and bordered on the north by McLemore Road. The property is on the edge of the Urban Growth Boundary (UGB). The property owners requested removal of the property from the UGB and Planning is recommending approval of the request.

Thompsons Station has indicated to the applicant that if they apply to them for annexation and sewer, those requests should be approved. A six hundred and seventy-five seat church is planned for the property and the applicant has requested denial.

FINANCIAL IMPACT:

N/A

RECOMMENDATION:

Staff recommends that the sewer availability for 4360 Columbia Pike be recommended for denial by the Board of Mayor and Aldermen.



Type of Availability Requested: **CHECK ALL THAT APPLY:** ☐ Water ☒ Sewer

Sewage Flow Calculations: *Use the City of Franklin projected flow examples sheet –pg.4*

We will be constructing a church with a main sanctuary that seats 675 people (7 x 675 sanctuary seats according to the below chart). In addition we will have office space, a children's ministry area with room for 200+ children, a common lobby space, storage, and a large break room.

use additional sheets as necessary

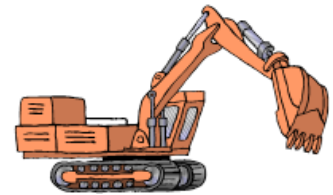
Anticipated sewage flows: <i>Information Required for Sewer Service</i>	
If County is requiring this request please indicate if you are requesting an approval or denial:	☒ DENY my Request ☐ APPROVE my request <i>*approval or denial is approved by BOMA, indication here is not a guarantee for approval or denial*</i>

Email Application to: availability@franklintn.gov
For additional information or questions please call: 615-794-4554

Date Submitted: 4/11/2023

MEMO

TO: Applicant
FROM: Water Management Department
DATE: May 2018
RE: Request for Water and/or Sewer Availability & Associated Costs



When considering development of a tract of land, one of the first steps a developer (or their design professional) should complete is the application for water and sewer availability. **Planned Unit Developments MUST have approved availability to be approved.**

The following items **SHALL** be included with a water and/or sewer availability request:

- Completed Application (ALL sections must be filled in)
- Project location map & Utility Plan (if available)
- Sewage Calculations (For Development projects only; Individual Single Family Homes are not required to submit these calculations).

Email Application to: availability@franklinton.gov

For additional information or questions please call: 615-794-4554

There is a 30 day maximum turnaround time for the requests. Unless your request requires Board of Mayor & Aldermen (BOMA) approval then applicant will be notified of the date of the BOMA meeting at which your request will be brought up.

THE AVAILABILITY IS GRANTED BASED ON THE FOLLOWING TIME PERIODS:

- Construction plans are to be prepared and **submitted within one year from the granting of availability.**
- Construction of the water and sanitary sewer **improvements shall begin within one and one-half (1 ½) years from the granting of availability.**

OTHER RELATED INFORMATION:

- Pump stations and force mains are not allowed if the development can be served by extension of gravity sewer.
 - Any necessary Pump Station or Force Main shall be subject to approval by Water Dept. Director.
- **No customer shall supply water service to more than one dwelling or premise from a single service line.**

PROPERTIES OUTSIDE OF CITY LIMITS:

Per **Resolution 2015-32**: Annexation shall be required as a condition of approval for all properties outside the City Limits whether within the City's Urban Growth Boundary, or not, in order to be granted sanitary sewer availability. Annexation shall occur at such time the property becomes contiguous to the City's corporate limits or as determined by the Board of Mayor and Alderman.

- Applicant shall be required to sign the Annexation Agreement **after** Availability Request is approved by BOMA, and **before** the approved letter is issued.

SINGLE FAMILY APPLICANTS:

- Not all portions of the application will apply, please mark NA to those sections.
- If a main line extension is necessary you will be required to submit a plan & profile set for review and approval.

MAIN LINE EXTENSION REQUIRED FOR SERVICE:

Plans shall be submitted for approval:

- Plans shall include: Site Layout & Location, Existing Utilities, Grading & EPSC, Plan & Profile, and Applicable Details.
- Include Final hydraulic analysis of the line/s. Use the City's standards for flow calculations.
- Water and Sewer Specifications are available on-line (in pdf form) for the convenience of the developer's engineer:
<http://www.franklinton.gov/government/engineering/development>

CURRENT SEPTIC SYSTEMS/APPLICANTS WITHIN THE COUNTY:

- Williamson County requires residents wishing to modify the septic system to first request availability with the City. You are required to complete the application and indicate whether you are requesting a denial or approval. (Indication does not guarantee final decision. BOMA must approve or deny your request).
- Septic System must be decommissioned per County standards:
<http://www.williamsoncounty-tn.gov/index.aspx?NID=126>

If you have any questions concerning this request, contact the City of Franklin Water Department at (615) 794-4554.

Tap Related Fees* *Does not include \$25 New Account Set up Fee*

Fee Description:	Applicable Utility	Fee Amount:
System Development Fee (SDF)	Water & Sewer	See Charts Below (based on meter size)
Access Fee	Water & Sewer	See Charts Below (based on meter size)
Effluent Disposal Fee (EDF)	Sewer	See Charts Below (based on meter size)
Tap Fee	Water & Sewer	See Charts Below (based on meter size)
Irrigation Fee	Water & Reclaim Water	See Charts Below (based on meter size)
Fire Sprinkler Fee (SDF)	Water (fire)	\$500 per diameter inch of connection line

Effective March 1, 2008, the fees and installation costs are as follows and are paid to the Building & Neighborhood Services Dept. 615-794-7012

WATER * City of Franklin Wat							
Meter Size	SFUE	GPM	SDF	Access Fees	Irrigation Meter ¹	Tap Existing ²	City making Tap ³
¾"	1	12.5	\$903	\$1,186	\$3,150	\$315	\$756
1"	13	50	\$3,612	\$4,746	\$4,725	\$374	\$897
1 ½"	30	120	\$8,619	\$11,390	\$6,300	\$656	\$1,444
2"	40	160	\$11,558	\$15,187	\$7,875	\$1,362	\$2,223
3"	88	350	\$25,284	\$33,222	\$9,450	\$1,581	\$3,654
4"	125	500	\$36,120	\$47,460	\$11,025	\$2,668	\$5,492
6"	300	1200	\$86,688	\$113,904	\$12,600	\$4,723	\$7,387
8"	375	1500	\$108,360	\$142,380	\$14,175	\$10,293	\$14,110

SEWER (Fees are based on water meter size regardless of water district)							
Meter Size	SFUE	GPM	SDF	Access Fee	Effluent Disposal ⁴	Tap Existing ²	City Making Tap ³
¾"	1	12.5	\$1,444	\$2,100	\$450	\$263	\$1,240
1"	13	50	\$5,775	\$8,400	\$1,800	\$263	\$1,240
1 ½"	30	120	\$13,860	\$20,160	\$4,320	\$263	\$1,240
2"	40	160	\$18,480	\$26,880	\$5,760	\$263	\$1,240
3"	88	350	\$40,425	\$58,800	\$12,600	\$263	\$1,240
4"	125	500	\$57,750	\$84,000	\$18,000	\$263	\$1,240
6"	300	1200	\$138,600	\$201,600	\$43,200	\$263	\$1,240
8"	375	1500	\$173,250	\$252,000	\$54,000	\$263	\$1,240

1- Irrigation Fees Include Meter Fee & \$25 Application Fee Only

3- City Installs Tap & Meter

2- Contractor Installs Tap & Meter – Subject to Addnl' Inspections

4- Fee Goes to Establishing Effluent Water System; paid with all Sewer Services

*** All Fees shall be paid prior to the issuance of a Building Permit or Utility Inspection, whichever occurs first. ***

Private Fire Hydrant and Sprinkler Systems – The SDF for connection of private fire hydrants and sprinkler system lines to the City of Franklin's (COF) lines shall be **\$500 per inch diameter of connection** to the City's lines. Radio-read meters will be required on all private fire hydrant and sprinkler systems.

UTILITY PERMIT RELATED FEES: PAID WITH PERMIT, NOT WITH AVAILABILITY REQUEST:

Only applicable if extending the water, sewer or reclaim water main lines.

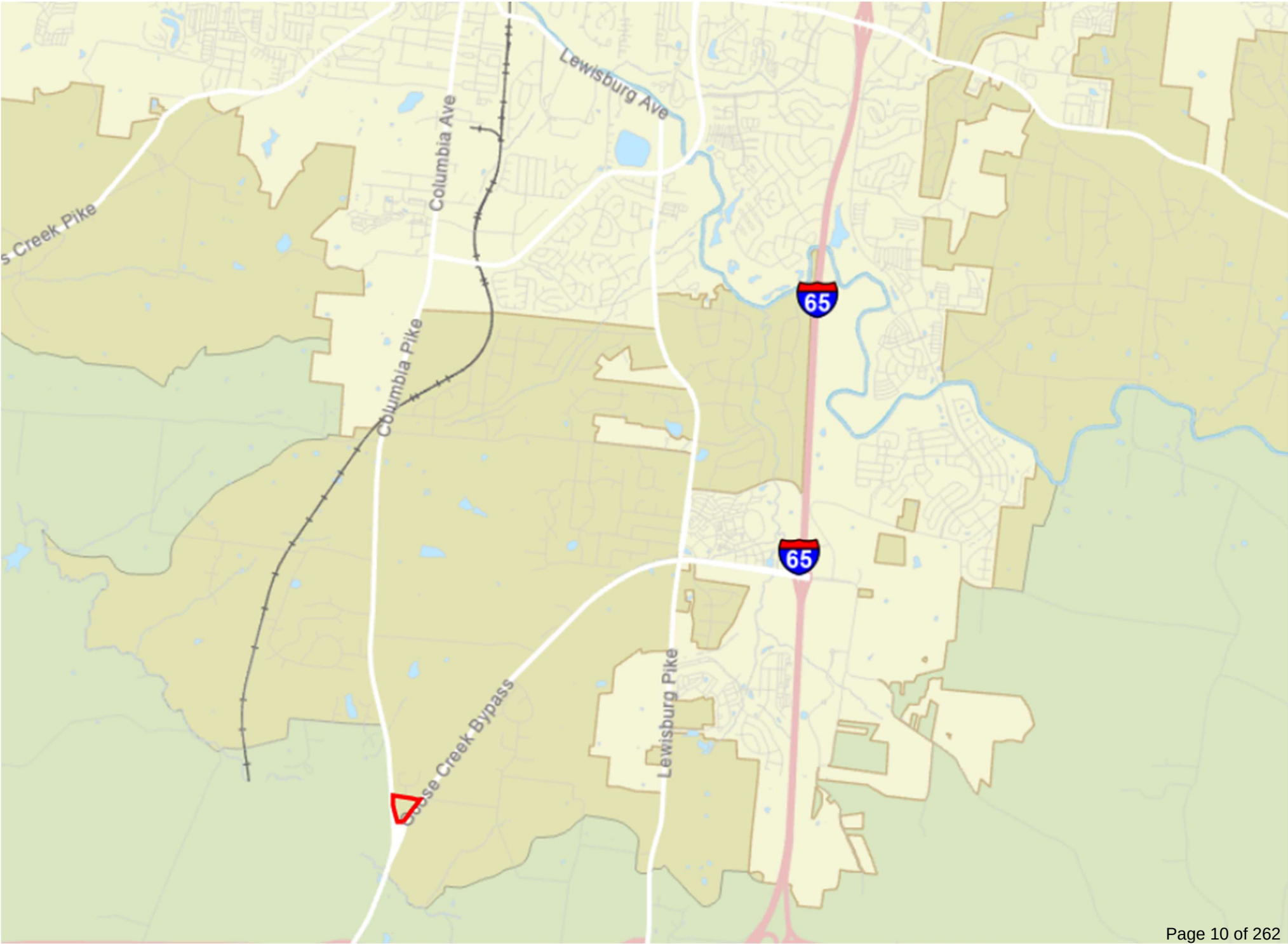
Fee Description	Applicable Utility	Fee Amount
Plan Review Fee	Water, Sewer & Reclaim Water	\$300 Water; \$300 Sewer & \$300 reclaim Water
Inspection fees:	Fee Rate	
Water Main Line	\$1.25/LF Water (minimum \$ 1,000)	
Sewer Gravity Main Line	\$2.00/LF (minimum \$1,000)	
Sewer Force Main Line	\$1.50/LF (minimum \$1,000)	
Reclaim Water	\$1.25/LF (minimum \$1,000)	

Checks are made payable to the City of Franklin. Please indicate what the payment is for on the check.

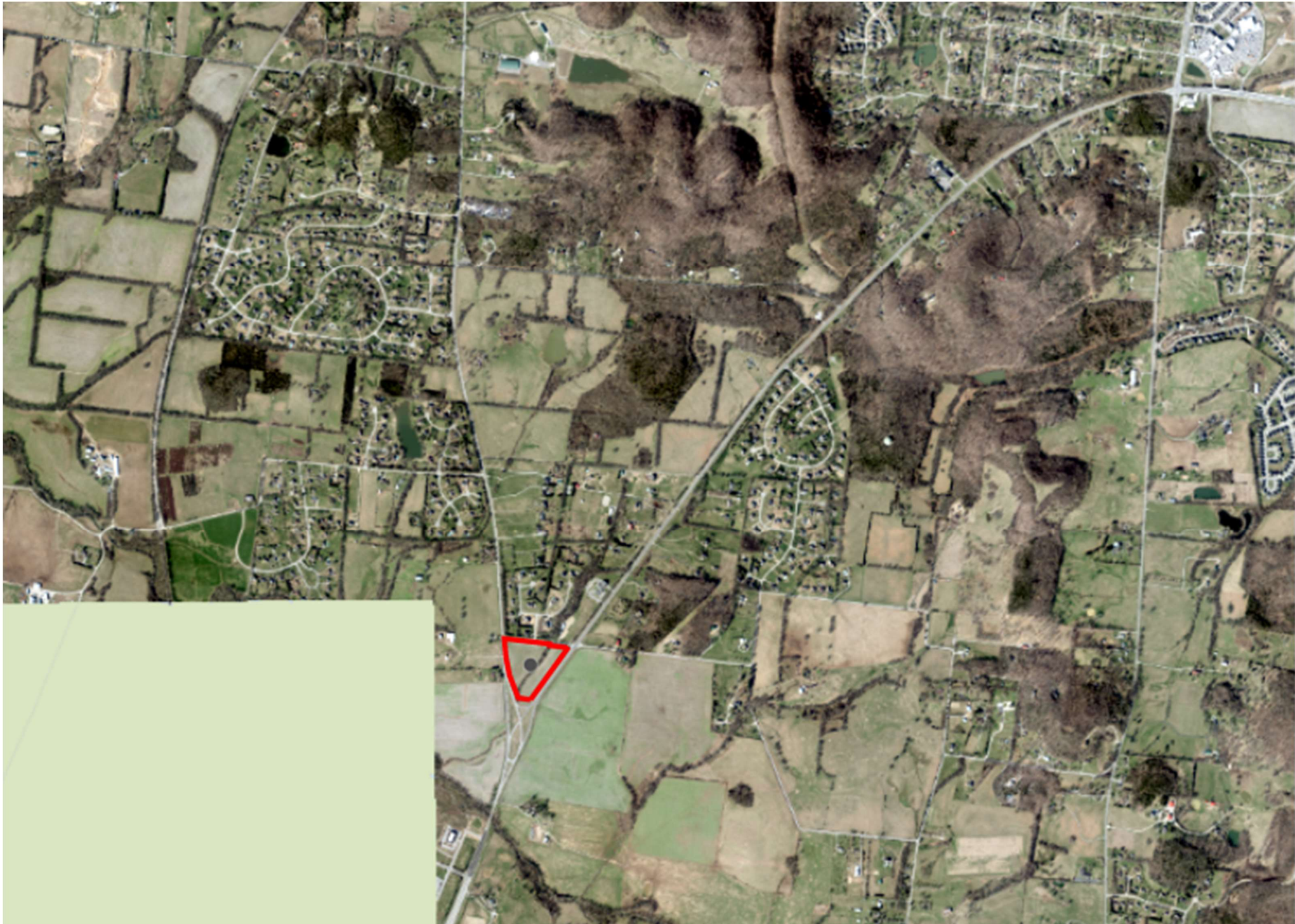
3 Projected Flow Examples

Drainage Facility	Flow in GPD	Design Units
Apartments -One Bedroom	250	per unit
Apartment -Two Bedroom	300	per unit
Apartment -Three Bedroom	350	per unit
Mobile Home Parks	300	per mobile home space
Single Family Dwelling	350	per unit
Assembly Hall (No Food Service)	2	per seat
Beauty Shop, Styling Salon	200	per station
Bowling Alleys (no food service)	75	per lane
Car Wash -(stand alone)	500	Per bay
Child Care Center	10	Per child and adult
Churches (small)	5	per sanctuary seat
Churches (large with kitchen)	7	per sanctuary seat
Country Clubs	50	per member
Dance Halls (No Food Service)	2	per person
Doctors/Dentists	75 20 10	per doctor per employee per patient
Drive-In Theaters	5	per car space
Factories (no showers)	25	per employee per 8-hour shift
Factories (with showers)	35	per employee -per 8-hour shift
Hospitals (no residents) (with food service)	300	per bed
Hotels	130	per unit
Institutions (residents) (with food service)	100	per person
Laundries (coin-operated)	400	per standard size machine
Nursing and Rest Homes (with food service)	200 100 50	per patient per resident employee per non-resident employee
Office Buildings	25	per employee
Office/warehouse space	0.1	per square foot
Retail Store	20	per employee
Restaurant -Ordinary (not 24-hour)	35	per seat
Restaurant -24-Hour	50	per seat
Restaurant -Banquet Rooms	5	per seat
Restaurant -Along Freeway	100	per seat
Restaurant -Tavern (very little food service)	35	per seat
Restaurant -Curb Service (drive-in)	50	per car space
Service Stations	1000	Per fuel island
Schools -Elementary (with food service)	15	per pupil
Schools -High and Junior High (with food service)	20	per pupil
Shopping Centers (no food service or laundries)	0.2	per sq. ft of floor space
Swimming Pool	10	per swimmer
Theaters, auditorium type	5	per seat
Youth and Recreation Camps (w/food service)	50	per person

LOCATOR MAP



LOCATOR MAP (Aerial view)



Neighborhood View





File #: 21-04574

DATE: April 14, 2023
TO: Capital Investment Committee
FROM: Michelle Hatcher, Director of Water Management
Scott Andrews, Utilities Engineer II

SUBJECT:

Consideration To Grant Water Availability For 2483 Hidden River Lane (Map 026, Parcel 03224)

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning a recommendation for approval of a request for water availability for the above referenced property.

BACKGROUND/STAFF COMMENTS:

Date of Request: 3/14/2023.
SFUE's Requested: 1.
Domestic Water Meter Size(s): 2".

This property is located outside of the City limits, in the Hidden River subdivision north of the City limits and west of Old Hillsboro Road. The City of Franklin already serves the subdivision with water, and when the water line was constructed, a service tap was extended to serve this property.

The property owners are building a home on the lot and are requesting a 2" water meter.

FINANCIAL IMPACT:

N/A

RECOMMENDATION:

Staff recommends that the water availability for 2483 Hidden River Lane be recommended for approval by the Board of Mayor and Aldermen.



Request for Water and/or Sewer Availability & Associated Costs

Please fill in the following information & return this form with the site plan per directions below. Incomplete forms will result in the request being returned until all of the information is included. Refer to the attached memo for fees and additional information.

Type of Availability Requested:		CHECK ALL THAT APPLY: ☒ Water ☐ Sewer	
Project Name & Subdivision, Section, Lot #			
Map & Parcel(s) #		026 --- 03224	
Property Address:		2483 Hidden River Ln, Franklin, TN 37069	
City Project # (If Applicable)			
# of Dwelling Units (If Residential)			
Applicant's Name & Company		Austin Rogers - Rogers Build INC	
Applicant's Address		5111 Peter Taylor Park Dr. Brentwood, TN 37027	
Applicant's Email & Phone #		kxler@rogersbuild.com, (865) 805-5923	
Anticipated Water Meter Size(s) (see chart on pg. 3).		2"	
Water District:			
Sewage Flow Calculations: Use the City of Franklin projected flow examples sheet -pg.4			
<i>use additional sheets as necessary</i>			
Anticipated sewage flows: Information Required for Sewer Service			
If County is requiring this request please indicate if you are requesting an approval or denial:		☐ DENY my Request ☐ APPROVE my request <i>*approval or denial is approved by BOMA, indication here is not a guarantee for approval or denial*</i>	

MUST SUBMIT A LOCATION MAP (FOR EX: GOOGLE MAP)

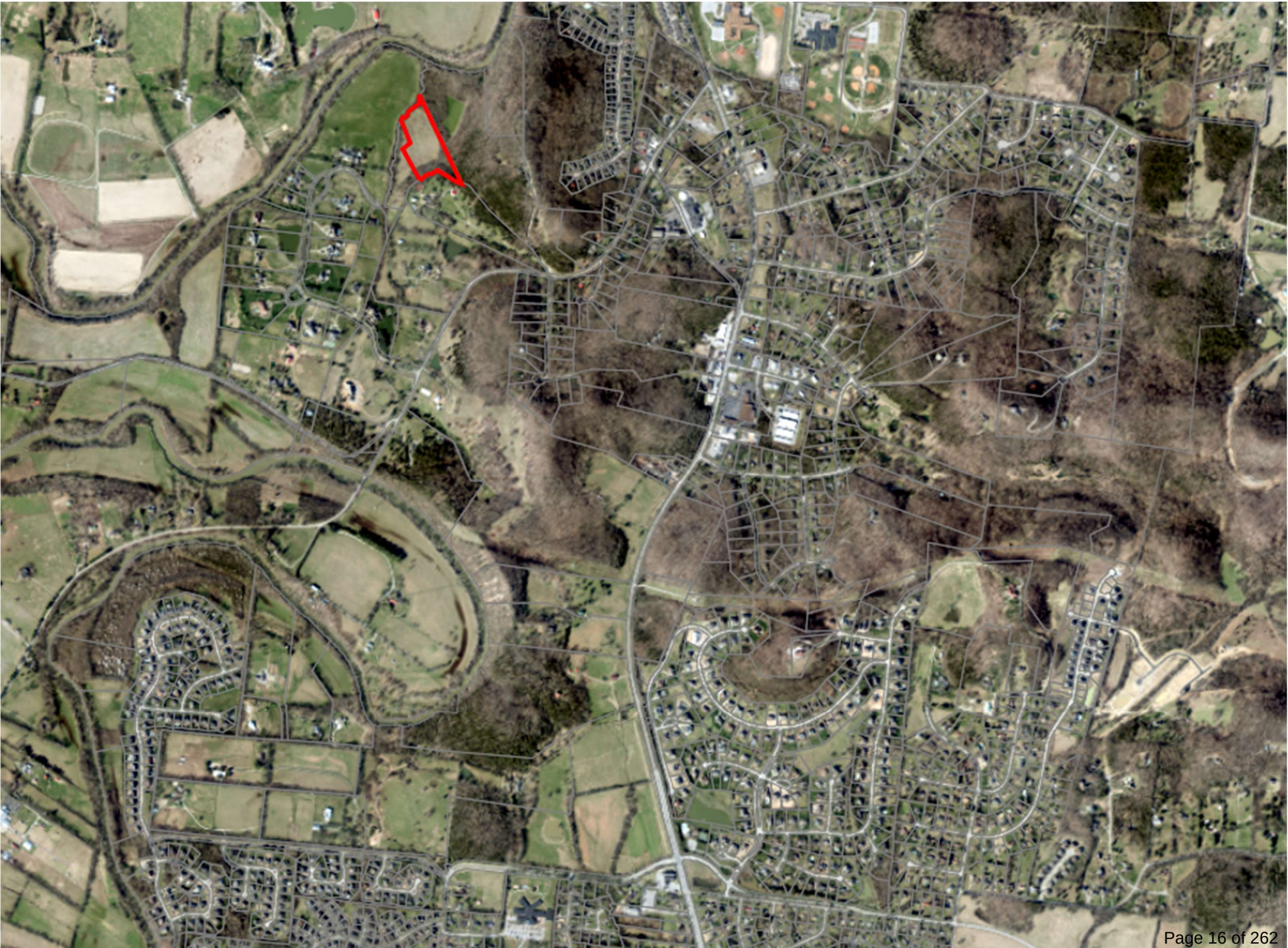
Email Application to: availability@franklinton.gov

For additional information or questions please call: 615-794-4554 **Date Submitted:** _____

LOCATOR MAP



LOCATOR MAP (Aerial view)



Neighborhood View





File #: 21-04555

DATE: April 11, 2023
TO: Capital Investment Committee
FROM: Michelle Hatcher, Director of Water Management
Brian Goodwin, Asst. Director of Water Management
Patricia McNeese, Utilities Engineer

SUBJECT:

Consideration Of Final Change Order To COF 2021-0069, A Construction Contract With Haren Construction Company, Inc. For The Southeast Pilot Plant And Red Wing Reclaimed Water Pump Station At A Cost Decrease Of \$62,958.66 And A Time Increase Of 233 Calendar Days

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning the final change order for the Southeast Pilot Plant and Red Wing Reclaimed Water Pump station project with Haren Construction Company.

BACKGROUND/STAFF COMMENTS:

The Southeast Pilot Plant and Red Wing Reclaimed Water Pump Station project was approved by the Board of Mayor and Aldermen (BOMA) on June 22, 2021, and awarded to Haren Construction Company in the amount of \$3,882,000.00. This change order is to final the project to show that there was an overall decrease of \$62,958.66 from the original amount of \$3,882,000.00 and to add 233 calendar days to the original contract time. The time extension is due to delays by vendors to procure the equipment necessary for startup and operation for the Pilot Plant and for the Reclaimed Water Pump Station.

FINANCIAL IMPACT:

The project was included in the budget with no grants or loans involved.

RECOMMENDATION:

Staff recommends that the final change order for COF Contract No. 2021-0069 be recommended to the Board of Mayor and Aldermen for approval.

CHANGE ORDER NO.: FINAL

Owner: **City of Franklin, TN**
 Engineer: **Hazen and Sawyer**
 Contractor: **Haren Construction Company**
 Project Name: **SE Basin Pilot & Redwing RPS**
 Owners Contract No.: **COF 2021-0069**
 Effective Date of Change Order: **5/23/2023**

Date Issued: **4/11/2023**

The Contract is modified as follows upon execution of this Change Order:

Description:

This change order is to reflect the Final Construction Cost and Time of the Project.

Attachments:

1. **Pay Request #16 – Final**
2. **March 29, 2023 Letter from Hazen and Sawyer**
3. **October 7, 2022 Letter from Haren Construction**

Change in Contract Price		Change in Contract Times	
Original Contract Price:		Original Contract Times:	
\$ 3,882,000.00		Substantial Completion:	RPS-2/28/2022 PB-6/28/2022
		Ready for final payment:	July 12, 2022
Increase from previously approved Change Orders		[Increase] [Decrease] from previously approved Change Orders:	
\$ 0.00		Substantial Completion:	RPS-2/28/2022 PB-6/28/2022
		Ready for final payment:	July 12, 2022
Contract Price prior to this Change Order:		Contract Times prior to this Change Order:	
\$ 3,882,000.00		Substantial Completion:	RPS-2/28/2022 PB-6/28/2022
		Ready for final payment:	July 12, 2022
[Decrease] this Change Order:		[Increase] this Change Order:	
\$ 62,958.66		Substantial Completion:	RPS-7/14/2022 PB-10/7/2022
		Ready for final payment:	March 1, 2023
Final Contract Price incorporating this Change Order:		Contract Times with all approved Change Orders:	
\$ 3,819,041.34		Substantial Completion:	RPS-7/14/2022 PB-10/7/2022
		Ready for final payment:	March 1, 2023

Recommended by City Project Manager

By: _____

Title: _____

Date: _____

Recommended by Department Director

By: _____

Title: _____

Date: _____

Authorized by Owner

By: _____

Title: _____

Date: _____

Contractor Approval

By: _____

Title: _____

Date: _____



Invoice Transmittal

(Must Accompany ALL Payment Requests)

SECTION 1 - Contract Information

Project Name: Southeast Pilot and Red Wing Reclaimed Water Pump Station Prc

Job Number: 2021-001

COF Contract Number: 2021-0069

TDOT PIN: _____

Vendor Name: Haren Construction Compai

Vendor Code: HAR125

Original Contract Amount: \$ 3,882,000.00

BOMA Date: 06/22/2021

Amend/CO Amount(s): _____

Approved Contract Ceiling: \$ 3,882,000.00

Grant Funding (YES or NO): _____

Grant Source: _____

SECTION 2 - Invoice Information

Vendor Invoice Number: 16

Invoice Date: 02/17/2023

Payment Sequence: 16

Date of Work: 02/17/2023

Current Invoice Amount: \$ 124,356.00

SECTION 3 - Accounts Payable Information

Payment Description: SE PP RWPS PR#16

Account Number (GL) 1: 431-89320-52219

Amount: \$ 124,356.00

Account Number (GL) 2: _____

Amount: _____

Account Number (GL) 3: _____

Amount: _____

Account Number (GL) 4: _____

Amount: _____

Account Number (GL) 5: _____

Amount: _____

Account Number (GL) 6: _____

Amount: _____

Account Number (GL) 7: _____

Amount: _____

Retainage Code: _____

Amount: _____

TOTAL (Must Match " Current Invoice Amount"): \$ 124,356.00

SECTION 4 - Approval Signature(s)

COF Project Manager: *Samuel Archuri*

Date: 04/06/2023

OR

Dept. Purchasing Agent: _____

Date: _____

INVOICES EQUAL TO OR GREATER THAN \$100,000 REQUIRES DIRECTOR LEVEL APPROVAL

Department Director: *Heidi Helster*

Date: 4/6/23



Contractor's Application for Payment No.

16

Application Period: 12/1/2022-2/17/2023		Application Date: 2/17/2023
To (Owner): City of Franklin, Tennessee	From (Contractor): Haren Construction Company	Via (Engineer): Hazen & Sawyer
Project: Franklin SE Basin Pilot & Redwing PS	Contract:	
Owner's Contract No.: 2021 - 010	Contractor's Project No.: 201-108	Engineer's Project No.: 50065-102

Change Order Summary

Approved Change Orders		
Number	Additions	Deductions
1		
2		
3		
4		
5		
TOTALS		
NET CHANGE BY		
CHANGE ORDERS		

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment; (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and (3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor Signature

Brennan Nielsen

Digitally signed by Brennan Nielsen
DN: C=US,
E=bnielsen@harenconstruction.com,
OU=Haren Construction Company,
CN=Brennan Nielsen
Date: 2023.03.20 15:26:01-04'00'

1. ORIGINAL CONTRACT PRICE..... \$ 3,882,000.00
2. Net change by Change Orders..... \$
3. Current Contract Price (Line 1 + 2)..... \$ 3,882,000.00
4. TOTAL COMPLETED AND STORED TO DATE
(Column F total on Progress Estimates)..... \$ 3,819,041.34
5. RETAINAGE:
 - a. 5% X Work Completed..... \$
 - b. X Stored Material..... \$
 - c. Total Retainage (Line 5.a + Line 5.b)..... \$
6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5.c)..... \$ 3,819,041.34
7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$ 3,618,834.95
8. AMOUNT DUE THIS APPLICATION..... \$ 200,206.39
9. BALANCE TO FINISH, PLUS RETAINAGE
(Column G total on Progress Estimates + Line 5.c above)..... \$ 62,958.66

Payment of:

\$ 200,206.39

\$75,850.39 is retainage
Payment is for \$124,356.00

(Line 8 or other - attach explanation of the other amount)

is reviewed by:

(Construction Manager)

Digitally signed by Michael L Orr
Reason: I have reviewed this document
Date: 2023.03.24 16:05:32-05'00'

is recommended by:

(Engineer)

is approved by:

(Owner)

Progress Estimate - Lump Sum Work

Contractor's Application

FOR Franklin SE Basin Pilot & Redwing PS		Application Number: 16					
From 12/1/2022-2/17/2023		Application Date: 2/17/2023					
		Work Completed			F		G
A		B	C		E		
Item #	Description	Scheduled Value (\$)	From Previous Application (C+D)	D This Period	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)
1	Item No.1 - \$100,000						
2	Mobilization	\$69,000.00	\$69,000.00			\$69,000.00	100.0%
3	Bonds & Insurance	\$31,000.00	\$31,000.00			\$31,000.00	100.0%
4							
5	Item No. 2 - \$250,000						
6	Site Preparation	\$135,000.00	\$135,000.00			\$135,000.00	100.0%
7	Site Maintenance	\$90,000.00	\$90,000.00			\$90,000.00	100.0%
8	Site Restoration	\$25,000.00	\$25,000.00			\$25,000.00	100.0%
9							
10	Item No. 3						
11	Project Closeout	\$50,000.00		\$50,000.00		\$50,000.00	100.0%
12							
13	Item No. 4 - Redwing PS Construction - \$1,962,639						
14	Gravel Parking Area	\$22,600.00	\$22,600.00			\$22,600.00	100.0%
15	French Drain	\$43,800.00	\$43,800.00			\$43,800.00	100.0%
16	Drainage Piping Including Headwalls	\$42,200.00	\$42,200.00			\$42,200.00	100.0%
17	Suction and Discharge Piping	\$262,000.00	\$262,000.00			\$262,000.00	100.0%
18	Valves	\$127,000.00	\$127,000.00			\$127,000.00	100.0%
19	Flow Meter & Vault	\$75,000.00	\$75,000.00			\$75,000.00	100.0%
20	Concrete Foundation	\$118,000.00	\$118,000.00			\$118,000.00	100.0%
21	Concrete Slab, Trenches, & Pump Pads	\$155,500.00	\$155,500.00			\$155,500.00	100.0%
22	Concrete Sidewalk	\$35,000.00	\$35,000.00			\$35,000.00	100.0%
23	CMU Walls	\$129,000.00	\$129,000.00			\$129,000.00	100.0%
24	Exterior Wood Siding & Insulation	\$102,000.00	\$102,000.00			\$102,000.00	100.0%
25	Roofing & Insulation	\$105,500.00	\$105,500.00			\$105,500.00	100.0%
26	Man Entry Doors	\$37,000.00	\$37,000.00			\$37,000.00	100.0%
27	Roll Up Doors	\$45,000.00	\$45,000.00			\$45,000.00	100.0%
28	Trolley, Hoist, Beams, Grating	\$87,500.00	\$87,500.00			\$87,500.00	100.0%
29	Painting	\$32,000.00	\$32,000.00			\$32,000.00	100.0%

Progress Estimate - Lump Sum Work

Contractor's Application

FOR Franklin SE Basin Pilot & Redwing PS		Application Number: 16				I I			
From 12/1/2022-2/17/2023		Application Date: 2/17/2023							
		Work Completed			E	F		G	
A		B	C		D	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)	Balance to Finish (B - F)
Item #	Description	Scheduled Value (\$)	From Previous Application (C+D)	This Period					
30	Pumps and Pump Control/PLC	\$300,000.00	\$300,000.00				\$300,000.00	100.0%	
31	VFD's	\$36,000.00	\$36,000.00				\$36,000.00	100.0%	
32	Electrical								
33	Electrical Submittals & Bonding	\$11,152.00	\$11,152.00				\$11,152.00	100.0%	
34	Installation	\$37,008.00	\$37,008.00				\$37,008.00	100.0%	
35	Utility Transformer & Distribution Equipment	\$50,331.00	\$50,331.00				\$50,331.00	100.0%	
36	Wiring & Conduit	\$33,306.00	\$33,306.00				\$33,306.00	100.0%	
37	Interior & Exterior Lighting	\$8,881.00	\$8,881.00				\$8,881.00	100.0%	
38	Electrical Testing & Commissioning	\$7,401.00	\$7,401.00				\$7,401.00	100.0%	
39	HVAC								
40	HVAC Submittals & Bonding	\$9,384.00	\$9,384.00				\$9,384.00	100.0%	
41	Equipment & Unit Heater	\$16,798.00	\$16,798.00				\$16,798.00	100.0%	
42	Ductwork	\$15,343.00	\$15,343.00				\$15,343.00	100.0%	
43	Fans & Louvers	\$2,240.00	\$2,240.00				\$2,240.00	100.0%	
44	Controls	\$2,800.00	\$2,800.00				\$2,800.00	100.0%	
45	Test & Balance	\$895.00		\$895.00			\$895.00	100.0%	
46	Startup and Commissioning	\$12,000.00	\$12,000.00				\$12,000.00	100.0%	
47									
48	Item No. 5 - Pilot Building Construction - \$1,300,000								
49	Civil/Site Work for Gravity Sewer	\$70,000.00	\$70,000.00				\$70,000.00	100.0%	
50	Concrete Work for Base Slab	\$65,000.00	\$65,000.00				\$65,000.00	100.0%	
51	PEMB Building	\$155,000.00	\$155,000.00				\$155,000.00	100.0%	
52	PEMB Roll-Up / Man Doors	\$58,000.00	\$58,000.00				\$58,000.00	100.0%	
53	PEMB Interior Architectural	\$42,000.00	\$42,000.00				\$42,000.00	100.0%	
54	Laboratory Casework	\$28,000.00	\$28,000.00				\$28,000.00	100.0%	
55	Plumbing								
56	Underground Sanitary	\$42,556.00	\$42,556.00				\$42,556.00	100.0%	
57	Above Ground Sanitary	\$16,239.00	\$16,239.00				\$16,239.00	100.0%	
58	Water Piping	\$29,118.00	\$29,118.00				\$29,118.00	100.0%	
59	Fixtures	\$57,115.00	\$57,115.00				\$57,115.00	100.0%	

Progress Estimate - Lump Sum Work

Contractor's Application

FOR Franklin SE Basin Pilot & Redwing PS		Application Number: 16							
From	12/1/2022-2/17/2023	Application Date: 2/17/2023							
A		Work Completed			E	F		G	
Item #	Description	B	C	D	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (F / B)	Balance to Finish (B - F)	
		Scheduled Value (\$)	From Previous Application (C+D)	This Period					
60	Insulation	\$23,416.00	\$23,416.00			\$23,416.00	100.0%		
61	HVAC								
62	HVAC Submittals & Bonding	\$28,917.00	\$28,917.00			\$28,917.00	100.0%		
63	Equipment & Unit Heater	\$89,592.00	\$89,592.00			\$89,592.00	100.0%		
64	Ductwork	\$78,393.00	\$78,393.00			\$78,393.00	100.0%		
65	Fans & Louvers	\$33,597.00	\$33,597.00			\$33,597.00	100.0%		
66	Insulation	\$13,439.00	\$13,439.00			\$13,439.00	100.0%		
67	Controls	\$13,439.00	\$12,100.00	\$1,339.00		\$13,439.00	100.0%		
68	Test & Balance	\$1,679.00		\$1,679.00		\$1,679.00	100.0%		
69	Miscellaneous Equipment	\$19,000.00	\$19,000.00			\$19,000.00	100.0%		
70	Painting	\$20,000.00	\$20,000.00			\$20,000.00	100.0%		
71	Electrical								
72	Electrical Submittals & Bonding	\$33,092.00	\$33,092.00			\$33,092.00	100.0%		
73	Installation	\$156,448.00	\$155,130.00	\$1,318.00		\$156,448.00	100.0%		
74	Switchgear	\$54,155.00	\$48,950.00	\$5,205.00		\$54,155.00	100.0%		
75	Wire & Conduit	\$111,667.00	\$111,667.00			\$111,667.00	100.0%		
76	Lighting	\$28,081.00	\$28,081.00			\$28,081.00	100.0%		
77	Electrical Testing & Commissioning	\$32,057.00		\$32,057.00		\$32,057.00	100.0%		
78									
79	Item No. 6 - Owner Furnished Equipment - \$50,000								
80	Suez ZW500 Membrane Unit Installation	\$9,000.00	\$9,000.00			\$9,000.00	100.0%		
81	Intuitech Z300 Ozone Unit Installation	\$10,000.00	\$10,000.00			\$10,000.00	100.0%		
82	Intuitech F1100 BAF Unit Installation	\$10,000.00	\$10,000.00			\$10,000.00	100.0%		
83	Calgon GAC Unit Installation	\$6,000.00	\$6,000.00			\$6,000.00	100.0%		
84	Trojan UVAOP Unit Installation	\$6,000.00	\$6,000.00			\$6,000.00	100.0%		
85	Aquisense UV Unit Installation	\$6,000.00	\$6,000.00			\$6,000.00	100.0%		
86	Startup and Commissioning OFE	\$3,000.00	\$3,000.00			\$3,000.00	100.0%		
87									
88	Item No. 7 - Unit Price Items								
89	Undercut Excavation 500cy @ \$25/cy	\$12,500.00						\$12,500.00	

Progress Estimate - Lump Sum Work

Contractor's Application

FOR Franklin SE Basin Pilot & Redwing PS			Application Number: 16		
From 12/1/2022-2/17/2023			Application Date: 2/17/2023		



March 29, 2023

Patricia McNeese
Utilities Engineer II
City of Franklin
Water Management Dept.
124 Lumber Dr.
Franklin, TN 37064

Re: Redwing & Pilot Milestone Time Extension Request – Rev2

Dear Patricia,

Please refer to the attached letter dated October 7, 2022 from Haren Construction Co., (HCCI) requesting Substantial Completion for the Pilot Building.

The table below represents the milestones established in the contract versus HCCI's extension request.

MILESTONE	CURRENT DATE	REQUESTED DATE
Redwing Reclaimed Water Pump Station <i>Substantial Completion</i>	February 28, 2022	July 18, 2022
SE Basin Pilot Facility <i>Substantial Completion</i>	June 28, 2022	October 7, 2022
Franklin SE Basin Pilot Facility & Redwing Reclaimed Water Pump Station <i>Final Completion</i>	July 12, 2022	March 1, 2023

Hazen supports HCCI's request for Substantial Completion milestone for the Pilot Building. Even though equipment necessary for startup and operation has been delay by vendors, HCCI and their subs acquired temporary components to get the Pilot facility operable so Hazen and City operations staff can began running process equipment, tweaking operations, and begin collecting data. All components have now arrived and as of March 1, 2023 have been tested and approved for use.

Sincerely,

Michael L. Orr, PE
Hazen PM

Attch: HCCI letter dated 10/11/2022

Job no



HAREN CONSTRUCTION COMPANY, INC.

October 7, 2022

Michael Orr, PE
Senior Associate
Hazen and Sawyer
545 Mainstream Drive, Suite 320
Nashville, TN 37228
Office 615-783-1515
morr@hazenandsawyer.com

Re: Substantial Completion
SE Basin Pilot Facility

Dear Mr. Orr,

This letter is to respectfully request Substantial Completion status for the SE Basin Pilot Facility part of the project as of this letter's date as required by Contract General Condition 00 C700-15.03, and we request that you issue a certificate of Substantial Completion.

The list of items that remain to be finished are as follows:

1. HVAC System Startup/Testing/Balancing
2. Swapping Temporary Gear for Permanent Gear (PP-1, EF Combo Starters) & Final Testing
3. Adding Riser on Influent at Influent EQ Tank to fix Pressure Issue at Chlorine Analyzers
4. Tubing to Chemical Storage Drums (Chemicals are not onsite, OFE item)
5. Correcting Site Fill and Grassing in Swale/Drainage Ditch
6. Site Restoration, Clean up and Grassing at Laydown & Parking area.

These items will all be done in accordance with the contract documents prior to Final Completion except for Item #2 as final delivery of the permanent gear is not determinable at this time. This will be considered a warranty replacement when they arrive. We hereby consider the SE Basin Pilot Facility ready for its intended use in regard to HCCI's contractual obligations.

We have enjoyed working with yourself and the Owner on this project. If you have any questions or comments in regard to this, please feel free to contact me.

Sincerely,

Brennan Nielsen
Project Manager

BN/JC

Substantial Completion-PB / 201-108

ETOWAH / MARYVILLE / DYERSBURG, TN
P.O. BOX 350 • 1715 HIGHWAY 411 NORTH • ETOWAH, TN 37331
(423) 263-5561 • FAX (423) 263-5573



City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04488

DATE: March 27, 2023
TO: Capital Investment Committee
FROM: Paul Holzen, Director of Engineering
Adam Moser, Traffic Engineer

SUBJECT:

Consideration Of DRAFT Resolution 2022-70, A Resolution To Award The Construction Contract (COF Contract No. 2022-0116) For The SR-96 (Murfreesboro Road) Traffic Signal Improvements Project (TDOT PIN 127913.00) To Stansell Electric Company, Inc In The Amount Of \$969,844

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning Resolution 2022-70, a resolution to award the Construction Contract (COF Contract 2022-0116) for the SR-96 (Murfreesboro Road) Traffic Signal Improvement Project to Stansell Electric Company, Inc.

BACKGROUND/STAFF COMMENTS:

On April 23, 2019, the BOMA approved COF Contract No. 2019-0097 (Tennessee Department of Transportation Agreement No. 180180) to allow the City to locally manage the SR-96 (Murfreesboro Road) Traffic Signal Improvements Project (TDOT PIN 127913.00). This agreement also allows the City to access up to \$1,550,000 in federal Congestion Mitigation & Air Quality (CMAQ) funds, as awarded to the City during the competitive grant cycle for fiscal year (FY) 2017, to be used toward the completion of this project.

On March 23, 2023, sealed bids for the construction portion of this project (COF Project No. 2020-008 / TDOT PIN 127913.00) were received, opened, and read aloud at City Hall by Engineering Department staff. Bids were received from two (2) bidders, with Stansell Electric Company, Inc. being the apparent responsive low bidder, with a bid amount of \$969,844.00. After careful review and tabulation of all submitted bids, City staff recommends award of this construction contract (COF Contract No. 2022-0116) to Stansell Electric Company, Inc. in the amount of \$969,844.00, pending concurrence by TDOT per Local Programs guidelines.

FINANCIAL IMPACT:

The total bid amount for this construction contract is \$969,844.00. This is the construction phase of this contract. Other phases of this project included NEPA, Design and CEI, along with the technical selection of the software and non-standard technology components of the project. The total project

cost to date is \$1,775,107.42. This is \$225,107.42 in excess of the CMAQ grant amount of \$1,550,000.00. Engineering staff has sent a request to TDOT for additional funding and, if unsuccessful, will reach out to the GNRC (MPO) to see if additional funding could be provided for the \$225,107.42 access amount. The increase in construction costs that were received by the low bidder, Stansell Electric, are attributable to the current state of construction, per the National Highway Construction Cost Index (NHCCI) from when the project was originally estimated for funding in 2020.

RECOMMENDATION:

Staff recommends that Resolution 2022-70 be recommended to the Board of Mayor and Aldermen for approval.

RESOLUTION 2022-70

A RESOLUTION TO AWARD THE CONSTRUCTION CONTRACT (COF CONTRACT NO. 2022-0116) FOR THE SR-96 (MURFREESBORO ROAD) TRAFFIC SIGNAL IMPROVEMENTS PROJECT (TDOT PIN 127913.00) TO STANSELL ELECTRIC COMPANY, INC IN THE AMOUNT OF \$969,844.00

WHEREAS, on April 23, 2019, the City of Franklin Board of Mayor and Aldermen (BOMA) approved COF Contract No. 2019-0097 (Tennessee Department of Transportation [TDOT] Agreement No. 180180]) to allow the City to locally manage the SR-96 (Murfreesboro Road) Traffic Signal Improvements Project (TDOT PIN 127913.00); and

WHEREAS, said Agreement includes \$1,550,000 in federal Congestion Mitigation & Air Quality (CMAQ) funds, as awarded during the competitive grant cycle for fiscal year (FY) 2017, to be used toward the completion of this project; and

WHEREAS, on March 23, 2023, sealed bids for the construction of the SR-96 (Murfreesboro Road) Traffic Signal Improvements Project (COF Project No. 2022-0116 / TDOT PIN 127913.00) were received by the City of Franklin Engineering Department at City Hall, 109 3rd Avenue South, Franklin, Tennessee 37064, were publicly opened, and were read aloud; and

WHEREAS, after careful review and tabulation of all submitted bids, City staff recommends award of the contract (COF Contract No. 2022-0116) for construction of the SR-96 (Murfreesboro Road) Traffic Signal Improvements Project to the lowest responsive bidder, Stansell Electric Company, Inc, in the bid amount of Nine Hundred Sixty Nine Thousand Eight Hundred Forty Four and 00/100 Dollars (\$969,844.00); and

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, AS FOLLOWS:

Pending concurrence by TDOT staff, approval is granted to award the contract (COF Contract No. 2022-0116) for the construction of the SR-96 (Murfreesboro Road) Traffic Signal Improvements Project (TDOT PIN 127913.00) to Stansell Electric Company, Inc in the amount of Nine Hundred Sixty Nine Thousand Eight Hundred Forty Four and 00/100 Dollars (\$969,844.00)

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2023.

ATTEST:

CITY OF FRANKLIN, TENNESSEE:

By: _____
Eric S. Stuckey
City Administrator

By: _____
Dr. Ken Moore
Mayor

Approved as to form:

By: _____
Shauna R. Billingsley
City Attorney

PROPOSAL CONTRACT

FOR THE CONSTRUCTION OF

Contract No. 2022-0116

PIN: 127913.00
County: Williamson
Federal Project No.: CM-NH-96(59)
State Project No.: 94LPLM-F3-109
Local Agency Reference No.: 2022-0116
Description Of Project: SR-96 (Murfreesboro Road) Traffic Signal Improvements
From Eddy Lane to Arno Road
Project Length: 3.50 Miles
Completion Time: On or Before 365 calendar days following the Notice To
Proceed with the work
DBE Goal: 5%

By: Stansell Electric Company, Inc.
City, Nashville, TN
St.:
Surety: Fidelity and Deposit Company of Maryland

Addendum #1 - 3/8/2023 - J. H. H. H.
Addendum #2 - 3/10/2023 - J. H. H. H.

TDOT Version: 3/15/19

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ADDENDUM NO. 2

City of Franklin

Engineering Department
109 Third Avenue South, Suite 133
Franklin, TN 37064

Project: SR96E Traffic Signal
Improvements

TDOT PIN: 127913.00

Contract No: 2022-0116

Federal Project No: CM-NH-96(59)

State Project No: 94LPLM-F3-109

Date of Issuance: March 10, 2023

You are directed to make the following change(s) in the Bidding Documents:

- (I) Pursuant to *Tennessee Code Annotated § 12-4-119* (as enacted by Chapter 775 of the Public Acts of 2022), City of Franklin Form 00414 entitled 'Non-Boycott of Israel Requirements' is being added to Contract No. 2022-0116. This form must be signed by the Contractor and included in the bid documents. The form is attached.
- (II) Please **acknowledge all addenda in writing** on the cover sheet of the *Proposal Manual* that is returned to the City on the day of Bid Submittal/Opening. A simple note stating each addendum issued with a signature will be acceptable, so as to ensure all addenda has been reviewed and acknowledged by the Contractor.

NON-BOYCOTT OF ISRAEL REQUIREMENTS

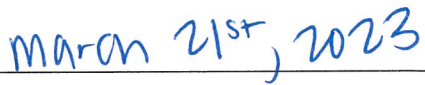
Tennessee Code Annotated § 12-4-119 (as enacted by Chapter 775 of the Public Acts of 2022) prohibits a public entity from entering into a contract with a company to acquire or dispose of services, supplies, information technology, or construction unless the contract includes a written certification that the company is not currently engaged in, and will not for the duration of the contract engage in, a boycott of Israel. This requirement does not apply to a contract with a total potential value of less than two hundred fifty thousand dollars (\$250,000) or to contractors with less than ten (10) employees.

CERTIFICATION

The Contractor certifies that it is not currently engaged in, and covenants that it will not, for the duration of the Contract, engage in a Boycott of Israel, as that term is defined in Tenn. Code Ann. § 12-4-119



Signature



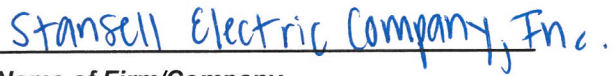
Date



Printed Name



Title



Name of Firm/Company

End of Addendum 2

ADDENDUM NO. 1

City of Franklin

Engineering Department
109 Third Avenue South, Suite 133
Franklin, TN 37064

Project: SR96E Traffic Signal
Improvements

TDOT PIN: 127913.00

Contract No: 2022-0116

Federal Project No: CM-NH-96(59)

State Project No: 94LPLM-F3-109

Date of Issuance: March 8, 2023

You are directed to make the following change(s) in the Bidding Documents:

(I) Questions from Contractors and Responses (in RED):

- a. Does the project include procuring Connected Vehicle (CV) radios?

No. The CV equipment is being procured by the City. This was done through a technical 'best value' selection process. The CV equipment to be installed by the Contractor under this contract are the Applied Information (AI) AI-500-086-02 FMU (field monitoring unit) in the traffic signal cabinet, AI-500-095 RSU mounted approximately 7' – 9' off the ground on the signal mast arm upright, and a high gain omni-directional DSRC/CV2X antenna mounted to the signal mast arm. The Contractor is to work with the CV radio vendor and City for installation and integration.

- b. Does the project include procurement of the ATC Traffic Signal Controller in the cost of the traffic signal cabinet (Item No 730-15.07)?

No. The ATC controller is being procured by the City for all intersections. This was done through a technical 'best value' selection process. The ATC will be configured by the technical vendor selected via the 'best value' contract, separate from this construction bid. The configuration will include conversion of the existing timing database to the new controller database. The Contractor is to work with the ATC vendor and City for installation and integration of the ATC controller into the cabinet. The ATC controller to be installed in the cabinet is the Q-Free XN NEMA ATC controller.

- c. What are the specifications and requirements for bid item 725-24.41 Burn-in Period

Item No 725-24.41, Burn-in Period, is a pay item used in Intelligent Transportation System (ITS) projects to ensure all technology is operating as specified per the System Engineering Analysis Report (SEAR). For this contract, it is a period of 30 days that begins after the complete installation and successful testing of all items specified in the project plans and specifications. Typical work for this contract includes minor adjustments to ITS and signal devices, such as vehicle detection, Connected Vehicle (CV) radios, etc. This pay item covers onsite equipment and labor for these minor adjustments by the Contractor. The Burn-in Period does not take the place of warranties or workmanship standard language for equipment procured and installed by the Contractor

d. Item 712-08.01 – Uniformed Police Officer. The unit is shown as 1 DOLL. How should we fill this in on the bid form?

- Estimate the total time that a uniformed police officer will be needed for traffic control duties. It is reminded that cabinet change outs are to occur at night and will require police officers.
- Refer to Franklin Police Department website for more information about hiring an extra-duty Franklin Police Officer for traffic control duties:
 - <https://www.franklintn.gov/government/departments-k-z/police/hire-an-officer-for-your-event>
 - FPD “Extra Duty Police Services Contract” - <https://www.franklintn.gov/home/showpublisheddocument/18197/637945310750770000>
- Determine total value for line item,
 - EXAMPLE:
 - a. Contractor estimates total cost to hire extra-duty FPD officer(s) for project at \$500 total,
 - b. Contractor adds 15% to total cost for “management” of FPD officers or \$75 (\$500 x 15%)
 - c. New total cost becomes \$500 + \$75 = \$575
 - d. Bid Form for line item 712-08.01 looks like:

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	EXT. AMOUNT
712-08.01	UNIFORMED POLICE OFFICER	DOL	575	\$575.00

e. We understand the contractor is responsible for the physical installation of the CV devices. Please confirm that the CV vendor will handle all licensing, programming, testing, & integration of the technology.

That is correct. The CV vendor will handle all licensing, programming, testing and integration of the technology. The Contractor shall be responsible for the physical installation and any adjustments that may be necessary during testing.

(II) Additional comments:

- A. Please **acknowledge all addenda in writing** on the cover sheet of the **Proposal Manual** that is returned to the City on the day of Bid Submittal/Opening. A simple note stating each addendum issued with a signature will be acceptable, so as to ensure all addenda has been reviewed and acknowledged by the Contractor.

End of Addendum 1

TABLE OF CONTENTS

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Supplemental Specification to Section 200	
Supplemental Specification to Section 300	
Supplemental Specification to Section 400	12/19/2022 SS-8
Supplemental Specification to Section 500	12/19/2022 SS-13
Supplemental Specification to Section 600	12/19/2022 SS-14
Supplemental Specification to Section 700	12/19/2022 SS-24
Supplemental Specification to Section 800	
Supplemental Specification to Section 900	01/30/2023 SS-31

The above Supplemental Specifications, revised as noted, are incorporated by reference for bidding purposes and will be printed with the Contract after awards. These Supplemental Specifications may be obtained from the Department at Suite 700, James K. Polk Bldg., Nashville, Tennessee or viewed on the Department's website at <https://www.tn.gov/tdot/tdot-construction-division/transportation/construction-division-resources.html>

Special Provisions.....	Special Provision Number, Regarding:	<u>Date</u>	<u>Page #</u>
1021	Employing & Contracting w/Illegal Immigrants	10/10/2016	SP-1
106A	Buy America Requirements	06/20/2011	SP-3
107FP	Water Quality and Storm Water Permits	02/08/2021	SP-5
	Insert Project Specific Permits (if applicable)		
1230	Equal Employment Opportunity	09/07/2022	SP-9
1231	Equal Employment Opportunity (11246)	09/07/2022	SP-15
1232	Affirmative Action (Exec Order 11246)	06/20/2022	SP-21
1246LP	DBE Participation	09/07/2022	SP-24
1247LP	Local Programs Federal-Aid Contracts with DBE Goal	09/07/2022	SP-26
1273	Required Contract Provision (Federal-Aid)	07/05/2022	SP-37
AA-FED RATES	Federal Wage Rates	01/06/2023	SP-50
106B	Prohibition on Certain Telecommunication and Video Surveillance Services or Equipment	09/10/2020	SP-57
700SIG	Highway Signs, Luminaries, and Traffic Signals	07/28/2021	SP-58
730FR	Traffic Signals City of Franklin	03/02/2022	SP-63
106BA	Build America, Buy America Act Requirements	12/12/2022	SP-125
107CPLP	Certified Payrolls – Local Programs	01/17/2023	SP-126

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Proposal	P-1
Bid Form	B-1
Proposal Certification	PC-1
Proposal Bond	PB-1

Proposal Guarantee	PG-1
Contract	C-1
Contract Payment and Performance Bond	CPP-1
Other Technical Special Provisions	N/A
COF 100RD Utility Record Drawings	09/22/2022 TSP-1
COF 712TCS Traffic Control Supervisor	09/22/2022 TSP-4

ATTENTION

It shall be the bidders' responsibility to confirm that the Proposal Contract contains all the documents indicated on the Table of Contents.

Should any omissions occur, the appropriate documents may be obtained from the Construction Division upon request.

THE CITY OF FRANKLIN
INSTRUCTIONS TO BIDDERS
BIDS TO BE RECEIVED

2/28/2023

Sealed bids for the construction of the following projects will be received by the CITY OF FRANKLIN, **109 3rd Avenue South, Suite 133, Franklin TN 37064** until **2:00 PM 2/28/2023** and opened publicly at City Hall, 109 3rd Avenue South, Franklin TN, **2:00 PM 2/28/2023**. The reading of the bids will begin at shortly after **2:00 PM**.

The proposed construction shall be performed in accordance with the most current version of the Standard Specifications for Road and Bridge Construction of the Tennessee Department of Transportation, and the Standard Roadway and Structures Drawings of the Tennessee Department of Transportation which are incorporated herein by reference and made a part hereof. In addition, only the Special Provisions contained within the applicable Proposal Contract will be considered binding. Any reference to any Special Provision not contained within the applicable Proposal Contract shall be disregarded. All questions related to the Proposal Contract, Plans, Specifications or Special Provisions shall be directed to the **City Traffic Engineer, Adam Moser**, by email at Adam.Moser@franklintn.gov or by phone at (615-550-6663). Information received from other offices of the CITY OF FRANKLIN strictly advisory.

IMPORTANT NOTICE TO BIDDERS:

Prospective bidders should read the following instructions carefully before submitting their bids. Special attention is called to the regulations of the CITY OF FRANKLIN that total bids, rather than unit prices, will be read. Proposals shall be rejected as being irregular if they fail to contain a unit price for each item listed. Extensions of the various items must be sub-totaled, carried forward, and shown as a grand total following the last proposal item. All entries must be in ink.

After a bidder has deposited a proposal with the CITY OF FRANKLIN, he can withdraw it only on written request in accordance with Subsection 102.07 of the Tennessee Department of Transportation Standard Specifications.

Totals read at the opening of the bids are not guaranteed to be correct and no final award of the contract will be made until bids and extensions have been checked and re-checked.

On all projects which are financed in whole or in part by funds received through Federal agencies and/or the Tennessee Department of Transportation, the awarding of contracts by the CITY OF FRANKLIN will be subject to approval by the Tennessee Department of Transportation. The CITY OF FRANKLIN reserves the right to reject any bid proposal which is not acceptable to the parties as listed, although such bid proposal would otherwise qualify as the lowest and best bid under the Tennessee Department of Transportation Standard Specifications.

The CITY OF FRANKLIN reserves the right to reject any or all Proposals, to waive technicalities or to advertise for new Proposals, if in the judgment of the awarding authority and subject to TDOT concurrence, the best interest of the CITY OF FRANKLIN will be promoted thereby.

The CITY OF FRANKLIN reserves the right to cancel the award of any Contract, at any time prior to execution of said Contract by all parties without any liability against the CITY OF FRANKLIN.

The awarding of the contract or rejection of all proposals will be made within 60 days after the formal opening of the proposals. Upon award, a detailed letter of instructions will be forwarded along with appropriate documents to the low bidder.

The CITY OF FRANKLIN hereby notifies all bidders, that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the basis of age, race, color, religion, national origin, sex or disability in consideration for an award.

The CITY OF FRANKLIN is an equal opportunity affirmative action employer, drug-free, with policies of nondiscrimination on the basis of race, sex, religion, color, national or ethnic origin, age, disability, or military service.

PREQUALIFICATION OF BIDDERS:

Each prospective bidder and subcontractor will be required to file a document entitled "Prequalification Questionnaire." The foregoing shall be filed on a form provided by the Tennessee Department of Transportation. The form must be filled out completely, and the truth and accuracy of the information provided must be certified by a sworn affidavit signed by an officer, partner, owner or other authorized representative of the applicant who has authority to sign contracts or other legal documents on behalf of the applicant. A prospective bidder must be prequalified by and in good standing with the Tennessee Department of Transportation prior to the issuance of a proposal form. A prospective subcontractor must be prequalified by and in good standing with the Tennessee Department of Transportation prior to being approved as a subcontractor. Each prospective bidder or subcontractor shall notify the Tennessee Department of Transportation if there is any subsequent change in the name, organization or contact information provided.

Prospective bidders' "Prequalification Questionnaire" shall be filed with the Tennessee Department of Transportation at least fourteen (14) days prior to the date of opening bids on any letting in which the applicant intends to submit a bid to the CITY OF FRANKLIN, or at least fourteen (14) days prior to the date on which the applicant requests approval as a subcontractor under a contract awarded by the CITY OF FRANKLIN. Bidders intending to submit proposals consistently shall complete and submit the prequalification application annually; however, this document may be changed during such period upon submission of additional favorable reports or upon receipt by the Tennessee Department of Transportation of substantiated evidence of unsatisfactory performance. The Tennessee Department of Transportation reserves the right to request additional information and documentation to clarify and/or verify any information submitted in an applicant's prequalification application.

The prequalification form can be found at the web address
<https://www.tn.gov/tdot/tdot-construction-division/construction-contractor-prequalification.html>

A proposal to be used for non-bidding purposes may be issued to any interested party regardless of prequalification. This proposal Contract will be marked "Void for Bidding". A contractor that has purchased a proposal contract that was marked "void for bidding" can buy another book once they are fully prequalified before the bid date.

LICENSING REQUIREMENTS

According to the types of funds used, contractor bidding requirements differ. When using any Federal funds, proposals shall be completed as described below:

Proposals shall be submitted by a bidder licensed with the Tennessee Department of Commerce and Insurance (TDCI), Board for Licensing Contractors (BLC) within twenty-one (21) days of the bid opening, in accordance with Subsection 102.11 of the Tennessee Department of Transportation Standard Specifications.

Prior to recommending award of a contract, the Local Government will confirm that the lowest responsible bidder is licensed with the BLC. Because TDOT work classifications and the BLC licensing classifications slightly differ, the Local Government will verify only that the apparent low bidder is licensed in the general classification (e.g., Heavy Construction (HC), Highway, Railroad, Airport Construction (HRA), Specialty (S), Municipal and Utility Construction (MU), or Electrical Contracting (CE)) and not the specific subcategories of these classifications for the type of work involved in the project. This is in recognition that the prime contractor is required to complete 30% of the specific project work and may subcontract the remainder of the work.

Title 48 of Tennessee Code requires all contractors and subcontractors that are domestic or foreign Corporations, Limited Liability Companies, Limited Partnerships, or Limited Liability Partnerships to be in good standing with the Secretary of State (i.e., have a valid Certificate of Existence/Authorization). This includes being duly incorporated, authorized to transact business, and/or in compliance with other requirements as detailed by the Secretary of State.

Bidders that are domestic or foreign corporations, limited liability companies, limited partnerships, or limited liability partnerships, must be in good standing with the Secretary of State (i.e., have a valid Certificate of Existence/Authorization) on or before twenty-one (21) days after proposals are opened.

PROPOSAL BOND

Each proposal must be accompanied by a bidder's bond, or Cashier's Check, or Certified Check made payable to the CITY OF FRANKLIN in an amount equaling not less than five percent (5%) of the amount bid. In the case of optional items in the proposals, the amount of the bidder's bond or check must be in an amount equaling not less than five percent (5%) of the total amount of the bid based on the high option.

If the bidder's bond is offered as guaranty, the bond must be on the form furnished by the CITY OF FRANKLIN and made by a surety company, qualified and authorized to transact business in the State of Tennessee and must be acceptable to the CITY OF FRANKLIN.

If a check is offered as guaranty, the check of the successful bidder will be cashable at the discretion of the CITY OF FRANKLIN, pending the satisfactory execution and acceptance of the contract and the contract bond.

ISSUANCE OF BIDDING DOCUMENTS

This CITY OF FRANKLIN and the Tennessee Department of Transportation are on a cash basis for sales of Plans, Proposal Contracts, Standard Specifications, Standard Drawings, Standard Drawing Books and Tabulations of Bids. Requests for documents must be accompanied by cash, check, money order, or they may be mailed to the buyer C.O.D.

A charge of **\$100.00** plus **9.25%** sales tax, for in-state delivery, will be made for each Proposal Contract. This charge is applicable regardless of whether the Proposal is to be used for bidding or non-bidding purposes. Proposals will be obtainable until the time set for opening bids. The charge for Plans and/or Cross-sections will be as specified in the Notice to Contractors and this charge will be applicable before the letting and for three months after the letting. Plans ordered after the three month period will be furnished at **\$1.50** per sheet. Individual Plan sheets and individual Standard Drawings will be furnished at **\$1.00** per sheet. Tabulations of bids will be furnished at **\$1.00** per sheet. Tennessee Department of Transportation Standard Drawing Books will be furnished by the Tennessee Department of Transportation at **\$100.00** per book plus **9.25%** sales tax, for in-state delivery. The most recent version of the Tennessee Department of Transportation Standard Specifications for Road and Bridge Construction will be furnished by the Tennessee Department of Transportation at **\$12.00** per book plus **9.25%** sales tax, for in-state delivery. There will be a minimum charge of \$2.00 on any purchase. All documents will be furnished without refund and transmitted at your risk.

When two or more contractors wish to bid together in a joint venture, each contractor will be required to make a written request for such a proposal to the CITY OF FRANKLIN. This request shall be signed by an authorized signatory of each firm.

Requests for joint venture proposals may be made in person or by telephone. However, the proposal for said joint venture will not be issued until the request in writing, as set forth above, is received by the CITY OF FRANKLIN.

REJECTION OF PROPOSALS

Proposals will be rejected as irregular if prior to the formal opening of the Proposal all of the following documents have not been signed: (1) the bidder shall sign by written signature the Proposal form, (2) the bidder shall sign by written signature the Proposal Certification form, (3) the bidder shall sign by written signature the Proposal Bond form or the Proposal Guarantee, whichever is applicable, (4) the Agent or Attorney-in-Fact representing a Surety Company shall sign by written signature the Proposal Bond, if applicable. In addition, Proposals will be rejected if any of the above signatures are a reproduced copy, such as, but not limited to a photostatic copy or a facsimile transmission. An original, dated and valid Power of Attorney for the Attorney-in-Fact must accompany the Proposal and the Contract. The accompanying Power of Attorney must be dated, and the date must be the exact same date as the date on the Proposal Bond. The Proposal and the Proposal Bond, including the attached Power of Attorney, shall be valid and binding for 60 days subsequent to the date of opening bids.

Proposals shall be completed on the forms as issued. Proposals will be rejected as being irregular if they are not prepared on the prescribed forms; if they show any omissions, alterations of form, additions, or conditions not called for, unauthorized alternate bids, or irregularities of any kind; or if they fail to contain a unit price for each item listed. Proposals may be rejected if any of the unit prices contained therein are mathematically unbalanced, either excessive or below the Engineer's Estimate.

Written alterations to unit prices and extensions of the various items in the bid item sheets of the Proposal or, for computer assisted bids (CAB), in the CAB program generated set of bid item sheets will not be cause for rejection of the Proposal, provided each alteration is made in ink and is initialed by a duly authorized official of the company. In case of conflict between altered unit prices or extensions thereof, the unit price in numerals will govern.

The Plans and Specifications are as much a part of the proposal form as if they were bound therein. All of the documents contained therein are part of the proposal. Proposals shall not be taken apart. Proposals taken apart may be subject to rejection. Photostatic or facsimile copies of Proposal sheets may not be attached to the Proposal. Proposals containing forms not issued by the CITY OF FRANKLIN may be subject to rejection.

Proposals will be rejected as irregular if the bidder fails to acknowledge all addenda.

Proposals will be rejected as irregular when submitted by a bidder who is not prequalified and in good standing on the date of letting in accordance with Subsection 102.01 of the Tennessee Department of Transportation Standard Specifications and Chapter 1680-5-3, Prequalification of Contractors, of the Rules of the Tennessee Department of Transportation.

Proposals will be rejected as irregular when submitted by a bidder who is not licensed according to the requirements as detailed above.

Reasonable grounds for believing that there has been collusion among the Bidders will cause a rejection of all Proposals in which the Bidders involved are interested.

ADDENDA

Addenda to the Proposal will be acknowledged by all bidders. Failure to acknowledge receipt of Addendum Letters is grounds for rejection.

RETAINAGE

Effective for all contracts, the CITY OF FRANKLIN will not hold retainage. In addition, the Contractor will not be able to hold retainage from the subcontractor.

SUBCONTRACTS

Your special attention is called to Section 105 - Control of Work, and Section 108 - Prosecution and Progress of the Tennessee Department of Transportation Standard Specifications, concerning duties of the contractor and subletting of contracts.

CHANGED CONDITIONS

Your special attention is called to Section 104.02 of the Tennessee Department of Transportation Standard Specifications, concerning changed conditions on this contract.

The following information applies to Federal-Aid construction projects:

NOTICE TO ALL BIDDERS

To report bid rigging activities call:

1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

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S T A T E

(Rev. 9-7-21)

(Rev. 12-15-21)

(Rev. 12-19-22)

O F

T E N N E S S E E

January 1, 2021

Supplemental Specifications – 100SS

of the

Standard Specifications for Road and Bridge Construction

January 1, 2021

Subsection 102.09, (pg. 17), 12-19-22; Rejection of Proposals; Revise No. 10:

10. The apparent low bidder fails to complete and submit the Department form “Certification Regarding Subcontractor Bid Quotes” (Bidders List) electronically before the close of business (4:30 PM Central Time) within ~~seven~~five (~~57~~) calendar days after the date on which bids are required to be submitted.

Subsection 104.03.B & C, (pg. 23-24), 9-7-21; Contract Change Notification; B & C; Revise subsections:

B. Written Acknowledgement by Engineer

The Engineer will provide written acknowledgement of the Contractor’s written notice within ten (10) calendar days.

C. Written Response by Engineer

The Engineer will provide a written response within the specified number of calendar days based on the requested contract change:

1. For requested changes to the contract time in excess of one hundred eighty (180) days or requested changes that alter the original contract amount by more than \$200,000, the Engineer will respond within thirty (30) days of receiving the Contractor's written notice.
2. For requested changes to the contract time in excess of ninety (90) days but less than or equal to one hundred eighty (180) days, or requested changes that alter the original contract amount by more than \$100,000 but less than or equal to \$200,000, or by more than ten percent (10%) of the original contract, whichever is less, the Engineer will respond within twenty-one (21) days of receiving the Contractor's written notice.
3. For all other requested changes to the contract, the Engineer will respond within fourteen (14) calendar days of receiving the Contractor's written notice.

The written response to the Contractor's written notice will include one of the following:

1. Confirmation that a change is necessary in accordance with **104.02**, and direction on how the Work will proceed.
2. A denial of the request for a change, which will include references to the Contract as to why the condition does not represent a change.
3. A request for additional information stating the specific information needed and the date by which it must be received. The Engineer will respond to the additional information provided within fourteen (14) calendar days.

When a change is necessary, the Engineer will make appropriate adjustments to the Contract price and time, if warranted, in accordance with **108.07**, **109.04**, **109.05.A**, and **109.06**. If the Contractor disagrees with the Engineer's decision or does not agree with the Contract adjustments, the Contractor may pursue the issue as a claim in accordance with **105.16**.

Subsection 106.06.A.1, (pg. 61), 12-15-21; Field Laboratory, Type A; Revise No. 1:

1. Scales of appropriate capacity and design to weigh the required samples. Scales are to be sensitive to within 0.1% of the sample to be weighed. Provide standard weights for scale calibration. Scale calibration shall be completed annually, by an independent source.

Subsection 107.13, (pg. 75), 1-9-23; Legal Responsibilities of the Contractor; Add New 3rd Paragraph:

The Contractor certifies that it is not currently engaged in, and covenants that it will not, for the duration of the Contract, engage in a boycott of Israel, as that term is defined in Tenn. Code Ann. § 12-4-119. This certification does not apply to a Contract with a value of less than two hundred fifty thousand dollars (\$250,000) or if the Contractor has fewer than ten (10) employees.

Subsection 107.20, (pg. 78), 12-19-22; Certified Payrolls; Revise Subsection:

As specified by Minimum Wage Scales for Federal-Aid and State Funded Construction contract provisions, submit and certify payrolls for each week in which any contract work is performed. All payrolls shall be submitted electronically through the website using AASHTOWare Project Civil Rights & Labor (CRL) software.

Register for payroll access and develop a method of import prior to the Preconstruction Conference. Ensure each subcontractor, including all Disadvantaged Business Enterprises (DBE), certified Small Business Enterprises (SBE), and DBE or SBE haulers, has registered in CRL for payroll access and developed their method of import prior to commencing Work.

Assume all responsibility for ensuring all payrolls and all subcontractor payrolls are submitted and certified electronically in CRL for each week in which any contract work is performed. If all payrolls are not received in this timeframe, the progress payment shall be withheld until all necessary payrolls have been received.

~~certified payrolls for Contractor and subcontractor workforce to the Engineer weekly for each week in which any work is performed. Once construction Work begins for the Contractor or subcontractor, if in any week the Contractor or subcontractor does not perform wWork, check the box "No Work Until Further Notice" in CRL. submit the following statement to the Engineer: "No work performed by (contractor name) for the week ending _____."~~

Subsection 108.01, (pg. 79, 80), 12-15-21; Subletting of Contract; Revise Item list:

Item 105-01 – Construction Stakes, Lines and Grades
Item 202-01 – Removal of Asbestos
Item 203-40 – Rock Anchors, Anchor Blocks, Tie Back Anchors
Item 209 – Project EPSC
Item 411-12 - Scoring
Item 411-33 – Stamped Asphalt
Item 501-03 – Concrete Shoulder Rumble Strip
Item 503-01 – Grinding Concrete Pavement
Item 602-03 – Steel Structures
Item 602-04 – Steel Structures
Item 602-10.81 – Heat Straightening
Item 603-02 – Repainting Steel Structures
Item 603-05 – Containment and Disposal of Waste
Item 604-04.01 – Applied Texture Finish (New Structures),
Item 604-04.02 – Applied Texture Finish (Existing Structures)
Item 604-04.10 – Graffiti Protection
Item 604-04.20&.21 – Painting or Staining Concrete Surfaces
Item 604-04.62 – Clean and Texture Finish Median Barrier
Item 604-05.31 – Bridge Deck Grooving (Mechanical)
Item 604.07 – Retaining Wall
Item 604-42.01 – Underwater Divers
Item 606-26.05 – Core Drilling for Piles (Abandoned)
Item 617 – Bridge Deck Sealant
Item 619 – Polymer Modified Concrete Overlay
Item 624 – Retaining Wall
Item 625-01.08,10,11 – Inclinator, Camera Drilled Shaft Inspections
Item 705 – Guardrail
Item 706 – Guardrail Adjusted, Removed and Reset
Item 707 – Fences
Item 712 – Temporary Traffic Control
Item 713 – Highway Signing
Item 714 – Roadway and Structure Lighting
Item 716 – Pavement Markings
Item 721 – Landscape and Irrigation
Item 724 – Landscape Lighting
Item 725 – ITS items
Item 730 – Traffic Signals
Item 740 – Geosynthetics
Item 79* – Utilities
Item 801 – Seeding
Item 802 – Landscape Plantings
Item 803 – Sodding
Item 805 – Erosion Control
Item 806 – Project Mowing

Subsection 108.01, (pg. 79, 80), 12-19-22; **Subletting of Contract**; Add to & Revise Item list:

Item 108-03 – CPM Project Schedule

Item 203-11 – Scaling and Trimming

Item 203-40 – Anchors

Item 406 – High Friction Surface Treatment

Item 617 – Bridge Deck Sealant and Thin Epoxy Overlay

Subsection 108.03.A, B, & C, (pg. 81,82,85,87,88), 9-7-21; **Contract Change Notification**;

A & B; Revise Heading,

C.1.c; Add new No.vi, **C.3**; Revise last paragraph, **C.4**; Revise last paragraph & add sentence:

A. Project Durations Less Than 9 Months

B. Project Durations 9 Months to 24 Months

C.1.c Narrative report in PDF file format fit to 8.5x11 inch paper and including:...

- vi. The quantity and estimated daily production rate for controlling activities;
- vii. Description of the calendars including identification of workdays per week, holidays, number of shifts per day, and number of hours per shift;
- viii. Description of how the schedule accommodates adverse weather days for each month; and
- ix. Description of execution plan, including number and type of crews, a list of subcontractors' crews, and expected equipment, but not limited to large equipment transport and delivery, transportation permits for oversized/overweight loads, and availability.

3. Baseline CPM Schedule.

The Engineer and Contractor will review the draft baseline CPM schedule at a meeting specific for the review of the schedule. The Engineer will accept the draft baseline CPM schedule, provide review comments, or request additional information. Make appropriate adjustments or provide additional information within 14 calendar days. The Engineer's acceptance is based solely on whether the baseline schedule meets the requirements of **108.03**. Review comments made by the Engineer on the initial schedule will not relieve the Contractor from compliance with the Contract. The Contractor is responsible for scheduling, sequencing, and prosecuting the Work to comply with the Contract requirements.

4. Schedule Updates.

Submit the updated schedule electronically to the Engineer in accordance with the requirements of this subsection. The Engineer reserves the right to reject any schedule updates because of changes in relationships between activities on the critical path, inadequate or inaccurate narrative updates, or other deficiencies in the schedule updates as required in this subsection.

The Department will measure and pay for CPM Project Schedule in accordance with **108.11** and **108.12** respectively.

Subsection 108.09, (pg. 95), 12-19-22; Failure to Complete Work on Time; Revise Table 108.09-1:

Table 108.09-1: Liquidated Damages for Failure to Complete the Work on Time

Original Contract Amount (\$)			Daily Charge (\$/day)
0	to	500,000	45 00.00
> 500,000	to	1,000,000	586 00.00
> 1,000,000	to	2,000,000	800.00
> 2,000,000	to	10,000,000	1,000.00
>10,000,000	to	20,000,000	1,600.00
>20,000,000			2,500.00

Subsection 108.11, (pg. 99), 9-7-21; Method of Measurement; Add subsection 108.11:

108.11 Method of Measurement

The Department will measure construction CPM Project Schedule as a percentage of the lump sum price bid for the completion of the work specified in **108.03.C** and partial payment will be made according to the schedule in Table 108.11-1.

Table 108.11-1: Payment Schedule for CPM Project Schedule

Estimate Number or Percent of Total Contract Amount of Previous Estimate	Total Percent of CPM Project Schedule Lump Sum Bid Item
Estimate # 1	20%
Estimate # 3	40%
20%	50%
40%	60%
60%	70%
80%	80%
95%	100%

Subsection 108.12, (pg. 99), 9-7-21; **Method of Measurement**; Add subsection **108.12**:

108.12 Basis of Payment

The Department will make partial payments for CPM Project Schedule on the basis of a percentage of the lump sum price bid in accordance with the schedule shown in Table 108.11-1.

If the Contractor fails to provide monthly schedule updates or address the Engineer's comments regarding the monthly schedule update, within 10 calendar days following the progress estimate pay period cutoff date, the Engineer will withhold payment for CPM Project Schedule and may withhold up to an additional 5% of the monthly estimate payment, until such time as an acceptable update has been provided.

No additional payments will be made for schedule revisions as requested per **108.03.D**.

Such payment is full compensation for meeting all requirements of **108.03.C** and **D**.

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STATE**OF****TENNESSEE**

(Rev. 12-15-21)

January 1, 2021

(Rev. 12-19-22)

Supplemental Specifications – 400SS**of the****Standard Specifications for Road and Bridge Construction****January 1, 2021**

Subsection 403.04, (pg. 286), 12-15-21; **Preparing Surface**; Revise Paragraph:

Prepare the designated surface as specified in **405.05**. Ensure that the surface is dry when applying tack coat.

Subsection 403.05.C, (pg. 286), 12-15-21; **Fog Sealing**; Revise 1st Paragraph:

When the Contract requires bituminous material for fog sealing of shoulders, provide emulsified asphalt meeting **403.02** or an item from QPL 40A. Apply diluted emulsified asphalt at a rate of 0.10 to 0.15 gallons per square yard based on a dilution rate of one part emulsified asphalt to one part water. This application may require two equal increments if run-off occurs. Apply fog seal when the ambient air temperature or the surface temperature is a minimum of 50°F.

Subsection 407.06.B, (pg. 324), 12-19-22; **Material Transfer Devices (MTDs)**; Revise 2nd Paragraph:

The MTD shall have a minimum storage capacity of 15 tons and shall be equipped with mixing augers in the bottom of the storage hopper that are capable of remixing or re-blending the material as the material is removed from the storage hopper. The mixing augers shall be operational and used at all times during placement of the asphalt mixes. The MTD shall have a rear discharge conveyor that swivels ~~a minimum of 150 degrees~~ to allow feeding the paving machine from the front, side or rear.

Subsection 407.09, (pg. 326-327), 12-15-21; **Weather Limitations**; Revise No. 2 & 3:

2. The bituminous plant mix is placed according to the temperature limitations specified in Table 407.09-1 and when weather conditions otherwise allow the pavement to be properly placed, compacted, and finished. Placement may proceed if either the air or surface temperature is met except for 411-TL, 411-TLD, 411-TLE, and 411-OGFC mixtures.

Measurement of the surface temperature shall be done on pavement that is shaded from direct sunlight unless no shaded location exists. If paving based on the air temperature, stop work once the air temperature falls below the minimum threshold. Do not start paving if the surface temperature does not meet the requirements and the air temperature is forecast to fall below the minimum temperature within 4 hours of starting work.

Table 407.09-1: Temperature Limitations

Compacted Thickness	Minimum Air or Surface Temperature (°F)	
	Unmodified mixes (PG 64, 67)	Modified mixes (PG 70, 76, 82)
≤ 1.5 inches	45	55
> 1.5 inches to < 3.0 inches	40	50
≥ 3.0 inches	35	45

3. For 411-TL, 411-TLD, 411-TLE, and 411-OGFC mixtures, placement shall proceed only when the pavement surface temperature and the air temperature are a minimum of 55° F and rising. Stop paving if the air temperature falls below 55°F immediately. Placement of these mixtures is restricted to the period between April 1 and October 31.

For all other mixtures, do not place bituminous plant mix, with a compacted thickness of 1.5 inches or less, between November 30 and April 1. Do not place bituminous plant mix, with a compacted thickness greater than 1.5 inches, between December 15 and March 16. If the temperature meets the above requirements, outside of normal paving season, a request for a seasonal limitation waiver may be submitted for Departmental consideration. Requests shall be submitted in writing at least one week before the anticipated need.

Subsection 407.15.A, (pg. 334), 12-19-22; Compaction, General; Revise Table 407.15:

Table 407.15 – Roller Requirements by Mix Type

Mix Type	Roller Requirements
307-A, 307-B, 307-BM-2, 307-C, 307-CW (except surface)	3 Rollers (Intermediate roller shall be Pneumatic)
307-AS, 307-ACRL, 411-D, 411-E, 307-CW (surface), 313-Asphalt Treated Permeable Base	3 Rollers (unspecified)
411-TL, 411-TLD, 411-TLE (when lift thickness > 1 inch)	3 Rollers (unspecified)
411-TL, 411-TLD, 411-TLE, 307-CS (when paved as a continuous layer)	2 Rollers (unspecified)
411-OGFC	2 Rollers (both rollers shall be static steel double drum, 10 Ton minimum)
Any mix used for scratch paving	2 Rollers (breakdown shall be pneumatic)

Subsection 407.15.C, (pg. 336-337), 12-15-21; Test Strips; Revise 1st Paragraph:

Construct test strips for all mixtures that require density testing to establish rolling patterns, to accommodate the Department to calibrate nuclear gauges, to verify that the base course or surface course mixture meets the density requirements of the specifications, and for mix design and production verification as required. Adjustments to the roller pattern may be made at the direction of the Engineer for mixtures that do not require density testing.

Subsection 407.20.C.3, (pg. 346-347), 12-15-21; Loss on Ignition (LOI); Revise 2nd & Remove 4th Paragraph:

If the percent of LOI in the aggregate differs by plus or minus 2% from the LOI indicated in the JMF, the Department will make a payment deduction in the price bid for the mix applied to the entire days production, not as a penalty but as liquidated damages. The percent of total payment to be deducted will be 5 times the percent that the LOI exceeds the JMF tolerance of plus or minus 2%.

Subsection 411.03.B, (pg. 353), 12-15-21; Proportioning; Revise Table 411.03-01:

Table 411.03-1: Proportions of Total Mixture, Percent by Weight

Surface Course	Effective Combined Mineral Aggregate	Asphalt Cement
Grading D	93.0 – 94.3	5.7 – 7.0 ⁽¹⁾
Grading E ⁽²⁾	93.0 – 94.3	5.7 – 7.0 ⁽¹⁾
Grading E (shoulders)	93.5 – 94.0	6.0 – 6.5 ⁽¹⁾
Grading TL	92.5 – 94.3	5.7 – 7.5 ⁽¹⁾
Grading TLD	93.0 – 94.3	5.7 – 7.0 ⁽¹⁾
Grading TLE	93.0 – 94.3	5.7 – 7.0 ⁽¹⁾
Grading TLE (shoulders)	93.5 – 94.0	6.0 – 6.5 ⁽¹⁾
Grading OGFC	92.0 – 94.0	6.0 – 8.0 ⁽¹⁾

⁽¹⁾ If the effective combined specific gravity of the aggregate exceeds 2.80, the above proportions may be adjusted as directed by the Engineer. The upper limit for flow values shall not apply to mixes with modified asphalt liquids.

⁽²⁾ The minimum allowable asphalt cement content for 411E low volume mixtures is 5.3%.

Subsection 411.03.C.1, (pg. 358), 12-15-21; Recycled Asphalt Pavement; Revise 2nd Paragraph:

All mixes shall contain at least 80% virgin asphalt, except for 411E Shoulder and 411TLE Shoulder Mixtures, which shall have at least 65% virgin asphalt.

Subsection 414.03.B, (pg. 367), 12-19-22; Micro-Surfacing; Revise Table 14.03-3:

Table 414.03-3: Micro-Surfacing

Test	Requirement
Mixing Time Test, seconds at 77 °F (T-102)	120 min
Mix Time, at 50 and 100 °F	(informational)
Set Time Tests: 30 minutes (T-139)	12 kg-cm min
Early Rolling Traffic Time: 60 minutes (T-139)	20 kg-cm min
Wet Stripping Test, % coating (T-114)	90% min
Wet Track Abrasion Test, loss in g/ft ² (T-100)	75 max 6 days 50 max 1 hour
Measurement of Excess Asphalt (T-109)	50 grams/ft ² max Sand Adhesion, 1,000 Cycles at 125 lbs
Classification Compatibility (T-144)	11 pt. min
Loss on Ignition (LOI) Test, 407.03.E.3	(informational)

Subsection 414.06.B, (pg. 377), 12-19-22; **Quality Control**; Add Subsection 5:

5. Aggregate Gradation. Prior to the start of production and at a minimum of once per day of production, perform a washed gradation (AASHTO T 27 with AASHTO T 11) of the stockpiled aggregate to ensure the gradation meets the mixture control tolerances of Table 903.12-2.

Subsection 415.03, (pg. 382), 12-19-22; **General Requirements**; Revise 1st Paragraph:

Coordinate operations so that vertical longitudinal faces do not exceed ~~1-1/4 inches in~~ height requirements indicated by plans in areas to be used by public traffic. Taper transverse faces in a manner approved by the Engineer to avoid creating a traffic hazard. Perform cold planing in the direction of traffic.

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500SS

500SS

Sheet 1 of 1

S T A T E

O F

T E N N E S S E E

(Rev. 12-19-22)

January 1, 2021

Supplemental Specifications – 500SS

of the

Standard Specifications for Road and Bridge Construction

January 1, 2021

Subsection 501.13, (pg. 399), 12-19-22; Testing Concrete; Revise 2nd Paragraph:

The Engineer will determine the 28-day compressive strength of the concrete under construction by conducting tests during the progress of work in accordance with **604.15**. The method of making and curing test specimens will be in accordance with AASHTO **R 100T-23**. Furnish the concrete necessary for the Engineer to conduct the field tests and provide a storage facility with watertight tanks of satisfactory size and number to accommodate the cylinder specimens. The Engineer may allow concrete that fails to meet the specified strength to remain in place, but the Department will pay for such concrete at a reduced price as specified in **604.31** to compensate for the loss of strength. Any reduction in payment because of low strength will be in addition to any reduction in payment related to deficiencies in pavement thickness or rideability.

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S T A T E**O F****T E N N E S S E E**

(Rev. 12-15-21)

January 1, 2021

(Rev. 12-19-22)

Supplemental Specifications – 600SS**of the****Standard Specifications for Road and Bridge Construction****January 1, 2021****Subsection 602.04.A, (pg. 429), 12-15-21; Shop Inspection; Revise A:**

Fabricators of steel bridges shall hold the following certifications in accordance with the AISC Certification Program – Bridge QMS Certification:

1. As a minimum, all fabricators shall be certified in the category of Certified Bridge Fabricator – Intermediate Bridge (IBR) with applicable supplemental requirements.
2. Fabricators of advanced type bridges, as defined in the AISC Standard for Steel Bridges, shall be certified in the category of Certified Bridge Fabricator – Advanced (ABR) with applicable supplemental requirements.
3. Fabricators of diaphragms, cross-frames, floor beams, stringers (rolled beams) and laterals shall be certified in the category of Certified Bridge Fabricator – Intermediate Bridge (IBR), as a minimum.
4. Fabricators of bridge bearings, expansion joints, sign structures and other metal highway components as listed in the AISC standard shall hold certification under the AISC Certification Program – Bridge Component QMS Certification (CPT). As an alternative, fabricators of bridge bearing or expansion joints may hold certification under the Bridge QMS Certification in the category of Certified Bridge Fabricator – Intermediate Bridge (IBR).

Subsection 604.03.A.1.a, (pg. 502), 12-19-22; **Design and Production Parameters**; Revise Table 604.03-1 and 4th paragraph:

Table 604.03-1: Composition of Various Classes of Concrete

Class of Concrete	Min 28-Day Compressive Strength (psi)	Min Cement Content (pound per cubic yard)	Maximum Water/Cement Ratio (pound/pound)	Air Content % (Design $\pm$ production tolerance)	Slump (inches)
A	3,000	564	0.45	6 ± 2	3 ± 1 ⁽¹⁾
D, DS ^(2,3)	4,000	620	0.40	7 ⁽³⁾	8 max ⁽⁴⁾
L ^(3,45)	4,000	620	0.40	7 ⁽³⁾	8 max ⁽⁴⁾
S (Seal)	3,000	682	0.47	6 ± 2	6 ± 2
X ⁽⁵⁶⁾					

- (1) For slip forming, the slump shall range from 0 to 3 inches.
- (2) Use Class D concrete in all bridge decks except box and slab type structures unless otherwise shown on the Plans. Use Class DS concrete in bridge decks with polish-resistant aggregate described in **903.03** and **903.24**.
- (3) Design Class D, Class DS, and Class L concrete at 7% air content. Acceptance range for pumping and other methods of placement is 4.5-7.5%. Sampling will be at the truck chute.
- ~~(4) Water reducing admixtures are acceptable; however, do not exceed the maximum water/cement ratio in order to achieve the required slump.~~
- (45) The unit weight of air dried Class L concrete (lightweight concrete) shall not exceed 115 pounds per cubic foot as determined according to ASTM C567.
- ~~(56) Plan specific requirements~~

Include chemical admixtures in the concrete mixture based on the ambient air temperature and expected weather conditions.

If using chemical admixtures, a Type A, F, or G water reducer, then the allowable slump shall be a maximum of 8 inches. Do not exceed the water cement ratio.

Subsection 604.03.A.1.d, (pg. 504), 12-19-22; Add Subsection d:

d. Performance Engineered Mixtures (PEM) Design and Production Parameters

Proportion the concrete based on a water-cement ratio that does not exceed the maximum shown in Table 604.03-3. The fine aggregate shall not exceed 50% by volume calculation of the total aggregate volume. The volume of paste shall not exceed 25%. The Contractor may elect to use PEM as an alternate/option in replacement of Class A concrete.

Document mixture adjustments, for moisture corrections, on the daily concrete report. Ensure that the adjusted mix complies with all the performance criteria specified in Table 604.03-3.

Table 604.03-3: Composition of Performance Engineered Concrete

Class of Concrete	Min 28-Day Compressive Strength (psi)	Min Cement Content (pound per cubic yard)	Maximum Water/Cement Ratio (pound/pound)	Air Content % (Design $\pm$ production tolerance)
PEM _(1,2,3,4,5)	3,000 ⁽¹⁾	-	0.45	6 $\pm$ 2

⁽¹⁾ Or as shown on the Plans or approved shop drawings.

⁽²⁾ Air Content must be accompanied with the Super Air Meter (SAM) number AASHTO T 395 for data collection only.

⁽³⁾ Resistance of Concrete to Rapid Freezing and Thawing AASHTO T 161 for data collection only.

⁽⁴⁾ Surface Resistivity Indication of Concrete's Ability to Resist Chloride Ion Penetration AASHTO T 358 for data collection only.

⁽⁵⁾ Determining the Reactivity of Concrete Aggregates and Selecting Appropriate Measures for Preventing Deleterious Expansion in New Concrete Construction ASTM R80 for data collection only.

All Standards of Practice for Developing Performance Engineered Concrete Pavement Mixtures AASHTO R 101 are for data collection only.

Include chemical admixtures in the PEM mixture based on the ambient air temperature and expected weather conditions. Dosage rates for any admixtures incorporated into the concrete shall be stated during the mix design submittal process. All admixtures shall be compatible and incorporated into the concrete in accordance with the manufacturer's recommendations. Concrete mixtures utilizing multiple admixture manufacturers shall prove compatibility in accordance with the Departmental procedures.

Subsection 604.03.A.2, (pg. 504-505), 12-19-22; **Mix Design Submittal**; Revise 1st and 3rd Paragraphs, and Add 6th Paragraph:

2. **Mix Design Submittal.** Submit, for approval, the proposed design in accordance with Departmental procedures at least 14 days prior to use. Develop the design using saturated surface dry aggregate weights. The design shall be prepared in an approved testing laboratory by a TDOT Certified Concrete Mix Design Technician ~~or a Professional Engineer licensed by the State of Tennessee.~~ The TDOT Certified Concrete Mix Design Technician ~~or Professional Engineer licensed by the State of Tennessee~~ shall certify that the information contained on the design submittal is correct and is the result of information gained from the actual trial batch. Build trial batches for design no more than 90 days before submitting the design. The trial batch shall produce an average compressive strength to indicate that the specified 28-day strength can be obtained in the field. Make all strength determinations using equipment meeting the requirements of, and in the manner prescribed by, AASHTO T 22. The design shall provide concrete of the strength specified in all applicable Special Provisions, Plans, and Specifications. The approved mix design will expire at the end of each calendar year or if it does not meet the minimum 28-day strength requirements. Assume responsibility for all costs of concrete design, preparation, and submittal.

Self-consolidating concrete (Classes SCC, SH-SCC, and P-SCC) shall be verified prior to placement either at the ready mix, precast, or prestressed facility. The concrete producer shall notify Regional Materials and Tests a minimum of 1 business day prior to performing a trial batch verification of the submitted design. ~~in the presence of Regional Materials and Tests.~~ The trial batch will ensure that all batched quantities and target admixture dosage rates are acceptable and meet specification prior to design approval. All quantities and identified admixture target dosage rates shall meet the tolerances specified in **604.11**.

Performance engineered concrete (Class PEM) shall be verified prior to placement. The concrete producer shall perform trial batching in the presence of a Headquarters Materials and Tests representative. All quantities and admixture dosage rates shall meet the tolerances specified in 604.11. Gradations shall be submitted with each request.

Subsection 604.03.A.3, (pg. 506), 12-19-22; Partial Cement Replacement with Fly Ash or Slag Cement; Revise 3rd Paragraph, Table 604.03-03, and 4th Paragraph:

When designing Portland cement concrete with Type I or Type IL cement modified by the addition of fly ash and/or slag cement, meet the maximum cement replacement rates (by weight) and minimum substitution ratios (by weight) specified in Table 604.03-~~43~~ for the applicable type of modifier.

Table 604.03-~~43~~: Type I or Type IL Cement Modified by Fly Ash or Slag Cement

Modifier	Maximum Cement Replacement Rate % (by weight)	Minimum Modifier Cement Substitution Rates (by weight)
Slag Cement (Grade 100 or 120)	35.0	1:1
Class "F" Fly Ash	25.0	1:1
Class "C" Fly Ash	25.0	1:1

The Contractor may use ternary cementitious mixtures (mixtures with Portland cement, slag cement, and fly ash) for Class A, Class D, ~~and~~ Class DS, Class PEM concrete provided that the minimum Portland cement content is 50%. The maximum amount of fly ash substitution in a ternary cementitious mixture shall be 20%. The Department will allow Type IS cement with ternary cementitious mixtures. When using a Type IS cement, do not use any additional slag cement as a partial replacement for the hydraulic cement. The Department will allow a maximum of 20% fly ash as a partial hydraulic cement replacement in Class A concrete using only Type IS cement.

Subsection 604.03.B, (pg. 507-510), 12-19-22; **Quality Control and Acceptance of Concrete**; Revise 2nd and 5th Paragraphs, Add Sentence after 5th Paragraph, Revise Nos. 7,8,10,11, and 9th Paragraph:

The minimum size of a batch shall be 2.5 cubic yards. If less than 2.5 cubic yards is needed, the concrete must be provided by a Volumetric Continuous Mixer as specified in 604.04.C.

The concrete producer shall develop for the Engineer's approval and maintain at the plant a plant-specific Process Control Plan that shall apply to all Department contracts for the calendar year. Communicate all changes made to the Process Control Plan during the year to the Regional Materials and Tests Supervisor. Develop for the Engineer's approval a placement site Process Control Plan stating the procedures for sampling, testing, and inspection of the concrete. Maintain a record of all tests and inspections performed at the facility and placement site. Provide these documents to the Engineer upon completion of the Project for inclusion in the Project records. Provide a binder of current records in accordance with Departmental procedures. ~~Keep records current and make them available to the Engineer for review at any time.~~

No water shall be added in the field for Class PEM concrete.

7. Conduct slump ~~(AASHTO T 119)~~ or slump flow ~~(ASTM C1611)~~ and air tests ~~(AASHTO T 152)~~. For Class PEM provide the Super Air Meter (SAM) number for informational purposes only.
8. Conduct yield tests ~~(AASHTO T 121)~~. If yield varies more than plus or minus 2% from that shown on the design, stop all batching operations until the problem has been identified and corrected or a new concrete design has been obtained. Additionally for Class PEM only, determine Unit Weight by AASHTO T 121.
10. Conduct tests for concrete and ambient air temperatures AASHTO T 309.
11. Provide a daily report to the Engineer that identifies the date, Contract and Project, Item number(s), batch weights, aggregate gradations, moisture corrections, admixtures, slump, air content, temperatures, and similar pertinent information.

The Department or its representative will be responsible for performing all acceptance tests. A TDOT Concrete Field Testing Technician or ACI equivalent will sample and test in accordance with Departmental 604.04 510 procedures. The Department will ensure the Contractors initial curing conditions are properly maintained during the initial curing period as specified in 722.09 and ~~also be responsible for properly curing and transporting~~ all acceptance cylinders are transported according to AASHTO R 100T 23.

Subsection 604.04.A.1, (pg. 511), 12-19-22; **Batching Plant, Multi-Aggregate Feed System, and Equipment, General**; Revise 2nd Paragraph:

All producers of concrete shall be on the Department's Producer List. ~~and be actively certified by the National Ready Mixed Concrete Association (NRMCA) Plant Certification Program.~~

Subsection 604.04.B.3, (pg. 513), 12-19-22; **Truck Mixers and Truck Agitators**; Revise 1st Paragraph:

~~Truck mixers shall be certified by the National Ready Mix Concrete Association (NRMCA) Delivery Vehicle Certification Program Option A or Option B. Each truck shall display the NRMCA certification card.~~ Ensure that truck mixers used for mixing and hauling concrete, as well as the truck agitators used for hauling central-mixed concrete, meet all the applicable requirements specified in **604.04.B.1**. Truck mixers shall have a manufacturer's plate indicating the various uses for which the equipment is designed, the gross volume of the drum, and the minimum and maximum speed of rotation of the drum or blades for charging, mixing and agitating. Equip truck mixers with an approved device for recording the number of revolutions of the drum or blades

Subsection 604.15.A, (pg. 532), 12-19-22; **Compressive Strength Tests of Concrete, General**; Revise 2nd Paragraph:

The frequency of testing for compressive strength to determine when forms may be removed, or when a structure may be put into service, shall be as requested by the Contractor or as deemed necessary by the Engineer in accordance with **604.15.C** or 604.15.D.

Subsection 604.15.B, (pg. 532-533), 12-19-22; **Concrete Acceptance Cylinders**; Revise 1st, Remove 2nd and Revise 3rd, 5th, and 6th Paragraphs:

The Department will test the specimens for compressive strength according to AASHTO T 22. Provide the necessary concrete for making test specimens and adequate curing and storage facilities specified in 722.09 at no additional cost to the Department. Provide hourly temperature data for each day the specimens were kept in the initial curing environment.

~~Concrete cylinders submitted for testing beyond 28 days shall comply with the design strength requirements specified in 604.03 or the Plans.~~

If the acceptance cylinders fail to meet the specified strengths, the Contractor must provide QC data from ~~companion cylinders that meet or exceed the required strength, and~~ TDOT Materials and Test ~~shall perform a nondestructive test using a Swiss Hammer on the concrete to prove required strength is achieved the batching operation for the suspect concrete delivered and a letter of intent to core the suspect location, and then the Contractor may drill core samples from the hardened concrete as verification of concrete strength instead of using the concrete cylinders. Companion cylinders shall be made from the same sample as the acceptance cylinders. If~~ When these requirements are met, the Contractor may then elect to drill a minimum of two or maximum of three concrete core samples per set of cylinders from the hardened concrete. The ~~Cores~~Contractor shall be obtained the cores in accordance with Departmental procedures. Obtaining the concrete cores and repairing the concrete core holes shall be at no cost to the Department.

The Engineer will not accept ~~concrete cylinders and~~ cores submitted for testing beyond 56 days.

The average compressive strength of all the ~~two~~ cores taken to represent the failing concrete acceptance cylinders will be considered to be the acceptance strength of record for the in-place concrete. Any core that fails to meet the standard for cores in the Departmental procedures will be discarded untested and not considered in the average compressive strength. In accordance with **604.31**, the Engineer will accept at a reduced pay concrete that meets the required strengths specified in **604.03** or the Plans for the respective class.

Subsection 604.15.C, (pg. 534), 12-19-22; Compressive Strength Tests of Concrete, Early Break Cylinders; Revise 1st Paragraph:

Make and cure all test specimens according to AASHTO ~~R 100T-23~~, and the applicable procedures therein defined for Field Cured Specimens, unless otherwise specified by the Engineer. The Department will test the specimens for compressive strength according to AASHTO T 22. Provide the necessary concrete for making test specimens at no additional charge to the Department.

Subsection 604.15.D, (pg. 534), 12-19-22; Compressive Strength Tests of Concrete, Maturity Method; Add Subsection D:

D. Maturity Method

Strength of concrete in-place may be estimated by the Standard Practice for Estimating Concrete Strength by the Maturity Method AASHTO T 325 and Departmental procedures for critical activities. (open pavement to traffic, removing forms, post tension, shipping, cold weather). The Department will break a set of cylinders made from the pour in question to verify the strength-maturity relationship, the concrete will be accepted on the basis of the 28 day strength as defined by the strength-maturity relationship. If the cylinders break within 10% of the estimated strength based on the strength-maturity relationship, the concrete will be accepted on the basis of the 28 day strength as defined by the strength-maturity relationship. If the cylinders break outside of the 10% tolerance, the 28 day cylinders will be broken and the concrete will be accepted per 604.15.B.

Subsection 604.19, (pg. 541), 12-19-22; Removal of Forms and Falsework; Revise 3rd Paragraph:

~~The Contractor may~~ Release and remove falsework and supports under concrete structures only when the following conditions are met:

1. Representative specimens of the concrete, made and cured in accordance with 604.15.C, attain a compressive strength of 3,000 pounds per square inch- or when Strength Maturity relationship indicates the concrete has achieved 3000 pounds per square inch and has been verified per 604.15.D.
2. The concrete has been in place a minimum of 7 days, not counting days of 24 hours each in which the temperature falls below 40 °F, or 21 calendar days, whichever occurs first.

Subsection 604.31, (pg. 557), 12-19-22; Basis of Payment; Revise 6th & 7th Paragraphs and Revise Equation:

Where concrete mixture does not meet the specified strength but is allowed to be included in the permanent construction as specified in 604.20 or ~~eores- the acceptance strength of record fails~~ to meet the strengths specified in 604.15, the Department will use the following equation to determine the percent-price deduction for the invoiced price of the defective concrete mixture, payment of contract bid price.

$$PDP = 100 - (3 \times Ds) \times IP \times Q$$

Where:

PDP = Percent Price Deduction by the Dollar Payment

Ds = Percent Below Specified Strength

$$Ds = \left[\frac{(\text{Specified Strength} - \text{Actual Strength})}{\text{Specified Strength}} \right] \times 100$$

IP = Invoice Price by the Cubic Yard

Q = Quantity of Defective Concrete by the Cubic Yard

~~The Department will base the percent payment on the unit price of the item as bid, i.e., volume [cubic yards], length [feet], each, or other designated bid unit.~~

The price deduction shall only apply to the invoiced delivery cost of the defective concrete mixture. The deduction shall not apply to incidental items associated with the bid items such as labor, reinforcing steel, etc. Supply the Engineer with a certified invoice from the producer for the defective concrete mixture. The certified invoice will be for the cost of the concrete mixture with taxes and fees delivered to the project.

~~Payment of the calculated percentage includes cost of incidental items such as reinforcing steel when included in the price bid for the item.~~

Subsection 607.02.B, (pg. 579), 12-15-21; **Materials, Pipe Culverts, Cross Drains, Side Drains, & Storm Drains**; Remove 1st Sentence:

B. Pipe Culverts, Cross Drains, Side Drains, & Storm Drains

~~Where Pipe Culverts (Cross Drains & Median Drains) are specified, provide them in accordance with the following:~~

Subsection 607.07, (pg. 582), 12-15-21; **Joining Pipe**: Revise 5th paragraph.

HDPE, PP, SRTRP, and PVC pipe shall be joined in accordance with ASTM D3212 and meet the performance requirements for water-tight. Install joints so that the connection of pipe sections, for a continuous line, will be free from irregularities in the flow line.

Subsection 615.09, (pg. 624), 12-19-22; Proportioning and Mixing of Concrete; Revise 5th Paragraph:

Make concrete test specimens for Class P and Class P-SCC, in accordance with AASHTO ~~R 100T-23~~ and ASTM C1758 respectively, to determine the adequacy of the concrete design and the minimum time at which the stress may be applied to the concrete. Cure the test specimens used to determine the time at which stress may be applied in the same manner and under the same conditions as the bridge members. The initial curing of specimens to determine the design strength of the concrete shall be specified above with additional curing water, as provided in AASHTO ~~R 100T-23~~. The compressive strength of the concrete will be ~~determined from the average strength of at least two representative test specimens made and cured as specified above and tested in accordance with AASHTO T 22~~ estimated using the Maturity Method in accordance with **604.15.D**. The frequency of sampling and testing will be in accordance with Departmental procedures.

Subsection 619.04.A, (pg. 652-653), 12-15-21; Volumetric Continuous Mixers; Revise No. 3 & Ticket List:

3. The volumetric mixing plant shall be operated and calibrated by a Volumetric Mixer Operator with a TDOT Concrete Field Testing Technician Certification or equivalent. In the presence of the Engineer, perform the calibration of gate settings according to the manufacturer's recommendations for the mix design to be used before starting work. The calibration procedure shall account for the moisture content of the aggregates. The yield shall be maintained within a tolerance of plus or minus 1% and verified using a minimum 2 cubic feet container every 50 cubic yards. Recalibrations will be necessary when indicated by the yield checks, and at any other times the Engineer deems necessary to ensure proper proportioning of the materials.

Each load of concrete produced by a volumetric continuous mixing plant shall be accompanied by a Concrete Delivery Ticket. The ticket shall include as a minimum the following:

- a. Date
- b. Contract number
- c. County
- d. Class of concrete
- e. Concrete design number
- f. Number of cubic yards
- g. Load number
- h. Truck number
- i. Maximum water allowed by design
- j. Total water added
- k. Water-cementitious materials ratio
- l. Time loaded
- m. Time discharged
- n. Signature of producer's Volumetric Mixer Operator

Subsection 619.04.A, (pg. 653), 12-19-22; Volumetric Continuous Mixers; Revise Ticket List:

Each load of concrete produced by a volumetric continuous mixing plant shall be accompanied by a Concrete Delivery Ticket. The ticket shall include as a minimum the following:

- a. Date
- b. Contract number
- c. County
- d. Class of concrete
- e. Concrete design number
- f. Number of cubic yards
- g. Load number
- h. Truck number
- i. Maximum water allowed by design
- j. Total water added
- k. Water-cementitious materials ratio
- ~~l. Time loaded~~
- l. Time discharged
- m. Signature of producer's Volumetric Mixer Operator

Subsection 622.03.A, (pg. 665), 12-19-22; Proportioning and Quality Assurance of Shotcrete, Proportioning; Revise 3rd Paragraph:

Shotcrete shall meet the performance requirements specified in Table 622.03-1 and meet the requirements for cement replacement in 604.03.A.3.

Subsection 623.02.C.1, (pg. 673), 12-15-21; Modular Roadway Expansion Joints, Fabrication and Construction; Revise No. 1:

1. Construct the expansion joint systems as shown on the shop drawings. Meet the tolerance requirements included in AASHTO specifications. Perform all welding according to AWS specifications and by certified welders only. Ensure that fabricators are certified under the AISC Certification Program – Bridge Component QMS Certification (CPT). As an alternative, fabricators of bridge bearing or expansion joints may hold certification under the Bridge QMS Certification in the category of Certified Bridge Fabricator - Intermediate Bridge (IBR).

Subsection 623.03.C.2, (pg. 676, 677), 12-15-21; Strip Seal Expansion Joints, Fabrication and Construction; Revise No. 2:

2. Shop drawings shall also supply information regarding material specifications, geometry, a table of variable temperature and dimensions, and a bill of material. The maximum joint opening shall be 4 inches. Construct the expansion joint systems in accordance with the details shown on the shop drawings. Tolerance requirements shall be in accordance with AASHTO Specifications. Perform all welding in accordance with AWS specifications and by certified welders only. Ensure that fabricators are certified under the AISC Certification Program – Bridge Component QMS Certification (CPT). As an alternative, fabricators of bridge bearing or expansion joints may hold certification under the Bridge QMS Certification in the category of Certified Bridge Fabricator - Intermediate Bridge (IBR).

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STATEOFTENNESSEE

(Rev. 12-15-21)

January 1, 2021

(Rev. 12-19-22)

Supplemental Specifications – 700SSof theStandard Specifications for Road and Bridge ConstructionJanuary 1, 2021**Subsection 702.02, (pg. 688), 12-19-22; Materials, Revise 4th Paragraph:**

The Department will make compressive strength test specimens in accordance with AASHTO R 100T-23.

Subsection 705.06, (pg. 697-698), 12-19-22; Installation of Posts; Revise 1st, 2nd, Nos. 1,2,3, & 4 and 4th Paragraphs:

Before beginning any excavation or driving any guardrail post, determine the location of all underground electrical, drainage, and utility lines in the vicinity, and conduct work ~~so as~~ to avoid damaging these facilities. Dig or drill holes to the depth shown on the Plans and/or the approved Shop Drawings and to a size that will allow proper setting of the posts and sufficient room for backfilling and tamping. ~~Alternatively, the Contractor may d~~Drive posts using approved methods and equipment, provided the posts are erected in the proper position and are free of distortion, burring, or other damage.

If solid rock is encountered while installing guardrail posts to the minimum depth required. The installation of guardrail posts shall meet requirements that are detailed in the Departments Standard Drawings or approved Shop Drawings for drilling post holes.:

1. ~~Within 18 inches of the ground surface, drill an oversized or elongated hole 24 inches into the rock. Set the post at the roadside edge of the hole, and backfill the hole with the cutting spoils.~~
- a. ~~If using wooden posts, either drill a single oversized hole 23 inches in diameter, or three overlapping holes 10 inches in diameter, to a length of 23 inches.~~
- b. ~~For steel posts, drill a single oversized hole, 20 inches in diameter, or three overlapping holes 8 inches in diameter, to a length of 20 inches.~~

2. ~~Below 18 inches of the ground surface, drill holes 12 inches into the rock or to the depth shown on the Plans. The holes shall be 8 inches in diameter for steel posts, and 12 inches in diameter for wood posts.~~
3. ~~If solid rock is encountered~~ When installing end terminals using tubes, install posts 1 and 2 to full depth or a minimum of 36 inches into the solid rock. Backfill the holes around the steel tube with the cutting spoils.
4. ~~See approved shop drawings for additional information concerning post depth and hole size.~~

Backfill dug holes with selected earth or other suitable materials in layers not to exceed 4 inches in thickness. Thoroughly tamp each layer. After backfilling and tamping is complete, hold the posts or anchors securely in place.

Subsection 705.06, (pg. 698), 12-15-21; Installation of Posts; Add new 7th Paragraph:

When an underground structure or utility prevents proper post installation for a run of guardrail, posts may be omitted along the run of guardrail only as detailed in the Department's Standard Drawings. A post will not be omitted from any end terminal or transition. If the conditions noted for omitting posts cannot be used, then the use of a guardrail footing or weak post attachment to culvert may be used as detailed in the Department's Standard Drawings

Subsection 705.10, (pg. 700), 12-15-21; Basis of Payment; Add new 7th Paragraph:

When posts are omitted from a run of guardrail, payment shall be as noted in the Standard Drawings.

- a. For 1 post being omitted, the Department will pay the contract unit price for W Beam Guardrail (Type 2) MASH TL-3.
- b. For 2 or 3 posts being omitted, the Department will pay for the linear feet of nested W Beam rail as detailed in the Standard Drawings at a rate equal of 1.5 times the contract unit price for W Beam Guardrail (Type 2) MASH TL-3.
- c. If a guardrail footing or attachment to culvert was used, the Department will pay for work as noted in the Standard Drawings.

Subsection 710.06, (pg. 723), 12-19-22; Aggregate Underdrains (with Pipe); Revise 1st Paragraph:

Excavate the trench to receive the pipe at the locations shown on the Plans or as directed by the Engineer. If the Plans do not show dimensions, construct the width of the trench to be not less than ~~the outside diameter of the pipe plus~~ 12 inches. Make the trench deep enough to intercept the water-bearing strata and to allow installation of the pipe and cover material. Unless otherwise shown on the Plans, spread a 2-inch layer of aggregate on the bottom of the trench, compact it, and bring to a uniform grade.

Subsection 712.02, (pg. 731-732), 12-15-21; Materials; Revise List:

Aluminum.....	916.02
Paint.....	910.02
Cold Rolled Carbon Steel -16 gauge	ASTM A1008
Non-metallic Drums and Barricades	QPL
Reflective Sheeting.....	916.06

Subsection 712.02.B, (pg. 732), 12-15-21; Temporary Pavement Marking Material; Revise 1st Paragraph:

Unless otherwise specified, the material for pavement marking shall be either temporary pavement marking tape listed on the Department's QPL, or reflectorized paint with raised reflective pavement markers placed as shown on the Plans

Subsection 712.02.E, (pg. 733), 12-15-21; Portable Impact Attenuators; Revise Heading & 1st Paragraph:**E. Temporary Work Zone Crash Cushions**

Temporary work zone crash cushions shall be in accordance with the Plans and Specifications, meet the requirements for the appropriate test level, and meet the requirements of and be listed on the Department's QPL or Standard Drawings.

Subsection 712.04.B, (pg. 735-736), 12-15-21; THP Troopers and Uniformed Law Enforcement Officers; Revise 2nd Paragraph:

When a THP Trooper is not available, the Contractor may provide a Uniformed Law Enforcement Officer if approved by the Engineer and the Regional Safety Coordinator or Regional Operations Office. All Uniformed Law Enforcement Officers shall provide a marked Federal, State, County, City, or Metropolitan government law enforcement vehicle equipped with blue lights and have the authority to write traffic tickets and make arrests within the project site. The Uniformed Law Enforcement Officer shall maintain a detailed written log of enforcement activities and shall submit the log to the Engineer for verification each month.

Subsection 712.06, (pg. 743), 12-15-21; **Temporary Marking; Revise Heading, Add No. 2, & Revise No. 1 & 3:**

712.06 Temporary Pavement Marking

Unless otherwise specified, install temporary pavement marking as follows:

1. Provide 4-inch wide pavement marking (line) for center, edge, lane and barrier lines as shown on the Plans for projects that will have traffic maintained overnight. For temporary pavement markings (line) on intermediate layers of pavement, use reflective tape, reflectorized paint, and raised pavement markers, or a combination thereof as shown on the Plans or as required by the Engineer, and install meeting **716, 910.02, 919.04**, or Department's QPL at the end of each day's work. Short, unmarked sections will not be allowed. Preserve established no-passing zones, if any, on the existing pavement; if no-passing zones have not previously been established, establish them before beginning the work. Mark two-lane, two-way highways with 10-foot long center lines applied on 40-foot centers and appropriate no-passing barrier lines.
2. When required, provide temporary pavement markings at intersections for temporary pavement markings on intermediate layers of pavement. The Department will require temporary intersection pavement markings to be reflectorized paint, or removable pavement marking meeting **716, 910.02, 919.04**, and or Department's QPL.
3. Where required on the completed permanent pavement surface, meet **716.03**.

Subsection 712.09, (pg. 744, 745), 12-15-21; **Method of Measurement; Revise No. 5, 7, 8 & Add 9:**

5. Warning Lights and Flashing Arrow Boards by the unit, Changeable Message Signs per each for the type designated. Payment will be based on the maximum number in place at one time.
7. Temporary Work Zone Crash Cushion based on the initial installation of each. No additional payment will be made for removal, moving, and reinstalling at other locations on the Project as directed by the Engineer. Payment will be based on the maximum number in place at one time.
8. Temporary pavement marking (line) for edge, center, lane and barrier lines will be measured as listed in the plans, complete in place and accepted, as Painted Pavement Marking (Line) regardless of whether the lines are painted, taped markings, or raised pavement markers, or a combination of the above as shown on the Plans or as required by the Engineer. Only the marked line will be measured for payment.
9. Temporary pavement markings at intersections will be measured as listed in the plans complete in place and accepted as Painted Pavement Marking (Description) or Removable Pavement Marking (Description)

Subsection 712.10, (pg. 746, 747), 12-15-21; Basis of Payment; Revise Item List & Paragraphs 4, 5, 9, Remove Paragraph 8:

<i>Item</i>	<i>Pay Unit</i>
Traffic Control	Lump Sum
Portable Barrier Rail	Linear Feet
Temporary Work Zone Crash Cushion	Each
Signs	Square Feet
Flexible Drums	Each
Temporary Barricades (Type)	Linear Feet
Removable Pavement Marking (Description)	Linear Feet
Changeable Message Sign Unit	Each
Arrow Board (Type C)	Each
Barrier Rail Delineator	Each
Temporary Flexible Tubular Delineator	Each

Payment for Temporary Work Zone Crash Cushion will be made at the contract price, complete in place, with total payment based on the maximum number in place at one time as specified in **712.09**.

Payment for Signs (Construction) is full compensation for providing sign panels with proper sheeting and legend, erecting on proper supports, furnishing all mounting hardware, covering when not in use, relocating, handling, and maintaining until Project completion. Vertical Panels will be paid as Signs (Construction).

Payment for Removable Pavement Marking items shall be full compensation for the installation, maintenance, and removal of the marking line when it is no longer required.

Subsection 716.03.B, (pg. 790), 12-15-21; Application; Revise No. 3 & Add No. 4:

3. **Temporary Pavement Marking (Line).** When thermoplastic is used on the final pavement surface, the Contractor may use reflectorized paint for the center, edge, lane and barrier lines installed meeting **716.07** and **910** at the end of each day's work and then install the permanent pavement marking after the paving operation is completed. Short, unmarked sections are not allowed. The Department will not directly measure and pay for temporary markings for the final surface and will consider the costs thereof to be incidental to the item for the permanent thermoplastic pavement markings (line).
4. **Temporary Pavement Markings at Intersections.** When required, temporary pavement markings at intersections are to be installed with reflectorized paint meeting **716.07** and **910**. The Department will measure and pay as noted in **712.09** and **712.10**,

Subsection 716.07.A, (pg. 793), 12-15-21; Application; Revise 11th Paragraph:

When reflectorized paint is required for temporary or final marking, install the paint meeting **910.02** at the end of each day's work. Do not leave any short, unmarked sections.

Subsection 717.03, (pg. 799-800), 12-19-22; Basis of Payment; Revise Subsection:

The Department will pay for Mobilization on a lump sum basis.

The Department will make partial payments for Mobilization based on the amount bid for mobilization and the total original contract amount for all items of work, with the first and second partial pay estimates paid on the Contract. Payment will be made at the rate of 50% of lump sum price for Mobilization on each of these partial pay estimates provided the amount bid for Mobilization does not exceed 5% of the total amount bid for the Contract. If the amount bid for the item of Mobilization exceeds 510% of the total amount bid for the Contract, the Department will pay 2-1/2% of the total amount bid on each of the first partial payment estimates, and that portion exceeding 510% on the last partial pay estimate. Payments will be made according to Table 717.03-1.

Table 717.03-1: Payment Schedule for Mobilization

<u>Payment Estimate Number or Completion of Contract</u>	<u>Payment Amount whichever is least</u>	<u>Accumulated Payment whichever is least</u>
<u>Estimate # 1</u>	<u>25% Lump Sum Item or 2.5% Contract Price</u>	<u>25% Lump Sum Item or 2.5% Contract Price</u>
<u>5% of Contract (Excluding previous mobilization payments and stockpile payments per 109.09)</u>	<u>25% Lump Sum Item or 2.5% Contract Price</u>	<u>50% Lump Sum Item or 5.0% Contract Price</u>
<u>10% of Contract (Excluding previous mobilization payments and stockpile payments per 109.09)</u>	<u>25% Lump Sum Item or 2.5% Contract Price</u>	<u>75% Lump Sum Item or 7.5% Contract Price</u>
<u>50% of Contract (Including previous mobilization payments and stockpile payments per 109.09)</u>	<u>25% Lump Sum Item or 2.5% Contract Price</u>	<u>100% Lump Sum Item or 10.0% Contract Price</u>
<u>Last Partial Pay Estimate</u>	<u>Portion Exceeding 10%</u>	<u>Portion Exceeding 10%</u>

If 50% or more of the total original contract amount is completed by the payment of Estimate #1, a payment of 75% of the price bid for Mobilization will be made on Estimate #1. The remainder of the price bid for Mobilization will be paid on the following estimate.

As an exception to the above, where the Work covered by the Contract is limited exclusively to the resurfacing of an existing pavement, including projects involving the milling off of a portion of the existing pavement prior to the laying down of new asphalt cement concrete layer(s), the Department will pay the entire lump sum price for the item of Mobilization, less the retainage provided for in Title 54 5-121, TCA, with the first partial pay estimate paid on the Contract, provided the amount bid for Mobilization does not exceed 5% of the total amount bid for the Contract. If the amount bid for the item of Mobilization exceeds 5% of the total amount bid for the Contract, the Department will pay 5% of the total amount bid for the Contract on the first partial pay estimate, and the portion exceeding 5% on the last partial pay estimate.

Subsection 722.06.E, (pg. 803), 12-19-22; Interior Utility Services; Revise Subsection E:

E. Telephone, ~~Answering Machine~~, and ~~Internet~~Facsimile Machine

Provide telephone service with ~~an answering machine~~voicemail and two incoming phone lines.; Provide internet service with wifi and two data ports for wired connections.~~a facsimile machine, and two incoming phone lines.~~

Subsection 722.09, (pg. 805), 12-19-22; Concrete Cylinder Storage; Revise 1st Paragraph:

Provide a storage facility (shed/building) for temporary storage of concrete acceptance cylinders. The storage facility shall be of sufficient size and construction to protect the concrete cylinders from the elements and damage. Obtain the Engineer's approval of the storage facility location. Department personnel ~~will control~~ shall have access to the storage ~~facility~~shed/building. Equip the storage ~~facility~~shed with a concrete curing environment consisting of a box or water curing tank with a heating/circulating system of sufficient size to properly cure all acceptance cylinders before transferring for final storage and testing. Provide a temperature measuring device capable of recording the conditions inside the curing environment. The curing ~~environment~~ ~~box or curing tank and heater/circulator~~ shall comply with AASHTO M 201, and proper curing of the cylinders shall be in accordance with AASHTO R 100T-23. Temperature data for the curing environment shall be kept for the duration of the projects and made available to the Department upon request. The Department will not accept any concrete without the Engineers approval of the storage facility. ~~The storage facility shall be equipped with a measuring device that will record the minimum and maximum temperatures inside of the curing area.~~

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STATEOFTENNESSEE

(Rev. 12-15-21)

(Rev. 12-19-22)

(Rev. 1-30-23)

January 1, 2021

Supplemental Specifications – 900SS
of the
Standard Specifications for Road and Bridge Construction
January 1, 2021

Subsection 901.01, (pg. 900), 12-19-22; Hydraulic Cement; Revise List, 2nd, and 3rd Paragraphs:

Portland Cement.....AASHTO M 85

~~Blended Hydraulic Cement Portland blast furnace slag cement (Type IS)~~ AASHTO M 240

~~Portland pozzolan cement (Type IP)~~AASHTO M 240

~~Portland limestone cement (Type IL)~~AASHTO M 240

The maximum allowable equivalent alkalis ~~is 0.60% for all Portland cements~~ is 0.60 % and blended cements when used in roadways concrete riding surfaces with aggregates meeting the requirements of **903.24. This includes Class CP, A Paving, and DS concrete mixtures.**

Use Type I, Type IL, Type IP, or Type IS cement unless otherwise specified. Do not mix different types or sources of cement.

Subsections Listed, (pg. varied), 12-19-22; Hydraulic Cement 901.01; Revise Following Subsections:

204.06.B, (pg. 156), Revise Materials List:

304.02, (pg. 230), Revise Materials List:

306.02, (pg. 238), Revise Materials List:

309.02, (pg. 252), Revise Materials List:

312.05, (pg. 266), Revise 1st Paragraph first sentence:

313.02, (pg. 270), Revise Materials List:

616.03, (pg. 635), Revise Materials List:

619.02, (pg. 650), Revise Materials List:

619.03, (pg. 651), Revise Table 619.03-1:

619.13, (pg. 657), Revise 1st Paragraph first sentence:

622.02, (pg. 664), Revise Materials List:

Subsection 903.03, (pg. 904-905), 12-19-22; Coarse Aggregate for Concrete; Revise 2nd, 4th, 5th, 6th and 7th Paragraphs:

Coarse aggregate for hydraulic cement concrete to be used in the finished riding surfaces of roadways shall meet requirements of 903.24 unless otherwise specified. Coarse aggregate in Portland cement concrete for bridge decks (except decks that will be overlaid with HFST or Asphalt Pavements during the same construction season) and overlays on interstates and four or more lane highways consisting of Size No. 57 shall meet 903.24 unless otherwise specified.

Coarse aggregate in Portland cement concrete pavements for finished riding surfaces of travel lanes including mainline pavements and ramps shall consist of Size No. 467. Ensure that either the Size No. 4 or Size No. 67 fractions meet **903.24**. ~~Ramps using Class A paving concrete or any riding surface travel lane consisting of Size No. 57 shall meet 903.24.~~

Coarse aggregate in two-lift composite pavements shall consist of Size No. 467 in the lower lift, graded as specified in **903.22**, ~~the coarse aggregate for the lower lift does not have to meet the requirements of 903.24~~. Coarse aggregate in the upper lift shall be Size No. 57 or 67 graded as specified in **903.22** and shall meet **903.24** riding surface requirements.

~~Coarse aggregate in Portland cement concrete bridge decks and overlays on interstates and four or more lane highways consisting of Size No. 57 shall meet 903.24~~

The coarse aggregates for travel lanes and bridge decks shall be crushed and consist of stone, slag, gravel, quartzite, gneiss, or combination thereof. ~~with an~~ The absorption of plus 4 material ~~shall not to~~ exceed 5% on any individual aggregate. Do not use uncrushed gravel, pea gravel, or any other uncrushed particles. Crushed gravel, if used, shall consist of siliceous washed particles after processing, of which at least 70% by count of the material retained on the No. 4 sieve contains a minimum of two fractured faces. One face shall be fractured for the approximate average diameter or thickness of the particle.

Subsection 903.11.C.3, (pg. 920), 12-19-22; Grading OGFC; Remove 2nd Paragraph:

~~Recycled asphalt pavement (RAP) milled from Department or other State Highway Agency projects shall be assumed to contain 75% polish-resistant material.~~

Subsection 903.12.B, (pg. 921-922), 12-19-22; Aggregate for Micro-Surface; Revise 1st, 2nd Paragraphs, and Table 913.12-2:

The aggregate shall be crushed slag, crushed granite, or crushed stone (crushed stone as specified in **903.24**) meeting the gradation limits specified in Table 903.12-2 and the physical properties of ASTM D692, except the percent of fractured pieces shall be 100. The aggregate shall meet the quality requirements in **903.25**. The aggregate shall have a minimum sand equivalent, as determined in accordance with AASHTO T 176, of 65. Polish-resistant aggregates will not be required for leveling courses, provided they will be covered with riding surface mixtures. ~~The contractor shall provide a Type A laboratory as defined by 106.06 capable of verifying gradation at the location of stockpiled material where blending occurs~~

If blending aggregates from more than one source, use automated proportioning and blending equipment which has individual bins for each aggregate source used to produce a uniform stockpile meeting the job mix formula gradation. Proportion and blending equipment shall be calibrated at the beginning of production. All aggregate sources shall be polish-resistant as specified in **903.24**. ~~The contractor shall provide a Type A laboratory as defined by 106.06 capable of verifying gradation at the location where blending occurs~~

**Table 903.12-2: Gradation Limits for Aggregate for Micro-Surface
Based on Wash Gradation**

Sieve	Design Master Range (Total Percent Passing)	Mixture Control Tolerances
3/8 inch	100	
No. 4	70-98	±6.0 ±5.0
No. 8	45-70	±5.0
No. 16	28-50	±5.0
No. 30	19-34	±4.0 ±5.0
No. 50	12-25	±4.0
No. 100	7-18	±2.0 ±3.0
No. 200	4-15	±2.0

Subsection 904.03 (pg. 931-934), 12-15-21; **Emulsified Asphalt**; Revise Table 904.03-1(c):

Table 904.03-1(c): Test Requirements for Emulsified Asphalt

Practices	AASHTO Test Method	CRS-2P	RS-2	RS-1	CRS-1
Saybolt-Furol Viscosity @ 77 °F, seconds	T59	n/a	n/a	20-100	n/a
Saybolt-Furol Viscosity @ 122 °F, seconds	T59	100-400	75-400	n/a	20-100
Storage Stability Test, 24- h, %	T59	1 Max	1 Max	1 Max	1 Max
5-day Settlement, %	T59	n/a	n/a	n/a	n/a
Particle Charge	T59	Positive	n/a	n/a	Positive
Sieve Test, %	T59	0.1 Max	0.1 Max	0.1 Max	0.1 Max
Residue by	T59	Evaporation	Distillation	Distillation	Distillation
Residue, %	T59	65 Min	63 Min	55 Min	60 Min
Demulsibility, %	T59	40 Min	60 Min	60 Min	40 Min
Distillate, %	T59	n/a	n/a	n/a	n/a
Oil Test, %	T59	n/a	n/a	n/a	3.0 Max
Stone Coating	T59	n/a	n/a	n/a	n/a
Float Test, seconds	T50	n/a	n/a	n/a	n/a
Penetration	T49	75-175	100-200	100-200	100-250
Elastic Recovery, % ⁽¹⁾	T301	50 Min	n/a	n/a	n/a
Ductility @ 77 °F, cm	T51	40 Min	40 Min	40 Min	40 Min
Ductility @ 40 °F, cm	T51	n/a	n/a	n/a	n/a
R&B Softening Point, °F	T53	125 Min	n/a	n/a	n/a
Original G*/sind @ 82 °C	T315	n/a	n/a	n/a	n/a

⁽¹⁾ Straight-sided mold, 20-cm elongation, 5min hold, 25 °C

Subsection 914.01, (pg. 977), 12-19-22; **Non-Reinforced Concrete Pipe**; Revise 2nd Paragraph:

Manufacture all non-reinforced concrete pipe to meet the Department's procedure for the Manufacture and Acceptance of Precast Concrete Products. ~~Drainage Structures, Noise Wall Panels, and Retaining Wall Panels.~~

Subsection 916.06, (pg. 988), 12-15-21; **Reflective Sheeting**; Revise Subsection:

Provide reflective sheeting from the Department's QPL conforming to AASHTO M 268 and the supplementary requirements for fungus resistance of AASHTO M 268. The sheeting material shall have a precoated adhesive backing or a heat and pressure activated adhesive backing protected by a removable liner.

For all signs with a SILVER-WHITE and ORANGE background when used on temporary barricades and channelizing drums, provide reflective sheeting that meets or exceeds AASHTO M 268, Type B.

For all permanent panel signs with a SILVER-WHITE, YELLOW, RED, GREEN, BROWN, or BLUE background, provide reflective sheeting that meets or exceeds AASHTO M 268, Type D.

For overhead permanent signs attached to sign structures which overhang travel lanes and are not illuminated with sign lighting, provide reflective sheeting that meets AASHTO M 268, Type D.

For all other sign types, provide reflective sheeting that meets or exceeds AASHTO M 268, Type B.

For FLOURESCENT ORANGE background, provide reflective sheeting that meets or exceeds AASHTO M 268, Type B.

Subsection 916.07, (pg. 988,989), 12-15-21; **Legends, Borders, and Accessories**; Revise Subsection:

Provide letters, numerals, symbols, borders, and route markers conforming to the MUTCD.

A. Type "A" Class I (Demountable)

Provide silver-white letters, numerals, symbols, borders, and route markers of a pre-coated pressure sensitive or a tack-free heat-activated adhesive reflective sheeting permanently adhered to the sign panel.

For all permanent panel signs, provide reflective sheeting that meets AASHTO M 268, Type D.

Mechanically apply the reflective sheeting to the properly prepared sign panel with the equipment and in a manner prescribed by the sheeting manufacturer. Letters, numerals, symbols, borders, and route markers shall be 0.032 inch thick aluminum sheet of 3003 H14 Alloy or approved composite material. Properly degrease and etch aluminum, or treat with a light, tight, amorphous chromate type coating.

Supply each letter, numeral, symbol, and route marker with mounting holes, and secure to the sign surface with corrosion-resistant screws, bolts, or rivets.

B. Type "A" Class 2 Cut-Out (Direct Applied Reflective Sheeting Copy)

Provide silver-white cut-out letters, numerals, symbols, borders, and route markers of a pre-coated pressure sensitive or a tack-free heat-activated adhesive reflective sheeting.

For all permanent panel signs, provide reflective sheeting that meets AASHTO M 268, Type D.

For all other sign types, provide reflective sheeting that meets or exceeds AASHTO M 268, Type B.

Subsections Listed, (pg. varies), 12-19-22; Replace Reflective with Retroreflective 916.06; **Revise Following Subsections:**

916.05.H, (pg. 986), Revise 2nd Paragraph:

916.05.H.3, (pg. 986), Revise 1st Paragraph:

916.05.I, .1, .2, (pg. 987), Revise Heading, 1st, 2nd Paragraphs:

916.06, (pg. 988), Revise Heading, 1st, 2nd, 3rd, 4th, 5th, 6th Paragraphs:

916.07.A, (pg. 989), Revise 1st and 2nd Paragraphs:

916.07.B, (pg. 989), Revise 1st, 2nd, 3rd Paragraphs:

916.08, (pg. 989-999), Revise 1st, 2nd, 3rd, 4th Paragraphs:

919.04, (pg. 1012), Revise Heading, 1st Paragraph, List:

919.05.A, .B, (pg. 1012-1013), Revise Heading, 1st Paragraphs:

712.02, (pg. 732), Revise Materials List:

712.02.B, .G, (pg. 732-733), Revise 1st Paragraphs:

712.04, (pg. 734), Revise 2nd Paragraph:

712.04.H.2.a.(2), .2.e, (pg. 740-741), Revise 1st Paragraphs:

712.06.1, .2, (pg. 743), Revise 1st Paragraphs:

713.04.A, (pg. 749), Revise 1st Paragraph:

713.04.F, (pg. 753), Revise 3rd, 4th, 5th Paragraphs:

713.06.3, (pg. 754), Revise 1st Paragraph:

716.01, (pg. 784), Revise 1st Paragraph:

716.02, (pg. 784), Revise Materials List:

716.03.B.2.b, (pg. 789), Revise 8th Paragraph:

716.03.B.3, .4, (pg. 790), Revise 1st Paragraph:

716.04, (pg. 790-791), Revise Heading, 7th Paragraph:

716.05, (pg. 791-792), Revise Heading, 1st Paragraph:

716.06, (pg. 792), Revise 2nd Paragraph:

716.07.A, (pg. 795), Revise 11th Paragraph:

716.08, (pg. 797), Revise Last Paragraph:

716.08.G, (pg. 797), Revise Heading:

910.02.C.2.e, (pg. 969), Revise Heading:

Revise Index (pg. 1053 & 1056), Revise: Reflective Pavement Markers, Reflective Sheeting, & Snowplowable Reflective Pavement Markers.

Subsection 918.01.B & D, (pg. 1003, 1004), 1-30-23; **Grass Seed, Seed Groups**;
Revise Tables 918.01-1, 2, 3, & 6:

Table 918.01-1: Group A (February 1-July 1)

Kind of Seed	Quantity, Percent by Weight
Kentucky 31 Fescue	80
Korean Lespedeza White Clover	15
Annual Rye Grass	5

Table 918.01-2: Group B (June 1-August 15)

Kind of Seed	Quantity, Percent by Weight
Kentucky 31 Fescue	75
Korean Lespedeza White Clover	15
German Millet	10

Table 918.01-3: Group B1 (April 15 - August 15)

Kind of Seed	Quantity, Percent by Weight
Bermudagrass (hulled)	70
Annual Lespedeza White Clover	30

Table 918.01-6: Temporary Seeding

Seed Group (Season)	Kind of Seed	Percent by Weight
Group D (January 1 – May 1)	Annual Rye Grass	33-1/3%
	Korean Lespedeza White Clover	33-1/3%
	Spring Oats	33-1/3%
Group E (May 1 – July 15)	Sorghum-Sudan Crosses ⁽¹⁾	100%
	or German Millet ⁽²⁾	100%
Group F July 15 – January 1	Cereal Rye	66-2/3%
	Annual Rye Grass	33-1/3%

⁽¹⁾ Dekalb Sudan SX11, Lindsey 77F, TN Farmer's Co-op GHS-1 or GHS-2A.

⁽²⁾ German Millet, GaHi-1

Subsection 921.09, (pg. 1022), 12-19-22; Grout; Revise Subsection:

~~Mix grout in small quantities as needed, and do not retemper or use grout after it has begun to set. Unless otherwise specified or directed, provide grout consisting of one part Portland cement and two parts sand by volume, mixed with sufficient water to form a grout of proper consistency.~~ Submit grout mix designs to the Department's Materials and Tests. Grout designs shall use hydraulic cement meeting Portland cement conforming to the requirements of 901.01 or an appropriate alternative from the Department's Qualified Products List, and Use sand conforming to the requirements of 903.02. Use water that has been approved by the Engineer.

When non-shrinking or non-shrinking fast-setting grout is specified, either formulate it by incorporating an admixture, or use a pre-mixed grout. ~~Obtain the Engineer's approval of the formulation and the admixture or the premixed grout.~~ Mix and use the grout in accordance with the manufacturer's recommendations. ~~These special grouts will be classified~~ Grouts will be reviewed as follows:

- Type I — Non shrinking Grout
- Type II — Non shrinking, Fast setting Grout

A. Non-Structural Grout

Grout specified without a strength requirement will be non-structural and shall have its design submitted per Departmental procedures. Mix grout in small quantities as needed, and do not retemper or use grout after it has begun to set. Unless otherwise specified or directed, provide grout consisting of one part Portland cement and two parts sand by volume, mixed with sufficient water to form a grout of proper consistency.

B. Structural Grout

Grout specified with a strength requirement will be structural grout and shall have its design submitted per Departmental procedures.

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T E N N E S S E E

Rev: October 10, 2016

January 1, 2021

SPECIAL PROVISION

REGARDING

EMPLOYING AND CONTRACTING WITH ILLEGAL IMMIGRANTS

The State shall endeavor to do business only with those contractors and subcontractors that are in compliance with the Federal Immigration and Nationality Act. This policy shall apply to all State Contractors including subcontractors. This policy statement is issued to establish implementation guidance to procuring state agencies and contractors reflecting the requirements of *Tennessee Code Annotated* §12-3-309 regarding the employment of illegal immigrants in the performance of state contracts.

1. The Contractor hereby attests, certifies, warrants, and assures that the Contractor shall not knowingly utilize the services of an illegal immigrant in the performance of this Contract and shall not knowingly utilize the services of any subcontractor who will utilize the services of an illegal immigrant in the performance of this Contract. The Contractor shall reaffirm this attestation, in writing, by submitting to the State a completed and signed copy of the "Attestation form" provided by the Department, semi-annually during the period of this Contract.
2. Prior to the use of any subcontractor in the performance of this Contract, and semi-annually thereafter, during the period of this Contract, the Contractor shall obtain and retain a current, written attestation that the subcontractor shall not knowingly utilize the services of an illegal immigrant to perform work relative to this Contract and shall not knowingly utilize the services of any subcontractor who will utilize the services of an illegal immigrant to perform work relative to this Contract.
3. The Contractor shall maintain records for its employees used in the performance of this Contract. Said records shall include a completed federal Department of Homeland Security Form I-9, *Employment Eligibility Verification*, for each employee and shall be subject to review and random inspection at any reasonable time upon reasonable notice by the State.

The Contractor understands and agrees that failure to comply with this section will be subject to the sanctions of *Tennessee Code Annotated* § 12-3-309 for acts or omissions occurring after January 1, 2007. This law requires the Chief Procurement Officer, Department of General Services, to prohibit a contractor from contracting with, or submitting an offer, proposal, or bid to contract with the State of Tennessee to supply goods or services for a period of one year after a

contractor is discovered to have knowingly used the services of illegal immigrants during the performance of this contract.

For the Purposes of this policy, "illegal immigrant" shall be defined as a non-citizen who has entered the United State of America without federal government permission or stayed in this country beyond the period allowed by a federal government-issued visa authorizing the non-citizen to enter the country for specific purposes and a particular time period.

STATE**O F****TENNESSEE**

(Rev. 6-20-11)

January 1, 2021

SPECIAL PROVISION**REGARDING****BUY AMERICA REQUIREMENTS**

All manufacturing processes for iron and steel products, and coatings applied thereon, used in this project shall occur in the United States except that if the proposal has bid items for furnishing domestic and foreign iron and steel, the bidder will have the option of (1) submitting a bid for furnishing domestic iron and steel, or (2) submitting a bid for furnishing domestic iron and steel and a bid for furnishing foreign iron and steel. If option (2) is chosen, the bid will be tabulated on the basis of (a) the total bid price using the bid price for furnishing domestic iron and steel and, (b) the total bid price using the bid price for furnishing foreign iron and steel.

For the total bid based on furnishing foreign iron and steel to be considered for award, the lowest total bid based on furnishing domestic iron and steel must exceed the lowest total bid based on furnishing foreign iron and steel by more than 25 percent. The 25 percent differential applies to the total bid for the entire project, not just the bid prices for the steel or iron products.

Iron and steel products are defined as products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed from iron and steel made in the United States. Iron products are included, however, pig iron and processed, pelletized, and reduced iron ore may be purchased outside the United States.

Manufacturing begins with initial melting and continues through the coating stage. Any process which modifies chemical content, physical size or shape, or the final finish is considered a manufacturing process. Coatings include epoxy, galvanizing, painting or any other surface protection that enhances the value and/or durability of a material.

The contractor shall provide a certification to the Engineer with each shipment of iron and steel products to the project site that the manufacturing processes for the iron and steel products occurred in the United States. No steel shall be placed until the contractor ensures the requirements of this Special Provision are met.

The above requirements do not prevent a minimal use of foreign materials, if the cost of such materials used does not exceed 0.1 percent of the total contract cost or \$2,500.00, whichever is greater. If steel not meeting the requirements of this Special Provision is used, the contractor shall provide a written statement to the Department prior to its use indicating where the steel will be incorporated in the work,

the value of the steel, the percentage of the contract amount, and the appropriate invoices shall be submitted as documentation.

The contractor shall be responsible for all cost associated with any steel that is permanently incorporated into the project that does not meet the requirements of this Special Provision without prior written approval from the Department, up to and including removal and replacement.

S T A T E**O F****T E N N E S S E E**

(Rev. 2-8-21)

January 1, 2021

SPECIAL PROVISION**REGARDING****WATER QUALITY AND STORM WATER PERMITS****Description**

This work consists of the conditions that apply to all construction activities on the project pursuant to the following:

1. Section 404 of the Federal Clean Water Act (33 U.S.C. §1344), and all implementing regulations, including without limitation regulations of the U.S. Army Corps of Engineers governing permits for discharges of dredged or fill material into waters of the United States in 33 CFR Part 323; and
2. The Tennessee Water Quality Control Act (T.C.A. §69-3-101, et seq.) and all implementing regulations, including without limitation the Rules of the Tennessee Department of Environment and Conservation governing NPDES permits in Chapter 400-40-10, and Aquatic Resource Alteration permits in Chapter 400-40-7; and
3. Section 26a of the TVA Act of 1933 as amended (49 Stat. 1079, 16 U. S. C. sec. 831y1.) and all implementing regulations, including without limitation the regulations of the Tennessee Valley Authority governing construction in the Tennessee River System in 18 C.F.R., Part 1304; and
4. The Tennessee Wildlife Resources Agency Reelfoot Lake Watershed Management permit program (T.C.A. section 70-5-1.), and all implementing regulations, including without limitation regulations authorizing any activity, practice, or project which has or is likely to have the effect of diverting surface or subsurface water from the Lake or have the effect of draining or otherwise removing water from Reelfoot Lake; and
5. Coast Guard Bridge Permit (USCG) (Section 9 of the Rivers and Harbors Appropriation Act of 1899) and all implementing regulations, including but not without limitation for projects which impact streams deemed navigable by the U.S. Coast Guard.

Responsibility

Assume all responsibilities of the permittee as indicated in the permit that relates to protection of the "waters of the United States" and/or "waters of the State of Tennessee."

Obtain any additional permits required by the Contractor for off-site waste and/or borrow areas and associated off project work areas.

Sign the Notice of Intent (NOI) form, provided by the Department, indicating acceptance of the stipulations contained in the permit. Submit the signed NOI to the TDOT HQ Construction Division by email within 10 calendar days after submittal of the contract proposal or the Department may at its discretion cancel the award with the Contractor forfeiting the bid bond.

Implement the provisions of the Water Quality (including, but not limited to, TDEC ARAP, USACE 404, TVA Section 26a, Coast Guard, TWRA) and Storm Water [including, but not limited to, National Pollution Discharge Elimination System (NPDES), Statewide Stormwater Management Plan (SSWMP)] Permits and requirements that pertain to construction activities.

Review of the permit provisions, including NPDES Permit provisions the site specific SWPPP, the contract plans, Standard Specifications and contract Special Provisions and find the permit requirements and erosion prevention and sediment control (EPSC) procedures to be reasonable, workable, and binding.

The Contractor shall not be released from the project site responsibilities under the NPDES permit provisions until the Notice of Termination (NOT) is submitted to TDEC by the TDOT Regional Operations Engineer. The NOT is a certification that the construction project is permanently stabilized, and all construction related discharges have ceased. This means that the use of EPSC measures to alleviate concerns of surface erosion and transport of sediment to surface water conveyances or to waters of the state is no longer necessary. Furthermore, it means that permanent controls, hard surfaces and/or vegetation, used on the project are deemed adequate to prevent erosion and sediment transport and no other potential sources of construction-related pollution are on the project.

The Contractor shall not be released from any warranty provided for EPSC plantings, including sod and trees. If the entire project is complete as outlined in **105.15** of the Standard Specifications, the tree plantings shall still be required to meet the requirements of **802** Standard Specifications.

NPDES Permit Required Action

Accompany the TDOT EPSC inspector or TDOT consultant on all EPSC inspections of the entire construction project including permitted locations and potentially impacted streams, and attend all QA/QC Project Assessments.

EPSC Inspections shall be conducted as required in the most current TN Construction General Permit.

EPSC inspections shall be performed on the schedule established in the TN Construction General Permit until the site is permanently stabilized to determine if the permit requirements are being met. Where sites or portion(s) of the construction project have been temporarily stabilized, the inspections only have to be conducted once per month until construction activity resumes. Written

notification of the intent to change the inspection frequency and the justification for such request must be submitted to the TDOT District Supervisor and the TDEC Central Office before proceeding.

A representative who holds a current TDEC "*Fundamentals of Erosion Prevention and Sediment Control Level I*" certification shall accompany the TDOT EPSC inspector on all required EPSC inspections. The project supervisor(s) shall also hold a current TDEC "*Fundamentals of Erosion Prevention and Sediment Control Level I*" certification. Proof of required personnel training for the individual(s) shall be provided to the TDOT District Supervisor prior to beginning of construction.

The TDOT EPSC inspector shall document all deficiencies on the required current TDOT EPSC Inspection Report form. Sign the TDOT EPSC Inspection Report form and any supporting documentation indicating that there is agreement with the report, recommendations and repair schedule as stated in the documentation.

Make necessary maintenance and repairs relative to deficiencies in these permit conditions or requirements within 24 hours after an inspection identifies the maintenance or repair need, and/or as directed by the TDOT District Supervisor, unless conditions make a particular activity impracticable. Any such conditions that make immediate repairs impracticable shall be documented on the inspection report and provided to the TDOT District Supervisor, and be accompanied by an expected repair schedule based on forecasted weather conditions.

Review the site specific SWPPP that will be made available prior to or at the pre-construction conference, for any additional EPSC requirements. Sign and submit two copies of the SWPPP signature page provided by the Department in the site specific SWPPP. Submit for review and approval any changes/revisions to the SWPPP to prevent erosion and sediment transport at any time after contract execution. Rejection of any submittals by the Department does not relieve the liability for appropriate Best Management Practices (BMPs).

If at any time during this contract, the requirements for the Water Quality Permits and/or the Storm Water Permits for Construction Related Activities are changed/revised/updated, the Contractor shall be notified in writing by the Department of such requirements. Comply with the new requirements within 30 days of the Department notification.

If at any time that sedimentation is occurring or has occurred in streams impacted by the project, immediately notify the TDOT District Supervisor to evaluate the EPSC measures employed. A determination of the cause for sedimentation will be made by the Department. Immediately repair or replace defective EPSC measures and install, as applicable, additional or other EPSC measures with the goal of eliminating future sedimentation. Once a remediation plan is provided by the Department, within 24 hours after notification, begin the remediation as required. Based on the cause of sedimentation, the Department will determine if the cost of remediation will be performed at the Contractor's expense.

Failure to Comply

In the event a Notice of Noncompliance, Notice of Violation, Notice of Deficiency, or Order is issued by any State or Federal Agency on this project, any required corrective action and all fines

will be the sole responsibility of the Contractor as outlined in **107.01** of the Standard Specifications.

Failure to comply or take immediate corrective actions required within 24 hours, unless documented conditions make a particular maintenance or repair activity impracticable immediately, shall be reason for the TDOT District Supervisor to suspend all other work on the Project, except EPSC and traffic control. The Department will apply non-refundable deductions of monies from the Contract per calendar day from monies due to the Contractor for any EPSC work on the Project. This deduction can be made for each location, as determined by the TDOT District Supervisor, for each calendar day that the deficiency is allowed to remain and charged as item description "*Failure to Comply with Permit Deduction*". A deduction shall be made from monies due the Contractor, not as a penalty, but as liquidated damages, as indicated in **108.09** of the Standard Specifications.

If the necessary corrections/adjustments are not done in a timely manner as required, the Department will implement the provisions of **209.07** and **109.08** of the Standard Specifications that provides for the Department making repairs and recovering the costs thereof from the Contractor.

The Department will not participate in any payment or reimbursement for fines and will not authorize time extensions due to delays in project progress for work stoppage, to remedy the violations stated within the NOV, required by the TDOT District Supervisor as stated in **105.01** of the Standard Specifications.

Spill Prevention, Control, and Countermeasure

To help prevent the discharge of oil into navigable waters, the U.S. Environmental Protection Agency (EPA) developed the Spill Prevention, Control, and Countermeasure (SPCC) Program. The SPCC Program is under the authority of Section 311 (j)(1)(C) of the Federal Water Pollution Control Act (Clean Water Act) in 1974. The rule may be found at Title 40, Code of Federal Regulations (CFR), Part 112. Additional information regarding the preparation and requirements of a SPCC Plan can be found at: <http://www.epa.gov/oem/content/spcc/>.

If applicable based upon the total aggregate capacity of aboveground oil storage, develop a site specific SPCC Plan per EPA requirements. This plan shall be provided to the TDOT District Supervisor as part of the required submittals during the project Pre-Construction Meeting or at which time the conditions on the project site meet the applicable criteria. Shall be responsible for obtaining any other necessary local, state, and federal permits as applicable. The SPCC Plan and/or permits shall be kept on-site.

Comply with all aspects of the site specific SPCC Plan including but not limited to performing any required inspections as directed by the SPCC Plan as well as implementing material and spill management practices per the project's SWPPP. In the event, where a release containing a hazardous substance in an amount equal to, or in excess of a reportable quantity established under either 40 CFR 117 or 40 CFR 302 occurs during a 24 hour period, immediately notify the TDOT District Supervisor.

S T A T E**O F****T E N N E S S E E**

(Rev. 6-20-22)
(Rev. 9-7-22)

January 1, 2021

SPECIAL PROVISION**REGARDING****EQUAL EMPLOYMENT OPPORTUNITY**

Electronic Code of Federal Regulations (e-CFR):
23 CFR 230 Chapter 1 Subchapter C Appendix A to Subpart A

Specific Equal Employment Opportunity Responsibilities**General**

- a) Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246 and Executive Order 11375 are set forth in Required Contract Provisions (Form PR-1273 or 1316, as appropriate) and these Special Provisions which are imposed pursuant to Section 140 of Title 23, U.S.C., as established by Section 22 of the Federal-Aid Highway Act of 1968. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions.
- b) The contractor will work with the Tennessee Department of Transportation and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract.
- c) The contractor and all his/her subcontractors holding subcontracts not including material suppliers, of \$10,000 or more, will comply with the following minimum specific requirement activities of equal employment opportunity: (The equal employment opportunity requirements of Executive Order 11246, as set forth in Volume 6, Chapter 4, Section 1, Subsection 1 of the Federal-Aid Highway Program Manual, are applicable to material suppliers as well as contractors and subcontractors). The contractor will include these requirements in every subcontract of \$10,000 or more with such modification of language as is necessary to make them binding on the subcontractor.

Equal Employment Opportunity Policy

The contractor will accept as his operating policy the following statement which is designed to further the provision of equal employment opportunity to all persons without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability and to promote the full realization of equal employment opportunity through a positive continuing program:

It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability. Such action shall include employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job training.

Equal Employment Opportunity Officer

The contractor will designate and make known to the Tennessee Department of Transportation contracting officers an equal employment opportunity officer (hereinafter referred to as the EEO Officer) who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of equal employment opportunity and who must be assigned adequate authority and responsibility to do so.

Dissemination of Policy

- a) All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's equal employment opportunity policy and contractual responsibilities to provide equal employment opportunity in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
 - 1) Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's equal employment opportunity policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.
 - 2) All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer or other knowledgeable company official covering all major aspects of the contractor's equal employment opportunity obligations within thirty days following their reporting for duty with the contractor.
 - 3) All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer or appropriate company official in the contractor's procedures for locating and hiring minority group employees.

- b) In order to make the contractor's equal employment opportunity policy known to all employees, prospective employees, and potential sources of employees, i.e., schools, employment agencies, labor unions (where appropriate), college placement officers, etc., the contractor will take the following actions:
 - 1) Notices and posters setting forth the contractor's equal employment opportunity policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
 - 2) The contractor's equal employment opportunity policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

Recruitment

- a) When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be published in newspapers or other publications having a large circulation among minority groups in the area from which the project work force would normally be derived.
- b) The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants, including, but not limited to, State employment agencies, schools, colleges and minority group organizations. To meet this requirement, the contractor will, through his EEO Officer, identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with equal employment opportunity contract provisions. (The U.S. Department of Labor has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended).

- c) The contractor will encourage his present employees to refer minority group applicants for employment by posting appropriate notices or bulletins in areas accessible to all such employees. In addition, information and procedures with regard to referring minority group applicants will be discussed with employees.

Personnel Actions

Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability. The following procedures shall be followed:

- a) The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
- b) The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
- c) The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
- d) The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

Training and Promotion

- a) The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
- b) Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event the Special Provision Regarding Training Program Requirements is provided under this contract, this subparagraph will be superseded as indicated therein.
- c) The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
- d) The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

Unions

If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

- a) The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
- b) The contractor will use best efforts to incorporate an equal employment opportunity clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.
- c) The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the Tennessee Department of Transportation and shall set forth what efforts have been made to obtain such information.
- d) In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability, making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The U.S. Department of Labor has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees). In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the Tennessee Department of Transportation.

Subcontracting

- a) The contractor will use his best efforts to solicit bids from and to utilize minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of minority-owned construction firms from the Tennessee Department of Transportation.
- b) The contractor will use his best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

Records and Reports

- a) The contractor will keep such records as are necessary to determine compliance with the contractor's equal employment opportunity obligations. The records kept by the contractor will be designed to indicate:
 - 1) The number of minority and non-minority group members and women employed in each work classification on the project.
 - 2) The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women. (Applicable only to contractors who rely in whole or in part on unions as a source for their work force),
 - 3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees, and
 - 4) The progress and efforts being made in securing the services of minority group subcontractors or subcontractors with meaningful minority and female representation among their employees.
- b) All such records must be retained for a period of 3 years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the of the Tennessee Department of Transportation and the Federal Highway Administration.
- c) The contractors will submit an annual report to the Tennessee Department of Transportation each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form PR 1391. If on-the-job training is being required by "Training Special Provision," the contractor will be required to furnish Form FHWA 1409.
- d) The contractor and subcontractors will be required to complete other reports as instructed by the Engineer.
- e) Current estimates may be withheld by the Engineer when reports are not received within the above specified time limits.

STATE

OF

TENNESSEE

(Rev. 6-20-22)

January 1, 2021

(Rev. 9-7-22)

SPECIAL PROVISION

REGARDING

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY

CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

Electronic Code of Federal Regulations (e-CFR):

41 CFR 60-4.3 Equal Opportunity Clauses

1) As used in these specifications:

- a) "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
- c) "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
- d) "Minority" includes:
 - I. Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
 - II. Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish or Portuguese Culture or origin, regardless of race);
 - III. Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - IV. American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

- 2) Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation, and which is set forth in the solicitations from which this contract resulted.

- 3) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.
- 4) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
- 5) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specification, Executive Order 11246, or the regulations promulgated pursuant thereto.
- 6) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- 7) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
 - a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction

project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

- b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available and maintain a record of the organization's responses.
- c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
- d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources complied under 7.b) above.
- f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
- g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

- h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
 - i) Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screenings procedures, and tests to be used in the selection process.
 - j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's workforce.
 - k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
 - l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriation training, etc., such opportunities.
 - m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
 - n) Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
 - o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
 - p) Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- 8) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of

the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

- 9) A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women, generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
- 10) The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.
- 11) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
- 12) The Contractor shall carry out such sanctions and penalties for violations of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- 13) The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
- 14) The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

- 15) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

S T A T E

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T E N N E S S E E

(Rev. 6-20-22)

January 1, 2021

SPECIAL PROVISION

REGARDING

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION

TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

Electronic Code of Federal Regulations (e-CFR):
41 CFR 60-4.2 -- Solicitations

- 1) The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
- 2) The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

<u>County</u>	Goals for Female Participation <u>in each Trade</u>
All Counties	6.9

<u>County</u>	Goals for Minority Participation <u>for each Trade</u>
Lincoln	11.2
Hamilton, Marion, Sequatchie	12.5
Bledsoe, Bradley, Grundy, McMinn, Meigs, Monroe, Polk, Rhea	8.6
Carter, Hawkins, Sullivan, Unicoi, Washington	2.6
Greene, Hancock, Johnson	3.2
Anderson, Blount, Knox, Union	6.6
Campbell, Claiborne, Cocke, Cumberland, Fentress, Grainger, Hamblen, Jefferson, Loudon, Morgan, Roane, Scott, Sevier	4.5

<u>County</u>	<u>Goals for Minority Participation for each Trade</u>
Montgomery	18.2
Davidson, Cheatham, Dickson, Robertson, Sumner, Williamson, Wilson, Rutherford	15.8
Bedford, Cannon, Clay, Coffee, DeKalb, Franklin, Giles, Hickman, Houston, Humphreys, Jackson, Lawrence, Lewis, Macon, Marshall, Maury, Moore, Overton, Perry, Pickett, Putnam, Smith, Stewart, Troup, Van Buren, Warren, Wayne, White	12.0
Shelby, Tipton	32.3
Benton, Carroll, Chester, Crockett, Decatur, Dyer, Fayette, Gibson, Hardeman, Hardin, Haywood, Henderson, Henry, Lake, Lauderdale, McNairy, Madison, Obion, Weakley	26.5

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted). If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in CFR Part 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from Project to Project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

- 3) The Contractor shall provide written notification to the Director of Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation.

U.S. Department of Labor – Regional Office
Office of Federal Contract Compliance Program
61 Forsyth Street, Room 7B75
Atlanta, GA 30303

The notification shall list the name, address, and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

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STATE**OF****TENNESSEE**

(Rev. 8-20-18)

January 1, 2021

(Rev. 9-7-22)

SPECIAL PROVISION**REGARDING****DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION – LOCAL
PROGRAMS**

The disadvantaged business enterprise (DBE) requirements of 49 CFR Part 26 apply to this contract. Accordingly, Disadvantaged Business Enterprises (DBEs) as defined in 49 CFR Part 26 shall have the maximum appropriate opportunity to participate in the performance of this contract or in the performance of subcontracts to this contract. In this latter regard, the Contractor shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 to ensure that DBEs have the opportunity to compete for and perform subcontracts. The Contractor shall not discriminate on the basis of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the award of subcontracts.

The Contractor shall submit to the Civil Rights Division Small Business Development Program (CRD-SBDP) copies of any subcontract agreements with DBEs upon execution. The Contractor shall identify all DBE subcontractors at the Preconstruction Conference and indicate the approximate date for each DBE subcontractor's appearance on the project. Before terminating and/or substituting a DBE subcontractor, the Contractor must give notice in writing to the DBE subcontractor, with a copy to TDOT's CRD-SBDP, of its intent to terminate and/or substitute including the reason for the request.

The Contractor shall provide notification to the Project Supervisor at least 24 hours prior to each DBE beginning work. The project supervisor or Inspector must complete a "Commercially Useful Function Checklist" to document the first date of work, work items, equipment, and forces of each DBE. The Contractor shall take full responsibility for the performance of a commercially useful function (CUF) by all DBE subcontractors, manufacturers, and materials suppliers who work on or provide materials for the project.

The Contractor shall provide a monthly payment certification to the Department entitled "Prompt Payment Certification Form." The Department shall provide the Contractor with the Prompt Payment Certification Form. An officer of the Contractor shall provide an electronic signature to the Prompt Payment Certification Form and return in Excel format via email to DBE.Runningtally@tn.gov and to the Project Supervisor concurrently. The Prompt Payment Certification Form shall be submitted monthly beginning no later than sixty (60) days after payment of the first estimate. Payments must abide by the conditions set in T.C.A. § 12-4-707.

Prior to receiving final payment, the Contractor shall provide to the project supervisor and CRD-SBDP certification of the dollars paid to each DBE firm, using Form CC3, "Certification of DBE Accomplishment." The certification shall be dated and signed by a responsible officer of the Contractor and by a responsible officer of the DBE. Falsification of this certification may

result in formal enforcement actions, including civil actions for false claims, suspension and debarment proceedings, or other administrative actions affecting bidder qualifications.

The Contractor and all subcontractors shall retain, for a period of not less than three (3) years after final acceptance of a project, copies of canceled checks or other documentation that substantiates payments to DBE firms. These records shall be available at reasonable times and places for inspection by authorized representatives of the Department and various Federal Agencies.

The Contractor is advised that failure to carry out the requirements as set forth above shall constitute a breach of contract, and after notification by the Department, may result in termination of the contract or other remedy as the Department deems appropriate, which may include, but is not limited to:

- 1) Withholding monthly progress payments;
- 2) Assessing sanctions;
- 3) Liquidated damages; and/or
- 4) Disqualifying the contractor from future bidding as non-responsible.

The Title VI and nondiscrimination provisions of USDOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

S T A T E

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T E N N E S S E E

(Rev. 6-20-22)

January 1, 2021

(Rev. 9-7-22)

SPECIAL PROVISION

REGARDING

DBE CONTRACT GOAL

Electronic Code of Federal Regulations (e-CFR):
49 CFR 26

All contractors shall pursue affirmative action requirements to encourage and increase participation of firms certified as a Disadvantaged Business Enterprise (DBE) as set forth in this special provision and in accordance with 49 CFR Part 26. The bidder shall arrange for the percentage of the work specified on the cover of the Proposal Contract to be performed by Tennessee Uniform Certification Program (TNUCP) Disadvantaged Business Enterprises (DBEs) or otherwise clearly demonstrate adequate good faith efforts as described herein. All payments must follow the conditions set by the most current T.C.A. § 12-4-707.

The Contractor shall take full responsibility for ensuring the performance of a “commercially useful function” (CUF), as defined in 49 CFR Part 26, by all DBE subcontractors, manufacturers, and materials suppliers who work on the project or provide materials for the project.

A. Disadvantaged Business Enterprise Policy

The Contractor shall abide by the following provision and include in all subcontract agreements the following provision, which is designed to promote full participation of DBEs as suppliers and subcontractors through a continuous, positive result-oriented program on contracts let by the Department:

The Contractor, sub-recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of U.S. Department of Transportation- assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Department deems appropriate, which may include, but is not limited to:

- 1) Withholding monthly progress payments;*
- 2) Assessing sanctions;*
- 3) Liquidated damages; and/or*
- 4) Disqualifying the contractor from future bidding as non-responsible.*

The Title VI and nondiscrimination provisions of USDOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

B. Counting DBE Participation toward Meeting Goals

The Contractor shall count DBE participation toward goals in accordance with 49 CFR Part-26. If the DBE performs a CUF on the contract including those functions as a subcontractor, expenditures to a DBE contractor count toward DBE goals. A DBE performs a CUF when it is responsible for execution of the specified work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a CUF, the DBE must also be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material, installing (where applicable), and paying for the material itself. The work performed by the DBE firm shall be necessary and useful to the completion of the contract, and consistent with normal highway construction industry practices in Tennessee. Work performed by a DBE firm in a particular transaction may be counted toward the goal only if the Department determines that it involves a CUF. The determination is verified by the "Commercially Useful Function Checklist" and the requirements of 49 CFR Part 26.

Note: In accordance with 49 CFR 26.55(c), to determine whether a DBE is performing a CUF, the Department must evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing, and the DBE credit claimed for its performance of the work, and other relevant factors. A DBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation. In determining whether a DBE is such an extra participant, the Department must examine similar transactions, particularly those in which DBEs do not participate.

When a DBE is presumed not to be performing a commercially useful function, the DBE may present evidence to rebut this presumption. The Department may determine that the firm is performing a commercially useful function given the type of work involved and normal industry practices.

The bidder may count the following DBE expenditures involving a CUF towards the DBE goal:

1. Projects where the DBE is the Prime Contractor

The entire portion(s) of the contract to be completed by certified DBE firm's own forces will be counted toward meeting the goal. This will also include the cost of supplies and materials obtained by the DBE for the work of the contract, including supplies purchased or equipment leased by the DBE. Items of the contract subcontracted to non-DBE firms will not be counted toward the goal.

Note: If a DBE does not perform or exercise responsibility for at least 30 percent of the total cost of its contract with its own work force, or the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, the Department must presume that it is not performing a commercially useful function.

2. Portions of a Bid from a Joint Venture

When a DBE performs as a participant in a joint venture, only the total dollar value of the contract equal to the distinct, clearly defined portion of the work of the contract that the DBE performs with its own forces will count toward DBE goals. A bid from a joint venture between a DBE and a non-DBE Contractor shall include an explanation of DBE commitments on [Form 8-5](#), which must be approved by the Civil Rights Division - Small Business Development Program (CRD-SBDP) and Local Programs Division prior to the letting. Only the DBE's portion will be counted toward the goal. Joint venture agreements have to be approved separately from the bid documents, prior to the awarding of the contract.

3. DBE Subcontractors

The DBE subcontractor shall assume actual and contractual responsibility for provision of materials and supplies, subcontracted work, or other commercially useful functions of the items of work subcontracted to them. When a DBE subcontracts part of the work of its contract to another firm, the value of the subcontracted work may be counted toward the DBE goal only if the DBE's subcontractor is also a DBE. Work that a DBE subcontracts to a non-DBE firm does not count toward the DBE goal. Cost of materials purchased from, or the cost of equipment leased from the non-DBE Contractor will not count toward the project DBE commitment. Prior written approval must be obtained from the CRD- SBDP for any DBE use of the Contractor's personnel or equipment.

4. DBE Manufacturers

The Contractor may count toward the DBE goal 100% of its expenditures for materials and supplies required under a contract and obtained from a DBE manufacturer only if the DBE operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.

5. DBE Regular Dealers (Material Suppliers)

The Contractor may count toward the DBE goal 60% of its expenditures for materials and supplies required under a contract and obtained from a DBE regular dealer. For purposes of this section, a regular dealer is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A firm may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business where such products are bought, kept in stock, and regularly sold to the public if the firm owns and operates the distribution equipment for the products. Any supplementing of the regular dealer's own distribution equipment shall be by a long-term lease and not on an ad hoc or contract-by-contract basis. Any lease containing the terms of the agreement shall be made available to and must be approved in writing by CRD-SBDP.

6. Other DBE Suppliers

With respect to materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, toward DBE goals; provided, the Department finds the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. The cost of the materials and supplies themselves shall not count toward DBE goals.

7. Transportation or Hauling of Materials

The Contractor may count towards the DBE goal hauling in either DBE-owned trucks or in trucks leased to or by DBE firms. The verification of truck drivers employed by DBE firms will continue to be by submission of payrolls independent from any Davis-Bacon regulations. Use the following factors in determining whether a DBE trucking company is performing a CUF:

- a. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting DBE goals.
- b. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
- c. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
- d. The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services that the lessee DBE provides on the contract.
- e. The DBE may also lease trucks from a non-DBE firm, including an owner-operator. The DBE that leases trucks equipped with drivers from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE leased trucks equipped with drivers not to exceed the value of transportation services provided by DBE-owned trucks or leased trucks with DBE employee drivers. Additional participation by non-DBE owned trucks equipped with drivers receives credit only for the fee or commission it receives as a result of the lease arrangement. If the DBE chooses this approach, it must obtain written consent from the Department [CRD- SBDP].
- f. The DBE may lease trucks without drivers from a non-DBE truck leasing company. If the DBE leases trucks from a non-DBE truck leasing company and uses its own employees as drivers, it is entitled to credit for the value of these hauling services.
- g. For purposes of this paragraph, a lease must indicate that the DBE has exclusive use of and control over the truck. Leases cannot be Department contract-specific, must be long term, and must be approved by CRD-SBDP. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

- h. Prior to hauling, the Contractor and DBE shall provide the District Supervisor a complete list of trucks that will be used on the project for DBE goal participation. The Department will provide a form that shall be used by the Contractor and the DBE to identify the trucks. A revised list will be required any time the trucks used changes. The Contractor and DBE must be able to adequately document the actual amount of hauling eligible for DBE goal participation.

8 Contracted Labor / Temporary Employment Agencies

The Department will count the entire amount of fees or commissions charged by a DBE firm for providing a bona fide service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of the contract; provided, however, the Department must find the fee to be reasonable and not excessive as compared to the fees customarily allowed for similar services.

C. Contract Award Procedures

The established DBE goal will be shown on the proposal as a percent of the total amount bid. If the total proposed DBE work submitted with the bid is less than the percentage participation goal set by the Department, the bidder shall, within three (3) business days from the bid openings, either propose sufficient additional DBE participation to meet the goal or clearly demonstrate by documentation that good faith efforts were made to meet the goal.

1. Bidder's Responsibility

It is the bidder's responsibility to determine the level of professional competence and financial responsibility of any proposed DBE subcontractor. The bidder shall ascertain that the proposed DBE subcontractor has suitable experience and equipment to perform a commercially useful function for work that is common industry practice in the Tennessee highway construction industry.

The Contractor shall develop and maintain records of negotiations with DBEs to reach agreeable prices, quotations, and work schedules, including but not limited to a record of dates when the Contractor first contacted each DBE.

2. DBE's Responsibility

Before bidding and subsequently entering into a contract (as a contractor or subcontractor), the DBE should consider the scope and size of the project, as well as whether it is certified to receive credit for the type of work performed. As with any contract, this is a legally binding document and should be performed to the best of one's ability. However, should a DBE ever have to withdraw from a contract, it shall provide the CRD-SBDP and Contractor with written documentation. A DBE should only withdraw when there is no other option, as non-completion of its duties may result in temporary disqualification of a prequalified bidder or subcontractor by suspending the privilege of bidding on Department contracts or becoming an approved subcontractor, as outlined in Chapter 1680-05-03 of the Rules of the Department.

3. Proposals with Established Project DBE Goals

For proposals with established project goals, the bidder will be required to complete [Form 8-5: DBE Award Information](#). The bidder shall list the following information on each Form 8-5 that is submitted:

- a. The names and addresses of all DBE firms being used or being considered for use under the contract as part of the bidder's DBE commitment.
- b. The work classification(s) for each DBE on the contract.
- c. The "Amount to DBE" which has been committed to each DBE firm for use on the contract.
- d. Written documentation of the bidder's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal; and
- e. Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the Contractor's commitment.
- f. All other requested information that is on Form 8-5.

Submit the quote from the DBE and the completed DBE Form 8-5 within three (3) business days after the Letting. Failure to provide the quote and the completed form or documentation clearly evidencing a good faith effort, as detailed in Section 4 below, within three (3) business days after the Letting may cause the bid to be rejected as irregular. Only certified DBE firms may be used. Contractor may access certification information by viewing the [TNUCP DBE Directory website](#).

When DBE goal projects are involved and the Contractor subcontracts to a non- DBE, and the non-DBE subcontractor in turn subcontracts to a DBE as a second-tier subcontractor, the Contractor must affirm in writing his/her knowledge and approval of such an arrangement. Recognition of a second-tier arrangement with a DBE subcontractor for goal work must be forwarded to the CRD-SBDP Director for verification, in writing, prior to any work being performed by the DBE which is intended to be counted toward the goal.

4. Bidder Selection and Good Faith Efforts

- a. Bidders shall submit proposals that meet the DBE goal or shall submit documentation clearly evidencing that they made a good faith effort to meet the DBE goal. Contractors who meet or exceed the contract goal will be assumed to have made good faith efforts to utilize DBE firms. DBE firms who bid as Prime Contractors will be considered to have met the goal.
- b. In making a fair and reasonable judgment as to whether the bidder has made adequate good faith efforts, the Department shall consider quality, quantity, and intensity of the different kinds of efforts that the bidder has made. The following list of factors is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases. In any event, the Department may consider whether the bidder:
 - 1) Selected portions of the work likely to attract DBE participation. The total dollar value of the portions selected should meet or exceed the contract DBE goal. If it is necessary, the bidder should break down subcontracts into economically feasible units in order to facilitate participation.

- 2) Provided notice to a reasonable number of specific DBEs, including those not regularly used by the bidder, that their participation in the contract is being solicited in sufficient time to allow them to participate effectively.
 - 3) Provided interested DBEs with adequate information about the plans, specifications, and requirements of the contract.
 - 4) Advertised in trade association publications or minority-focused media concerning participation opportunities.
 - 5) Effectively used the services of available minority community organizations, minority contractors' groups, local, state, or federal minority business assistance offices, or other organizations that provide assistance in the recruitment and placement of DBEs.
 - 6) Negotiated in good faith with interested DBEs, including not rejecting DBEs as unqualified lacking sound reasons based on a thorough investigation of their capabilities.
 - 7) Made efforts to assist interested DBEs in obtaining bonding or insurance required by the bidder.
 - 8) Submitted all quotations received from DBEs, and for those quotations not accepted, an explanation of why the DBE was not accepted including price comparisons. Receipt of a lower quotation from a non-DBE will not in itself excuse a bidder's failure to meet the contract goal.
 - 9) Has adequate records of its contacts and negotiations with DBEs.
- c. If the Contractor has not met the DBE goal or submitted documentation clearly evidencing good faith efforts within three (3) business days after the bid opening, the Contractor's bid will be considered non-responsive and may be cause for the forfeiture of the Proposal Guaranty which shall become the property of the Department, not as penalty, but as liquidated damages. The Department then may consider the next lowest responsive bid for award.

As soon as practical after contract award, the Contractor shall submit copies of all binding subcontracts and purchase orders with DBEs to the respective District Supervisor and to CRD-SBDP.

No progress estimate shall be processed until copies of all binding subcontracts and purchase orders with DBEs have been received.

5. Joint Checking Allowance for DBE

A DBE must receive pre-approval by the Department before using a joint check. Joint check requests shall be submitted by the DBE to CRD-SBDP prior to the subcontract agreement.

The following are some general conditions that must be met regarding joint check use:

- a. The second party (typically the Contractor) acts solely as a guarantor.
- b. The DBE must release the check to the supplier.
- c. The use of joint checks must be a commonly recognized business practice in the industry.
- d. The DBE remains responsible for all other elements of 49 CFR Part 26.55(c)(1).
- e. The DBE is not required to use a specific supplier nor the Contractor's negotiated unit price.
- f. The DBE shall submit receipt/copy of cancelled checks to CRD- SBDP.

D. Construction Requirements

1. Preconstruction Conference

The Contractor shall identify all DBE subcontractors and indicate the approximate dates for their appearance on the project. The Department will review the contract information to verify the actual work to be performed by the DBE subcontractors and will review any lease agreements allowed as part of the DBE commitment. Information submitted shall match Form 8-5.

2. Process for Removal of a DBE

At no time shall a DBE be terminated or substituted without prior written consent from CRD-SBDP. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the CRD-SBDP's written consent as provided herein. Absent such written consent, the Contractor shall not be entitled to any payment for work or material unless it is by the listed DBE. The CRD-SBDP may provide such written consent only if it agrees that the Contractor has good cause to terminate the DBE firm, as further described below.

Before terminating and/or substituting a DBE subcontractor on a project that includes SP1247 in the Contract Proposal, the Contractor must give notice in writing to the DBE subcontractor, with a copy to the CRD-SBDP, of its intent to request to terminate and/or substitute including the reason for the request.

The Contractor must then give the DBE five (5) days to respond to the Contractor's notice. The DBE shall then advise the CRD-SBDP and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the CRD-SBDP should not approve the Contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the CRO-SBDP may provide a response period shorter than five (5) days.

If approval is granted for removal, CRD-SBDP will submit a letter to the Contractor and the DBE. Good faith efforts shall then be directed at finding another DBE subcontractor to perform at least the same amount of work under the contract as the DBE that was terminated, to the extent needed to meet the contract goal established.

The good faith efforts shall be documented by the Contractor. If requested by the CRD-SBDP, the Contractor shall submit the documentation within seven (7) days, which may be extended for an additional seven (7) days, if necessary, at the request of the Contractor, and the CRD-SBDP shall provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

The Contractor has the responsibility to comply with 49 CFR Part 26.53(f) and all applicable policies and regulations.

Reasons for termination and/or substitution of a DBE subcontractor must meet the reasons for good cause as outlined in the current 49 CFR Part 26.53(f), which include, but are not limited to, circumstances in which the listed DBE subcontractor:

- a. Fails or refuses to execute a written contract.
 - b. Fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the Contractor.
 - c. Fails or refuses to meet the Contractor's reasonable, nondiscriminatory bond requirements.
 - d. Becomes bankrupt, insolvent, or exhibits credit unworthiness.
 - e. Becomes ineligible to work on public works projects because of suspension and debarment proceedings pursuant with 2 CFR Parts 180 and 1200 or applicable state law.
 - f. Is not a responsible subcontractor, as determined by the Department.
 - g. Voluntarily withdraws from the project and provides written notice to the Contractor of its withdrawal.
 - h. Is ineligible to receive DBE credit for the type of work required.
 - i. Is unable to complete its work on the contract as a result of death or disability of an owner; and/or
 - j. For other documented good cause, the Department may elect to compel the termination of the DBE subcontractor; provided that good cause does not exist if the Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the Contractor can self-perform the work for which the DBE was engaged, or so that the Contractor can substitute another DBE or non-DBE subcontractor after contract award.
3. Brokering of work by DBEs is not allowed and is a material breach of contract. A DBE firm involved in brokering of work may result in removal or suspension of DBE certification and/or formal enforcement actions, including civil actions for false claims, suspension and debarment proceedings, or other administrative actions affecting bidder qualifications. Any firm involved in brokering of work that engages in willful falsification distortion, or misrepresentation with respect to any facts related to the project shall be referred to the U. S. Department of Transportation's Office of the Inspector General for prosecution under Title 18, U.S. Code, Section 641. Contractor shall place this provision in all subcontracts with DBEs.

4. The Contractor shall provide notification to the Project Supervisor at least 24 hours prior to each DBE beginning work. A Department Project Supervisor/Inspector must complete a Commercially Useful Function (CUF) Checklist to document the first date of work, work items, equipment, and forces of each DBE.
5. The Contractor shall provide a monthly payment certification to the Department entitled "Prompt Payment Certification Form." The Department shall provide the Contractor with a computer generated [Prompt Payment Certification Form: LP Form 8-29](#). An officer of the Contractor shall provide electronic signature to the Prompt Payment Certification Form and return via email to DBE.Runningtally@tn.gov.

Prompt Payment data shall be submitted monthly beginning no later than sixty (60) days after payment of the first estimate.

6. The Department will hold estimate payment if previously listed information is not submitted. Reasons for non- payment to a DBE could include the following:
 - a. Whether the DBE is performing satisfactorily.
 - b. Whether the Contractor has reason to believe the DBE is not performing a commercially useful function, and if so, why, and what steps the Contractor is taking to rectify the situation.

In the event the Contractor reports questions in relation to prompt payment regarding whether a DBE is independent and performing a commercially useful function and takes appropriate steps promptly to address the issue, then the Department will take this effort into account when considering Contractor compliance measures as described below. Payments must abide by the conditions set in TCA 12-4-707.

E. Post Construction Requirements

Prior to receiving final payment, the Contractor shall provide to the Project Engineer and CRD-SBDP certification of the dollars paid to each DBE firm, using [Form 8-35; CC3](#). The certification shall be dated and signed by a responsible officer of the contractor and by a responsible officer of the DBE. Falsification of this certification may result in removal or suspension of DBE certification and/or formal enforcement actions, including civil actions for false claims, suspension and debarment proceedings, or other administrative actions affecting bidder qualifications. The final estimate will not be paid to the Contractor until proper certifications including CC-3 have been made.

F. Required Records

The Contractor and all subcontractors shall retain, for a period of not less than three (3) years after final acceptance of a project, copies of canceled checks or other documentation that substantiates payments to DBE firms. These records shall be available at reasonable times and places for inspection by authorized representatives of the Department and various Federal Agencies. Copies shall be provided to the Department if requested.

G. Contractor Compliance

If the Contractor fails to comply with Special Provision 1247 and/or 49 CFR Part 26, resulting in failure to obtain goal where a good faith effort was not accepted, the Department shall take one or a combination of the following steps:

1. The Department may withhold from the Contractor the monetary value of the unattained goal percentage plus an additional 10% for engineering costs, not as penalty but as liquidated damages.
2. Suspend the Contractor from participation in Department bid lettings pursuant to rules promulgated by the Department.
3. For repeated failures to comply, debar the Contractor pursuant to rules promulgated by the Department.
4. Invoke other remedies available by law and/or in the contract.
5. Invoke any other lawful remedy agreed upon by the Commissioner and the Contractor in writing.

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REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- XI. Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants /

Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:

The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (1) Withholding monthly progress payments;
- (2) Assessing sanctions;
- (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding (29 CFR 5.5)

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics,

including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records (29 CFR 5.5)

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b.(1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or

subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(i), and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees (29 CFR 5.5)

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State

Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the

corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. **Apprentices and Trainees (programs of the U.S. DOT).**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor

set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility (29 CFR 5.5)

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1 of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1 of this section. 29 CFR 5.5.

* \$27 as of January 23, 2019 (See 84 FR 213-01, 218) as may be adjusted annually by the Department of Labor; pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990).

3. Withholding for unpaid wages and liquidated damages.

The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this section. 29 CFR 5.5.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this section. 29 CFR 5.5.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or

equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on longstanding interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance

with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.326.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders

or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.326.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more — as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1. Instructions for Certification – First Tier Participants:

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant

who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov/>). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

3. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is

submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contractor). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers to any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<https://www.sam.gov>), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(a) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(b) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(c) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier

subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B)**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

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TENNESSEE DEPARTMENT OF TRANSPORTATION

MINIMUM WAGE SCALES FOR FEDERAL AID HIGHWAY CONSTRUCTION

"General Decision Number: TN20230147 01/06/2023

Superseded General Decision Number: TN20220147

State: Tennessee

Construction Type: Highway

Counties: Tennessee Statewide.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023

SUTN2016-001 07/13/2016

	Rates	Fringes
BRICKLAYER.....	\$ 14.26	**
CARPENTER.....	\$ 17.52	
CEMENT MASON/CONCRETE FINISHER...	\$ 15.55	**
ELECTRICIAN.....	\$ 24.08	
IRONWORKER		
Reinforcing.....	\$ 16.29	
Structural.....	\$ 16.89	
LABORER		
Common/Unskilled.....	\$ 13.11	**
Skilled		
Air Tool Operator,		
Asphalt Raker, Chain Saw		
Operator, Concrete Mixer		
(less than 1 yd),		
Concrete Rubber, Edger,		
Fence Erector, Form		
Setter (steel), Guard		
Rail Erector, Mechanic's		
Tender (tire changer or		
oiler), Mortar Mixer,		
Nozzleman or Gun Operator		
(gunite), Pipelayer,		
Sign Erector.....	\$ 15.27	**
PAINTER (INCLUDES SANDBLASTER)...	\$ 26.36	
POWER EQUIPMENT OPERATOR:		
GROUP 1		
Backhoe/Hydraulic		

Excavator (3/4 yd &
over), Crane (less than
20 Tons), End Loader (3
yd & over), Motor Patrol
(finish), Piledriver,
Dragline.....\$ 19.14
GROUP 1A
Drill Operator (Caisson)...\$ 25.26
Farm Tractor Operator
(Power Broom).....\$ 13.50 **
GROUP 2
Backhoe/Hydraulic
Excavator (less than 3/4
yd), Bulldozer or Push
Dozer, End Loader (less
than 3 yd), Motor Patrol
(rough), Tractor
(crawler/ utility), Truck
Driver (Heavy Duty, Off
Road) Scraper, Shovel, or
Trenching Machine.....\$ 17.08
GROUP 3
Asphalt Paver, Concrete
Finishing Machine,
Concrete Paver, Scale,
Spreader (self-
propelled), Concrete
Grinder, Asphalt Milling
Machine, Boring Machine
(horizontal).....\$ 17.75
GROUP 4
Bobcat, Central Mining
Plant, Concrete Pump,
Concrete Saw, Curb
Machine (automatic or
manual), Dozer or Loader
(stockpile), Drill
(piling), Mulcher or
Seeder, Rock Drill (truck
mounted), Roller
(asphalt), Roller
(compaction self-
propelled), Soil
Stabilization Machine,
Tractor (boom and hoist),
Bituminous Distributor
Machine, pump, Track
Drill, Striping Machine....\$ 16.48
Heavy Duty Mechanic.....\$ 20.33
Light Duty Mechanic.....\$ 19.53
Sweeping Machine (Vacuum)
Operator.....\$ 15.56 **
GROUP 5
Crane (over 20 Tons).....\$ 20.44

TRUCK DRIVER

2 axles.....	\$ 15.36 **
3-4 axles.....	\$ 14.86 **
5 or more axles.....	\$ 16.27

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current

negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

(Rev. 01/06/23)

STATE

OF

TENNESSEE

Sheet 7 of 7

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

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S T A T E**O F****T E N N E S S E E**

September 10, 2020

January 1, 2021

SPECIAL PROVISION**REGARDING****PROHIBITION ON CERTAIN TELECOMMUNICATION AND VIDEO****SURVEILLANCE SERVICES OR EQUIPMENT**

Installation of telecommunication and video surveillance equipment, services or systems shall contain no components from providers as listed in Title 2 Code of Federal Regulations (CFR) Part 200.216.

The prohibition on certain telecommunication and video surveillance services or equipment regulation in Title 2 CFR 200.216 shall apply to this contract. Take all necessary and reasonable steps in accordance with Title 2 CFR 200.216 to ensure that no prohibited telecommunication and video surveillance services or equipment are included in any of the work in this contract. As defined in Title 2 CFR 200.471, the regulation provides clarity that the telecommunications and video surveillance costs associated with Title 2 CFR 200.216 are unallowable for services and equipment from the providers.

It is prohibited from installing equipment, services, or systems that use covered telecommunications equipment or services from providers described in section 889 of the National Defense Authorization Act for Fiscal Year 2019 (NDAA 2019).

As described in section 889 of the NDAA 2019, "covered telecommunications equipment or services" means:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities);
- Video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);
- Telecommunications or video surveillance services provided by such entities or using such equipment; or
- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country. The term "covered foreign country" means the People's Republic of China.

Any prohibited equipment installed must be removed and replaced at the contractor's expense with acceptable equipment.

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STATE**OF****TENNESSEE**

(Rev. 7-28-21)

January 1, 2021

SPECIAL PROVISION**REGARDING****HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS****Scope**

These design requirements shall apply to 713-Highway Signing, 714-Roadway and Structure Lighting, and 730-Traffic Signals of the current Standard Specifications.

Description

The design of the supports for overhead sign bridges and butterfly configurations, high mast lighting, luminaires, CCTV camera poles, and traffic signal strain poles and mast arm structures shall be in accordance with the American Association of Highway and Transportation Officials (AASHTO) LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st edition, with addenda.

General Conditions

All overhead sign bridges and butterfly sign structures, traffic signal strain poles and mast arm structures and high mast light poles 90-feet or greater in height, shall be designed using the Fatigue Category 1 provisions found in the subject specifications except that, design for galloping-induced fatigue and truck-induced gust fatigue, are excluded. Fatigue designs are not required for luminaire poles less than 55-feet in height, span-wire poles, or roadside sign poles.

In lieu of designing for galloping-induced fatigue in mast arm pole assemblies, a 60-inch by 16-inch by 0.125 gauge aluminum or galvanized steel panel shall be installed horizontally near the end of the mast arm with the long axis of the panel collinear with the long axis of the mast. The panel shall be mounted at such a height as to provide a least a 6-inch clearance from the top of the signal assembly or sign blank located on the mast arm within the length of the anti-galloping panel. The panel and attachment hardware shall be shown on the shop drawings, and is considered an item included in the price bid for the mast arm assembly.

Additionally, all mast arm connections to the support pole shall be accomplished using a wrap-around ring stiffener assembly.

The design coordination instructions are as follows:

- a. The Basic Wind Speed shall be 120 mph for Extreme 1 Limit State.
- b. The Design Life shall be 50 years resulting in a 1,700 year Recurrence Interval.

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STATE

(Rev. 08-29-19)

(Rev. 03-02-22)

OF**TENNESSEE**

January 1, 2015

City of Franklin
Williamson County**SPECIAL PROVISION****REGARDING****SECTION 730 – TRAFFIC SIGNALS****DESCRIPTION****730.01 Description of Work**

This work consists of furnishing and installing all necessary materials and equipment to complete in-place traffic signal systems, modify existing systems, or both, all as shown on the Plans or the Standard or Special Details, City of Franklin Standard Drawings and as specified in these Specifications. Unless otherwise shown on the Plans or specified in the Special Provisions, all materials shall be new.

Where existing systems are to be modified, incorporate the existing material into the revised system, salvage it for return to the City of Franklin, or abandon it as specified or as directed by the Engineer.

Furnish and install all incidental parts that are not shown on the Plans or specified herein, but that are necessary to complete the traffic signal or other electrical systems, or that are required for modifying existing systems, as though such parts were shown on the Plans or specified herein. Include the costs of such incidentals in bid price for other items. All systems shall be complete and in operation to the Engineer's satisfaction at the time of completion of the work. This is to include but not limited to the traffic signal system work, traffic signal communications, traffic signs, traffic markings and any other work required to ensure that the traffic signal system can function as per the final plans.

Notify the Department and the City in writing when the work is complete in order that the final inspection can be scheduled and performed by the Department and City of Franklin.

Operate and maintain the traffic signal system until such time that system testing is complete and a final inspection is performed. All discrepancies found in the inspection shall be corrected to the satisfaction of the Department and the City of Franklin. The City of Franklin will assume maintenance responsibilities once all discrepancies are corrected and a written final acceptance document is produced by the City.

GENERAL REQUIREMENTS**730.02 Regulations and Code**

Ensure that all equipment provided conforms to NEMA Standards Publication, Traffic Control Systems, latest revision, or the Radio Manufacturers Association, whichever is applicable. In addition to the requirements of these Specifications, the Plans, and the Special Provisions, all material and work shall conform to the requirements of the NEC and the NESC; the Standards of ASTM, ANSI, ITE, and IMSA; the MUTCD; and the City of Franklin adopted codes and permitting process.

Wherever reference is made to the NEC, or the Standards mentioned above, consider the reference to mean the code or standard that is in effect on the date of advertising the bids or authorization for force account.

730.03 Submittal Data Requirements

Within 30 days after the issuance of the work order, submit to the Engineer, the Traffic Operations Division, and the City of Franklin, one collated set of the manufacturer's descriptive literature and technical data that fully describes the types of signal equipment proposed for use. In the descriptive literature, identify the manufacturer and models and include sufficient information for the Engineer to determine if the equipment or material meets the requirements of the Plans and these Specifications. Include with these sets of submittal data a list of the materials submitted along with descriptive material for, but not limited to, the following items:

1. Controller
2. Cabinet and Exhaust Fan
3. Detectors/Detection Devices
4. Signal Heads including Lamp Information and Mounting Hardware
5. Loop Wire and Loop Sealant
6. Shielded Detector Cable
7. Signal Cable
8. Cable for Span Wire, Guys, and similar features
9. Pull Boxes
10. Conduit
11. Coordination Equipment
12. Support Pedestals, Poles and Mast Arms
13. Communication Cable
14. Communications Equipment
15. Electrical Service Connection

Also include in the submittal sets detailed scale drawings of all non-standard or special equipment and of all proposed deviations from the Plans. Upon request, submit for approval sample articles of materials proposed for use. The Department and the City of Franklin will not be liable for any materials purchased; labor performed, or delay to the Work prior to such approval.

In addition to the above, submit to the Engineer a notarized letter certifying that all traffic signal materials listed in the submittal conform to the Plans and Specifications along with a copy of a statement from the City of Franklin that the system is acceptable. Any material substitutions requested by the City of Franklin shall meet minimum Department and City standards and shall be approved by the Department and City in writing prior to purchase or installation. Once approval has been given, provide proof of order of said materials within seven days of approval. The Department and City will not be liable for any materials purchased; labor performed, or delay to the Work regarding such approval.

Submit an electronic copy in PDF format of "Design" or "Shop" drawings, indicating the proposed dimensions and material specification for each of the supports and mast arms involved, to the Division of Structures for approval purposes within 30 days after the work order is issued. The Department and City will review these drawings at the earliest possible date, and will return the electronic copy marked "Approved for Fabrication," or "Returned for Revisions as Noted." Respond by taking appropriate action to ensure the earliest possible correction of these items so as not to delay the installation.

730.04 Mill Test Reports and Certification

Provide Mill Test Reports (MTR) or Certifications of Conformance to the Specifications for Materials and Design for all materials incorporated into the Work. Supply the following prior to acceptance of the structures:

1. MTRs for MAJOR structural items only, as identified in Table 730.04-1, shall include both physical and chemical descriptions of the material as supplied to the fabricator. When physical properties are altered during the fabrication, supplement the MTR covering chemical composition with certified test reports indicating the physical properties of this material after fabrication.

2. Certifications of Conformance to the Specifications for all remaining material not covered by MTR as identified in Table 730.04-1.
3. Certification that all welding was performed by operators qualified as follows: Steel welders to AWS and aluminum welders to ASME.
4. Certification of Conformance to the Specification for the Design of all components not completely dimensioned and detailed on the Standard Drawing.

Table 730.04-1: Required Mill Test Reports and Certifications

Component Materials	MTR	Certification
Tubes for arms and poles	X	
Base Castings	X	
Anchor Bolts	X	
Pole tops, misc. fittings, and hardware		X
Fabricated or cast-type arm connections		X
Galvanizing		X

730.05 Working Drawings

Provide within the controller cabinet and to the City of Franklin an electrical schematic diagram of the cabinet and system wiring. Submit manufacturer's instructions for installation, maintenance, and operation of all equipment to the City of Franklin and also place a copy within the controller cabinet. Place all such materials inside a plastic envelope mounted in the cabinet.

730.06 Guarantee

Guarantee the Traffic Signal System(s) installed under these Specifications, including all equipment, parts, and appurtenances in connection therewith, to the City and State against defective workmanship and materials for a period of not less than 1 year following the date the signal system is installed and made operational, except in no case shall this guarantee expire prior to 3 months after the final acceptance of the Project. Upon completion of the Project, turn over to the City of Franklin all warranties or guarantees on equipment and materials that are offered by the manufacturers as normal trade practice.

730.07 Training

Provide to the City of Franklin and/or the Department a training session on the controller and associated cabinet equipment to be supplied on the Project. The training session shall last for a minimum 8 hours unless the City and/or the Department determines a lesser time is adequate. Train the user in the complete operation and programming features of all controllers. Provide this training prior to the acceptance of the Project at a facility agreed upon by the City of Franklin.

After the required training, certify to the Engineer that training has been completed.

This training requirement shall not apply if a training program meeting these criteria has been provided to the City of Franklin by this vendor and/or manufacturer on the equipment being bid within 18 months prior to the date of the invitation to bid. This requirement shall apply if the bidder is proposing new, upgraded, or modified equipment not covered in the previous training program.

MATERIALS AND INSTALLATION**730.08 Excavating and Backfilling**

Perform excavation needed to install conduit, foundations, and other equipment, so as to cause the least possible damage to the streets, sidewalks, and other improvements. Excavate trenches no wider than necessary to properly install the electrical equipment and foundations. Do not begin excavating until immediately before installing conduit and other equipment. Place the material from the excavation where it will cause the least disruption and obstruction to vehicular and pedestrian traffic and the least interference with the surface drainage.

Backfill the excavations and compact to at least the density of the surrounding material. Remove all surplus excavation material and dispose of outside the highway right-of-way, in accordance with **203.07**, or as directed by the Engineer.

After backfilling, keep excavations well-filled, and maintain in a smooth and well-drained condition until permanent repairs can be made.

At the end of each day's work, and at all other times when construction operations are suspended, remove all equipment and other obstructions from that portion of the roadway used by public traffic, and park a minimum of 30 feet from the edge of pavement unless otherwise protected by guardrail, bridge rail, or barriers installed for other purposes.

Perform excavation in the street or highway so as to restrict no more than one traffic lane in either direction at any time. Do not obstruct traffic during hours of peak flow unless otherwise approved by the Engineer. Incorporate construction signing in accordance with the MUTCD.

730.09 Removing and Replacing Improvements

Replace or reconstruct, with the same kind of materials as found on the Work, improvements, such as sidewalks, curbs, gutters, Portland cement concrete and asphalt concrete pavement, bituminous surfacing, base material, and all other improvements removed, broken, or damaged.

Before removing the sidewalk and pavement material, use an abrasive type saw to cut, to a minimum depth of 2 inches, the outline of all areas to be removed in Portland cement concrete sidewalks and in all pavements. Use any method satisfactory to the Engineer to cut the remainder of the required depth. Make cuts neat and true with no shatter outside the removal area.

Whenever a part of a square or slab of existing concrete sidewalk or driveway is broken or damaged, remove the entire square or slab and reconstruct the concrete as specified above.

Perform all work in accordance with these Specifications, or the applicable local ordinance, whichever is of a higher standard. Consider this removal and replacement work to be incidental to other items.

730.10 Foundations

Construct foundations for posts, standards, and cabinets of Class A Portland cement concrete in accordance with Department or City of Franklin Standard Drawings, as applicable.

Pour foundations for posts, standards, and pedestals after the post, standard, pedestal, or anchor bolts or reinforcing steel is in proper position. Form the exposed portions to present a neat appearance. Rest the bottom of concrete foundations on firm undisturbed ground.

Construct forms to be true to line and grade. Finish tops of footings for posts and standards, except special foundations, to curb or sidewalk grade or as ordered by the Engineer. Use rigid forms, securely braced in place. Place conduit ends and anchor bolts by means of a template until the concrete sets. Moisten both the forms and the ground that will

be in contact with the concrete before placing concrete. Do not remove forms until the concrete has cured for at least 12 hours and hardened sufficiently to allow form removal without causing damage to the concrete.

Apply an ordinary surface finish to exposed surfaces of concrete. Wherever the edge of a concrete foundation or sidewalk section is within 18 inches of any existing concrete improvement, extend the sidewalk section to meet the existing improvement.

Where obstructions prevent the construction of planned foundations, construct a foundation satisfactory to the Engineer.

730.11 Anchor Rods

Furnish, with anchor-base type rods, anchor bolts meeting the requirements of ASTM F1554, grade as required by design. Fit each anchor bolt with two heavy hex nuts. Hot-dip galvanize all nuts and not less than 10 inches of the threaded ends of anchor bolts according to ASTM A153. The anchor bolts shall be capable of resisting at yield strength stress the bending moment of the shaft at its yield strength stress.

Set standards, posts, and pedestals plumb by adjusting the nuts before the foundation is finished to final grade. Do not use shims or similar devices for plumbing or raking. After plumbing or raking has been completed, cut off anchor bolts 1/4 inch above the top nut, and paint the exposed surface with rust protective paint.

Furnish all anchor bolts and nuts required for relocating existing standards and posts.

730.12 Pull Boxes

Construct and install pull boxes as shown on the Plans and the TDOT and City of Franklin Standard Drawings or as directed by the Engineer. Additional pull boxes may be required where traffic signal and/or electrical conduit runs are more than 150 feet long. The maximum spacing between traffic signal and electrical pull boxes shall be 150 feet, unless otherwise directed by the Engineer. Maximum spacing for fiber optic pull boxes shall be 500 feet. Install pull boxes wherever practicable out of the line of traffic. Set covers level with the pavement, or with the curb or sidewalk grade, or with the surrounding ground as required. Pull box covers shall be stamped with either the words "TRAFFIC SIGNALS" or "COF FIBER OPTIC" inscribed to the same specifications as directed by TDOT and City of Franklin standard drawings and specifications.

Place electrical conductors within pull boxes so as to be clear of the metal frame and cover.

Rest the bottom of the pull box firmly on a bed of crushed stone with a minimum depth of 12 inches below the bottom, and extending 6 inches beyond the outside edge of the pull box, unless otherwise directed by the Engineer.

A. Concrete Pull Boxes

Construct concrete pull boxes of a mixture of one part cement, two parts sand, and four parts gravel or 1-inch crushed stone with reinforcement placed as shown on the Standard Drawings. Reinforcement shall consist of welded wire reinforcement, 4 x 4 inches - No. 4/4 at 85 pounds per 100 square feet, meeting the requirements of **907.03**. Pull boxes may be poured in place or precast. The color of the pull box concrete material shall match the surrounding concrete color.

Install a cast iron frame and cover of the dimensions shown on the Drawings in each pull box. Provide castings of Class 30, meeting the requirements of **908.07**. The covers shall have a roughened top surface of 1/8 inch in relief. Provide notches for removing the cover. Inscribe the words "TRAFFIC SIGNALS" on top of the covers with letters 1-1/2 inches high and 1/8 inch in relief as shown on the Drawings.

The frame shall have a minimum weight of 42 pounds. The cover shall be of the "Extra Heavy" type with a minimum weight of 54 pounds.

B. Reinforced Plastic or Epoxy Mortar Pull Boxes

Ensure that pull boxes composed of reinforced plastic or epoxy mortar are designed and tested to temperatures of -50 °F and meet the requirements of the following: ASTM D543, ASTM D570, ASTM D790, and ASTM D635, and are based on a 30,000-pound single axle load over a 10 x 20 inch area. The top of the pull box shall consist of a concrete frame (ring) and cover. The color of the pull box concrete material shall match the surrounding concrete color. Inscribe the words "TRAFFIC SIGNALS" or "COF FIBER OPTIC", as applicable on top of the covers.

C. Precast Composite Concrete Pull Boxes (Fiber Optic Type A and B)

Pull Box and cover shall be precast composite polymer concrete product. Pull boxes with a polymer cover but other material for the box will not be accepted.

Pull Boxes and covers shall be single-stack open-bottom assemblies configured as shown in the Plans.

Vertical Design / Test Load shall be - 22,500lbs/33,750lbs. Loadings shall comply with ANSI 77 2007 and shall exceed Tier 15 test provisions for both the cover and sidewall.

Pull Box shall meet NEC for handhold enclosures.

Inscribe the words "COF Fiber Optic" on top of the covers with letters 1-1/2 inches high and 1/8 inch in relief as shown on the Plans.

730.13 Transformer Base

Fabricate the transformer base from steel plate and sheet, and design it to harmonize with the shaft. Provide each transformer base with:

1. One 7-1/2 x 9 inch minimum handhole, with a cover secured with stainless steel fastening screws;
2. Four galvanized steel bearing plates to fasten the base to the anchor bolts;
3. Four galvanized steel bolts, nuts, and washers to fasten base and standard; and
4. One 1/2-inch, 13 UNC grounding nut welded to the inside of the base opposite the handhole opening.

Ensure that the strength of the transformer base is comparable with that of the shaft.

When a transformer base is required, no handhole will be required in the shaft.

730.14 Conduit

Furnish and install plastic and steel conduit in accordance with these Specifications and close conformity with the lines shown on the Plans or as established by the Engineer.

Threads shall be clean cut, straight, and true and of sufficient length to allow proper coupling. Do not use long running threads on any part of the Work. Protect threads in transit and during installation, and provide conduit with proper supports and protection during construction to prevent damage. Properly thread, ream, and cap all ends of pipe installed for future connections to prevent water and foreign matter from entering the conduit system. Provide threaded ends with approved conduit bushings.

Signal conduit shall be a minimum 2 inches in diameter, and detector conduit a minimum 1 inch in diameter, unless otherwise specified or directed by the Engineer. Conduit for service connections shall be 1 inch in diameter. Do not use conduits smaller than 1 inch in diameter unless otherwise specified, except grounding conductors at service points shall be enclosed in 3/4-inch diameter conduit. Larger-sized conduit may be used, at no additional cost to the Department, in which case it shall be for the entire length of the run with no reducing couplings allowed.

A. Materials

Provide conduits and fittings of the type as shown in the construction plans or as directed by the Engineer and as follows:

1. Steel Conduit

- a. Rigid conduit and fittings shall be heavy-wall, hot dipped galvanized steel conforming to Federal Specification WW-C-581-d(3) and ANSI C80.1. It shall be galvanized inside and out and shall meet the requirements of ASTM A53. Each length shall bear the label of Underwriters Laboratories, Inc.
- b. Flexible conduit shall be galvanized flexible steel meeting Federal Specification WW-C-581-d(3), ANSI C80.1 and UL Standard 6 with a minimum 40-mil thickness of polyvinyl chloride (PVC) coating conforming to ASTM D746.

2. Plastic Conduit. For plastic conduit, provide high impact PVC, Schedule 40 or Schedule 80.**3. High-Density Polyethylene (HDPE).** Materials used for the manufacture of HDPE conduit and fittings shall be per ASTM F2160 and consist of a Standard Dimension Ratio (SDR) 9-11. No other substitutions shall be allowed unless directed by the Engineer. HDPE conduit can be used with preassembled cable and rope-in-conduit.

Conduit shall be extruded from colored material for uniform full-thickness coloring. All continuous flexible conduit shall be labeled with durable identification giving the name of the manufacturer, conduit size (inner diameter trade size and wall thickness/rating), manufacturer/date codes, the legend "COF Communications" and sequential foot marking. Labeling shall occur a maximum of every 2 ft.

4. Coupling

- a. Make every effort to minimize coupling. Couplings are permitted only with the Engineer's prior approval.
- b. Couplings shall be airtight and watertight.
- c. All couplings shall be installed in accordance with the conduit and the coupling manufacturer's recommendations.
- d. Only couplings of the type specified below and approved by the conduit manufacturer are permitted.
- e. Couplings shall be accomplished only by hydraulic press-on or electro-fusion coupling methods.
- f. Use hydraulic press-on couplings of seamless tool-grade tubular aluminum with sealing ring barbs and center stop.
- g. Use hydraulic compression duct coupling tools and follow all manufacturer's installation procedures, fully inserting both conduit sections to the coupling center stop.
- h. Use pre-fabricated electro -fusion couplings that are field-installed using the coupling manufacturer's recommended automatic self-monitoring fusing machine and installation procedures.
- i. Do not use any other coupling methods.

B. Installation

All bends shall be in strict compliance with the NEC.

Lay conduits to a minimum depth of 6 inches below subgrade but not less than 24 inches below pavement grade except when approved by the Engineer; conduit may be laid at a depth of not less than 24 inches below top of curb when placed in back of the curb. Place conduit runs for detectors parallel to existing or proposed curbs and not more than 18 inches behind the curb face unless otherwise specified. Place steel conduit or Schedule 80 PVC conduit under existing pavements by approved jacking or drilling methods. Do not disturb pavements without the Engineer's approval. Where trenching is allowed in a traffic bearing area, use PVC conduit (Schedule 40) encased in concrete.

Conduits shall be continuous and extend from end point (i.e. pull box, foundation signal pole, pedestal pole, etc.) to another end point, or as directed by the Engineer. Conduit splicing shall not be permitted between end points.

After completing the installation of the conduit, test all conduits installed under the Contract with a mandrel having a diameter 1/4-inch smaller than the conduit and a length of 2 inches. Repair, to the Engineer's satisfaction, all conduits that will not allow passage of the mandrel; if repairs cannot be accomplished, remove and replace the conduit at no additional cost to the Department. After the mandrel test, scour all conduits with a stiff wire brush slightly larger in diameter than the conduit. Clear all conduits in the Engineer's presence.

Extend conduits terminating in anchor base standards and pedestals approximately 2 inches above the foundation and slope them toward the hand-hole opening. Conduits shall enter concrete pull boxes from the bottom and shall terminate not less than 2 inches or more than 4 inches above the bottom of the box and near the box walls to leave the major portion of the box clear.

Clean existing underground conduit to be incorporated into a new system by blowing with compressed air and wire brush mandrel, or by other means approved by the Engineer.

Seal all open conduit entrance holes, with or without cables, with conduit duct seal putty. Where cables enter the conduit, the sealant shall be applied after installing the cable. These locations shall consist of conduit ends in pull boxes, cabinet bases and weather heads.

All fiber optic conduit installed shall include a polyolefin pull string for future conductor pulls and shall have a tracer wire (#10 AWG bare copper stranded) for all fiber optic conduit installations.

AWG#14 trace/locate wire shall be installed in all empty conduit runs and spliced between boxes to form a continuous run. Any fiber optic conduit shall be terminated in "Type B" fiber optic pull box unless otherwise specified. Fiber optic conduit shall have Type 2 Warning Tape installed a minimum of twelve (12) inches below finished grade.

730.15 Conductors

Furnish and install conductors in accordance with these Specifications and close conformity as shown on the Plans, or as directed by the Engineer.

Traffic Control Conductors shall be rated at 600 volts. Run all conductors, except loop conductors and cables run along messengers, in conduit, except where run inside poles. Where signal conductors are run in lighting standards containing high voltage street lighting conductors, encase the signal conductors in flexible or rigid metal conduit. Where telephone circuits are introduced into controller foundations, encase the telephone conductors in flexible metal conduit and in conformance with the NEC.

Conductors for traffic loops shall be continuous AWG No. 14 XLP stranded wire to the detector terminals or spliced with shielded detector cable within a pull box, conduit, or pole base.

Detector cable shall be two conductor twisted pair shielded AWG No. 14 stranded meeting IMSA Specification No. 50-2.

730.16 Cable

All signal cable shall conform to applicable IMSA Specification No. 19-1 or 20-1. Use stranded cable color coded AWG No. 14 for all signal and accessory circuits. Retain the same color identification for the entire length of a circuit run.

730.17 Wiring

1. Terminate all wiring to screw terminals using lugs.
2. Make all splices with solderless connectors, and insulate splices with weatherproof tape applied to a thickness equal to the original insulation.
3. Splices shall be permitted only in pull boxes, pole base, or controller cabinets.
4. Attach cables to messenger with non-corrosive lashing rods or stainless steel wire lashings.
5. All wiring within enclosed cabinets shall be neatly formed and harnessed and shall have sufficient length for access and servicing.

730.18 Service Connection

Coordinate service connection details and metering with the local utility as directed by the Engineer and in conformance with the City and County requirements. Obtain an electrical permit from the City of Franklin Codes Department prior to constructing the service installation.

Provide AC service installation to supply the following:

1. 100-amp main breaker with one (1) 50-amp breaker for the traffic signal installation, three (3) 30 amp breakers, one each for the illuminated signs, safety lighting and a spare which may be used for project specific ITS infrastructure.
2. Each 30-amp breaker shall be labeled for its use. Locate photocell for illuminated street name signs and safety lighting at the service disconnect with a test/bypass switch.

Underground service connection shall be installed per the City of Franklin Standard Drawings. The electrical service pedestal shall be a Milbank Model No. CP3B51110A22SL1, Tesco Model No. 26-000 M, or approved equivalent.

730.19 Sealant

Provide sealant material selected from the Qualified Products List maintained by the Department's Material and Test Division for sealing saw-cuts. The sealant material shall resist the upward movement of loop and lead-in and shall exhibit stable dielectric characteristics, including a low permittivity and high dielectric strength. It shall bond to the roadway paving material, preventing entry of moisture, and shall remain flexible without melting through the anticipated temperature and weather conditions. Inductive loop detectors shall be installed without flexible tube or backer rod.

730.20 Strand Cable

Span cable for suspending signal heads between pole supports shall be 7-strand, Class A, copper-covered steel wire strand or greater, meeting the requirements of ASTM A460, with a minimum breaking strength as noted on the Plans. An acceptable alternate is 7-strand steel wire with a Class A zinc coating meeting the requirements of ASTM A475, with a minimum breaking strength as shown on the Plans.

Strand cable for messenger wire (other than span wire as specified above) and pole guy cable use shall be of the diameter(s) shown on the Plans and shall meet the requirements of ASTM A475 for zinc-coated steel wire strand, 7-strand Siemens-Martin Grade with a Class A zinc coating or greater.

A Figure 8 cable combining the messenger cable and conductor cable in an insulated jacket is an acceptable alternate to conductor cable lashed to a messenger cable.

730.21 Bonding and Grounding

Make metallic cable sheaths, conduit, transformer bases, anchor bolts, and metal poles and pedestals mechanically and electrically secure to form a continuous system, and ensure they are effectively grounded. Bonding and grounding jumpers shall be copper wire or copper strap of not less than the same cross-sectional area as No. 6 AWG.

Furnish and install a ground electrode at each service point. Ground electrodes shall be one-piece lengths of copperweld ground rod not less than 8 feet in length and 1/2 inch in diameter, installed in accordance with the NEC. Ground the conduit and neutral as required under the NEC, except that grounding conductors shall be No. 6 AWG or approved equal, as a minimum. Enclose exposed ground conductors in 1/2-inch diameter conduit, and bond to the electrode with a copperweld ground clamp.

730.22 Field Test

Prior to completing the work, conduct the following tests on all traffic signal and lighting circuits in the Engineer's presence:

1. Test for ground in circuit.
2. Conduct a megger test on each circuit between the circuit and ground. The insulation resistance shall be not less than the values specified in Section 119 of the NEC.
3. Conduct a functional test to demonstrate that each part of the system functions as specified or intended herein. The functional test shall be submitted and approved by the Engineer.
4. Test all detector loops and leads before and after they are sealed in the pavement to ensure there are no shorts to ground in the system and to ensure that the loop plus lead-in inductance is within the operating range of the detector.

Replace or repair, in a manner approved by the Engineer, all faults in material or in the installation revealed by these tests. Repeat the applicable testing until no fault appears.

Prior to turn on for full signal actuated functionality, a new traffic signal shall be placed into flash operation for a minimum of 7 days prior to the activation of the signal to normal operation, unless otherwise directed by the Engineer.

730.23 Inspection

After completion of the installation and before final acceptance of the Project, conduct a full operational check of the system under actual traffic conditions in the presence of the Engineer. The operational check shall cover a minimum time period of 30 calendar days. During this period, perform all necessary adjustments and replace all malfunctioning parts of the equipment required to place the system in an acceptable operational condition at no additional cost to the Department. Perform all work and furnish all materials required under these Specifications subject to the direct supervision, inspection, and approval of the Engineer. Provide the Engineer and authorized representatives free access to the work, and to all plants, yards, shops, mills, and factories where, or in which, articles or materials to be used or furnished in connection with such work are being prepared, fabricated, or manufactured. Provide full and sufficient information to determine that the performance of the work, the character of materials, and the quality of workmanship and materials meets the intent of these Specifications.

Only perform work in the presence of the Engineer or the Inspector appointed by the Engineer, unless permission to do otherwise has first been obtained. The Engineer may reject any work that is performed or constructed in the absence of the Engineer or Inspector, without such permission having been granted, either expressly or by implication.

The inspection of the work shall not relieve the obligation to properly fulfill the Contract as specified. If the Engineer finds a part of the work, or the materials used in the work, to be defective or unsuitable at any time prior to final acceptance, repair or replace such defective or unsuitable work or material.

Request the presence of an Engineer or Inspector in connection with the work under these Specifications at least 24 hours before such services will be required.

SIGNAL HEADS

730.24 Signal Heads

Signal heads shall meet the latest requirements published in the Equipment and Materials Standards of the Institute of Transportation Engineers (ITE) for Adjustable Face Vehicle Traffic Control Signal Heads” and the National Electrical Code. The arrangement of traffic signal heads shall be mounted as shown on the Plans or as specified by the Engineer and be in accordance with the latest versions of the MUTCD and the TDOT Traffic Design Manual.

Each vehicle signal head shall:

1. Be of the adjustable, colored lens, vertical type with the number and type of lights detailed as specified herein and as shown on the Plans;
2. Provide a light indicator in one direction only;
3. Be capable of adjustment (without attachments) through 360 degrees about a vertical axis;
4. Signals mounted on mast arms shall be done with an “Astro-Brac Clamp Kit, Galvanized Cable Mount” type hardware, Skyclamp Cable Clamp Kit SBC64-CCK, or approved equivalent

All circular indications shall use 12-inch Light Emitting Diodes (LED), lenses unless otherwise shown on the Plans. All arrow indications shall use 12-inch LED lenses, unless otherwise shown on the plans. All lenses shall be polycarbonate. All new vehicle signal heads installed at any one intersection shall be of the same style and from the same manufacturer. All exposed metal signal housings, doors, visors, backplates and framework parts shall be painted with a powder coated finish and be in accordance to the MUTCD specifications. Apply one or more coats of primer to all signal heads, signal head and mountings, followed by two coats of high quality synthetic resin enamel of Traffic Signal Black meeting or exceeding Federal Specifications TT-C-595 Gloss Black. Apply one or more coats of primer to all signal hoods followed by two coats of high quality synthetic resin enamel of Traffic Signal Black meeting or exceeding Federal Specifications TT-C-595 Gloss Black. Apply one or more coats of primer to louvers as specified, signal hood interiors, and back plates, followed by two coats of Lusterless Black Enamel meeting or exceeding Master Painters Institute (MPI) Reference 94. Examine all factory enameled equipment and materials for damaged paint after installation, and repair such damaged surfaces to the Engineer's satisfaction. Factory applied enamel finish in good condition and of appropriate color will be acceptable.

Suspensions for span wire mounting of multi-faced signal heads and signal head clusters (such as a 5-section signal head) shall include an approved swivel type balance adjuster for proper vertical alignment.

Signal head housings shall be cast aluminum and all associated parts/hardware shall be of non-corrosive material. The signal hood shall be of the cutaway tunnel type, secured to the front section of the door with four stainless steel machine screws that thread into tapped holes in the door. Ensure that all signal heads meet the minimum Contract requirements for adjustable face vehicle traffic control signal heads. In addition to these requirements, comply with the following:

A. Optical Units

Traffic signal indications shall be LED type and meet the Institute for Transportation Engineers (ITE) latest LED specifications. All LED indications shall have a five year warranty.

A. Signal Head Mounting and Mounting Brackets

Furnish signal heads that either have integral serrations or are equipped with positive lock rings and fittings designed to prevent heads from turning due to external forces. Lock ring and connecting fittings shall have serrated contacts. Provide signals with water-tight fittings.

Support bracket-mounted signal heads, as shown on the Plans, by mounting brackets consisting of assemblies of 1-1/2 inch standard pipe size. Ensure that all members are both plumb or level, symmetrically arranged, and securely assembled. Conceal all conductors within poles and mounting assembly. Secure each slip fitter to the pole.

B. Directional Louvers

Where shown on the Plans, furnish and install louvers in the hoods of the signal head sections designated.

Directional louvers shall have a snug fit in the signal hoods. Construct the outside cylinder and vanes from a non-ferrous metal or galvanized sheet steel. Louvers shall be painted with a powder coated finish and as specified above.

C. Back Plates

Where shown on the Plans, furnish and attach back plates to the signal heads. All back plates shall be louvered and constructed of Polycarbonate. Other materials such as plastic or fiberglass may be used where approved. In fabricating back plates, bend back the inside vertical edges, adjacent to the signal head, to form mounting brackets for attaching to the signal. Form back plates in two or more sections and bolt together, thus allowing for installation after signal heads are in place. Back plates shall have a dull black appearance in the front and back with applied 2" retro reflective yellow border (ASTM Type XI) 3M Diamond Grade 4000 series prismatic sheeting, Avery Dennison T-11500 OmniCube series sheeting, or approved equal, unless noted otherwise in plans.

D. Wiring

Signal head leads shall be No. 18 AWG stranded with 221 °F thermoplastic insulation. Wire a separate white (common) lead to each socket shell; and wire a colored lead, corresponding to the color code shown on the Plans, to each socket terminal. Provide leads of sufficient length to allow connection to the terminal block specified. Provide each complete signal head with a minimum 4-point terminal block, properly mounted in a signal section. Stud type terminal blocks shall have not less than 1/4-inch edge clearance to any portion of the stud. Exterior wiring shall have a 360-degree drip loop in advance of entering the head.

Signal heads and pedestrian signal heads shall be installed with a minimum single 7 conductor cable and as indicated on the plans.

All new and existing cables shall be labeled in the cabinet, pole/pedestal bases and pull boxes using the convention of TDOT Standard Drawings. Each wire shall be identified by a circular plastic tag, 1 3/8" diameter with preprinted lettering of minimum 1/4" height. Tags shall be permanently fastened to wire by means of nylon self-clinching straps. Marking shall indicate "GRD" for all ground and grounded neutral conductors. Companion circuit conductors shall be marked "CKT" followed by the designated characters as shown on the plans.

E. Pedestrian Signals

Pedestrian signal heads shall meet the latest requirements published in the Equipment and Materials Standards of the Institute of Transportation Engineers (ITE) for Adjustable Face Pedestrian Signal Heads", the National Electrical Code and be compatible with NEMA standards. The arrangement of pedestrian signal heads shall be mounted as shown on the Plans or as specified by the Engineer and be in accordance with the latest versions of the MUTCD and the TDOT Traffic Design Manual. The pedestrian indications including countdowns shall be LED symbols and in conformance with the Institute for Transportation Engineers (ITE) latest countdown and LED specifications. All LED indications shall have a five year warranty.

In addition, where pedestrian signal heads are provided, they shall:

1. Include a pedestrian change interval countdown display where the calculated pedestrian change interval is more than 7 seconds;
2. Include Accessible Pedestrian Signals and pedestrian pushbuttons complying with MUTCD Accessible Pedestrian Signals section;
3. Incorporate a locator tone meeting the requirements of the MUTCD Accessible Pedestrian Signals;
4. include a pedestrian pushbutton with tactile vibrating arrow button and audible sound.

The pedestrian countdown display shall conform to the latest FCC regulation on Emission of Electronic Noise.

The manufacturer must supply certification, which includes a copy of the test report by an independent technical laboratory as to the compliance with ITE specifications (where it applies). The report shall also indicate that the tests were performed only after the modules received a thirty (30) minute operational warm-up period immediately preceding the tests.

The housing door, door latch, and hinges shall be of aluminum or polycarbonate or approved equal. Hinge pins shall be stainless steel. Provide the door with a neoprene gasket capable of making a weather resistant, dust-proof seal when closed.

All pedestrian signal heads, mountings, outside of hoods, and pedestrian push button housings shall have a powder coated finish (if aluminum) or colored resin (if polycarbonate) in accordance to MUTCD specifications. All pedestrian signals shall be painted with black enamel meeting or exceeding Federal Specifications TT-C-595 Gloss Black. The interior of signal hoods shall have one or more coats of primer followed by two coats of Lusterless Black Enamel meeting or exceeding MPI Reference 94. Examine all factory enameled equipment and materials for damaged paint after installation and repaint such damaged surfaces to the Engineer's satisfaction. Factory applied enamel finish in good condition and of appropriate color shall be acceptable, as approved by the Engineer.

F. Signal Head Installation

Install signal heads and pedestrian signal heads with the faces completely covered until the entire installation is ready for operation.

CONTROLLERS – GENERAL**730.25 Controllers**

A controller shall consist of the complete electrical mechanism for controlling the operations of traffic control signals, including the timing mechanism and necessary auxiliary equipment, mounted in a cabinet. A minimum of 30 days prior to turn on, contact the City of Franklin Traffic Operations Center to arrange the delivery of the new controller for programming by the City. Upon City installation of the timings in the controller, retrieve the controller and install it at the intersection.

Controller equipment shall be permanently marked with the manufacturer's name or trademark, part number, and serial number.

Controllers must meet the following applicable industry standards and amendments:

1. NEMA TS2 Controller NEMA TS-2-2016
2. ATC Controller AASHTO/ITE/NEMA ATC 5.2b
3. All NEMA TS2 and ATC controllers must provide functionality that meets or exceeds operational characteristics, including NTCIP support, as described in NEMA TS-2-2016.
4. ATC controllers with NEMA TS2 Type 2 connectors shall be utilized by the City.

With the latest upgrade of the TACTICS central system software, the City of Franklin requires the Siemens M60 type ATC Series Traffic Controller. The controller mechanism shall meet or exceed the current NEMA Traffic Signal Systems Standard. Provide Standard A, B, C and D Connectors and Synchronous Data Link Control (SDLC) connectors. Submit private laboratory certification that the proposed unit is in complete compliance with the NEMA standards in effect at the time of the advertisement for bids.

The controller shall have all timing values entered via a front panel mounted keyboard, as well as a cable connection with a laptop computer. The keyboard and connection port shall be integral parts of the controller unit.

Each controller shall have all operating timing parameters as specified in NEMA on a per phase basis, including all Volume/Density features. Each phase shall have a defined Last Car Passage feature wherein the last vehicle receiving the Phase Green shall receive at least one full Passage Time increment.

The controller shall have all of the following keyboard entered values or parameters:

1. Start on condition of the controller where the user can select via the keyboard the following:
 - a. Phases to start in
 - b. Phase display to be on
 - c. Overlap display start-on condition
 - d. Normal start-up display shall be main street green phase(s), with concurrent overlaps green
2. Phase recall functions:
 - a. Non-lock detector
 - b. Lock detector call
 - c. Minimum recall
 - d. Maximum recall
 - e. Pedestrian recall
 - f. Non-actuated phase
 - g. Phase not active, phase omitted
 - h. Pedestrian phase omitted
3. All phase interval timing values except the Phase Yellow Clearance shall be as per NEMA. Each controller Phase Yellow Clearance Interval is 3 seconds as a minimum.

The controller shall have a back-lit liquid crystal display for each ring of the controller to provide an English language menu for programming with displays for programming or reading all controller features. The dynamic displays for real-time operation shall be able to display the following values for each ring or phase(s) concurrently:

1. Per Phase Display:
 - a. Phase Vehicle Call
 - b. Phase Pedestrian Call
 - c. Phase is Next In Service

- d. Phase is In Service
 - e. Phase Pedestrian Intervals in Service
2. Per Ring Display:
- a. Ring Gapped Out
 - b. Ring Maximum Green Termination
 - c. Ring was Force Off Terminated
 - d. Ring Maximum Green II in effect
 - e. Ring Phase in Service Operating:
 - i. Lock Call
 - ii. Non-Lock Call
 - iii. Minimum Recall
 - iv. Maximum Recall
 - v. Pedestrian Recall
 - vi. Non-Actuated Mode
3. Per Ring Display of Timing Values (Real Time). The following values shall be selectively displayed and shall display the current value in a real time mode.
- a. Minimum Green Interval
 - b. Passage Timer
 - c. Pedestrian Interval Timing
 - d. Maximum Green Timer
 - e. Time Before Reduction Timer
 - f. Time to Reduce Timer

It shall be possible to inspect and alter any currently programmed value while the controller is in operation without affecting the field operation. The controller shall continue to operate the intersection as values are inspected or altered.

The controller shall store all operator entered data in EEPROM devices that require no battery to support value storage. No internal components of circuitry shall require battery support.

Except for replacing controllers in existing systems, all new installations must include controllers that capture high resolution event-based data elements to provide the automated traffic signal performance measures.

The manufacturer must supply certification of the conformance to the above requirements at the time of the bid.

In addition to the above requirements, the controller shall:

1. Have all timing values entered via a front panel mounted keyboard. This keyboard shall be an integral part of the controller unit.
2. Have an English language menu for programming or reading all controller features.
3. Continue to operate the intersection as values are inspected or altered.
4. Include the ability to upload and/or download the controller software operating system and user programmed database to or from external media (datakey, usb, sd card etc).
5. Support Flashing Yellow Arrow for Permissive Left-turn Movements applications
6. Assure overlap omit by ped call

Surge Protection Devices

The cabinet shall have Surge Protective Devices (SPDs) for the main AC power input, all signal head field wiring terminals, interconnect cable terminals and loop lead-in cable terminals which are located in the cabinet. Furnish SPDs to provide effective defense against high transient voltages caused by lightning discharges or other sources. SPDs must be unobstructed and accessible from the front side of any panel used in the cabinet. The SPD for the main AC power input of the cabinet must be connected on the load side of the cabinet circuit breaker. SPDs must meet the following minimum requirements:

1. AC power SPD:
 - a. Must be UL 1449 4th Edition Listed
 - b. Parallel connected device
 - c. UL Nominal Surge Rating (In): 20kA
 - d. UL Short Circuit Current Rating (SCCR): 150kA minimum
 - e. Surge current rating: 50kA per phase minimum
 - f. Visual status indication
 - g. Remote signalization contacts for monitoring purposes
 - h. 10 year manufacturer's warranty minimum
2. DC power SPD:
 - a. Must be UL 1449 4th Edition recognized
 - b. Parallel connected device
 - c. UL Nominal Surge Rating (In): 10kA minimum
 - d. Must provide protection between all +/-Gnd connections
 - e. Surge current rating: 20kA per phase minimum
 - f. Visual status indication
 - g. Remote signalization contacts for monitoring purposes
 - h. 10 year manufacturer's warranty minimum
3. Data and communication SPD:
 - a. Must be UL 497B listed
 - b. 10 year manufacturer's warranty minimum
4. Signal and interconnect cable field wiring terminal SPD:
 - a. Clamp the surge voltage to a level no greater than twice the peak operating voltage of the circuit being protected.
 - b. Withstand a surge current of 1000A with an 8 by 20 μ s waveform six times (at 1 second intervals between surges) without damage to the suppressor.
 - c. 10 year manufacturer's warranty minimum
5. Loop lead-in cable field wiring terminal SPD:
 - a. Protect the detector unit loop inputs against differential (between the loop lead) surges, and against common mode (between loop leads and ground) surges
 - b. Clamp the surge voltage to 25 V or less when subjected to repetitive 300A surges
 - c. Withstand repetitive 400A surges with an 8 by 20 μ s waveform without damage
 - d. 10 year manufacturer's warranty minimum

All SPDs must be installed according to the SPD manufacturer's instructions and not affect the operation of equipment. SPD leads must be kept as short and straight as possible.

CABINETS – GENERAL**730.26 Cabinets**

Cabinets must be permanently marked with a label including the manufacturer's name or trademark, model/part number, and the year and month of manufacture. The label should be placed on the inside of the main door using a water resistant method. The label must be visible after installation.

Cabinets shall be provided as a complete unit and have all terminals and facilities necessary for traffic signal control as shown on the plans and shall meet at a minimum, the following requirement:

NEMA TS2 Type 1 Controller Cabinet NEMA TS 2 2016

The manufacturer must supply certification of the conformance to the above requirements at the time of the bid. Cabinets shall also be in accordance with the latest version of the TDOT Traffic Design Manual.

Two paper copies of the cabinet wiring diagram shall be provided with each cabinet. The nomenclature of signal heads, vehicular movements and pedestrian movements on the wiring diagram must be in accordance with the signal operating plan. Documentation must include a list identifying the termination points of cables used for vehicular and pedestrian signal heads, detector loop lead-ins, and pedestrian pushbutton wires. A heavy duty, resalable plastic bag must be mounted on the backside of main cabinet door for storing cabinet documentation.

House the controller in a rigid, weatherproof cabinet, constructed, finished, and equipped as follows, and as shown on the Plans and Standard Details:

1. Material, Workmanship, Dimensions and Layout

- a. Completely fabricated from .125": thick type 5052-H32, vinyl coated, mill finished aluminum utilizing intermittently welded construction, waterproofed with silicone sealant. Mill finish aluminum shall be required unless noted on plans to be powder coated or vinyl wrapped. Wraps shall be customizable to work with local artists and photographs. Wrap graphics and text shall be provided by the City. Cabinet wrap shall be installed at traffic cabinet manufacturer's facility by personnel certified by the wrap manufacturer or by field personnel certified by the wrap manufacturer. Wrap shall be made of a 2 mils (not millimeters) conformable graffiti-resistant vinyl. Material shall utilize a non-flammable, self-extinguishing grey opaque adhesive that blocks substrate color from showing through. Wrap shall be laminated with an optically clean UV protectant gloss laminate that resists and protects against light abrasion, scratching, spray paint, markets, adhesives and/or chemicals. Wrap shall have a material warranty of 1 year from the date of installation.
- b. All pad mounted cabinets shall be 56" in height. The width of the cabinet shall be 44" . The depth of the cabinet shall be a maximum of 27" unless a different size is specified in the plans. The inside of the cabinet shall be able to house the battery backup system by double stacking the load bays and allowing battery shelves next to the load bay terminals towards the bottom of the cabinet. Due to many size differences between manufactures we will accept cabinet height sizes from 55" to 57" so long as shelving and terminals as specified are adequately allowed.
- c. Internal attaching components shall include a total of 12 adjustable "C" channel mounting studs for shelving and panels., 4 per side, and 4 slotted rails on the rear wall.
- d. Two full width shelves shall be in the top controller compartment portion of the cabinet. A slide out laptop shelf with storage shall be mounted below the second from the top shelf. Two additional shelves shall be located in the lower portion of the cabinet alongside the double stack load bays to accommodate the battery backup/UPS components.

- e. Thermo-convection air ventilation system utilized with provisions for mounting fan for forced air cooling. A minimum of two fans with thermostats shall be included. Exhaust outlet openings are provided under the roof over-hang.
- f. All internal and external hardware shall utilize non-corrosive material.

2. Doors

- a. The door openings shall be double flanged on the top, bottom and sides to prevent water from entering the cabinet. The openings shall include a mount for two door-operated switches.
- b. Doors shall be provided with a three-point locking mechanism.
- c. ¾" diameter stainless steel inward turning handle on the controller compartment door. Provide handle for padlocking.
- d. Doors shall be equipped with industrial Medeco Signal Cabinet Lock P/N TrafficCab 101 Lock and Medeco XT Slim Line, or as specified in the plans. A minimum of one Medeco key shall be supplied with each cabinet.
- e. Door shall accommodate louvered inlet with filter to prevent dirt from entering with air flow.
- f. A closed-cell neoprene door seal gasket shall be used.
- g. Doors are to be mounted with 4 stainless steel hinges utilizing a non-removable ¼" diameter hinge pin for support, carriage bolted in place for ease of door removal.
- h. A 2" deep, fabricated switch compartment is included with a standard "police" lock and 18-gauge stainless steel continuous hinge with a 1/8" diameter hinge pin riveted in place shall be included on both doors. Compartments shall be mounted flush to the door.

3. Back Panel

- a. Shall be wired for 8 vehicle movements, 4 pedestrian phases and 4 overlaps (sixteen channels). Pedestrian phases shall be LS9-LS12 and Overlaps shall be LS13-LS16.
- b. Sixteen NEMA input and output indicating load switches and bases shall be provided.
- c. Shall be wired for 8 flash relay bases to allow any loadswitch (phase) outputs to flash Yellow, Red, or no-flash.
- d. Cabinet Main Back Panel signal outputs shall use both color-coded red, yellow and green wires and red, yellow and green labels for easy identification.
- e. All pedestrian and overlap signal wires shall feed to their back-panel positions from below the terminal strips and not travel over the face of the back-panel and other signal wires.
- f. Provide 4 terminal screw downs per channel, one each for red, yellow, green and flash.
- g. Color-coded labels shall be placed on the inside of the front cabinet door to illustrate the procedure for changing the signal output flash colors.
- h. All detection shall utilize the SDLC port.

4. Bus Interface Unit (BIU)

Cabinet shall include:

- a. One BIU that shall be a NEMA designated BIU2 as listed in Table 8-1 of NEMA Standards Publication No. TS 2-2003 or later revision.
 - b. One SDLC distribution panel with connectors for 10 SDLC cables.
 - c. Three SDLC cables one each for MMU, Controller, and detector rack BIU.
 - d. The cabinet assembly shall have provision for supporting detection inputs by means of NEMA TS2 BIU method. When using the TS2 BIU method, the detection technology shall use a standard BIU to route detector calls to the controller via the SDLC Port bus.
- 5. Cabinet Mounting.** Mount cabinets as shown on the Plans and per the City of Franklin Standard Details.
- 6. Ventilation.** Unless otherwise specified, provide ventilation as follows:
- a. On all cabinets housing controllers, mount a screened, rain-tight vent, 1-1/2 inches in diameter or larger, on the cabinet top.
 - b. Provide screened or filtered inlet ventilation openings, equal to or greater in area than top vents, located in the bottom or lower back side of Type I and II cabinets or around the lower 8 inches portion of Type III cabinets.
 - c. Construct the vents so as to project within the cabinet no more than necessary to provide for lock nuts and gaskets to retain the vent.
 - d. Locate vents so as to not interfere with the mounting of controller equipment.
- 7. Cabinets with Exhaust Fans.** Exhaust fans shall consist of an electric fan with ball or roller bearings and a capacity of at least 100 cubic feet per minute. Mount the fan in a rain-tight housing attached to the top of the controller cabinet.
- The fan shall be controlled by a thermostat having a temperature differential between turn-on and turn-off of 15 °F (-0, +5 °F), adjustable for turn-on through a minimum calibrated range of from 100 °F to 150 °F.
- Whenever a fan is to be installed, provide the air inlet filter and filter holder shown in the Standard Details, or approved equal. Internally seal other air inlets. Provide exhaust fans in all cabinets that house controllers, with the exception of flasher controllers.
- 8. Auxiliary Equipment.** With the exception of cabinets used in special applications (Type I and II), provide all cabinets with the following:
- a. Substantial shelves or brackets to support controller and auxiliary equipment as indicated in these specifications.
 - b. Panel for terminals arranged for adequate electrical clearance. Panels should be located in the cabinet as described below:

- Detectors	Lower left wall
- AC power	Lower right wall
- Auxiliary/police switches	Door
- Load switch bay	Back wall
- Generator Plug	Side Wall

- c. The cabinet shall include an LED light and GFI duplex receptacle which can be used when the main circuit breaker is off.
- d. Control panel assembly consisting of:
 - 1. Power supply connections made to a 30-ampere circuit breaker mounted on the cabinet separate from the signal terminal panel. The circuit breaker shall be a magnetic trip type, having an interrupting capacity of at least 2,000 amperes at 125 volts AC. The circuit shall trip between 101% and 125% of rated load, with an inverse time delay characteristic provided. Instantaneous tripping shall occur at ten times the nominal rating. All controllers shall be internally fused.
 - 2. Service line surge protection as noted in 730.25 of the SPD specifications.
 - 3. Electrical service termination point sized to accept No. 4 AWG copper wire
 - 4. Ground fault receptacle
 - 5. LED cabinet lights shall be dimmable and switchable to reduce glare at night time.
 - 6. Circuit breakers in accordance to the National Electric Code for:
 - (a) Main power input to provide all power associated with normal operation.
 - (b) Flasher power input to provide all power associated with flash operation.
 - (c) Service power to provide power for the lamp and duplex receptacle and cabinet light.
 - 7. Copper ground bus (minimum of 12 positions).
- e. Flasher mechanism independent of controller. The cabinet shall be wired for and include a NEMA flasher mounted on the back panel. All cabinets shall have a two-circuit flasher. The flasher shall have output indicators mounted on the front of the flasher case and shall be rated at a minimum of 15 amperes.
- f. General purpose relays, where required to perform specified functions. All relays external to the controller or appurtenances shall meet NEMA standards. In addition:
 - 1. Flash transfer relays shall be of heavy-duty type and have a minimum contact rating of 10 amperes. Contacts shall be of silver material to reduce contact pitting.
 - 2. Unless otherwise specified, each cabinet shall include six (6) flash transfer relays.
 - 3. Flash transfer relays shall support Flashing Yellow Arrow for Permissive Left-turn movement applications.
- g. Type II, III, IV, and V cabinets, when specified as housing for traffic actuated controllers, with two or more insulated terminal blocks mounted within the housing, one or more for terminating each field wire.
- h. A minimum of 12 available bare ground positions tied to AC Common Return.
- i. Earth (driven) ground tie point to terminate a single No. 4 AWG copper ground.
- j. A tie point to tie all ground systems within the cabinet to a single reference point. All grounds (AC - return, Chassis, and Logic Ground) must be referenced to a single ground point at the electric service.
- k. A panel (police subpanel) shall contain the following:
 - 1. A main power switch, which shall be wired to remove all cabinet power when in the Off position.
 - 2. An Automatic Flash switch, which shall be wired as follows:

- (a) The Flash position shall cause the cabinet to provide Flash Operation. The controller shall continue to operate, and Stop Time shall be applied to the controller.
 - (b) Auto/Manual switch to activate Manual Control Enable.
 - (c) Manual control pushbutton switch with self-coiling cord. Cord shall attach to a 2 position terminal strip via fork type connector
 - (d) Upon return from Flashing to Automatic, the controller shall initialize in the Start-Up Display condition as programmed in the controller, typically major road phases.
3. A panel mounted inside the main door shall contain the following switches:
- (a) A technician Stop-Time switch to apply Stop Time to each controller ring.
 - (b) An Interval Advance switch, enabled only by the Stop Time switch, to be momentary pushbutton switch to apply Interval advance to the timer.
 - (c) A Signal On-Off switch, which shall remove the AC power applied to the signal heads for normal operation while the controller continues to operate.
 - (d) Individual phase vehicle and pedestrian detector test switches to be miniature toggle of the On-Off Momentary type to place (only as specified in the plans or by the City):
 - i. No Call - Call provided by detectors
 - ii. Locked detector call
 - iii. Momentary detector call

Insulate or shield switch terminals on back of main cabinet door so that no live parts are exposed.

Leads from the terminal block to the auxiliary door switches shall be no less than No. 18 AWG stranded, with TW plasticized polyvinyl chloride or nylon insulation enclosed in an insulating loom, and shall be of sufficient length to allow full opening of the main cabinet door.

- l. The cabinet shall be wired with the appropriate number of load switches to accommodate vehicular and pedestrian phasing according to plans. At a minimum, cabinets shall include 16 load switch bases. The load switch wiring shall support Flashing Yellow Arrow for Permissive Left-turn Movement applications.
- m. All cabinet wiring shall be neatly routed and labeled, laced and permanently secured. All cable shall be secured to the panel, where practical. There shall be no holes drilled through the cabinet walls to mount panels or secure cables.
- n. All terminals in the cabinet shall be of the barrier type. The following field connector terminals shall be provided:
 - 1. Four (4) signal output positions per load switch bay (R-Y-G-FL).
 - 2. Ten (10) positions per phase for vehicle loop detector harness.
 - 3. One position per phase for pedestrian detector inputs.
- o. Cabinets shall have, at a minimum, SDLC communication between the controller, MMU, Detector Rack, Radar Detector (if applicable) and Video Detection (if applicable).
- p. Cabinets shall have two 4-way electrical outlet assemblies (Non GFI) that has 120 VAC from the OUTPUT side of the Main Power Surge unit for pluggable equipment.
- q. Cabinets shall support Flashing Yellow Arrow for Permissive Left-turn Movements applications.
- r. All cabinets shall be supplied with a Malfunction Management Unit (MMU) and shall meet at a minimum, the following requirement:

NEMA TS2 Malfunction Management Unit NEMA TS 2 2016

The manufacturer must supply certification of the conformance to the above requirements at the time of the bid.

According to NEMA TS2 the MMU shall be able to detect the presence of voltage on conflicting on conflicting field connection terminals, the absence of proper voltages on all the signal field connection terminals of a channel, and shall be capable of monitoring for the presence of satisfactory operating voltages within the Controller Unit (CU) and the MMU itself. The MMU shall be able to operate as a Type 16 with sixteen channels or as a Type 12 with twelve channels (compatible with NEMA TS1 cabinets).

The MMU shall have an Ethernet port configurable by the City of Franklin to be on the City's network.

The MMU shall be able to be configured for Flashing Yellow Arrow operation.

The MMU shall have fault logging features that include at a minimum:

- Date of Fault
- Time of Fault
- Fault Condition
- Power Failure

Faults and logs shall be stored in non-volatile memory for remote user retrieval

The MMU shall be an EDI – MMU2-16LEip Enhanced NEMA Signal Monitor w/ Ethernet Port or approved equivalent.

- s. The cabinet shall include an Opticom Auxiliary Interface Panel (AIP) and Opticom GPS Radio (3101) mounted to the side of the cabinet
- t. A generator plug with automatic hot swap bypass switch shall be included with the cabinet and mounted on the side of the cabinet. The bypass shall prevent utility back feed and fail-to-line in the event of generator or Uninterruptable Power Supply (UPS) failure.

9. Enhanced Operational Features.

- a. When shown on the Plans, or specified in the Special Provisions, supply certain enhanced operational features of controllers. When required, these inputs and outputs shall be accessed to the controller by a dedicated fourth (or "D" Connector). Provide a connector of a type as determined by the manufacturer, and that meets the following requirements:
- b. This connector shall not be mateable to any other connector in the cabinet.
- c. All operating voltages in this connector shall be NEMA DC level voltages.
- d. No special operating features shall enter or exit the controller on any NEMA pin designated as "Spare" or "Future."
- e. When the "D" connector is not connected to the controller, the cabinet facility shall operate as a standard NEMA cabinet facility with no operational loss of standard NEMA features.
- f. If the "D" connector is used as the input source for Pre-Emption operation, wire the cabinet facility so that the cabinet facility will NOT perform any operation other than FLASH unless the "D" connector is terminated at the correct termination point and all cabinet features including Pre-Emption are operational.

730.27 Auxiliary Equipment for Traffic Signal Controllers

Furnish and install the following auxiliary equipment in each cabinet for traffic actuated controllers.

- A.** The Cabinet shall include a TS2-1 to TS2-2 power adaptor cable (A cable).

B. Load Switches

Provide each cabinet complete, with the necessary number of NEMA load switches and Flash Transfer relays necessary to affect the specified signal sequence and phasing. Load switches shall:

1. Meet NEMA standards.
2. Have front-face mounted LED indicators to indicate the "On" condition of both the Input and Output circuits.
3. Use replaceable "cube" type circuitry or encapsulated discrete component construction. No unencapsulated discrete component constructions are acceptable.

Load switches shall be PDC SSS86I/O.

C. Time Clock Switches

Where shown on the Plans, provide time clock switches of solid state circuitry, continuous duty, with a 7-day cycle clock operating from the 120-volt AC service line. Provide switching for a minimum of one independent output and ensure the time of day selection is adjustable to within 1 minute of the desired time. Provide a battery backup system that can maintain time keeping and memory a minimum of 24 hours after power interruption. Furnish an omitting device as an integral part of the time switch to allow the switching operation to be skipped for any preselected day or days of the week. The time clock shall automatically compensate for daylight savings time changes. When the time clock is supplied as an internal component of the controller, supply the clock feature to provide for the selection of Maximum Green II on time of day, day of week, week of year basis. Time clocks shall meet NEMA environmental specifications.

When required in the traffic signal plans, the auxiliary equipment listed below shall meet the following requirements:

A. Uninterruptable Power Supply (UPS)

The uninterruptible battery back-up system for the traffic signal cabinet shall have a programmable digital display with remote monitoring capabilities, including UPS fail, AC fail, on battery and low battery. The UPS shall be a double conversion, power conditioning unit to fully power the traffic signal, including full signal and cabinet operation, in the event of a power failure for a minimum of 2 hours. The traffic signal shall be able to go into 'flash' condition for an additional 2 hours for a minimum UPS backup power requirement of 4 hours total. The UPS shall be able to accommodate an average system operating demand of 450 watts with a peak of 750 watts (usually found under all-red traffic signal operation conditions).

UPS assemblies should include off-the-shelf deep cycle Lithium Ion Phosphate batteries or approved equivalent. Loss of utility power, transfer from utility power to battery power, and transfer back to utility power must not interfere with normal operation of connected equipment. In the event of UPS failure or battery depletion, connected equipment must be energized automatically upon restoration of utility power. Removal and replacement of the UPS must not disrupt the operation of the equipment being protected.

All harnesses necessary to connect and operate the system must be included. All connectors must be keyed to prevent improper connection.

UPS assemblies shall be installed in accordance with the manufacturer's recommendations.

An UPS operation and maintenance manual shall be provided in the cabinet where the UPS is installed with cabinet wiring schematics, electrical interconnection drawings, parts layout and parts lists.

The UPS shall include a manufacturer's warranty covering defects for a minimum of three years (5 years for the external batteries) from the date of final equipment acceptance. The warranty must include provisions for providing a replacement UPS within 10 calendar days of notification for any UPS found to be defective during the warranty period at no cost to the maintaining agency.

The UPS shall have communications capability with the City's current TCP/IP Ethernet network for remote monitoring. Should the UPS not have an Ethernet RJ45 communication port compatible with the City's network requirements, a device with the capability to support IP/Ethernet communications to the UPS from the City of Franklin TOC shall be provided.

Operating temperature range: -30° F to 165° F

The UPS batteries and controller must be able to fit into the TS2 Type 1 cabinet, as specified.

B. Communications

Ethernet switches shall be a hardened, three 10/100/1000 Base-TX, with two Gigabit combo ports that utilize SFP modules for fiber and twisted pair copper communication mediums. The switch shall offer centralized and convenient management through a windows-based utility. The module shall support transmission utilizing Category 5e cable or better, multimode, or single-mode fiber. The module shall support the Ethernet data IEEE 802.3 protocol using Auto-negotiating and Auto-MDI/MDI-X features. The switch shall be specified, approved, and accepted by the City of Franklin Information Technology (IT) Department.

C. Fiber optic cables

Single-mode type cable shall be between 8-9 μ m core diameter, with at least 12 fibers per cable unless otherwise specified. A fiber optic drop cable shall be a minimum of 6 fibers (each type) and be spliced into the trunkline in a splice enclosure either aerially or in a pull box. 50ft. of slack shall be provided, either lashed to a span aerially, or coiled in a pull box for underground installations. Termination panels shall be provided with sufficient size to provide for a neat installation, and enough panel space to accommodate the specified number of fibers for termination. ST connectors shall be used unless otherwise specified. Any necessary jumpers shall be provided for installed equipment.

MISCELLANEOUS TRAFFIC SIGNALS**730.28A Flashing School Signals**

When shown on the Plans, provide flashing school signals compatible with the City of Franklin's current school flashing system and that conform to the following:

1. The signal shall produce two alternate flashing lights within the marginal limits of a school speed limit sign. Details of the sign construction shall be as shown on the Plans. Sign colors shall conform to the MUTCD and be constructed of materials complying with these specifications.
2. The two LED lenses shall be yellow in color and a minimum of 12 inches in diameter. The LED lenses shall be part of a weather-proof and water-tight optical unit. The LED lenses shall meet the same requirements for vehicular signal head LED lenses. Mount the lenses in the sign using a molded endless rubber gasket with the sign being mounted to the signal case.

3. Provide a two circuit type flasher unit to provide alternating equal on-off operation. The flashing mechanism shall produce between 50 and 60 flashes per minute through two 120-volt, 60-cycle AC, 15-ampere circuits. The flasher shall be of solid state construction.
4. Wire the unit for external circuits.
5. The signal shall be actuated by time switch meeting **730.27**. Locate the timing device in a remote mounted control cabinet.
6. Where an illuminated speed limit indication is shown on the Plans, the numeral message shall be illuminated in Portland Orange in a rectangular lens and illuminated only during the period when the signal produces two alternately flashing amber lights.

In addition, the Time Clock Unit/Switch used for Flashing School Signals shall be a programmable module that allows a user to define the time and day that the school speed zone flasher assembly will initiate and terminate flashing operation. The module shall be installed within the pole-mounted signal cabinet provided as part of project. The time clock shall be compatible with the cabinet's wiring relays and termination panels and the battery power supply system. The time clock switch provided shall also have the following features/capabilities outlined below:

1. Daylight Savings Time shall be a user-programmable setting, in addition to having automated compensation per TDOT specifications.
2. The unit shall provide a minimum 12-character, multi-line alpha-numeric LCD back-lit display capable of displaying all programming parameters.
3. The unit shall be capable of being programmed manually (using an integral keyboard pad) or programmed externally using an optional software program via a laptop computer and cable connection (compatible software program is a separate and distinct item from the time switch unit, and if required, will be separately specified and noted in list of estimated project quantities).
4. Unit shall provide automatic Leap Year compensation.
5. The time clock switch shall be capable of up to minimum 24-hours of capacitive back-up operation, 48 hours desirable, in the event of power interruption.
6. Unit shall be compatible with the supplied solar powered power system / battery unit
7. Time clock switch shall be capable of being programmed for one (1) Normal / Main program, and an additional minimum of 12 Exception periods /programs allowing holiday, vacation and custom skip plans. The exception programs will allow for the Normal / Main program to be skipped or allow for flasher operation on alternative schedules (i.e. early release days, summer school, etc).
8. Unit shall conform to TDOT standard specification subsection 730.27 – Auxiliary Equipment for Traffic Actuated Controller – Time Clock Switches except as superseded herein.
9. Unit shall have non-volatile program memory to allow retention during power loss.

730.28B Solar Power Flashers

When required, the solar power flasher equipment listed below shall meet the following requirements:

1. Solar panel and mounting equipment shall be installed on cantilever pole shaft as illustrated on layout detail sheet and as directed by manufacturer instructions.

2. Solar power unit assembly shall include all required mounting equipment, wiring/cables, battery supply, battery charging unit and other ancillary equipment necessary to operate the solar panel and properly charge the battery. The photovoltaic array shall include mounting bracket assembly to permit adjustment of the array to optimal sun exposure. The photovoltaic module shall be mounted and aligned per manufacturer recommendations to maximize solar exposure.
3. Battery unit shall meet manufacturer specifications required to operate and power L.E.D. signal displays and continuous time clock switch operation. Battery shall be compatible with cabinet equipment, including the time clock switch and the flasher signal displays. Battery unit shall meet minimum environmental and performance specifications required for system operation as recommended by solar panel and time clock switch manufacturers.
4. Solar panel and battery supply shall be of a size and power rating necessary to provide required power to time switch clock and flasher signal displays. Obtain the power load requirements from the solar power equipment manufacturer and provide as required. On a typical school day, it should be expected that the flasher system will operate up to four (4) hours per day with the time clock continuously operating to maintain its clock timer. Provide a solar system sizing report from the manufacturer indicating the power supply requirements of the proposed system required to meet the expected power demand.
5. The photovoltaic modules shall be warranted for a minimum of five (5) years from date of installation.
6. The battery system shall be a gelled-electrolyte type battery with capacity to provide a minimum of five (5) days continuous operation of the flasher assembly without charging. Batteries shall be field replaceable. Batteries shall have prorated warranty of a minimum of five (5) years from date of installation.

730.28C Portable Traffic Signals

Portable Traffic Signals (PTS) consists of furnishing, installing and configuring a complete PTS system that may be used in construction zones or in other temporary signal locations. The work will be at various sites throughout the state of Tennessee and will consist of providing all labor, materials, equipment and incidentals necessary to make functional the PTS in accordance with these specifications.

The PTS shall be trailer or cart mounted units that provide for easy transportation and quick setup and deployment. There shall be 2 unit options and each unit shall be self-contained.

1. Type 1 units are typically used for long term projects (i.e. projects 5 days or longer in duration) and shall include 2 signal heads per trailer with an upper signal head mounted on an overhead mast arm that can be extended over the travel lane, and a lower signal head mounted on the vertical upright of the trailer.
2. Type 2 units are typically used for short term projects (i.e. projects 4 days or shorter in duration) and shall include 1 signal head that is mounted on the vertical upright of the trailer or cart. Cart-mounted units shall meet the requirements of and be listed on the Department's QPL or Standard Drawings. If the project duration is extended beyond 4 days, then Type 1 units should be substituted in lieu of the Type 2 units for all PTS within the signal system.

The PTS shall be MUTCD Compliant and utilize standard ITE signal heads, and adhere to the ITE Specifications and Standards for Vehicle Traffic Control Signal Heads, Light Emitting Diode (LED) Circular Signal Supplement. The unit shall be solar powered and communicate via a wireless or hardwire connection. The unit shall include all the major components listed below or be able to perform the functions of these components. The major components of the unit shall include but are not limited to the trailer or cart, telescoping mast arm (on Type 1 units only), signal head(s) and back plates, traffic signal controller with operating software, solar charging system with batteries, input and output devices, flasher units, conflict monitor, relays, communications system and other equipment required for the safe operation and installation of the unit.

The PTS signal heads and all applicable components of the PTS shall meet the physical display and operational requirements of conventional traffic signals as specific in the MUTCD.

1. For Type 1 units, each unit shall contain 2 signal heads with an upper signal head mounted on an overhead mast arm that can be extended over the travel lane with a minimum clearance of 17 feet measured from the bottom of the signal head unit to the road surface. The lower signal head shall be mounted to the vertical upright of the trailer at a minimum height of 8 feet from the bottom of the signal head unit to the road surface. The signal heads shall also include black back plates that can be easily removed. The signal heads shall have the ability to be rotated 180 degrees to face in the opposite direction and shall have the ability to rotate and lock in approximately 10 degree increments to position the signal head for the optimum visibility to motorists.
2. For Type 2 units, the signal head of the unit shall be mounted to the vertical upright at a minimum height of 8 feet from the bottom of the signal head unit to the road surface. The signal head shall also include black back plate that can be easily removed. The PTS shall be easily rotated to position the signal head for optimum visibility to motorists.

The PTS shall include a solid-state controller with operating temperature range of -40°F to +180°F and compliance with NEMA TS-5 Performance Standard. The controller or programming module shall have an easy to read front panel indicator display. The display shall be backlit and have the capability to facilitate programming and display the currently operating program for each vehicular approach. The controller shall be capable of operating the PTS system in a fixed time, traffic actuated, or manual control mode. Each PTS in a connected system shall have the capability to serve as either the master or slave signal. Each PTS shall include a Conflict Monitor Unit (CMU), or Malfunction Management System (MMS) to ensure phase conflicts do not exist during operation.

1. A minimum of 5 automatic time-of-day timing plans within a 24-hour period should be available in fixed time mode. The operating system should have the ability to control a minimum of 4 traffic phases with programmable cycle time adjustments and user adjustable red, amber, minimum green and maximum green times. The operating system shall also have the capability of facilitating standby modes of red, red flash and yellow flash.
2. The system shall also have the ability to operate in vehicle actuation mode when vehicle detection detectors are used. The operating system shall have the capability to allow the PTS to be connected to and controlled by a standard NEMA controller.
3. The system shall have the capability to be configured and controlled remotely using a handheld wireless remote control with the capability of being operated at a distance up to ¼ mile from the master.
4. The system shall have the capability of remote monitoring for reporting, at a minimum, signal location and status, battery voltage and system defaults. The remote monitoring shall have capability to alert designated individuals if a fault condition occurs.
5. The operating system shall include password protection to prevent unauthorized programming.

The PTS shall communicate with all other PTS within the signal system via license-free wireless 900 MHZ radio link communications. The radio units shall maintain communications at a minimum distance of 1 mile. The radio system shall conform to the applicable Federal Communications Commission (FCC) requirements, including FCC 90.17, and all applicable state and local requirements. The PTS shall be in direct communication at all times either by wireless or hardwire connection to provide for the required conflict monitor.

The system shall also have the ability to operate in vehicle actuation mode when vehicle detection detectors are used. For Type 1 units, the PTS detector shall be a high-definition, multi-beam, microwave radar stop bar detector for each vehicular approach. The Type 1 radar detector shall have a minimum range of 140 feet and shall be mounted at a minimum height of 17 feet measured from the top of the road surface. For Type 2 units, the PTS detector shall be a

radar detector for each vehicular approach. The Type 2 radar detector shall have a minimum range of 140 feet and shall be mounted and have complete radar detection functionality at a minimum height of 8 feet measured from the top of the road surface.

The PTS shall be equipped with a solar power array, charging unit and battery system. For Type 1 units, the number and size of batteries shall be sufficient to operate the signal for a minimum of 21 days at 70 degrees without additional charging or assist from the solar array. An on-board battery charger shall be compatible with both the solar array and with a 120V AC power source. The solar panel array shall provide for a minimum of 440 watts of solar collection capability. For Type 2 units, the PTS shall have batteries sufficient to operate the signal for a minimum of 5 days at 70 degrees without additional charging or assist from a solar array. All instrumentation for the electrical system and battery compartment shall be mounted in a lockable weatherproof enclosure. Solar panels shall be secured to the mounting brackets for theft prevention. All wiring for the unit shall be protected against weather and damage.

The trailer or cart, and all mounted components, shall conform to the wind loading requirements (90 mph minimum) as described in the AASHTO Standard Specifications for Highway Signs, Luminaries and Traffic Signals. The wind load calculations shall be completed by an independent third-party, and stamped by a U.S. Registered Professional Engineer. The trailer or cart shall be made of structural steel and shall include 4 leveling/stabilizer jacks capable of lifting the trailer or cart a minimum of 6 inches. The trailer or cart shall be equipped with a hydraulic or electric lift system sufficient for 1 person to be able to raise and lower the vertical upright and/or horizontal mast arm to and from the operating position. For Type 1 or 2 units, the trailer or cart shall be equipped to provide legal and safe transport on the public highway system at speeds up to 55 mph. All exterior metal surfaces, except signal heads and back plates, shall be powder-coat painted highway safety orange.

The PTS work shall meet the following general requirements:

1. Be responsible for locating the PTS in the appropriate location based on MUTCD and ITE standards for visibility to motorists and for safe operation.
2. Be responsible for providing all hardware, software, communications equipment and licenses to operate a complete PTS system.
3. Be responsible that all PTS equipment is installed according to the manufacturer's recommendations including wireless or hardwire connections.
4. Be responsible for transport, setup, configuration, operation and monitoring of the PTS throughout the entire project. The Engineer shall approve all timing and settings that are used for operation of the signal.
5. As directed by the Engineer, it may be necessary to relocate the PTS during the project. The cost of the relocation shall be included in the PTS price bid.

DETECTORS

730.29 Detectors

Provide detectors, of the type shown on the Plans, to actuate signal phases of traffic actuated controllers. Provide ample lightning protection to provide effective defense against high transient voltages caused by lightning discharges or from other sources. The lightning protection unit must withstand repeated 400-ampere surges on a 9 x 20 microsecond waveform. Also, the unit must be a two-stage device capable of clamping a minimum of one hundred 300-ampere surges to 25 volts within 40 nanoseconds for surge applied across the two detector leads.

A. Inductive Loop Detection System

Inductive loop detector units (loop amplifiers) shall meet at a minimum, the following requirement:

NEMA TS2 Inductive Loop Detector Units NEMA TS 2 2016

Detector loops shall be installed in accordance with TDOT Standard Drawing T-SG-3, standard notes and details of detector loops

Loop amplifiers shall be of the multi-channel, rack-mounted type meeting the standards of the latest NEMA TS2 revision for detector rack configuration. The number of detector channels shall be as specified in the plans. The front of the rack-mounted detector shall provide an LCD display for programming and monitoring.

The rack-mounted loop amplifiers shall be powered by a 24V DC power supply external to the controller unit as defined in NEMA TS-2 Section 5.3.5. All loop amplifiers shall be of the type to provide both "Extended" and "Delayed" outputs.

The loop detector amplifier shall be full automatic, requiring no adjustments to effect operational ability other than setting of the operating frequency and sensitivity. The amplifier shall:

1. Sense any legal motor vehicle traveling at speeds up to 65 miles per hour.
2. Have both a "Pulse" and "Presence" Output:
 - a. Pulse output shall generate an output of 125 ±25 millisecond output for each vehicle entry.
 - b. Presence output shall provide a continuous output for up to 60 minutes as long as a vehicle is within the detection zone.
3. Provide at least four user selectable sensitivity ranges.
4. Be supplied with at least three frequency ranges for crosstalk minimization.
5. Have a front-face mounted indicator to indicate active output of the internal relay. This indicator shall indicate the presence of:
 - a. Normal Output
 - b. Delayed Output
 - c. Extended Output
6. Have a front-panel mounted "Reset" switch that when pressed shall cause the unit to completely re-tune itself.
7. Have Delayed or Extended timing features with the following ranges:
 - a. Delayed output of 0 to 30 seconds in 1-second increments.
 - b. Extended output of 0 to 10 seconds in 1/4-second increments.
8. Have internal diagnostics to determine the operational ability of the loop. These diagnostics shall determine if a loop is opened or shorted, and shall provide a visible indication of such condition. Additionally, if such a condition occurs, the amplifier unit shall default to a "constant" output.
9. Provide output by a mechanical relay, which shall be "off" to provide an output.
10. Have all delay functions wired to the associated plan phase green to inhibit that function during controller phase green.
11. Be able to operate with loop lead-in lengths of at least 2,000 feet. All loop head and homerun wire to be continuous with no splices within the roadway.

Comply with the details of the detector loop installation as shown on the Plans or Standard Drawings.

B. Video Detection System (VDS)

When specified in the plans, the equipment shall consist of all items necessary to provide a complete functional video detection system that process images and provide detection outputs to the traffic signal controller. The VDS shall be capable of the following:

1. Be capable of NEMA TS2 operation.
2. Be waterproof and weather resistant.
3. Provide user-defined detection zone programming via a graphical user interface (GUI) and any necessary equipment for future programming. The configuration database shall have the ability to be stored on removable data storage external to the video card.
4. Display programmable detection zones and detection activations overlaid on live video inputs. It shall detect vehicles in real time as they travel across each detection zone.
5. Have a minimum of 24 programmable detection zones per camera.
6. Shadow rejection without special hardware.
7. Non-impaired operation under light intensity changes.
8. Maintain operation during various weather conditions (e.g. rain, fog, snow).
9. Anti-vibration, 5% rejection based on image change.
10. Ability to select direction of flow parameters.
11. Ability to properly detect directionally.
12. Ability to configure presence, pulse, extend and delay outputs.
13. Ability to set up a minimum of six detection zones per camera view to count the number of vehicles detected and stores the information for retrieval.
14. Variable focus providing a minimum of 4 to at least 40 degree horizontal field of view.
15. Store detection zones in non-volatile memory.
16. Have no splices between the processors and the cameras.
17. Provide LED indicators to show active detection.
18. Have an internal heater to assure proper operation of the equipment during low temperatures.
19. Have surge ratings as set forth in NEMA specifications.
20. Have a two-year warranty and updates of all software shall be available without charge during the warranty period.

VDS shall be of a single 4K resolution, fish-eye type camera equivalent to Miovision SmartView 360 and components as listed below:

- a. SmartView 360 camera
- b. SmartSense cabinet interface device
- c. SmartLink network device

C. Radar Vehicle Detection System (RVDS)

When specified in the plans, the equipment shall consist of all items necessary to provide a complete functional RVDS that process high-definition, multi-beam radar electromagnetic waves and provide detection outputs to the traffic signal controller.

RVDS shall be capable of NEMA TS2 operation.

The RVDS shall consist of the following components:

1. Radar sensor (1)
2. Detector rack interface module (1)
3. Power and surge protection panel or module (1) (cabinet interface devices that combine one or more of the above components shall be acceptable as well).
4. All associated equipment required to setup and operate in a field environment including software, serial and ethernet communication ports, cabling, electrical connectors and mounting hardware.

The RVDS shall be capable of the following:

1. The RVDS shall be able to operate in all types of weather conditions including: rain, snow, sleet, ice, fog and windblown dust.
2. Lightning and surge protection will be provided for power connections and communications links to the radar RVDS.
3. Provide a "fail safe" operation that triggers when communication between the radar vehicle sensor and the interface module is broken. Contact closure from the interface module will occur on all programmed detector channels associated with the affected radar sensor when the failsafe is triggered and will remain in this state until communication is re-established between the interface module and the radar vehicle sensor.
4. Comply with all applicable Federal Communications Commission (FCC) requirements. The manufacturer will provide documentation of compliance with FCC specifications.
5. Shall maintain frequency stability without the use of manual tuning elements by the user.
6. Shall provide a minimum of 4 separate RF channels selectable by the user to avoid interference with other devices working on the same frequency.
7. The communication port(s) shall support a communication speed that will not introduce excessive latency between when a vehicle is detected and the contact closure in the traffic signal cabinet.
8. The interface modules that utilize the detector rack must operate at 12V or 24V DC. Shelf mounted interface modules must operate within a range of 89V to 135V AC, 60 Hz single phase. Power to the RVDS radar sensor must be from the transient protected side of the AC power distribution system in the traffic control cabinet in which the RVDS is installed.
9. RVDS documentation shall include a comprehensive user guide as well as quick reference guide(s).
10. Shall have the ability to configure presence, pulse, extend and delay outputs.

RVDS shall be above-ground radar presence detector equivalent to Wavetronix SmartSensor radar devices, equivalent to the City's current RVDS, as listed below:

- a. Stop Bar Presence Detector – Wavetronix SmartSensor Matrix SS-225
- b. Advanced Detection – Wavetronix SmartSensor Advance SS-200V
- c. Mid-block Detection and Monitoring – Wavetronix HD
- d. Cabinet Interface Device – Wavetronix Click 656
- e. Detector Rack Cards – Wavetronix Click 112/114
- f. Serial to Ethernet – Wavetronix Click 301

D. Wireless Magnetometer Detection System (WMDS)

When specified in the plans, the equipment shall consist of all items necessary to provide a complete functional wireless magnetometer detection system that process changes to earth magnetic field and provide detection outputs to the traffic signal controller.

WMDS shall be capable of NEMA TS2 operation.

The WMDS shall consist of the following components:

1. In-pavement sensors
2. All wireless communication equipment needed to establish communication links to the controller cabinet.
3. Interface modules compatible with NEMA TS-2 V2.06b cabinet detector rack.
4. Surge protection for the WMDS and system software for set-up and monitoring of the WMDS.

The WMDS shall be capable of the following:

1. Detecting a variety of vehicle types including motorcycles, automobiles and large trucks. The system must allow the user to select sensitivity levels that adjust the amount of hysteresis to the magnetic field needed to achieve contact closure to the assigned detector channel. Magnetometer sensitivity level adjustments must allow for different levels of vehicle detection.
2. The ability to configure presence, pulse, extend and delay outputs.
3. WMDS equipment failure such as: the sensor, communications link, access point radio, repeater radio (if used) or interface module, shall result in constant vehicle call "fault state" on the affected detector channel to the traffic controller.
4. Detection accuracy must be comparable to properly operating inductive loops.
5. Provide real-time vehicle detection (within 150 milliseconds (ms) of vehicle arrival). Once detection is achieved by the sensor, the traffic controller must receive contact closure to the assigned detector channel within the 150 ms time frame.
6. The in-pavement sensor must operate on batteries without the need for underground power or communication cable connections to the unit.
7. The average operating life span of the sensor under battery power must be a minimum of 10 years.
8. The interface module must provide 2 or 4 detector channels. Sensors must be assignable to the available detector channels on the interface module using software provided with the WMDS.
9. The front face of the module shall identify detector channel 1 and detector channel 2. Each must use an LED to indicate contact closure on the channel. When vehicle detection is achieved, the LED will be on and contact closure applied to the detector channel. During periods of no vehicle detection the LEDs will be in an off state and no contact closure will be applied to the detector channel.
10. The interface module will use an LED indication to indicate a "fault state" with the WMDS. When the fault state is active contact closure will be applied to the appropriate detector channel.

The WMDS shall be equivalent to Sensys detection of the type and parts listed below, consistent with the City's current WMDS:

Sensys VSN240-F-2 Flush-Mount Sensor
Sensys FLEX-RPT3-SLR Solar Repeater
Sensys FLEX-ANT-2 Long Range External Antenna
Sensys FLEX-ANT-1 Standard External Antenna
Sensys FLEX-ISOL-M Isolator Module
Sensys APCC-SPP Digital Radio
Sensys FLEX-CTRL-M-E Control Module, Enhanced
Sensys FLEX-CONN-M Stand-Alone Unit

E. Pedestrian Push Buttons

Where shown on the Plans, furnish and install pedestrian push buttons of substantial tamper-proof construction. They shall consist of a direct push type button and single momentary contact switch in a cast metal housing. Operating voltage for pedestrian push buttons shall not exceed 24 volts.

Provide a weatherproof assembly, constructed to prevent electrical shocks under any weather condition.

Where a pedestrian push button is attached to a pole, the housing shall be shaped to fit the curvature of the standard or post to which it is attached to provide a rigid installation.

Unless otherwise specified, install the push button and sign on the crosswalk side of the pole.

Pedestrian push buttons shall have a transient protection that meets NEMA specifications.

Accessible pedestrian push buttons shall be in accordance with PROWAG requirements. Submit accessible pedestrian push buttons to TDOT and the City of Franklin for review and approval.

The pedestrian push buttons shall be equivalent to the Polara iNavigator system, consistent with the City's current pedestrian detection.

F. Emergency Vehicle Priority Control System

The City of Franklin uses a Global Traffic Technologies GPS Opticom emergency vehicle priority control system in conjunction with the traffic signal installation. To ensure priority control system integrity, operation and compatibility, all components at all intersections shall be from the same manufacturer. Priority control shall be provided on the applicable approaches of the intersection as indicated on the plans. Intersection detection equipment will consist of Model 3100 GPS Radio Unit containing a GPS receiver with antenna and a 2.4 GHz spread spectrum transceiver with antenna mounted atop of the signal cabinet, both connected to an Opticom Model 764 Multimode Phase Selector located in the intersection controller cabinet. The multimode phase selector shall be installed in a 1045B Opticom Card Rack or Opticom Model 760 card rack. Preempt panel shall be wired for R/R F/H Opticom

MISCELLANEOUS**730.30 Internally Illuminated Street Name Signs**

Internally illuminated Light Emitting Diode (LED) signs shall be Temple Edge-Lit, Transportation Control Systems Britelite Edge Lit, or approved equal. This specification shall govern for LED street name signs which are rigid bracket-attached to traffic pole shafts and/or mast arms. All materials used in fabrication shall be new and of good quality.

A. Sign Dimensions

The LED internally illuminated street name sign shall be capable of being constructed in standard widths from 24-120 inches in length, according to the construction plans. The height of the signs shall be 22 inches to accommodate 12-inch upper case letters / 9-inch lower case letters and 2.5-inch clearance from the vertical sides. Street name legend shall be a mixed upper and lower case letters, with a superscripted extension.

B. Sign Sheeting

Sign shall have a single side message as shown on the design sheets. The message should be bright white letters. The background shall be a green 3M™ Electrocut™ film, Avery Dennison film, or approved equal.

The Manufacturer/Vendor shall supply shop drawing submittals on the fixtures, sign, sign message and mounting hardware. Where the Manufacturer/Vendor has not previously supplied the item to the City of Franklin that Supplier shall provide a full-size physical prototype of all equipment to the City for review and approval.

C. Hardware

The sign shall be rigid-mounted to a pole shaft or mast arm. The method of mounting shall be by banding. Unless otherwise shown on the plans or required in this specification, all fasteners and screws in or on the fixture shall be stainless steel type 302 or 305, brass or aluminum. All steel nuts, bolts, and hardware for sign attachment shall be stainless steel type 302 or 305.

The plans are to show the location on the mast arms for the clamp-on street signs, when required, as well the location and details for the wire entrance. Offset mounting brackets with clamps and adapters shall be attached at two-foot spacing on the back side panel for use of Band-It material, Uline material, or approved equal to rigidly mount the sign to the mast arm. The sign bracket itself shall clamp the top and bottom frame of the sign. The adapters shall swivel around the mid-height level of the sign, and be lockable to allow for leveling of the sign.

All wiring connections within the sign fixture shall terminate through an U.L. approved junction box.

All conductors inside the sign fixture and on the load side of the power source shall be U.L. listed appliance material (no smaller than #14 AWG) stranded copper wire with thermoplastic insulation.

730.31A Fiber Optic Cable (OSP)

All outside plant trunk cables used in the project shall be stranded loose tube design. Drop cables shall be central core or stranded loose tube design. The cable configurations shall be dictated by the particular communication path, data rate, & distance of the optical path.

Cable configurations required shall be displayed in the design plan set.

1. General Considerations

The cable shall meet all requirements stated in this specification. The cable shall be a listed product of the United States Department of Agriculture Rural Utilities Services (RUS) 7 CFR1755.900 and the ANSI/ICEA Standard for Fiber Optic Outside Plant Communications Cable, ANSI/ICEA S-87-640-1992.

The cable shall be new, unused, and of current design and manufacture.

2. Fiber Characteristics

All fibers in the cable must be usable fibers and meet required specifications.

Each optical fiber shall consist of a doped silica core surrounded by a concentric silica cladding. The fiber shall be matched clad design.

SINGLE-MODE: The single-mode fiber utilized in the cable specified herein shall conform to the following specifications:

- a. Typical Core Diameter: 8.3 μm .
- b. Cladding Diameter: $125.0 \pm 1.0 \mu\text{m}$.
- c. Core-to-Cladding Offset: $< \square 0.8 \mu\text{m}$.
- d. Cladding Non-Circularity: $\square \square < 1.0\%$. Defined as: $[1 - (\text{min. cladding dia.} / \square \square \text{max. cladding dia.})] \times 100$
- e. Coating Diameter: $245 \pm 10 \mu\text{m}$.
- f. Colored Fiber Diameter: nominal 250 μm .

- g. Attenuation Uniformity- No point discontinuity greater than 0.10 dB at either 1310 nm or 1550 nm.
- h. Attenuation at the Water Peak- The attenuation at 1383 ± 3 nm shall not exceed 2.1 dB/km.
- i. Cutoff Wavelength- The cabled fiber cutoff wavelength (λ_{ccf}) shall be < 1250 nm.
- j. Mode-Field Diameter: 9.30 ± 0.50 μm at 1310 nm 10.50 ± 1.00 μm at 1550 nm
- k. Zero Dispersion Wavelength (λ_o)- 1301.5 nm $< \lambda_o < 1321.5$ nm.
- l. Zero Dispersion Slope (S_o)- < 0.092 ps/(nm²·km).
- m. Polarization Mode Dispersion < 0.5 ps/sq.rt. km

The coating shall be a dual layered, UV cured acrylate applied by the fiber manufacturer.

The coating shall be mechanically strippable without damaging the fiber.

3. Fiber Specification Parameters

Required Fiber Grade - Maximum Individual Fiber Attenuation for single-mode fibers shall be 0.40dB/km @ 1310nm, 0.30dB/km @ 1550.

The maximum dispersion shall be ≤ 3.2 ps/(nm·km) from 1285 nm through 1330 nm and shall be ≤ 18 ps/(nm·km) at 1550 nm.

4. Specifications for Outdoor Trunk Cables

Optical fibers shall be placed inside a loose buffer tube. The nominal outer diameter of the buffer tube shall be 3.0 mm.

Each buffer tube shall contain up to 12 fibers.

The fibers shall not adhere to the inside of the buffer tube.

Each fiber shall be distinguishable from others by means of color coding in accordance with EIA/TIA-598-A, "Optical Fiber Cable Color Coding." The ink for coloring fibers shall be UV cured; no thermal inks shall be used in the coloring process.

Buffer tubes containing fibers shall also be color coded with distinct and recognizable colors in accordance with EIA/TIA- 598, "Optical Fiber Cable Color Coding."

- a. Buffer tube colored stripes shall be inlaid in the tube by means of co-extrusion when required. The nominal stripe width shall be 1 mm.
- b. For dual layer buffer tube construction cables, standard colors are used for tubes 1 through 12 and stripes are used to denote tubes 13 through 24. The color sequence applies to tubes containing fibers only, and shall begin with the first tube. If fillers are required, they shall be placed in the inner layer of the cable. The tube color sequence shall start from the inside layer and progress outward.

In buffer tubes containing multiple fibers, the colors shall be stable during temperature cycling and not subject to fading or smearing onto each other or into the gel filling material. Colors shall not cause fibers to stick together.

The buffer tubes shall be resistant to external forces and shall meet the buffer tube cold bend and shrink back requirements of 7 CFR 1755.900.

Fillers may be included in the cable core to lend symmetry to the cable cross-section where needed.

The central anti-buckling member shall consist of a glass reinforced plastic rod. The purpose of the central member is to prevent buckling of the cable.

Each buffer tube shall be filled with a non-hygroscopic, non-nutritive to fungus, electrically non-conductive, homogenous gel. The gel shall be free from dirt and foreign matter. The gel shall be readily removable with conventional nontoxic solvents.

Buffer tubes shall be stranded around the dielectric central member using the reverse oscillation, or "SZ", stranding process. Water blocking yarn(s) shall be applied longitudinally along the central member during stranding.

For single layer cables, a water blocking tape shall be applied longitudinally around the outside of the stranded tubes/fillers. The tape shall be held in place by a single polyester binder yarn. The water blocking tape shall be non-nutritive to fungus, electrically non-conductive and homogenous. It shall also be free from dirt and foreign matter. Dual layer cables shall be water blocked in a similar fashion.

Two polyester yarn binders shall be applied contra helically with sufficient tension to secure the buffer tube layer to the central member without crushing the buffer tubes. The binders shall be non-hygroscopic, non-wicking and dielectric with low shrinkage.

The cable shall contain at least one ripcord under the sheath for easy sheath removal.

Tensile strength shall be provided by high tensile strength aramid yarns and/or fiberglass yarns.

The high tensile strength aramid yarns and/or fiberglass yarns shall be helically stranded evenly around the cable core.

The cable shall be sheathed with medium density polyethylene. The minimum nominal jacket thickness shall be 1.4 mm. Jacketing material shall be applied directly over the tensile strength members and water blocking tape. The polyethylene shall contain carbon black to provide ultraviolet light protection and shall not promote the growth of fungus.

The jacket or sheath shall be free of holes, splits, and blisters.

The cable jacket shall contain no metal elements and shall be of a consistent thickness.

The cable jacket shall be marked with "Manufacturer Optical Cable," sequential foot markings, year of manufacture, fiber count and fiber types, EX (72f, 36 sum, and 36 mm 62.5/125). The actual length of the cable shall be within $-0\pm1\%$ of the length markings. The marking shall be in contrasting color to the cable jacket. The height of the marking shall be approximately 2.5 mm.

The maximum pulling tension shall be 2700 N (608 lbf) during installation (short term) and 890 N (200 lbf) long term installed.

The shipping, storage, and operating temperature range of the cable shall be -40°C to $\pm 70^{\circ}\text{C}$. The installation temperature range of the cable shall be -30°C to $\pm 70^{\circ}\text{C}$.

5. Specifications for Drop Cable (to Controllers, VMS, Camera locations, etc.)

The City of Franklin specifies that the Fiber Connections Inc. "Gator Patch ITS Drop Cable" Model # GP20L006FRB-xx-1 shall be used in each location (xx is cable length to splice pull box plus additional 20 feet slack for splicing in meters), Z Stack Pre-Terminated All-purpose Patch Panel, or approved equal. This unit is the fiber termination panel to be mounted in the cabinet and the attached drop cable is run to the trunk cable splice pull box where a mid-span splice will be made.

6. General Cable Performance Specifications for OSP cables

When tested in accordance with FOTP-3, "Procedure to Measure Temperature Cycling Effects on Optical Fiber, Optical Cable, and Other Passive Fiber Optic Components," the change in attenuation at extreme operational temperatures (-40degreeC to ± 70 degreeC) shall not exceed 0.2 dB/km at 1550 nm for single-mode fiber and 0.5dB/km at 1300 nm for multimode fiber.

When tested in accordance with FOTP-82, "Fluid Penetration Test for Filled Fiber Optic Cable," a one meter length of unaged cable shall withstand a one meter static head or equivalent continuous pressure of water for one hour without leakage through the open cable end.

When tested in accordance with FOTP-81, "Compound Flow (Drip) Test for Filled Fiber Optic Cable", the cable shall exhibit no flow (drip or leak) of filling or flooding compound at 65degreeC.

When tested in accordance with FOTP-41, "Compressive Loading Resistance of Fiber Optic Cables, the cable shall withstand a minimum compressive load of 220 N/cm (125 lbf/in) applied uniformly over the length of sample. The load shall be applied at the rate of 3 mm to 20 mm per minute and maintained for 10 minutes. The change in attenuation shall not exceed 0.4 dB during loading and 0.2 dB after loading at 1550 nm for single-mode.

When tested in accordance with FOTP-104, "Fiber Optic Cable Cyclic Flexing Test," the cable shall withstand 25 mechanical flexing cycles around a sheave diameter not greater than 20 times the cable diameter. The change in attenuation shall not exceed 0.1 dB at 1550 nm for single-mode fiber.

When tested in accordance with FOTP-25, "Repeated Impact Testing of Fiber Optic Cables and Cable Assemblies," the cable shall withstand 25 impact cycles. The change in attenuation shall not exceed 0.2 dB at 1550 nm for single-mode fiber.

When tested in accordance with FOTP-33, "Fiber Optic Cable Tensile Loading and Bending Test," using a maximum mandrel and sheave diameter of 560 mm, the cable shall withstand a tensile load of 2700 N (608 lbf). The change in attenuation shall not exceed 0.2 dB during loading and 0.1dB after loading at 1550 nm for single-mode.

When tested in accordance with FOTP-85, "Fiber Optic Cable Twist Test," a length of cable no greater than 4 meters will withstand 10 cycles of mechanical twisting. The change in attenuation shall not exceed 0.1 dB at 1550 nm for single-mode fiber.

When tested in accordance with FOTP-37, "Low or High Temperature Bend Test for Fiber Optic Cable", the cable shall withstand four full turns around a mandrel of 10 times the cable diameter after conditioning for four hours at test temperatures of -30degreeC and ± 60 degreeC. Neither the inner or outer surfaces of the jacket shall exhibit visible cracks, splits, tears or other openings. Optical continuity shall be maintained throughout the test.

7. Quality Assurance Provisions

All optical fibers shall be proof tested by the fiber manufacturer at a minimum load of 100 kpsi.

All optical fibers > 1000 meters shall be 100% attenuation tested. The attenuation of each fiber at both operational windows shall be provided with each cable reel.

The cable manufacturer shall be ISO 9001 registered.

8. Packaging

Top and bottom ends of the cable shall be available for testing.

Both ends of the cable shall be sealed to prevent the ingress of moisture.

Each reel shall have a weatherproof reel tag attached identifying the reel and cable.

9. Pre-Terminated Drop Cable Assemblies

These assemblies shall be employed when connecting a camera, controller, VMS or other device to the trunk cable and mid-span splice techniques will be used.

Cable used for Drop cable assemblies shall conform to section FOC – 1.5.

10. System configuration - Drop & Insert Applications

Signal from the TOC to local controllers, cameras, and/or variable message signs will be conveyed via the trunk & drop cables in a closed loop configuration. At each controller, the applicable fibers will be routed in & out of the applicable housing using a specified ~~Gate~~ Patch and a mid-span access splice point. Only fibers required for the drop & insert shall be cut, no other fibers in the cable shall be cut without the direction of the engineer.

The length of the drop cable shall be determined after the traffic signal cabinet, pull boxes, and conduit has been installed to insure proper sizing. Twenty feet of drop cable shall be coiled neatly in the pull box with the splice enclosure to provide slack.

11. Fiber Optic Patch Cables (Jumpers)

Any patch cords used for system configuration shall be compatible with fiber types and connectors specified herein. Single-mode patch cords shall be yellow in color and each jacketing material shall conform to the appropriate NEC requirement for the environment in which installed. All cordage shall incorporate a 900um buffered fiber, aramid yarn strength members, and an outer jacket. Patch cords may be simplex or duplex, depending on the application. Single-mode fibers shall be 1.0dB/km @ 1310nm, 0.75dB/km @ 1550.

12. Fiber Optic Connectors

All connectors used in the communication system shall be FC compatible, ceramic ferrule connectors. Factory terminated connectors shall be heat cured epoxy type with a maximum measured loss of ≤ 0.30 dB; No field installable connectors accepted. The operating temperature of all connectors in the system shall be - 40C to ± 70 C with no more than a 0.20dB change across the temperature range.

13. Fiber Optic Closures

Aerial, Pole Mount, Pedestal, and Hand Hole Environments; OSP Closure for Aerial, Pole Mount, Pedestal, and Hand Hole will incorporate the following features:

The closure shall be capable of accepting up to six cables in a butt splice.

The closure shall be capable of storing up to 90" lengths of expressed buffer tubes.

Assembly shall be accomplished without power supplies, torches, drill kits or any special tools. Reentry shall require no additional materials. Sealing shall be accomplished by enclosing the splices in a polypropylene dome that is clamped together with a stainless steel latch and sealed with an O-ring.

Closure shall be capable of strand mounting with the addition of a strand mounting bracket.

Splice case shall be non-filled (no encapsulate), will prevent water intrusion and shall allow re-entry without any special tools. The closure shall be capable of preventing a 10 feet water head from intruding into the splice compartment for a period of 7 days. Testing of the closure is to be accomplished by the placing of the closure into a pressure vessel and filling the vessel with tap water to cover the closure. Apply continuous pressure to the

vessel to maintain a hydrostatic head equivalent to 10 feet on the closure and cable. This process shall be continued for 7 days. Remove the closure, open to check for the presence of water. Any intrusion of water in the compartment containing the splices constitutes a failure. Ensure that the water immersion test has been performed by the manufacturer or an independent testing laboratory, and the appropriate documentation has been submitted to the city.

Buried-OSP Closure for buried applications will incorporate the following features:

Splice case must handle up to four cables. A butt adapter, if applicable could be used to increase capacity to eight cables.

The closure shall be capable of accommodating splice organizers which accept mechanical, single fiber fusion, or multi fiber splices. The closure shall have provisions for storing fiber splices and un-spliced fiber/buffer tubes. The closure shall hold a minimum of 2 splice trays to a maximum of 15 splice trays with each tray housing up to 24 splices. The closure shall be UL rated. Closure re-entry and subsequent reassembly shall not require specialized tools or equipment.

For compression testing, the closure shall not deform more than 10% in its largest cross-sectional dimension when subjected to a uniformly distributed load of 1760 Newtons at -18°C and $+38^{\circ}\text{C}$. The test shall be performed after stabilizing at the required temperature for a minimum of two hours. It shall consist of placing an assembled closure between two flat parallel surfaces, with the longest, closure dimension parallel to the surfaces. The weight shall be placed on the upper surface for minimum of 15 minutes. The measurement shall then be taken with the weight in place. Ensure that the compression test has been performed by the manufacturer or an independent testing laboratory, and the appropriate documentation has been submitted to the City.

14. Fiber Optic Termination Hardware

For cross connect applications inside controller cabinets, the fiber optic cable shall be terminated using a 900 μm fan-out modular design for the fiber count being terminated. The nonmetallic fan-out shall attach directly to the buffer tube and transition the 250 μm coated fibers into the fan-out tubing. The fan-out shall be housed in a Wall Mount Distribution cabinet equipped with the appropriate number of adapters. The fibers shall be connected to the transmission equipment via FC/FC fiber optic patch cables. This hardware scheme shall also be utilized for wall mount applications.

For rack mount applications, the fiber optic cable shall be terminated using a 900 μm fan-out modular design for the fiber count being terminated. The non-metallic fan-out shall attach directly to the buffer tube and transition the 250 μm coated fibers into the fan-out tubing. The fan outs shall be housed in a Fiber Distribution Center sized for 50% growth based on the initial installation. Appropriate panels for FC adapters shall be included based on the population of the fiber cable installed. If fusion or mechanical pigtail splicing is used for termination points, a splice housing with appropriate 900 μm pigtails and splice trays shall be used in conjunction with the Fiber Distribution Center.

15. Installation

a. Aerial Installations

All fiber optic components will be installed in accordance with the manufacturer's instructions. All necessary interconnections, services, and adjustments required for a complete and operable data transmission system shall be provided. All pole attachments, service loops, and conduit risers will be placed to minimize the possibility of damage as well as to facilitate future expansion or modernization.

Cable between controllers shall be lashed to a 1/4" EHS messenger with stainless steel lashing wire for aerial installations. The installation will be accomplished in accordance with accepted OSP construction practices. Precautions shall be taken to ensure the installation specifications for the cable are not exceeded (tension, minimum bend radius). The cable shall be marked with an orange weatherproof identifying tag at each pole

location, with print "Caution, Fiber optic Cable".

The cable shall be installed in continuous runs as indicated on the plans. Splices shall be allowed only at drop points and only those fibers necessary to complete the communication path shall be spliced (mid-span access). All other fibers in the cable(s) shall be left undisturbed; with a minimum of 5 feet of buffer tube coiled inside the closure.

Sufficient slack shall be left at each drop point to enable access of the cable components and splicing to occur on the ground (typical 2 x strand height plus 15 ft) (60 feet). For aerial slack storage at splice points, a radius controlling device, commonly referred to as a SNO-SHOE shall be used for securing resulting cable slack at aerial splice points and shall be mounted directly to the strand.

For aerial cable runs exceeding 6 pole spans between splice points (indicated on the plans), two opposing SNO-SHOES shall be placed on the span 50' apart to provide for a 100' service loop for future drops and for slack for repair and pole relocations.

b. Underground Installations

Install fiber-optic cable underground in conduit using cable pulling lubricants approved by the fiber-optic cable manufacturer and the Engineer.

Obtain approval of cable pulling lubricant and method of pulling before installing underground fiber-optic cable.

Use a dynamometer (clutch device) so as not to exceed the maximum allowable pulling tension if the cable is pulled by mechanical means. Do not use a motorized vehicle to generate cable pulling forces.

Keep tension on the cable reel and pulling line at the start of each pull. Do not release tension if the pulling operation is halted. Restart the pulling operation by gradually increasing tension until the cable is in motion.

For pulling cable through manholes, junction boxes, and vaults, feed the cable by manually rotating the reel. Do not pull cable through intermediate junction boxes, handholes, or openings in conduit unless otherwise approved.

For underground installations, the following minimum slack requirements apply; 50 feet at the pull box locations or controller location for midspans, 15' for point to point applications for each cable.

Install communications cable identification markers on each communications cable entering a junction box.

Drop cable shall be routed to the controller cabinets via conduit risers or underground conduit as illustrated in the plans. The cable entrance shall be sealed to prevent water ingress.

The minimum requirement for fiber protection outside a fiber optic enclosure in all cases shall be 3.0mm Fan-out tubing, containing a hollow 900um tube, aramid strength members and an outer jacket, and shall be secured to the cable sheath.

The minimum requirement for fiber protection inside wall mount or rack mount fiber enclosure shall be 900um buffering, intrinsic to the cable in the case of tight buffered fibers, or in the case of 250um coated fibers, a fan-out body & 900um tubing secured to the buffer tube(s).

c. Splicing Methods

All splices shall be accomplished by means of the fusion splice technique and shall not induce more than 0.1 dB attenuation for each splice, and 0.07 dB averages for all splices. Splices found to exceed 0.1 dB attenuation shall be re-spliced, at no additional cost to the Department or City of Franklin, as applicable

until this requirement is met.

Only splice fibers at locations that are identified in the Plans. At these splicing locations, splice all the fibers that are identified on the associated Splice Diagrams in the Plans. Splice Diagrams in the Plans shall not be revised without approval from the Engineer. All splices shall be protected and stored in fiber optic splice closures or aerial splice enclosures.

16. Testing and Documentation

a. OTDR Testing

Prior to the installation, perform on-site on the reel testing. Test all fibers in each reel of cable prior to installation. This testing is for both continuity and attenuation. The tests shall be conducted at 1310nm for single mode fibers. The testing shall be performed using an Optical Time Domain Reflectometer (OTDR) via a "pigtail" splice. The resultant OTDR trace(s) shall reflect overall length and attenuation expressed in db/km. All test results shall be within $\pm 3.0\%$ of factory supplied attenuation measurements for single mode fibers. Testing shall be done in one direction only. Hard copy or disk based (with applicable software) OTDR traces for the testing shall be supplied to the City of Franklin prior to installation of cables. Factory results for installed cable may be accepted at own risk. In either case, on-the-reel test results or factory measurements shall be provided to the City for each cable installed.

Following installation, each section of the installed cable shall be tested for continuity and attenuation as indicated above. The traces shall demonstrate that no change in transmission characteristics has occurred during installation and that any splices meet the requirements herein. This testing can be done in conjunction with the End-to-End testing described below. The traces shall be included in the documentation package provided at the conclusion of the contract.

b. Attenuation Testing

Only completely connected spans will be tested for final End-to-End attenuation (power loss). The testing shall be performed at 1310 nm and 1550 nm for single-mode fibers. The testing shall be conducted using "hand-held" optical test sets and shall be conducted using a two-jumper reference. The testing shall be in one direction only. The results shall be tabulated and be included in the documentation package provided at the conclusion of the contract. Overall loss for each link shall not exceed the cumulative specified losses of the components in the link.

EXAMPLE:

@850nm, a 1 km link with 2 splices and a connector on each end shall not exceed:

5.0dB((3.5dB $\pm$.25dB $\pm$.25dB $\pm$.5dB $\pm$.5dB))

c. Testing Of Continuous Fiber Optic Cable

The fibers in this installation shall be tested for final End-To-End attenuation (power loss). The overall loss for this link shall not exceed the manufacturer's specifications. The fibers are being installed for future use when demanded and must be operable at this time.

At the conclusion of the contract, 2 copies of system documentation package shall be provided. It shall include at a minimum:

- 1) Post installation OTDR traces for each fiber.
- 2) End-to-End Attenuation measurement for each fiber.
- 3) A splice plan showing the location and configuration of any splices in the system as well as how the transmission scheme is set up.

- 4) Reference manuals for equipment provided.

730.31B ITS Device Control Cabinet**1. Materials**

Material, equipment, and hardware furnished under this section must be pre-approved by the Engineer.

Provide a Type B Model 336A cabinet specifically wired for either CCTV, DMS, WMS or PCS, dependent on the application for the installation.

2. Functional Requirements

The Type B cabinets shall be provided with fully wired back and side panels with all necessary terminal boards, wiring harnesses, connectors and attachment hardware for each cabinet location. All equipment shall be shelf mounted. All terminals and panel facilities shall be placed on the lower portion of the cabinet walls below the shelves.

Submit a cabinet layout for each installation for review by the Engineer. Only cabinets with approved layouts will be accepted by the Department or City of Franklin, as applicable. Each field cabinet shall, as a minimum, be supplied with the following:

- a. Fan and Thermostat
- b. Left Side Power Distribution Panel
- c. Air Filter
- d. Adjustable Shelves (1-4 as required)
- e. Back Panel
- f. Right Side Panel
- g. Locking Mechanism
- h. Lock
- i. Ground Bus (2)
- j. Surge Protection (for Solid State Equipment)
- k. Terminal Blocks
- l. Duplex Power Outlets (GFI protected)
- m. Drawer that opens and slides out for placement of notebook computer
- n. All necessary installation and mounting hardware.

3. CCTV Cabinets

Provide and install all equipment, hardware and software to provide for functional camera installation. The camera installation shall provide an operating camera with equipment ready for future fiber optic communications with the City of Franklin's Transportation Operations Center (TOC).

4. Construction Methods

The cabinet will be secured using 3 steel banding.

One 2-inch conduit nipple will connect the cabinet with the interior of the pole.

Metered power leads, data cables and communications cables shall be run on the interior of the pole.

Handholes shall be provided near the base of poles and near the device location for access to install and maintain the data leads. Strain relief J-hooks will be provided on the interior of the pole at the device location handhole.

Cabinet shall be mounted 48" above finish grade.

730.31C Closed Circuit Television (CCTV) Camera**1. Materials**

Provide a High Definition (HD) IP Power-Over-Ethernet (POE) CCTV PTZ camera, control and communications hardware, enclosure, cabling and mounting apparatus. The CCTV and mounting apparatus shall be an Axis Q6135-LE, Cohu RISE 4228 HD, or equal approved by the City of Franklin.

2. Installation Requirements

All equipment shall be installed according to the manufacturer's recommendations, the Plans and as follows:

- a. Materials and associated accessories/adapters shall not be applied contrary to the manufacturer's recommendations and standard practices.
- b. Shall include all materials needed to permanently mount the CCTV camera to the support structure as indicated in the plans.
- c. Furnish and install all cabling and all ancillary equipment required to provide a complete and fully operational CCTV system site as shown on the plans.
- d. Verify all wiring meets NEC requirements where applicable.
- e. Cameras shall be mounted in positions which allow 360-degree continuous rotation and mounting arm position shall be approved by the Engineer prior to pole placement.
- f. Furnish and install all appropriate field surge protection devices and ensure proper ground per manufacturer recommendations.
- g. Coordinate with the Department or City of Franklin, as applicable, for IP addresses, and video encoding settings for all CCTV camera sites prior to turn-on/installation and site testing.
- h. The CCTV system shall be compatible with, and integrated into the existing TOC video wall and CCTV control software. Coordinate with the TOC operations personnel for integration of the new CCTV cameras into the existing video wall and video control software systems. Integrate and test all video control and display of the cameras at the TOC.

730.31D CCTV Pole and Lowering Device**1. Materials**

Material, equipment, and hardware furnished under this section must be pre-approved by the Engineer.

In addition, provide a galvanized steel pole standard with a length of 50 feet or as shown in plans. The pole standard shall be designed according to AASHTO Standards and Specifications For Structural Supports For Highway Signs, Luminaires, and Traffic Signals (Current Edition, et al). The pole standards shall be designed for a wind velocity of 90 miles per hour. The steel support shall be finished by the manufacturer in a black gloss color.

Determine the size and design of all steel CCTV support poles and foundations. Shop drawings for the proposed poles shall be submitted to the City of Franklin for review and approval.

Provide a lowering device compatible with the City of Franklin CCTV equipment.

The pole base will provide three 2-inch, non-metallic (High Impact Schedule 80 PVC) conduits into the interior of the pole. One of the conduits will contain the metered power service lines. One conduit will contain the communications cable (Fiber optic or hardwire). The remaining conduit will be a spare with a pull rope installed between the main pull box and the pole foundation.

Metered power leads, data cables and communications cables shall be run on the interior of the pole.

Handholes shall be provided near the base of poles and near the device location for access to install and maintain the data leads. Strain relief J-hooks will be provided on the interior of the pole at the device location handhole.

2. Functional Requirements - Camera Lowering Device Requirements for 50' poles

a. General

The work under this item specifies the additional requirements for the 50' poles which should be equipped with the Camera Lowering Device (CLD). The Camera Lowering Device shall be safely operable by one trained technician working alone, to lower the Camera Assembly to ground level for maintenance as necessary and return the Camera

Assembly to the pole top mounting and secure it in place, eliminating the need for access by a bucket truck. The camera lowering device shall be installed at camera sites as indicated on the plans. Weatherproof connectors (camera to the lowering device) shall allow for adaptation of the camera and the dome type housing for lowering and hoisting. Lifting and lowering shall be done with a motorized gear box (winch). The CLD should be a stand-alone device mounted on a camera pole and included in the cost of the 50' pole. An integrated CLD with pole assembly may be procured provided it meets all specifications.

Design the required pole mounting adapters, brackets and mounting hardware, including extensions and cable entry to the camera mounting pole to accommodate the dome enclosure with pan/tilt unit and pole combination. The pole mounting adapter shall be electrically bonded to the pole. The pan and tilt unit shall be electrically bonded to the mounting adapter. An individual CLD shall be furnished and installed at each CCTV site designed to support and lower a standard closed circuit television camera, lens, housing, PT mechanism, cabling, connectors and other supporting field components without damage or causing degradation of camera operations. This CLD shall consist of an arm mounted suspension contact unit attached to the galvanized steel pole at locations as shown on the Plans. The CLD shall include a tracking guide system permitting the moveable portion of the system to align in the same position every time the system is operated thereby eliminating the need to re-orientate the camera. The electrical / signal connector shall mate without any degradation of performance due to vibration or movement during operation. The cables for the CLD shall not come into contact with any other cables inside the pole.

The entire device, complete with the camera, shall be tested by an independent laboratory experienced in structural, mechanical and electrical testing. It shall be shown to withstand wind forces of greater than 90 mph with a 1.3 gust factor. Certified and dated test reports from the testing facility shall be submitted to the Engineer within 10 days after the testing for review and approval. The top of the pole deflection shall not exceed 1 inch deflection from Center (2-inch deflection diameter) due to 30 mph (non-gust) winds.

All designs, testing results and shop drawings of the camera mounting, lowering device and structural design shall be in compliance with the Contract Documents and Plans and submitted to the Engineer for review and approval 90 days after the Notice to Proceed. Arrange for a factory representative to assist with the assembly and testing of the first CLD onto the pole assembly. Copies of written installation and operating instructions shall be furnished to the Engineer as required by the Contract Documents.

All external components of the CLD shall be made of corrosion resistant materials, anodized, galvanized, or otherwise protected from the environment and dissimilar metals by industry accepted coatings to withstand exposure to a corrosive environment. All pulleys for the camera lowering device and portable lowering tool

shall

have sealed, and self-lubricated bearings. At the discretion of the Engineer, an integrated CLD with pole assembly may be procured.

b. Suspension Unit

Design the required pole mounting adapters, brackets and mounting hardware. The CLD shall have a minimum load capacity 200 pounds with a 10 to 1 safety factor. The enclosure receptacle and camera enclosure shall incorporate a mating device. The mating device shall have a minimum of 2 latching devices. These latching devices shall securely hold the camera housing and its control equipment free of vibration or motion between the enclosure receptacle and camera enclosure. The latching devices shall lock and unlock by alternately raising and lowering the camera enclosure. When the camera enclosure is latched, all weight shall be removed from the lowering cable. The enclosure receptacle and camera enclosure shall have a heavy-duty tracking guide. The tracking guide and latching devices shall lock the camera enclosure in the same position each time.

Sufficient electrical contacts shall be provided to support all camera functions. The electrical contacts shall be gold coated to prevent corrosion. In addition, replaceable gaskets shall be provided to seal from moisture and dust the electrical contacts and latching devices.

The CLD shall be designed to preclude the lifting cable from contacting the CCTV cabling. The only cable permitted to move within the pole or lowering device during lowering or raising shall be the stainless steel lowering cable. All other cables shall remain stable and secure during lowering and raising.

The CLD shall support the Camera Assembly a minimum of 20" from the pole. The CLD shall be designed to permit a ± 3 degree of horizontal adjustment for leveling the dome enclosure. The lowering cable shall be a minimum 5/32" diameter stainless steel aircraft cable with a minimum breaking strength of 2400 pounds.

Weights and/or counterweights shall be provided as necessary to assure that the alignment pin and connectors are proper for the camera support to be raised into position without binding and that sufficient weight is present on the camera and its control components that it can be lowered properly.

c. Portable Camera Lowering Device Tool

Furnish and test one Portable Lowering Tool capable of being operated by a hand winch and an electric drill motor, which is fully compatible with the CLD and the Steel Camera Pole and meets the following requirements:

- 1) The Portable Lowering Tool shall be one recommended by the manufacturer of the CLD
- 2) The Portable Lowering Tool shall have a minimum load capacity of 200 pounds with a 10 to 1 safety factor.
- 3) The tool shall consist of a lightweight metal frame and winch assembly with cable, a quick release cable connector, an adjustable safety clutch and a variable speed industrial duty electric drill motor.
- 4) This tool shall be compatible with the hand hole of the pole and the CLD inside the hand hole.
- 5) When attached to the hand hole, the tool will support itself and the load assuring lowering operations and provide a means to prevent freewheeling when loaded.
- 6) The Portable Lowering Tool shall be delivered to the Engineer upon project completion.
- 7) The Portable Lowering Tool shall have a reduction gear to reduce the manual effort required to

operate the lifting mechanism.

- 8) The Portable Lowering Tool shall be provided with an adapter for operating the lowering device by a portable drill using a clutch mechanism.
- 9) The Portable Lowering Tool shall be equipped with a positive locking mechanism to secure the cable reel during raising and lowering operations.

d. Construction Methods

Install the CCTV pole standard per the TDOT Standard Specifications, and pole manufacturer's design standards.

The CCTV camera shall be installed per the manufacturer Installation and Operation Manual, in the outdoor pendant configuration.

The CCTV control and communications hardware and enclosure shall be wired and installed per the City of Franklin Standard Detail manufacturer Installation and Operations Manuals indicated above.

TRAFFIC SIGNAL SUPPORTS

730.32 Cantilever Signal Supports

This Subsection applies to the manufacture of steel poles and mast arms for the support of traffic signals. The height of poles, shaft dimensions and wall thickness shall meet the design requirements and mounting height of traffic signals as set forth in these Specifications and shown on the Plans. The Plans indicate bracket/mast arm lengths.

Furnish poles consisting of a straight or uniformly tapered shaft, cylindrical or octagonal in cross-section, having a base welded to the lower end and complete with anchor bolts. All castings shall be clean and smooth with all details well defined and true to pattern. Steel castings shall conform to ASTM A27, Grade 65-35. Gray iron castings shall conform to ASTM A126, Class A.

All mast arms shall be compatible with the poles in material, strength, shape, and size.

Determine the size and design of all steel signal support poles and foundations. Shop drawings for the proposed poles, support structures and foundations shall be submitted to the Department and the City of Franklin for review and approval.

A. Anchor Base

Secure an anchor base of one-piece cast steel or steel plate of adequate strength, shape, and size to the lower end of the shaft. Place the base so as to telescope the shaft, and weld at the top and bottom faces with continuous fillet welds so that the welded connection develops the full strength of the adjacent shaft section to resist bending action. Provide each base with a minimum of four holes to receive the anchor bolts. Provide cast steel bases with removable cast iron covers for anchor bolts and tapped holes for attaching covers with hex head cap screws.

Provide a welded frame handhole, 5 x 8 inches minimum and located with a clear distance above the base of no less than the pole diameter, "D". Weld a 1/2-inch 13 UNC grounding nut to the inside of the pole at a point readily accessible for wiring.

B. Shaft

Fabricate shafts from the best, hot-rolled basic open hearth steel. The shaft shall have only one longitudinal electrically welded joint and may have electrically welded intermediate transverse full penetration circumferential

joints, at intervals of not less than 10 feet. The shaft shall be longitudinally cold-rolled to flatten the weld and increase the physical characteristics so that the metal will have minimum yield strength of 48,000 pounds per square inch. Where transverse full penetration circumferential welds are used, the shaft fabricator shall furnish to the Engineer certification that: (1) all such welds have been radiographed and ultrasonically tested by an independent testing laboratory using a qualified Nondestructive Testing (NDT) technician and (2) the NDT equipment has been calibrated annually.

Fit the shaft with a removable pole cap, a J-hook wire support welded inside near the top, and a flange plate assembly to match that welded to the butt end of the mast arm.

C. Mast Arms

Provide mast arms fabricated and certified in the same manner as the upright shafts and that have the same physical characteristics.

The mast arms shall meet the design requirements necessary to support rigidly mounted traffic signals as shown on the Plans. All arms shall include a removable cap at the tip, grommets wire outlets, and signal hanger assemblies of the type and number shown on the Plans, and a flange plate welded to the butt end to provide a rigid connection to the mast. The assembly shall be constructed so that all wiring can be concealed internally.

Connect mast arms to the upright pole at a height necessary to provide a minimum clearance of 16 feet 6 inches and a maximum clearance of 19 feet under the traffic signal heads. Install separate signal heads to provide the same clearance.

D. Finish

Galvanize steel poles, mast arms, and hardware in accordance with ASTM A123.

Galvanize all steel and cast iron components, hardware, and threaded fasteners, except anchor bolts, after fabrication in accordance with ASTM A123, or A153 or A385, as applicable.

The steel supports shall be finished by the manufacturer in Franklin Green (Downtown Historical District) or Black, as specified by the plans. Any deficiencies in the finish shall be touched upon a method approved by the manufacturer and the City of Franklin.

730.33 Steel Strain Poles

Provide steel strain poles consisting of a uniformly tapered or equivalent upright shaft fitted with a removable pole top, J-hook wire support and 45-degree wire inlet near the top, a span wire clamp, a 5 x 8 inch handhole with reinforced frame and cover, bent anchor bolts, and all other accessories needed to make a complete installation. The pole and all of its component parts shall be designed to support tethered traffic signals of the type and number shown on the Plans, suspended from a span wire assembly. Fabricate and certify the poles as specified for the upright shafts in **730.32**.

Determine the size and design of all steel strain poles and foundations. Shop drawings for the proposed poles shall be submitted to the Department and the City of Franklin for review and approval.

Determine the shaft length required to meet field conditions and vertical clearances of signal heads over the roadway. The signal head clearance shall be a minimum of 16 feet 6 inches and a maximum of 19 feet. Fasten the span wire no closer than 1 foot 6 inches from the top of the pole.

Unless otherwise specified, provide all strain pole traffic signal supports with a one-piece anchor type base, fabricated from drop forged or cast steel of sufficient cross-section to fully develop the ultimate strength of the poles. Fasten the base to the pole with a welded connection that develops the full strength of the pole. Provide the base with a minimum of four holes of sufficient size to accommodate the proper size anchor bolts that are capable of resisting at yield

strength stress, the bending moment of the shaft at its yield strength stress. Provide removable cast iron covers for the anchor bolts.

The shaft shall be fabricated from material providing minimum yield strength of 48,000 pounds per square inch after fabrication.

Galvanize the steel poles and hardware in accordance with ASTM A123.

Galvanize all steel and cast iron components, hardware, and threaded fasteners, except anchor bolts, after fabrication in accordance with ASTM A123, or A153 or A385, as applicable.

730.34 Pedestal Support Signal Poles

Provide pedestal poles consisting of one upright pole with suitable base and other accessories or hardware as required making a complete installation.

All poles shall be made of one continuous piece from top of base connection for the entire height of the pole. The cross-section shall be either cylindrical or octagonal and may or may not be uniformly tapered from butt to tip.

The cross-section at the tip shall have a 4-1/2 inch outside diameter.

The steel supports shall be finished by the manufacturer in Franklin Green (Downtown Historical District) or Black, as specified by the plans. Any deficiencies in the finish shall be touched up in a method approved by the manufacturer and the City of Franklin.

A. Type "A" Pedestal (Aluminum)

Pedestals shall be of uniform octagonal or cylindrical cross-section of the tubular tapered type fabricated of one full length sheet.

Bases shall be octagonal or square in shape, of the ornamental type fabricated of cast material. Provide a handhole in each base.

Caps shall be of the nipple or tenon type mounting fabricated of cast material.

Furnish bases with four steel anchor bolts of sufficient size and length to securely anchor the base to the concrete footing. Weld the shaft to the cast metal base. Refer to the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (current edition).

Type A pedestal shaft shall be fabricated from aluminum tubing 6063-T4 heat treated to T-6 temper after fabrication, and meeting ASTM B221.

Type A anchor base shall be made of sand-cast aluminum alloy 356-T6 meeting ASTM B26 - SF 70A-T5 specifications.

B. Type "B" Pedestal (Steel)

Pedestals shall be fabricated from a 4-1/2 inch (outside diameter) seamless steel pipe.

Bases shall be octagonal in shape of the ornamental type fabricated of cast or malleable iron and shall have minimum height of 12 inches. The top opening of the base shall be threaded to receive the shaft. Provide a handhole in each base.

Furnish bases with four steel anchor bolts of sufficient length to securely anchor the base to the concrete footing.

730.35 Wooden Pole Signal Supports**A. General**

Provide wooden poles of the class and length shown on the Plans and that meet **917.11**. Set poles to the depth shown on the Plans, and fit them with all the necessary hardware to make the installation complete.

The signal head clearance shall be 16 feet 6 inches minimum and 19 feet maximum. Fasten the span wire at least 2 feet below the top of the pole.

B. Guying Components

Guy clamps shall be steel, 3-bolt type, 6 inches in length, and of the proper strand size to fit the wire used. The clamp bolts shall have upset shoulders fitting into the clamp plate. Substitution of the cable grip is subject to the Engineer's approval.

Attach guy wire to the pole with a 5/8-inch diameter x 12-inch length single strand angle-type eye bolt with 2 x 2 inch square cut washers; lock washer, and square nut.

Instead of the eye bolt specified above, an angle single strand eye of drop forged steel may be used, fastened on threaded end of span wire eye bolt.

Sidewalk guy fittings shall consist of 2-inch inside diameter standard galvanized steel pipe of required length with malleable iron pole plate and guy clamp. Fasten the pole plate to the pole with a 3/8-inch thru bolt and 1/2-inch lag screws.

All guying components and hardware shall be galvanized in accordance with ASTM A123 or A153.

Anchors for guys shall be of the pressed steel four-way expanding fluke type or of the steel or malleable iron sliding plate type. The minimum unexpanded diameter shall be 8 inches, and the minimum expanded area shall be 110 square feet. Coat anchors with a black asphaltic paint.

Guy anchor rods shall be drop-forged steel, 3/4-inch diameter and 7-foot minimum length, threaded, of the single thimble eye type, with a square anchor bolt nut.

730.36 Pole Location

Install all signal support poles at the locations shown on the Plans or where directed by the Engineer. Some field adjustments may be required in order to avoid conflicts with either underground, above ground or overhead utilities. Determine and stake the optimum locations for the poles/controller and for receiving approval from the City of Franklin before installation begins. Proper roadside clear zones shall be followed.

COMPENSATION**730.37 Method of Measurement**

Measurement for traffic signals will be on a per item basis for each item to be furnished and installed, as specified herein and shown on the Plans.

With regard to items for signal head assemblies, each item to be furnished, installed, or both furnished and installed shall be distinguished with a code number as follows:

1. The first digit is the number of faces per assembly.
2. The second digit will indicate the number of 12-inch lenses per assembly (including arrow lenses).
3. The third digit is the quantity of 8-inch lenses per assembly.
4. The letter "A" indicates an arrow lens and the digit following the "A" indicates the number of 12-inch arrow lenses per assembly.
5. The letter "H" or "V" indicates the arrangement of arrow signal lenses to be horizontal or vertical with respect to solid ball indications.

EXAMPLE:

1 5 0 A 2 H

Digits indicate the following:

1 = one face

5 = five 12-inch lenses

0 = zero 8-inch lenses

A2 = two 12-inch arrow lenses

H = Arrow lenses placed horizontally with respect to circular indications

A. Removal of Signal Equipment

The Department will measure items of equipment or material designated or required for removal on a per each intersection basis. Removal and salvage of all signal heads, poles, control equipment, cabinets, span wire, cable, and similar features to be performed at an intersection shall be included as a unit cost per each intersection. This includes the cost of stockpiling salvable equipment and delivery to the City of Franklin, as noted in the Plans. Remove any traffic control related equipment that is in conflict with the proposed equipment and deliver to the City of Franklin Street Department facility. All new or temporary signals shall be removed and stockpiled in such a manner that the removed equipment will not be damaged. Poles shall be removed complete and undamaged. The pole shall be cleaned of any concrete foundation material. Any damage due to negligence or lack of proper care of equipment shall be replaced in kind. The replacement of the equipment shall be at no additional cost to the Department or City of Franklin. All such removed and salvageable equipment is now and shall remain the property of the City of Franklin.

Signal Head Assembly (includes Pedestrian Signal Heads)

The Department will measure signal heads of the type shown on the Plans by the individual assembly complete in place, per each. This item shall include the signal heads, terminals, lamps, attachment hardware, cable connection, and testing.

Pull Box

The Department will measure each pull box of the type required as one complete unit, installed, per each. This item includes the pull box, excavation, backfilling, crushed stone base, and other incidental items as called for in the Plans or Standard Drawings.

Electrical Service Connection

The Department will measure Electrical Service Connections on a per each signal installation basis. This item includes the electrical service supplied to the weatherhead by the local utility, all necessary materials and labor for connection of the electrical service from the controller to the weatherhead, the wiring of the controller and detectors, and all incidentals necessary to render a complete and operable system.

Signal Cable

The Department will measure the length of Signal Cable of each size (number of conductors) installed in linear feet to the nearest foot from point to point along the routing for each cable.

The Department will make horizontal measurements by center to center measurement from:

1. Pole to pole
2. Pole to signal head (when terminating in a signal head)
3. Pull box to pull box
4. Pull box to pole
5. Pull box to pole-mounted or base-mounted controller

For cable inside mastarms, the Department will measure from center of vertical support to signal head where cable terminates.

The Department will make vertical measurement by one of the following:

1. For cable inside poles or conduit risers, the distance from ground level to the point of attachment of the span wire.
2. For cable inside mast arm supports, the distance from ground level to the mast arm connection.
3. For cable to pole-mounted controller,
 - a. From ground level to bottom of controller.
 - b. From bottom of controller to point of attachment of span wire.
4. For cable to pole-mounted signal head or pushbutton,
 - a. From ground level to bottom of signal head or pushbutton
 - b. From bottom of signal head or pushbutton to point of attachment of span wire.

The Department will make no additional allowance for slack length, length inside equipment or supports (except as noted), length for the required 360-degree drip loop, and similar instances requiring additional length of cable.

Span Wire

The Department will measure Span Wire Assembly, Tether Wire Assembly, and Messenger Cable by type in linear feet to the nearest foot. The measurement will be made from center to center of poles. These items include attachment hardware, strain insulators, and other hardware shown in the Plans as part of the assembly. The Department will make no additional allowance for slack length and other instances requiring additional length of wire.

Steel Conduit Riser Assembly

The Department will measure conduit riser assemblies per each for each size conduit riser installed on the outside of a pole, as shown on the Plans. This item includes conduit, weatherhead, conduit, fittings, nuts, washers, banding, clamps, grounding, and other items necessary for installation.

Conduit

The Department will measure conduit in linear feet to the nearest foot for each size and type of conduit installed.

The Department will measure underground conduit along the conduit by one of the following:

1. From the face of curb to the center of a pull box, pole or controller foundation,
2. From center to center of pull boxes,
3. From center to center of a pull box and a pole or controller foundation, or
4. From center to center of pole foundations or pole foundation and controller foundation.

The Department will add:

1. 1 foot to the above measurements for each entry to a pull box or pole foundation and each exit of a pull box or pole foundation.
2. 3 feet to the measurement for each capped extra entry (conduit stub) or exit to a pull box or pole foundation installed, as shown on the Plans.
3. 3 feet to the measurement for each connection between underground conduit and above ground riser.
4. 3 feet to the measurement for each entry or exit to a foundation for a base-mounted controller.

This item includes trenching, backfilling, sealing, capping, fittings, bushings, banding, grounding, and other accessories and hardware required for installation of the conduit system.

Vehicle Detector (Description)

The Department will measure vehicle detector loop amplifier per each unit, including the cable and associated hardware necessary to electrically connect the amplifier to the controller and loop lead in.

The Department will measure two and four channel card rack type amplifiers per each unit, including the cable, card rack(s), and associated hardware necessary to electrically connect the amplifiers to the controller and loop lead-ins.

The Department will measure radar detectors per each including all mounts/supports, cable boxes, conductors, detector rack cards, interface devices and all items necessary for a fully functioning Wavetronix detection system.

The Department will measure Radio/GPS activated priority control detectors with all antennas, radio units, phase selectors, cable, interface devices and all items necessary for a fully functioning Radio/GPS activated priority control system.

The Department will measure wireless magnetometer detectors per each including all in-pavement installations, repeaters, mounts/supports, isolators, access point controller cards, radio wired interface devices and all items necessary for a fully functioning wireless detection system.

Shielded Detector Cable

The Department will measure the two-conductor shielded detector cable installed between the controller cabinet and the loop detector wires in linear feet to the nearest foot.

The Department will make horizontal measurements (overhead and underground) by one of the following:

1. From center to center of pull boxes,
2. From center to center of pull box and pole,
3. From center to center of poles, or
4. From center to center of pull box or pole and controller foundation.

The Department will make vertical measurements by one of the following:

1. From ground level to the point of attachment of span wire, inside pole or conduit riser,
2. From the bottom of controller cabinet to the point of attachment of span wire, or
3. From ground level to the bottom of controller.

The Department will make no additional allowance for slack length, length inside equipment or supports (except as noted), splices, and similar instances requiring additional length of cable.

Saw Slot

The Department will measure the length of saw slot for installation of detection loop and lead wiring in linear feet to the nearest foot. Measurement for detection loops in the traffic lanes will be made based on the loop size shown on the Plans (the nominal length plus the nominal width) times 2. The Department will make no additional allowance for saw overruns to obtain full depth of saw slot or diagonal cuts to prevent sharp bends in the loop wire. The Department will measure saw slot for detection loop leads from the conduit entry at the face of curb or edge of pavement and along the route of the lead-in to the detection loop.

This item includes backing rods, or polyethylene foam sealant, loop sealant, and all other incidentals necessary to render a complete and operable system.

Loop Wire

The Department will measure the length of loop wire for installation of detection loops and lead-ins in linear feet to the nearest foot. Measurement will be made from the pull box or pole to the detection loop, around the loop the required number of turns and back to the pull box, pole, or point of splice. The Department will make no additional allowance for slack length, length inside equipment or supports, splices, and similar instances requiring additional length of wire.

This item includes electrical connections, testing, and all other incidentals necessary to render a complete and operable system.

Controller

The Department will measure controllers as one complete unit, installed, per each. This item includes all auxiliary equipment shown the Plans to provide signalization control as shown on the Plans, and all hardware, including the cabinet (and cabinet foundation, if base-mounted), necessary for installation.

Wood Pole

The Department will measure Wood Poles, of the type and size shown on the Plans, per each, installed.

Guying Device

The Department will measure Guying Devices, of the type shown on the Plans, per each, installed. This item includes the guy wire, anchor, clamps, and all other components shown on the Plans necessary for installation.

Steel Strain Pole

The Department will measure Steel Strain Poles of the type and size shown on the Plans, per each, installed. This item includes the pole, foundation, anchor bolts, grounding, and all other hardware shown on the Plans necessary for a complete installation.

Cantilever Signal Support

The Department will measure Cantilever Signal Supports, of the type and size shown on the Plans, per each, installed. This item includes the vertical pole shaft, mast arm, foundation, anchor bolts, grounding, and all other hardware shown on the Plans necessary for a complete installation.

Service Cable

The Department will measure two conductor power service cables, of the type and size shown on the Plans, in linear feet to the nearest foot, installed. Horizontal runs will be measured center to center of poles. Vertical runs will be measured from the ground to the weatherhead inside a pole or conduit riser, or from the ground to the

bottom of the controller, or from the bottom of the controller to the weatherhead. This item includes all necessary attachment hardware. The Department will make no additional allowance for slack length or other instances requiring additional length of cable.

Pedestrian Pushbutton with Sign

The Department will measure Pedestrian Pushbutton with Sign as one complete unit, in place, per each. This item includes the pushbutton, sign, mounting hardware, wiring of pushbutton, testing, and all other incidentals necessary for a complete installation.

Pedestrian Signal Display with Pushbutton and Sign

The Department will measure Pedestrian Signal Display with Pushbutton and Sign as one complete unit, in place, per each. This item includes the signal heads, terminals, lamps, cable connections, pushbutton, sign, all attachment hardware, testing, and other incidentals necessary for a complete installation.

Portable Traffic Signal

The Department will measure Portable Traffic Signal, of the type shown on the Plans or as directed by the Engineer, per each, installed. This item includes the all of the software and hardware necessary for a complete installation.

Pedestal Support Signal Pole

The Department will measure Pedestal Support Signal Poles, of the type and size shown on the Plans, per each, installed. This item includes the vertical pole shaft, base, foundation, anchor bolts, grounding, and all other hardware shown on the Plans necessary for a complete installation.

Internally Illuminated Street Name Signs

The Department will measure Internally Illuminated Street Name Signs of the type and size shown on the Plans, per each, installed. This item shall include the street name sign, terminals, lamps, attachment hardware, electrical connection, and testing for a complete installation.

Fiber Optic Drop Cable

The Department will measure Fiber Optic Drop Cable, of the type and size shown on the Plans, in linear feet to the nearest foot, installed. Horizontal runs will be measured center to center of poles. Vertical runs will be measured from the ground to the weather head inside a pole or conduit riser, or from the ground to the bottom of the controller, or from the bottom of the controller to the weather head. This item includes all necessary attachment hardware.

Interconnect Cable – Fiber Optic

The Department will measure Interconnect Cable - Fiber Optic, of the type and size shown on the Plans, in linear feet to the nearest foot, installed. Horizontal runs will be measured center to center of poles. Vertical runs will be measured from the ground to the weather head inside a pole or conduit riser, or from the ground to the bottom of the controller, or from the bottom of the controller to the weather head. This item includes all necessary attachment hardware.

Fiber Optic-Splice Closure & Aerial Splice Closure

The Department will measure the Fiber Optic Splice Closure, as shown on the Plans, per each installed. This item includes all materials, labor, tools, equipment, and incidentals necessary to complete the work, and all testing and documentation.

Fiber Optic Termination Panel

The Department will measure Fiber Optic Termination Panel, of the type and size shown on the Plans, per each installed. Termination panels shall contain the necessary fiber optic connector modules, label covers and associated splicing for locations indicated on the Plans. This item includes all materials, labor, tools, equipment, and incidentals necessary to complete the work, and all testing and documentation.

Fiber Optic Fusion Splice

The Department will measure Fiber Optic Fusion Splice, as shown on the Plans, per each splice location installed. The item shall include but not limited to, all fusion splices at that given location, all ancillary and incidental materials, testing, documentation, and all labor and equipment necessary to complete the work for all necessary splices at a given location. This price shall be full compensation for all labor, tools, materials, equipment, and incidentals necessary to complete the work.

Fiber Optic Fusion Splice

The Department will measure Fiber Optic Storage Bracket (Aerial), of the type and size shown on the plans, per each installed. This item shall include all materials, labor, tools, equipment, and incidentals necessary to complete the work, and all testing and documentation.

CCTV Camera System

The Department will measure CCTV Camera System, as shown on the Plans, per each installed and fully operational. This item shall include furnishing, installing, system integration, training, documentation, and testing of a complete CCTV Camera System including the CCTV Camera Assembly, PT unit, zoom lens, enclosure, camera controller/receiver, coaxial cable (if required and approved), outdoor rated category 5e cable, control/signal cable, power cable, surge suppressors and conduit between the camera and the cabinet, connections to support structures, attachment hardware and brackets and all incidental items to provide and install the CCTV Camera System as intended, as well as the satisfactory completion of all testing requirements and all work, equipment and appurtenances as required for a full CCTV Camera System.

This item shall also include all local configuration and control manufacturer software, system documentation including: shop drawings, operations and maintenance manuals, wiring diagrams, block diagrams and other materials necessary to document the operation of the CCTV Camera System; integration and configuration into the existing TOC video wall and controller, and testing for display of the video on the existing video wall.

CCTV Pole and Lowering Device

The Department will measure CCTV Pole and Lowering Device, of the type and size shown on the Plans, per each, installed. This item includes the pole, foundation, anchor bolts, grounding, lowering device, portable lowering device tool, and all other hardware necessary for a complete installation.

730.38 Basis of Payment

The Department will pay for accepted quantities, complete in place, at the contract prices as follows:

<i>Item</i>	<i>Pay Unit</i>
Traffic Signal	Lump Sum
Removal of Signal Equipment	Each
Signal Head Assembly (Description)	Each

Install Pull Box (Description)	Each
Electrical Service Connection	Each
Signal Cable – (Description)	Linear Feet
Span Wire Assembly (____ pounds min. break strength)	Linear Feet
Tether Wire Assembly – ____" Diameter	Linear Feet
Messenger Cable – ____" Diameter	Linear Feet
Riser Assembly (Description)	Each
Conduit ____" Diameter (Type)	Linear Feet
Vehicle Detector (Description)	Each
Shielded Detector Cable	Linear Feet
Saw Slot	Linear Feet
Loop Wire	Linear Feet
Controller (Description)	Each
Wood Pole (Description)	Each
Guying Device (Description)	Each
Steel Strain Pole (Description)	Each
Cantilever Signal Support (Description)	Each
Pedestal Support Signal Pole (Description)	Each
Service Cable	Linear Feet
Pedestrian Pushbutton with Sign	Each
Pedestrian Signal Display with Pushbutton and Sign	Each
Portable Traffic Signal (Type)	Each
Internally Illuminated Street Name Signs	Each
Fiber Optic Drop Cable (Description)	Linear Feet
Interconnect Cable - Fiber Optic (Description)	Linear Feet
Fiber Optic Splice Closure	Each
Fiber Optic Aerial Splice Closure	Each
Fiber Optic Termination Panel (Description)	Each
Fiber Optic Fusion splice	Each
Fiber Optic Storage Bracket (Description)	Each
CCTV Camera System	Each
CCTV Pole (Description with lowering device)	Each

The unit price to be paid includes the cost of furnishing and installing, complete in place, each of the various types of equipment required by the Summary of Quantities shown on the Plans. Total payment is full compensation for all materials, labor, equipment, and incidentals necessary to produce a completely operative and finished installation of a traffic signal or traffic signal system as shown on the Plans and as specified herein, including restoration of pavements, sidewalks, and appurtenances damaged or destroyed during construction and tests. All additional materials and labor not specifically shown or called for, which are necessary to complete the traffic signal installation or traffic signal system described, will be considered incidental to the system and no additional allowance will be made.

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STATE**OF****TENNESSEE**

December 12, 2022

January 1, 2021

SPECIAL PROVISION**REGARDING****BUILD AMERICA, BUY AMERICA ACT
REQUIREMENTS**

The Build America, Buy America Act (BABA) Public Law No. 117-58 SEC. 70914 that all of the iron, steel, manufactured products, and construction materials used are subject to Build America, Buy America requirements and are produced in the United States.

- A. Iron and steel: FHWA existing requirements SP106A Regarding Buy America.
- B. Manufactured products: FHWA Buy America Final Rule 11/25/1983, 48 FR 53099; Waiver for Manufactured Products.
- C. Construction materials includes an article, material, or supply that is or consists primarily of:
 - non-ferrous metals;
 - plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
 - glass (including optic glass);
 - Lumber; or
 - drywall.

Construction materials that consist of two or more of the listed materials that have been combined together through a manufacturing process, and items that include at least one of the listed materials combined with a material that is not listed through a manufacturing process, should be treated as manufactured products, rather than as construction materials.

Consider “all manufacturing processes” for construction materials to include at least the final manufacturing process and the immediately preceding manufacturing stage for the construction material.

Provide certifications to the Engineer for the construction materials that they meet the Build America Buy America Act requirements. Assure all submittals required for Buy America are submitted to the Engineer prior to the products and or materials being incorporated in the project.

The contractor shall be responsible for all cost associated with any of the construction materials that are permanently incorporated into the project that does not meet the requirements of this Special Provision without prior written approval from the Department, up to and including removal and replacement.

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STATEOFTENNESSEE

January 17, 2023

January 1, 2021

SPECIAL PROVISIONREGARDINGCERTIFIED PAYROLLS – LOCAL PROGRAMS

As specified by Minimum Wage Scales for Federal-Aid and State Funded Construction contract provisions and Special Provision 1273, submit certified payrolls for Contractor and subcontractor workforce to the Engineer weekly for each week in which any work is performed. Once Work begins, if in any week the Contractor or subcontractor does not perform Work, submit the following statement to the Engineer: “No work performed by (contractor name) for the week ending _____.”

Assume all responsibility for ensuring all payrolls and all subcontractor payrolls are submitted and certified electronically for each week in which any contract work is performed. If all payrolls are not received in this timeframe, the progress payment shall be withheld until all necessary payrolls have been received.

There will be no direct payment for recording and reporting of this information. All cost associated with this provision shall be considered incidental.

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PROPOSAL
TO THE CITY OF FRANKLIN, TENNESSEE
COF CONTRACT NO. 2022-0116

By submitting this Proposal, the undersigned bidder represents that it has carefully examined the site of the work described herein, has become familiar with local conditions and the character and extent of the work; has carefully examined the Plans, the *Standard Specifications for Road and Bridge Construction* (January 1, 2021) adopted by the State of Tennessee, Department of Transportation, with subsequent revisions which are acknowledged to be a part of this Proposal, the Special Provisions, the Proposal Form, the Form of Contract, and the Form of Contract Payment and Performance Bond; and thoroughly understands their stipulations, requirements, and provisions.

The undersigned bidder has determined the quality and quantity of materials required; has investigated the location and determined the sources of supply of the materials required; has investigated labor conditions; and, has arranged for the continuous prosecution of the work herein described.

By submitting this Proposal, the undersigned bidder agrees to provide all necessary equipment, tools, labor, incidentals, and other means of construction, to do all the work, and furnish all the materials of the specified requirements which are necessary to complete the work in accordance with the Plans, and the Specifications, and agrees to accept as payment in full the unit prices for the various items described in the Specifications that are set forth in this Proposal. The bidder understands that the quantities of work specified are approximate only and are subject to increase or decrease and that any such increase or decrease will not affect the unit prices set forth in this Proposal. Compensation for "extra work" which may be required by the CITY OF FRANKLIN in connection with the construction and completion of the work but which was not reflected in the Plans and Specifications at the time of bidding, will be made in the following manner: work for which there is a unit price set forth in this Proposal will be compensated at that unit price; work for which there is no unit price set forth in this Proposal will be compensated in accordance with the applicable Tennessee Department of Transportation Standard Specifications.

By submitting this Proposal, the parties hereto, in the performance of this Contract, shall not act as employees, partners, joint ventures, or associates of one another. It is expressly acknowledged by the parties hereto that such parties are independent contracting entities and that nothing in this Contract shall be construed to create an employer/employee relationship or to allow either to exercise control or direction over the manner or method by which the other transacts its business affairs or provides its usual services. The employees or agents of one party shall not be deemed or construed to be the employees or agents of the other party for any purpose whatsoever.

By submitting this Proposal, the undersigned bidder, if awarded the contract, agrees that it will be responsible for compliance with the Patient Protection and Affordable Care Act ("PPACA") with respect to itself and its employees, including any obligation to report health insurance coverage, provide health insurance coverage, or pay any financial assessment, tax, or penalty for not providing health insurance. The Contractor shall indemnify the State and hold it harmless for any costs to the State arising from Contractor's failure to fulfill its PPACA responsibilities for itself or its employees.

By submitting this Proposal, the undersigned bidder, if awarded the contract, shall be registered with the Department of Revenue for the collection of Tennessee sales and use tax or provide confirmation from the Department of Revenue that the bidder is not required to register for the Tennessee sales and use tax. This registration requirement is a material requirement of this Contract.

By submitting this Proposal, the undersigned bidder hereby agrees to be bound by the award of the Contract and, if awarded the Contract on this Proposal, to execute the required Contract and the required Contract Payment and Performance Bond within ten (10) days after receipt of notice of the award. The undersigned bidder submits herewith the required Proposal guaranty in an amount of not less than five percent (5%) of the total amount of the Proposal offered and agrees and consents that the Proposal guaranty shall immediately be at the disposal of the CITY OF FRANKLIN, not as a penalty, but as an agreed liquidated damage if the required Contract and Contract Payment and Performance Bond are not executed within ten days from receipt of the notice of award.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to § 12-12-106. This list is generated to identify entities ineligible to contract with the State of Tennessee or any political subdivision of the State per the Iran Divestment Act, T.C.A. §§ 12-12-101 – 113, and the current list may be found at the Tennessee Department of General Services, Central Procurement Office, website under the Public Information Library webpage at the following link: [http://tn.gov/assets/entities/generalservices/cpo/attachments/List of persons pursuant to Tenn. Code Ann. 12-12-106. Iran Divestment Act-July.pdf](http://tn.gov/assets/entities/generalservices/cpo/attachments/List_of_persons_pursuant_to_Tenn._Code_Ann._12-12-106._Iran_Divestment_Act-July.pdf).

THIS PROPOSAL SUBMITTED BY:

Stansell Electric Company, Inc.

Bidder (1)

By:

Robert P. Elliott - President

Printed Name and Title

960 Visco Drive

Address

Nashville, TN 37210

City/State/Zip

Bidder (1) being S-corporation composed of officers, partners, or owners as
a follows:

(Type of business entity)

David P. Stansell - CEO chairman Robert P. Elliott - President

Name/Title

Name/Title

James N. Stansell JR. -emeritus Matthew C. Smith - Vice

Name/Title

Name/Title

James T. Stansell - Secretary Chris Knopf - CFO

Name/Title

Name/Title

Bidder (2)*

By:

Printed Name and Title

Address

City/State/Zip

Bidder (2) being _____ composed of officers, partners, or owners as
a follows:

(Type of business entity)

Name/Title

Name/Title

Name/Title

Name/Title

Name/Title

Name/Title

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BID FORM for PIN 127913.00 / COF Contract No. 2022-0116 PART 1 of 1 - UNIT PRICES & BID AMOUNT(S)						
FOOTNOTE(S)	ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (\$)	EXT. AMOUNT (\$)
13	105-01.50	CONSTRUCTION LAYOUT	LS	1	17,000.00	17,000.00
	604-10.07	CONCRETE REMOVAL	LS	1	12,700.00	12,700.00
	701-02.03	CONCRETE CURB RAMP	S.F.	1,218	24.00	29,232.00
	702-01.02	CONCRETE CURB	L.F.	80	350.00	28,000.00
	712-01	TRAFFIC CONTROL	LS	1	53,000.00	53,000.00
	712-04.01	FLEXIBLE DRUMS (CHANNELIZING)	EACH	260	33.00	8,580.00
	712-05.01	WARNING LIGHTS (TYPE A)	EACH	6	30.00	180.00
7	712-06	SIGNS (CONSTRUCTION)	S.F.	653	10.00	6,530.00
7	712-07.02	TEMPORARY BARRICADES (TYPE II)	L.F.	24	20.00	480.00
9	712-08.01	UNIFORMED POLICE OFFICER	DOLL	1	9,200.00	9,200.00
	712-08.03	ARROW BOARD (TYPE C)	EACH	2	1,400.00	2,800.00
15	713-15.07	SUSPENDED FLAT SHEET ALUMINUM SIGN (0.080" THICK)	EACH	12	400.00	4,800.00
8	713-16.50	REMOVE AND REPLACE SIGN (TN-69B)	EACH	1	470.00	470.00
	716-02.03	PLASTIC PAVEMENT MARKING (CROSS-WALK)	L.F.	151	50.00	7,550.00
	716-04.12	PLASTIC PAVEMENT MARKING (YIELD LINE)	S.F.	66	35.00	2,310.00
	716-08.01	REMOVAL OF PAVEMENT MARKING (LINE)	L.F.	187	2.00	374.00
	717-01	MOBILIZATION	LS	1	46,600.00	46,600.00
12	725-20.91	CCTV CAMERA SYSTEM (PAN TILT & ZOOM)	EACH	4	5,900.00	23,600.00
	725-24.41	BURN-IN PERIOD	LS	1	5,200.00	5,200.00
	725-24.55	AS-BUILT PLANS	LS	1	8,000.00	8,000.00
3	730-01.02	REMOVAL OF SIGNAL EQUIPMENT	EACH	10	600.00	6,000.00
6	730-01.03	MODIFICATION OF EXISTING TRAFFIC SIGNAL EQUIPMENT	LS	1	16,500.00	16,500.00
	730-02.09	SIGNAL HEAD ASSEMBLY (130 WITH BACKPLATE)	EACH	4	1,000.00	4,000.00
	730-02.17	SIGNAL HEAD ASSEMBLY (150 A2H WITH BACKPLATE)	EACH	2	1,700.00	3,400.00
	730-02.30	SIGNAL HEAD ASSEMBLY (140 A4F LEFT WITH BACKPLATE)	EACH	12	1,300.00	15,600.00

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BID FORM for PIN 127913.00 / COF Contract No. 2022-0116 PART 1 of 1 - UNIT PRICES & BID AMOUNT(S)						
FOOTNOTE(S)	ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (\$)	EXT. AMOUNT (\$)
	730-02.31	SIGNAL HEAD ASSEMBLY (140 A4F RIGHT WITH BACKPLATE)	EACH	3	1,300.00	3,900.00
4	730-02.41	SIGNAL HEAD MODIFICATION (BACKPLATE)	EACH	3	350.00	1,050.00
	730-03.21	INSTALL PULL BOX (TYPE B)	EACH	10	950.00	9,500.00
	730-08.02	SIGNAL CABLE - 5 CONDUCTOR	L.F.	2,881	2.00	5,762.00
	730-08.03	SIGNAL CABLE - 7 CONDUCTOR	L.F.	3,552	3.00	10,656.00
10	730-12.02	CONDUIT 2" DIAMETER (PVC)	L.F.	585	22.00	12,870.00
2, 14	730-13.13	VEHICLE DETECTOR (RADAR)	EACH	21	9,900.00	207,900.00
14	730-13.14	VEHICLE DETECTOR (360-DEGREE CAMERA)	EACH	2	29,000.00	58,000.00
11, 14	730-13.15	VEHICLE DETECTOR (TWO 360-DEGREE CAMERA)	EACH	3	37,000.00	111,000.00
	730-15.07	CABINET (SIXTEEN PHASE BASE MOUNTED)	EACH	9	21,000.00	189,000.00
5	730-15.11	MODIFY CABINET (NEW DEVICES)	EACH	7	1,100.00	7,700.00
	730-21.02	WOOD POLE (SIGNAL SUPPORT) CLASS 3, 40' LENGTH	EACH	2	3,800.00	7,600.00
	730-22.02	GUYING DEVICE (ANGLE ANCHOR)	EACH	3	800.00	2,400.00
	730-23.30	PEDESTAL POLE (10' PEDESTRIAN)	EACH	8	2,100.00	16,800.00
	730-26.10	PEDESTRIAN SIGNAL HEAD W/PUSHBUTTON & 15IN SIGN	EACH	9	1,100.00	9,900.00
1	801-02	SEEDING (WITHOUT MULCH)	UNIT	1	1,850.00	1,850.00
1	801-03	WATER (SEEDING AND SODDING)	M.G.	1	1,850.00	1,850.00
					BID TOTAL (IN FIGURES):	969,844.00

TOTAL BID PRICE (IN WORDS):

Nine Hundred Sixty-Nine Thousand Eight Hundred Forty-Four Dollars and Zero Cents

TOTAL BID PRICE (IN FIGURES):

\$ 969,844.00

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PROPOSAL CERTIFICATION

The undersigned, being first duly sworn, certifies on behalf of the bidder that it has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this Proposal or Contract. This is an official document that is required or authorized by law to be made under oath and is presented in an official proceeding. A person who makes a false statement in this certification is subject to the penalties of perjury.

The undersigned further certifies that said bidder is not under the control of any person, firm, partnership, or corporation, which has or exercises any control of any other person, firm, partnership, or corporation, which is submitting a bid on this Contract.

Stansell Electric Company, Inc.

Sworn to and subscribed before me

Bidder (1)

this 20th day of March, 2023

By:

Robert P. Elliott - President

Printed Name and Title

Jacqueline K. Conner
Notary Public

My commission

expires

11/21/2026

(Seal)



Sworn to and subscribed before me

Bidder (2)

this _____ day of _____,

By:

Printed Name and Title

Notary Public

My commission

expires

(Seal)

CITY OF FRANKLIN, TENNESSEE

PROPOSAL BOND

COF CONTRACT NO. 2022- 0116

Principal: **Stansell Electric Company, Inc.**

Print Name of Principal

Surety: **Fidelity and Deposit Company of Maryland**

Print Name of Surety

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the CITY OF FRANKLIN in the full and just sum of five percent (5%) of the total amount bid by the Principal for the project stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

NOW, THEREFORE, the condition of this obligation is: the Principal shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the Proposal, and if the CITY OF FRANKLIN shall award a Contract to the Principal, the Principal shall, within ten (10) days after written notice of the award is received by him, fully execute a Contract on the basis of the terms, conditions and unit prices set forth in his Proposal or bid and provide bonds with good and sufficient surety, as required for the faithful performance of the Contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Principal withdraws its bid after bids are opened, or after award of the Contract has been made fails to execute such the Contract and/or such additional documents as may be required and to provide the required bonds within the time period specified above, then the amount of the Proposal Bond shall be immediately paid to the CITY OF FRANKLIN, not as a penalty, but as agreed upon liquidated damages.

IN WITNESS WHEREOF, the Principal has caused these presents to be signed by a duly authorized official and the Surety has caused these presents to be duly signed and sealed by an authorized agent or attorney-in-fact.

Stansell Electric Company, Inc.

Fidelity and Deposit Company of Maryland

Principal (1)

Surety (1)

By:

By:

General Agent or Attorney-in-Fact, **Mark Neal**

Robert P. Elliott, President

March 23, 2023

Print Name and Title

Date

March 23, 2023

Date

(Seal)

Principal (2)

Surety (2)

By:

By:

General Agent or Attorney-in-Fact

Print Name and Title

Date

Date

(Seal)

***NOTE: The signature and information for Principal (2) and Surety (2) is to be provided when there is a joint venture.**

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by Robert D. Murray, Vice President, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint **Frank E. NEAL, III, Jerri BAIN, Mark NEAL, Brent W. NEAL, Mitchell F. JOHNS, Thomas NEAL of Brentwood, Tennessee**, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 7th day of December, A.D. 2022.



ATTEST:
**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**

A handwritten signature of Robert D. Murray in black ink.

By: *Robert D. Murray*
Vice President

A handwritten signature of Dawn E. Brown in black ink.

By: *Dawn E. Brown*
Secretary

**State of Maryland
County of Baltimore**

On this 7th day of December, A.D. 2022, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Robert D. Murray, Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, deposeth and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.

A handwritten signature of Iva Bethea in black ink, followed by a circular notary seal.

Iva Bethea
Notary Public
My Commission Expires September 30, 2023

Authenticity of this bond can be confirmed at bondvalidator.zurichna.com or 410-559-8790

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 23rd day of March, 2023.




By: Mary Jean Pethick
Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
reportsfclaims@zurichna.com
800-626-4577

Authenticity of this bond can be confirmed at bondvalidator.zurichna.com or 410-559-8790

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***NOTE: The signature and information for Bidder (2) is to be provided when there is a joint venture.**

CITY OF FRANKLIN, TENNESSEE

PROPOSAL BOND

CONTRACT NO. 2022-0116

Principal: _____
Print Name of Principal

Surety: _____
Print Name of Surety

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the CITY OF FRANKLIN in the full and just sum of five percent (5%) of the total amount bid by the Principal for the project stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

NOW, THEREFORE, the condition of this obligation is: the Principal shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the Proposal, and if the CITY OF FRANKLIN shall award a Contract to the Principal, the Principal shall, within ten (10) days after written notice of the award is received by him, fully execute a Contract on the basis of the terms, conditions and unit prices set forth in his Proposal or bid and provide bonds with good and sufficient surety, as required for the faithful performance of the Contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Principal withdraws its bid after bids are opened, or after award of the Contract has been made fails to execute such the Contract and/or such additional documents as may be required and to provide the required bonds within the time period specified above, then the amount of the Proposal Bond shall be immediately paid to the CITY OF FRANKLIN, not as a penalty, but as agreed upon liquidated damages.

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IN WITNESS WHEREOF, the Principal has caused these presents to be signed by a duly authorized official and the Surety has caused these presents to be duly signed and sealed by an authorized agent or attorney-in-fact.

_____ Principal (1)	_____ Surety (1)
By: _____	By: _____ General Agent or Attorney-in-Fact
_____ Print Name and Title	_____ Date
_____ Date	_____ (Seal)

_____ Principal (2)	_____ Surety (2)
By: _____	By: _____ General Agent or Attorney-in-Fact
_____ Print Name and Title	_____ Date
_____ Date	_____ (Seal)

***NOTE:** The signature and information for Principal(2) and Surety(2) is to be provided when there is a joint venture.

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CITY OF FRANKLIN, TENNESSEE

PROPOSAL GUARANTEE

CONTRACT NO. 2022-0116

Bidder: Stansell Electric Company, Inc.
Print Name of Bidder

KNOW ALL MEN BY THESE PRESENTS, that the above-named Bidder has tendered the attached cashier's or certified check in an amount equal to five percent (5%) of the total amount it bid for the project stated above, payable to the CITY OF FRANKLIN, to be held pending the fulfillment of the following obligation conditions.

NOW, THEREFORE, the condition of this obligation is: the Bidder shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the Proposal, and if the CITY OF FRANKLIN shall award a Contract to the Bidder, the Bidder shall, within ten (10) days after it receives written notice of the award, fully execute a Contract on the basis of the terms, conditions and unit prices set forth in its Proposal or bid and provide bonds with good and sufficient surety, as required for the faithful performance of the Contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Bidder withdraws its bid after bids are opened, or after award of the Contract has been made fails to execute such the Contract and/or such additional documents as may be required and to provide the required bonds within the time period specified above, then the CITY OF FRANKLIN shall cash the attached check and retain the funds, not as a penalty, but as agreed upon liquidated damages.

IN WITNESS WHEREOF, the Bidder has caused these presents to be signed by a duly authorized official.

<u>Stansell Electric Company, Inc.</u>	<u>N/A</u>
Bidder (1)	Bidder (2)*
By: <u>[Signature]</u>	By: <u>N/A</u>
<u>Robert P. Elliott - President</u>	<u>N/A</u>
Print Name and Title	Print Name and Title
<u>March 20th, 2023</u>	<u>N/A</u>
Date	Date

***NOTE:** The signature and information for Bidder(2) is to be provided when there is a joint venture.

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CITY OF FRANKLIN, TENNESSEE

CONTRACT NO. 2022-0116

This agreement is made and executed in three (3) originals, between the CITY OF FRANKLIN, and _____ hereinafter referred to as the "Contractor."

WITNESSETH

The CITY OF FRANKLIN did advertise for, receive and accept a bid from the Contractor for work on the above identified contract.

In consideration of the agreements herein contained, to be performed by the parties hereto and of the payments hereafter agreed to be made, it is mutually agreed by both parties that:

1. The contract between the parties consists of the following "Contract Documents" all of which constitute one instrument:
 - (a) the Instructions to Bidders
 - (b) the Proposal
 - (c) all conditions and terms of this Contract form
 - (d) the Contract Payment & Performance Bond and/or Letter of Credit, where applicable
 - (e) the most current version of the *Tennessee Department of Transportation Standard Specifications for Road and Bridge Construction* (herein referred to as *TDOT Standard Specifications*)
 - (f) Supplemental Specifications
 - (g) Revisions and Additions
 - (h) Special Provisions
 - (i) Addenda
 - (j) The most current version of the TDOT Standard Drawings
 - (k) The Contract Plans,
 - (l) The Work Order
 - (m) Construction Changes
 - (n) Supplemental Agreements

All of the provisions contained in the listed Contract Documents are incorporated herein by reference with the same force and effect as though set out in full.

2. The Contract Documents are intended to be complementary and to describe and provide for a complete work. Requirements in one of these are as binding as if occurring in all of them. In case of discrepancy, Supplemental Specifications will govern over the TDOT Standard Specifications; the TDOT Standard Specifications will govern over the local government standard specifications; the Contract Plans will govern over both Supplemental and Standard Specifications, and Special Provisions will govern over both Plans and Specifications. In interpreting Plans, calculated dimensions will govern over scaled dimensions. Contract Plans, typical cross sections and approved working drawings will govern over Standard Drawings.
3. The Contractor agrees to furnish all materials, equipment, machinery, tools and labor and to perform the work required to complete the project in a thorough and

workmanlike manner, to the satisfaction of the appropriate official of the CITY OF FRANKLIN.

4. The CITY OF FRANKLIN agrees to pay to the Contractor such unit prices for the work actually done as are set out in the accompanying proposal, in the manner provided for in the TDOT Standard Specifications, Supplemental Specifications and applicable Special Provisions.
5. The Contractor shall, at all times, observe and comply with all applicable federal, state and local laws, ordinances and regulations and shall indemnify and hold harmless the CITY OF FRANKLIN and all of its officers, agents and servants against any claim of liability or assessment of fines or penalties arising from or based upon the Contractor's and/or its employees' violations of any such law ordinance or regulation. The Contractor shall maintain documentation for all charges against the CITY OF FRANKLIN under this Contract. The books, records and documents of the Contractor insofar as they relate to the work performed or money received under this contract shall be maintained for a period of seven (7) full years from the date of the final payment and shall be subject to audit at any reasonable time and upon reasonable notice by the CITY OF FRANKLIN, the State, the Comptroller of the Treasury, the Tennessee Department of Transportation, or their duly appointed representatives.
6. The Contractor shall be responsible for any and all injury or damage to persons or to property arising from the prosecution of the work and due to any act, omission, neglect or misconduct in its manner or method of prosecuting the work or due to its non-execution of the work or due to defective work or materials. The Contractor shall provide proof of adequate and appropriate general liability insurance providing liability coverage in an amount not less than \$1 million dollars per occurrence and \$300,000 per claimant, naming the CITY OF FRANKLIN as an additional insured.
7. The Contractor shall indemnify and hold harmless the CITY OF FRANKLIN and all of its officers, agents and employees from all suits, actions or claims of any character arising from the Contractor's acts or omissions in the prosecution of the work, use of unacceptable materials in constructing the work, infringement of patent, trade mark or copyright, or claims for Workers' Compensation. If any such suit, action or claim is filed, the CITY OF FRANKLIN may retain from the monies due to the Contractor under this Contract a sum deemed sufficient by the CITY OF FRANKLIN to protect the CITY OF FRANKLIN from loss therefrom. Upon resolution of the suit, action or claim, any remaining retained funds will be released.
8. Upon execution of this Contract, the Contractor shall be prepared to begin the work to be performed under the Contract, but will not proceed until it has received official "Notice to Proceed". This official notice will stipulate the date upon which it is expected that the Contractor will begin his work, and from which date the working days tabulated against its time limit will begin. All other requirements in regard to the beginning of construction set forth in the Proposal and Special Provisions will date from the official notice.

IN WITNESS WHEREOF, the parties hereto have cause this Contract to be signed and executed by their respective authorized agents or officials.

_____ Contractor 1	_____ Contractor 2*
By: _____	By: _____
_____ Print Name and Title	_____ Print Name and Title
_____ Date	_____ Date

CITY OF FRANKLIN, TENNESSEE

This Contract is accepted _____ day of _____ ,
this _____
and is effective on the _____ day of _____ ,

[CITY/COUNTY Official]

Approved:

CITY OF FRANKLIN Attorney

***NOTE:** The signature and information for Contractor 2 is to be provided when there is a joint venture.

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CONTRACT PAYMENT AND PERFORMANCE BOND

Note: to be filled out post-award

CONTRACT NO. 2022-0116

Be it known that _____,
as Principal, and _____,
as Surety(ies), all authorized to do business in the State of Tennessee, hereby bind themselves
to the CITY OF FRANKLIN, and other potential claimants, for all obligations incurred by the
Principal under its contract with CITY OF FRANKLIN, for the construction of the above identified
contract; in the full contract amount of _____
_____ (\$_____).

The obligations of the Principal and Surety(ies) under these payment and performance
bonds shall continue in full force and effect until all materials, equipment and labor have been
provided AND all requirements contained in the contract, plans and specifications have been
completed in a timely, thorough and workmanlike manner. The parties agree that these bonds
are statutory in nature and are governed by the provisions contained in Title 12, chapter 4 and
Title 54, chapter 5 of the Tennessee Code Annotated relating to bonds required of contractors
and that those provisions constitute a part of this bond.

By this instrument, the Principal and Surety(ies) specifically bind themselves, their heirs,
successors, and assigns, *in solido*, under the following bonds:

Payment Bond. To the CITY OF FRANKLIN and all "Claimants," as contemplated by T.C.A.
Title 54, chapter 5, in the full contract amount of

_____ (\$_____),
in order to secure the payment in full of all timely claims under the project.

Performance Bond. To the CITY OF FRANKLIN in the full contract amount of

_____ (\$_____),
in order to secure the full and faithful performance and timely completion of the project according
to its plans and specifications, inclusive of overpayments to the contractor and liquidated
damages as assessed.

Upon receipt of notice that the Principal is in default under the contract, the Surety(ies)
shall undertake to complete performance, without regard to cost. If the Surety(ies) fail or refuse
to complete performance of the contract, the CITY OF FRANKLIN may then proceed with the
work in any lawful manner that it may elect until it is finally completed. When the work is thus
finally completed, the total cost of the same will be computed. All costs and charges incurred
by the CITY OF FRANKLIN in completing the Work will be deducted from any monies due or
which may become due to the Principal. If the total costs of completion exceeds the sum which
would have been payable under the Contract, then the Principal and the Surety(ies), *in solido*,
shall be liable for and shall pay to the CITY OF FRANKLIN the amount of such excess.

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In witness whereof we have signed this instrument as dated.

Principal/Contractor 1:

By: _____ Date: _____

Printed Name and Title

(For Joint Venture)

Principal/Contractor 2:

By: _____ Date: _____

Printed Name and Title

Surety 1:

Surety 2:

By: _____ By: _____

Attorney-in-Fact

Attorney-in-Fact

Printed Name

Printed Name

Agency Name

Agency Name

Street Address

Street Address

City/State/Zip

City/State/Zip

(Seal)

(Seal)

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Subsequent correspondence/communication from CITY OF FRANKLIN with respect to monthly progress reports and/or the contract bonds should be directed to:

For Surety 1:

For Surety 2:

_____ Name	_____ Name
_____ Address	_____ Address
_____ City	_____ City
_____ State/Zip	_____ State/Zip
_____ Phone Number	_____ Phone Number
_____ Fax Number	_____ Fax Number

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SPECIAL PROVISION**REGARDING****UTILITY RECORD DRAWINGS****PART 1 – GENERAL****1.1 SCOPE****1.1.1 General**

The following specifications define the requirements for the preparation and submittal of the Utility Record Drawings for all utilities included in the Contract Documents.

1.1.2 Work Included

The Contractor shall, unless specified otherwise, provide all materials, equipment, tools, and labor necessary for surveying as-built utility installations, and preparation and submittal of Utility Record Drawings. All surveying and Utility Record Drawings must be done by a Professional Surveyor licensed in the State of Tennessee.

1.1.3 Location of the Work

The location of this work is as shown in the Contract Documents.

1.1.4 Coordination of the Work

The Contractor shall be responsible for the satisfactory coordination of the surveying activities with other construction and activities in the area. Delays in work resulting from lack of such harmony shall not in any way be a cause for extra compensation by any of the parties.

1.1.5 Working Hours

The work shall be carried out in accordance with local ordinance and not to cause any unreasonable nuisance to affected residents. Under emergency conditions, this limitation may be waived by the consent of the City of Franklin, TN.

1.2 METHOD OF MEASUREMENT & PAYMENT

All surveying and record preparation must be done by a Professional Surveyor licensed in the State of Tennessee. The work shall be measured, and the compensation determined in the following manner:

1.2.2 Record Drawings

The preparation and submittal of the record drawings shall be paid for on a lump sum basis including preparing and submitting the Professional Surveyor signed and sealed set of Record Drawings in accordance with the requirements listed in this special provision.

1.3 SUBMITTALS

1.3.1 The contractor shall submit the Record Drawings, which are signed and sealed by a State of Tennessee Registered Surveyor, in the following formats: two (2) full-size (paper size shall be 22" x 34" or 24" x 36" with a maximum scale of 1"= 50'), one (1) digital PDF to the same scale as the full-size paper

drawings, and Computer-Aided Design and Drafting (CADD) digital files in AutoCAD (DWG) or MicroStation (DGN) format, prepared utilizing the same coordinate system as shown in the Contract Documents.

PART 2 – PRODUCTS

2.1 MATERIALS

The contractor shall furnish all materials of adequate quality for the purpose intended, including all stakes, pipes, paint, and all other materials necessary to properly perform the required work. Stakes and pipes shall be suitable for general field construction staking and shall be durable enough to last from installation of the utility to the surveying for the preparation of the Record Drawings. Any stakes and pipes damaged during the duration of the contract shall be replaced and re-set at their proper location with no additional compensation being made therefore.

PART 3 – EXECUTION

3.1 GENERAL

3.1.1 The Engineer of Record will provide the CADD Drawings to the project's contractor for use by the Professional Surveyor for the production of the Record Drawings.

3.2 SURVEYING REQUIREMENTS

All surveying for the project shall be done by or under the supervision of a Tennessee licensed Professional Surveyor. The Professional Surveyor shall review the work, resolve problems, and make decisions in a timely manner.

3.3 SURVEYING FOR RECORD DRAWINGS

The contractor shall only be required to provide Record Drawings for the various systems listed below in sections 3.3.1 thru 3.3.10 that have been or will be modified, altered, installed, constructed, or otherwise disturbed as a part of the construction contract to which this Special Provision has been attached or included.

3.3.1 Property Lines and Easements

The surveyor shall show all property lines and easements included in the Contract Documents.

3.3.2 Stormwater Record Drawings

The following stormwater items shall be included: stormwater culverts and pipes (including: material, slope and length), structures (manholes, catch basins, junction boxes, end walls, outlet structures, etc. [including rim elevations and inverts]) and permanent stormwater Best Management Practices (BMPs) with depicting 1' contours and 25' around the permanent stormwater BMPs (including: detention ponds, retention ponds, bioretention ponds, infiltration trenches, etc.).

3.3.3 City of Franklin, TN Traffic Signals and Fiber Optics Record Drawings:

The following traffic signal and fiber optics shall be included: signal poles, pedestrian poles, CCTV poles, school zone flashers, signal cabinets, conduit (including: conduit size, number of conduit, material, length, description of utility located in conduit, etc.), electrical service pedestals, pull boxes and vehicle detectors.

3.3.4 Street and/or Site Lighting System:

The following street and pedestrian lighting systems shall be included: light poles, pull boxes, conduit (including: conduit size, number of conduit, material, length, description of utility located in conduit, etc.), controller cabinets and service pedestal.

3.3.5 Water Record Drawings:

The following potable water items shall be included: public and private water mains (including: size and material), private laterals (including: size and material), valves (including type: gate valve, blow off valve, air release valve, etc.), meters and enclosures (including: type, size and material), backflow preventers and enclosures (including: type, size and material) and fire suppression items (including: hydrants, meters, fire department connections, etc.). Reference specific utility provider technical specifications and guidelines for additional requirements.

3.3.6 Sanitary Sewer Record Drawings:

The following sanitary sewer items shall be included: public and private gravity sanitary sewer mains (including: material, slope and length), structures (including: rim elevations and all inverts), cleanouts, private laterals (including: size and material), low pressure pumps (including size), force mains (including: material, slope, depth and length), pump stations (including: buildings, driveways, fences, enclosures, etc.), and valves (including valve type).

3.3.7 Reclaimed Water Record Drawings:

The following reclaimed water items shall be included: public and private reclaimed water mains (including: size and material), private laterals (including size and material), valves (including type [e.g. gate valve, blow off valve, air release valve, etc.]), meters / meter boxes (including size), backflow preventers and enclosure (including: type, size and material) and fire hydrants.

3.3.8 Natural Gas Record Drawings:

The following natural gas items shall be included: public and private gas mains (including: size and material), valves (including: size and type), regulating stations, services, and meters.

3.3.9 Electrical and Communications Record Drawings:

The following electrical and communications (*i.e.* phone, cable, fiber optic, etc.) items shall be included: pole locations, riser poles, conduit (including: conduit size, number of conduit, material, length, description of utility located in conduit, etc.), pull boxes, transformers/switches, equipment pads, vaults/manholes (including rim elevations), services runs, service pedestals and meters.

3.3.10 Irrigation:

The following irrigation items shall be included: irrigation tap locations, meter locations, pump stations, backflows, controllers, sensors, all pipe sizes/materials, sleeves, valve locations, sprinkler heads, etc. Plans shall include dimensional data from building walls, curbs, sidewalks, etc.

END OF SPECIAL PROVISION

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SPECIAL PROVISION
REGARDING
TRAFFIC CONTROL SUPERVISOR

At the preconstruction conference the Contractor shall designate a Traffic Control Supervisor other than the Superintendent to be responsible for initiating, installing, and maintaining all traffic control devices in accordance with all applicable special provisions, standard drawings, plans, specifications, and the most current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

Qualifications. The Traffic Control Supervisor shall have *at least* one (1) of the following (or similar as approved by the City Traffic Engineer) qualifications:

- Certified by the American Traffic Safety Services Association (ATSSA) as a Traffic Control Supervisor (TCS),
- National Highway Institute (NHI) Certificate of Accomplishment in Work Zone Safety,
- Satisfactorily completed the following two (2) training courses taught thru the Tennessee Transportation Technical Assistance Program (TTAP) at The University of Tennessee, Knoxville (UTK) Center for Transportation Research:
 - a. "Work Zone Traffic Control / Flagging", and
 - b. "Advanced Work Zone, Design and Operation".

In addition, they shall have at least one (1) year's experience directly related to work zone traffic control in a supervisory or similarly responsible capacity.

Responsibilities. The Traffic Control Supervisor shall:

1. Oversee all operations which contribute to the convenience, safety and orderly movement of traffic.
2. Be available on a twenty-four (24) hour basis with access to all manpower, equipment and materials needed to maintain traffic control devices and handle traffic related situations.
3. Maintain documentation to become part of the final project records of all daily activities including deficiencies found, how they were corrected, and the personnel, equipment, and traffic control devices utilized.
4. Correct routine deficiencies within a twenty-four (24) hour period after discovery.

5. Be available on the site within sixty (60) minutes after notification of an emergency situation, prepared to effect corrective measures immediately.
6. Make daily inspections of all traffic control devices (at least every third inspection shall be at night).
7. Prepare and submit for approval any revisions to the existing traffic control plan sufficiently in advance, but no less than seven (7) business days, to allow appropriate City staff to review the proposed revisions prior to implementation.
8. Coordinate project traffic control activities with the City of Franklin's designated project management team *and* with the City's Traffic Operations Center (TOC).
9. Coordinate public awareness of changing traffic conditions through the City of Franklin's designated project management team *and* with the City's Traffic Operations Center (TOC).
10. Educate all employees of the Contractor utilized as flaggers on proper flagging procedures.

Emergency Maintenance. Emergency maintenance shall consist of maintenance, repair, or replacement of traffic control devices that have been damaged, vandalized, or otherwise rendered ineffective to the extent that a serious hazard exists. The Traffic Control Supervisor shall cause such emergency work to begin within two (2) hours after being notified. When emergency maintenance is required during nonworking hours, devices that are classified as "unacceptable" according to *ATSSA Quality Standards for Work Zone Traffic Control Devices* may be used, provided that the devices are effective in reducing the existing hazard, and further provided that they are replaced not later than the next business day. The Traffic Control Supervisor shall keep the City informed of the name, address, and telephone number of the individual responsible for performing emergency maintenance.

Failure to Comply. In the event a routine traffic control deficiency is not corrected within twenty-four (24) hours after discovery, a deduction in the amount of one hundred dollars (\$100.00) shall be made from monies due the Contractor for each calendar day that the deficiency is allowed to remain, not as penalty, but as liquidated damages.

In the event that immediate action is not taken to correct an emergency situation, a deduction in accordance with Subsection 712.04 of the Tennessee Department of Transportation (TDOT) Standard Specifications for Road and Bridge Construction shall be made from monies due the Contractor. In addition, if deemed necessary by the City due to lack of response by the Contractor, City forces may be mobilized to correct the emergency situation with all costs of the corrective action being assessed against monies due the Contractor. This assessment for costs incurred shall be in addition to the assessment of the amount in accordance with Subsection 712.04.

The preceding assessments shall be in addition to any liquidated damages which may be assessed in accordance with the Contract Documents.

Basis of Payment. The labor costs involved in the provision of the Traffic Control Supervisor, and any equipment, tools, or incidentals necessary to complete the work, are to be included in the lump sum price bid for Traffic Control, Item No. 712-01.

END OF SPECIAL PROVISION



THE POWER TO INNOVATE
THE EXPERIENCE TO SUCCEED

SEALED BID ENCLOSED

TO: City of Franklin
109 3rd Avenue South, Suite 133
Franklin, TN 37064

FOR: SR-96 (Murfreesboro Road) Traffic Signal
Improvements From Eddy Lane to Arno Road
Contract No. 2022-0116

SUBMITTED BY: Stansell Electric Company, Inc.
c/o Matt Leonard
860 Visco Drive
Nashville, TN 37210
615-329-4944
mleonard@stansellelectric.com

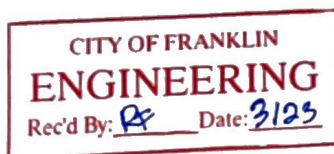
CONTRACTOR'S LICENSE #: 3989

CLASSIFICATION: BC; CE; HRA-E.1; Unlimited

EXPIRATION DATE: 04/30/2025

BID OPENING DATE: Thursday, March 23rd, 2023
2:00 P.M. CST

SUBCONTRACTOR: Stansell Electric Company, Inc. | License #3989 |
Classification: BC; CE; HRA-E.1 | Expiration Date: 04/30/2025





City of Franklin

109 3rd Ave S.
Franklin, TN 37064
(615) 791-3217

File #: 21-04586

DATE: April 19, 2023
TO: Capital Investment Committee
FROM: Paul Holzen, Director of Engineering
Jonathan Marston, Asst. Director of Engineering

SUBJECT:

Capital Projects Dashboard And Status Updates For April 2023

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning the status of some of the City's transportation, stormwater, and parks capital projects.

BACKGROUND/STAFF COMMENTS:

To access the live dashboard for the City of Franklin Capital Investment Projects, please go to the following City webpage:

[COF Dashboard Link](#)

Manually locate the dashboard following the instructions below:

1. Go to the City of Franklin's main website at: <https://www.franklinton.gov/>,
2. Hover your mouse over "Our City" or "Business",
3. Click on "City Projects",
4. Click on "[Capital Projects Dashboard](#)".

FINANCIAL IMPACT:

N/A

RECOMMENDATION:

None

City of Franklin Capital Investment Projects Dashboard

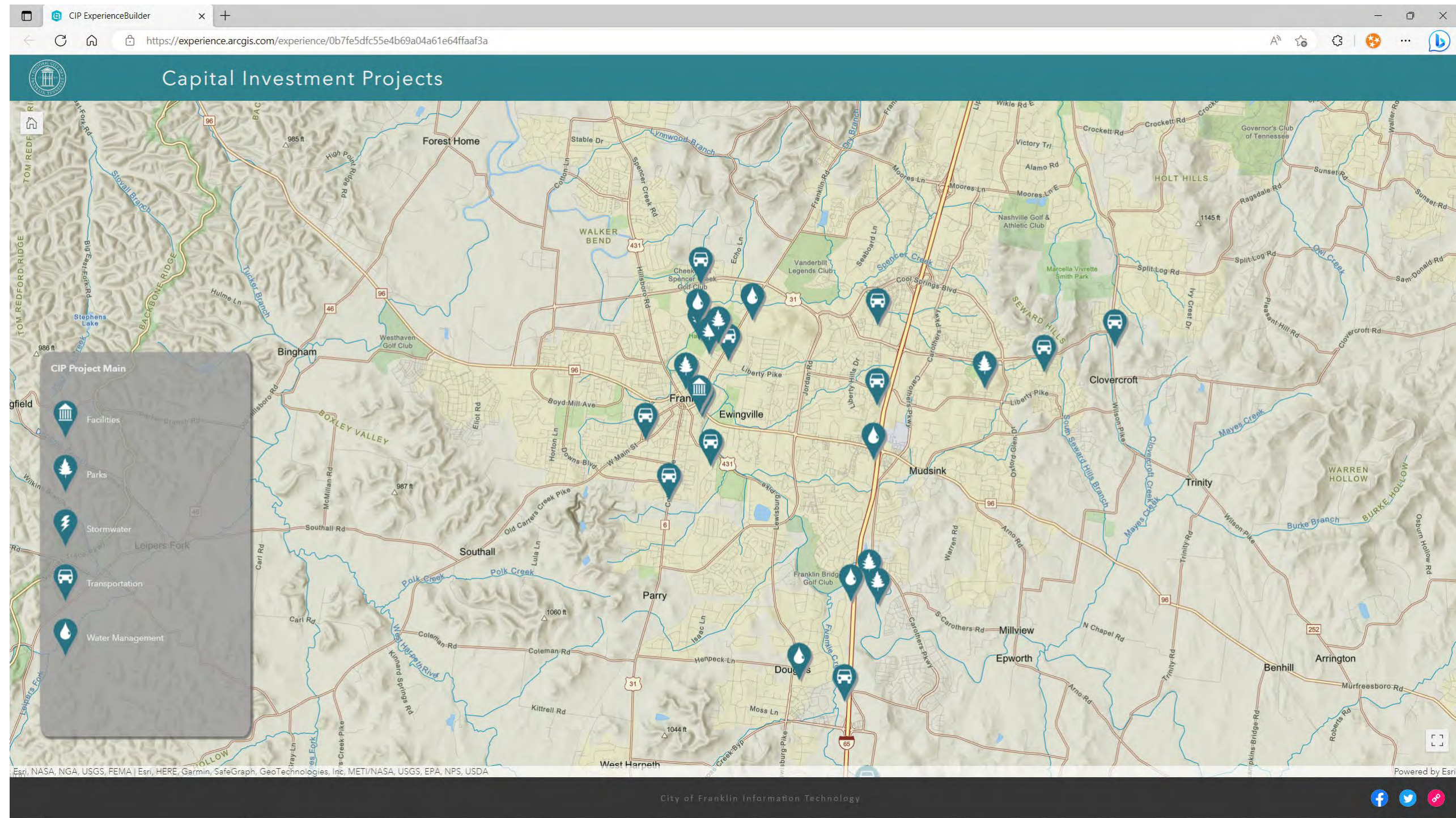


Image Captured from City of Franklin Website on 04/19/2023

Go to www.franklinton.gov >> Hover over “Our City” >> Click on “City Projects” >> Click on “[Capital Projects Dashboard](#)”

OR

Go to www.franklinton.gov >> Hover over “Business” >> Click on “City Projects” >> Click on “[Capital Projects Dashboard](#)”