



Meeting Agenda

Work Session

Tuesday, June 23, 2020

5:00 PM

Board Room

The Board of Mayor and Aldermen Work Session Meeting will limit physical access in the meeting room due to current limitations on public gatherings. Accommodations have been made to ensure that the public is able to participate in the meeting. The public may participate in the following ways: • Watch the meeting on FranklinTV or the City of Franklin website. • Watch the live stream through the City of Franklin Facebook and YouTube accounts. • Call in to the conference meeting 1-615-550-8420. Callers will be unmuted and given an opportunity to comment during the meeting at specific times. • Limited viewing will be available in the lobby of City Hall to watch the live video. • The public may email comments and questions prior to 4:30 p.m. on the day of the meeting to recorder@franklinton.gov to be read aloud. • City YouTube: <https://www.youtube.com/user/CityOfFranklin> • City Facebook Live: <https://www.facebook.com/CityOfFranklin> • City website: <https://www.franklinton.gov/franklin-tv>

CALL TO ORDER

MEETING PROCEDURE CHANGES

1. Consideration Of Resolution 2020-109, A Resolution Declaring That The Board Of Mayor And Aldermen Members Shall Meet On June 23, 2020 For Work Session And Conduct Its Essential Business By Electronic Means Rather Than Being Required To Gather A Quorum Of The Members Physically Present In The Same Location Because It Is Necessary To Protect The Health, Safety, And Welfare Of Tennesseans In Light Of The COVID-19 Outbreak.

Sponsors: Shauna Billingsley

CITIZEN COMMENTS

WORKSESSION DISCUSSION ITEMS

2. Discussion Concerning The Cool Springs East / Jordan Branch Restoration Project.
CIC 5/28/20, referred to Work Session 4-0

Sponsors: Paul Holzen

3. *Consideration Of Ordinance 2020-10, An Ordinance To Rezone 21.24 Acres From Regional Commercial (RC-6) And General Office (GO) Districts To Planned (PD 11.35/12,320) District For The Property Located South Of Oak Meadow Drive And East Of South Royal Oaks Boulevard (Vintage At Watson Glen PUD Subdivision);Cancelling The Public Hearing For July 14, 2020 And Sending The Item Back To Planning Commission On July 23, 2020.

FMPC 5/28/20, 8-0-1

WS 6/9/20

BOMA 6/9/20, 7-0

Sponsors: Emily Hunter, Amy Diaz-Barriga, Dianna Tomlin

4. *Consideration Of Resolution 2020-47, A Resolution Approving A Development Plan For Vintage At Watson Glen PUD Subdivision, For The Property Located South Of Oak Meadow Drive and East Of South Royal Oaks Boulevard. Cancelling The Public Hearing For July 14, 2020 And Sending The Item Back To Planning Commission On July 23, 2020.

FMPC 5/28/20, 8-0-1

WS 6/9/20

Sponsors: Emily Hunter, Amy Diaz-Barriga, Dianna Tomlin

5. *Consideration Of Resolution 2020-101, A Resolution To Award The Construction Contract (COF Contract No. 2020-0113) For The Adaptive Signal Control Technology (ASCT) Project (COF Project No. 2013-018 / TDOT PIN 116144.01) To Stansell Electric Company, Inc. In The Amount Of \$743,157.00.

Sponsors: Paul Holzen, Jonathan Marston, Adam Moser

6. Consideration Of **Draft** Ordinance 2019-52, An Ordinance To Establish No Parking Restrictions On Both Sides Of East Benjamin Drive From Liberty Hills Drive To Freedom Drive.

CIC 5/28/20, referred to Work Session 3-1

Sponsors: Paul Holzen, Jonathan Marston, Adam Moser

7. Consideration Of **Draft** Ordinance 2019-53, An Ordinance To Establish No Parking Restrictions On Both Sides Of Freedom Drive From North Royal Oaks Boulevard To East Benjamin Drive.

CIC 5/28/20, referred to Work Session 3-1

Sponsors: Paul Holzen, Jonathan Marston, Adam Moser

8. Consideration Of Ordinance 2019-39, An Ordinance To Create Title 12, Chapter 13 Of The Franklin Municipal Code, Establishing Local Rules Applicable To Construction, And To Create Section 12-1301 Relating To Construction Work Hours.

Sponsors: Tom Marsh, Patrick Virrill

9. Consideration Of Ordinance 2019-40, An Ordinance To Amend Title 12, Chapter 13 Of The Franklin Municipal Code To Create Section 12-1302 Relating To Construction Site Maintenance.

Sponsors: Tom Marsh, Patrick Virrill

10. Consideration Of COF Contract No. 2020-0076 With Community Housing Partnership Of Williamson County For Home Rehabilitation Assistance For Low To Moderate Income Residents Of The City Of Franklin.

Sponsors: Tom Marsh, Kathleen Sauseda

11. Consideration Of Draft Procurement Award To ADS, LLC, d/b/a ADS Environmental Services Of Huntsville, Alabama In The Total Estimated Amount Of \$488,220 For Years 1-3 For Wastewater Flow Monitoring Services For The Wastewater General Division Of The Water Management Department. (Purchasing Office Procurement Solicitation No. 2020-021; COF Contract No. 2020-0172)

Sponsors: Michelle Hatcher, Brian Goodwin

12. Consideration Of Resolution 2020-106, A Resolution Declaring An Existing Section Of City Of Franklin Right-Of-Way Known As Old Charlotte Pike Generally Located Between The New NW Section Of The Mack Hatcher Parkway Extension And Carlisle Lane As Surplus And To Be Maintained In Its Current Configuration As A Private/Public Access, Utility, And Drainage Easement.

Sponsors: Vernon Gerth

13. Consideration Of Change Order No. 12 To City Of Franklin Contract No. 2018-0259 With Southland Constructors, For The Addition Of 45 Days In Regards To Weather Delay Days For Fire Station 7 In The Amount Of \$42,000.00.

Sponsors: Brad Wilson

14. Consideration Of Resolution 2020-108, A Resolution Authorizing City Staff To Commence Contract Negotiations With OHM Advisors/Studio Eight Design For Professional Services Related To The Design Of The New City Of Franklin City Hall.

Sponsors: Eric Stuckey, Vernon Gerth, Kristine Brock, Mark Hilty

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.



File #: 20-0857

DATE: June 15, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Shauna Billingsley, City Attorney

SUBJECT:

Consideration Of Resolution 2020-109, A Resolution Declaring That The Board Of Mayor And Aldermen Members Shall Meet On June 23, 2020 For Work Session And Conduct Its Essential Business By Electronic Means Rather Than Being Required To Gather A Quorum Of The Members Physically Present In The Same Location Because It Is Necessary To Protect The Health, Safety, And Welfare Of Tennesseans In Light Of The COVID-19 Outbreak.

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning conducting the Board of Mayor and Aldermen by electronic means to limit physical contact for the health and safety of all citizens.

BACKGROUND/STAFF COMMENTS:

Due to the COVID-19 Outbreak citizens need to limit potential exposure to the virus by limiting contact with others. To support this effort the City of Franklin boards and commissions will meet electronically rather than gathering a quorum physically in the same location to conduct their essential business.

FINANCIAL IMPACT:

N/A

RECOMMENDATION:

Staff recommends approval of Resolution 2020-109.

RESOLUTION 2020-109

A RESOLUTION DECLARING THAT THE BOARD OF MAYOR AND ALDERMEN SHALL MEET ON JUNE 23, 2020, FOR WORK SESSION AND CONDUCT ITS ESSENTIAL BUSINESS BY ELECTRONIC MEANS RATHER THAN BEING REQUIRED TO GATHER A QUORUM OF THE MEMBERS PHYSICALLY PRESENT IN THE SAME LOCATION BECAUSE IT IS NECESSARY TO PROTECT THE HEALTH, SAFETY, AND WELFARE OF TENNESSEANS IN LIGHT OF THE COVID-19 OUTBREAK

WHEREAS, Coronavirus Disease 2019 (COVID-19) is a severe acute respiratory disease that appears to occur through respiratory transmission, presents with similar symptoms to those of influenza, and can lead to serious illness or death, particularly in the case of older adults and persons with serious chronic medical conditions; and

WHEREAS, the Centers for Disease Control and Prevention has recommended that all states and territories implement aggressive measures to slow and contain transmission of COVID-19 in the United States; and

WHEREAS, on March 12, 2020, pursuant to the authority granted by Tenn. Code Ann. § 58-2-107, the Governor of Tennessee, Bill Lee, issued Executive Order No. 14, declaring a state of emergency to facilitate the response to COVID-19; and

WHEREAS, on March 13, 2020, the President of the United States, Donald J. Trump, declared a national state of emergency with respect to COVID-19; and

WHEREAS, on March 20, 2020, Mayor Ken Moore issued Executive Order No. 2020-01 Declaring a State of Emergency and Civil Emergency; and

WHEREAS, Governor Lee issued Executive Order No. 16 and Executive Order No. 34 allowing electronic meetings while continuing to function openly and transparently; and

WHEREAS, Mayor Moore issued Executive Orders No. 2020-03, No. 2020-05, No. 2020-07, No. 2020-09, No. 2020-11, No. 2020-12, No. 2020-13, No. 2020-14, No. 2020-15, No. 2020-16, and No. 2020-17 continuing the Declaration of a State of Emergency and Civil Emergency; and

WHEREAS, the Board of Mayor and Aldermen believes it is in the best interest of the City of Franklin to conduct the June 23, 2020, work session by electronic means.

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

The work session scheduled for June 23, 2020, at 5 p.m. shall be conducted by electronic means rather than requiring a quorum of the members of the Board of Mayor and Aldermen to attend in person to protect the health, safety, and welfare of Tennesseans in light of the COVID-19 Outbreak. Physical access in the meeting room will be limited. The public can view and participate in the meetings by watching the meeting live or later as a recording on FranklinTV, the City of Franklin website, the City of Franklin's Facebook page, and the City of Franklin's YouTube account. Specific dial-in and website links can be found on the City's website at

<https://www.franklin.tn.gov/Home/Components/Calendar/Event/10201/1092>

IT IS SO RESOLVED AND DONE on this 23rd day of June, 2020.

ATTEST:

By: _____
Eric S. Stuckey
City Administrator

CITY OF FRANKLIN, TENNESSEE:

By: _____
Dr. Ken Moore
Mayor

Approved as to Form By:
Shauna R. Billingsley, City Attorney



File #: 20-0781

DATE: June 10, 2020

TO: Board of Mayor and Alderman

FROM: Paul Holzen, Director of Engineering

SUBJECT:

Discussion Concerning The Cool Springs East / Jordan Branch Restoration Project.
CIC 5/28/20, referred to Work Session 4-0

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning the Cool Springs East / Jordan Branch Restoration Project.

BACKGROUND/STAFF COMMENTS:

For many years, the City of Franklin has received complaints from residents about the erosion of Jordan Branch, which flows behind several houses in the Cool Springs East Subdivision. The stream originates near the city limits between Brentwood and Franklin, directly adjacent to the Nashville Golf & Athletic Club. The recent history of this project is as follows:

January 10, 2014 - BOMA approved a PSA to initiate a feasibility study.

December 16, 2014 - Feasibility Study & recommendations completed.

May 26, 2015 - BOMA approved a PSA for the design of the project.

July 25, 2016 - 1st public meeting held with HOA.

Fall 2016 - Property owner questionnaire was sent to residents to obtain feedback on the project.

January 10, 2017 - Additional survey contract was approved by the Board.

March 16, 2017 - 2nd public meeting held with the HOA.

June 2018 - First bid notice issued. No bids received by City staff.

July 2018 - Second bid notice issued. No bids received by City staff.

February 2019 - Third bid notice issued (Tree Removal Only). No bids received by City staff.

May 14, 2019 - Staff met with HOA to discuss bid problems.

July 1, 2019 - The new stormwater budget was approved, and capital funding associated with stormwater projects was moved into the CIP and BOMA's prioritization process.

August 13, 2019 - BOMA's FY2019-2028 CIP and Jordan Branch Stream Bank was not included.

October 17, 2019 - Staff reviewed the HOA's tree removal quote of \$547,875.

As part of the CIP prioritization process, the Board voted on priority capital projects. Staff looked at the weighted and non-weighted rankings for all projects. Jordan Branch (Cool Springs E) Stream Restoration Project was ranked 24 (49 out of 225 points) as part of the weighted ranking and was ranked 29 (4 votes out of 9) for the non-weighted ranking. As a result, this project was not funded for construction and staff has not proceeded with this project.

On April 6, 2020, City of Franklin Staff received a letter from the HOA. In this letter, the HOA has committed \$100,000 to the project and requested the City of Franklin to manage the project. The biggest challenge associated with project has been access. During the Design/ROW phase of the project, no property owners were willing to allow access to accommodate the project. This is the main reason that staff has been unsuccessful at obtaining bids. Assuming the BOMA wants to proceed with the project, below is the staff recommendation:

1. The HOA should be 100% responsible for all cost associated with the tree removal and obtaining the necessary temporary construction easements to facility the project.
2. The City of Franklin would be 100% responsible for the grading and stabilization of the channel.

FINANCIAL IMPACT:

Below is the estimated project cost:

Tree Removal	\$400,000
Grading/Stabilization	\$900,000
Total Estimated Project Cost	\$1,300,000

Assuming the Board is interested in proceeding with the project, staff would need to evaluate the availability of funding with the City Administration and the Finance Department.

RECOMMENDATION:

Staff seeks direction from the Board of Mayor and Aldermen.

COOL SPRINGS EAST

Brian Dixon, President
Cool Springs East Board of Directors
557 Bakers Bridge Ave
Franklin, TN 37067
board@coolspringseast.org

The City of Franklin
109 3rd Avenue South
Franklin, TN 37064

April 6, 2020

Re: Jordan Branch Commitment

To Whom It May Concern:

The Cool Springs East Board of Directors is committed to seeing this project through to completion. We have approved up to \$100,000 for this project. While we do not currently have these funds available in cash, we are reviewing options to fund this commitment. We are also open to any suggestions by the city with regards to funding this project, whether it be a one-time payment or annual payments.

We have received the one bid from Hutchison Tree Service, which was previously forwarded to Jeff Willoughby. We are still waiting for a second bid from Kevin Meekins. He promised to have the bid to us this week. We reached out to Community Tree, but are waiting to schedule a visit at a later date. We will forward additional bids as they are received.

While the board is willing to assist with the project, we are not experts in this field and would defer to the city regarding project management. If we need to find a third-party project manager, please let us know.

We look forward to moving this project forward as quickly as possible.

Sincerely,



Brian Dixon, President
Cool Springs East Board of Directors

Hutchison Tree Service
13825 Old Hickory Blvd.
Antioch, TN 37013
615-941-1176

Estimate

Date	Estimate #
3/6/2020	1045

Name / Address
Cool Springs East HOA

Project

Description	Qty	Cost	Total
Cutting and removal of all trees along drainage ditch, approximately 1200' long. All trees within 5' of ditch bank to be cleared. No stump grinding or removal. This is preliminary pricing. Access points would need to be ironed out for a hard number. This price includes the removal of all related debris from property.	1	191,500.00	191,500.00
		Total	\$191,500.00

Customer Signature _____



Natchez Landscape Services

Estimate

ADDRESS

Cool Springs East

ESTIMATE # 1047

DATE 04/23/2020

DESCRIPTION

AMOUNT

Pre-Construction:

- Install per SWPP plan that the city of Franklin is to provide
- Build a temporary gravel road down to the creek bed which will be utilized for equipment access
- City of Franklin to provide a surveyor that will stake the area that is to be included in this scope. A high visibility fence will be installed along the project boundary line by the city of Franklin
- A third party will provide a report which will be done before the project starts to assess each of the owner's current property condition that is adjacent to the project. That report will be submitted to the HOA board before work begins. A post work report will be performed in the same manner and will be submitted to the HOA board at the conclusion of the project.
- All bonds and insurance the customer requires will be provided before the project starts.

Construction:

- Cut down, chip, and remove all trees greater than 2" caliper along Jordan Branch between Cliffe Run Drive and Nashville Golf and Athletic club- see attached map provided by the city.
- This will include tree removal and disposal only.
- Trees to be cut as close to ground as possible. No stump grinding included.
- The plan is to do the majority of work within the creek bed which means need of accessing through the homeowner's property will be kept to a minimum and done if only absolutely necessary.
- Trees will be cut down and lowered into the creek bed, chipped and hauled away. Will use gravel from creek bed and wood chips as a base for the access road in the creek bed for the equipment. Majority of the wood chips will be hauled away leaving only a small amount of the wood chips used for the base of the access road through the creek bed.
- Total disturbed area approximately 1.65 acres.
- The Jordan Branch drainage area to be cleared from all obstructions daily as to prevent backup in the event of a large rainfall.
- A skid steer with grapple will be used to carry material to the chipper.

DESCRIPTION	AMOUNT

- Work will be performed from 7:30-5:00 daily except on Sunday's, holidays or excessive rainy days until the project is complete
- This proposal is done with the understanding that all property will be accessible at the time the work is to be done if necessary. It is the HOA's responsibility to ensure that all the effected properties will be accessible as needed. The plan is to keep this to a minimum if possible.
- There are no anticipated road blockages during the project.
- Trucks and wood chippers will be stored off site daily. A skid steer will be left on site in an inconspicuous area until the project is complete.
- Projected project time is 4 months depending on weather and access.

Post Construction:

- The temporary gravel road down to the creek bed will be put back as it was before the project started.
- HOA and the City of Franklin to inspect job when finished to determine if any additional amount of wood chips left are to be removed in order for them to complete the next phase of the project.
- Lawn damages and any fence repair to adjacent residential properties is possible and repair is NOT included in quote.
- A third party will provide a report which will be done at the conclusion of the project to assess each of the owner's current property condition that is adjacent to the project. That report will be submitted to the HOA board for review.

440,450.00

Management Fee/Overhead

40,000.00

Payment Terms:	TOTAL	\$480,450.00

Will submit montly billing for the amount of work that has been completed.
 Pay periods and invoice deadlines to be determined before the project begins.

Accepted By

Accepted Date



Estimate #7835
Date: 04/03/2020

www.CommunityTreePreservation.com

4074 Laverne Couchville Pike
Antioch, TN 37013
615-832-2410

admin@communitytreepreservation.com



Billing Address

Brian Dixon
557 Bakers Bride Ave
Franklin, TN 37067
Phone: 615-424-7466
briandixon@me.com

Jobsite Location

557 Bakers Bride Ave
Franklin, TN 37067

ITEM DESCRIPTION

Our Proposed Tree Removal Process:

This is a large project that could require up to 6-months (~ 180 days) to complete fully. Our best-case timeline would be 4- months, and our worst-case timeline would be the full 6-months. We have abandoned the idea of needing access through homeowner's yards, and instead feel confident that we can remain in the creek during the majority of the project (using it will be our "haul road" if you will).

Instead, we have concluded that we will still fell the trees (or climb and strategically lower them) into the creek. However, the chipper will now remain down in the creek (buffering some of the noise) where all trees/shrubs/debris will be chipped into large piles within the creek. From there, these piles will be scraped up and ferried out via a skidsteer (most likely two skidsteers) to large (30-cubic yard) roll-off dump boxes that can remain at the end of the creek (at 146 Cliffe Run, where we initially met). This will keep us down in creek rather than in homeowner's yards and we will need just one access point (road) into and out of the creek (which we will build with delivered gravel). Three of us have now walked this creek multiple times and feel confident our equipment (skidsteers and chippers) can successfully drive the entire length of the creek (with the understanding that the last lot [by the golf course] will be off limits for chipping into the creek due to the sensitivity and different watershed classification).

By chipping into the creek and ferrying out the large chip piles, we feel this will be the least invasive method to get all the cut wood debris out efficiently. While we can certainly get out the majority of the woodchips, this method would leave behind a small portion of chips at each pile, and some loose chips are likely to fall from the bucket during delivery to the roll-off dump boxes. That said, we would certainly be mindful of (and within) the 15% threshold of chips that could remain in the creek post job completion as proposed by the stormwater engineer.

This is a challenging bid. We certainly understand why it has been so and want to be extra careful in placing this bid—so thank you for the time allotted. We are providing an estimate of \$398,080, and a best-and worst-case timeline of 4- to 6-months, respectively. As you know, it could be possible that what we have planned on paper may not work out as perfectly in the field, though we see no reason why it should not after careful consideration. That said, the estimated dollar figure indicated below should be planned for budgeting purposes. We would also like to further discuss the potential for payments to be made along the way as we progress through the work.

****Continued on page 2****

Client Notes

*Please Note: Pricing below includes:

- The careful cutting down of approximately 591 trees plus all of the underbrush associated with the trees along both sides of the creek. We will start the tree removal process as the tree marked with a white tag and continue all the way to the bend in the creek that terminates at the golf course. This will include the removal of all trees and underbrush > 2" diameter at ground level. All stumps will be as low to the ground as low as possible (i.e., left less than 12" tall to be dug out by excavators).
- The chipping of all cut wood debris into large piles (in the creek) and delivery of all chip piles out to large, 30-cubic yard roll-off dump boxes parked at the street.
- Delivery of chip-filled roll-off dump boxes to a predetermined wood disposal lot (all delivery and dump fees will be paid for by Community Tree Preservation).
- Expert cleanup of each work area. On top of the creek banks all cut wood debris (along both sides) will be cleared to ground level (except leaves). Any wood debris will be chipped into the creek and each chip pile will be delivered out to the roll-off dump boxes. The roadways surrounding each dump box will be blown off at the end of each day's work.

=====

Total Bid: (\$398,080*)

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(615-832-2410)

* This document is a transcription. While it is believed to be current and accurate, it is not warranted to be so.

* Estimates are good for 30 days. However, stated prices may increase due to additional services requested, unforeseen hazards, obstacles encountered, newly built structures, or other delays beyond CTP's control.

* The actual time it takes to complete the job will vary; however, the estimated price stands whether the job is finished under or over the estimated timeframe.

* Our opinion is in no way a substitute for a consulting arborist who carries liability insurance to determine actual tree risk. We look for telltale signs of risk from loosening bark, stress fractures along the trunk, decay, and a history of the tree.

* Emergency fees – An emergency fee may be added to any job that requires completion of the work contained within the approved estimate to be completed within 72 hours.

* Stump grinding – Service for stump grinding is scheduled separately from other services and may not be completed the same day. Wood chips made from grinding stay 100% on the property. We rake and fill back in the hole that was made, but large stumps will leave a mounding pile.

* Yard and turf damage – repairs to yard and turf are not included in this bid. While we are a low-impact tree service, CTP will not be responsible for damage to any underground installations such as pipes, cables, wires, irrigation systems and/or septic systems that TN One Call (811) cannot locate.

* Payment – Payment is due upon completion of work. A \$25 late fee will be applied per month after 30 days. Return check fee is \$30.00. A 3% surcharge will be added to payments made with credit cards.

* Customer represents and warrants that all trees, plant materials, and property upon which work is to be performed are either owned by the customer, or if not owned by customer, that the owner of such trees, plant materials, and property authorizes CTP to have the work performed. Customer hereby grants Community Tree Preservation, Inc. a license to access and use such trees, plant materials, and property in order to perform the work. Customer shall be responsible for securing any permits or authorization required to perform the work, and shall provide copies of this to Community Tree Preservation, Inc. The customer agrees that the final decision for tree services is at the sole discretion of the owner.

* This agreement shall be constructed and enforced in accordance with Tennessee law. Any action arising from this agreement may be maintained in a court of competent jurisdiction in Nashville, TN, or (at CTP's option) where any breach occurs. CTP shall be entitled to recover its expenses (including attorney fees) incurred because of any violation of this agreement by the customer.



File #: 20-0666

DATE: June 11, 2020

TO: Board of Mayor and Alderman

FROM: Emily Hunter, Planning Director
Amy Diaz-Barriga, Planning Supervisor
Dianna Tomlin, Principal Planner

SUBJECT:

*Consideration Of Ordinance 2020-10, An Ordinance To Rezone 21.24 Acres From Regional Commercial (RC-6) And General Office (GO) Districts To Planned (PD 11.35/12,320) District For The Property Located South Of Oak Meadow Drive And East Of South Royal Oaks Boulevard (Vintage At Watson Glen PUD Subdivision);Cancelling The Public Hearing For July 14, 2020 And Sending The Item Back To Planning Commission On July 23, 2020.

FMPC 5/28/20, 8-0-1

WS 6/9/20

BOMA 6/9/20, 7-0

PURPOSE:

Project Information

COF Project Number: 7246

Applicant: Gamble Design Collaborative, Greg Gamble

Owner: Franklin Investment Holdings, LLC, Robert Goodall

BACKGROUND/STAFF COMMENTS:

Required public notice to property owners within 500 feet of the development was failed to be made prior to the May 28, 2020 Planning Commission meeting. Staff recommends that this item be sent back to the July 23, 2020 Planning Commission, with proper public notice, and that the July 14, 2020 BOMA public hearing be cancelled.

The applicant is requesting to rezone the property from Regional Commercial (RC-6) and General Office (GO) to Planned District (PD 11.35/12,320) to accommodate the proposed development plan for Vintage at Watson Glen. The development plan has been submitted concurrently.

Envision Franklin places this property in the Neighborhood Mixed Use Design Concept. The Planned Development district is an appropriate base zone for this Design Concept.

PROCEDURAL REQUIREMENTS:

1. The city's project identification number shall be included on all correspondence with any city department relative to this project.

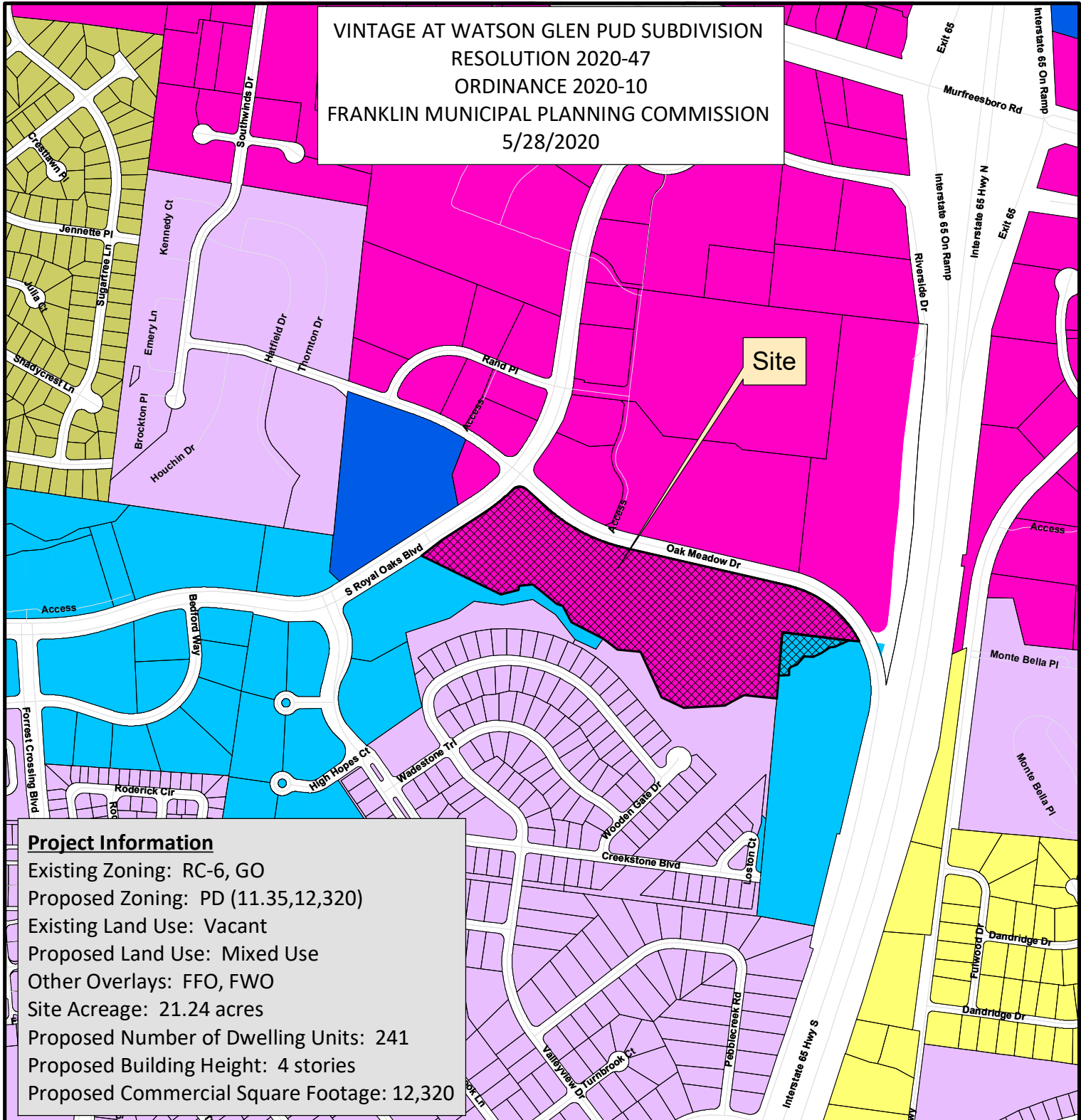
FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends Ordinance 2020-10 be sent back to the July 23, 2020 FMPC, with proper public notice, and that the July 14, 2020 BOMA public hearing be cancelled.

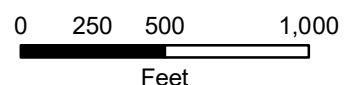
VINTAGE AT WATSON GLEN PUD SUBDIVISION
 RESOLUTION 2020-47
 ORDINANCE 2020-10
 FRANKLIN MUNICIPAL PLANNING COMMISSION
 5/28/2020



Project Information

Existing Zoning: RC-6, GO
 Proposed Zoning: PD (11.35,12,320)
 Existing Land Use: Vacant
 Proposed Land Use: Mixed Use
 Other Overlays: FFO, FWO
 Site Acreage: 21.24 acres
 Proposed Number of Dwelling Units: 241
 Proposed Building Height: 4 stories
 Proposed Commercial Square Footage: 12,320

Vintage Watson Glen	CI Civic Institutional District
AG Agricultural District	NC Neighborhood Commercial
ER Estate Residential District	CC Central Commercial District
R1 Residential 1 District	DD Downtown District
R2 Residential 2 District	1ST Avenue District
R3 Residential 3 District	5TH Avenue District
R4 Residential 4 District	RC6 Regional Commerce 6 District
R6 Residential 6 District	RC12 Regional Commerce 12 District
MR Mixed Residential District	GO General Office District
PD Planned District	LI Light Industrial District
OR Office Residential District	HI Heavy Industrial District



This map was created by the Franklin Planning Department.
 It was compiled from the most authentic information available.
 The City is not responsible for any errors or omissions contained hereon.
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ORDINANCE 2020-10

AN ORDINANCE TO REZONE 21.24 ACRES FROM REGIONAL COMMERCE-6 (RC-6) AND GENERAL OFFICE (GO) DISTRICTS TO PLANNED (PD 11.35/12,320) DISTRICT FOR THE PROPERTY LOCATED SOUTH OF OAK MEADOW DRIVE AND EAST OF SOUTH ROYAL OAKS BOULEVARD (VINTAGE AT WATSON GLEN PUD SUBDIVISION).

WHEREAS, the City of Franklin, Tennessee, encourages responsible growth and the sensible transition of land uses and densities; and

WHEREAS, the Planned (11.35/12,320) district provides zoning for land uses compatible with both the Franklin Land Use Plan and surrounding development; and

WHEREAS, the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee, adopted Resolution 2020-47, approving a Planned Unit Development (PUD) Development Plan as required by the Franklin Zoning Ordinance; and

WHEREAS, the zoning has been reviewed and approved by BOMA after a public hearing and a recommendation by the Franklin Municipal Planning Commission.

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

SECTION I. That the following described property shall be, and is hereby, rezoned from its present zoning classification of RC-6 and GO Districts to PD (11.35/12,320) District:

PREMISES CONSIDERED	
Map-Parcel	Acres
079-08800	20.54
079-10120	.70
Total	21.24

SECTION II. That the attached Location Map and Survey shall serve the purpose of further delimiting the geographical boundaries as described by this Ordinance.

SECTION III. BE IT FINALLY ORDAINED by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on third and final reading, the health, safety, and welfare of the citizens requiring it.

ATTEST:

CITY OF FRANKLIN, TENNESSEE:

By: _____

Eric S. Stuckey

City Administrator/Recorder

By: _____

Dr. Ken Moore

Mayor

Approved as to form by:

Shauna R. Billingsley
City Attorney

PLANNING COMMISSION RECOMMENDED:

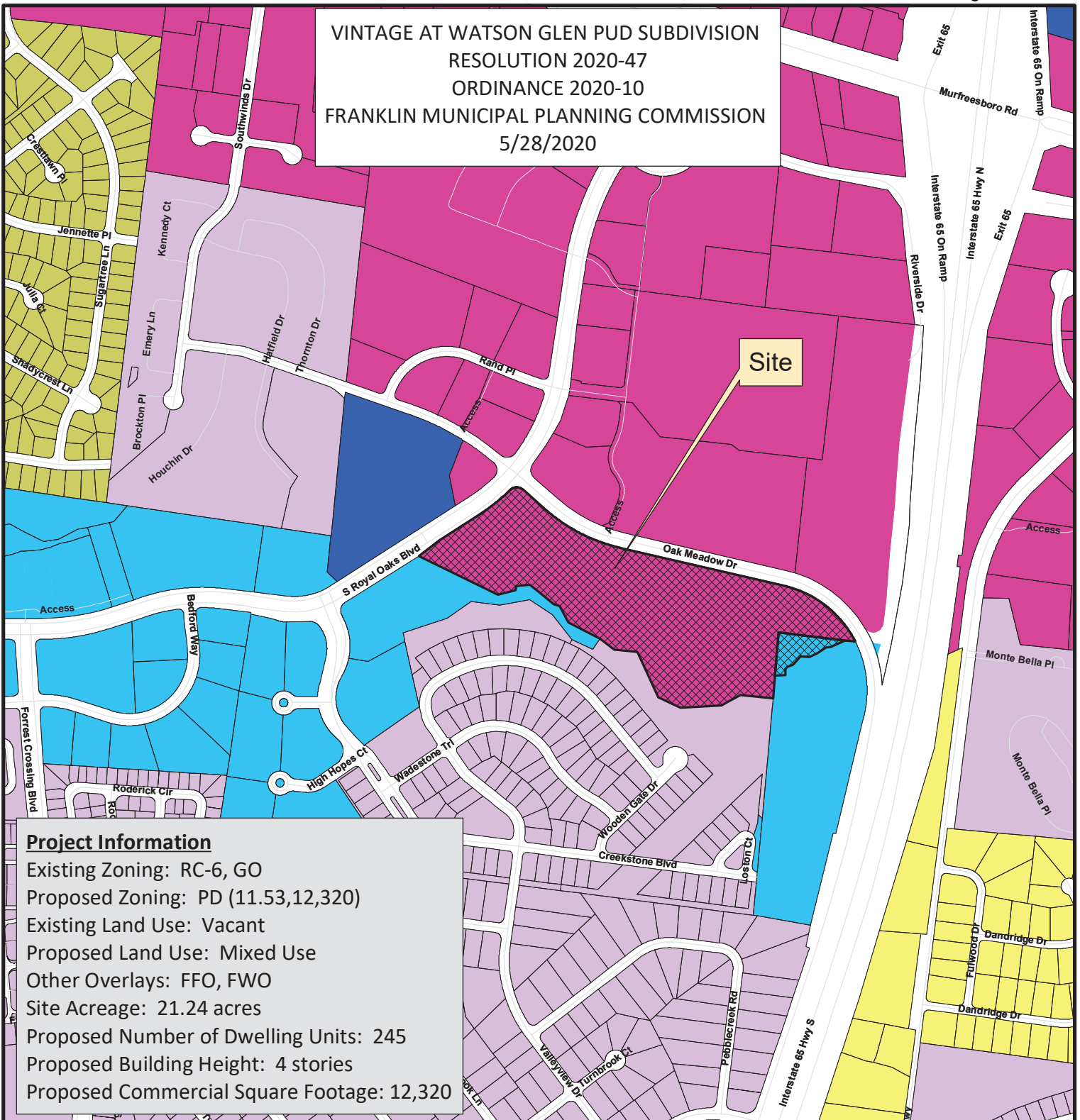
PASSED FIRST READING:

PUBLIC HEARING HELD:

PASSED SECOND READING:

PASSED THIRD READING:

VINTAGE AT WATSON GLEN PUD SUBDIVISION
 RESOLUTION 2020-47
 ORDINANCE 2020-10
 FRANKLIN MUNICIPAL PLANNING COMMISSION
 5/28/2020



Project Information

Existing Zoning: RC-6, GO
 Proposed Zoning: PD (11.53,12,320)
 Existing Land Use: Vacant
 Proposed Land Use: Mixed Use
 Other Overlays: FFO, FWO
 Site Acreage: 21.24 acres
 Proposed Number of Dwelling Units: 245
 Proposed Building Height: 4 stories
 Proposed Commercial Square Footage: 12,320

	Vintage Watson Glen		CI Civic Institutional District
	AG Agricultural District		NC Neighborhood Commercial
	ER Estate Residential District		CC Central Commercial District
	R1 Residential 1 District		DD Downtown District
	R2 Residential 2 District		1ST Avenue District
	R3 Residential 3 District		5TH Avenue District
	R4 Residential 4 District		RC6 Regional Commerce 6 District
	R6 Residential 6 District		RC12 Regional Commerce 12 District
	MR Mixed Residential District		GO General Office District
	PD Planned District		LI Light Industrial District
	OR Office Residential District		HI Heavy Industrial District



0 250 500 1,000
 Feet

This map was created by the Franklin Planning Department.
 It was compiled from the most authentic information available.
 The City is not responsible for any errors or omissions contained herein.
 All data and materials (c) copyright 2018. All rights reserved.

SITE DATA CHART

PROJECT NAME: VINTAGE AT WATSON GLEN
PROJECT NUMBER: 7247
ADDRESS: OAK MEADOW DRIVE
PARCEL(S): MAP 079, PARCELS 88 & 101.20
ACREAGE / SF OF SITE: 21.24 AC / 925,109 SF

BASE ZONING: RC-6
PROPOSED ZONING: PD (11.35, 12.320)
ZONING OVERLAY: FFO, FWO

BUILDING TYPES APPLIED: COMMERCIAL / MIXED-USE, MULTIFAMILY,
FRONTAGE TYPES APPLIED: URBAN LANDSCAPE, URBAN

SETBACKS: FRONT: 8'
SIDE: 5'
REAR: 20'

DWELLING UNIT COUNT (BY TYPE): MULTIFAMILY: 241

COMMERCIAL SF (BY USE): OFFICE: 4,420 SF
RESTAURANT: 7,900 SF
12,320 SF

TOTAL: 12,320 SF

NON-RESIDENTIAL: 5,500 SF

BUILDING HEIGHT: 1-4 STORIES

MINIMUM REQUIRED LSA: 0.2
PROVIDED LSA: 0.65
OPEN SPACE REQUIRED: 5% (48,255 SF)
OPEN SPACE PROVIDED: 5.5% (50,803 SF)
NATURAL AREA REQUIRED: 0%
NATURAL AREA PROVIDED: 46% (427,680)
TREE CANOPY RETENTION ACREAGE: 6.39 AC (244% OF REQUIRED)

PARKING REQUIRED (BY USE):
MULTI-FAMILY: 1.5 / I/R: 128 UNITS = 189
2.5 / 2BR: 101 UNITS = 253
3.0 / 3+BR: 14 UNITS = 42
TOTAL MULTI-FAMILY: 464

RESTAURANT: 10 / 1,000 SF + 1 EMPLOYEE
52 / (SEAT (DRIVE-THRU) / QUICK SERVICE)
RESTAURANT 1: 5,400 SF = 60
RESTAURANT 2: 45 SEATS = 24
TOTAL RESTAURANT: 84

OFFICE: 4 / 1,000 SF
OFFICES: 4,420 SF = 18 (TO BE SHARED WITH RESIDENTIAL)

TOTAL PARKING REQUIRED: 586

PARKING PROVIDED (BY USE):
MULTI-FAMILY / OFFICE: 495
RESTAURANT: 91
586

OFFICE: BOB GOODALL
393 MAPLE STREET
GALLATIN, TN 37066

APPLICANT: GAMBLE DESIGN COLLABORATIVE
ADDRESS: 324 LIBERTY PIKE
SUITE 145
(615) 975-5765
gdc@rsmi.com
CONTACT: GREG GAMBLE

EXISTING TREE SURVEY NOTE

ALL EXISTING VEGETATION SHOWN WAS LOCATED VIA AERIAL PHOTOGRAPHY AND/OR FIELD OBSERVATION.

UTILITY NOTE

THIS SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES, ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES AT THE SITE, PUBLIC RECORDS AND/OR MAPS PREPARED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN (3) THREE OR MORE THAN (10) TEN WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL 811.

MINERAL RIGHTS INFORMATION

AT THE PRESENT TIME, PROPERTY TITLE REFERENCE DOES NOT REFLECT ANY MINERAL RIGHTS ON THE SUBJECT PROPERTY.

HYDROLOGIC SOIL GROUP

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AmC3	Humphreys gravelly silty clay loam, 5 to 12 percent slopes, severely eroded	A	0.1	0.7%
ArB2	Armour silt loam, 2 to 6 percent slopes, eroded	B	3.6	17.2%
CaC2	Caprina silt loam, phosphatic, 5 to 12 percent slopes, eroded	D	2.2	10.4%
Eg	Egans silt loam, phosphatic	C	2.8	13.7%
Hu	Huntington silt loam, phosphatic	B	7.9	38.1%
SiC3	Silversville clay loam, 5 to 12 percent slopes, severely eroded	A	2.7	13.0%
SiO3	Silversville clay loam, 12 to 20 percent slopes, severely eroded	A	1.4	6.8%
Totals for Area of Interest			20.8	100.0%

EXISTING GRADING & DRAINAGE DATA CHART:

DRAINAGE:
SITE AREA: 21.24 AC
IMPERVIOUS AREA: 0.0 AC
DISTURBED AREA: N/A
Existing Rv VALUE: 0.17 (PROJECT AREA)
PEAK FLOW RUNOFF: 20 CFS

Slopes Table			
Number	Minimum Slope	Maximum Slope	Color
1	14.00%	19.99%	
2	20.00%	100.00%	

LEGEND

- CM(O) CONCRETE MONUMENT (OLD)
R(O) IRON ROD (OLD)
R(N) IRON ROD (NEW)
(5/8" x 18" W/CAP STAMPED "RAGAN SMITH & ASSOCIATES")
CATCH BASIN/CURB INLET
RCF REINFORCED CONCRETE PIPE
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ELECTRIC BOX
TRANSFORMER PAD
INVERT
HEADWALL
FIRE HYDRANT
FIBER OPTIC BOX
- Ø UTILITY POLE
-X-X- FENCE
-UGE- UNDERGROUND ELECTRIC LINE
STORM STRUCTURE
FEMA FLOODWAY AREA
ZONE "AE"
LOT NUMBER
SIGN
WATER VALVE
LIGHT STANDARD
ELECTRIC STUBOUT
R.O.W.C.T. REGISTER'S OFFICE FOR
WILLAMSON COUNTY, TN

STATEMENT OF IMPACTS

WATER FACILITIES
WATER SERVICE WILL BE PROVIDED BY . THE WATER MAINS ARE LOCATED ALONG
241 UNITS x 350 GPD = 84,350 GPD

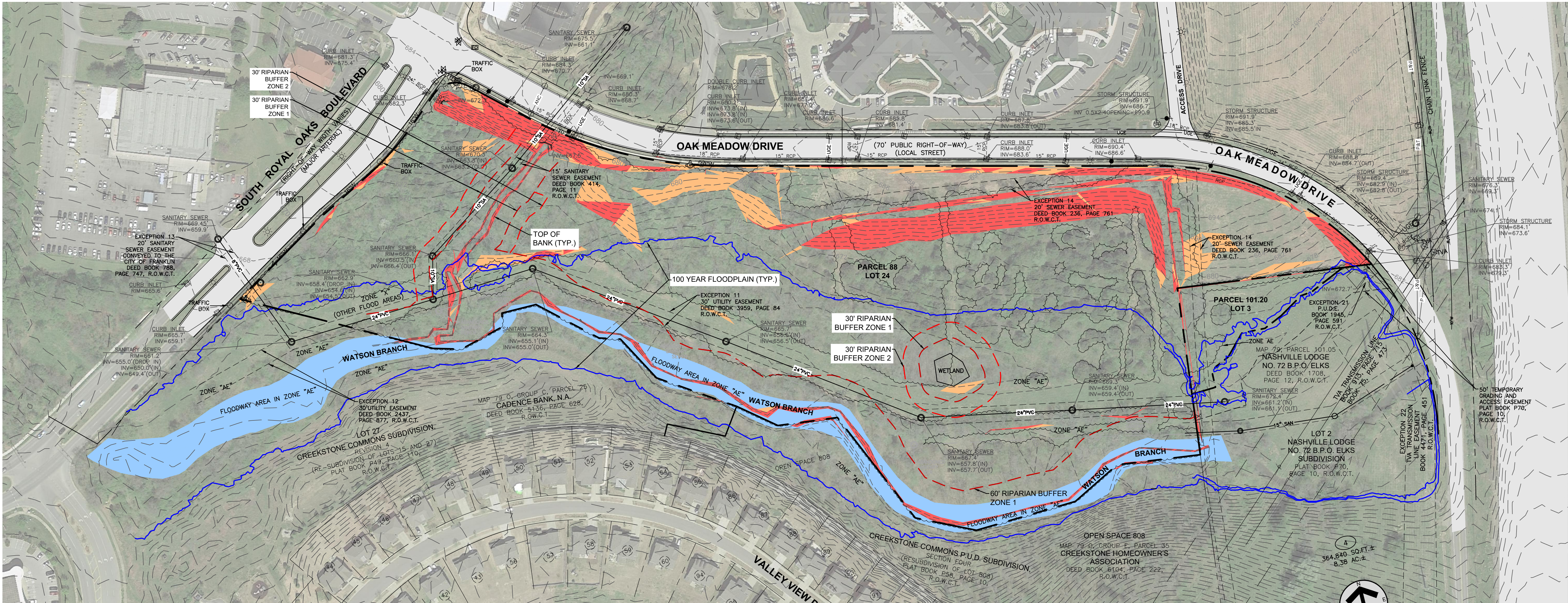
SEWER FACILITIES
SEWER SERVICE WILL BE PROVIDED BY THE CITY OF FRANKLIN.

REPURIFIED (REUSE) WATER FACILITIES
NOT AVAILABLE TO THIS SITE.

POLICE, FIRE, AND RECREATIONAL FACILITIES
NEAREST POLICE STATION: 3.7MI (FRANKLIN POLICE DEPARTMENT)
NEAREST FIRE STATION: 1.4 MI (FRANKLIN FIRE DEPARTMENT)
NEAREST RECREATIONAL FACILITY: 1.5 MI (SOAR ADVENTURE TOWER)

PROJECTED STUDENT POPULATION
241 x 0.64 = 155 STUDENTS

REFUSE STORAGE AND SANITATION COLLECTION FACILITIES
REFUSE COLLECTION FOR THE DEVELOPMENT SHALL BE PROVIDED BY



NOTE:
BEARINGS SHOWN HEREON ARE BASED ON THE
TENNESSEE STATE PLANE COORDINATE SYSTEM,
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PROJECT NAME:	VINTAGE AT WATSON GLEN	
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BASE ZONING:	RC-6	
PROPOSED ZONING:	PD (11.35, 12.320)	
ZONING OVERLAY:	FFO, FWO	
BUILDING TYPES APPLIED:	COMMERCIAL / MIXED-USE, MI	
FRONTAGE TYPES APPLIED:	URBAN LANDSCAPE, URBAN	
SETBACKS:		
FRONT:	8'	
SIDE:	5'	
REAR:	20'	
DWELLING UNIT COUNT (BY TYPE):	MULTIFAMILY:	241
COMMERCIAL SF (BY USE):	OFFICE:	4,420 SF
	RESTAURANT:	<u>7,000 SF</u>
TOTAL:		12,320 SF
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BUILDING HEIGHT:		1-4 STORIES
MINIMUM REQUIRED LSA:		0.2
PROVIDED LSA:		0.85
OPEN SPACE REQUIRED:		5% (48,255 SF)
OPEN SPACE PROVIDED:		5% (50,803 SF)
NATURAL AREA REQUIRED:		0%
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TREE CANOPY RETENTION ACREAGE:		6.39 AC (244% OF REQUIRED)

PARKING REQUIRED (BY USE):		
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 OFFICE:		
	BOB GOODALL 393 MAPLE STREET GALLATIN, TN 37066	
 APPLICANT:		
GAMBLE DESIGN COLLABORATIVE		
324 LIBERTY PIKE		
SUITE 145		
(615) 975-7855		
greg.gamble@gdc-tn.com		
GREG GAMBLE		
 CONTACT:		

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Eg	Egan silt loam, phosphatic	C	2.8	13.7%
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		ST	STORM STRUCTURE
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RCP	REINFORCED CONCRETE PIPE	⊗	LOT NUMBER
	SANITARY SEWER MANHOLE	—●—	SIGN
E	ELECTRIC BOX	W	WATER VALVE
TP	TRANSFORMER PAD	*	LIGHT STANDARD
IN	INVERT	OE	ELECTRIC STUBOUT
HW	HEADWALL		
	FIRE HYDRANT	R.O.W.C.T.	REGISTER'S OFFICE FOR WILLAMSON COUNTY, TN
FO	FIBER OPTIC BOX		

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WATER SERVICE WILL BE PROVIDED BY . THE WATER MAINS ARE
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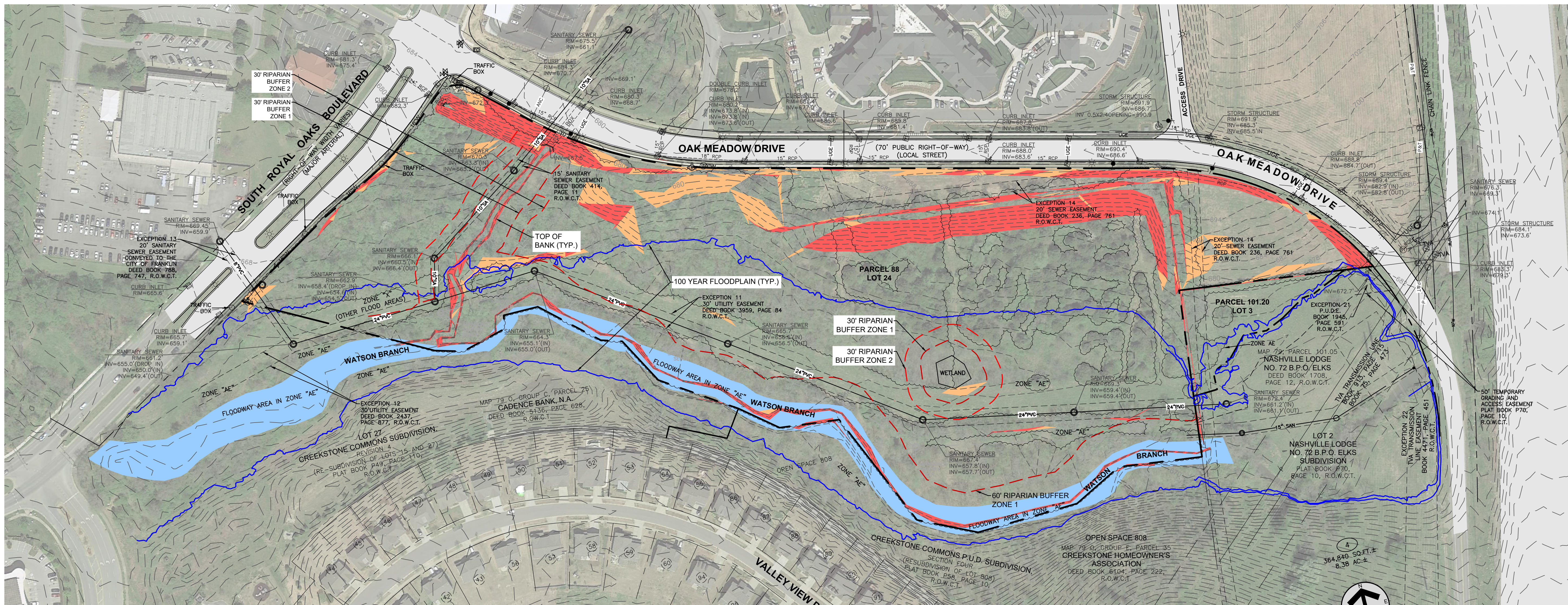
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NOTE:
BEARINGS SHOWN HEREON ARE BASED ON THE
TENNESSEE STATE PLANE COORDINATE SYSTEM,
ZONE 5301, FIPZONE 4100; NAD 83 DATUM.

From: [Greg Gamble](#)
To: [Ken Moore](#); [Margaret Martin](#); [danamclendon@mac.com](#); [Burger Bev](#); [Scott Speedy](#); [Pearl Bransford](#); [Clyde Barnhill](#); [Brandy Blanton](#); [Ann Petersen](#); [Orr, Michael](#); [Scott Harrison](#); [Mike Hathaway](#); [roger.lindsey@nashville.gov](#); [Alma Mclemore](#); [jimmy@tennesseevalleyhomes.com](#); [mdadst@aol.com](#); [Jennifer Szilagyi](#)
Cc: [Eric Stuckey](#); [Vernon Gerth](#); [Emily Hunter](#); [Amy Diaz-Barriga](#); [Jimmy Wiseman](#); [Dianna Tomlin](#); [Ross Bradley](#); [Goodall, Bob](#)
Subject: Vintage At Watson Glen
Date: Thursday, June 11, 2020 9:11:47 AM

ATTENTION COF staff: This email originated from outside the City of Franklin. Please use discretion when clicking on attachments & links from unknown senders or suspicious emails.

Mayor, Aldermen, and Planning Commissioners,

We made the unfortunate discovery yesterday that our firm failed to properly notify the neighbors of the proposed Vintage development on Oak Meadow of the Planning Commission Hearing on May 28th. I am embarrassed that we had miscommunication in our office during the month of April due to Covid stay at home restrictions. I sincerely thought that this step was completed. This is not typical for how we work at GDC. We believe in the full transparency of planning and neighborhood outreach.

The good news is we will likely be able to have an in-person Planning Commission soon, and will be able to have a more appropriate public hearing at the Planning Commission for this proposed mixed use neighborhood. We have asked to be placed on the July 23rd Planning Commission, and this has been granted by staff. We will start the Aldermen process over after the Planning Commission meeting.

I apologize for any confusion that we have created.

Sincerely,

Greg Gamble



615.975.5765

324 Liberty Pike, Suite 145

Franklin, TN 37064



File #: 20-0665

DATE: June 11, 2020

TO: Board of Mayor and Alderman

FROM: Emily Hunter, Planning Director
Amy Diaz-Barriga, Planning Supervisor
Dianna Tomlin, Principal Planner

SUBJECT:

*Consideration Of Resolution 2020-47, A Resolution Approving A Development Plan For Vintage At Watson Glen PUD Subdivision, For The Property Located South Of Oak Meadow Drive and East Of South Royal Oaks Boulevard. Cancelling The Public Hearing For July 14, 2020 And Sending The Item Back To Planning Commission On July 23, 2020.

FMPC 5/28/20, 8-0-1

WS 6/9/20

PURPOSE:

Project Information

COF Project Number: 7247

Applicant: Gamble Design Collaborative, Greg Gamble

Owner: Franklin Investment Holdings, LLC, Robert Goodall

BACKGROUND/STAFF COMMENTS:

Required public notice to property owners within 500 feet of the development was failed to be made prior to the May 28, 2020 Planning Commission meeting. Staff recommends that this item be sent back to the July 23, 2020 Planning Commission, with proper public notice, and that the July 14, 2020 BOMA public hearing be cancelled.

Envision Franklin places this property in the Neighborhood Mixed Use Design Concept. The Neighborhood Mixed Use design concept provides a diverse mix of high activity uses with a connected and walkable layout. These centers and corridors should have coordinated development patterns at a pedestrian scale, with high quality architecture, plazas, sidewalks, and pedestrian and bicycle amenities to activate the street and connect these gathering places to the residential neighborhoods they support.

The proposed development meets the goals of the Design Concept. It has an active commercial corner and first floor commercial in buildings one, two and three, with multi-family residential units above. The project creates a walkable character both along the sidewalk at Oak Meadow and internally from the multi family to the restaurant area. A large natural area will be developed with trails and offer a buffer between this development and the existing neighborhood.

PROJECT CONSIDERATIONS:

Existing and future transit routes were discussed on May 12 with planning staff, Franklin Transit Authority, and the developer. Based on section 10.3.1 of the Franklin Zoning Ordinance it was determined that a transit stop would not be required with this development.

PROCEDURAL REQUIREMENTS:

1. The applicant shall upload the corrected plan to the online plan review website (<https://franklin.contractorsplanroom.com/secure/>). All revisions to the approved plans shall be "clouded." With the resubmittal, each condition of approval/open issue in the online plan review system shall contain a full response from the applicant as to the satisfaction or completion of that condition.
2. The city's project identification number shall be included on all correspondence with any city department relative to this project.

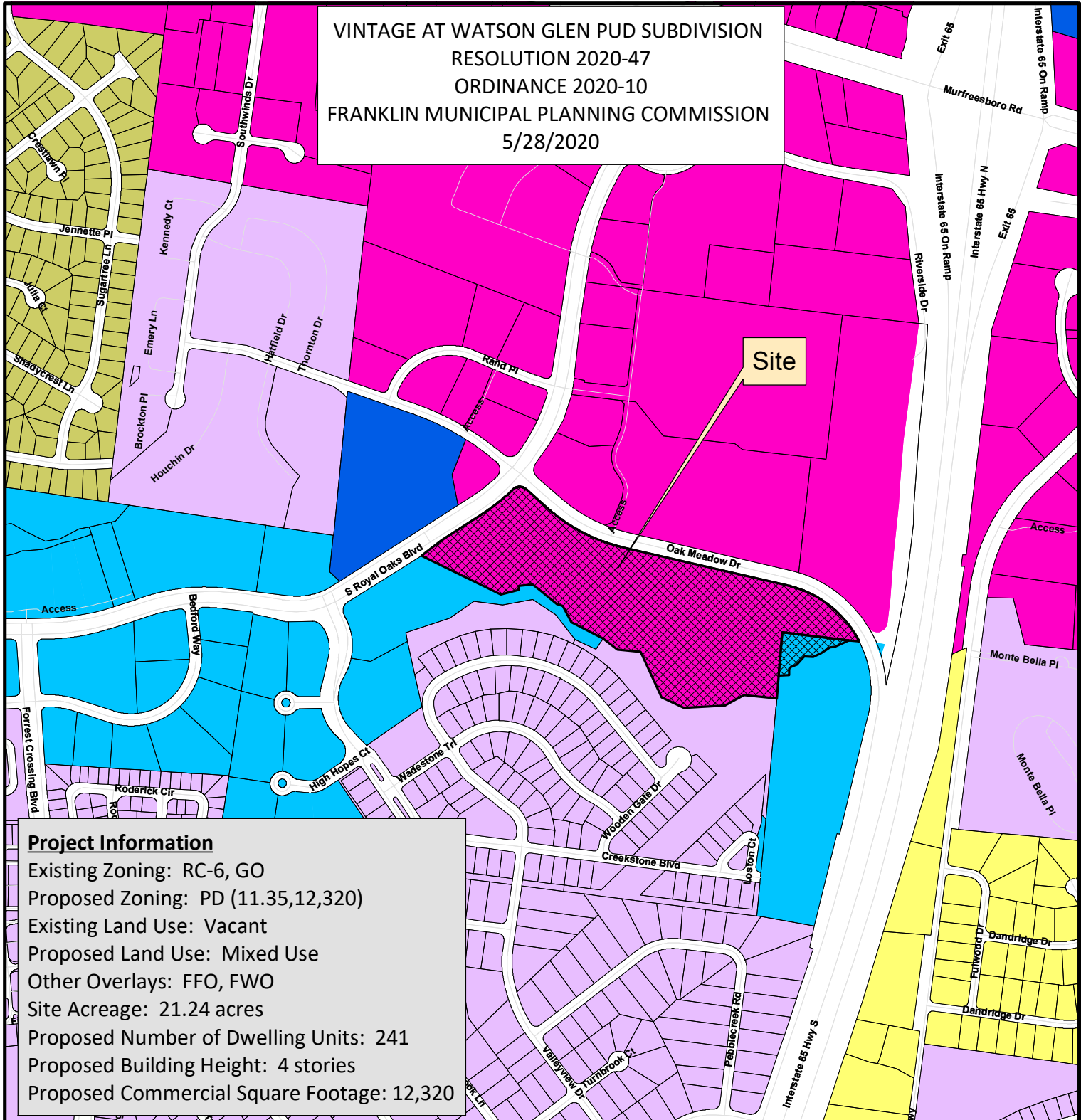
FINANCIAL IMPACT:

Unknown.

RECOMMENDATION:

Staff recommends Resolution 2020-47 be sent back to the July 23, 2020 Planning Commission, with proper public notice, and that the July 14, 2020 BOMA public hearing be cancelled.

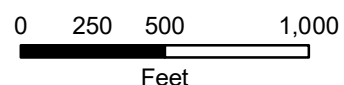
VINTAGE AT WATSON GLEN PUD SUBDIVISION
 RESOLUTION 2020-47
 ORDINANCE 2020-10
 FRANKLIN MUNICIPAL PLANNING COMMISSION
 5/28/2020



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PD Planned District	LI Light Industrial District
OR Office Residential District	HI Heavy Industrial District



This map was created by the Franklin Planning Department.
 It was compiled from the most authentic information available.
 The City is not responsible for any errors or omissions contained hereon.
 All data and materials (c) copyright 2018. All rights reserved.

RESOLUTION 2020-47

**A RESOLUTION APPROVING A DEVELOPMENT PLAN FOR VINTAGE AT WATSON GLEN
PUD SUBDIVISION, FOR THE PROPERTY LOCATED SOUTH OF OAK MEADOW DRIVE
AND EAST OF SOUTH ROYAL OAKS BOULEVARD.**

WHEREAS, the Board of Mayor and Aldermen (BOMA) of the City of Franklin, Tennessee, has, or will, approve the zoning for the property as part of Ordinance 2020-10; and

WHEREAS, the Planned Unit Development (PUD) process is a review procedure that is intended to encourage innovative land planning and design and avoid the monotony sometimes associated with large developments by:

- (a) Reducing or eliminating the inflexibility that sometimes results from strict application of zoning standards that were designed primarily for individual lots;
- (b) Allowing greater freedom in selecting the means to provide access, light, open space, and design amenities;
- (c) Encouraging a sensitive design that respects the surrounding established land use character and natural or man-made features of the site including, but not limited to, trees, historic features, streams, hillsides, and floodplains;
- (d) Promoting quality design and environmentally sensitive development by allowing development to take advantage of special site characteristics, locations, and land uses; and
- (e) Allowing deviations from certain zoning standards that would otherwise apply if not contrary to the general spirit and intent of this ordinance; and

WHEREAS, the PUD process requires the approval of a Development Plan that is reviewed and approved by BOMA, after a public hearing and a recommendation by the Franklin Municipal Planning Commission; and

WHEREAS, in accordance with the provisions of the City of Franklin, Tennessee, Zoning Ordinance, and as required by Tennessee Code Annotated § 13-4-310, as amended, the approval of the Development Plan by the BOMA will initiate a vesting period during which the development standards adopted by the City and in effect on the date of approval shall remain the standards applicable to the approved Development Plan.

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

SECTION I. That the legal description of the property included in the Development Plan is as follows:

PREMISES CONSIDERED	
Map-Parcel	Acres
079-08800	20.54
079-10120	0.70
Total	21.24

SECTION II. That the attached Location Map and Survey shall serve the purpose of further delineating the geographical boundaries as described by this Resolution.

SECTION III. That the overall entitlements for the Vintage at Watson Glen are as follows:

Entitlements	Vintage at Watson Glen
Base Zone District	PD (11.35/12,320)
Other Zoning Overlays	FWO, FFO
Number of Dwelling Units	241
Number of Nonresidential Square Footage	12,320
Open Space Requirements	46,255 Square Feet
Number of Phases in Development	2

SECTION IV. That the Development Plan, the exhibits accompanying the Development Plan, and all conditions and restrictions placed upon the Development Plan by the Franklin Municipal Planning Commission and this Board shall be made a part of this Resolution as though copied verbatim herein, and that a permanent record of the Development Plan, the exhibits accompanying the Development Plan, and all such conditions and restrictions shall be kept in the Franklin Planning and Sustainability Department.

SECTION V. That this Resolution shall take effect from and after the passage of Ordinance 2020-10, on third and final reading, the health, safety, and welfare of the citizens requiring it.

BE IT SO RESOLVED AND DONE this the _____ day of _____, 2020.

Attest:

City of Franklin, Tennessee:

Eric S. Stuckey
City Administrator

Dr. Ken Moore
Mayor

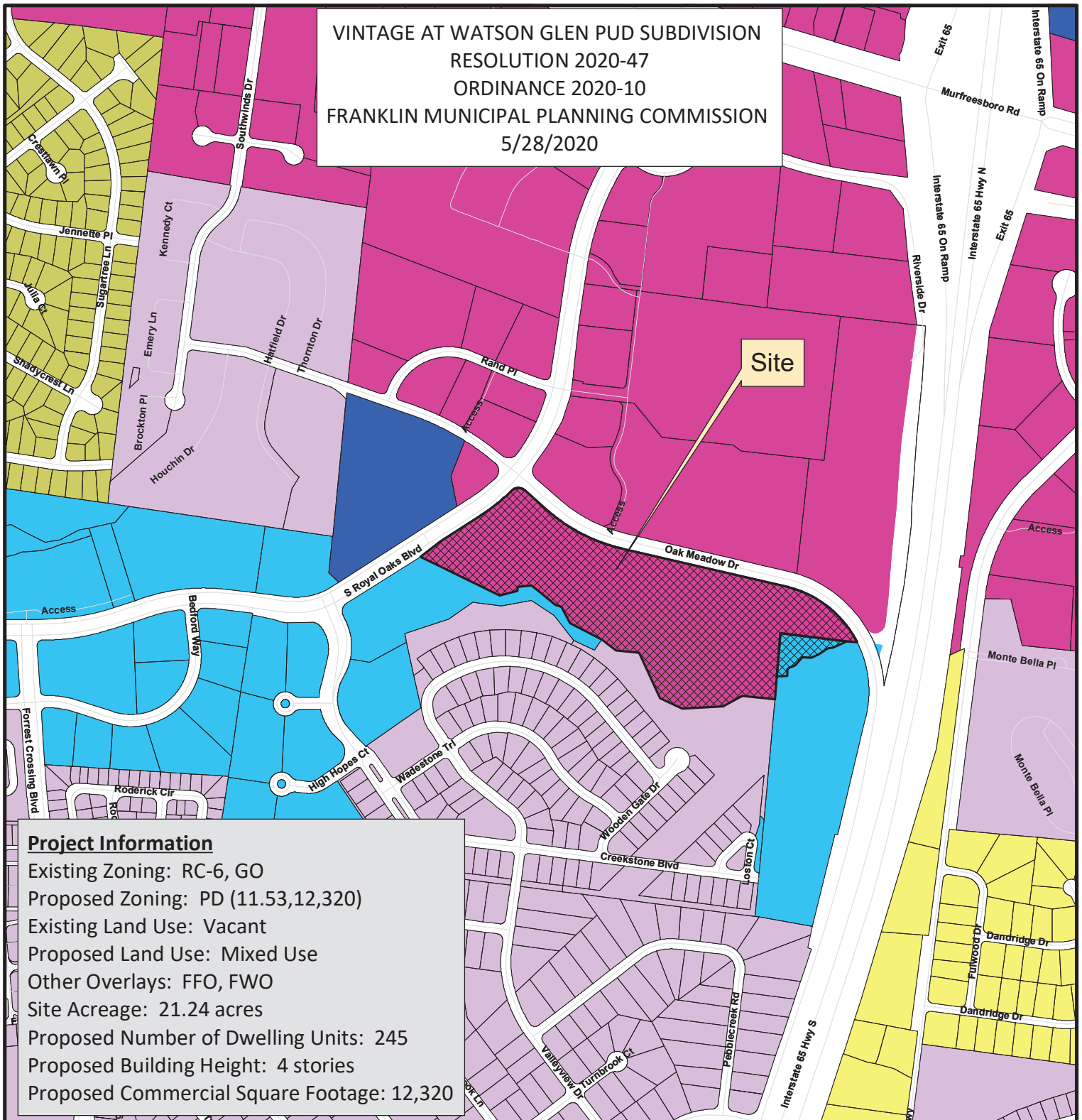
Approved as to form by:

Sauna R. Billingsley
City Attorney

PREAPPLICATION CONFERENCE:
BOMA/FMPC JOINT CONCEPTUAL WORKSHOP:
NEIGHBORHOOD MEETING:
PLANNING COMMISSION RECOMMENDED APPROVAL:
PUBLIC HEARING AND BOMA APPROVAL:

April 6, 2020
April 23, 2020
May 6, 2020

VINTAGE AT WATSON GLEN PUD SUBDIVISION
 RESOLUTION 2020-47
 ORDINANCE 2020-10
 FRANKLIN MUNICIPAL PLANNING COMMISSION
 5/28/2020



Project Information

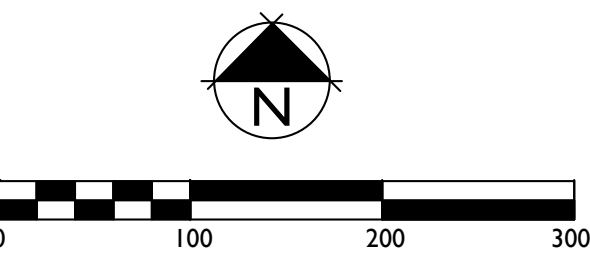
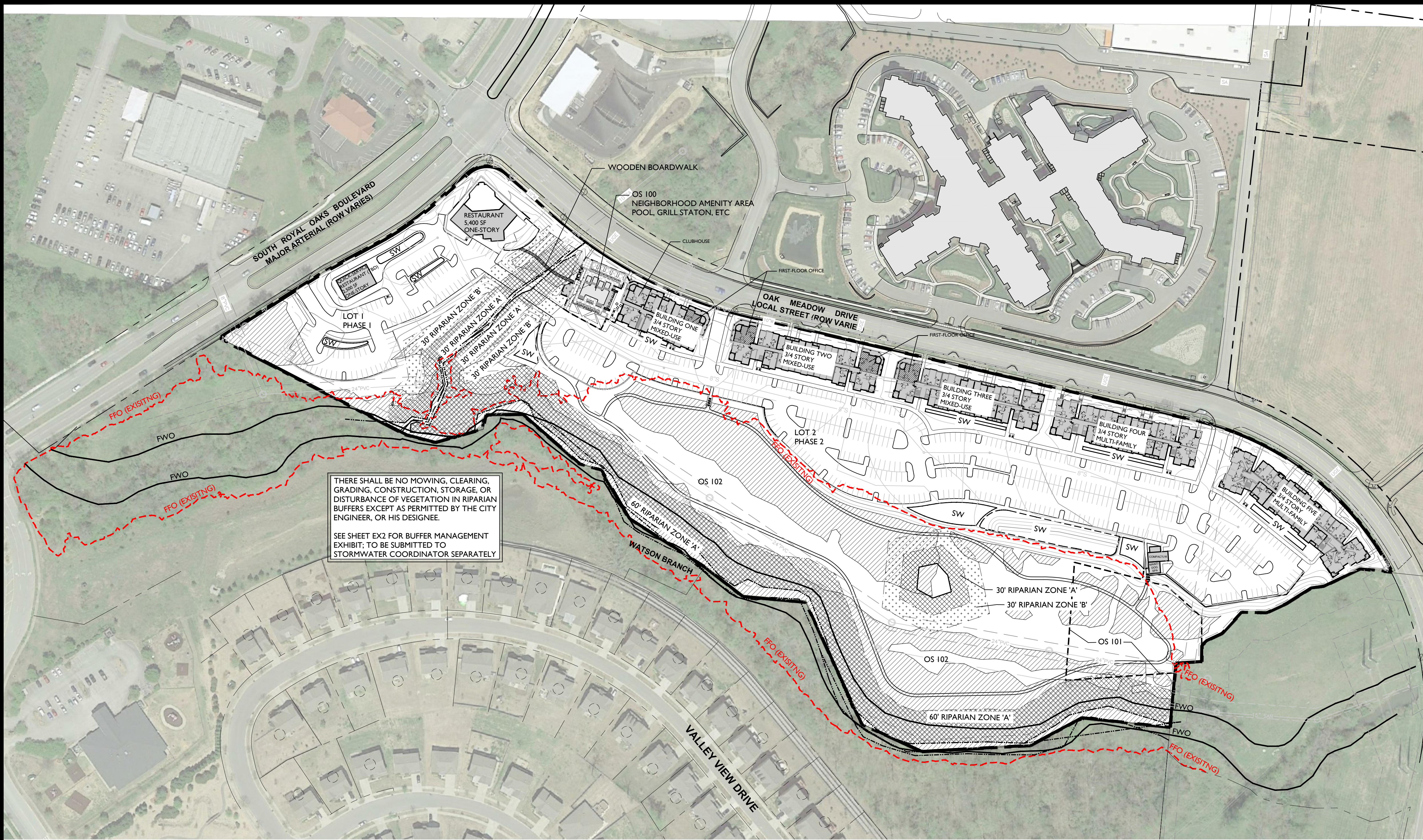
Existing Zoning: RC-6, GO
 Proposed Zoning: PD (11.53,12,320)
 Existing Land Use: Vacant
 Proposed Land Use: Mixed Use
 Other Overlays: FFO, FWO
 Site Acreage: 21.24 acres
 Proposed Number of Dwelling Units: 245
 Proposed Building Height: 4 stories
 Proposed Commercial Square Footage: 12,320

	Vintage Watson Glen		CI Civic Institutional District
	AG Agricultural District		NC Neighborhood Commercial
	ER Estate Residential District		CC Central Commercial District
	R1 Residential 1 District		DD Downtown District
	R2 Residential 2 District		1ST Avenue District
	R3 Residential 3 District		5TH Avenue District
	R4 Residential 4 District		RC6 Regional Commerce 6 District
	R6 Residential 6 District		RC12 Regional Commerce 12 District
	MR Mixed Residential District		GO General Office District
	PD Planned District		LI Light Industrial District
	OR Office Residential District		HI Heavy Industrial District



0 250 500 1,000
 Feet

This map was created by the Franklin Planning Department.
 It was compiled from the most authentic information available.
 The City is not responsible for any errors or omissions contained herein.
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KEY	
	PRESERVED CANOPY
	RIPARIAN ZONE 'A'
	RIPARIAN ZONE 'B'
	SLOPES - 14 - 20%
	SLOPES - 20% +
	OPEN SPACE

SITE DATA CHART	
PROJECT NAME:	VINTAGE AT WATSON GLEN
PROJECT NUMBER:	XXXX
ADDRESS:	OAK MEADOW DRIVE
PARCELS:	MAP 079, PARCELS 88 & 101.20
ACREAGE / SF OF SITE:	21.24 AC / 925,109 SF
BASE ZONING:	RC-6
PROPOSED ZONING:	PD (11.53, 17.820)
ZONING OVERLAY:	FFO, FWO
BUILDING TYPES APPLIED:	COMMERCIAL / MIXED-USE, MULTIFAMILY, URBAN LANDSCAPE, URBAN
FRONTAGE TYPES APPLIED:	
SETBACKS:	
	FRONT: 8'
	SIDE: 5'
	REAR: 20'
DWELLING UNIT COUNT (BY TYPE):	
	MULTIFAMILY: 245
COMMERCIAL SF (BY USE):	
	OFFICE: 4,420 SF
	NON-RESIDENTIAL: 5,500 SF
	RESTAURANT: 7,900 SF
	17,820 SF
TOTAL:	
BUILDING HEIGHT:	1-3 STORIES
MINIMUM REQUIRED LSA:	.2
PROVIDED LSA:	.65
OPEN SPACE REQUIRED:	5% (46,255 SF)
OPEN SPACE PROVIDED:	5.5% (50,803 SF)
NATURAL AREA REQUIRED:	0%
NATURAL AREA PROVIDED:	46% (427,660)
TREE CANOPY RETENTION ACREAGE:	6.39 AC (244% OF REQUIRED)
PARKING REQUIRED (BY USE):	
	MULTI-FAMILY:
	1.5 / 1BR: 126 UNITS = 189
	2.5 / 2BR: 105 UNITS = 263
	3.0 / 3+BR: 14 UNITS = 42
	TOTAL MULTI-FAMILY: 494
RESTAURANT:	
	10 / 1,000 SF + 1/EMPLOYEE
	.52 / SEAT (DRIVE-THRU / QUICK SERVICE)
	RESTAURANT 1: 5,400 SF = 60
	RESTAURANT 2: 45 SEATS = 24
	TOTAL RESTAURANT: 84
OFFICE:	
	4 / 1,000 SF
	OFFICES: 4,420 SF = 18 (TO BE SHARED WITH RESIDENTIAL)
	TOTAL PARKING REQUIRED: 578
PARKING PROVIDED (BY USE):	
	MULTI-FAMILY / OFFICE: 495
	RESTAURANT: 94
	TOTAL PARKING PROVIDED: 589
OWNER:	808 GOODALL 393 MAPLE STREET GALLATIN, TN 37066
APPLICANT:	GAMBLE DESIGN COLLABORATIVE
ADDRESS:	324 LIBERTY PIKE SUITE 145 (615) 975-5765 greg.gamble@gdc-tn.com GREG GAMBLE
CONTACT:	

OPEN SPACE REQUIREMENT		
MINIMUM OPEN SPACE REQUIREMENT: 5%		
REQUIRED: 46,255 SF		
PROVIDED: 50,803 SF TOTAL (5.5%)		
ADDITIONAL NATURAL AREA: 317,172 SF		
TOTAL OPEN SPACE PROVIDED: 367,975 SF		
LOT	TYPE	AREA (SF)
100	NEIGHBORHOOD AMENITY	10,059
101	NEIGHBORHOOD AMENITY	40,744
ADDITIONAL OPEN SPACE		
102	NATURAL AREA	317,172

TREE CANOPY RETENTION	
OVERALL SITE AREA = 925,109 SF (21.24 AC)	
EXISTING TREE CANOPY	PRESERVED TREE CANOPY
633,789 SF (14.55 AC)	278,429 SF (6.39 AC)
TREE CANOPY DATA:	
TOTAL EXISTING TREE CANOPY:	633,789 SF: 14.55 AC (69% OF SITE)
REQUIRED CANOPY PRESERVATION:	18% (114,082 SF: 2.61 AC)
PROVIDED CANOPY PRESERVATION:	278,429 SF: 6.39 AC (244% OF REQUIRED)

STATEMENT OF IMPACTS

WATER FACILITIES
WATER SERVICE WILL BE PROVIDED BY THE CITY OF FRANKLIN. THE WATER MAINS ARE LOCATED ALONG SOUTH ROYAL OAKS BLVD. 245 UNITS x 350 GPD = 85,750 GPD

SEWER FACILITIES
SEWER SERVICE WILL BE PROVIDED BY THE CITY OF FRANKLIN.

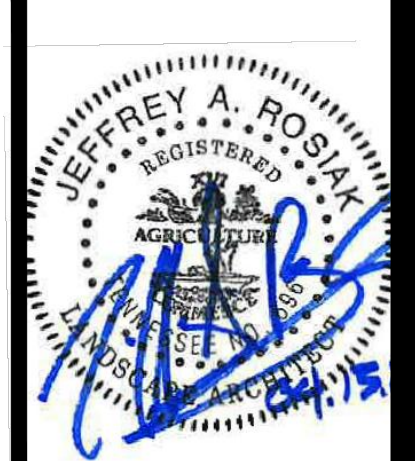
REPURIFIED (REUSE) WATER FACILITIES
NOT AVAILABLE TO THIS SITE.

POLICE, FIRE, AND RECREATIONAL FACILITIES
NEAREST POLICE STATION: 3.7 MI (FRANKLIN POLICE DEPARTMENT)
NEAREST FIRE STATION: 1.4 MI (FRANKLIN FIRE DEPARTMENT)
NEAREST RECREATIONAL FACILITY: 1.5 MI (SOAR ADVENTURE TOWER)

PROJECTED STUDENT POPULATION
245 x 0.64 = 157 STUDENTS

REFUSE STORAGE AND SANITATION COLLECTION FACILITIES
REFUSE COLLECTION FOR THE DEVELOPMENT SHALL BE PROVIDED BY THE CITY OF FRANKLIN

PHASING			
DEVELOPMENT	NON-RESIDENTIAL	SF	MULTIFAMILY
OVERALL	RESTAURANT, RETAIL, OFFICE, ETC.	17,820	245
PHASE 1	RESTAURANT	7,900	0
PHASE 2	OFFICE, RETAIL, ETC.	9,920	245



Revision Date	
△	
△	
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CONDITIONS OF APPROVAL:

Open Issues: 22 These issues are currently being filtered

Addressing

General Issues

100. Addressing

lori.jarosz@franklintn.gov The restaurant that is closer to Oak Meadow Drive is 240 South Royal Oaks Blvd and the other restaurants is 250 South Royal Oaks Blvd. These addresses can be added at site plan.
[Edited By Lori Jarosz]

Engineering - Development Plan Checklist

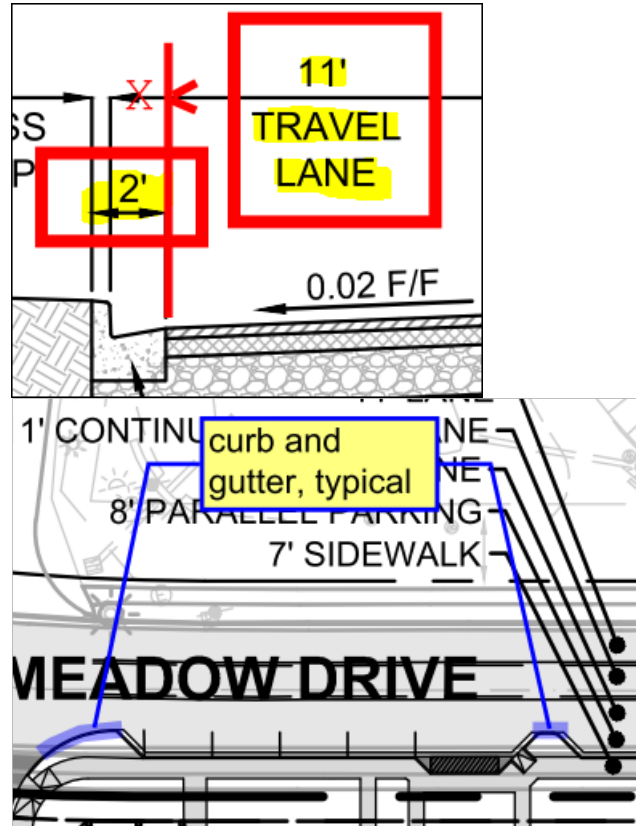
General Issues

45. ROW Dedication

joe.marlo@franklintn.gov Comment partially addressed.

Applicant shall revise the Oak Meadow Drive Typical Section on C4.0 such that the 11'-0" travel lane width is shown exclusive of the gutter width.

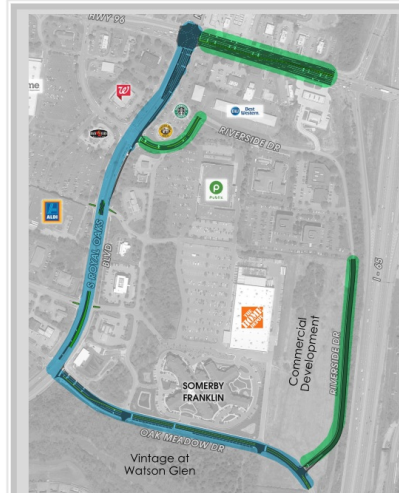
Applicant shall show COF standard gutter at all curb within ROW, including at bump-outs for on-street parking on Oak Meadow Drive. No travel or turn lanes on Oak Meadow Drive shall be less than 11'-0" wide, exclusive of gutter width.



68. F. Development Plan

jimmy.wiseman@franklinton.gov

Per the presentation to the Board of Mayor and Aldermen this development plan shall be responsible for the improvements on Oak Meadow Drive and Royal Oak Boulevard as identified in the Traffic Impact Analysis.



Developer Improvements

VINTAGE IMPROVEMENTS:

SIGNAL TIMING ON 96
INTERSECTION OF 96 AND ROYAL OAKS
ROYAL OAKS TURN LANES
ROYAL OAKS INTERSECTIONS
OAK MEADOW DRIVE

COMMERCIAL DEVELOPMENT IMPROVEMENTS

HIGHWAY 96 SAFETY CONSIDERATION
RIVERSIDE DRIVE AT STARBUCKS
RIVERSIDE DRIVE CONNECTION TO OAK MEADOW

74. H. Stormwater Management Plan

lance.fittro@franklinton.gov

This is an advisory comment to be addressed at Site Plan:

An extensive network of permeable pavement is indicated throughout the site running parallel to utility mains located under the street and parking lot drive aisles. While specific locations of service lines and utility crossings are not required to be shown on the Development Plan, it should be understood that with any Site Plan including these features, no utility mains, service lines, or utility crossings of any kind will be permitted underneath permeable pavement areas. Where crossings are necessary, it is expected that these will be accommodated within pavement breaks for landscape islands, under sidewalk crossings, etc. Depiction of any utilities crossing under or through green infrastructure practices on the Development Plan shall not be construed as permission to construct such crossings with future Site Plans.

79. Off Site Improvements

jimmy.wiseman@franklinton.gov

The offset agreement has been submitted for review. The applicant shall remove Sheet C6.1 to avoid conflicts and confusion. The improvements shall be discussed further with FMPC and the BOMA.

Engineering Review

2020-04-13 Vintage at Watson Glen PUD Development Plan - Initial Submittal UPDATED ARCHITECTURE.pdf

92. General Information

jimmy.wiseman@franklinton.gov

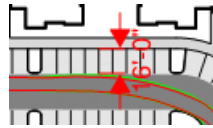
The applicant shall update the TIS to reflect the drive-thru restaurant prior One Stop.

Fire Protection Review

General Issues

80. AutoTurn

curt.edelmann@franklintn.gov Where a parking stall is 16-feet deep, the auto-turn must show all portions of the truck clear the parking spaces by a minimum of 2-feet. Where it is not possible to maintain a 2-foot clearance, the spaces must be designated as COMPACT CAR PARKING ONLY spaces.



MTEMC

2020-05-07 Vintgae at Watson Glen Development Plan Resubmittal.pdf

95. MTEMC Requirements

ehale@mtmc.com Developer should contact MTEMC for electric layout, installation requirements and easement information. There will be offsite work required for service to this site.

Parks

General Issues

3. Parkland Impact Fee

kevinl@franklintn.gov Applicant shall add Parkland information to the plan set. Preferably on sheet C2.0.

ADD:

Parkland Note:

245 units x \$4,304=\$1,054,480 due at Final Plat.

Parkland Impact fees are being requested through Parkland Impact Agreement.

Please contact Kevin Lindsey at Parks for more information.

[Edited By Kevin Lindsey]

Planning

General Issues

58. Open Space

dianna.tomlin@franklintn.gov Label the required 5% open space as one of the types required by the zoning ordinance.

- 11.3 Natural Area
- 11.4 Greenway
- 11.5 Neighborhood Amenities
- 11.6 Pocket Park
- 11.7 Courtyard
- 11.8 Square or Green
- 11.9 Outdoor Dining Area
- 11.10 Plaza

94. Resubmittal Warning

dianna.tomlin@franklintn.gov Please see comments from Water Quality. We need a wetland delineation

96. Parking counts

amy.diaz-barriga@franklin.tn.gov

Correctly list parking counts, on sheet C2. Individual requirements are inconsistent with the parking provided by use summary at the bottom.

PARKING REQUIRED (BY USE):			
MULTI-FAMILY:			
1.5 / 1BR:	126 UNITS =	189	
2.5 / 2BR:	101 UNITS =	253	
3.0 / 3+BR:	14 UNITS =	42	
TOTAL MULTI-FAMILY			484
RESTAURANT:			
10 / 1,000 SF + 1/EMPLOYEE			
.52 / SEAT (DRIVE-THRU / QUICK SERVICE)			
RESTAURANT 1:	5,400 SF =	60	
RESTAURANT 2:	45 SEATS =	24	
TOTAL RESTAURANT:			84
OFFICE:			
4 / 1,000 SF			
OFFICES:	4,420 SF =	18	
TOTAL PARKING REQUIRED:			586
PARKING PROVIDED (BY USE):			
MULTI-FAMILY / OFFICE:			495
RESTAURANT:			93
TOTAL PARKING PROVIDED:			588

98. Heights

amy.diaz-barriga@franklin.tn.gov

clarify in the site data chart that the height at the street is 1-3 stories, but the height of the buildings are 4 stories on the back side

99. Entitlements

amy.diaz-barriga@franklin.tn.gov

Remove the reference to non-residential SF on sheet C2.0 Site Data Chart. see below. It is confusing as it is not included in the overall entitlements.

DWELLING UNIT COUNT (BY TYPE):		
MULTIFAMILY:		241
COMMERCIAL SF (BY USE):		
OFFICE:	4,420 SF	
RESTAURANT:	7,900 SF	
TOTAL:	12,320 SF	
NON-RESIDENTIAL:	5,500 SF	
BUILDING HEIGHT:		
	1-3 STORIES	

101. Advisory

dianna.tomlin@franklin.tn.gov

Advisory, Only to be Addressed at Site Plan:

Architecture currently shown does not meet some of the requirements of the Zoning Ordinance, but as concepts are acceptable at the Development Plan stage. At site plan review, architecture will need to comply with all standards in the Zoning Ordinance. Specifically, the restaurant at the corner does not have a prominent entrance facing the street. All buildings are required to have an entrance at the street they face The apartment buildings will need more façade variety between buildings.

[Edited By Dianna Tomlin]

Stormwater

General Issues

1. Wetland

Doug.Noonan@franklintn.gov Comment not addressed, "Size and shape of wetland differs greatly from previous development plan. **Please provide a wetland delineation.** The current wetland shown at ~2,867sq. ft., while the wetland shown on the previous development plan is ~18,318 sq. ft."

While the report provided identifies an observed wetland, it acknowledges that the delineation was not included in the scope of work. Based on the best available information (NWI, previous site plan, and field observations of wetland flagging) the wetland shown on the previous development plan (COF #6086) appears to be accurate. The proposed trail and grading (highlighted in yellow) impacts the previously identified wetland and associated buffer.



The applicant shall show the wetland as it was delineated for the previous development plan (COF #6086), and revise plans accordingly to avoid encroachment.
[Edited By Doug Noonan]

61. Riparian Buffer

jeff.willoughby@franklintn.gov **If any encroachment of any kind is shown in the riparian buffers** then a formal variance request shall be submitted and approved before final plan approval will be granted.

Additionally, if buffer averaging is being shown then a buffer management plan shall be submitted and approved before final plan approval will be granted as well.

62. Riparian Buffer

jeff.willoughby@franklintn.gov

This is still shown incorrectly as zones are labeled as "A" and "B"

Identify all water resources onsite. Label by their corresponding name as shown on the most current USGS maps. Include top of bank and riparian buffer zones on all site plan sheets. Riparian buffers shall be applied from top of bank. Top of bank is defined as the break in slope of the corresponding grade or if available, the ordinary high water mark.

- For drainage areas over 1 square mile there shall be a 60' riparian buffer zone 1.
- For drainage areas under 1 square mile shall be a 30' riparian zone 1 and 30' riparian zone 2.
- **Zones shall be labeled in the following format: "Width: Riparian Buffer Zone Designation" for example "60' Riparian Buffer Zone 1"**
- Where the average Slope of the land within the Streamside Buffer is between fifteen percent (15%) and twenty-five percent (25%), an additional twenty (20) feet shall be added to the zone 1 minimum buffer width.
- Where the average Slope of the land within the riparian buffer is greater than twenty-five percent (25%), an additional fifty (50) feet shall be added to the zone 1 minimum buffer width.

Water/Sewer

General Issues

14. Trails

ben.mcneil@franklintn.gov

*****This comment does not hinder site plan approval, but is to remain open as a reminder to staff.*****

The applicant shall be aware that Franklin will not be responsible for any trails or any maintenance that have been installed over the existing sanitary sewer easement. A note must be added tom the plat with this information.

Zoning

General Issues

85. FFO

shanna.mccoy@franklintn.gov

Comment to remain open as a project reminder.

Advisory comment

The applicant shall obtain a floodplain development permit prior to any disturbance of the FFO.

86. FFO/FEMA

shanna.mccoy@franklintn.gov

Comment to remain open as project reminder.

Advisory comment

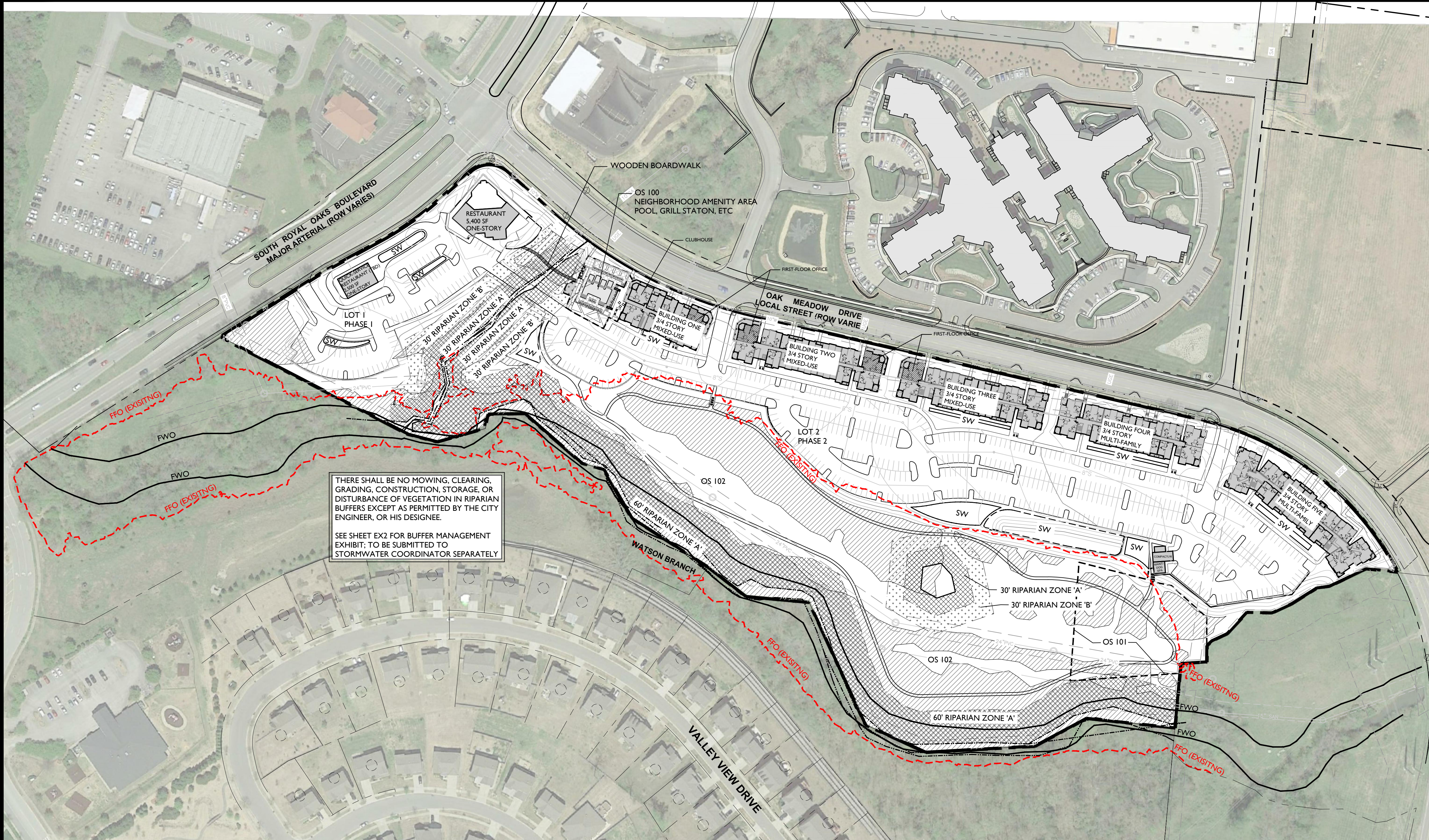
The applicant shall obtain a letter of map amendment from FEMA for any flood plain alteration.

87. FFO

shanna.mccoy@franklin.tn.gov Comment to remain open as project reminder.

Advisory comment

Once the LOMR is approved by FEMA it must be approved by BZA.



SITE DATA CHART

PROJECT NAME:	VINTAGE AT WATSON GLEN
PROJECT NUMBER:	XXXX
ADDRESS:	OAK MEADOW DRIVE
PARCELS:	MAP 079, PARCELS 88 & 101.20
ACREAGE / SF OF SITE:	21.24 AC / 925,109 SF
BASE ZONING:	RC-6
PROPOSED ZONING:	PD (11.53, 17.820)
ZONING OVERLAY:	FFO, FWO
BUILDING TYPES APPLIED:	COMMERCIAL / MIXED-USE, MULTIFAMILY, URBAN LANDSCAPE, URBAN
FRONTAGE TYPES APPLIED:	
SETBACKS:	FRONT: 8' SIDE: 5' REAR: 20'
DWELLING UNIT COUNT (BY TYPE):	MULTIFAMILY: 245
COMMERCIAL SF (BY USE):	OFFICE: 4,420 SF NON-RESIDENTIAL: 5,500 SF RESTAURANT: 7,900 SF TOTAL: 17,820 SF
BUILDING HEIGHT:	1-3 STORIES
MINIMUM REQUIRED LSA:	.2
PROVIDED LSA:	.65
OPEN SPACE REQUIRED:	5% (46,255 SF)
OPEN SPACE PROVIDED:	5.5% (50,803 SF)
NATURAL AREA REQUIRED:	0%
NATURAL AREA PROVIDED:	46% (427,660)
TREE CANOPY RETENTION ACREAGE:	6.39 AC (244% OF REQUIRED)
PARKING REQUIRED (BY USE):	
MULTI-FAMILY:	1.5 / 1BR: 126 UNITS = 189 2.5 / 2BR: 105 UNITS = 263 3.0 / 3+BR: 14 UNITS = 42 TOTAL MULTI-FAMILY: 494
RESTAURANT:	10 / 1,000 SF + 1/EMPLOYEE .52 / SEAT (DRIVE-THRU / QUICK SERVICE) RESTAURANT 1: 5,400 SF = 60 45 SEATS = 24 RESTAURANT 2: 7,900 SF = 84 TOTAL RESTAURANT: 144
OFFICE:	4 / 1,000 SF OFFICES: 4,420 SF = 18 (TO BE SHARED WITH RESIDENTIAL)
TOTAL PARKING REQUIRED:	578
PARKING PROVIDED (BY USE):	MULTI-FAMILY / OFFICE: 495 RESTAURANT: 94 TOTAL PARKING PROVIDED: 589
OWNER:	808 GOODALL 393 MAPLE STREET GALLATIN, TN 37066
APPLICANT:	GAMBLE DESIGN COLLABORATIVE
ADDRESS:	324 LIBERTY PIKE SUITE 145 (615) 975-5765 greg.gamble@gdc-tn.com GREG GAMBLE
CONTACT:	

OPEN SPACE REQUIREMENT

MINIMUM OPEN SPACE REQUIREMENT: 5% REQUIRED: 46,255 SF		
PROVIDED: 50,803 SF TOTAL (5.5%) ADDITIONAL NATURAL AREA: 317,172 SF		
TOTAL OPEN SPACE PROVIDED: 367,975 SF		
LOT	TYPE	AREA (SF)
100	NEIGHBORHOOD AMENITY	10,059
101	NEIGHBORHOOD AMENITY	40,744
ADDITIONAL OPEN SPACE		
102	NATURAL AREA	317,172

TREE CANOPY RETENTION

OVERALL SITE AREA = 925,109 SF (21.24 AC)	
EXISTING TREE CANOPY 633,789 SF (14.55 AC)	PRESERVED TREE CANOPY 278,429 SF (6.39 AC)
TREE CANOPY DATA:	
TOTAL EXISTING TREE CANOPY:	633,789 SF; 14.55 AC (69% OF SITE)
REQUIRED CANOPY PRESERVATION:	18% (114,082 SF; 2.61 AC)
PROVIDED CANOPY PRESERVATION:	278,429 SF; 6.39 AC (244% OF REQUIRED)

STATEMENT OF IMPACTS

WATER FACILITIES
WATER SERVICE WILL BE PROVIDED BY THE CITY OF FRANKLIN. THE WATER MAINS ARE LOCATED ALONG SOUTH ROYAL OAKS BLVD. 245 UNITS x 350 GPD = 85,750 GPD

SEWER FACILITIES
SEWER SERVICE WILL BE PROVIDED BY THE CITY OF FRANKLIN.

REPURIFIED (REUSE) WATER FACILITIES
NOT AVAILABLE TO THIS SITE.

POLICE, FIRE, AND RECREATIONAL FACILITIES
NEAREST POLICE STATION: 3.7 MI (FRANKLIN POLICE DEPARTMENT)
NEAREST FIRE STATION: 1.4 MI (FRANKLIN FIRE DEPARTMENT)
NEAREST RECREATIONAL FACILITY: 1.5 MI (SOAR ADVENTURE TOWER)

PROJECTED STUDENT POPULATION
245 x 0.64 = 157 STUDENTS

REFUSE STORAGE AND SANITATION COLLECTION FACILITIES
REFUSE COLLECTION FOR THE DEVELOPMENT SHALL BE PROVIDED BY THE CITY OF FRANKLIN

PHASING

DEVELOPMENT	NON-RESIDENTIAL	SF	MULTIFAMILY
OVERALL	RESTAURANT, RETAIL, OFFICE, ETC.	17,820	245
PHASE 1	RESTAURANT	7,900	0
PHASE 2	OFFICE, RETAIL, ETC.	9,920	245

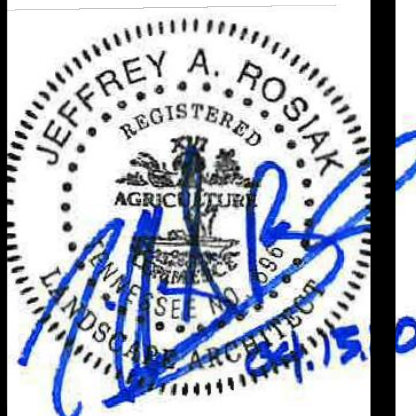
KEY

- PRESERVED CANOPY
- RIPARIAN ZONE 'A'
- RIPARIAN ZONE 'B'
- SLOPES - 14 - 20%
- SLOPES - 20% +
- OPEN SPACE



GAMBLE
DESIGN COLLABORATIVE
DEVELOPMENT PLANNING AND
LANDSCAPE ARCHITECTURE

VINTAGE AT WATSON GLEN PUD SUBDIVISION
DEVELOPMENT PLAN
Franklin, Williamson County, Tennessee



Revision Date	
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OVERALL
DEVELOPMENT
PLAN
SHEET
C2.0
COF # xxxx



1 BUILDING 1
A1.0 ELEVATIONS

N.T.S.



2 BUILDING 2
A1.0 ELEVATIONS

N.T.S.



3 BUILDING 3
A1.0 ELEVATIONS

N.T.S.



4 BUILDING 4
A1.0 ELEVATIONS

N.T.S.



6 BUILDING 5
A1.0 ELEVATIONS

N.T.S.



5 MULTI-FAMILY / MIXED-USE
A1.0 PERSPECTIVE

N.T.S.

The home elevations shown here are representative of the mixed-use/multifamily homes planned for Vintage at Watson Glen. They are the basis for design review by the City of Franklin at the time of Site Plan Submittal. Based on my professional experience, the plans presented meet or exceed the design standards set forth by the City of Franklin.

Greg Gamble, Registered Landscape Architect.

Revision Date _____
△ _____
△ _____
△ _____
△ _____

From: [Greg Gamble](#)
To: [Ken Moore](#); [Margaret Martin](#); [danamclendon@mac.com](#); [Burger Bev](#); [Scott Speedy](#); [Pearl Bransford](#); [Clyde Barnhill](#); [Brandy Blanton](#); [Ann Petersen](#); [Orr, Michael](#); [Scott Harrison](#); [Mike Hathaway](#); [roger.lindsey@nashville.gov](#); [Alma Mclemore](#); [jimmy@tennesseevalleyhomes.com](#); [mdadst@aol.com](#); [Jennifer Szilagyi](#)
Cc: [Eric Stuckey](#); [Vernon Gerth](#); [Emily Hunter](#); [Amy Diaz-Barriga](#); [Jimmy Wiseman](#); [Dianna Tomlin](#); [Ross Bradley](#); [Goodall, Bob](#)
Subject: Vintage At Watson Glen
Date: Thursday, June 11, 2020 9:11:47 AM

ATTENTION COF staff: This email originated from outside the City of Franklin. Please use discretion when clicking on attachments & links from unknown senders or suspicious emails.

Mayor, Aldermen, and Planning Commissioners,

We made the unfortunate discovery yesterday that our firm failed to properly notify the neighbors of the proposed Vintage development on Oak Meadow of the Planning Commission Hearing on May 28th. I am embarrassed that we had miscommunication in our office during the month of April due to Covid stay at home restrictions. I sincerely thought that this step was completed. This is not typical for how we work at GDC. We believe in the full transparency of planning and neighborhood outreach.

The good news is we will likely be able to have an in-person Planning Commission soon, and will be able to have a more appropriate public hearing at the Planning Commission for this proposed mixed use neighborhood. We have asked to be placed on the July 23rd Planning Commission, and this has been granted by staff. We will start the Aldermen process over after the Planning Commission meeting.

I apologize for any confusion that we have created.

Sincerely,

Greg Gamble



615.975.5765

324 Liberty Pike, Suite 145

Franklin, TN 37064



File #: 20-0821

DATE: June 2, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Paul Holzen, Director of Engineering
Jonathan Marston, Asst. Director of Engineering
Adam Moser, Traffic Engineer

SUBJECT:

*Consideration Of Resolution 2020-101, A Resolution To Award The Construction Contract (COF Contract No. 2020-0113) For The Adaptive Signal Control Technology (ASCT) Project (COF Project No. 2013-018 / TDOT PIN 116144.01) To Stansell Electric Company, Inc. In The Amount Of \$743,157.00.

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning Resolution 2020-101.

BACKGROUND/STAFF COMMENTS:

In 2011, the City of Franklin entered into a Local Agency Project Agreement with the Tennessee Department of Transportation (TDOT) to allow the City to locally manage an Intelligent Transportation Systems (ITS) extension project utilizing federal funds. Since that time, City staff worked with TDOT to amend the original agreement to include adaptive signal control technology (ASCT) as a work item covered by the agreement.

After study of several major roadways in the Cool Springs area, the project team determined the most appropriate locations for implementation of an ASCT project. This project consists of the installation of additional vehicle detection systems at 19 intersections in the Cool Springs area. This additional detection will allow the centralized system in the Traffic Operations Center (TOC) to automatically make incremental signal timing adjustments, both up and down, to accommodate changing traffic conditions.

In April 2020, a construction contract (COF Contract No. 2020-0113) to install the additional vehicle detection was advertised for bids. On May 27, 2020, City staff held a virtual bid opening utilizing Cisco Webex technology for this project. After review and tabulation of the submitted bid, staff recommends the award of this project to lone bidder, Stansell Electric Company, Inc.

FINANCIAL IMPACT:

The total cost of this construction contract is \$743,157.00. Eighty percent (80%) of this project is funded utilizing Federal Surface Transportation Block Grant (STBG) funds. The remaining 20% is

funded locally.

For several years, local funding for this project has been included in the TOC's annual operating budget. This remains the case for fiscal year (FY) 2021, which begins July 1, 2020. Therefore, the General Ledger (GL) code to be utilized for project expenses is 110-89530-41610.

RECOMMENDATION:

Staff recommends approval of Resolution 2020-101 to award the construction contract (COF Contract No. 2020-0113) for the ASCT project (COF Project No. 2013-018 / TDOT PIN 116144.01) to Stansell Electric Company, Inc. in the amount of \$743,157.00.

RESOLUTION 2020-101

A RESOLUTION TO AWARD THE CONSTRUCTION CONTRACT (COF CONTRACT NO. 2020-0113) FOR THE ADAPTIVE SIGNAL CONTROL TECHNOLOGY (ASCT) PROJECT (COF PROJECT NO. 2013-018 / TDOT PIN 116144.01) TO STANSELL ELECTRIC COMPANY, INC. IN THE AMOUNT OF \$743,157.00

WHEREAS, on September 13, 2011, the City of Franklin Board of Mayor and Aldermen ("BOMA") approved Tennessee Department of Transportation ("TDOT") Agreement No. 110291 (COF Contract No. 2011-0129) to allow the City to locally manage the Franklin ITS Extension Project (TDOT PIN 116144.00); and

WHEREAS, on June 11, 2013, the BOMA approved Amendment No. 1, which added "adaptive signal control" to the list of accepted work types and created a separate project (TDOT PIN 116144.01) for Adaptive Signal Control Technology ("ASCT"); and

WHEREAS, on November 8, 2016, the BOMA approved Amendment No. 3, which finalized the funding allocation for the Franklin ITS Extension Project (TDOT PIN 116144.00) and the ASCT Project (TDOT PIN 116144.01); and

WHEREAS, on May 27, 2020, sealed bids for the construction of the ASCT Project (COF Project No. 2013-018 / TDOT PIN 116144.01) were received by the City of Franklin Engineering Department at City Hall, 109 3rd Avenue South, Franklin, Tennessee 37064 and were publicly opened and read aloud; and

WHEREAS, after careful review and tabulation of all submitted bids, City staff recommends award of the contract (COF Contract No. 2020-0113) for construction of the ASCT Project to the low bidder, Stansell Electric Company, Inc., in the bid amount of Seven Hundred Forty-Three Thousand One Hundred Fifty-Seven and 00/100 Dollars (\$743,157.00).

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

Pending concurrence by TDOT, approval is granted to award the contract (COF Contract No. 2020-0113) for the construction of the Adaptive Signal Control Technology Project (COF Project No. 2013-018 / TDOT PIN 116144.01) to Stansell Electric Company, Inc., in the amount of Seven Hundred Forty-Three Thousand One Hundred Fifty-Seven and 00/100 Dollars (\$743,157.00).

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2020.

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. 2020-0113

PIN: 116144.01
County: Williamson
Federal Project No.: STP-M-9305(3)
State Project No.: 94LPLM-F3-065
Local Agency Reference No.: 2013-018
Description Of Project: Adaptive Signal Control Technology (ASCT) Project
Project Length: 4.08 miles
Completion Time: On or Before November 13, 2020
DBE Goal: 5.75%

By: Stansell Electric Company, Inc.
City, Nashville, Tennessee
St.:
Surety: Frank E. Neal & Co., Inc. and Fidelity and Deposit
Company of Maryland

Addenda Acknowledged:
#1 dated 5/20/20
#2 dated 5/21/20

TDOT Version: 3/15/19

ADDENDUM NO. 2

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

Project:	Adaptive Signal Control Technology (ASCT)
PIN:	116144.01
Contract No:	2020-0113
Federal Project No:	STP-M-9305(3)
State Project No:	94LPLM-F3-065

Date of Issuance: May 21, 2020

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

(I) Clarification of Day, Date, and Time of Bid Opening:

Addendum No. 1 and its accompanying email notification incorrectly referenced a Bid submittal deadline day and date of Wednesday, May 28, 2020. **That information is incorrect.**

The day, date, and time of the Bid Opening remains unchanged from the original Advertisement and Proposal Contract. **The deadline for submittal of Bids is Wednesday, May 27, 2020 at 2:00 PM (CDT).**

(II) Bid Submittal and Bid Opening Process:

- a. Bids may no longer be submitted to the City via mail or other delivery service.
- b. Bids shall be submitted directly to City staff at a designated location between the north side of City Hall and the 2nd Avenue Public Parking Garage. This area can be accessed from 2nd Avenue South.
 - Bids may be submitted no earlier than thirty (30) minutes prior to the 2:00 PM (CDT) deadline on May 27, 2020.
 - Bids received after the deadline of 2:00 PM (CDT) on May 27, 2020 shall not be considered.
- c. Following the submittal deadline at 2:00 PM (CDT) on May 27, 2020, a virtual Bid Opening, using Cisco Webex, will begin at approximately 2:10 PM (CDT), when the Bids will be opened and read aloud. This virtual Bid Opening can be joined using one (1) of the following methods:

(Please note that this meeting information has changed since Addendum No. 1)

- Join by Computer:
 - o Click on the following Webex link...[Join Meeting](#), or
 - o Manually enter the following web address into your internet browser...<https://cityoffranklin.webex.com/cityoffranklin/j.php?MTID=m5999faa867a41ab95fea6eda3724b930>
 - o Meeting Number (Access Code): 282 708 995
 - o Meeting Password: rF6qPx7apH2
- Join by Phone at: 1-415-655-0003 (US Toll)
- Join using Microsoft Lync or Microsoft Skype for Business at:
282708995.cityoffranklin@lync.webex.com

END of Addendum

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Supplemental Specification to Section 600.....	12-30-19	75
Supplemental Specification to Section 700.....	12-30-19	109
Supplemental Specification to Section 800.....	N/A	N/A
Supplemental Specification to Section 900.....	12-30-19	162

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 <http://www.tn.gov/tdot/section/tdot-construction-division>.

Special Provisions.....	Special Provision Number, Regarding:.....	<u>Date</u>	<u>Page #</u>
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	Insert Project Specific Permits (if applicable)	N/A	N/A
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City of Franklin Adaptive Signal Control Technology Technical Special Provisions (TSP)	

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.

ADDENDUM NO. 1

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

Project:	Adaptive Signal Control Technology (ASCT)
PIN:	116144.01
Contract No:	2020-0113
Federal Project No:	STP-M-9305(3)
State Project No:	94LPLM-F3-065

Date of Issuance: May 20, 2020

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

(I) Concerns and Changes to Bid Submittal Process and Bid Opening:

a. Concerns:

- 1) Due to the ongoing pandemic, City Hall currently has limited hours and limited services that are open to the public. Because of this, bidders will not be allowed to attend the Bid Opening in-person.
- 2) Also due to the pandemic, mail and package deliveries may now include additional delays. City staff is taking additional precautionary measures when handling mail and deliveries. These additional delays could cause a properly submitted Bid to miss the established deadline for submittal of Bids.

b. Changes:

- 1) Bids may no longer be submitted to the City via mail or other delivery service.
- 2) Bids shall be submitted directly to City staff at a designated location between the north side of City Hall at 109 3rd Avenue South and the 2nd Avenue Public Parking Garage. This area can be accessed from 2nd Avenue South.
 - Bids may be submitted no earlier than thirty (30) minutes prior to the 2:00 PM (CDT) deadline.
 - Bids received after the deadline of 2:00 PM (CDT) shall not be considered.
- 3) Following the submittal deadline at 2:00 PM (CDT), a virtual Bid Opening, using Cisco Webex, will begin at approximately 2:10 PM (CDT), when the Bids will be opened and read aloud. This virtual Bid Opening can be joined using one (1) of the following methods:

- Join by Computer:
 - Click on the following Webex link...[Join Meeting](#), or
 - Manually enter the following web address into your internet browser...<https://cityoffranklin.webex.com/cityoffranklin/j.php?MTID=m2890660d54a150d428706686099ca629>
 - Meeting Number (Access Code): 282 583 298
 - Meeting Password: hZQAnsmn933
- Join by Phone at: 1-415-655-0003 (US Toll)
- Join using Microsoft Lync or Microsoft Skype for Business at:
282583298.cityoffranklin@lync.webex.com

(II) Questions and clarifications to the Bidding Documents:

- a. No questions have been submitted to date.
- b. Be aware that the line items provided for Erosion Prevention and Sediment Control (EPSC), including: 209-09.01, 209-20.03, and 740-11.02, are to be used only if and as directed by the City and/or its construction representative(s).

(III) Revised Bid Form:

Included with this addendum is a revised Bid Form. Bidder shall complete the revised Bid Form and shall attach it to the original Bid Form within the Proposal Contract. **DO NOT REMOVE** any pages from the original bound Proposal Contract. There are no additional or deleted line items, only updated descriptions and quantities for the following line item(s):

a. Original Bid Form:

ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QUANTITY
920-20.20	MAGNETOMETER SENSOR REPEATER - SINGLE	EACH	19
920-20.28	MAGNETOMETER SENSOR REPEATER – DUAL, EXT ANTENNA	EACH	5

b. Revised Bid Form:

ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QUANTITY
920-20.20	MAGNETOMETER SENSOR REPEATER	EACH	45
920-20.28	MAGNETOMETER SENSOR EXT ANTENNA	EACH	5

(IV) Attachments:

- a. Revised Bid Form,
- b. Revised Plans Sheet 2 “Estimated Quantities”, and
- c. Revised page 2-17 of the Technical Special Provisions (TSP).

END of Addendum

Revised BID FORM for PIN 116144.01 / COF Contract No. 2020-0113

PART 1 of 2 - PROJECT ESTIMATED QUANTITIES (Revised via Addendum No. 1)

FOOTNOTE(S)	ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (\$)	EXT. AMOUNT (\$)
	209-09.01	SANDBAGS	BAG	42		
	209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	1,575		
	712-01	TRAFFIC CONTROL	LS	1		
	712-04.01	FLEXIBLE DRUMS (CHANNELIZING)	EACH	100		
	712-06	SIGNS (CONSTRUCTION)	S.F.	864		
	712-08.03	ARROW BOARD (TYPE C)	EACH	4		
	717-01	MOBILIZATION	LS	1		
	725-24.41	BURN-IN PERIOD	LS	1		
	725-24.55	AS-BUILT PLANS	LS	1		
	725-24.61	TRAINING	LS	1		
5	725-28.22	SPARE PARTS	LS	1		
	730-03.21	INSTALL PULL BOX (TYPE B)	EACH	2		
	730-12.02	CONDUIT 2" DIAMETER (PVC)	L.F.	560		
	730-12.13	CONDUIT 2" DIAMETER (JACK AND BORE)	L.F.	165		
	730-14.01	SHIELDED DETECTOR CABLE	L.F.	725		
	740-11.02	TEMPORARY SEDIMENT TUBE 12IN	L.F.	210		
4	790-20.01	POLE (30' ALUMINUM)	EACH	7		
	920-20.05	MAGNETOMETER SERVER LICENSE	LS	1		
1	920-20.12	MAGNETOMETER VEHICLE DETECTOR SENSOR	EACH	196		

Revised BID FORM for PIN 116144.01 / COF Contract No. 2020-0113

PART 1 of 2 - PROJECT ESTIMATED QUANTITIES (Revised via Addendum No. 1)

FOOTNOTE(S)	ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (\$)	EXT. AMOUNT (\$)
3	920-20.20	MAGNETOMETER SENSOR REPEATER	EACH	45		
3	920-20.28	MAGNETOMETER SENSOR EXT ANTENNA	EACH	5		
2	920-20.36	MAGNETOMETER SENSOR SYSTEM ISOLATOR	EACH	20		
2, 3	920-20.44	MAGNETOMETER SENSOR DIGITAL RADIO	EACH	36		
2	920-20.52	MAGNETOMETER SENSOR CABINET CONTROL	EACH	20		
2	920-20.60	MAGNETOMETER SENSOR CABINET CONTROLLER INTERFACE	EACH	20		
3	920-20.68	MAGNETOMETER SENSOR REPEATER - DUAL	EACH	21		

TOTAL BID PRICE (IN WORDS):

TOTAL BID PRICE (\$):

5/14/2020 12:05:49 PM
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NOTE:
REVISION 1 - 5/14/2020
UPDATED PAY ITEM DESCRIPTION
FOR PAY ITEM NUMBERS 920-20,20,
920-20,28, AND 920-20,68,
UPDATED QUANTITY FOR PAY ITEM
NUMBER 920-20,20

ESTIMATED QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
209-09.01	SANDBAGS	BAG	42
209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	1575
712-01	TRAFFIC CONTRO.	LS	1
712-04.01	FLEXIBLE DRUMS (CHANNELIZING)	EACH	100
712-06	SIGNS (CONSTRUCTION)	S.F.	864
712-08.03	ARROW BOARD (TYPE C)	EACH	4
717-01	MOBILIZATION	LS	1
725-24.41	BURN-IN PERIOD	LS	1
725-24.55	AS BUILT PLANS	LS	1
725-24.61	TRAINING	LS	1
5 725-28.22	SPARE PARTS	LS	1
730-03.21	INSTALL PULL BOX (TYPE B)	EACH	2
730-12.02	CONDUIT 2" DIAMETER (PVC)	L.F.	560
730-12.13	CONDUIT 2" DIAMETER (JACK AND BORE)	L.F.	165
730-14.01	SHIELDED DETECTOR CABLE	L.F.	725
740-11.02	TEMPORARY SEDIMENT TUBE 12IN	L.F.	210
4 790-20.01	POLE (30' ALUMINUM)	EACH	7
920-20.05	MAGNETOMETER SERVER LICENSE	LS	1
1 920-20.12	MAGNETOMETER VEHICLE DETECTOR SENSOR	EACH	196
3 920-20.20	MAGNETOMETER SENSOR REPEATER	EACH	45
3 920-20.28	MAGNETOMETER SENSOR EXT ANTENNA	EACH	5
2 920-20.36	MAGNETOMETER SENSOR SYSTEM ISOLATOR	EACH	20
2, 3 920-20.44	MAGNETOMETER SENSOR DIGITAL RADIO	EACH	36
2 920-20.52	MAGNETOMETER SENSOR CABINET CONTROL	EACH	20
2 920-20.60	MAGNETOMETER SENSOR CABINET CONTROLLER INTERFACE	EACH	20
3 920-20.68	MAGNETOMETER SENSOR ANTENNA	EACH	21

FOOTNOTES:
1 ITEM INCLUDES THE INSTALLATION OF SENSORS AS SHOW IN THE PLANS AND SPECS.
2 ITEM INCLUDES THE CATSE AND POWER CORDS AS NEEDED FOR OPERAT ONS.
3 ITEM INCLUDES THE MOUNTING HARDWARE AS NEEDED FOR ATTACHMENT.
4 ITEM IS FOR THE ALUMINUM DIFECT BURIED DETECTOR POLES FOR THE MAGNETOMETER SYSTEM.
5 ITEM TO INCLUDE SPARE PARTS AS DESCRIBED IN THE PROJECT TECHNICAL SPECIAL PROVISIONS.



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Birmingham
Charlotte
Cincinnati
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Dallas
Fort Lauderdale
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Jacksonville
Knoxville
Louisville
Miami
Nashville
Richmond
Tallahassee
Tampa

Gresham Smith
222 Second Avenue South
Suite 1400
Nashville, Tennessee 37201
615.770.8100
WWW.GRESHAMSMITH.COM

FRANKLIN ASCT
FRANKLIN, TENNESSEE



REVISION	
No.	Date
1	5/14/2020

ESTIMATED QUANTITIES

2
RECEIVED, R.T.S.
DATE: 5/15/20
DATE: 2014

2.6. Payment

The contract unit price shall be full compensation for all work specified in this section.
Payment will be made under:

Item No.	Description	Unit
920-20.05	Magnetometer Server License	LS
920-20.12	Magnetometer Vehicle Detection Sensor	Each
920-20.20	Magnetometer Sensor Repeater	Each
920-20.28	Magnetometer Sensor Ext Antenna	Each
920-20.36	Magnetometer Sensor System Isolator	Each
920-20.44	Magnetometer Sensor Digital Radio	Each
920-20.52	Magnetometer Sensor Cabinet Control	Each
920-20.60	Magnetometer Sensor Cabinet Controller Interface	Each
920-20.68	Magnetometer Sensor Antenna	Each

Items will be paid per each as follows:

1. 50% of the contract unit price upon approval of Pre-Installation Test results.
2. Additional 20% of the contract unit price upon approval of Stand Alone Site Test results.
3. Additional 20% of the contact unit price upon approval of Conditional System Acceptance Test results.
4. Final 10% of the contract unit price upon Final System Acceptance.

THE CITY OF FRANKLIN
INSTRUCTIONS TO BIDDERS
BIDS TO BE RECEIVED

5/27/2020

Sealed bids for the construction of the following projects will be received by the CITY OF FRANKLIN, at **City Hall in the Engineering Department office at 109 3rd Avenue South, Suite 133, Franklin, TN 37064** until 2:00 PM **5/27/2020** and opened publicly at City Hall, 109 3rd Avenue South, Franklin, TN 37064, **2:00 PM 5/27/2020**. The reading of the bids will begin at **2:10 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 **attention of Adam Moser, P.E., City of Franklin Traffic Engineer (615-791-3218)**. 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
<http://www.tn.gov/tdot/section/tdot-construction-division>**

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 **\$1.00** 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.

S T A T E

(Rev. 3-30-15)
(Rev. 11-16-15)
(Rev. 6-27-16)
(Rev. 12-2-16)
(Rev. 5-15-17)
(Rev. 11-6-17)
(Rev. 5-14-18)
(Rev. 7-2-18)
(Rev. 10-8-18)
(Rev. 5-13-19)
(Rev. 8-12-19)
(Rev. 12-30-19)

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

January 1, 2015

Supplemental Specifications - Section 100**of the****Standard Specifications for Road and Bridge Construction****January 1, 2015**

Subsection 101.03 (pg. 10) 5-15-17; Terms - Add the following definition for Specialty Items:

“Specialty Item. Work items identified in the contract which are not bid normally associated with highway construction and require highly specialized knowledge, abilities, craftsmanship, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract in general, these items are to be limited to minor components of the overall contract.”

Subsection 102.11 (pg. 18), 3-30-15; Licensing of Bidders Add the following to the second paragraph:

“The Department may retain the Proposal Guaranty, not as a penalty, but as liquidated damages in the event a bidder does not have a license at the time of award.”

Subsection 104.04 (pg. 27), 3-30-15; Maintenance of Traffic - Add the following as the first full paragraph on page 27:

“If a holiday falls on Saturday or Sunday, do not close lanes or restrict traffic from the preceding Friday at 6 am to the following Monday at 6 am.”

Subsection 105.02 (pg. 37), 5-13-19; **Plans and Working Drawings**; Revise 8th paragraph:

Except for Strain Poles, Street Lighting Poles, High Mast Poles with Accompanying Lowering Devices, Photometrics and Cofferdams, the fabricator shall furnish the Division of Structures with as-built shop drawings electronically in *.pdf or *.tif format after the structure is complete and before final payment will be made.

Subsection 105.02 (pg. 35-37), 12-30-19; **Plans and Working Drawings**; Revise 6th, 7th, 8th & 9th paragraphs:

Submit shop drawings in sets with the drawing numbers running consecutively in each set, ~~and appropriately bound if more than five sheets in a set.~~ Do not resubmit shop drawings marked “APPROVED” or “APPROVED AS NOTED” unless specifically instructed.

~~Shop drawings shall be a minimum of 8 1/2 x 11 inches in size. Legible half-size copies (11 x 17 inches) of full-size drawings are acceptable for submittal (see sheet format below). Submit for approval the minimum number of sets of shop drawings specified below. Only one set will be returned to the fabricator unless specifically requested and the additional set(s) requested to be returned is submitted along with those shown below. For Consultant designs, an additional set is required. For railroad structures, three additional sets are required. All shop drawings shall be submitted electronically. The preferred format for electronic submittals is *.pdf format. Submittals shall be sent to the following email address: TDOT.Structures.ShopDrawings@tn.gov. Paper copies of shop drawings for steel girders will be required when requested by the designer for review. Submittals for the following items except structural steel girders (i.e., Bridge Girders) may be submitted electronically in *.pdf or *.tif format. Structural Steel Girders must be submitted in paper format as directed below.~~

~~Two Sets: Structural Steel (Half-size sets shall be submitted for approval. Four additional sets, two full-size and two half-size, will be required after final approval.)~~

~~Four Sets: Energy Attenuation Devices, Overhead, Cantilever Sign Structures, and Cofferdams~~

~~Six Sets: Metal Bridge Rails, Bearing Devices (shop drawings not required for plain elastomeric bearing pads), Bridge Deck Drains (shop drawings not required if fabricated according to applicable Standard Drawing), Navigation Lighting Support Brackets, Precast Prestressed Concrete Beams, Precast Prestressed Concrete Deck Panels, Precast Reinforced Concrete Beams, Precast Reinforced Concrete Box Culverts, when applicable, Post-tensioned Concrete, Roadway Expansion Devices, Steel Stay-In-Place forms, and any other type of structural shop drawing not specifically listed.~~

Except for Strain Poles, Street Lighting Poles, High Mast Poles with Accompanying Lowering Devices, Photometrics and Cofferdams, the fabricator shall furnish the Division of Structures an ~~electronic copy of~~ as-built shop drawings ~~electronically in *.pdf or *.tif format~~ after the structure is complete and before final payment will be made. A *.pdf file is the preferred format for electronic copies. Submittals shall be sent to the following email address: TDOT.Structures.ShopDrawings@tn.gov.

All working drawings shall be approved by the Engineer; such approval will be general in nature and will not operate to relieve the Contractor of its responsibility under the Contract for the successful completion of the Work. In addition to such approval, working drawings involved in construction over or under railroad tracks will require approval of the railroad company before approval is granted by the Engineer. Submit ~~four sets of~~ plans for any cofferdams, sheeting and bracing details for bents or piers adjacent to a track, and falsework for erecting the spans over tracks, and the method of installation for the protection of the tracks, to the Engineer. Do not begin such work until these plans are approved by the Department and the Chief Engineer of the railroad. Approval of these plans will not relieve the Contractor from liability. The above also applies in connection with the installation of pipes, culverts, and other work adjacent to or under railroad tracks. The Department will not pay for the cost of preparing working drawings separately. These costs will be included in the prices of the respective Contract items involved.

Subsection 105.03 (pg. 38), 12-2-16; Conformity with Plans and Specifications - Add the following to the end of the section:

“Products listed on the QPL which fail to comply with Departmental performance expectations shall be removed from the QPL. Products removed from the QPL shall be replaced with an equivalent product from the QPL. At the Departments discretion, an equitable adjustment may be made to the contract for invoice price deviations.”

Subsection 105.03 (pg. 38), 6-27-16; Conformity with Plans and Specifications - Add the following to the end of the section:

“All products must be listed on the Qualified Products List (QPL) and perform as specified at the time of use regardless of Letting date. Any products removed from the QPL or that do not perform as specified, must be supplied or replaced at the Contractor’s expense.”

Subsection 105.06 (pg. 40), 3-30-15; Planning of the Operations-Preconstruction Conference - Replace 2nd sentence of 1st paragraph:

“The contractor must attend a preconstruction conference arranged by the Engineer.”

Subsection 105.06 (pg.41), 12-30-19; **Planning of the Operations-Preconstruction Conference**; Add No. 12 to 1st paragraph:

12. Submit schedule for meeting Certified Payroll time frames required under 29 CFR Sections 3.3, 3.4, and 5.5 for Contractor payroll and Subcontractor’s payroll on the contract. Submit the weekly pay period end days and payroll payment days for the Contractor and Subcontractors on the project.

Subsection 105.10 (pg. 46), 5-15-17; Authority and Duties of Inspectors - Revise 2nd sentence of the first paragraph:

“Such inspection may extend to any part or to all of the Work and to the preparation, fabrication, or manufacture of materials to be used.”

Subsection 105.11 (pg. 46), 5-15-17; Inspection of Work - Revise the 1st sentence:

“The Engineer or its representative will inspect all materials and each part or detail of the Work .”

Subsection 105.13 (pg. 48), 5-15-17; Completion of Specific Sections of a Project - Remove the 2nd paragraph.

Subsection 105.15 (pg. 49), 5-15-17; Acceptance - Remove last paragraph:

Subsection 105.19 (pg. 57), 12-30-19; **Basis of Payment**; Revise 1st paragraph:

The Department will make partial payments for Construction Stakes, Lines and Grades on the basis of a percentage of the lump sum price bid in accordance with the schedule shown in Table 105.18-1. Submit a certification of the personnel and –the name, license number, and qualifications of the Tennessee licensed Professional Engineer or a Tennessee Registered Land Surveyor who is performing the work as specified in 105.09, Construction Stakes, Lines, and Grades at the preconstruction meeting. No payment for Construction stakes, lines, and grades will be made until the certification has been received.

Subsection 106.06 (pg. 61), 5-15-17; Field Laboratory - Revise the first paragraph of A. and subsection A.2:

“Provide a Type A Laboratory consisting of a building, room, or dedicated area having at least 120 square feet of floor area with a minimum width of 8 feet and a minimum height of 7 feet. Provide laboratory space that is floored, roofed, sealed inside, weather-tight, and furnished with electricity. Furnish the space with adequate work benches, cabinets, and drawers. Provide suitable heat and air conditioning, and equip the laboratory with a laboratory oven capable of maintaining a temperature of 230 °F ± 9 °F. Stove tops and hot plates may be used to determine moisture conditions of aggregates. Provide lights, electrical outlets, and adequate ventilation for the tests being performed.

When the determination of aggregate gradation is required, furnish the following equipment:

1. Scales of appropriate capacity and design to weigh the required samples. Scales are to be sensitive to within 0.2% of the sample to be weighed. Provide standard weights for scale calibration.
2. Screens of appropriate size and mesh to separate the samples into the required series of sizes. Woven wire cloth shall conform to AASHTO M 92. Screens for running gradations of coarse aggregates shall meet AASHTO T27.
3. A mechanical shaker approved by the Engineer and suitable for running both coarse and fine aggregate.
4. Facilities to perform wash tests according to AASHTO T 11 that include an adequate and suitable water supply.”

Subsection 107.08 (pg. 69), 5-15-17; Protection of Streams, Lakes, and Reservoirs - Add the following to the end of the third paragraph:

“All costs associated with any support activities including obtaining permission from landowners, permits, and compliance are to be included in the bid cost for the project.”

Subsection 107.08 A (pg. 8-69), 8-12-19; **Protection of Streams, Lakes and Reservoirs**; Revise 4th and 8th paragraph, remove 10th paragraph: Add 2 new paragraphs after the 8th paragraph;

4th paragraph, revise the first sentence;

The Department will acquire the necessary permits related to waters of the United States as defined in 33 CFR Part 323 or waters of the State as defined in TCA §69-3-103 for construction indicated on the Plans.

8th paragraph, revise the first and last sentence;

Exercise every reasonable precaution throughout the life of the Project to prevent the discharge of any substance into the waters of the United States and waters of the State or to place or cause any substance to be placed where it,...

If a discharge as described above occurs, stop the Work, notify the Engineer, and the Tennessee Department of Environment and Conservation, Division of Water Resources, and take immediate actions to contain and remediate the discharge. Perform containment and remediation work at no cost to the Department.

10th paragraph, remove the entire paragraph;

Add 2 new paragraphs after the 8th paragraph;

Conduct and schedule operations so as not to interfere with the movement and habitat of species such as mussels, fish, and birds as indicated in plans or permits. Comply with the provisions and

requirements of all applicable permits and United States Fish and Wildlife Service Biological Opinion.

Exercise every reasonable precaution to prevent fish kills while performing any Work activity in waters of the State. Pay any costs incurred by the Tennessee Wildlife Resources Agency to monitor for fish kills during blasting or demolition of structures. If a discharge or change described above results in a fish kill, pay any fines or costs related to the fish kill.

Subsection 107.08 (pg. 71), 11-6-17; Migratory Birds - Add the following as section E:
“E. Migratory Birds

The following procedure will be automatically implemented by TDOT, unless FWS approves in writing deviations due to special circumstances, or for a specific variance.

Cliff swallow and barn swallow nests, eggs, or birds (young and adults) will not be disturbed between April 15 and July 31. From August 1 to April 14, nests can be removed or destroyed, and measures implemented to prevent future nest building at the site (i.e., closing off area using netting).

Exceptions:

- (1) If there are no eggs in the nests prior to April 15, TDOT will be allowed to destroy the nests and prevent further nest building at the site, by installing netting. Net openings shall be ½ inch or smaller after installation, and shall be installed securely and in such a manner that it will not pose a safety hazard. Absence of eggs prior to net installation must be documented by using appropriate means for determination, such as, but not limited to, site visits and photographs.
- (2) If there are no birds (young or adult) left in any of the nests at a specific site prior to July 31, the nests can be removed or destroyed. Absence of birds must be documented by using appropriate means for determination, such as, but not limited to, site visits, photographs, and observations of no birds using the nests.

Osprey, Double Crested Cormorants, Great Horned Owls, Barn Owls, Black Vulture, and Eastern Phoebe:

If these avian species are encountered on a bridge project, TDOT Ecology should be contacted immediately for further assistance.

The Contractor will be assessed the amount of any and all fines and penalties assessed against and cost incurred by TDOT which are the result of the Contractor's failure to comply with this specification. TDOT will not be responsible for any delays or costs due to the Contractor's failure to comply. Additional compensation or contract time due to noncompliance will not be granted.

All costs incurred with this specification will not be measured or paid for separately, but will be considered included in the contract unit prices bid for other items of the contract.”

Subsection 108.01 (pg. 78) 5-15-17; Subletting of Contract - Add the following list of specialty items:

“Do not sublet, allow second tier sublet, sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof or a right, title, or interest in the Contract without the Engineer’s written consent. If the Engineer consents to subletting or second tier subletting a portion of the Contract, the Contractor shall self-perform work amounting to not less than 30% of the total original Contract cost. For items designated in the Contract as “specialty items,” the Contractor may sublet or second tier sublet this work and deduct the cost of such specialty items from the total original cost before computing the amount of the Work required to be self-performed by the Contractor with its own organization.

As stated above, unless there is a Special Provision 108A in the proposal, the following items are designated as Specialty Items:

- Item 105-01 - Construction Stakes, Lines and Grades
- Item 202-01.02 – Removal of Asbestos
- Item 209 - EPSC
- Item 411-12.**Shoulder Scoring
- Item 501-03.12 – Concrete Shoulder Rumble Strip
- Item 602-03 - Steel Structures
- Item 602-04 - Steel Structures
- Item 602-10.13 / .14 - Navigational Lighting
- 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 604-04.62 - 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 624 – Retaining Wall Items
- Item 625-01.08,10,11 – Inclinator, Drilled Shaft Inspections
- Item 640 - Weigh Station Items
- Item 705 - Guardrail, Anchors, etc.
- Item 706 - Guardrail Items
- Item 707 - Fencing Items
- Item 712 - Traffic Control Items
- Item 713 - Signing Items
- Item 714 - Lighting Items
- Item 716 - Pavement Marking Items
- Item 720-03, 720-04, 720-05, 720-06, 720-07, 720-08, 720-09 – Railroad Highway Crossing

Item 721-01.06 – Irrigation System Repair
Item 721-10, 721-11.20, 721-11.30, 721-12 – Landscape and Irrigation
Item 725 – ITS items
Item 730 - Traffic Signal Items
Item 7** - Utility Items
Item 750.01 – Mitigation Site
Item 801 - Seeding
Item 802 - Landscaping Items
Item 803-01 - Sodding
Item 805 - Erosion Control
Item 806 - Project Mowing”

Subsection 108.03 C (pg. 81), 12-30-19; **C. Project Durations Greater Than 24 Months or When Required By Contract**; Remove the 1st sentence, replace with new No. 1:

Develop a Critical Path Method (CPM) project execution schedule and subsequent updates as required or as specifically requested by the Engineer. Generate the CPM schedule using Primavera Project Management (P6) scheduling software.

- 1. Initial Project Schedule.** Within thirty (30) calendar days after the Contract Award, submit an Initial Project Schedule (IPS) to the Engineer for review and acceptance. A detailed plan shall be completed as described in Baseline CPM Schedule, for all work contemplated for the first one hundred and twenty (120) calendar days after Notice to Proceed. The IPS shall begin with the date of Award and also include all other work thereafter in sufficient detail to identify the Critical Path and identify all contractual milestones.

Submission of the IPS shall be in accordance with the CPM Schedule Submission Requirements. The IPS will be reviewed at the Pre-Construction Conference. IPS schedule must be accepted prior to Notice to Proceed.

Subsection 108.03 C.1 (pg. 81), 12-30-19; **Baseline CPM Schedule**; Revise No. & 1st paragraph:

- 2. Baseline CPM Schedule.** Within **ninety (90)** calendar days after the Notice to Proceed, submit a draft baseline CPM schedule to the Engineer and hold a meeting to review. Define and sequence activities so as to accurately describe the Project and to meet Contract requirements, the scope of work, phasing, accommodations for traffic, and interim, milestone, and project completion dates. Use working days to create the schedule, beginning with the date of **Award**. **The baseline CPM shall include, in their entirety, the detailed activities representing the entire duration of the project.** Ensure that the CPM schedule identifies and includes the following:...

Subsection 108.03 C.2 (pg. 83), 12-30-19; **Schedule Updates**; Revise No. & last paragraph:

- 3. CPM Schedule Submission Requirements.**

The Engineer and Contractor will review the draft baseline CPM schedule at ~~a meeting specific for the review of the schedule. the preconstruction conference~~. The Engineer will accept the draft baseline CPM schedule, provide review comments, or request additional information. Make appropriate adjustments or provide additional information. The Department may withhold payments or only make payments for the value of materials in accordance with **109.08** until the Engineer accepts the baseline CPM schedule. 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. The cost of preparing and updating the schedule is incidental to all Contract items.

Subsection 108.03 C.3 (pg. 84), 12-30-19; **Schedule Updates**; Revise No. & last paragraph:

4. Schedule Updates. ...

Submit the updated schedule electronically to the Engineer. ~~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. If the Contractor fails to provide monthly schedule updates, or address the Engineer's comments regarding the monthly schedule update, by the estimate payment date, the Engineer may withhold up to 5% of the monthly estimate payment, until such time as an acceptable update has been provided.~~

Subsection 108.09 (pg. 90) 5-14-18; Failure to Complete the Work on Time - Table 108.09-1: Modify the Daily Charge (\$/Day) as shown below:

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

Original Contract Amount (\$)			Daily Charge (\$/day)
0	to	500,000	400.00
> 500,000	to	1,000,000	580.00
> 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 109.01 (pg. 98-100) 11-16-15; Measurement of Quantities, E. Weight; Remove the 12th paragraph and replace with the following:

“The scales shall be checked by an independent certified scale company. The check shall be performed on a semiannual basis; January through June and July through December. The results shall be maintained onsite and made available for review to Departmental personnel. If deficiencies are reported, all corrections shall be performed, documented, and verified prior to supplying material for TDOT projects.”

Subsection 109.01 (pg. 98-99) 5-15-17; Measurement of Quantities, E. Weight, Modify the 6th paragraph to the following:

“Employ a Certified Public Weigher as defined in the Certified Public Weigher Law of 1981, Tennessee Code Annotated, Section 47-26-801, et seq., as amended. The Engineer will measure all applicable materials in accordance with the Certified Public Weigher Law and Department policy on scales approved by the Engineer. Provide weight (haul) tickets in accordance with Department policy and as directed by the Engineer. These requirements apply to entities located both inside and outside the state of Tennessee”

Subsection 109.01 (pg. 98-100) 5-15-17; Measurement of Quantities, E. Weight, Modify the 12th paragraph to the following:

“The scales shall be calibrated and certified by an independent certified scale company. The calibration and certification shall be performed on a semiannual basis; January through June and July through December. Scales shall be validated on a quarterly basis to ensure their continued accuracy. Validation shall be made by a verified known weight, or other scales that are approved by the Department or other State agency. A verified known weight shall be checked for continued accuracy each time the scales are calibrated. The results shall be maintained onsite and made available for review to Departmental personnel. If deficiencies are reported, all corrections shall be performed, documented, and verified prior to supplying material for TDOT projects.”

Subsection 109.01 (pg. 98-100), 11-9-17; Measurement of Quantities E. Weight, Revise subsection to the following:

“E. Weight

The term “ton” will mean the short ton consisting of 2,000 pounds avoirdupois.

Unless otherwise specified, the Engineer will accept certified weights for materials measured or proportioned by weight that are shipped by rail or truck transport, provided that only the actual weight of the material used is paid for.

For bituminous materials, net certified scale weights or weights based on certified volumes in the case of rail or truck transport shipments, unless otherwise specified, will be used as a basis of measurement, subject to correction when bituminous material has been lost, wasted, or otherwise not incorporated in the Work.

In all cases where measurement of materials is based on certified weights, provide the Engineer with certified weigh bills showing the net tons of materials received in each shipment. The Engineer will not pay for materials in excess of the amounts represented by the certified weigh bills.

Certified Weigh Tickets for Asphalt Mixtures and Aggregate Materials shall list on the ticket:

1. Date
2. Time
3. The ticket number
4. Gross weight of the loaded truck
5. Tare weight of the truck
6. Net weight of the material to be paid
7. Running Daily Total for the particular material
8. Truck number
9. Truck Legal limit

Employ a Certified Public Weigher as defined in the Certified Public Weigher Law of 1981, Tennessee Code Annotated, Section 47-26-801, et seq., as amended. The Engineer will measure all applicable materials in accordance with the Certified Public Weigher Law and Department policy on scales approved by the Engineer. Certified Weigher licenses shall be posted near the scale beam or weight indicator in full view at all times. Certified Weigher shall be the only person allowed to operate the scale or weigh recording equipment. Provide weight (haul) tickets in accordance with Department policy and as directed by the Engineer. These requirements apply to entities located both inside and outside the state of Tennessee.

Certified Weigher shall weigh each load with the maximum load not to exceed the legal limit established by law. The proposed haul route shall be known prior to deployment.

Provide a standard brand of platform truck scales with a sufficient rated capacity to weigh the maximum gross load to which they will be subjected. Do not use truck scales to

measure weights in excess of the manufacturer's rated capacity. Clearly post the manufacturer's rated capacity on the scale manufacturer's plate and in the shelter provided for the weigher.

At the time of installation or modification of existing scales, test the scales before using to ensure they are within the allowable tolerances. Use a qualified scale technician to perform any alteration (e.g., electrical readout) or change in the rated capacity. Document all changes or alterations made by the scale technician and furnish a copy of the documentation to the Department.

House the recording mechanism of the scale in a suitable shelter furnished with adequate light, heat, chairs, tables, and storage drawers as needed for the convenience of the weigher. In addition, keep the scale platform and scale pit free of debris that could affect the accuracy of the scales.

Provide digital readout and scale printers as the primary weight indicator or as accessory equipment. The Department will inspect and approve all scale control and recording equipment.

Ensure the scale's accuracy within a tolerance of 0.5%. Provide a straight approach at each end of the platform scale in the same plane as the platform and of sufficient length and width to ensure the level positioning of vehicles longer than the scale platform during weight determinations. Weigh each truck and trailer with no brakes set on any wheel. Locate the scale platform so that surface water will drain away from it and to allow for an adequate foundation of concrete or other approved materials. Construct the foundation of sufficient strength and durability to withstand repeated capacity loading without affecting the accuracy of the scales.

The scales shall be calibrated and certified by an independent certified scale company. The calibration and certification shall be performed on a semiannual basis; January through June and July through December. Scales shall be validated on a quarterly basis to ensure their continued accuracy. Validation shall be made by a verified known weight, or other scales that are approved by the Department or other State agency. A verified known weight shall be checked for continued accuracy each time the scales are calibrated. The results shall be maintained onsite and made available for review to Departmental personnel. If deficiencies are reported, all corrections shall be performed, documented, and verified prior to supplying material for TDOT projects.

Weigh tickets shall be certified either manually or electronically. If certified manually, the Certified Weigher shall sign his official registered signature and place his seal on the

original ticket. The ticket shall be filled out in ink and delivered to the project site with the material.

For materials directly paid for by the ton, the Engineer will be furnished a daily recap of all materials delivered to the project. The daily recap sheet must list the ticket number, type of material by item number, and a quantity of materials for each load hauled. Any discrepancy between the certified weigh bills and the daily recap will be reviewed along with the contractor's initialed copy of weigh bills.

Due to possible variations in the specific gravity of aggregates, the tonnage used may vary from the proposal quantities and the Department will not make adjustments in the Contract unit price because of such variations.

The truck tare to be used in the weighing operation shall be the weight of the empty truck determined with full tank(s) of fuel and the operator seated in the cab. A daily weight shall be recorded at the beginning of each work day prior to use of truck. If preferred, a new tare may be determined for each load. When a new tare is obtained for each load, the requirement for full tank(s) of fuel shall be waived.

All weight of trucks shall be recorded to the nearest 20 pounds. The cost of providing facilities and equipment for the accurate weighing, proportioning, or measuring of materials is incidental to the associated pay items in the Contract."

Subsection 109.01 (pg. 98-100), 10-8-18; Measurement of Quantities, E. Weight - Replace the last sentence to the previously modified 6th paragraph with the following:

"Loads in excess of the Legal Weight limit shall be rejected and no payment will be issued."

Subsection 109.02 (pg. 100-101), 11-9-17; Replace the last paragraph:

"Document on the Prompt Payment Certification Form the actual amount paid to all subcontractors, during the estimate period for which the certification is being made. Ensure all Disadvantaged Business Enterprise (DBE) or certified Small Business Enterprise (SBE) are listed and classified on the form, including DBE or SBE off-site haulers and DBE or SBE material suppliers"

Subsection 109.02 (pg. 100-101), 7-2-18; Scope of Payment - Remove paragraphs 5, 6 and 7, beginning with, "Provide a monthly payment certification...." and replace with the following:

"Scope of Payment

The Department will pay, and the Contractor agrees to accept, the compensation provided in the Contract for the work acceptably completed and measured for payment under each Contract item. Payment of a Contract item is full compensation for furnishing all materials, equipment, tools, labor, and incidentals required to complete the item; and for all risk, loss, damage, or expense arising out of the nature or the performance of the work, subject to **107.19** and **109.11**.

If the "Basis of Payment" clause in the Specifications relating to a unit price in the bid schedule requires that the price of the Contract item cover and be considered compensation for certain work or material essential to the item, the Department will not measure or pay for this same work or material under any other pay item that may appear elsewhere in the Specifications.

When two or more projects are included in the same Contract, the Contractor will be required to furnish any item listed in the Contract to any or all of the projects at the Contract unit price.

The Department requires that the Contractor pay subcontractors, material suppliers, and haulers promptly for their work after receipt of payment for the associated work from the Department. The Contractor shall pay each subcontractor, material supplier, and hauler for work performed or materials supplied under its subcontract no later than thirty (30) calendar days from the date the Contractor receives payment for the work from the Department. Any payment to the Contractor from which any amount has been withheld in accordance with **107.19** or **109.11** shall constitute full payment for the associated work, and the Contractor shall remain obligated to pay all subcontractors, material suppliers, and haulers fully and promptly for all associated work. The same prompt payment requirements apply to subcontractors at all tiers.

Ensure each subcontractor, including all Disadvantaged Business Enterprises (DBE), certified Small Business Enterprises (SBE), and DBE or SBE haulers or material suppliers, has registered for AASHTOWare Project Civil Rights & Labor (CRL) prior to commencing Work.

Document within CRL the actual amount paid to all subcontractors, material suppliers, and haulers during the monthly estimate period for which the certification is being made. The Department will withhold estimate payments if the required information is not submitted or if subcontractors, at any tier, material suppliers, or haulers are not paid after the thirty (30) calendar day time period. Any delay or postponement of payment beyond the thirty (30) calendar day time frame will be subject to terms listed in TCA §12-4-707(b). The Contractor shall remain obligated to pay all subcontractors, material suppliers, and haulers fully and promptly for all work associated with a pay estimate from the Department, notwithstanding any withholding of payment from the Contractor for failure to pay a subcontractor, material supplier, or hauler within thirty (30) calendar days.

The prime contractor, subcontractors, at any tier, material suppliers, or haulers shall not withhold any retainage from progress payments made to their subcontractors.

Subsection 109.04 (pg. 106), 3-30-15; Replace C. Force Account, 4. Equipment, c. with:

“Idle or standby cost will not be paid for more than 8 hours in a day or 40 hours in a week”.

Subsection 109.09. (pg. 114); 5-13-19; **Payment for Stockpiled Materials**; Revise 5th paragraph No. 3:

When requesting payment for stockpiled materials, provide a written request to the Engineer that contains the following information:

1. Contract and Project numbers,
2. Item number and description as stated in the Contract proposal,
3. Quantity and unit of measure as stated in the contract proposal and/or project documents,
4.

S T A T E

O F

T E N N E S S E E

(Rev. 5-18-15)
(Rev. 11-16-15)
(Rev. 12-2-16)
(Rev. 5-15-17)
(Rev. 5-14-18)
(Rev. 10-8-18)
(Rev. 5-13-19)
(Rev. 12-30-19)

January 1, 2015

Supplemental Specifications - Section 200

of the

Standard Specifications for Road and Bridge Construction

January 1, 2015

Subsection 201.03 Clearing and Grubbing, A. General (pg. 118-119), 5-15-17; remove the third paragraph:

Subsection 201.03 Clearing and Grubbing, C. Clearing and Grubbing Activities, 5. Borrow Pit Areas (pg. 120), 5-15-17; remove the last sentence in the last paragraph:

“In areas approved as borrow pits by the Engineer, clear and grub all trees, stumps, brush, and heavy vegetation.

In areas designated for obtaining construction material other than borrow, clear and grub trees, stumps, brush, and vegetation, and strip overburden lying above the material to be obtained.

Complete this work prior to removing borrow or construction materials.”

Subsection 202.03 General (pg. 125), 5-15-17; remove the last sentence of the 2nd paragraph:

“Remove materials designated for salvage in readily transportable pieces, and store the removed pieces at specified locations within the Project limits. Replace with new material, at no additional cost to the Department, those materials designated for salvage that are damaged during removal, transport, or storage operations. Take ownership of material not designated for the Department’s use, and dispose of such material beyond view from the Project limits.”

Subsection 203.02 B. Borrow Excavation (pg. 134), 5-15-17; remove the last sentence of the 1st paragraph:

“Borrow Excavation consists of material required for the construction of embankments or other portions of the work.”

Subsection 203.02 B.3 (pg. 135), 5-13-19; **Borrow Excavation (Graded Solid Rock)**; Revise last paragraph:

Process the material using an acceptable method that produces the required gradation. The material shall meet the quality requirements of 903.25. Obtain the Engineer’s approval before using the material.

Subsection 203.04 (pg. 139), 5-15-17; add 5. to the list of provisions:

- “1. The cost of this material is more economical than borrow excavation.
2. The material is available within the adjusted balance where the shortage exists or the material may be hauled outside the limits of adjusted balance if the cost of the material is more economical than borrow after considering the additional cost of overhaul.
3. The material can be excavated without blasting.
4. There is a minimum of 20 feet between the top of the existing slope and the top of the new slope and a minimum of 5 feet between the top of the new slope and right-of-way line or Control Access fence. The 20-foot minimum will not apply when the existing slope is 4:1 or flatter or to overlapping or near overlapping slopes in medians or between parallel roads or ramps. The Engineer may reduce the 20-foot minimum at the Contractor’s written request.
5. The material has not been designated as potentially acid producing material.”

Subsection 203.04 (pg. 139-140), 5-15-17; add the 2nd paragraph as follows, revise the 5th paragraph to remove the reference to the *Procedures for Providing Offsite Waste and Borrow on TDOT Construction Projects*:

“E. Borrow Areas

Notify the Engineer before opening any borrow area to allow adequate time for the Engineer to take cross-section elevations and measurements of the ground surface after being stripped, and to test the borrow material before use. Obtain approval for the borrow area according to the *Procedures for Providing Offsite Waste and Borrow on TDOT Construction Projects*. Allow at least 14 days for

testing borrow materials or other material from roadside pits proposed for construction purposes.

Borrow materials shall not contain acid producing materials. Representative samples of the proposed borrow material shall be tested for pH (EPA600/2-78-054 or ASTM D4239). Material with a pH less than 5 is considered acid producing and will not be accepted.

Unless otherwise allowed, do not place borrow material until after the roadway excavation material has been placed in the embankments. If the Contractor places more borrow than is required and thereby causes a waste of excavation, the Department will deduct the amount of such waste from the measured borrow volume. Do not excavate beyond the dimensions and elevations established.

The Contractor may remove highway fencing to obtain borrow materials. Replace the fencing removed with new fence at no cost to the Department, and assume responsibility for confining livestock, as necessary.

Excavate borrow pits to be self-draining where possible and practicable, and of a shape that can be easily cross-sectioned.

After completing excavation operations, provide the area with a neat appearance. Cover all self-draining borrow areas with topsoil and stabilize. Provide and place topsoil and seeding (with mulch) as specified in **203.06** and **801**, respectively.

For borrow pits 1 acre or larger in size that are not self-draining, refer to Sections 53-801 through 53-809 of the TCA. Full information regarding the requirements to be complied with and the necessary permits that the property owner must secure for the construction of a pond, lake, borrow pits, etc., 1 acre or larger that is not constructed to drain, will be supplied upon application to the TDEC.”

Subsection 203.07 (pg. 141-142), 5-15-17; replace the last paragraph:

“Ensure the offsite disposal grading plan is properly designed (including but not limited to slope stability and fill placement recommendations) regulated, and implemented.”

Subsection 204.06 – 2 (pg.152-154), 5-14-18; replace Table 204.06-3 with the following:

Table 204.06-3: Specification Limits for EFF

Property	Specification Limit
Air content (ASTM D6023)	Maximum 30% ⁽¹⁾
Load Application (ASTM D6024)	24 hours maximum in any condition
Consistency	15 inches minimum as tested per <u>204.06.B.1</u>
Compressive strength (ASTM D4832) ⁽²⁾	30 psi minimum at 28 days 100 psi maximum at 28 days
⁽¹⁾ When using air entrained mixture design	
⁽²⁾ ASTM D4832 4 x 8 inch cylinder molds may be used. The preferred capping method to be used is wetsuit neoprene restrained in rigid retainers.	

Subsection 204.06 – 2 (pg.152-154), 5-18-15; replace Tables 204.06 with the following:

1. General Use Flowable Fill

Table 204.06-2: Specification Limits for General Use Flowable Fill

Property	Specification Limit
Load Application (ASTM D6024)	24 hours maximum in any condition
Consistency	15 inches minimum tested as specified in this 204.06.B.1

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2. Excavatable Flowable Fill (EFF)

Table 204.06-3: Specification Limits for EFF

Property	Specification Limit
Air content (ASTM D6023)	Maximum 30% ⁽¹⁾
Load Application (ASTM D6024)	24 hours maximum in any condition
Consistency	15 inches minimum as tested per 204.06.B.1
Compressive strength (ASTM D4832) ⁽²⁾	30 psi minimum at 28 days
⁽¹⁾ When using air entrained mixture design	
⁽²⁾ ASTM D4832 4 x 8 inch cylinder molds may be used. The preferred capping method to be used is wetsuit neoprene restrained in rigid retainers.	

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3. Early Strength Flowable Fill (ESFF)

Table 204.06-4: Specification Limits for ESFF

Property	Specification Limit
Air content (ASTM D6023)	Maximum 30% ⁽¹⁾
Load Application (ASTM D6024)	6 hours maximum in any condition
Consistency	15 inches minimum as tested per 204.06.B.1
Compressive strength (ASTM D4832) ⁽²⁾	30 psi minimum at 24 hours
⁽¹⁾ When using air entrained mixture design	
⁽²⁾ ASTM D4832 4 x 8 inch cylinder molds may be used. The preferred capping method to be used is wetsuit neoprene restrained in rigid retainers.	

Subsection 204.06 B.1 (pg. 151-153), 12-30-19; **General Use Flowable Fill**; Revise 1st paragraph & Revise Tables 204.06-2, 204.06-3, & 204.06-4:

- 1. General Use Flowable Fill.** When not otherwise shown on the Plans, or specified in the Contract, provide general use flowable fill proportioned to meet the limits specified in Tables 204.06-1 and 204.06-2. ~~Alternate proportioning may be used if the trial batch proves satisfactory results.~~

Table 204.06-2: Specification Limits for General Use Flowable Fill

Property	Specification Limit
~~Load~~ ~~Application~~ ~~(ASTM D6024)~~	~~24 hours maximum in any condition~~
Consistency	15 inches minimum tested as specified in this <u>204.06.B.1</u>

Table 204.06-3: Specification Limits for EFF

Property	Specification Limit
Air content (ASTM D6023)	Maximum 30% ⁽¹⁾
~~Load~~ ~~Application~~ ~~(ASTM D6024)~~	~~24 hours maximum in any condition~~
Consistency	15 inches minimum as tested per <u>204.06.B.1</u>
Compressive strength (ASTM D4832) ⁽²⁾	30 psi minimum at 28 days 100 psi maximum of 28 days

⁽¹⁾ When using air entrained mixture design

⁽²⁾ ASTM D4832 4 x 8 inch cylinder molds may be used. The preferred capping method to be used is wetsuit neoprene restrained in rigid retainers.

Table 204.06-4: Specification Limits for ESFF

Property	Specification Limit
Air content (ASTM D6023)	Maximum 30% ⁽¹⁾
~~Load~~ ~~Application~~ ~~(ASTM D6024)~~	~~6 hours maximum in any condition~~
Consistency	15 inches minimum as tested per <u>204.06.B.1</u>
Compressive strength (ASTM D4832) ⁽²⁾	30 psi minimum at 24 hours

⁽¹⁾ When using air entrained mixture design

⁽²⁾ ASTM D4832 4 x 8 inch cylinder molds may be used. The preferred capping method to be used is wetsuit neoprene restrained in rigid retainers.

Subsection 204.06 (pages. 153-154) 11-16-15; Excavatable Flowable Fill - delete the first sentence of the first full paragraph after Table 204.06-3 on page 153, Early Strength Flowable Fill – delete the first sentence of the second paragraph below Table 204.06-4 on page 154

Subsection 204.11 (pg. 162), 12-2-16; Revise Section B. Pipe Culverts as follows:

“B. Pipe Culverts

1. Placing Backfill Material. After the bedding has been prepared and the pipe installed, backfill the trench with bedding material, fine compactable soil selected from excavation or borrow, or both, as shown on the Plans. Before backfilling concrete pipe, allow the joints to cure as specified in **607.07**. Place the material along each side of the pipe in layers not more than 8 inches in loose depth. Moisten or dry, if necessary, each layer to near optimum moisture content and thoroughly compact with mechanical tampers. Thoroughly compact the material under the haunches of the pipe and ensure that the backfill material is in intimate contact with the side of the pipe. Uniformly place and raise backfill on both sides of the pipe for the full required length. Except as may be required for the imperfect trench method, place backfill material for the full depth of the trench.

2. Placing Embankment Material. When the top of the pipe is above the top of the trench, place and compact embankment material in layers of not more than 8 inches in loose depth for a width on each side of the pipe equal to at least twice the horizontal inside diameter of the pipe or 12 feet, whichever is less. The embankment on each side of the pipe, for a distance equal to the horizontal inside diameter of the pipe, shall be of the same material and compacted in the same manner as specified for backfill in **204.11.B.1**. For the remainder of the fill material, use soil that can be readily compacted and that contains no frozen lumps, chunks, or plastic clay, stones that would be retained on a 3-inch sieve, or other objectionable material. Compact the material as required for backfill or by rolling as specified in the applicable requirements of **204**. Place the embankment material evenly on both sides of the pipe for the full width of the roadbed up to an elevation a minimum of 1 foot above the top of the pipe. Above this elevation, and also above the top of a backfilled trench that is 1 foot or more above the top of the pipe, place embankment as specified in the applicable requirements of **205**, except for those requirements related to the imperfect trench method.

3. Plastic Pipe. For plastic pipe, work structural backfill into the haunch area and compact the materials by hand after placing the pipe. Special compaction means may be necessary in the haunch area. Place structural backfill in layers of not more than 8 inches in loose lift thickness and bring up evenly and simultaneously on both sides of the pipe to an elevation not less than 1 foot above the pipe. Use a vibratory plate to achieve a minimum compaction level of 90% Standard Proctor Density according to AASHTO T 99. Do not use hydrohammer type compactors over the pipe. Obtain the Engineer’s approval of all compaction equipment.”

Subsection 205.04 (pg. 175) 10-7-19, Formation of Embankments, add the following sentence to the 2nd paragraph on the original page:

“The Department inspector conducting the density tests shall be a certified Nuclear Gauge Technician.”

Subsection 205.04 (pg. 177-178), 5-13-19; **Formation of Embankments**; Revise 1st paragraph after **E**:

When the Plans require Solid Rock Fill, the material shall consist of sound, non-degradable rock (granite, gneiss, limestone, or other approved material). Material shall meet the quality requirements in 903.25. Do not use plastic soil or shale material. Place Solid Rock Fill as shown on the Plans or as directed by the Engineer.

Subsection 206.03 (pg. 180-181), 5-15-17; remove the reference to the *Procedures for Providing Offsite Waste and Borrow on TDOT Construction Projects* in the next to last sentence of the first paragraph:

“Perform final dressing by hand work and machines to produce a uniform satisfactory finish to all parts of the roadway and other components of the Project. Shape the roadbed, shoulders, ditches, and slopes to within reasonably close conformity to the specified lines, grades, and cross-sections. Dress spoil banks, borrow areas, waste areas, and similar areas. Clear rock cuts of all loose fragments, and leave in a neat, safe, and workmanlike condition.”

Subsection 209.01 (pg.190), 5-15-17; revise the 1st sentence of the 2nd paragraph:

“Implement erosion prevention and sediment control (EPSC) measures during all phases of construction. Ensure that all EPSC measures shown on the Stormwater Pollution Prevention Plan (SWPPP) are in place before beginning soil disturbing activities.”

S T A T E

(Rev. 11-16-15)

(Rev. 6-27-16)

(Rev. 12-2-16)

(Rev. 5-15-17)

(Rev. 10-8-18)

(Rev. 5-13-19)

(Rev. 12-30-19)**O F****T E N N E S S E E**

January 1, 2015

Supplemental Specifications - Section 300**of the****Standard Specifications for Road and Bridge Construction****January 1, 2015**

Subsection 303 (pg. 220), 10-8-18; Mineral Aggregate Base, Remove 303.04 Sodium Chloride from Index.

Subsection 303.01 (pg. 220) 5-15-17; add the following sentence as the last sentence of the 2nd paragraph:

“Mineral aggregates base shall be Type A or Type B, whichever is shown on the Plans and called for in the bid schedule. Reclaimed Concrete Aggregate (RCA) may be used as an alternate for Type A or Type B base material.”

Subsection 303.02 (pg. 220-221) 5-15-17; add the following sentence to the last sentence of the 1st paragraph:

“Depending upon whether the Plans require Type A or Type B base, provide mineral aggregate meeting 903.05. For Type A base, use aggregate of Grading D. For Type B base, the Contractor may use aggregate of Grading C or D. For RCA, use grading specified in 903.05-C.”

Subsection 303.04 (pg. 221) 10-8-18; Sodium Chloride, remove all information pertaining to Sodium Chloride from subsection:

Subsection 303.07 (pg. 222-223) 5-15-17; modify the 1st sentence of the 1st paragraph to the following:

“Construct Mineral Aggregate Base, Type A, Type B, or RCA in one or more layers, to the compacted thickness shown on the Plans.”

Subsection 303.08 (pg. 223-224) 5-15-17; add the last sentence to the last paragraph of subsection A:

“For Mineral Aggregate Base, Type A, use the stationary plant method. For Mineral Aggregate Base, Type B, requiring the blending of two or more materials, use either the stationary plant method or the road mix method (mechanical mixer), except as provided for in **903.05**. For Mineral Aggregate Base, Type B, requiring additive, use either stationary plant mixing or road mixing. When using RCA as a replacement for Mineral Aggregate Base, Type A or Type B, use the intended method of mixing for the material listed above.”

Subsection 303.08 (pg. 225) 10-8-18; Mixing, B. Use of Calcium Chloride and Sodium Chloride, Remove all information pertaining to Sodium Chloride:

“B. Use of Calcium Chloride

If using calcium chloride, incorporate it in either the solid or liquid form, at the approximate rate of 6 pounds per ton of aggregate, noting that:

- ☐ 6 pounds is equivalent to 1.29 gallons 60 °F 32% solution
- ☐ 6 pounds is equivalent to 1.02 gallons 60 °F 38% solution

For stationary plant mixing, proportion chloride material, in solid form, through a hopper equipped with an approved vibratory feeder and an adjustable opening capable of accurately controlling the flow of material. Proportion calcium chloride liquor using an approved calibrated meter that has a registering capacity capable of indicating the total amount of liquid used during any single day's operation.

For road mixing, add the chloride material to the aggregate at the point in the mixing operation and in the manner directed by the Engineer.”

Subsection 303.10 (pg. 225-227) 5-15-17; add subsection c.:

“2. Density Requirements

- a. **Type A Base.** The average density of each lot of Type A base, unless otherwise specified, shall be within 100% of maximum density as determined according to AASHTO T 99, Method D, with no individual test less than 97% of maximum density.
- b. **Type B Base.** The average density of each lot of Type B base, unless otherwise specified, shall be not less than 97% of maximum density as determined according to AASHTO T 99, Method D, with no individual test being less than 95% of maximum density.
- c. **RCA Base.** The average density of each lot of RCA base, unless otherwise specified, shall be not less than 100% of maximum density as determined according to AASHTO T 99, Method D, with no individual test less than 97% of maximum density. The moisture content shall be within $\pm 3\%$ of the optimum moisture content as determined by an independent laboratory analysis. Mixing of the material with water shall be completed per Section 303.08.”

Subsection 303.10 C.2.c (pg 227), 5-13-19; **Density Requirements**; Revise paragraph:

- c. RCA Base.** The average density of each lot of RCA base, unless otherwise specified, shall be not less than 100% of maximum density as determined according to AASHTO T 99, Method D, with no individual test less than 97% of maximum density. The moisture content shall be within $\pm 3\%$ of the optimum moisture content as determined by Departmental analysis. Mixing of the material with water shall be completed per Section 303.08.

Subsection 303.14 (pg. 228) 5-15-17; revise the first sentence of A.:

“A. Mineral Aggregate for Mineral Aggregate Base, Type A or Type B, or RCA

The Department will measure Mineral Aggregate for Mineral Aggregate Base, Type A, Type B, or RCA, by the ton, in accordance with **109.**”

Subsection 303.14 (pg. 228) 10-8-18, C. Sodium Chloride, remove part C. which covers Sodium Chloride:

Subsection 303.15 (pg 229) 10-8-18, Basis of Payment; remove item for Sodium Chloride:

303.15 Basis of Payment

The Department will pay for accepted quantities at the contract prices as follows:

<i>Item</i>	<i>Pay Unit</i>
Mineral Aggregate, Type_____Base	Ton
Calcium Chloride	Ton
Water	MG

The Department will pay for the work required to prepare the subgrade in accordance with 303.07 as provided for in the applicable Section or Subsection under which the work is performed.

Subsection 303.15 (pg. 229), 12-30-19; **Basis of Payment**; Add subsection A & B:

A. General

The Department will pay for accepted quantities at the contract prices as follows:

...

B. Adjustments

Specific Gravity. In cases where the Bulk SSD specific gravity of the mineral aggregate exceeds 2.80, the Department will adjust the tonnage of mineral aggregate for payment by multiplying the tonnage of mineral aggregate used by a specific gravity of 2.80 and dividing by the higher specific gravity.

Subsection 307.03 (pg. 246) 11-16-15; Modify Table 307.03-3:

B. Recycled Asphalt Pavement for Bituminous Plant Mix Base, Table 307.03-3

Table 307.03-3: Mixtures Using RAP

Mix Type	% RAP (Non-processed)⁽¹⁾	Maximum % RAP (Processed)⁽²⁾	Maximum % RAP Processed & Fractionated⁽³⁾	Maximum Particle Size (inches)
307-ACRL	0	00	-	-
307-AS	0	00	15	-
307-A	15	20	35	1-1/2
307-B	15	30	35	1-1/2
307-BM	15	30	35	3/4
307-BM2	15	30	35	3/4
307-C	15	30	35	3/8
307-CW	15	30	35	1/2
307-CS	0	15	25	5/16

⁽¹⁾ “Non-processed” refers to RAP that has not been crushed and screened or otherwise sized prior to its use.

⁽²⁾ “Processed” refers to RAP that has been crushed and screened or otherwise sized such that the maximum recycled material particle size is less than that listed in Table 307.03-3 prior to entering the dryer drum.

⁽³⁾ “Fractionated” refers to RAP that has been processed over more than one screen, producing sources of various maximum particle sizes (e.g., 3/4 to 1/2 inch, 1/2 inch to #4, etc.). The Contractor may use the larger percentages of fractionated RAP specified only if individual fractions of two different maximum particle size are introduced into the plant as separate material sources for increased control.

⁽⁴⁾ RAP for 307-AS must be processed in a manner such that the minimum particle size is no smaller than 3/4” prior to solvent extraction. For RAP containing gravel as coarse aggregate, the maximum allowable RAP content shall be 10%.

2. Recycled Asphalt Shingles (RAS) RAS may be included to a maximum of 3% of the total weight of the mixture.

Subsection 307.03 (pg. 246) 5-15-17; Modify Table 307.03-3:

B. Recycled Asphalt Pavement for Bituminous Plant Mix Base, Table 307.03-3

Table 307.03-3: Mixtures Using RAP

Mix Type	% RAP (Non-processed) ⁽¹⁾	Maximum % RAP (Processed) ⁽²⁾	Maximum % RAP Processed & Fractionated ⁽³⁾	Maximum Particle Size (inches)
307-ACRL	0	00	-	-
307-AS	0	10	10	-
307-A	15	20	35	1-1/2
307-B	15	30	35	1-1/2
307-BM	15	30	35	3/4
307-BM2	15	30	35	3/4
307-C	15	30	35	3/8
307-CW	15	30	35	1/2
307-CS	0	15	25	5/16

⁽¹⁾ “Non-processed” refers to RAP that has not been crushed and screened or otherwise sized prior to its use.

⁽²⁾ “Processed” refers to RAP that has been crushed and screened or otherwise sized such that the maximum recycled material particle size is less than that listed in Table 307.03-3 prior to entering the dryer drum.

⁽³⁾ “Fractionated” refers to RAP that has been processed over more than one screen, producing sources of various maximum particle sizes (e.g., 3/4 to 1/2 inch, 1/2 inch to #4, etc.). The Contractor may use the larger percentages of fractionated RAP specified only if individual fractions of two different maximum particle size are introduced into the plant as separate material sources for increased control.

Subsection 307.03 (pg. 250) 6-27-16; C. revise the last paragraph to the following:

“Mix an approved antistrip agent with the asphalt cement at the dosage as specified in **921.06.B.**”

Subsection 307.06 (pg.250), 12-30-19; **Preparing the Subgrade, Sub-base, or Surface**; Revise 1st paragraph:

The Plans will indicate whether the plant-mixed base is to be constructed on a treated or untreated subgrade or sub-base, on a granular base, or on an existing surface. Ensure that the surface upon which the plant mix base is to be constructed meets 205, 207, 302, 303, 304, or 309, whichever is applicable. If shown on the Plans, condition the surface as specified in 407.10. Condition existing mineral aggregate base as specified in 310. Construct prime coat or tack coat, ~~when shown on the Plans~~, as specified in 402 or 403, respectively.

Subsection 307.06 (pg. 250) 12-2-16; add the following as the second paragraph:

“Do not place AS/ACRL which cannot be covered by the next course of pavement within the same construction season.”

Subsection 309.02 (pg. 253-254), 5-13-19; **Materials**; Add material to list:

Provide materials as specified in:

Water	302.03.B
Portland Cement, Type I.....	901.01
Portland-Pozzolan Cement, Type IP.....	901.01
Crushed Stone or Slag, Grading D.....	903.05
Aggregate, Crushed or Uncrushed Gravel or Chert	903.15
Reclaimed Concrete Aggregate	903.05.C
Bituminous Material for Curing, Emulsified Asphalt, Types allowed for Tack Coat in 403	904.03

Subsection 309.14 (pg. 258-259), 12-30-19; **Basis of Payment**; Add subsection A & B:

A. General

The Department will pay for accepted quantities at the contract prices as follows:

....

B. Adjustments

Specific Gravity. In cases where the Bulk SSD specific gravity of the mineral aggregate exceeds 2.80, the Department will adjust the tonnage of mineral aggregate for payment by multiplying the tonnage of mineral aggregate used by a specific gravity of 2.80 and dividing by the higher specific gravity.

Subsection 310.02 (pg. 260) 10-8-18, Materials, Remove materials information for sodium chloride:

“310.02 Materials

Provide materials as specified in:

Aggregate for Conditioning Base	903.05

Calcium Chloride, Type 1, Type 2 or Calcium Chloride Liquor 921.02

Subsection 310.04 (pg.261) 10-8-18, Conditioning, remove sodium chloride from the 3rd paragraph:

“310.04 Conditioning

Condition the existing base by applying water, blading, and compacting as directed by the Engineer. Scarify sections of existing base that are pot-holed to the full depth of the pot holes. Scarify and shape warped and distorted sections as directed by the Engineer. Moisten the material as necessary, and mix, shape, and roll until the base is uniformly and thoroughly compacted. Continue applying water, blading, and rolling until a smooth, dense, well-bonded surface is obtained that meets the Engineer’s approval.

The Department will divide the completed base into lots of approximately 10,000 square yards for density testing purposes, and will perform five density tests in each lot. The average dry density shall be not less than 100% of maximum density as determined according to AASHTO T 99 Method D, and no individual test shall be less than 97% of maximum density. Smaller lots may be considered when approved or directed by the Engineer.

Distribute calcium chloride ~~or sodium chloride~~, when specified, at the approximate rate of 1 pound per square yard and incorporate it in the base material during blading and rolling operations as directed by the Engineer.

If additional material is to be added to the existing base, lightly scarify the existing base, add the material, and condition the base as specified above.

Subsection 310.06 (pg. 262)10-8-18, Method of Measurement, Remove 3. Sodium Chloride information from the subsection, renumber 4. to 3.:

“310.06 Method of Measurement

The Department will measure:

1. Conditioning Mineral Aggregate Base by the linear mile, based on a horizontal measurement made along the median centerline of the Project for divided sections and along the centerline of the pavement for two-lane sections, excluding bridges.
2. Calcium Chloride by the ton in accordance with 303.14.D.
3. Water by M.G. (1,000 gallons) using calibrated tanks or distributors, or accurate water meters.

If the Contract requires the construction of a mineral aggregate base and a surface course, the Department will not directly measure or pay for conditioning of the base but will consider this work to be incidental to the unit price bid for the base material.

If the Contract requires the addition of base material to sections or the entire length of a previously constructed base, the Department will not directly measure or pay for conditioning of the base on the sections where base material is added. Sections where base material is not added will be measured for payment by the linear mile.

If the Contract requires a surface to be constructed on a previously constructed base and no additional material is added to the base, the Department will measure and pay for conditioning of the base by the linear mile.”

Subsection 310.07 (pg. 262) 10-8-18, Basis of Payment, Remove all information for sodium chloride:

“310.07 Basis of Payment

The Department will pay for accepted quantities at the contract prices as follows:

Item Pay Unit

Conditioning Mineral Aggregate Base	Linear Mile
Calcium Chloride	Ton
Water	MG

Payment for Conditioning Mineral Aggregate Base is full compensation for conditioning all base on interchanges, approaches, service roads, ramps, frontage roads, roadside rest areas, and all other base within the limits of the Project that requires conditioning to receive a succeeding stage of construction under the Contract.”

Subsection 313.03 (pg. 273) 11-16-15; B. Bituminous Treated Permeable Base, add the following sentence to the end of the paragraph:

“Recycled Asphalt Pavement (RAP) meeting the requirements of 307.03.B may be incorporated into asphalt treated permeable base up to 15% by weight of aggregate. RAP must be processed in a manner such that the minimum particle size is no smaller than $\frac{3}{4}$ ” prior to solvent extraction. Treated permeable base mixtures containing RAP shall contain at least 65% virgin asphalt binder. For RAP containing gravel as a coarse aggregate, the maximum allowable RAP content shall be 10%”

Subsection 313.03 (pg. 273) 5-15-17; B. Bituminous Treated Permeable Base, revise the sentence added on 11-16-15 to the following sentence:

“Recycled Asphalt Pavement (RAP) meeting the requirements of 307.03.B may be incorporated into asphalt treated permeable base up to 10% by weight of aggregate. Treated permeable base mixtures containing RAP shall contain at least 65% virgin asphalt binder. For RAP containing gravel as a coarse aggregate, the maximum allowable RAP content shall be 10%.

Mix an approved antistrip agent with the asphalt cement at the dosage as specified in **921.06.B.**”

Subsection 313.10 (pg. 276) 5-15-17; Basis of Payment, add the sentence as the third paragraph:

“The cost of antistrip additive used in Bituminous Plant Mix (Hot Mix) will be included in the price of Treated Permeable Base.”

STATE**OF****TENNESSEE**

(Rev. 5-18-15)

(Rev. 7-13-15)

(Rev.11-16-15)

(Rev. 6-27-16)

(Rev. 12-2-16)

(Rev. 1-6-17)

(Rev. 5-15-17)

(Rev. 11-6-17)

(Rev. 5-14-18)

(Rev. 10-8-18)

(Rev.5-13-19)

(Rev. 12-30-19)

January 1, 2015

Supplemental Specifications - Section 400**of the****Standard Specifications for Road and Bridge Construction****January 1, 2015**

Subsection 401.02(pg. 278) 10-8-18, Mineral Aggregate Surface – Materials, Remove Sodium Chloride from the materials list:

“401.02 Materials

Provide materials as specified in:

Aggregate, Class B **903.05.B**

Calcium Chloride, Type I, Type 2, or Calcium Chloride Liquor **921.02**

The Engineer will accept aggregate for gradation as specified in **303.02.**”

Subsection 401.06 (pg. 280) 10-8-18, Mineral Aggregate Surface – Method of Measurement, Remove 4. Sodium Chloride from the subsection:

” 401.06 Method of Measurement

The Department will measure:

1. Mineral Aggregate Surface by the ton in accordance with **109.**

2. Water added to the materials at the direction of the Engineer by the M.G. (1,000 gallons) using calibrated tanks or distributors, or accurate water meters.

3. Calcium Chloride by the ton in accordance with **303.14.D.**

When measuring Mineral Aggregate Surface, the Department will deduct the weight of all surface moisture on the aggregate at the time of weighing in excess of 8%.”

Subsection 401.07 (pg. 280) 10-8-18, Mineral Aggregate Surface – Basis of Payment, Remove Sodium Chloride from the basis of payment list:

“The Department will pay for accepted quantities of Mineral Aggregate Surface, complete in place, at the contract prices as follows:

Item Pay Unit

Mineral Aggregate	Ton
Calcium Chloride	Ton
Water	MG”

Subsection 402.03 (pg. 282) 5-27-16; revise 0.2 to 0.05 in the range as shown in the 2nd paragraph:

“The distributor shall be designed, equipped, maintained, and operated so that bituminous material at even heat may be applied uniformly on variable surface widths at readily determined and controlled rates from 0.05 to 0.5 gallons per square yard, with uniform pressure, and with an allowable variation from any specified rate of plus or minus 0.02 gallons per square yard.”

Subsection 403.02 (pg. 285-286) 10-8-18; Bituminous Materials, add RS-1, CRS-1 and remove emulsified from “Approved Emulsified Trackless Tack”, update Table 403.02-1 to adjust temperature range required and add approved trackless tack information:

Provide materials as specified in:

Emulsified Asphalt, SS-1, SS-1h, CSS-1, CSS-1h, TST-1P, CQS-1h, CQS-1hp, RS-1, CRS-1.....904.03 or Approved Trackless Tack from the QPL.

Table 403.02-1: Tack Coat Application Temperatures

Material	Temperature Range
SS-1, SS-1h, CSS-1, TST-1P, CQS1h, CQS-1hp, CSS-1h,	70 to 160 °F
Approved Trackless Tack from the QPL	Per Manufacturer’s Recommendation

Subsection 403.02 (pg. 285-286) 12-2-16; Bituminous Materials, remove trackless tack information from specifications and reference the QPL for approved Emulsified Trackless Tacks, remove trackless tacks from Table 403.02-1:

“Emulsified Asphalt, SS-1, SS-1h, CSS-1, CSS-1h, TST-1P, CQS-1h, CQS-1hp.....904.03 or Approved Emulsified Trackless Tack from the QPL.

Table 403.02-1: Tack Coat Application Temperatures

Material	Temperature Range
SS-1, SS-1h, CSS-1, TST-1P, CQS-1h, CQS-1hp and CSS-1h	60 to 140 °F

Subsection 403.02 (pg. 285-286) 11-16-15; Bituminous Materials, update the reference to 904.03, add TTT-3 to Table 403.02-1:

“Emulsified Asphalt, SS-1, SS-1h, CSS-1, CSS-1h, TST-1P, CQS-1h, CQS-1hp, TTT-1, TTT-2, TTT-3 904.03”

Table 403.02-1: Tack Coat Application Temperatures

Material	Temperature Range
SS-1, SS-1h, CSS-1, TST-1P, CQS-1h, CQS-1hp and CSS-1h	60 to 140 °F
TTT-1	160 to 180 °F
TTT-2	120 to 160 °F
TTT-3	100 to 180 °F

Subsection 403.05 (pg. 286) 11-16-15; A. Emulsified Asphalt, Add the following paragraph at the end of the subsection:

“Take a minimum of 3 cores throughout the length of the project for informational tack coat shear testing. Include the underlying layer. Not required for mats less than one inch thick.”

Subsection 403.05 A (pg. 287), 12-30-19; **Emulsified Asphalt**; Remove last paragraph:

~~*a minimum of 3 cores throughout the length of the project for informational tack coat shear testing. Include the underlying layer. Not required for mats less than one inch thick.”*~~

Subsection 403.05 (pg. 287) 11-16-15;) B. Test Strip, modify the 2nd paragraph to update the rate as 0.08 and 0.12:

“If placing the bituminous material upon a milled surface, apply the tack material at a rate of between 0.08 and 0.12 gallons of applied emulsion per square yard.”

Subsection 403.05 (pg. 287) 6-27-16; revise the last sentence of the 2nd paragraph:

“If placing the bituminous material upon a milled surface, apply the tack material at a rate of between 0.08 and 0.12 gallons applied emulsion per square yard.”

Subsection 403.05 (pg. 287), 11-6-17; Revise the 1st sentence of the 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.”

Subsection 404 (pg. 289-293) 1-6-17; Remove the entire subsection. All specifications regarding Double Bituminous Surface Treatment has been incorporated into subsection 405. All references shall be updated to subsection 405.

Subsection 405 (pg. 294-298) 1-6-17; replace subsection 405 with the following:

“405.01 Description

This work consists of constructing a bituminous seal coat consisting of one or more applications each of bituminous material and cover aggregate.

MATERIALS

405.02 Materials

Provide materials as specified in:

Mineral Aggregate, Size Nos. 7, 8, 78, 89.....	903.13
Mineral Aggregate.....	903.14
Emulsified Asphalt, CRS-2p	904.03

Apply seal coat at a temperature range of 60 to 140 °F.

EQUIPMENT

405.03 Equipment

Provide a power broom or other mechanical sweeping equipment, equipment for heating bituminous material, a pressure distributor meeting the requirements of 402.03, pneumatic-tire and steel-wheel rollers, self-propelled mechanical aggregate spreading equipment that can be adjusted so as to spread accurately at the specified rate, and such other equipment and small tools as may be required to perform the work in a satisfactory manner.

CONSTRUCTION REQUIREMENTS

405.04 Limitations

Only apply bituminous material:

1. When the designated surface is dry, firm, and properly cured;
2. Between April 15 and October 1; and, unless otherwise directed,

3. When the ambient temperature in the shade and away from artificial heat is 70°F or more.

405.05 Preparing the Designated Surface

Before placing seal coat, clean all surfaces to be sealed by sweeping with a motorized broom to remove any loose material. Clean depressions and cracks not reached by the power broom using hand brooms or pressurized air.

Cover any utility installations to prevent adherence of the bituminous mixture. Suitable covering includes plywood disks, sand, craft paper, roofing felt or other approved methods. Remove the protective coverings before opening the road to traffic. The cost for these adjustments shall be included in the bid price for other items.

The Plans will indicate whether the surface is to be constructed on a treated or untreated subbase, a granular base, an asphalt base, or on an existing surface. The surface of the base or sub-base upon which the construction is to be placed shall meet the requirements of the applicable Section of Part 3, Bases and Subgrade Treatments, of these Specifications.

Condition existing surface, if called for on the Plans, as specified in 407.10. Condition existing mineral aggregate base as specified in 310.

Construct and maintain Prime Coat or Tack Coat, if shown on the Plans, as specified in 402 or 403, respectively.

405.06 Application

A. Applying Bituminous Material:

Have all equipment calibrated prior to starting work. The TDOT inspector shall be present during calibration to determine aggregate spread rate and distributor rates. Distributor trucks shall have proper calibration of spray equipment. Spray nozzles should be clean, properly angled, and appropriately sized for the desired application rate. Stop work if the distributor is not applying material properly, such as gaps in application or streaking.

Place a 500 ft. test strip for the bituminous seal coat at the beginning of the project to assure proper coverage and proper equipment calibration. The test section is to verify break time of emulsion and chip retention. The test strip shall be able to carry normal traffic within 3 hours. If normal traffic cannot be carried, the emulsion shall be adjusted and another test strip is required.

At least 14 working days before the scheduled start of construction of any bituminous seal coat, submit a sample of aggregate intended for use for the determination of the appropriate application rates of bituminous material and aggregate. Apply emulsified asphalt by pressure distributor at a uniform rate in accordance with Table 405.06-1 below. The exact rate will be established by the Engineer.

Table 405.06-1: Application Rates for Bituminous Material

Aggregate Size (per 903.22)	Aggregate Spread Rate (lb/yd ²)	Emulsion Shot Rate (gal/yd ²)
7	25 – 30	0.30 – 0.45
78	22 – 28	0.28 – 0.38
8	20 – 25	0.20 – 0.35
89	17 – 23	0.17 – 0.28

Before beginning each spread, place building paper across the roadway surface with the forward edge exactly coinciding with the end of the preceding covered spread. Start distributors on the paper, the width of which shall allow the full force of all nozzles to be in effect before the forward edge of the paper is reached. If required by the Engineer, also stop the spread on building paper. Remove the paper immediately after its use, and dispose of properly. Immediately correct all defects in application.

The length of spread of bituminous material shall not exceed that which trucks loaded with cover material can immediately cover.

The spread of bituminous material shall not extend more than 6 inches wider than the width covered by the cover material. Do not allow the bituminous material to chill or otherwise impair retention of the cover material.

Do not allow traffic on the bituminous material until it has been covered with mineral aggregate.

Treat areas that are inaccessible to the distributor with either hand sprays or pouring pots as directed by the Engineer.

B. Application of Double Bituminous Surface Treatment:

First Application

Apply the first application of emulsified asphalt using pressure distributors at a uniform rate established by the Engineer within the range of 0.30 to 0.38 gallons per square yard. Apply each spread of bituminous material so as not to be more than 6 inches wider than the width covered by the immediate spread of cover aggregate. Each width of spread shall not be less than half the surface to be treated.

Before beginning each spread, place building paper across the roadway surface with the forward edge exactly coinciding with the end of the preceding covered spread. Start distributors on the paper, the width of which shall allow the full force of all nozzles to be in effect before the forward edge of the paper is reached. If required by the Engineer, also stop the spread on building paper. Remove the paper immediately after its use, and dispose of properly. Immediately correct all defects in application.

Treat areas that are inaccessible to the distributor with hand sprays or pouring pots as directed by the Engineer.

If treating less than the full width of the roadway, do not spread the aggregate on the inside 6 inches of either the first or second application until the adjacent lane has been treated. Immediately following each application, uniformly cover the applied bituminous material with Size No. 7 mineral aggregate that is reasonably free of surface moisture.

Spread the aggregate at a rate between 24 and 30 pounds per square yard, as established by the Engineer, using a self-propelled mechanical spreader; except on short projects of 1/2 mile in length or less, self-propelled mechanical spreading equipment will not be required. Back the truck on the aggregate being spread, without driving on or over uncovered bituminous material.

The length of bituminous material spread shall not exceed that which trucks loaded with cover material can immediately cover.

Second Application

Apply the second application of emulsified asphalt in the same manner as the first application, at a uniform rate established by the Engineer within the range of 0.20 and 0.35 gallons per square yard.

Spread mineral aggregate, Size No. 8, in the same manner as the first spread at a rate established by the Engineer within the range of 16 to 28 pounds per square yard.

Immediately after each spread of cover aggregate, broom to achieve uniform coverage. Use a power source, which is independent of the drive train that propels the equipment, to power the revolving brooms of mechanical sweeping equipment. Place additional aggregate by hand on thin or bare areas.

405.07 Spreading and Rolling Aggregate

A. Spreading

Immediately after bituminous material has been applied, no more than two minutes, spread and embed the mineral aggregate cover in the bituminous material. Spread the aggregate as close to the application of bituminous material as is practicable, and cover each distributor load applied immediately. Aggregates shall be moistened and visually damp at the time of placement.

Spread the aggregate in accordance with the rates specified in Table 405.06-1. The exact rate will be established by the Engineer. Back the truck on the aggregate being spread, without driving on or over uncovered bituminous material. If treating less than the full width of roadway, do not spread the aggregate on the inside 6 inches of the bituminous spread until the adjacent lane is treated. Immediately after spreading the aggregate, perform hand-brooming to achieve uniform coverage. Place additional aggregate by hand on thin or bare areas.

The speed of the spreader shall be such that the aggregates are not rolling over, and starting and stopping of the spreader is minimized. Use of previously used (swept) aggregates is not permitted.

B. Rolling – Bituminous Seal Coat

Immediately after distributing the aggregate, roll the entire surface by moving in a longitudinal direction, beginning at the outer edges and progressing toward the center of the roadway, with

each trip of the roller overlapping the previous trip by half the width of the rear wheel. Perform initial rolling with a self-propelled pneumatic tire roller, and follow with steel-wheel rolling. The amount and sequence of rolling shall be as directed by the Engineer. Complete the initial rolling of the aggregate within 1 hour after applying the bituminous material.

Use power brooms to correct irregularities by sweeping the aggregates from areas of thick or heavy distribution to areas of thin or light distribution. Then continue rolling using both steel-wheel and pneumatic rollers until the aggregate is thoroughly embedded in the bituminous material. The Engineer may require additional rolling at a later date. Redistribute excess or loose aggregate that was thrown out of place.

Slow moving traffic may use the section or roadway upon which the aggregate has been spread.

Rolling and Curing – Double Bituminous Seal Coat

Immediately after spreading and brooming the cover aggregate, roll the entire surface, beginning at the edges and progressing to the center. Begin rolling within 30 minutes after spreading the aggregate. Perform initial rolling with a self-propelled pneumatic tire roller, and follow with steel-wheel rolling. The amount and sequence of rolling shall be as directed by the Engineer.

Allow the first application of bituminous material and aggregate to cure for as long as deemed necessary by the Engineer before beginning the second application. Immediately before the second application of bituminous material, roll the surface with a steel-wheel roller.

For the second application of bituminous material and cover aggregate, repeat the same rolling and curing procedures as required for the first application.

The Contractor may allow slow-moving traffic to use sections of the roadway where the bituminous material has been covered with mineral aggregate.

405.08 Shoulders

Restore shoulders that have been disturbed by the Contractor's construction operations at no cost to the Department. Remove all objectionable material placed on the shoulders by the Contractor as directed by the Engineer.

Construct shoulders, when specified, as provided for under **208**.

405.09 Maintenance and Protection

Maintain in a satisfactory condition each completed section of seal coat until the entire Project is complete. Maintenance shall include making repairs where failures occur, and maintaining the seal coat in a smooth uniform condition; and brooming, dragging, and rolling when required.

After the final application, maintain the work in a satisfactory condition for at least 10 calendar days. If all other requirements of the Contract have been fulfilled, the Department will not charge working time during the 10-day maintenance period against the Contract time.

For final cleanup, sweep up all excessive quantities of loose, dislodged cover aggregate that may have collected along the edge of the completed seal coat, and dispose of this material as directed by the Engineer.

405.10 Method of Measurement

The Department will measure Mineral Aggregate and Bituminous Material by the ton in accordance with **109**. The Department may use net certified weights as a basis of measurement for mineral aggregate, subject to correction for aggregate that is lost, wasted, or otherwise not incorporated into the Work.

405.11 Basis of Payment

The Department will pay for accepted quantities of Bituminous Seal Coat, complete in place, at the contract prices as follows:

<i>Item</i>	<i>Pay Unit</i>
Bituminous Material	Ton
Mineral Aggregate	Ton

The Department will measure and pay for the work required to prepare the designated surface, as provided for under **405.05**, in accordance with the applicable Section or Subsection under which the work is performed.”

Subsection 405.03 (pg. 295), 12-30-19; **Equipment**; Revise paragraph:

Provide a power broom or other mechanical sweeping equipment, equipment for heating bituminous material, a pressure distributor meeting the requirements of 402.03, two pneumatic-tire ~~and steel wheel~~ rollers, self-propelled mechanical aggregate spreading equipment that can be adjusted so as to spread accurately at the specified rate, and such other equipment and small tools as may be required to perform the work in a satisfactory manner.

Subsection 405.05 (pg. 295) 5-14-18; Add the following as the second paragraph:

“Before placing seal coat, clean all surfaces to be sealed by sweeping with a motorized broom to remove any loose material. Clean depressions and cracks not reached by the power broom using hand brooms or pressurized air.

Remove pavement markers and adhesives. Abrade all types of existing striping. Work shall be accomplished without the pavement being gouged or damaged and in a manner which ensures the bituminous treatment will adhere in all areas applied. Work shall be performed to the satisfaction of the Engineer.”

Subsection 405.11 (pg. 298), 12-30-19; **Basis of Payment**; Add subsection A & B:

A. General

The Department will pay for accepted quantities of Bituminous Seal Coat, complete in place, at the contract prices as follows:

.....

B. Adjustments

Specific Gravity. In cases where the Bulk SSD specific gravity of the mineral aggregate exceeds 2.80, the Department will adjust the tonnage of mineral aggregate for payment by multiplying the tonnage of mineral aggregate used by a specific gravity of 2.80 and dividing by the higher specific gravity.

Subsection 407.02 (pg. 300-301) 12-2-16; Replace the 4th paragraph:

“If anti-stripping additive, other than hydrated lime, meeting 921.06.B.1 is required, use approved in-line blending equipment, as specified in 407.04.A.6, to add it at the mixing plant or inject it at the asphalt terminal. Manufacture’s documentation that asphalt binders will continue to meet requirements listed in subsection **904** after the anti-stripping additive is added shall be provided by the contractor with the mix design submittal. For mix designs submitted more than six months in advance, the documentation shall be resubmitted prior to use of the mix design with updated test results.”

Subsection 407.02 (pg. 300) 11-16-15; Materials, add the following at the end of the fourth paragraph:

“If anti-stripping additive, other than hydrated lime, meeting **921.06.B.1** is required, use approved in-line blending equipment, as specified in **407.04.A.6**, to add it at the mixing plant or inject it at the asphalt terminal. Provide manufacture’s documentation ensuring asphalt binders will continue to meet requirements listed in Subsection **904** after anti-stripping additives are added.”

Subsection 407.03 D.2.h.3 (pg. 308), 6-24-19; **Mix Design/Production Verification**; Revise the 1st & 2nd paragraph:

- (3) Place no more than 500 tons of mix until the verification testing, with the exception of TSR, is complete. Production may continue and mixture may be placed in excess of the first 500 tons; however, all mixture will be subject to price adjustment or removal at the discretion of the Engineer if the test results do not comply with the specifications.

Proceed, if the test results for the produced mix are within the limits required for production. The limits required for production are defined as meeting all of the following:

- (a) Meets all mix design requirements as specified in Table 407.03-2,
- (b) Gradation and Asphalt Cement Content of the mix are within the 90% pay factor for a single test per Table 407.20-2.
- (c) The average density of the test strip meets requirements per Table 407.15-1.

Subsection 407.03 E. 1. (pg. 313) 10-8-18, Tensile Strength Ratio, modify the second paragraph:

“1. **Tensile Strength Ratio.** Perform testing for stripping and moisture susceptibility of the mixture according to ASTM D 4867, Standard Test Method for Effect of Moisture on Asphalt-Concrete

Paving Mixtures For all mixtures requiring design, except OGFC, follow ASTM D4867. For OGFC follow ASTM D4867 except as noted:

- Modify step 8.6.1 so that the three conditioned samples are subjected to a partial vacuum of 26 inches Hg for 10 minutes to whatever degree of saturation achieved
- Subject the 3 condition samples to one freeze thaw cycle per note 6 listed in ASTM D4867 8.7. except as noted:

After 15h in freezer, remove samples and immediately immerse the still wrapped specimen in 77°F water for 2 hours

After 2 hours remove specimen from water bath and remove wrapping from specimen then immerse sample in 140°F water bath for 24 hours..

All specimens tested for stripping and moisture susceptibility shall meet the criteria specified in Table 407.03-4.”

Subsection 407.03 E (pg. 290), 12-30-19; **Testing Procedures;** Revise Table 407.03-04: Criteria for Stripping and Moisture Susceptibility:

Table 407.03-4: Criteria for Stripping and Moisture Susceptibility

Asphalt Cement	Minimum Tensile Strength	Minimum TSR
Polymer Modified	100 psi	80%
Non-Polymer Modified	80 psi	80%
411 OGFC	50 psi	80%

Subsection 407.06 (pg. 327), 5-18-15; - A. Pavers. Replace the entire first paragraph with the following:

“Bituminous pavers shall be self-contained, power-propelled units provided with an activated screed, equipped to be heated, and capable of spreading and finishing courses of bituminous plant mix material in lane widths applicable to the specified typical section and thickness shown on the Plans. All screed extensions shall be full assembly extensions, including activated and heated screeds. Pavers shall include throw-back blades, reverse augers, or equivalent to place mix beneath the auger gearbox. Auger extensions shall be incorporated in a manner such that the maximum distance from the augers to the end plate shall be 18 inches. Screed extensions may extend beyond the 18-inch maximum from auger extensions only when extending for short-term temporary deviations in pavement width such as driveways. Do not use strike-off boxes, with the exception of sections with continuously varying width.”

Subsection 407.09 (pg. 329-331), 5-14-18; Revise the following: 3. Add two sentences as the end of the paragraph, 4. Remove the first sentence, add two sentences as new first and second sentence, Add second paragraph as shown:

“3. 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. Only place 411-TL, 411-TLD, and 411-OGFC mixtures when the pavement surface temperature and the ambient air temperature are a minimum of 55 °F and rising; limit placement to the period from April 1 to November 1. 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.

4. If determined necessary by the Department, the Contractor may request a variance from the above required temperatures and seasonal limitations to pave at lower temperatures by submitting a Cold Weather Paving and Compaction Plan. All projects requiring a Cold Weather Paving and Compaction Plan shall utilize Intelligent Compaction to demonstrate proper coverage and compaction temperature at no additional cost to the Department; with the exception of small quantity projects, such as, but not limited to, bridge approaches, intersections, and temporary traffic shifts. Upon completion, the documentation showing appropriate coverage and compaction temperature shall be provided to the Department. Submit requests in writing at least one week before the anticipated need, and include a Paving and Compaction Plan for Cold Weather that meets the Department’s Procedure. The plan shall identify what practices and precautions the Contractor intends to use to ensure the mixture is placed and compacted to meet the specifications. The plan shall include compaction cooling curves estimating the time available for compaction, the intended production, haul, and compaction rates, with paver and roller speeds estimated. The Contractor may consider using such practices as the addition of rollers, reduced production and paving rates, insulated truck beds, and heating the existing surface.

In no cases will a cold weather paving and compaction plan or seasonal limitation waiver be approved for 411-OGFC, 411-TL, or 411-TLD.

If the specified densities are not obtained, stop all paving operations and develop a new plan. All mixture failing to meet specifications will be subject to price adjustments or removal and replacement at no cost to the Department.”

Subsection 407.11 (pg. 332) 12-2-16; Add the following to the paragraph below Table 407.11-1:

“Minimum temperature for OGFC mixes shall be 280°.”

Subsection 407.14 (pg. 335) 10-8-18; modify paragraph 3. 1st sentence by adding lift thickness:

“establish lift thickness or line, grade, and elevation”

Subsection 407.14 (pg. 335), 12-30-19; **Spreading and Finishing**; Revise 5th paragraph:

Unevenness of texture, segregation (including end-of-load segregation) ~~as measured by a properly calibrated nuclear gauge~~, or tearing or shoving of bituminous mixture during the paving operation,

shall be reason to stop the paving. Only resume paving operations when the condition is corrected. Immediately remove unacceptable mix and replace at no cost to the Department. The Department will not allow excessive throwing back of the bituminous mixture. Any amount of mixture not fully adhered to the roadway shall be repaired prior to completion of the project. If the failure is not repaired the same day as originally placed, the method of repair must be approved by the Engineer prior to beginning of the repair. The repairs will be no additional cost to the Department.

Subsection 407.15 C (pg. 340), 12-30-19; **Test Strips**; Add to 1st paragraph:

Construct test strips for all A, B, BM, BM2, C, CW, D, and E mixes to establish rolling patterns, to calibrate nuclear gauges, to verify that the base course or surface course meets the density requirements of the specifications, and for mix design and production verification as required. Adjustments in roller patterns for mixes AS, A-CRL, CS, TL, TLD, and TLE, may be made at the direction of the Engineer.

Subsection 407.15, C. Test Strips. (pg. 340-341) 11-16-15; Add the following paragraph after the 7th paragraph of the subsection:

“Take an additional 3 cores after placement of the surface layer on the tack coat test strip described in subsection **403.05.B**. Include the underlying pavement layer for shear testing. These cores will be for informational testing only. Not required for mats less than one inch thick”

Subsection 407.15 C (pg. 341-342), 12-30-19; **Test Strips**; Remove from 8th paragraph:

~~“Take an additional 3 cores after placement of the surface layer on the tack coat test strip described in subsection **403.05.B**. Include the underlying pavement layer for shear testing. These cores will be for informational testing only. Not required for mats less than one inch thick”~~

Subsection 407.15 (pg. 341) 6-27-16; remove the 2nd sentence of the 8th paragraph:

“Take cores on the test strip at ten randomly selected locations as designated by the Engineer. Provide these cores to the Department for use in calibrating the nuclear gauge and to verify that the average density of the test strip meets the density requirements of the specifications. The Department will report all densities using the corrected nuclear gauge readings. Correction factors are specific to the nuclear gauges used during the test strip construction. If a different nuclear gauge needs to be used for acceptance, it will be necessary to cut new cores from the ongoing pavement construction to calibrate the new gauge.”

Subsection 407.15 (pg. 341) 12-2-16; remove “randomly selected” from 1st sentence of the 8th paragraph as follows:

“Take cores on the test strip at ten locations as designated by the Engineer.”

Subsection 407.15 A. 3. c. (pg. 337-338) 5-15-17; update 10,000 square yards to 1,000 tons:

“c. Projects containing less than 1,000 tons or bituminous pavement.”

Subsection 407.15 A. and B. (pg. 337-342) 10-8-18;A. Add Roller Requirements by Mix Type, modify 1., 2., and 4., B. Modify Tables to condense into Table 407.15 – 1 Density Requirements for Bituminous Pavements, modify 1st sentence of the 1st paragraph below Table 407.15:

407.15 Compaction

A. General

After spreading and striking-off the bituminous mixture and adjusting surface irregularities, thoroughly compact the mixture using methods approved by the Engineer and that are capable of achieving the specified density while the material is in a workable condition. When no density requirements are specified, use a system of compaction for roadway pavements that has previously produced the required bituminous pavement densities. The Engineer may require a control strip and random density samples to evaluate the system.

In general, accomplish compaction using a combination of the equipment specified in **407.07**. As a minimum, meet the following roller requirements, but increase the number of rollers if the required results are not being obtained.

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, 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)

1. If the compaction effort is detrimental to the quality of the mat, immediately stop and re-evaluate rolling patterns and equipment. To modify the roller train from that which is specified for the mix, submit to the engineer a written request of the rollers to be substituted

and a narrative explanation of how the specified equipment has been detrimental to the quality of the pavement.

2. The Department will only consider requests for substitution of equipment when it is shown that best practices are being followed and that the problem is not due to improper operation or poor maintenance of the equipment. If this request is approved by the Engineer, a new test strip and roller pattern shall be established.
3. With the Engineer's approval, the Contractor may reduce the minimum number of rollers listed above to one roller of either the steel-wheel or vibratory type on the following types of construction and projects:
 - a. Shoulder construction,
 - b. Incidental construction such as bridge approaches and driveways, and
 - c. Projects containing less than 10,000 square yards of bituminous pavement.
4. Compaction of 411-OGFC mixtures shall consist of a minimum of two passes before the material temperature has fallen below 185 °F. Unless otherwise directed by the Engineer, begin rolling at the low side and proceed longitudinally parallel to the road centerline. When paving in echelon, or abutting a previously placed lane, roll the longitudinal joint first, followed by the regular rolling procedure. When paving in echelon, rollers shall not compact within 6 inches of an edge where an adjacent lane is to be placed. Operate rollers at a slow uniform speed with the drive wheels nearer the paver, and keep the rollers as nearly as possible in continuous operation. Continue rolling until all roller marks are eliminated. Do not park rollers on the bituminous pavement.

To prevent adhesion of the mixture to the rollers, keep the wheels properly moistened with water or water mixed with very small quantities of detergent or other approved material. Limit excess use of liquid.

Do not refuel rollers on bituminous pavements.

Along forms, curbs, headers, walls and other places not accessible to the rollers, compact the mixture thoroughly using hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, the Contractor may use a trench roller to compact the mix.

B. Density Requirements

Meet the applicable density requirements specified in Tables 407.15-1.

Table 407.15-1: Density Requirements for Bituminous Pavement

Mix Type	% of Maximum Theoretical Density (Lot Average)	No Single Test Less Than, % (Sub Lot)
Travel Lanes ADT < 1,000 A, B, BM, BM2, C, CW, D, E	90.0	87.0
Travel Lanes 1,000 < ADT < 3,000 A, B, BM, BM-2, C, CW, D, E	91.0	89.0
Travel Lanes ADT > 3,000 A, B, BM, BM-2, C, CW, D, E	92.0	90.0
Travel Lanes and Shoulders Any ADT CS, TL, TLD, TLE, OGFC	NA	NA
Shoulders B, BM, BM-2, D, E	88.0	85.0

Correct sublots that test below the minimum density so that the density of the area is equal to or above the minimum, at which point it can be used to determine the average density of the lot. Do not place any successive layers until the area has been corrected. As necessary to determine the classification of open graded or dense graded mixes and to measure segregation, use AASHTO T 269 or ASTM D3203.

Repair or replace defective mixture to the satisfaction of the Engineer and at no cost to the Department.

The Department will perform density testing in accordance with **407.20.B.5**.

Subsection 407.20 A. (pg. 345), 11-6-17; Revise the second paragraph as follows:

“The Department will pay for liquid anti-strip additive and hydrated lime anti-strip additive based on certified documentation of material costs not to exceed \$15 per gallon and \$90 per ton, respectively.”

Subsection 407.20 (pg. 346) 5-18-15; Basis of Payment; B. Acceptance of Mixture; Modify the last paragraph to revise 500 tons to 1000 tons:

“When the total plan quantity of any mix is less than 1000 tons, the Department will accept the mix on the basis of visual inspection and Contractor Quality Control certification. The Department may run extraction, gradation analysis, or other tests deemed necessary for acceptance purposes.”

Subsection 407.20 B.1 (pg. 346), 5-13-19; **Acceptance of the Mixture, General**; Revise 2nd & 3rd paragraph:

The Engineer will accept bituminous mixture at the plant with respect to gradation and asphalt content, on a lot basis. A standard size lot at the asphalt plant will consist of a continuous shift's production that does not start over at Midnight. The number of sublots in a lot will vary from n=1 to n=4 according to Table 407.20-1.

When the total plan quantity of any mix is less than 1000 tons, the Department will accept the mix on the basis of visual inspection and Contractor Quality Control certification. If the daily production of any mix is less than 100 tons, no tests will be required for that quantity of mix. The Department may run extraction, gradation analysis, or other tests deemed necessary for acceptance purposes.

Subsection 407.20 B.3 (pg. 347-348), 12-30-19; **Acceptance of the Mixture**; Revise 3rd paragraph:

~~At least once per week~~Monthly, per mixture during production, the Engineer shall check-determine the correction factor for the ignition oven used for acceptance of the mixture per AASHTO T 308 correction factors with a sample of the aggregate mixture proportions, blended at the optimum asphalt content and adjust the Asphalt Cement content for acceptance of the mixture accordingly. Adjust the correction factor accordingly.—Keep records of all correction factors for all mixtures. Adjusted payment for asphalt content and gradation will be based on the ignition furnace results as specified in Table 407.20-2. Use of this alternative equipment shall be at no additional cost to the Department.

Subsection 407.20 (pg. 348) 10-8-18; Table 407.20-2, add OGFC information to table:

**Table 407.20-2: Acceptance Schedule of Payment
(Asphalt Plant Mix Characteristics)**

Characteristics	Pay Factor	Average Arithmetic Deviation of the Lot Acceptance Test from the JMF	
		1 Test	2 Tests or more
All mixes except 411-OGFC	1.00	0.00-0.30	0.00-0.25
Asphalt Cement Content ⁽¹⁾	0.95	0.31-0.35	0.26-0.30
(Extraction or ignition oven)	0.90	0.36-0.40	0.31-0.35
	0.80 ⁽²⁾	over 0.40	over 0.35
411-OGFC only	1.00	0.00-0.30	0.00-0.25
Asphalt Cement Content	0.90	0.31-0.35	0.26-0.30
(Extraction or ignition oven)	0.80	0.36-0.40	0.31-0.35
	0.60 ⁽²⁾	over 0.40	over 0.35
Gradation	1.00	0.00-6.50	0.00-5.70
3/8 inch sieve and larger	0.95	6.51-7.08	5.71-6.20
	0.90	7.09-7.66	6.21-6.69
	0.80 ⁽²⁾	over 7.66	over 6.69
Gradation	1.00	0.00-4.62	0.00-4.00
No. 4 sieve ⁽³⁾	0.95	4.63-5.20	4.01-4.50
	0.90	5.21-5.77	4.51-5.00
	0.80 ⁽²⁾	over 5.77	over 5.00
Gradation	1.00	0.00-3.80	0.00-3.30
No. 8, 16, 30 & 50 sieves ⁽³⁾	0.95	3.81-4.46	3.31-3.91
	0.90	4.47-5.12	3.92-4.52
	0.80 ⁽²⁾	over 5.12	over 4.52
Gradation	1.00	0.00-1.80	0.00-1.60
No. 100 & 200 sieves ⁽³⁾	0.95	1.81-2.00	1.61-1.75
	0.90	2.01-2.20	1.76-1.90
	0.80 ⁽²⁾	over 2.20	over 1.90
⁽¹⁾ Does not apply to 307 Grading A, AS, or ACRL mixes. ⁽²⁾ If approved by the Engineer, the Contractor may accept the indicated partial pay. The Department may require removal and replacement at no cost. The Contractor may remove and replace at no cost to the Department at any time. ⁽³⁾ When there is more than one reduced payment relating to gradation in 1 lot of material, only the greatest reduction in payment will be applied. Reductions applicable for any other reason will be cumulative.			

Characteristics	Pay Factor	Average Arithmetic Deviation of the Lot Acceptance Test from the JMF	
		1 Test	2 Tests or more

Subsection 407.20 (pg. 348) 11-16-15; Table 407.20 – 2, make the following changes:

**Table 407.20-2: Acceptance Schedule of Payment
(Asphalt Plant Mix Characteristics)**

Characteristics	Pay Factor	Average Arithmetic Deviation of the Lot Acceptance Test from the JMF	
		1 Test	2 Tests or more
Asphalt Cement Content ⁽¹⁾	1.00	0.00-0.30	0.00-0.25
(Extraction or ignition oven)	0.95	0.31-0.35	0.26-0.30
	0.90	0.36-0.40	0.31-0.35
	0.80 ⁽²⁾	over 0.40	over 0.35
Gradation	1.00	0.00-6.50	0.00-5.70
3/8 inch sieve and larger	0.95	6.51-7.08	5.71-6.20
	0.90	7.09-7.66	6.21-6.69
	0.80 ⁽²⁾	over 7.66	over 6.69
Gradation	1.00	0.00-4.62	0.00-4.00
No. 4 sieve ⁽³⁾	0.95	4.63-5.20	4.01-4.50
	0.90	5.21-5.77	4.51-5.00
	0.80 ⁽²⁾	over 5.77	over 5.00

Subsection 407.20 (pg. 349) 10-8-18; B.5, Add the sentence as the next to last sentences of the 1st paragraph:

“Acceptance for Mix Density on the Roadway. The Department will apply a deduction in payment, not as a penalty but as liquidated damages, for failure to meet the density requirements specified in **407.15**. As soon as practicable after the final rolling is completed on each lot, the Department will perform 5 density tests at locations determined by the Engineer, and will compute an average of all such tests. Deductions for failure to meet density requirements will be computed to the nearest 0.1% as a percentage of the total payment otherwise due for each lot. The percent of total payment to be deducted will be 5 times the percent the average in-place density for each lot that fails to meet **407.15**. The Department will make deductions in monies due the Contractor for failure to meet the density requirements under the item for Density Deduction. The Department will conduct acceptance testing for density in accordance with ASTM D2950 unless otherwise specified. For projects with total project tonnage per mix type less than 2,000 tons (not including small quantity jobs as defined in 407.20.B.1) the department may alternatively calculate in place density by cores (AASHTO T-166), in this case no cores will be taken for gauge correlation on the test strip. The Department inspector will be a certified Asphalt Roadway Technician.”

Subsection 407.20 (pg. 350) 10-7-19; B.5. Acceptance for Mix Density on the Roadway, Revise the last sentence in the 1st paragraph:

“Acceptance for Mix Density on the Roadway. The Department will apply a deduction in payment, not as a penalty but as liquidated damages, for failure to meet the density requirements specified in **407.15**. As soon as practicable after the final rolling is completed on each lot, the Department will perform 5 density tests at locations determined by the Engineer, and will compute an average of all such tests. Deductions for failure to meet density requirements will be computed to the nearest 0.1% as a percentage of the total payment otherwise due for each lot. The percent of total payment to be deducted will be 5 times the percent the average in-place density for each lot that fails to meet **407.15**. The Department will make deductions in monies due the Contractor for failure to meet the density requirements under the item for Density Deduction. The Department will conduct acceptance testing for density in accordance with ASTM D2950 unless otherwise specified. The Department inspector conducting the density tests shall be a certified Nuclear Gauge Field Technician.”

Subsection 407.20 (pg. 350) 11-16-15; B. 5. Acceptance for Mix Density on the Roadway, Replace the entire 2nd paragraph with the following:

“For density testing purposes, the Department will divide the pavement into lots of 1,000 tons. Five density tests will be performed in each lot and the average results compared with the requirements specified in Tables 407.15-1 to 407.15-4. At the beginning of a project or at any time it is deemed advisable, the Department may consider smaller lots to evaluate compaction methods or for other reasons as approved or directed by the Engineer.”

Subsection 411.03 (pg. 357) 10-8-18; B. Proportioning, modify table 411.03-1 to add TLE requirements:

“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)	92.0 - 94.7	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 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 (pg. 358-359) 10-8-18; B. Proportioning: 2. Grading E, modify subsection and Table 411.03-3 to add TLE requirements, remove riding surface phrase:

2. **Grading E and TLE.** In addition to the other requirements of these Specifications, the composition of the mineral aggregate shall be such that, when combined with the required amount of bitumen, the resultant mixture will meet Table 411.03-3.

Table 411.03-3: Mixture Properties (High vs. Low Volume Roads)

Mix	Traffic Volume	Stability Minimum lb-ft ^(1, 3)	Flow 0.01 inch ⁽²⁾	Design Void Content % ⁽¹⁾	Production Void Content % ⁽¹⁾	VMA, Min % ⁽¹⁾
411E 411TLE	High Volume (ADT > 1,000)	2,000	8 - 16	4.0 ± 0.2	3 - 5.5	14
411E 411TLE	Low Volume (ADT ≤ 1,000)	1,500	8 - 16	3.5 ± 0.5	2 - 5	n/a

- ⁽¹⁾ Tested according to AASHTO T 245 with 75 blows of the hammer on each side of the test specimen, using a Marshall Mechanical Compactor.
- ⁽²⁾ Flow will only be required when using a non-modified binder (PG 64-22 or 67-22)
- ⁽³⁾ Minimum stability for shoulder mixes will be 1,500 lb-ft and optimum asphalt cement content for shoulder mixes shall be as directed by the Regional Materials Supervisor.

Subsection 411.03 (pg. 358-359) 10-8-18; C. Recycled Asphalt Pavement and Recycled Asphalt Shingles: modify Table 411.03-6 to add TLE requirements:

Table 411.03-6: Use of Recycled Asphalt Pavement

Mix Type	% RAP (Non-processed) ⁽¹⁾	Maximum % RAP (Processed) ⁽²⁾	Maximum % RAP Processed and Fractionated ⁽³⁾	Maximum Particle Size (inch)
411D (PG64-22, PG67-22)	0	15	20	1/2
411D (PG70-22, PG76-22, PG82-22)	0	10	15	1/2
411E & 411TLE(Roadway)	0	15	20	1/2
411E &	15	30	35	1/2

Mix Type	% RAP (Non-processed) (1)	Maximum % RAP (Processed) (2)	Maximum % RAP Processed and Fractionated (3)	Maximum Particle Size (inch)
411TLE (Shoulder)				
411TL (PG64-22, PG67-22)	0	15	15	5/16
411TL (PG70-22, PG76-22, PG82-22)	0	10	10	5/16
411TLD (PG64-22, PG67-22)	0	15	15	5/16
411TLD (PG70-22, PG76-22, PG82-22)	0	10	10	5/16
(1) “Non-processed” refers to RAP that has not been crushed and screened or otherwise sized such that the maximum recycled material particle size is less than that listed above prior to entering the dryer drum. (2) “Processed” refers to RAP that has been crushed and screened or otherwise sized such that the maximum recycled material particle size is less than that above prior to entering the dryer drum. (3) “Fractionated” refers to RAP that has been processed over more than one screen, producing sources of various maximum particle sizes (e.g., 3/4 to 1/2 inch, 1/2 inch to #4, etc.). The Contractor may use the larger percentages of fractionated RAP specified only if individual fractions of two different maximum particle size are introduced into the plant as separate material sources for increased control.				

Subsection 411.03 (pg. 363) 11-16-15; 2. Recycled Asphalt Shingles (RAS), change 5% to 3% in the 1st sentence of the 1st paragraph.

“Recycled Asphalt Shingles (RAS) may be included to a maximum of 3% of the total weight of mixture.”

Subsection 411.03 B. Anti-strip Additive (pg. 365) 6-27-16; revise the 2nd paragraph:

“Mix an approved anti-strip agent with the asphalt cement at the dosage as specified in **921.06.B.**”

Subsection 411.09 (pg. 367), 5-13-19; **Method of Measurement**; Revise Table 411.09-1:

Table 411.09-1: Asphalt Cement Content

Mix Type	Asphalt Content, %
411-D	5.9
411-E Roadway	6.3
411-E Shoulder	6.3
411-TL	6.3
411-TLD	5.9
411-TLE Roadway	5.9
411-TLE Shoulder	5.9
411-OGFC	6.0

Subsection 414.02 (pg. 369) 11-16-15; Materials, add the following paragraph to the end of the subsection:

“Ensure that no deleterious material is introduced into aggregate stockpiled at project site.”

Subsection 414.02 (pg. 369) 11-6-17; Revise the last sentence:

“For a slurry seal, use a Type CQS-1h emulsified asphalt. For micro-surfacing use a type CQS-1hp or CSS-1hp emulsified asphalt.”

Subsection 414.02 (pg. 369), 12-30-19; **Materials**; Revise 2nd paragraph:

For a slurry seal, use a Type CQS-1h emulsified asphalt. For micro-surfacing, use a type CQS-1hp ~~or CSS-1hp~~ emulsified asphalt.

Subsection 414.06 (pg. 379-382) 5-14-18; Remove B. 3. a., update b. to a. and revise as follows:

“B. Quality Control

3. **Documentation.** Maintain a lot sheet as follows:

a. **Lot Sheet.** Divide the Project into lots of each day’s production. For each lot, maintain a lot sheet, providing the following information:

- (1) Contract Number, Route,
- (2) Date, Air Temperature, Pavement Surface Temperature
- (3) Control Settings, Calibration Values, Unit Weight of Emulsion (pounds per gallon), Percent Residue in Emulsion
- (4) Beginning and Ending Log Miles

- (5) Computer display readings for material usage (Beginning, Ending, and Total)
- (6) Length, Width, Total Area (square yards) of the construction completed for the day
- (7) Aggregate used (dry ton) Asphalt Emulsion used (ton), additives (gallon), water (gallon), and/or Portland Cement (ton)
- (8) Application Rate of asphalt emulsion, Combined Application Rate (pounds per square yard)
- (9) Mix Design (Percent Portland cement, Percent Emulsion, Percent Asphalt Cement)
- (10) Calibration Forms
- (11) Contractor's Authorized Signature"

Subsection 414.12 (pg. 384) 10-8-18, Basis of Payment, add the following as the last sentence of the paragraph:

"The Department will pay for accepted quantities, determined in accordance with 414.11, at the contract prices, complete in place, which payment shall be full compensation for all equipment, materials, labor and incidentals necessary to complete the work. A price adjustment for Loss on Ignition (LOI) shall be applied on a project basis per 407.20.C.3."

Subsection 414.12 (pg. 384), 12-30-19; **Basis of Payment**; Add subsection A & B:

A. General

The Department will pay for accepted quantities, determined in accordance with 414.11, at the contract prices, complete in place, which payment shall be full compensation for all equipment, materials, labor and incidentals necessary to complete the work.

B. Adjustments

- 1. Loss on Ignition (LOI).** A price adjustment for Loss on Ignition (LOI) shall be applied on a project basis per 407.20.C.3.
- 2. Specific Gravity.** In cases where the Bulk SSD specific gravity of the mineral aggregate exceeds 2.80, the Department will adjust the tonnage of mineral aggregate for payment by multiplying the tonnage of mineral aggregate used by a specific gravity of 2.80 and dividing by the higher specific gravity.

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

(Rev. 5-18-15)

(Rev. 11-16-15)

(Rev. 5-15-17)

(Rev. 11-6-17)

(Rev. 5-14-18)

(Rev. 10-8-18)

(Rev. 5-13-19)

(Rev. 12-30-19)

January 1, 2015

Supplemental Specifications - Section 500**of the****Standard Specifications for Road and Bridge Construction****January 1, 2015****Subsection 501.03 A.1** (pg. 393), 5-13-19; **Proportioning, General**; Revise 1st paragraph:

Submit the proposed concrete design to the Engineer for approval. Determine the design using saturated surface dry aggregate weights. Verify the design by preparing trial batches meeting the requirements of these specifications. Ensure that the concrete design is prepared by a TDOT Certified Concrete Mix Design Technician, or by an approved independent testing laboratory under the direction of a registered professional Civil Engineer, licensed by the State of Tennessee. The TDOT Certified Concrete Mix Design Technician or the Civil Engineer shall certify that the information contained on the design is correct and is the result of information obtained from the trial batches. Prepare trial batches for design, including admixtures in the proper proportion, no more than 90 days before the design submittal. The approved mix design will expire at the end of each calendar year or if it does not meet the minimum 28-day requirements. All cost of concrete design, preparation, and submittal are the Contractor's responsibility.

Subsection 501.03 A.2 (pg. 394), 5-13-19; **Design and Production Parameters**; Revise 4th Paragraph:

Admixtures to be incorporated into the concrete 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 Department's Standard Operating Procedure 4-4.

Subsection 501.03 (pg. 395), 5-18-15; 3. Mix Design Submittal; Replace the first paragraph with the following:

“Instead of the above mix design submittal, a request to use an existing design may be submitted for approval provided the design has been used on a state funded project within the last six (6) months. The approval of this concrete design submittal will not relieve the Contractor of the responsibility of providing concrete meeting the requirements of these Specifications. A temporary mix design may be issued if the 7-day or 14-day compressive strengths exceed the required 28-day strengths.”

Subsection 501.03 A. Proportioning (pg. 395) 5-15-17; Add water as 22. on the list of Design Submittal requirements, update the paragraph below the list to add water requirements:

“A. Proportioning

3. Design Submittal. Include the following information as a minimum in the proposed concrete design submittal:

1. Source of all aggregate
2. Brand and type of cement
3. Source and class of fly ash (if used)
4. Source and grade of ground granulated blast furnace slag (if used)
5. Specific gravity of cement
6. Specific gravity of fly ash (if used)
7. Specific gravity of ground granulated blast furnace slag (if used)
8. Admixtures (if used)
9. Gradation of aggregates
10. Specific gravities of aggregates (saturated surface dry)
11. Air content (if air entrainment is used)
12. Percentage of fine aggregate of the total aggregate (by volume)
13. Slump
14. Weight per cubic yard
15. Yield
16. Temperature of plastic concrete
17. Water/cement ratio (pound/pound)
18. 7-day compressive strength [minimum of two 4-inch x 8-inch cylinders]
19. 14-day compressive strength [minimum of two 4-inch x 8-inch cylinders]
20. 28-day compressive strength [minimum of two 4-inch x 8-inch cylinders]
21. Weight of each material required to produce a cubic yard of concrete
22. Water – submit testing results per Tables 921.01-1 & 921.01-2

Instead of the above mix design submittal, a request to use an existing design may be submitted for approval provided the design has been used on a state funded project within the last six (6) months. When submitting for the use of an existing mix design, the most current water testing results per 921.01 shall accompany the submittal. The approval of this concrete design submittal will not relieve the Contractor of the responsibility of providing concrete meeting the requirements of these Specifications. A temporary mix design may be issued if the 7-day or 14-day compressive strengths exceed the required 28-day strengths.”

Subsection 501.03 A.3 (pg. 395), 5-13-19; **Mix Design Submittal**; Revise 2nd paragraph:

Instead of the above mix design submittal, a request to use an existing design may be submitted for approval within the current calendar year. When submitting for the use of an existing mix design, the most current water testing results per 921.01 shall accompany the submittal. The approval of this concrete design submittal will not relieve the Contractor of the responsibility of providing concrete meeting the requirements of these Specifications. A temporary mix design may be issued if the 7-day or 14-day compressive strengths exceed the required 28-day strengths.

Subsection 501.03 A.3 (pg. 395-396), 12-30-19; **Mix Design Submittal**; Revise 3rd paragraph:

If proposing to use materials or admixtures from sources other than those shown on the approved concrete mix design, submit a ~~written request to the Regional Materials and Tests Engineer explaining the necessity for the change and include a~~ new mix design developed in accordance with this Subsection **501.03**. Do not place any concrete until the new design is approved. The Engineer will not accept concrete produced using materials that are not shown on an approved concrete design.

Subsection 501.03 A.6 (pg. 398-399), 12-30-19; **Adjustments to Mix Proportions**; Remove entire subsection:

~~**6. Adjustments to Mix Proportions.** Meet the mix proportions approved by the Department during the progress of the work, except make the following adjustments as necessary with the Engineer's approval:~~

- ~~1. Maintain the cement content within 2% of the designated value by adjusting the proportions of materials as necessary.~~
- ~~2. If concrete of the desired plasticity and workability cannot be obtained with the proportions originally designed, adjust the aggregate weights as required, provided that the originally designated cement content is not changed except as specified in paragraphs (3), (4) and (5) below.~~
- ~~3. If it is found impossible to produce concrete having the required consistency without exceeding the maximum allowable water-cement ratio specified, increase the cement content so that the maximum allowable water-cement ratio will not be exceeded.~~
- ~~4. If for any reason the concrete must be placed by hand methods and the water-cement ratio established for the vibrated concrete cannot be maintained, adjust the mix proportions for placement by hand methods and increase the cement proportion by 38 pounds per cubic yard, or more if necessary, in order to maintain the water-cement ratio established for the vibrated concrete. The Department will not make additional payment to the Contractor for the cost of the additional cement.~~
- ~~5. Change the mix proportions if the character or source of materials changes.~~
- ~~6. Change the mix proportions or mixing procedure to maintain the air content within the specified limits.~~
- ~~7. Change the mix proportions to allow for the use of retarders or other chemical additives that may be required or approved.~~

Subsection 501.03 B (pg. 399), 5-13-19; **Quality Control and Acceptance of Concrete**; Revise 2nd paragraph:

Provide qualified technicians to perform sampling, testing, and inspection for process control. A TDOT Certified Concrete Plant Quality Control Technician shall provide process control of the concrete at the concrete plant. This technician shall be present at the concrete plant during all batching operations for the Project and shall have the primary responsibility during production of performing process control. A TDOT Certified Concrete Field Testing Technician or equivalent shall provide process control of the concrete at the placement site and shall be present during all concrete placement. A TDOT Certified Concrete Field Testing Technician or equivalent is not required to be at the placement site during small quantity placing operations but shall perform one complete set of tests during the life of the Project.

Subsection 501.03.B (pg. 399), 12-30-19; **Quality Control and Acceptance of Concrete**; Revise 2nd paragraph:

Provide qualified technicians to perform sampling, testing, and inspection for process control. A TDOT Certified Concrete Plant Quality Control technician shall provide process control of the concrete at the concrete plant. This technician shall be present at the concrete plant during all batching operations for the Project and shall have the primary responsibility during production of performing process control. A TDOT Certified concrete Field Testing or equivalent shall provide process control of the concrete at the placement site and shall be present during all concrete placement. A TDOT Certified Concrete Field Testing technician or equivalent is not required to be at the placement site during minor structures, as listed in 604.11 B, small-quantity-placem~~ent~~ing operations. ~~but shall perform one complete set of tests during the life of the Project.~~

Subsection 501.03 (pg. 399-402) 11-16-15; B. Quality Control and Acceptance of Concrete, adjust the following:

- “1. Test to determine aggregate gradations (AASHTO T 27 with AASHTO T 11 when required). Conduct a combined belt gradation before work starts and at least daily to verify consistency if using a dynamic, multi-aggregate feed system.
3. Calibrate the weighing systems, aggregate feed flow rate and weigh bridges, water meters, and admixture dispensing systems before starting production.
4. Ensure accurate weighing or flow rate of the aggregates and cement, the proper metering of water and admixtures, and the quality of water.
6. Adjust mix proportions due to actual moisture content of both coarse and fine aggregates, with moisture content determined according to AASHTO T 255. If using a dynamic aggregate weighing system, multi-aggregate proportioning adjustments are to be made by using an in-bin moisture sensor.”
7. Conduct slump (AASHTO T119) or slump flow (ASTM C1611) and air tests (AASHTO T152).

Page 401- “Make, cure, and transport all early break cylinders (7-14 day, etc.) according to AASHTO T 23, and deliver to the Regional laboratory or other established satellite laboratories

for testing. Make all early break cylinders (7-14 day, etc.) for self-consolidating concrete according to ASTM C1758, and deliver to the Regional laboratory or other established satellite laboratories for testing.”

Page 402 - “Correct batch weights or aggregate feed flow rates to compensate for surface moisture on the aggregate at the time of use. The Contractor...”

Subsection 501.03 B.12 (pg. 401), 5-13-19; **Quality Control and Acceptance of Concrete**; Add “r” to list:

12. A concrete delivery ticket shall accompany each load to the placement site. 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 at the plant
 - k. Maximum water allowed to be added on the project
 - l. Actual water added on project
 - m. Number of revolutions at mixing speed at plant
 - n. Number of revolutions at mixing speed at project
 - o. Time loaded
 - p. Time discharged
 - q. Actual and target batch weights of each component including each aggregate, chemical admixture and mineral admixture used
 - r. Signature of producer’s TDOT Certified Concrete Plant Quality Control Technician

Subsection 501.03 (pg. 401) 5-14-18; B. Quality Control and Acceptance of Concrete, remove AASHTO T23 and replace with specification 604.15 C.”

“Make, cure, and transport all early break cylinders (7-14 day, etc.) in accordance with 604.15.C, and deliver to the Regional Laboratory or other established satellite laboratories for testing.”

Subsection 501.04 (pg. 402) 11-16-15; replace the following:

“A. Batching Plant, Multi-Aggregate Feed System, and Equipment,

1. General. The batching plant shall include bins, weighing hoppers or belt feeds with weigh bridges and load cells, and scales. If using cement in bulk,...
2. Bins and Hoppers- Add the following new paragraph under the existing paragraph

For multi-aggregate feed systems, provide bins as noted with variable size openings and variable speed belts. Each bin must have a calibrated moisture sensor to adjust aggregate feed flow rates. Assure consistent, uninterrupted aggregate flow and consistent belt speeds once aggregate feed system is calibrated.

3. Scales- Add the following new paragraph under the last paragraph in the section.

For multi-aggregate feed systems, provide a dual idler weight bridge with load cells to accurately weigh the actual aggregate flow rate.”

Subsection 501.04 A. 1. (pg. 402), 11-6-17; General, Add the following after the first paragraph:

“All producers of concrete shall be on the Department’s approved producer list and be actively certified by the National Ready Mixed Concrete Association (NRMCA) Plant Certification Program.”

Subsection 501.04 (pg. 404) 11-16-15; B. Mixers, remove the complete 4th paragraph.

Subsection 501.04 B. 3. (pg. 403), 11-6-17; Truck Mixers and Truck Agitators, Add the following to the beginning of the first paragraph:

“Truck mixers shall be certified by the National Ready Mix Concrete Association (NRMCA) Delivery Vehicle Certification Program Option A or Option B.”

Subsection 501.09 (pg. 410) 10-8-18; Revise course to coarse in the 3rd paragraph of the subsection:

“Separately weigh the fine aggregate and each size of coarse aggregate into the hopper or hoppers in the respective amounts set by the Engineer. The coarse aggregates shall meet the gradation requirements for Size No. 467, as specified in **903.22**, or a blend of Size No. 4 and Size No. 67 that meets the required gradation for Size No. 467, specified in **903.22**.”

Subsection 501.12 – Placing Concrete (pg. 413-415) 5-15-17; replace the subsection:

“501.12 Placing Concrete

Either unload the concrete into an approved spreading device, or deposit it directly on the base, and mechanically spread the concrete in a manner that prevents segregation of the materials. When using central or transit mixed concrete, deposit it in an approved spreader. Place the mixture so as to minimize rehandling and relocation from point of placement. The mechanical spreader will not be required on areas too small to accommodate the paving equipment, projects that contain 10,000 square yards or less of concrete paving, and on variable width sections and ramps. Placing shall be continuous between transverse joints without the use of intermediate bulkheads. Do not place concrete on frozen grade.

Perform any necessary hand spreading with shovels or other approved tools. Do not allow workmen to walk in the freshly mixed concrete with boots or shoes coated with earth or other foreign substances.

If placing concrete adjacent to a previously constructed lane of pavement and mechanical equipment is to be operated on this existing lane of pavement, that lane shall meet the requirements for opening to traffic specified in **501.22**. If the existing lane is to only carry finishing equipment, the Contractor may begin paving the adjoining lanes after 7 days.

Deposit concrete as near to expansion and contraction joints as possible without disturbing them; do not dump concrete from the discharge bucket or hopper onto a joint assembly unless the hopper is well centered on the joint assembly.

Immediately remove all concrete materials that may fall on or be worked into the surface of a completed slab using approved methods.

When using the slip-form method of concrete paving, place the concrete with an approved slip-form paver meeting the requirements of **501.04.D.11**.

Ensure that the sliding forms are rigidly held together laterally to prevent spreading of the forms. The forms shall trail behind the paver for such a distance that no appreciable slumping of the concrete will occur and so that necessary finishing can be accomplished while the concrete is still within the forms. Before the concrete has hardened, correct any edge slump of the pavement, exclusive of edge rounding, in excess of 1/4 inch.

Operate the slip-form paver with as nearly a continuous forward movement as possible, and coordinate all operations of mixing, delivering, and spreading of concrete so as to provide uniform progress while minimizing the stopping and starting of the paver. If, for any reason, it is necessary to stop the forward movement of the paver, also immediately stop the vibratory and tamping elements. Apply no tractive force to the machine, other than that which is controlled from the machine. Replace slabs with random cracks before completion of paving operations.

Contractor may choose to utilize a single lift or two lift paving process according to the following requirements.

A. Single Lift Pavement

Use vibrators to thoroughly consolidate the concrete against and along the faces of all forms and along the full length and on both sides of all joint assemblies. Do not allow vibrators to come in contact with a joint assembly, the grade, or a side form. Do not operate the vibrator for longer than 5 seconds in any one location.

The Contractor may only use hand-operated vibrators on projects containing 10,000 square yards or less of concrete paving and on variable width sections. Only operate vibrators mounted on a machine while the machine is in motion.

Equip the slip-form paver with vibrators meeting the applicable requirements of **501.04.D.1** to vibrate the concrete for the full width and depth of the strip of pavement being placed.

B. Two Lift Composite Pavement

When placing two lift composite pavements, the upper lift shall be of a lesser thickness as designated by contract design. It shall be placed such that the result is a wet-on-wet application. The lower lift will be one foot less in width than the upper lift.

Paving operations shall be adjusted and approved by the Engineer as necessary to assure a wet-on-wet monolithic pavement section. If the bonding between lifts or the consolidation of concrete is determined to be unsuitable by the Engineer, the lower lift shall be removed and replaced prior to the upper lift placement.

1. Lower Lift. Uniformly spread concrete with a spreader or slipform machine. Internal vibration will be required for the lower lift. Tie bars and dowel bars (with the use of dowel baskets) shall be placed in the lower lift at mid-depth of the finished concrete pavement thickness. The lower lift shall not require curing, texturing, or sawing before the upper lift is placed. The lower lift shall be struck off to provide a nominal lower lift thickness that complies with the pavement design. The upper lift shall be struck off to allow for the finished total pavement to conform to the cross section shown in the contract plans.

2. Upper Lift. Place the upper lift within 45 minutes following the placement of the lower lift. Placement of the upper lift shall be such that intermingling of the two concrete mixtures is minimal. External vibration for the upper lift will be allowed if proper consolidation and finishing can be demonstrated in accordance with **501.16**. Dowel bars can be inserted during the placement of the upper lift. Cure the upper lift only in accordance with **501.18**. At no time shall the total thickness be less than shown on the pavement design and the cross section shown in the contract plans.

Frequency of the vibrators shall be established based on the workability of the concrete mixture and past experiences. Electronic, internal, T-shaped, poker vibrators shall be used. Other types of vibrating equipment may be approved by the Engineer. Vibrator impulses shall be delivered directly to the concrete and the intensity of vibration shall be sufficient to consolidate the concrete thoroughly and uniformly throughout the depth and width of the lift. Increase in the speed of the vibrators will be allowed with the permission of the Engineer.

A paving plan shall be supplied to the Engineer for review and approval prior to pouring. The plan shall document procedures to ensure consistency of material properties during concrete placement and finishing, identify and eliminate potential for load misidentification, and maintain speed of production and paving. Concrete for each lift shall be produced from the same ready-mix facility.”

Subsection 501.17 (pg. 424) 11-16-15; A. Surface Testing, modify the following:

- “3. Ramps where the design speed is greater than 40 miles per hour
 - (a) Test sections shall terminate 100 feet from a stop or slow speed yield condition
 - (b) Superelevated sections greater than 40 miles per hour design speed must be ground in accordance with **Table 501.17-1**
- 4. Ramps where the design speed is 40 miles per hour or less
 - (a) Test sections shall terminate 100 feet from a stop or slow speed yield condition
 - (b) Superelevated sections with a design speed of 40 miles per hour or less must be ground in accordance with **Table 501.17-2**

Subsection 501.17 (pg. 425) 11-16-15; B. Pay Factors and Required Corrective Action, modify the following:

“Payment factors and required corrective actions relative to profile indexes for ramps with design speeds of 40 MPH or less shall conform to Table 501.17-2.

Table 501.17-2: Pay Factors & Corrective Action for Ramps with Design Speeds of 40 mph or less

Profile Indexes	Pay Factor	Corrective Action
<10 inches per mile	105%	None
10 to < 20 inches per mile	100%	None
20 to < 23 inches per mile	98%	Grind to 20 inches per mile
23 plus inches per mile	95%	Grind to 20 inches per mile

Subsection 501.26 – Basis of Payment (pg. 434) 5-15-17; add the following sentence to the 7th paragraph of the subsection:

The Department will pay for additional concrete, measured in accordance with **501.25**, at the purchase price, F.O.B. the unloading point, as verified by invoices, with no compensation allowed for further handling. The State will be reimbursed from monies due the Contractor for a decrease in concrete measured in accordance with **501.25** in an amount equal to the purchase price of the cement, F.O.B. the unloading point. No payment will be allowed for any changes in the proportions of the aggregates. No additional payment will be made if two-lift composite pavement alternate is selected.”

STATE**OF****TENNESSEE**

(Rev. 5-18-15)

(Rev. 11-16-15)

(Rev. 6-27-16)

(Rev. 12-2-16)

(Rev. 5-15-17)

(Rev. 11-6-17)

(Rev. 5-14-18)

(Rev. 10-8-18)

(Rev. 5-13-19)

(Rev. 12-30-19)

January 1, 2015

Supplemental Specifications - Section 600**of the****Standard Specifications for Road and Bridge Construction****January 1, 2015**

Subsection 602.17 (pg. 459-477), 12-2-16; Entire Subsection: Replace all references to AASHTO M164 and AASHTO M253 with ASTM F3125, Grade A325 and A490

Subsection 602.17 (pg. 459) 12-2-16; modify the first paragraph of A.:

“All high strength bolts, or equivalent fasteners, tightened to a high tension shall be coated with permitted coatings in accordance with ASTM F3125 for their respective grade. Use the bolts in holes conforming to 602.06, 602.07, and 602.08. All Grade A325 and A490 bolts, except Type 3 bolts used in weathering steel, shall be coated. Permitted coatings for Grade A325 and Grade A490 bolts are listed in ASTM F3125, Annex A1.”

Subsection 602.17 (pg. 465–469), 12-2-16; Update Tables:

Bolt Diameter (inches)	Bolt Tension (pounds)	
	(Grade A325)	Grade A490 Bolts
½	12,000	15,000
5/8	19,000	24,000
¾	28,000	35,000
7/8	39,000	49,000
1	51,000	64,000
1-1/8	64,000	80,000
1-1/4	81,000	102,000
1-3/8	97,000	121,000
1-1/2	118,000	148,000

⁽¹⁾ Equal to 70% of the specified minimum tensile strength of bolts.

Table 602.17-1: Minimum Bolt Tension ⁽¹⁾

Bolt Diameter (inches)	Grade A325 Snug Tension (kips)	Grade A490 Snug Tension (kips)
½	1	1
5/8	2	2
¾	3	4
7/8	4	5
1	5	6
1-1/8	6	8
1-1/4	8	10
1-3/8	10	12
1-1/2	12	15

Table 602.17-3: Minimum Installation Tension

Bolt Diameter (inches)	Grade A325 Tension (kips)	Grade A490 Tension (kips)
1/2	12	15
5/8	19	24
3/4	28	35
7/8	39	49
1	51	64
1-1/8	64	80
1-1/4	81	102
1-3/8	97	121
1-1/2	118	148

Table 602.17-4: Rotation from Snug Condition

Bolt Length (measured in Step 1)	Grade A325 Required Rotation	Grade A490 Required Rotation
Up to and including 4 diameters	2/3	2/3
Over 4 diameters, but not exceeding 8 diameters	1	5/6
Over 8 diameters to 12 diameters	1-1/6	1

Table 602.17-5: Turn Test Tension

Bolt Diameter (inches)	Grade A325 Tension (kips)	Grade A490 Tension (kips)
1/2	14	17
5/8	22	28
3/4	32	40
7/8	45	56
1	59	74
1-1/8	74	92
1-1/4	94	117
1-3/8	112	139
1-1/2	136	170

Table 602.17-6

Bolt Length (measured in Step 1)	Required Rotation (All Grades)
Up to and including 4 diameters	1/3
Over 4 diameters, but not exceeding 8 diameters	1/2

Table 602.17-7

Bolt Diameter (inches)	Grade A325 Torque (ft-lbs)	Grade A490 Torque (ft-lbs)
1/2	150	180
5/8	290	370
3/4	500	630
7/8	820	1020
1	1,230	1540
1-1/8	1,730	2160
1-1/4	2,450	3050
1-3/8	3,210	3980
1-1/2	4,250	5310

Table 602.17-8

Bolt Length (measured in Step 1)	Additional Required Rotation Grade A325	Additional Required Rotation Grade A490
Up to and including 4 diameters	1/3	¼
Over 4 diameters, but not exceeding 8 diameters	1/2	1/3

Table 602.17-9: DTI Requirements for A325 Bolts

Bolt Diameter (inches)	Verification Tension (kips)	Maximum Verification Refusals	DTI Spaces	Minimum Installation Refusals
½	13	1	4	2
5/8	20	1	4	2
¾	29	2	5	3
7/8	41	2	5	3
1	54	2	6	3
1-1/8	67	2	6	3
1-1/4	85	3	7	4
1-3/8	102	3	7	4
1-1/2	124	3	8	4

Table 602.17-11

Bolt Diameter (inches)	Bolt Tension (kips)	
	AASHTO M 164 Bolts (ASTM A325)	ASTM A490 Bolts
1/2	13	16
5/8	20	25
3/4	29	37
7/8	41	51
1	54	67
1-1/8	67	84
1-1/4	85	107
1-3/8	102	127
1-1/2	124	155

Table 602.17-12

Bolt Diameter (inches)	Number of Spaces	
	Bolts (Grade A325)	Grade A490 Bolts
1/2	4	N/A
5/8	4	N/A
3/4	5	6
7/8	5	6
1	6	7
1-1/8	6	7
1-1/4	7	8
1-3/8	7	8
1-1/2	8	N/A

Subsection 602.19 (pg. 478), 6-27-16; add the following as the 2nd paragraph:

“All welders shall be qualified in accordance with the AASHTO/AWS D1.5, Bridge Welding Code, current edition. Welders shall be certified for each weld process and position which they will be using.”

Subsection 602.39 (pg.488), 6-27-16; revise the title as follows:

“CONSTRUCTION REQUIREMENTS – ERECTION – REMOVAL”

Subsection 602.42 (pg.489), 6-27-16; revise as follows:

“All contractors and subcontractors directly engaged in the erection or removal of structural steel, precast prestressed or mild steel reinforced concrete bridge beams or girders over active highway traffic lanes, on any route, railroad or any stream deemed navigable to commercial or pleasure water craft, shall submit an erection or removal plan prepared and stamped by a Professional Engineer licensed in the State of Tennessee. Include the following in these plans: the sequences of erection or removal, the generalized location of all pick points, and the plan to adequately stabilize the structure throughout the erection or removal process. Submit this plan to the Engineer at least 30 days before starting erection. At each stopping point in the erection or removal sequence, have a competent contractor’s representative inspect the beams to ensure adequate stability.

Do not begin any erection or removal work without the Engineer’s approval. The Engineer’s approval does not relieve the Contractor of the responsibility for the safety of its method or equipment or from carrying out the work in accordance with the Plans and Specifications.”

Subsection 603.01 B (pg. 499), 12-30-19; **Certification Requirements;** Revise entire subsection:

All contractors or subcontractors involved in field surface preparation or coating application shall be certified according to the Society for Protective Coatings (SSPC) Painting Contractor Certification Program (PCCP) or NACE International Institute Contractor Accreditation Program (NIICAP).

Contractors or subcontractors performing field coating application shall be certified according to SSPC QP1, Field Application or equivalent, including NIICAP AS-1 Field.

Contractors and subcontractors performing field surface preparation of existing structures shall be certified according to SSPC QP2, Field Removal of Hazardous Coatings or equivalent, including NIICAP AS-2 Hazard Waste Removal.

Ensure that all contractors and subcontractors that perform field surface preparation or field coating application are certified to the requirements of SSPC; QP1 or QP2, or NIICAP; AS-1 Field or AS-2 before Contract award, and remain certified for the duration of the Project. If a contractor's or subcontractor's certification expires or is suspended, do not allow that contractor to perform any work until the certification is reissued or reinstated. The Department will not consider any requests for time extensions for any delay in the completion of the Project due to an inactive certification and may apply liquidated damages. Provide a copy of the certifications to the Engineer before beginning work and notify the Engineer of all changes in certification status.

Subsection 603.05 A & B.2 (pg. 499-500), XX-XX-19; **A. New Structures & B. Existing Structures;** Revise 1st paragraph subsection A & Revise No. 2 in subsection B:

A. New Structures

Prepare all metal surfaces to a condition equivalent to SSPC SP10/NACE 2 (Near White Blast Clean).

B. Existing Structures

2. **Blast Cleaning.** Use SSPC-SP10/NACE 2 for System A, or as shown on the Plans for Systems B and C. Blast cleaning shall leave a surface profile acceptable to the paint manufacturer.

Subsection 604.02 (pg. 517-518), 5-15-17; A. General, add Class DS Concrete to the index:

604.02 Materials

A. General

Provide materials as specified in:

Hydraulic cement ¹	901.01
Fine Aggregate, (all Classes of concrete)	903.01

Coarse Aggregate	
For Class A Concrete: Size No. 57	903.03
For Class D Concrete: Size No. 57	903.03
For Class DS Concrete: Size No. 57	903.03
For Class L Concrete.....	903.19
Joint Filler, Preformed Type	905.01
Steel Bar Reinforcement	907.01
Welded Steel Wire Fabric	907.03
Structural Steel.....	908.01
Permanent Steel Bridge Deck Forms	908.03
Steel Castings.....	908.05
Gray Iron Castings	908.07
Bronze Bearing Plates, Plain.....	908.09
Bronze Bearing Plates, Self-Lubricating.....	908.10

¹Use Type I, Type IL, or Type IS unless otherwise specified or permitted, or Type I or Type IL cement with either fly ash and/or ground granulated blast furnace slag as a partial cement replacement unless otherwise specified or permitted. When using Type I or Type IL cement with either fly ash and/or ground granulated blast furnace slag as a partial cement replacement, comply with the requirements of **604.03**.

Subsection 604.02 C. (pg. 519), 11-6-17; Precast Box Sections, remove mylar reference in second paragraph:

“Submit shop drawings of the proposed precast box section and design calculations for approval before construction. As a minimum, the shop drawings shall include a plan and elevation view of the box culvert showing all precast sections, a typical precast box section showing dimensions and reinforcing, and notes and details required for construction. After obtaining the necessary approval, furnish the Structures Division a reproducible design file. . The Department will pay the Contractor for the precast box based on the price bid for the quantity of the items in the cast-in-place structure it replaces. Manufacture the precast reinforced box sections in accordance with Departmental procedures.”

Subsection 604.03 (pg. 519-525), 5-13-19; **Classification, Proportioning and Quality Assurance of Concrete:** Combined supplemental specifications from 5-15, 11-15, 12-16, 5-17, 11-17, and 5-18; Replace entire subsection with the following:

A. Classification and Proportioning and Quality Assurance

1a. Design and Production Parameters. Proportion the concrete based on a pre-determined minimum cement content, and a water-cement ratio that does not exceed the maximum shown in Table 604.03-1. Below this limit, adjust the quantity of water to meet the slump requirements. The fine aggregate shall not exceed 44% by volume calculation of the total aggregate, with the exception of slip formed Class A concrete incorporated into parapets and median barriers.

For slip formed parapet and median barriers exclusively, the percentages of fine and coarse aggregate in an approved concrete mix design may be adjusted plus or minus 2%, such that the maximum percent by volume of fine aggregate does not exceed 46%.

Document mixture adjustments in the field book and daily concrete report. Ensure that the adjusted mix complies with all of the performance criteria specified in Table 604.03-1.

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 $\pm$ 2	3 $\pm$ 1 ⁽¹⁾
D, DS ^(2, 3)	4,000	620	0.40	7 ⁽³⁾	8 max ⁽⁴⁾
L ^(3, 5)	4,000	620	0.40	7 ⁽³⁾	8 max ⁽⁴⁾
S (Seal) ⁽⁶⁾	3,000	682	0.47	6 $\pm$ 2	6 $\pm$ 2
X ⁽⁷⁾					

⁽¹⁾ For slip forming, the slump shall range from 0 to 3 inches.

⁽²⁾ Use Class DS concrete in riding surfaces as described in 903.03 and in accordance to Specification 903.24 requirements. Use Class D concrete in all other bridge decks except box and slab type structures unless otherwise shown on the Plans.

⁽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.

⁽⁵⁾ 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.

⁽⁶⁾ The use of fly ash as a cement replacement will be allowed in Class S (Seal) concrete.

⁽⁷⁾ Plan specific requirements.

Include chemical admixtures in the concrete mixture as specified in Table 604.03-2 based on the ambient air temperature and expected weather conditions.

Table 604.03-2: Use of Chemical Admixtures

Class of Concrete	Temperature less than 85 °F and falling	Temperature 85 °F or greater and rising
A	Type A or F	Type D or G or A and B
D, DS	Type A or F	Type A or F and B or G
L	Type F	Type F and B or G
S	Type D or G or A and B	Type D or G or A and B

If using a Type A, F, or G water reducer, then the allowable slump shall be a maximum of 8 inches.

Admixtures to be incorporated into the concrete shall all be from the same manufacturer, shall be compatible, and shall be incorporated into the concrete in accordance with the manufacturer's recommendations.

The fine aggregate in all Class L concrete shall be natural sand meeting **903.01**.

Do not use fine aggregate manufactured from limestone or other polishing aggregates in concrete to be used as a riding surface in traffic lanes.

1b. Self-Consolidating Concrete (SCC) Design and Production Parameters.

Proportion the concrete based on a pre-determined minimum cement content, and a water-cement ratio that does not exceed the maximum shown in Table 604.03-4. The fine aggregate shall not exceed 50% by volume calculation of the total aggregate volume. Maximum size of coarse aggregate shall not exceed a No. 67 stone. The Contractor may elect to use SCC as an alternate/option in replacement of Class A concrete.

Document mixture adjustments in the field book and daily concrete report. Ensure that the adjusted mix complies with all of the performance criteria specified in Table 604.03-4.

Table 604.03-4: Composition of Self-Consolidating 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 Flow (inches)
SCC (2,3,4,5)	3,000 ⁽¹⁾	564	0.45	6 $\pm$ 2	26 $\pm$ 5
SH-SCC (2,3,4,5,6)	4,500	620	0.45	6 $\pm$ 2	26 $\pm$ 5

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

(2) Acceptance range for the T50 test in accordance with ASTM C1611 shall be between 2-7 seconds.

(3) Passing ability in accordance with ASTM C1621 shall be less than 2 inches for acceptance.

(4) Visual Stability Index (VSI) shall not exceed 1.0 as per ASTM C1611 for acceptance.

(5) Static segregation as measured by ASTM C 1610 shall not exceed 20%.

(6) Air Content may be reduced if placed under water or underground if approved by the Engineer

Include chemical admixtures in the self-consolidating concrete mixture as specified in Table 604.03-5 based on the ambient air temperature and expected weather conditions. Approved viscosity modifying admixtures (VMA) may be used as part of the chemical admixtures if they are shown in the approved mixture design.

Table 604.03-5: Use of Chemical Admixtures

Class of Concrete	Temperature less than 85 °F and falling	Temperature 85 °F or greater and rising
SCC, SH-SCC	Type A or F Type S (Viscosity Modifying)	Type D or G or A and B Type S (Viscosity Modifying)

Dosage rates for any admixtures incorporated into the concrete shall be stated during the mix design submittal process. All admixtures shall be compatible and from the same manufacturer.

2. **Mix Design Submittal.** Submit the proposed concrete design to the Engineer for approval. Develop the design using saturated surface dry aggregate weights and trial batches meeting the requirements of these Specifications. The concrete design shall be prepared by a TDOT certified Class 3 concrete technician or approved independent testing laboratory under the direction of a registered civil engineer licensed by the State of Tennessee. The concrete plant technician or the civil engineer shall certify that the information contained on the design is correct and is the result of information gained from the trial batches. The concrete design 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. Provide concrete of the design strength specified in all applicable Special Provisions, Plans, and Standard Specifications. Build trial batches for design no more than 90 days before submitting the concrete design. The approved mix design will expire after 6 months if it is not used on a Department funded project and meet the minimum 28-day strength requirements. Assume responsibility for all costs of concrete design, preparation, and submittal.

As a minimum, include the following information in the proposed concrete design submittal:

1. Source of all aggregates
2. Brand and type of cement
3. Source and class of fly ash (if used)
4. Source and grade of ground granulated blast furnace slag (if used)
5. Specific gravity of cement
6. Specific gravity of the fly ash (if used)
7. Specific gravity of the ground granulated blast furnace slag (if used)
8. Admixtures (if used)
9. Gradations of aggregates
10. Specific gravity of aggregates (saturated surface dry)
11. Air content (if air entrainment is used)
12. Percentage of fine aggregate of the total aggregate (by volume)
13. Slump
14. Weight per cubic yard
15. Yield
16. Temperature of plastic concrete
17. Water/cement ratio (pound/pound)
18. 7-day compressive strength (minimum of two 4-inch x 8-inch cylinders)

19. 14-day compressive strength (minimum of two 4-inch x 8-inch cylinders)
20. 28-day compressive strength (minimum of two 4-inch x 8-inch cylinders)
21. Weight of each material required to produce a cubic yard of concrete
22. Water – submit testing results per Tables 921.01-1 & 921.01-2

In addition to the above mentioned items, for self-consolidating concrete include as a minimum the following information in the proposed SCC design submittal:

23. Slump flow, VSI, and T50, in accordance with ASTM C1611, shall be required in place of the slump test.
24. Passing ability in accordance with ASTM C1621.
25. Static segregation in accordance with ASTM C1610.
26. 7-day compressive strength (minimum of two 4-inch x 8-inch cylinders), in accordance with ASTM C1758.
27. 14-day compressive strength (minimum of two 4-inch x 8-inch cylinders), in accordance with ASTM C1758.
28. 28-day compressive strength (minimum of two 4-inch x 8-inch cylinders), in accordance with ASTM C1758.

Self-consolidating concrete (Classes SCC, SH-SCC and P-SCC) shall be verified prior to placement either at the ready mix facility or prestressed plant. The submitted mix design shall be reviewed by Headquarters Materials and Tests for specification compliance. The concrete producer shall then perform a trial batch verification of the submitted mix design in the presence of Regional Materials and Tests. The trial batch will ensure that all batch quantities and target admixture dosage rates are acceptable and meet TDOT specification prior to full mix design approval. If using a previously approved SCC design additional verification of the trial batch is not required. All quantities and identified admixture target dosage rates shall meet the tolerances specified in **501.09**

Instead of the above mix design submittal, an existing design may be submitted for approval provided the design has been used on a state funded project within the last six (6) months. When submitting for the use of an existing mix design, the most current water testing results per 921.01 shall accompany the submittal. The approval of this concrete design submittal will not relieve the Contractor of the responsibility of providing concrete meeting the requirements of these Specifications. A temporary mix design may be issued if the 7-day or 14-day compressive strengths exceed the required 28-day strengths.”

If proposing to use materials or admixtures from sources other than those shown on the approved mix design, submit a written request to the Regional Materials and Tests Engineer explaining the necessity for the change, and include a new mix design developed in accordance with the above provisions. Do not place any concrete until the new design is approved.

3. **Partial Cement Replacement with Fly Ash or Ground Granulated Blast Furnace Slag.** Do not use concrete with fly ash or ground granulated blast furnace slag as a partial cement replacement in concrete when high early strength is specified.

When choosing to replace a portion of Type I or Type IL cement with fly ash or ground granulated blast furnace slag, ensure that the following requirements will be met before producing any concrete:

1. Store fly ash or ground granulated blast furnace slag in silos separate from each other and separate from the hydraulic cement.
2. Add the fly ash or ground granulated blast furnace slag to the concrete using methods and equipment that are approved by the Engineer and capable of uniformly distributing the materials throughout the mix.
3. The fly ash or ground granulated blast furnace slag may be weighed cumulatively in the weigh hopper with the cement, provided the cement is added first. The temperature of the fly ash or the ground granulated blast furnace slag shall not exceed 160 °F at the time of introduction to the mix.

When designing Portland cement concrete with Type I or Type II cement modified by the addition of fly ash and/or ground granulated blast furnace slag, meet the maximum cement replacement rates (by weight) and minimum substitution ratios (by weight) specified in Table 604.03-3 for the applicable type of modifier.

Table 604.03-3: Type I or Type II Cement Modified by Fly Ash or Ground Granulated Blast Furnace Slag (GGBFS)

Modifier	Maximum Cement Replacement Rate % (by weight)	Minimum Modifier Cement Substitution Rates (by weight)
GGBFS (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, ground granulated blast furnace slag, and fly ash) for Class A, Class D, and Class DS 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 as a partial replacement for the hydraulic cement.

B. Quality Control and Acceptance of Concrete

Meet the requirements of **501.03.B**.

In addition, the Department will require an approved concrete design for non-critical items involving small quantities of concrete, but may accept these non-critical items at a reduced testing frequency in accordance with Department Procedures. This requirement applies to sidewalks, curbs and gutters, building foundations, slope paving, ditch paving, guardrail anchorages, small culvert headwalls 30 inches in diameter or less, fence posts, catch basins, manhole bases and inlets, small sign bases, and steel strain pole footings. The Contractor may use pre-approved, pre-packaged concrete mixtures for these applications if the quantity does not exceed 2 cubic yards per day, in which case no design will be required. If the quantity exceeds 2 cubic yards, prior approval must be obtained from the Engineer prior to placement.

Correct batch weights to compensate for surface moisture on the aggregate at the time of use. The Contractor may withhold some of the water from the mix at the plant and add it at the placement site as specified in **604.13**.

The Department will perform all acceptance testing and independent assurance sampling and testing in accordance with **501.03.B**.

C. High Early Strength

When the Plans for structural or pavement repairs, or other type work, require high early strength concrete, the Contractor may use Type I, Type IL, or Type III cement. If Type I or Type IL cement is used, the minimum cement content shall be 714 pounds per cubic yard. If Type III cement is used, the minimum cement content shall be 620 pounds per cubic yard. The Contractor may substitute high early strength concrete, meeting these requirements, for Class A concrete when approved in writing by the Engineer.

When electing to use high early strength concrete, use the same source and gradation of fine and coarse aggregates as that specified for the concrete being substituted. The Department will not make additional payment if the Contractor decides to substitute high early strength concrete for Class A concrete. The unit price for the class of concrete for which the substitution is made shall be full compensation for the concrete.

Subsection 604.03 A.1a (pg. 521), 5-13-19; **Design and Production Parameters**; Revise 6th paragraph:

Admixtures to be incorporated into the concrete 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 Department's Standard Operating Procedure 4-4.

Subsection 604.03 A.1.b (pg. 521), 5-13-19; **Self-Consolidating Concrete (SCC) Design and Production Parameters**; Revise 4th paragraph:

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 Department's Standard Operating Procedure 4-4.

Subsection 604.03.B (pg. 524), 12-30-19; **Quality Control and Acceptance of Concrete**; Revise 2nd paragraph:

In addition, the Department will require an approved concrete design for minor structures as listed in 604.11 B. non-critical items involving small quantities of concrete including, but may accept these non-critical items at a reduced testing frequency in accordance with Department Procedures. This requirement applies to sidewalks, curbs and gutters, building foundations, slope paving, ditch paving, guardrail anchorages, small culvert headwalls 30 inches in diameter or less, fence posts, catch basins, manhole bases and inlets, small sign bases, and steel strain pole footings. The Contractor may use pre-approved, pre-packaged concrete mixtures listed in QPL 15 for these applications if the quantity does not exceed 2 cubic yards per day, in which case no design will be required. If the quantity exceeds 2 cubic yards, prior approval must be obtained from the Engineer prior to placement. All pre-packaged concrete mixtures are required to be mixed in a mechanical concrete mixing machine and in accordance with manufacturer's recommendations.

Subsection 604.03 A.2 (pg. 521-523), 5-13-19; **Mix Design Submittal**; Revise 1st and 3rd paragraphs:

Submit the proposed concrete design to the Engineer for approval. Develop the design using saturated surface dry aggregate weights and trial batches meeting the requirements of these Specifications. The concrete design shall be prepared by a TDOT Certified Concrete Mix Design Technician or approved independent testing laboratory under the direction of a registered civil engineer licensed by the State of Tennessee. The TDOT Certified Concrete Mix Design Technician or the civil engineer shall certify that the information contained on the design is correct and is the result of information gained from the trial batches. The concrete design 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. Provide concrete of the design strength specified in all applicable Special Provisions, Plans, and Standard Specifications. Build trial batches for design no more than 90 days before submitting the concrete design. 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.

Instead of the above mix design submittal, an existing design may be submitted for approval provided the design has been approved by the Department within the current calendar year. When submitting for the use of an existing design, the most current water testing results per 921.01 shall accompany the submittal. The approval of this concrete design submittal will not relieve the Contractor of the responsibility of providing concrete meeting the requirements of these Specifications. A temporary mix design may be issued if the 7-day or 14-day compressive strengths exceed the required 28-day strengths.

Subsection 604.04 (pg. 525-527). 5-14-18; Remove the last 3 paragraphs from page 527 and insert the paragraphs as the 6th, 7th, and 8th paragraph of the subsection:

“604.04 Equipment

Obtain the Engineer's approval as to the design, capacity, and mechanical condition of equipment and tools used to handle materials and perform the work. Have the equipment on the jobsite sufficiently ahead of the start of construction operations to be examined and approved by the Engineer. Use

equipment and construction processes that have sufficient capacity to accomplish the maximum continuous concrete placement, as governed by the construction joints shown on the Plans or as directed by the Engineer.

Meet the requirements for batching plants specified in **501.04.A**, except that when approved by the Engineer, the requirement for storage compartments in addition to weigh bins for fine and coarse aggregates may be waived, provided the batching tolerances specified in **501.09** are maintained.

Meet the requirements for mixers specified in **501.04.B**, except that the requirement for the boom-and-bucket attachment to the mixer will be waived.

Provide ample and satisfactory equipment for conveying concrete from the mixer to final position in the forms. Use closed chutes or pipes when concrete is to be dumped or dropped for a distance greater than 5 feet. Where steep slopes are required, equip the chutes with baffle boards, or use chutes in short lengths that will allow the direction of movement to be reversed.

Use vibrators of an approved type and design, and operate them under load at the rate recommended by the manufacturer and approved by the Engineer.

When placing concrete by pumping, do not use aluminum conduit.

Do not pour any concrete for bridge decks or slabs above grade before verifying the availability and operability of all necessary equipment, including finishing machines, continuous water source or portable tanks, water distribution equipment, two work bridges, vibrators, sprayers, a 12-foot straightedge, and appropriate backup items.

Provide at every concrete deck pour a portable, cold fogger capable of changing humidity and cooling air above fresh concrete. The fogger shall be designed to provide a maximum VMD (volume mean diameter) of 15 microns, and a throw distance of 60 feet.

The Contractor may mix concrete for minor structures, as identified in **604.11.B**, in a mobile volumetric continuous mixing plant.

Use a mobile mixing plant that is:

1. Designed to accurately batch aggregates and cement by volume based on weight.
2. Equipped to perform mixing by a continuous auger and/or paddles.
3. Capable of producing a uniform concrete mix meeting all requirements of the Specifications.
4. Capable of carrying in separate compartments all the necessary ingredients needed for the concrete mix.
5. Equipped with calibrated proportional devices for each material.
6. Equipped with proportioning controls that they may be set and secured for different materials and mixes.

7. Equipped with separate bins and gate openings for each type of material, including a watertight storage bin for cement. Cover the aggregate bins with tarpaulins or by other approved methods when required.

Ensure that a metal plate identifying the discharge speed and weight-calibrated constant of the machine is attached to each unit.

Make adequate standard volume measures, scales, and weights available for checking the accuracy of the proportioning mechanism.

Furnish a calibrated chart for the individual unit when required by the Engineer.

In the Engineer's presence, the producer or factory representative shall perform the calibration and gate settings according to the manufacturer's recommendations for the design to be used.

Provide a satisfactory method of setting the dosage for admixtures. If using admixtures other than air-entraining agents, add them in the manner and in the dosage recommended by the manufacturer.

Subsection 604.04 (pg. 525-527); 5-13-19; **Equipment**; Remove 5th-11th paragraphs, Add subsection A. title, and add subsection B:

A. General

Obtain the Engineer's approval as to the design, capacity, and mechanical condition of equipment and tools used to handle materials and perform the work. Have the equipment on the jobsite sufficiently ahead of the start of construction operations to be examined and approved by the Engineer. Use equipment and construction processes that have sufficient capacity to accomplish the maximum continuous concrete placement, as governed by the construction joints shown on the Plans or as directed by the Engineer.

Meet the requirements for batching plants specified in 501.04.A, except that when approved by the Engineer, the requirement for storage compartments in addition to weigh bins for fine and coarse aggregates maybe waived, provided the batching tolerances specified in 501.09 are maintained.

Meet the requirements for mixers specified in 501.04.B, except that the requirement for the boom-and-bucket attachment to the mixer will be waived.

Provide ample and satisfactory equipment for conveying concrete from the mixer to final position in the forms. Use closed chutes or pipes when concrete is to be dumped or dropped for a distance greater than 5 feet. Where steep slopes are required, equip the chutes with baffle boards, or use chutes in short lengths that will allow the direction of movement to be reversed.

Use vibrators of an approved type and design, and operate them under load at the rate recommended by the manufacturer and approved by the Engineer.

When placing concrete by pumping, do not use aluminum conduit.

Do not pour any concrete for bridge decks or slabs above grade before verifying the availability and operability of all necessary equipment, including finishing machines, continuous water source

or portable tanks, water distribution equipment, two work bridges, vibrators, sprayers, a 12-foot straightedge, and appropriate backup items.

Provide at every concrete deck pour a portable, cold fogger capable of changing humidity and cooling air above fresh concrete. The fogger shall be designed to provide a maximum VMD (volume mean diameter) of 15 microns, and a throw distance of 60 feet.

B. Volumetric Continuous Mixers

Produce concrete specified in Table 604.03-1 in accordance with Section 604.03, in a volumetric continuous mixing plant provided that the manufacturer's equipment meets the tolerance requirements of Section 501.09. Use a volumetric continuous mixing plant that conforms to the following:

1. The unit shall be equipped with:
 - a) Calibrated proportioning devices for each ingredient added to the concrete mix and perform mixing by a continuous auger and/or paddles.
 - b) Equipped with proportioning controls that may be set and secured for different materials and mixes.
 - c) A working recording meter that is visible at all times and furnishes a ticket printout with the calibrated measurement of the mix being produced.
 - d) Separate bins and gate openings for each type of material, including a watertight storage bin for cement. Cover the aggregate bins with tarpaulins or by other approved methods when required.
2. The unit shall have a stamped plate from the Volumetric Mixer Manufacturers Bureau (VMMB) stating the equipment conforms to ASTM C685. The plate shall be attached in a prominent place and have the following plainly marked: the gross volume of the transportation unit in terms of mixed concrete, the discharge speed, and the mass calibrated constant of the machine in terms of volume.
3. The calibration will be performed in the presence of the Engineer by a Volumetric Mixer Operator certified by VMMB and holds a TDOT Concrete Mix Design Technician Certification. Perform the calibration of gate settings according to the manufacturer's recommendations for the mix design to be used. Inspections and calibrations shall be performed at a minimum of every 6 months, every 2500 cubic yards, or when a new mix design is to be used. The yield shall be maintained within a tolerance of ± 1 percent and verified using a minimum 2 cubic feet container every 500 cubic yards or a minimum of once per week.
4. The volumetric mixing plant shall be operated by a Volumetric Mixer Operator certified by VMMB and holds a TDOT Concrete Plant Quality Control Technician Certification. Any equipment adjustment that would cause any deviation from the approved concrete mix design shall not be made during the on-site production of concrete.

If the mixer fails to discharge a uniform mix at any time, production of concrete shall halt until any problems are corrected.

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. Time loaded
- l. Time discharged
- m. Signature of producer's TDOT Certified Concrete Plant Quality Control Technician.

The form shall be delivered to the Inspector at the site of the work. Loads that do not carry such information or do not arrive in satisfactory condition shall not be used.

Subsection 604.04 B (pg. 525-527), 12-30-19; **Volumetric Continuous Mixers**; Revise No. 3 & 4, add No. 5, add paragraph after No 5, revise delivery ticket list k, l, m, & add n:

A. Volumetric Continuous Mixers

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3. The volumetric mixing plant shall be operated and calibrated by a Volumetric Mixer Operator certified by VMMB and holds 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 $\pm 1\%$ and verified using a minimum 2 cubic feet container every 500 cubic yards or a minimum of once per week. ~~The calibration will be performed in the presence of the Engineer by a Volumetric Mixer Operator certified by VMMB and holds a TDOT Concrete Mix Design Technician Certification. Perform the calibration of gate settings according to the manufacturer's recommendations for the mix design to be used. Inspections and Recalibrations shall be necessary when indicated by the yield checks, performed at a minimum of every 6 months, every 2500 cubic yards, or at any time the Engineer deems necessary to ensure proper proportioning of the materials. when a new mix design is to be used. The yield shall be~~

~~maintained within a tolerance of ± 1 percent and verified using a minimum 2 cubic feet container every 500 cubic yards or a minimum of once per week.~~

4. ~~Tests for aggregate moisture contents and gradations shall be performed by someone who holds a TDOT Concrete Plant quality Control Technician Certification or a TDOT Aggregate Technician Certification. The volumetric mixing plant shall be operated by a Volumetric Mixer Operator certified by VMMB and holds a TDOT Concrete Plant Quality Control Technician Certification. Any equipment adjustment that would cause any deviation from the approved concrete mix design shall not be made during the on-site production of concrete.~~
5. A TDOT Concrete Mix Design Technician or a registered Professional Engineer licensed by the State of Tennessee shall submit the Department in writing a concrete design in accordance with SOP 4-4.

If the mixer fails to discharge a uniform mix at any time, production of concrete shall halt until any problems are corrected.

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. ~~Time loaded~~ Water-cementitious materials ratio
- l. ~~Time loaded~~ discharged
- m. ~~Signature of producer's TDOT Certified Concrete Plant Quality Control Technician.~~ Time discharged
- n. Signature of producer's VMMB Certified Volumetric Mixer Operator

Subsection 604.11 A & B (pg. 539,540), 12-30-19; **Major Structures & Minor Structures**; Revise 2nd paragraph of A & Revise paragraph of B:

A. Major Structures

.....

When using lightweight aggregates, uniformly pre-saturate the aggregates ~~by sprinkling~~ and allow to drain. At time of use, ensure that the aggregates are in a saturated surface dry condition to minimize water absorption.

B. Minor Structures

~~For the following items of construction, the Contractor may substitute a mobile volumetric continuous mixing concrete plant, meeting the requirements of **604.04**, for the method specified in **501.09**.~~

The following are considered minor structures. See each Section for additional details:

- 611** Manholes, catchbasins, inlets, and pipe end walls
- 701** Cement concrete sidewalks, driveways and median pavement
- 702** Cement concrete curb, gutter, and combined curb and gutter
- 703** Cement concrete ditch paving
- 705** Guard rail
- 707** Fences
- 709** Rip-rap slope paving
- 713** Highway signing
- 714** Roadway and structure lighting

Subsection 604.13 (pg. 541), 5-15-17; Mixing Concrete, add Class DS concrete to the 2nd paragraph, 3rd sentence:

- D.** “Do not retemper concrete by adding water or by other means. However, the Contractor may withhold a portion of the mixing water or chemical admixtures from transit mixers and add at the work site if all requirements of the approved mix design are met. Water added at the placement site for Class A, Class D, Class DS and Class L concrete shall not exceed 1 gallon per cubic yard. The total amount of water in the mix shall not exceed the maximum in the approved mix design. To achieve additional slump, use a water reducing admixture. If water, air entrainers, or chemical admixtures are added at the placement site, mix the concrete a minimum of 30 revolutions at mixing speed after making the additions. Do not use concrete that is not within the specified slump limits, air content limits, temperature limits, or time limits at the time of placement.”

Subsection 604.13 (pg. 541), 5-14-18; Mixing Concrete, revise the 2nd and 3rd sentence of the 2nd paragraph:

“Do not retemper concrete by adding water or by other means. However, the Contractor may withhold a portion of the mixing water or chemical admixtures from transit mixers and add at the work site if all requirements of the approved mix design are met, provided the delivery ticket indicates the amount of water withheld. The total amount of water in the mix shall not exceed the

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maximum in the approved mix design. To achieve additional slump, use a water reducing admixture. If water, air entrainers, or chemical admixtures are added at the placement site, mix the concrete a minimum of 30 revolutions at mixing speed after making the additions. Do not use concrete that is not within the specified slump limits, air content limits, temperature limits, or time limits at the time of placement.”

Subsection 604.13 (pg. 541-542), 12-30-19; **Quality Control and Acceptance of Concrete**; Remove 4th & 5th paragraph:

~~When concrete placed in the items of construction specified in 604.11.B does not exceed 25 cubic yards per week, the Engineer may accept it on the basis of field testing for air, slump, and occasional strength tests with only random plant inspections as deemed necessary by the Engineer for control.~~

~~When the Engineer uses this basis of acceptance, the ready mix plant furnishing the concrete shall have been inspected and approved for use as specified in 604.04. In addition, ensure that the delivery ticket accompanying each load of concrete shows the class of concrete, the quantity of cement, aggregates, water, and additives used in the batch, and the time of batching. Ensure that the materials used in the concrete are tested and approved.~~

Subsection 604.14 (pg. 542), 11-16-15; Consistency of Concrete, modify the following:

“The slump of the concrete when measured according to AASHTO T 119 shall meet 604.03 - **1A**. The slump flow of self-consolidating concrete when measured according to ASTM C1611 shall meet **604.03 1B**.”

Subsection 604.15 (pg. 542-543), 11-16-15; B. Concrete Acceptance Cylinders, modify the following:

“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 at no additional cost to the Department.

Concrete cylinders submitted for testing beyond 28 days shall comply with the strength requirements specified in Table 604.15-1.

Table 604.15-1: Strength Requirements

Class of Concrete	Compressive Strength (psi) at:			
	Less than 31 days	31 to 42 days	43 days to 56 days	
A, S, CP, SCC	3,000	3,300	3,500	
D, L	4,000	4,400	4,600	
X	Plans Requirement (Req)	Req. + Req. * (10%)	Req. + Req. * (15%)	

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If the acceptance cylinders fail to meet the specified strengths, the Contractor may drill core samples from the hardened concrete as verification of concrete strength instead of using the concrete cylinders. 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. If the above mentioned requirements are met, the Contractor may then elect to drill a maximum of three core samples per set of cylinders from the hardened concrete. The Contractor shall obtain the cores in accordance with the Department's Standard Operating Procedure 4-2, and bear all costs of obtaining the cores and repairing the core holes."

Subsection 604.15 (pg. 543), 5-15-17; Table 604.15-1: Strength Requirements, Add Class DS to Table, update 2nd paragraph 3rd sentence to remove "cylinders and":

Table 604.15-1: Strength Requirements

Class of Concrete	Compressive Strength (psi) at:		
	Less than 31 days	31 to 42 days	43 days to 56 days
A, S, CP, SCC	3,000	3,300	3,500
D, DS, L	4,000	4,400	4,600
SH-SCC	4,500	4,950	5,175
X	Plans Requirement (Req)	Req. + Req. * (10%)	Req. + Req. * (15%)

If the acceptance cylinders fail to meet the specified strengths, the Contractor may drill core samples from the hardened concrete as verification of concrete strength instead of using the concrete cylinders. 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. If the above mentioned requirements are met, the Contractor may then elect to drill a maximum of three core samples per set of cylinders from the hardened concrete. The Contractor shall obtain the cores in accordance with the Department's Standard Operating Procedure 4-2, and bear all costs of obtaining the cores and repairing the core holes.

Acceptance for payment may be based on cores provided by the Contractor at its expense. These cores shall meet the strength requirements specified in Table 604.15-1. The Engineer will not accept concrete cores submitted for testing beyond 56 days.

Subsection 604.15 (pg. 542-544) 5-14-18, Compressive Strength Tests of Concrete; revise the last sentence of A. and add subsection 604.15.C.:

“604.15 Compressive Strength Tests of Concrete

A. General

The Engineer will determine concrete strength by tests performed during the progress of the work, and will use these tests to determine the strength of the concrete for acceptance and pay purposes. The frequency of testing will be as specified in the sampling and testing schedule of the Department’s Standard Operating Procedures.

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.

B. Concrete Acceptance Cylinders

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 at no additional charge to the Department.

Concrete cylinders submitted for testing beyond 28 days shall comply with the strength requirements specified in Table 604.15-1.

Table 604.15-1: Strength Requirements

Class of Concrete	Compressive Strength (psi) at:		
	Less than 31 days	31 to 42 days	43 days to 56 days
A, S, CP, SCC	3,000	3,300	3,500
D, DS, L	4,000	4,400	4,600
SH-SCC	4,500	4,950	5,175
X	Plans Requirement (Req)	Req. + Req. * (10%)	Req. + Req. * (15%)

If the acceptance cylinders fail to meet the specified strengths, the Contractor may drill core samples from the hardened concrete as verification of concrete strength instead of using concrete cylinders. The Contractor must provide QC data from companion cylinders that meet or exceed the required strength, and TDOT Materials and Tests shall perform a nondestructive test using a Swiss Hammer on the concrete to prove required strength is achieved. If the above mentioned requirements are met, the Contractor may then elect to drill a maximum of three core samples per

set of cylinders from the hardened concrete. The Contractor shall obtain the cores in accordance with the Departments Standard Operating Procedure 4-2, and bear all costs of obtaining the cores and repairing the core holes.

Acceptance for payment may be based on cores provided by the Contractor its expense. These cores shall meet the strength requirements specified in Table 604.15-1. The Engineer will not accept concrete cylinders and cores submitted for testing beyond 56 days.

The average compressive strength of the two cores taken to represent the low test cylinders will be considered to be the acceptance strength of the in-place concrete, provided that the cores are obtained and tested within 56 days after concrete placement. In accordance with 603.31, the Engineer will accept at a reduced pay concrete that meets the required strengths specified in 604.03 for the respective class, but fails to meet the requirements in Table 604.15-1.

All concrete used shall undergo acceptance testing. The Department will determine the method to formally accept in-place concrete that is represented by acceptance cylinders that have been lost, damaged, or destroyed. These methods may include coring or non-destructive testing.

C. Early Break Cylinders

Make and cure all test specimens according to AASHTO T 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.

Field Cured Specimens, as defined in AASHTO T 23, shall be cured in accordance with AASHTO T23- *Section 10.2. - Field Curing*. Cylinders shall be representative of the concrete placed and shall be cured in the same manner and method as the placed concrete. Specimens shall be protected from the elements in the same manner as the formed work. If specimens are to be used for determining when a structure is capable of being put into service the specimens should be removed from the molds at the time of removal of the form work.

Subsection 604.15 B (pg. 543-544), 12-30-19; **Concrete Acceptance Cylinders**; Revise 3rd paragraph:

If the acceptance cylinders fail to meet the specified strengths, the Contractor may drill core samples from the hardened concrete as verification of concrete strength instead of using the concrete cylinders. 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. Companion cylinders shall be made out of the same sample as the acceptance cylinders. If the above mentioned requirements are met, the Contractor may then elect to drill a maximum of three core samples per set of cylinders from the hardened concrete. The Contractor shall obtain the cores in accordance with the Department's Standard Operating Procedure 4-2, and bear all costs of obtaining the cores and repairing the core holes.

Subsection 604.16 (pg. 545) 5-15-17; Placing Concrete, A. General – revise the 1st paragraph to add Class DS in the first sentence:

“Unless otherwise specified, before placing a bridge deck overlay of Class D , Class DS, or Class L concrete, machine scarify the surface to be covered to a minimum depth of 1 inch. In areas inaccessible to machine scarifying, and in areas of spalling where steel reinforcement is exposed, remove deteriorated concrete using hand tools or other methods approved by the Engineer. After scarifying, clean the deck of all deleterious material. Do not allow traffic on the scarified deck.”

Subsection 604.19 (pg. 551-552), 5-14-18; Removal of Forms and Falsework, Revise the 3rd paragraph and 1. to incorporate references to subsection 604.15:

“The Contractor may release and remove falsework and supports under concrete structures 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 3000 pounds per square inch.”

Subsection 604.23 B (pg. 559), 5-13-19; **Water Method**; Revise 1st paragraph:

As soon as possible after applying curing compound to bridge decks and to other top slabs located above subgrade elevation, apply either a combination of damp burlap and white polyethylene sheeting or a white, co-polymer coated, absorbent, non-woven synthetic fabric, from a work bridge, taking care not to mar the surface of the deck. The sheeting material shall meet the performance requirements of ASTM C171. Immediately cover all other concrete slabs with materials suitable for use with the water cure. After placing the protective cover, immediately apply a mist spray and keep the cover thoroughly wet with a continuously fed soaker hose system for 120 hours.

Subsection 604.27 (pg. 560), 11-16-15; Rideability of New or Resurfaced Bridge Decks and Roadway Approaches, A. General, revise the 1st paragraph to the following:

“On all highway sections with a posted speed greater than 40 miles per hour, the following rideability provisions shall apply to new or resurfaced bridge decks and roadway approaches.”

Subsection 604.31 (pg. 567-568) 5-15-17; Basis of Payment, add Class DS to item and pay unit list:

604.31 Basis of Payment

The Department will pay for accepted quantities at the contract prices as follows:

<i>Item</i>	<i>Pay Unit</i>
Class A Concrete (Description)	Cubic Yard
Class D Concrete (Description)	Cubic Yard
Class DS Concrete (Description)	Cubic Yard
Class L Concrete (Description)	Cubic Yard
Class S Concrete (Description)	Cubic Yard
Steel Bar Reinforcement	Pound
Epoxy Coated Reinforcing	Pound
Scarifying	Square Yard
Applied Texture Finish	Square Yard
Hydro-demolition	Square Yard

Subsection 606.04.B.1(b) (pg. 578), 6-27-16; replace 1.b. with the following:

“(b) Except as provided in paragraph 2(b) below, develop an energy per blow in foot-pounds not less than 250 multiplied by R, where R is the required minimum bearing resistance of the pile in tons.”

Subsection 606.07.A. (pg. 581), 6-27-16; revise the 1st paragraph:

“Construct cast-in-place concrete piles of the design shown on the Plans and that consist of concrete cast in drilled holes or in steel shells or pipes driven to the required bearing. Use Class A concrete meeting **604**, or use Class X concrete, as required by design, meeting **604**. Provide and place suitable casing when required to prevent caving of the hole before concrete is placed.

Subsection 607.02 A (pg. 597), 12-30-19; **Materials**; Add to Materials list:

Polypropylene (PP) Pipe.....914.12
Steel Reinforced Thermoplastic Ribbed Pipe (SRTRP)....914.13

Subsection 607.02 B. 1 & 2 (pg. 597-598), X-XX-19; **Materials**; Add to Materials list:

1. **Pipe Diameters from 18 through 60 inches.** Provide materials meeting one of the following:
 1. Class III, IV, or V concrete pipe meeting either **914.02** or AASHTO M 86.
 2. Metal pipe meeting **915.02**.
 3. HDPE pipe meeting **914.10**.
 4. PVC pipe meeting **914.09**.
 5. PP pipe meeting **914.12**.
2. **Pipe Diameters Larger than 36 inches through 48 inches.** Provide materials meeting one of the following:
 1. Class III, IV, or V concrete pipe meeting **914.02**.

2. Metal pipe meeting **915.02**.
3. HDPE pipe meeting **914.10**.
4. PP pipe meeting **914.12**.

Subsection 607.02 D. 1 & 2 (pg. 599), 12-30-19; **Materials**; Add to Materials list:

1. **Pipe Diameters 15 through 36 inches.** Provide materials meeting one of the following:
 1. Class III, IV, or V concrete pipe meeting either **914.02** or AASHTO M 86.
 2. HDPE pipe meeting **914.10**.
 3. PVC pipe meeting **914.09**.
 4. PP pipe meeting **914.12**.
 5. SRTRP meeting **914.13**.
2. **Pipe Diameters Larger than 36 through 48 inches.** Provide materials meeting one of the following:
 1. Class III, IV, or V concrete pipe meeting **914.02**.
 2. HDPE pipe meeting **914.10**.
 3. PP pipe meeting **914.12**.

Subsection 607.07 (pg. 601), 12-30-19; **Materials**; Revise 6th paragraph:

HDPE, PP, SRTRP, and PVC pipe shall meet the performance requirement for soil-tightness, unless water-tightness is specified. Install joints so that the connection of pipe sections, for a continuous line, will be free from irregularities in the flow line.

Subsection 611.02 (pg. 620), 11-6-17; **Materials**, revise the last sentence of the last paragraph to remove the mylar reference:

“After obtaining the necessary approval, furnish the Engineer an electronic reproducible design file..”

Subsection 613.02 (pg. 633), 6-27-16; add the following section:

“Brick Paving Units 912.05”

Subsection 615.09 (pg. 644), 10-8-18; Table 615.09-1: Class P Concrete, Revise Table and footnote (4):

Table 615.09-1: Class P Concrete, Revise Table 615.09-1 and footnote (3).

Table 615.09-1: Class P 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 or Slump Flow (inches)
P	5,000 ⁽¹⁾	658	0.45	0-8 ⁽²⁾	2 $\pm$ 1 ⁽³⁾
P-SCC ⁽⁴⁾	5,000 ⁽¹⁾	658	0.45	0-6 ⁽²⁾	26 $\pm$ 5

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

(2) Air entraining is optional with the Contractor, unless otherwise shown on the Plans or shop drawings.

(3) Not to exceed 3 inches before the addition of high range admixtures, and not to exceed 10 inches after the addition of high range admixtures. If water-cement ratio is equal to or less than 0.35 then the maximum slump is 10 inches. If the water-cement ratio is 0.36 – 0.45, the maximum slump is 8 inches.

(4) Maximum coarse aggregate size of a No. 67 stone.

Subsection 615.09 (pg. 644), 11-16-15; Proportioning and Mixing of Concrete, update Table 615.09-1 and add the 3rd paragraph below the table, modify the last paragraph:

Table 615.09-1: Composition of Prestress Concrete Classes

Class of Concrete	Minimum 28-Day Compressive Strength (psi)	Minimum Pounds Cement per Cubic Yard	Maximum Water/Cement Ratio (pound/pound)	Air Content %	Slump or Slump Flow (inches)
P	5,000 ⁽¹⁾	658	0.45	0-8 ⁽²⁾	2 $\pm$ 1 ⁽³⁾
P-SCC ⁽⁴⁾	5,000 ⁽¹⁾	658	0.45	0-6 ⁽²⁾	25 $\pm$ 4

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

(2) Air entraining is optional with the Contractor, unless otherwise shown on the Plans or shop drawings.

(3) Not to exceed 3 inches before the addition of high range admixtures, and not to exceed 10 inches after the addition of high range admixtures. If water-cement ratio is equal to or less than 0.35 then the maximum slump is 10 inches. If the water-cement ratio is 0.36 – 0.45, the maximum slump is 8 inches.

(4) Maximum coarse aggregate size of a No. 67 stone.

Comply with all applicable provisions of **604.03** except as modified herein.

Submit a concrete design to the Department for review and approval. In addition to the proportions, identify in the design submittal the source or brand of all materials and the type of cement to be used. The Contractor may use Type I or Type III cement, unless otherwise specified. Do not use calcium chloride. Use a retardant admixture when the ambient temperature is 75 °F or higher. The slump of the concrete shall be 2 inches with a tolerance of ± 1 inch at the time of placement. When an approved superplasticizer is to be used, the slump of the concrete shall be the same as above before the superplasticizer is added to the mix. After the addition of the superplasticizer, the slump may be increased to a maximum of 8 inches at the time of placement.

The slump flow of self-consolidating concrete shall be determined and within the design and production tolerances stated in **Table 615.09-1**. Include chemical admixtures in the self-consolidating concrete mixture as specified in **Table 604.03-5** based on the ambient air temperature and expected weather conditions. Approved viscosity modifying admixtures (VMA) may be used as part of the chemical admixtures if they are shown in the approved mixture design.

Handle, measure, and batch materials; mix concrete; and comply with the limitations of mixing as specified in **501.09**, **501.10**, and **501.11**, respectively.

Make concrete test specimens for Class P and Class P-SCC, in accordance with AASHTO T 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 as specified above with additional curing water, as provided in AASHTO...

Subsection 615.17 (pg. 652), 5-18-15; Table 615.17-1: Manufacturing Tolerances in Standard Sections, Update Table 615.17-1:

Table 615.17-1: Manufacturing Tolerances in Standard Sections

Description	Tolerance	
	I-Sections	Box Sections
Nominal Depth	± 1/2 inch	± 1/2 inch
Nominal Width	± 1/2 inch	± 1/2 inch
Nominal Length	Computed Elastic Shortening ±1/2 inch	Computed Elastic Shortening ±1/2 inch
Variation in Straightness, inches	1/4 inch x (Total Length in feet)/10	1/4 inch x (Total Length in feet)/10
Variation in Camber, inches	Beams in any 1 span not more than: 1/8 inch x (Total Length in feet)/10	Beams in any 1 span not more than: 1/8 inch x (Total Length in feet)/10
Location of Voids	-----	Length ± 1/2 in Wall Thickness ± 1/2 in
Bearing	Full Bearing - Full Width of Beam	Full Bearing on at Least 2/3 of Width of Beam
Tendon Placement	± 1/2 inch	± 1/2 inch
Reinforcing Steel Placement	± 1/2 inch	± 1/2 inch
Reinforcing Steel Concrete Cover	± 1/2 inch	± 1/2 inch
Reinforcing Steel Splice Lengths	Minus 1-1/2 inches	Minus 1-1/2 inches

Subsection 619.03 (pg. 671,672), 12-30-19; **Proportioning**; Revise Table 619.03-02 Polymer Modified Concrete-Required Properties & Revise last paragraph:

Table 619.03-2: Polymer Modified Concrete - Required Properties

Property	Value
Slump (measured 4 to 5 minutes after discharge from a continuous mixer)	4 to 6 inches
Air Content	0 to 8 %
Water-Cement Ratio	Not more than 0.40 considering all the non-solids as part of the water
Compressive Strength	As specified in plans

The polymer admixture shall contain a minimum of 46% solids. ~~Submit to the Department in writing a-A concrete mix design is required for identifying constituent materials, the name and location of aggregate suppliers, and the type and brand of the cement and polymer proposed for use.~~ Do not place any concrete before obtaining the Department's approval of the design. Do not change materials without the Engineer's written approval.

Subsection 619.04 A (pg. 672-673), **EFFECTIVE 01-01-21; Mixer**; Revise entire subsection:

A. Volumetric Continuous Mixers

Produce PMC overlay in a volumetric continuous mixing plant provided that the manufacturer's equipment meets the tolerance requirements of Section 501.09. Use a volumetric continuous mixing plant that conforms to the following:

5. The unit shall be equipped with:
 - e) Calibrated proportioning devices for each material added to the concrete mix and perform mixing by a continuous auger and/or paddles.
 - f) Proportioning controls that may be set and secured for different materials and mixes.
 - g) Recording meter that is visible at all times and furnishes a ticket printout with the calibrated measurement of the mix being produced.
 - h) Separate bins and gate openings for each type of material, including a watertight storage bin for cement. Cover the aggregate bins with tarpaulins or by other approved methods when required.
6. The unit shall have a stamped plate from the Volumetric Mixer Manufacturers Bureau (VMMB) stating the equipment conforms to ASTM C685. The plate shall be attached in a prominent place and have the following plainly marked: the gross volume of the transportation unit in terms of mixed concrete, the discharge speed, and the mass calibrated constant of the machine in terms of volume.
7. The volumetric mixing plant shall be operated and calibrated by a Volumetric Mixer Operator certified by VMMB and holds 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 $\pm 1\%$ 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.

8. Provide equipment necessary for TDOT to perform tests to determine moisture and gradations of aggregates in accordance with SOP 1-1. If gradations are out of tolerance or aggregate moisture content varies by 5% or more, additional yield checks and/or calibration will be required.

If the mixer fails to discharge a uniform mix at any time, production of concrete shall cease until any problems are corrected.

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 VMMB Certified Volumetric Mixer Operator

The form shall be delivered to the Inspector at the site of the work. Loads that do not carry such information or do not arrive in satisfactory condition shall not be used.

~~Use a continuous type mixer, calibrated to accurately proportion the specified mix, to mix and discharge the PMC overlay. Equip the mixer so that the proportions of the cement, natural sand, and coarse aggregate can be fixed by calibration of the mixer and cannot be changed without destroying a seal or other indicating device affixed to the mixer by the Engineer.~~

~~Equip the mixer with a flow meter for calibrating the water supply portion of the mixer. In addition, also equip the mixer with a cumulative type water meter that can be read to the nearest 0.1 gallon. The water meters shall be readily accessible, accurate to within 1%, and easy to read. The Engineer will check both water meters each time the mixer is calibrated.~~

~~Use approved methods to add the admixture so as to keep it separated as far as is practicable.~~

~~Calibrate the continuous type mixer to the Engineer's satisfaction before starting the work. Conduct yield checks for each 50 cubic yards of mix. Recalibration will be necessary when indicated by the yield checks, and at any other times the Engineer deems necessary to ensure proper proportioning of the ingredients. Do not use continuous type mixers that entrap unacceptable volumes of air in the mixture. Do not use batch type and drum type transit truck mixers or rotating drum batch type mixers to mix PMC overlay concrete. Keep the mixer clean and free of partially dried or hardened materials at all times. Ensure that the mixer consistently produces a uniform, thoroughly blended mixture within the specified air content and slump limits. Immediately repair or replace malfunctioning mixers.~~

Subsection 619.11 (pg. 676), 12-30-19; **Curing**; Remove 6th paragraph:

~~Take a random 1 quart sample of the latex off each concrete mobile supplier and deliver it to the Division of Materials and Tests lab for evaluation. An engineer from the office of Bridge Inspection and Repair shall be present for the initial calibration of the concrete mobile. The Engineer will check and measure the volume of the latex, cement, aggregate, and water at the concrete mobile before and after as an approximate check of the calibration of the concrete mixer.~~

Subsection 622.03 (pg. 686) 12-2-16; Add the following paragraph at the beginning of the section:

“Same-as designs shall not be submitted for Shotcrete.”

Subsection 622.03 (pg. 687), 12-30-19; **Proportioning and Quality Assurance of Shotcrete**; Remove 1st paragraph:

~~Same as designs shall not be submitted for Shotcrete.~~

Subsection 622.03 (pg. 687) 10-8-18; Proportioning and Quality Assurance of Shotcrete, Modify Table 622.03-2, add a sentence to the end of the paragraph between tables 622.03-1 and 622.03-2:

Table 622.03-1: Shotcrete Performance Requirements

Parameter	Value
3-Day Compressive Strength (psi)	2000
28-Day Compressive Strength (psi)	4000
Minimum Cementitious per cubic yard	660
Maximum Water/Cement (pound/pound)	0.45
Air Content (%)	7-10 ⁽¹⁾
7-Day Maximum Absorption (%)	8

⁽¹⁾ Air content acceptance range shall be between 7-10%, with sampling at the truck chute. Air entrainment is required for wet-mix shotcrete but not for dry-mix shotcrete.

Aggregate for shotcrete shall meet the strength and durability requirements of AASHTO M6/M80 and the gradation requirements specified in Table 622.03-2. An intermediate size aggregate may also be used as an additional component if needed to meet gradation. Aggregates failing to comply with Table 622.03-2 may be used if preconstruction testing as specified in **622.04** proves satisfactory results.

Table 622.03-2: Gradation Requirements

Sieve Size	Percent Passing by Weight
3/4 inch	100
1/2 inch	98-100
3/8 inch	90-100
No. 4	70-85
No. 8	50-70
No. 16	35-60
No. 30	20-50
No. 50	8-20
No. 100	0-10

Subsection 622.03 A (pg. 687-688), 12-30-19; **Proportioning**; Revise 5th paragraph:

Chemical admixtures to be incorporated into the shotcrete shall ~~all be from the same manufacturer, and shall be incorporated into the shotcrete according to the manufacturer's recommendations, subject to the Engineer's approval.~~ 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 Department's Standard Operating Procedure 4-4. Ensure that accelerators (if used) are compatible with the cement used, are non-corrosive to steel, and will not promote other detrimental effects such as cracking and excessive shrinkage.

Subsection 622.03 (pg. 686-688) 5-14-18; Add subsection C: Placement of Shotcrete:

"C. Placement of Shotcrete

An ACI-certified Shotcrete Nozzleman shall be utilized to properly place shotcrete."

STATE**O F****T E N N E S S E E**

(Rev. 6-27-16)

(Rev. 12-2-16)

(Rev. 5-15-17)

(Rev. 11-6-17)

(Rev. 10-8-18)

(Rev. 5-13-19)

(Rev. 12-30-19)

January 1, 2015

Supplemental Specifications - Section 700**of the****Standard Specifications for Road and Bridge Construction****January 1, 2015****Subsection 705.06** (Page 719), 5-13-19; **Installation of Posts**; Revise 3rd Paragraph:

To validate proper installation of posts, for each guardrail contractor/installer doing work for the Department, the Regional Operations and Materials and Tests offices may select any post for verification. If the posts are found to be in accordance with the Plans and Specifications, the Contractor may re-install the posts if they were not damaged during the pulling process. If the post length is found to be deficient, the Department will require the contractor/installer to remove the entire run of guardrail or end terminal and replace it properly at no cost to the Department.

Subsection 709.02 E (pg. 738), 6-24-19; **Machined Riprap**; Revise last paragraph:

When using rock or stone as riprap, ensure that the material meets the quality requirements in 903.25. Obtain the Engineer's approval of the material before using.

Subsection 712.04 (pg. 758), 12-30-19; **General**; Revise 3rd paragraph:

The Contractor may splice stationary U-Post sign supports that are 3 lbs/ft or less, provided the splice is a minimum of 18 inches. In addition, drive the stubs for the splice as required above and so as not to extend above 18 inches from ground level. A splice is only allowable with U-Posts and shall not be permitted for any other post types (square tube, round post, I-beam, etc.). Fasten the splice with four bolts, two placed at each end of the splice. In general, work being performed at spot locations and of short duration will necessitate the use of portable supports properly weighted for stability.

Subsection 712.04 (pg. 759), 12-2-16; A. Flaggers, add ABET Accredited University Programs to the list of flagger training:

- “1. American Traffic Safety Services Association (ATSSA)
2. National Safety Council (NSC)
3. Tennessee Transportation Assistance Program (TTAP)
4. ABET Accredited University Programs”

Subsection 712.04 (pg. 759). 11-6-17; A. Flaggers, replace the last paragraph with the following:

“The Department will review and determine if an alternative training program is acceptable prior to use. Alternative training programs shall meet all MUTCD requirements and follow FHWA guidance.

The Department will consider flaggers to be a general requirement of traffic control and will not make direct payment for such.

Coordinate flagging operations in a manner that causes as little delay to the traveling public as possible. Delays shall be kept within 2 minutes or ¼ mile, but shall not exceed 5 minutes or a 1 mile maximum, unless prior authorization is granted by the Department.”

Subsection 712.04.B (pg.759-760) 12-2-16; revise the second paragraph of B. THP Troopers and Uniformed Law Enforcement Officers:

“B. THP Troopers and Uniformed Law Enforcement Officers

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 marked 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 712.04 G. (pg. 762), 11-6-17; G. Lane Closures, add the Type of Facility and Requirement table to the end of the subsection, revise the last sentence:

“G. Lane Closures

Hold the length of a lane closure to the minimum length required to accomplish the Work. Locate advanced warning signs for the Project so as to not overlap with the advanced warning signs for lane shifts and lane closures.

Use drums in all transition tapers for lane closures on multi-lane roads.

Contractor’s Staff performing lane closure shall have the following certifications to close lanes on TDOT facilities and shall be onsite during each lane closure performed.

Type of Facility	Requirement
Two Lane	Flagging Operations Certification (Shall comply with Subsection 712.04 A)
Multi-Lane	*ATSSA Traffic Control Technician Training or equivalent
Controlled Access Freeways & Expressways	*ATSSA Traffic Control Technician Training or equivalent

*Proof of certification shall be provided to the Engineer at the Pre-Construction Meeting.”

Subsection 712.09 (pg. 769), 12-2-16; change Uniformed Police Officer to Uniformed Law Enforcement in the last paragraph:

“The Department will pay for Uniformed Law Enforcement Officers provided by the Contractor at the invoice price of the work plus 5%, not to exceed \$50 per hour for the hours present on the Project. No compensation will be made for drive time.”

Subsection 713.04 (pg. 772) 5-15-17; Construction Methods and Requirements; add steel requirement as the last paragraph:

“Ensure steel meets all specifications in **602.04.**”

Subsection 713.04.C.6 (pg. 774), 6-27-16; replace C.6. with the following:

“6. Concrete. Use either (1) Class A concrete meeting 604.03 or (2) Class X concrete with a f’c as identified in the plans or required by the design. If Class X concrete is required, use a mix meeting the minimum requirements of **604.03** for Class A concrete, but with a cementitious material quantity necessary to produce the specified strength.”

Subsection 713.04.C.8 (pg. 774), 6-27-16; add sentence to the end of 8.:

“8. Setting Anchor Bolts and Stubs. Set anchor bolts and stubs for sign supports to proper locations and elevations with templates, and carefully check them after constructing the sign foundation and before the concrete has set. Anchor rods shall conform to the requirements of section **730.11**”

Subsection 714 (pg. 779-800), 11-6-17; Revise the subsection as follows:

“MATERIALS

714.02 Materials

Provide materials as specified in **917** and as follows:

Portland Cement Concrete, Class A	604
Crushed Stone Grading D.....	903.05
Steel Bar Reinforcement for Concrete Structures.....	907.01
Welded Steel Wire Fabric	907.03
Gray Iron Castings.....	908.07
Inorganic Zinc Paint	910.03
Cement Concrete Curing Materials	913
Conduit.....	917.05 or 917.07

Within 30 days after the issuance of the work order, submit to the Engineer, four collated sets of the manufacturer's descriptive literature and technical data, fully describing the types of lighting equipment proposed for use. In the descriptive literature, identify the manufacturer and model, 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 when applicable:

1. Complete photometric data of luminaires as published by the manufacturer with independent testing laboratory results.
2. Computer printouts showing illumination levels throughout each interchange area where high mast luminaires are to be installed.
3. General details of light standards, breakaway bases, and bracket arms. For light standards taller than 30 feet, submit one set of design calculations and six prints of “Design” or “Shop” drawings to the Division of Structures for approval purposes. The Department will review these drawings at the earliest possible date, and will return two prints 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.
4. Highmast tower details with a set of design calculations for each height including access hole, base, anchorage, head frame, and lowering device. Include specification references for materials and location, type, size, and extent of welds. In addition to the set of design calculations, submit six prints of “Design” or “Shop” drawings for each highmast tower height to the Division of Structures for approval purposes, in a manner similar to that specified in Item 3 above for light standards taller than 30 feet.
5. Dimension sheets and performance data on all related equipment.

The Engineer will retain one copy and forward one copy each to the the local entity (city or county engineer) and the Traffic Operations Division for their review.

Also include with the submittal sets detailed scale drawings of all non-standard or special equipment and of all proposed deviations from the Plans. Deviations from the Plans or Specifications require approval from the Traffic Operations Division. Include a letter requesting deviations or alternate materials in the submittal for Traffic Operations Division approval. Upon request, submit for approval sample articles of materials proposed for use. The

Department will not be liable for any materials purchased, labor performed, or delay to the Work prior to such approval.

In addition to the above, include with each submittal a notarized letter certifying that all lighting system materials listed in the submittal conform to the Plans and Specifications. Also submit to the Engineer a statement from the Maintaining Agency that the system is acceptable to the Agency.

714.03 Codes

Furnish material and perform all work in strict accordance with the latest revision of the National Electrical Code, the National Electrical Safety Code, the Illuminating Engineering Society (IES) publications, ANSI standards, and the codes, regulations, and rules prevailing in the area in which the Work is being performed, as applicable.

714.04 Reserved**CONSTRUCTION REQUIREMENTS****714.05 Conduit**

Install conduit of the type and size specified at the locations shown on the Plans, or as directed by the Engineer. Install pull or drag wires of the type and size specified in conduit at the locations shown on the Plans.

A. Underground Conduit

1. **General.** Underground conduit shall consist of encased or direct burial conduit. Install conduit in a trench excavated to the dimensions and lines specified.

Before beginning any excavation, determine the location of all electrical, drainage, and utility lines in the vicinity, and perform work so as to avoid damaging these facilities. Ensure that the conduit will be located so as to avoid conflict with proposed guardrail, sign posts, and other features.

Build conduit runs in straight lines where possible. Where sweeps are necessary, use standard long sweep conduit bends when feasible, and meet the minimum radius required by the National Electric Code. Install pull boxes at intervals so that the tensile strength of the conductors will not be exceeded.

Obstructions encountered when excavating trenches for underground conduit may require minor changes, such as in locations of conduit runs and pull boxes. Obtain the Engineer's approval before making such changes. Where possible, provide a minimum of 12 inches between the finished lines of conduit runs and utility facilities, such as gas lines, water mains, and other underground facilities not associated with the electrical system. Where the conduit run is adjacent to concrete walls, piers, footings, and similar structures, maintain a minimum of 4 inches of undisturbed earth or firmly compacted soil between the conduit and the adjacent concrete or, when the conduit is encased, between the encasement and the adjacent concrete.

Unless shown on the Plans, do not excavate trenches in existing pavement or surfaced shoulders to install conduit. If it is necessary to place a conduit under an existing pavement, install the conduit by jacking or other approved means with galvanized rigid steel conduit or schedule 80 PVC conduit.

Keep jacking and drilling pits at least 10 feet from the edge of the paved shoulder or sidewalk unless otherwise directed by the Engineer. When the Plans specifically allow excavation of a trench through an existing pavement or surfaced shoulder, restore the pavement and/or surface and base to their original condition. Do not leave boring pits open for extended periods of time.

Unless otherwise specified, cut trenches for conduit on a slight grade for drainage, and make the walls of the trench essentially vertical. Tamp the bottom of the trench as necessary to produce a firm foundation for the conduit.

Excavate trenches for rigid metallic conduit, with or without encasement, to a minimum depth of 18 inches, plus conduit diameter, measured from the finished subgrade.

Sheet and brace the trenches as required, and adequately support all pipe and other structures exposed in trenches as necessary to prevent damage.

Ream metallic conduit after threads are cut. Ream other conduit as necessary. Cut all ends square and to butt solidly in the joints to form a smooth raceway for cables.

Ensure that conduit joints form a water-tight seal. Coat metallic conduit threads with pipe compound and then securely connect. Make conduit joints with the materials and in the manner recommended by the conduit manufacturer and as approved by the Engineer.

Install conduit bushings in conduit where necessary and required for protection of the conductors. When the conduit is installed for future use, ensure that the ends of metallic conduit runs are properly threaded and capped, and that the ends of non-metallic conduit runs are satisfactorily plugged or capped to prevent water or other foreign matter from entering the conduit system.

a. Encased Conduit. Place encased conduit under roadway and paved shoulders unless trenching is required for installation at the locations shown on the Plans. Unless otherwise specified, construct encasement as follows:

- (1) Construct the encasement of Class A concrete meeting the requirements of **604**.
- (2) Extend the encasement of conduit under roadway pavements or surfaces to the outer edges of the surfaced or paved shoulders, or 1 foot beyond the outer edge of the sidewalk, or 1 foot beyond the outer edge of the curb when no shoulder or sidewalk is indicated.
- (3) Extend the conduit at least 6 inches beyond the encasement.
- (4) Encase the pipe with a minimum of 3 inches of concrete.
- (5) Plug the ends of the conduit temporarily to prevent the entrance of concrete or other foreign material.
- (6) Do not encase any conduit with concrete until inspected and approved by the Engineer.
- (7) Cure concrete encasement as specified in **604.23**, except that the curing period may be reduced to 24 hours if backfilling is to proceed at the time specified in **714.05.A.2**.

b. Direct Burial Conduit. When rock is encountered in the bottom of the trench, install the conduit on a bed of well compacted fine grain soil at least 4 inches thick.

- 2. Backfilling Conduit.** Do not backfill encased conduit until the concrete encasement has cured a minimum of 24 hours. After the Engineer has inspected and approved the installation of direct burial conduit, promptly backfill to the required grade with approved material in layers not exceeding 6 inches in loose depth, and compact each layer as directed by the Engineer.

B. Conduit on Structures

Install conduits, conduit fittings, hangers, expansion fittings, and accessories on as shown on the Plans and, unless otherwise specified, in accordance with the following:

1. Run conduit parallel to beams, trusses, supports, pier caps, and similar features in the most direct manner.
2. Install horizontal runs on a slight grade, without forming low spots, to ensure proper drainage.
3. Run conduits with smooth, easy bends.
4. Hold conduits in boxes with locknuts and provide bushings for protection of the conductors.

C. Testing Conduit

After completing the installation of conduit, test it with a metallic mandrel in the presence of the Engineer. Use 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 having a slightly larger diameter than the conduit.

Test conduits that have been installed under a previous contract with a mandrel and clean as described above before installing the cables.

714.06 Pull Boxes

Construct pull boxes in accordance with the design, dimensions, and at the locations shown on the Plans. Construct concrete pull boxes of Class A concrete meeting the requirements of **604**. Place non-metallic pull boxes only in non-traffic bearing locations and not in paved areas.

Provide a cast iron frame and cover or reinforced concrete cover, as shown on the Plans, with each pull box.

Plug unused conduit entrance holes and openings for conduit to be extended by others with suitable plugs of plastic, bituminous fiber, or other approved material to prevent the entrance of foreign matter.

714.07 Underground Cable for Lighting Circuits

Underground cable for lighting circuits shall consist of direct burial cable, preassembled cable in duct, or cable in conduit, as shown on the Plans.

If it is necessary to install a cable under an existing pavement or surfaced shoulder, install conduit, when specified, in accordance with the applicable provisions of **714.05**, and place the cable within the conduit.

Construct walls of trenches for cables to be essentially vertical. Unless otherwise specified, install underground cable as follows:

1. Excavate trenches for direct burial cable to a minimum depth of 24 inches plus the cable diameter as measured from finished subgrade.
2. In general, locate the trenches to avoid conflict with proposed guardrail, sign posts, and other features.
3. Protect direct burial cable, and preassembled cable in duct, in trenches by cushioning with sand or earth that passes a 1/4-inch screen. Place the cable, or preassembled cable in duct, and sand or earth in the trench so that a minimum 3-inch thickness of the cushion material will completely surround each cable.

A. Direct Burial Cable

Do not unreel cables and pull into the trench from one end. Unreel the cables, lay them alongside the trench, and then lay in the trench. Allow the cables to “snake” slightly in the trench to provide adequate slack for settling of earth. Ensure that there are no crossovers of cable in the trench. Where cable is brought up into the base of the lighting standard, leave sufficient slack for making the connections inside the standard.

B. Preassembled Cable in Duct

When installing in the trench, do not pull preassembled cable in duct taut, but allow it to “snake” in the ditch to provide not less than 18 inches slack per 100 feet of trench. The minimum bending radius on the cable duct shall be 18 inches. Where the duct is brought into the base of the lighting standard or into a pull box, leave sufficient length for trimming the duct to expose enough cable to allow for the connections to be made inside the standard or pull box.

C. Cable in Conduit

Carefully pull cables in conduits into place using approved methods so that the cable will be installed without electrical or mechanical damage. Pull all cables within a single conduit at the same time. If necessary to ease the pulling, use a lubricant of the type recommended by the cable manufacturer. When cables are pulled through hand holes in pole shafts, place a pad of firm rubber or other suitable material between the cable and the edges of the opening to prevent cable damage.

After the cable has been installed in the conduit, seal the ends of buried conduit with approved pliable and non-hardening material to prevent the entrance of dirt, moisture, or other foreign material.

D. Splices

Splice conductors as shown on the Plans. Only make splices at accessible points, such as handholes and pull boxes, unless otherwise shown on the Plans. After making a conductor splice, insulate it with heat-shrinkable tubing, supplied by the manufacturer, with an adhesive coating on the inner wall.

E. Ground Wire

Install ground conductors of the type and size shown on the Plans, and to be continuous in trenches with direct burial cable, and continuous inside preassembled cable in duct, and in conduit. Connect the ground conductors

to the ground rod at all control points, to the ground lug in pole foundations, and to all metallic conduit runs using a grounding bushing, except that the connections to conduit in pole foundations may be omitted. Make all connections as shown on the Plans.

F. Backfilling Underground Cable

Backfill cable as specified in **714.05**.

G. Cable Identification

To assist in the identification of circuits at the pull boxes, mark the phase conductors with colored rubber-based, or equivalent, paint. When final connections are made, provide permanent tape wire markers to identify the branch circuit conductors (X1A, X1B, etc.), neutral (X1N, etc.), and the ground (g).

714.08 Light Standards

Install light standards of the designated design, kind, size, and class in accordance with and at the locations shown on the Plans. Ensure that the installed standards, complete with the bracket arm(s) and luminaire(s) as specified, provide the mounting height shown on the Plans. Determine the pole height as required by bracket arm upsweep, slope conditions, and similar characteristics.

A. Foundations for Light Standards

Consider transformer bases to be an integral part of the lighting standard unless otherwise specified.

1. Bolt-Down Base Pole Foundations

- a. **Concrete Foundations.** Excavate a hole of the size and depth shown on the Plans. Remove and dispose of all excavated material as directed by the Engineer. Place anchor bolts of the type and size specified according to the pole manufacturer's recommendations, and securely hold to ensure proper position in the completed foundation. Ensure that no realignment of anchor bolts will occur after the foundation is poured. Accurately place reinforcing steel and securely hold to avoid displacement.

Accurately place conduits in foundations, orient them in the proper direction to accommodate service cables, and securely hold to avoid displacement.

Place Class A concrete in the excavated area against undisturbed earth to an elevation 4 inches below the finished ground line, and in an approved form from 4 inches below said ground line to the finished top of foundation elevation, as specified. Construct the foundation with a continuous concrete pour. Chamfer the edges of the top and formed portion of the foundation. Apply a Class 2 finish, as specified in **604.21.B**, to the portion of the foundation above grade and within 4 inches of grade.

- b. **Metal Foundations.** Install metal foundations where shown on the Plans and, if desired, at locations where installation is possible without predrilling the hole.

- 2. **Prestressed Concrete Butt Base Pole Foundations.** Excavate prestressed concrete butt base lighting standard foundations using manual or mechanical methods. Dig or drill the holes to the depth and the diameter shown on the Plans. Place and compact in the bottom of the hole 6 inches of crushed stone, meeting the requirements of **903.05**, Grading D.

3. **Wood Poles.** Excavate for wood poles as specified for prestressed concrete butt base pole foundations in **714.08.A.2.** Dig or drill the holes to the depth shown on the Plans and in such diameter to allow satisfactory use of mechanical tamping equipment.

B. Light Standard Installation

Handle the standards or poles as recommended by the manufacturer and approved by the Engineer. Accomplish erection without marring the finish or otherwise damaging the standard. Ground the light standards as shown on the Plans. When installing lighting on a bridge, review the proposed bridge plans or the completed structure before ordering the standards.

1. **Bolt-Down Base Poles.** Set standards with bolt-down bases on foundations constructed as specified in **714.08.A.1.** Use metal shims supplied with the poles to plumb the pole, if the twin bracket arm type is used; and, unless otherwise specified, to rake or lean the pole backward 4 inches, if the single bracket arm type is used.
2. **Prestressed Concrete Butt Base Poles.** Place prestressed concrete butt base lighting standards in the hole and on the layer of crushed stone prepared as specified in **714.08.A.2.** Position the pole in the center of the hole at grade and hold in place. Rake the lighting standards with single bracket arms as specified for poles with bolt-down bases in **714.08.B.1.** Set lighting standards with two bracket arms plumb. Fill the space surrounding the pole butt-base with crushed stone, applied in 6-inch layers. The crushed stone shall meet the same requirements specified for the stone foundation in **714.08.A.2.** Moisten the stone backfill material as necessary, and thoroughly compact each layer with mechanical tamping equipment. Continue the backfill with crushed stone to the depth of the bottom edge of the cable entrance in the butt-base. After completing the installation of the electrical cable, continue placing the crushed stone backfill in 6-inch layers, and compact to a depth of 1 foot below grade. Backfill the remaining 12 inches with soil in two equal layers, and thoroughly compact each layer.
3. **Wood Poles.** Place wood poles in holes excavated as specified in **714.08.A.2.** Set the pole in the center of the hole, with any vertical curvature of the pole located in the plane of the lines, and rake in a direction opposite that of the unbalanced stress where a guy or underbrace is specified. Backfill the hole with approved material applied in 6-inch layers, and thoroughly compact each layer with mechanical tamping equipment. Install cross arms and guying components, when specified, as shown on the Plans.

C. Highmast Tower Installation

Install standards with lowering devices on foundations constructed as shown on the Plans. Ensure that the standards are plumb. Assemble the shaft in the Engineer's presence. Do not perform any field welding between sections of the shaft. Erect the tower according to the manufacturer's recommended procedures and under the manufacturer's supervision. Make adjustments to align all parts and ensure operation. Arrange for the manufacturer or its representative to instruct the local utility in the proper operation of the lowering device.

714.09 Bracket Arms

Install, on the lighting standards, bracket arms of the specified type, design, kind, dimensions, and number as shown on the Plans.

714.10 Luminaires

Use the following luminaire types on the roads and bridges: High Intensity Discharge (HID) which includes High Pressure Sodium (HPS) and Metal Halide (MH); Fluorescent and Induction lamps; and Light Emitting Diode (LED).

Install luminaires of the design and size shown on the Plans, and level according to the manufacturer's recommendations, as shown on the Plans and as approved by the Engineer. Provide glare shields on luminaires when shown on the Plans.

Clamp the pole and bracket cable in the proper terminals on the terminal board in the luminaire, and then splice the cable to the proper phase and neutral conductors outside of the handhole in the pole base. After other required circuit splices are made outside of the handhole, place all of the wire inside the handhole. Leave slack in all cables for future maintenance. Attach a suitable identification tag to each of the phase cables.

Clean luminaire reflector surfaces and glassware after installation. Perform cleaning, if required, according to the luminaire manufacturer's recommendations.

Ensure that luminaires for sign lighting are adjustable both horizontally and vertically.

High Intensity Discharge (HID)

High Intensity Discharge (HID) luminaires shall meet IES standards from LM-51-00 to LM-35-02. The HID luminaire shall be covered by a one-year written warranty starting from the system acceptance date. All of the other electrical and mechanical component parts of the HID shall be covered by a five-year written warranty starting from the system acceptance date. The signed warranty certificate shall be submitted prior to final payment.

Light Emitting Diode (LED)

Light Emitting Diode (LED) luminaires shall be manufactured in accordance with ANSI C136.37-2011 (or recent version). All testing and data sheets for proposed LEDs shall be included in the submittal package and shall include, but not limited to, the following: Illuminating Engineering Society of North America (IESNA): LM-79-08, LM-80-08, RP-8-14, TM-3-95 and TM-15-07 (all should be up-to-date versions). In addition to these requirements, the LEDs shall meet the following requirements:

1. Finished surface: Furnish luminaires with the color mentioned in the plans. The surface of luminaire housing shall meet UL-1598 listed for wet locations, ASTM B117 for salt chamber exposure, and ASTM D1654 for rust creepage.
2. Thermal Management: the luminaire shall start and operate in the ambient temperature range of -25C to +25C.
3. Optical Assembly: The LED optical assembly package shall have a minimum Ingress Protection rating of IP 66 according to ANSI/IEC 60529. The luminaire shall have a standardized refractor/reflector to meet the required optical distribution as required by the plans. The optical assembly shall utilize high brightness, long life, minimum 70 color rendering index (CRI), (3000 K-5700 K) color temperature (+/-300 K) LEDs binned according to ANSI C78.377. Lenses shall be UV-stabilized acrylic or glass. Provisions for house-side shielding shall be provided when specified.

4. Prevent the entrance of wildlife by limiting openings around the pipe tenon mounting area.
5. Electrical Parts (including Safety Testing) shall comply with an ANSI C136.41 with 7-pin receptacle that is fully pre-wire for LED driver's control.
6. Documents for the materials submitted need a certification from a National Voluntary Laboratory Accreditation Program (NVLAP) and that lab must be recognized by the U.S. Department of Energy.

LED Luminaire Warranty

The entire LED luminaire and all of its component parts shall be covered by a 10 year written warranty covering materials, fixture finish, and workmanship. Failure is when one or more of the following occur:

1. Negligible light output from more than 10 percent of the LED packages.
2. Condensed moisture inside the optical assembly.
3. Driver that continues to operate at a reduced output below 15 percent of the rated nominal output. The warranty period shall start from the system acceptance date. The signed warranty certificate shall be submitted prior to final payment.

714.11 Lamps

Install lamps of the design, type, and size, and at the locations shown on the Plans.

714.12 Installation of Overhead Wires

Install overhead wiring, when specified, as shown on the Plans.

714.13 Cable Markers

When shown on the Plans, place precast or cast-in-place concrete cable markers, of the dimensions indicated, at all locations where lighting cables make an abrupt change in direction. Construct the markers of Class A concrete meeting **604**. Imprint an arrow on each marker to indicate the direction of the cable run as it approaches and leaves the marker. Also imprint the circuit number on the marker.

Recess the markers into the ground approximately 3 inches, unless otherwise specified.

714.14 Control Center

Furnish and install a service pole or poles of the design, type, size, and class, and at the locations shown on the Plans. Install the service pole(s) as specified in **714.08** and as shown on the Plans. Set the service pole(s) plumb.

Notify the power company, at least 30 days before connection, of the need to furnish power to operate the lighting system.

Unless otherwise specified, furnish and install all the control center equipment and electrical supply facilities. The electrical supply facilities shall include the necessary service conduit from the control cabinet to the delivery point designated on the Plans.

Construct a concrete slab, of the dimensions and thickness indicated, around the service pole foundation. Construct the slab of Class A concrete meeting the requirements of **604**, and reinforce the slab, if specified, as shown on the Plans.

Construct a 6-foot chain-link fence and gate of the size specified around the control center as shown on the Plans and as specified in **707**.

714.15 Field Painting

After erection is completed, thoroughly clean steel standards that are not galvanized, and then apply two coats of inorganic zinc paint meeting the requirements of **910.03**. Perform painting as specified in **603**.

If the shop coat of prime paint is damaged, cover the damaged areas with a coat of the same type of paint as used for the original primer coat, and allow it to completely dry before applying the first coat of aluminum paint.

If the finish on galvanized steel materials is scratched, chipped, or otherwise damaged, the Engineer will reject the material, or may allow it to be repaired as specified in **713.04.B**.

714.16 Testing After Installation

Install all materials and equipment to form a complete installation ready for operation, unless otherwise specified.

After the installation is completed, test the lighting system in the presence of a Department representative and the Maintaining Agency. Tests shall include insulation resistance, voltage, current, and performance tests. Unless otherwise specified, perform the tests in accordance with the following:

D. Voltage Tests

Take a voltage reading at the control center at the load side of the circuit protection device and the last lighting standard served in each branch circuit. In cases where the circuit feeds in two or more directions, take the voltage reading at the light most remote from the control point or as directed by the Engineer. Unless otherwise specified, with the complete lighting system energized and all lamps operating, the voltage of this last standard shall not be less than 90% of the nominal rated voltage of the luminaire supply circuit, and the voltage at the last underpass luminaire in each branch circuit shall not be less than the minimum operating voltage recommended by the manufacturer of the luminaire ballast.

E. Current Test

Conduct current tests at each control center at the load side of each circuit protection device, using a clamp-on type ammeter. Current, in amperes, in each supply conductor shall not be greater than the rated current of a luminaire times the number of luminaires in the circuit.

F. Grounding Resistance Test

Conduct ground resistance tests with a “megger,” manufactured by the James H. Biddle Company, or a “vibraground” manufactured by Associated Research Incorporated or approved equal.

Adhere to the following when conducting this test:

1. Ensure that no equipment, such as ballast or oil switches, is connected at the time of the test.
2. Test only one conductor at a time.
3. Isolate the conductor being tested from ground.
4. Ensure that the other phase conductor and the neutral are grounded during each test.

G. Performance Tests

Prior to acceptance and after all faults have been corrected, operate the lighting system, including automatic control equipment and other specified apparatus, for a continuous 48-hour period without interruption or failure attributable to poor workmanship or defective material. After the 48 hours of continuous operation, the Engineer will inspect all lights and equipment for normal operation. Make all necessary repairs or replacements to the Engineer's satisfaction.

Make arrangements with the Servicing Agency to purchase the electric power necessary to conduct all tests.

Furnish the Engineer five copies of the test results, together with five copies of a statement from the Maintaining Agency that the system is acceptable to the Agency.

714.17 Repair of Seeded and Sodded Areas

If areas previously seeded or sodded are disturbed during the performance of the work described in this Section, reseed (with mulch) or re-sod such areas as specified in **801** or **803**, respectively. Perform these repairs as the work progresses to minimize erosion of disturbed areas.

H. 714.18 Disposal of Excess or Unsuitable Material

Dispose of excess or unsuitable material as specified in **203.07**.

714.19 Final Cleanup

Perform final cleanup as specified in **104.10**. Remove existing foundations, designated for removal, to a minimum of 6 inches below grade. Before final inspection, touch-up finishes, clean surfaces including signs that are lighted, and perform such other work as directed by the Engineer to ensure the effectiveness and neat appearance of the work.

COMPENSATION

714.20 Method of Measurement

When the bid schedule contains an item for Roadway and Structure Lighting on a lump sum basis, measurement will be for the sum total of all items to be furnished and installed.

When the bid schedule contains items for various elements of Roadway and Structure Lighting, the Department will make measurement for payment as follows:

A. Conduit

The Department will measure:

1. Encased Conduit and Direct Burial Conduit by the linear foot of conduit for each kind, number, and size installed as indicated, and
2. Conduit (Structures) of the kind and size specified by the linear foot of each individual kind and size of conduit placed.

B. Pull Boxes

The Department will measure Pull Boxes by the unit, per each.

C. Cable

The Department will measure Cable of the type, and number and size of conductors specified, by the linear foot from the center to center of pull boxes, light standards, and similar features, for each type and number and size of conductors. No additional allowance will be made for slack length, length inside equipment or standards, and similar instances requiring additional length of wire.

D. Preassembled Cable in Duct

The Department will measure Preassembled Cable in Duct by the linear foot from the center to center of pull boxes, light standards, and similar features. No additional allowance will be made for slack length.

E. Light Standards

The Department will measure Light Standards of the kind and design specified by the unit, per each.

F. Luminaires

The Department will measure Luminaires of the size, type, and design specified by the unit, per each, regardless of their classifications (i.e. LED, HID).

G. Overhead Conductors

The Department will measure Overhead Conductors of the gauge, type, and kind specified by the linear foot between supports. No allowance will be made for slack length.

H. Cable Markers

The Department will measure Cable Markers by the unit, per each.

I. Control Center

The Department will measure the Control Center on a lump sum basis. Such measurement will be for the sum total of all items to be furnished and installed at the control center, except as specified in **714.20.J** and **714.20.K**.

J. Class A Concrete

The Department will measure Class A Concrete used to construct the concrete slab around the service pole at the control center by the volume in cubic yards, as determined from the specified thickness shown on the Plans

and surface measurements for width and length. The Department will not measure reinforcement for the concrete slab for payment, but will consider the costs thereof as incidental to the item for Class A Concrete.

K. Chain-Link Fence and Gate

The Department will measure and pay for Fence and Gates in accordance with **707.08** and **707.09**, respectively.

L. Navigational Lighting and Overhead Sign Lighting

The Department will measure Navigational Lighting and Overhead Sign Lighting furnished and installed in accordance with the Plans on a lump sum basis.

M. Incidental Items

The Department will consider incidental, and will not directly measure, the following:

1. Excavation and backfilling performed in connection with this construction.
2. The removal and satisfactory disposal of existing pavement, surface, and base required to install conduit, and for restoring the base, pavement, and surface to their original condition.
3. Furnishing, installing, and subsequently removing sheeting, bracing, and supports needed to install conduit.
4. Labor, materials, equipment, electrical energy, and incidentals required to conduct the performance tests specified in **714.16.D**.
5. Reseeding, resodding, and otherwise restoring to their original condition areas that were disturbed during the performance of the work described in this Section.

714.21 Basis of Payment

When the bid schedule indicates payment will be made for Roadway and Structure Lighting on a lump sum basis, such payment is full compensation for all materials, labor, equipment, and incidentals necessary to produce a completely integrated, operative, and finished installation of a Roadway and Structure Lighting System, as shown on the Plans.

When the bid schedule contains items for various elements of Roadway and Structure Lighting, the Department will make payment as follows:

A. Conduit

1. **Encased Conduit.** The Department will pay for Encased Conduit at the contract unit price per linear foot, complete in place, for each kind, number, and size installed as indicated. Such payment is full compensation for all excavation, sheeting when required, backfilling, disposal of excess or unsuitable material, furnishing and placing or installing all materials and accessories, including grounding materials, concrete, and reinforcement when specified, all bends, joints, fittings and appurtenances, and installing the encased conduit complete.
2. **Direct Burial Conduit.** The Department will pay for Direct Burial Conduit of the kind, number, and size specified at the contract unit price per linear foot, complete in place. Such payment is full compensation

for all excavation, sheeting when required, backfilling, jacking of conduit, disposal of excess or unsuitable material, furnishing and placing or installing all materials and accessories, including grounding materials, bedding materials when required, all bends, joints, fittings and appurtenances, and installing the conduit complete.

3. **Conduit (Structures).** The Department will pay for Conduit (Structures) of the kind and size specified at the contract unit price per linear foot, complete in place. Such payment is full compensation for furnishing and installing all materials, including conduits, hangers, expansion fittings, grounding materials, and associated hardware and accessories, and installing the conduit complete.

B. Pull Boxes

The Department will pay for Pull Boxes at the unit price per each, complete in place. Such payment is full compensation for furnishing and installing or constructing pull boxes and for all excavation, backfilling, and other work connected therewith.

C. Cable

The Department will pay for Cable of the type, and number and size of conductors, as specified, at the contract unit price per linear foot, complete in place. Such payment is full compensation for furnishing and installing the cable and grounding materials, making splices, joints and connections, and for trenching, furnishing, and placing cushion and backfill material, and disposing of excess or unsuitable excavated material.

D. Preassembled Cable in Duct

Preassembled Cable in Duct of the kind and size specified will be paid for at the contract unit price per linear foot, complete in place. Such payment is full compensation for furnishing and installing the cable duct, grounding materials, making splices and connections, and for trenching, furnishing, and placing cushion and backfill material, and disposing of excess or unsuitable excavated material.

E. Light Standards

The Department will pay for Light Standards of the type specified at the contract unit price per each, complete in place. Such payment is full compensation for furnishing and installing the complete light standards, including the foundation, standard, bracket arm or arms, associated hardware and wiring, grounding materials, excavation, backfilling materials, and backfilling. The Department will measure foundations for high mast towers separately.

F. Luminaires

The Department will pay for Luminaires of the size and type specified at the contract unit price per each, regardless of their classifications (i.e. LED, HID), complete in place. Such payment is full compensation for furnishing and installing the complete luminaire, including the ballast(s), lamp(s), glare shields where required, and associated hardware and wiring.

G. Overhead Conductors

The Department will pay for Overhead Conductors of the gauge, type, and kind specified at the contract unit price per linear foot, complete in place.

H. Cable Markers

The Department will pay for Cable Markers of the design specified at the contract unit price per each, complete in place. Such payment is full compensation for furnishing and installing the marker complete, including the excavation, backfilling, and removal and disposal of excess or unsuitable excavated materials.

I. Control Center

The Department will pay for the Control Center at the contract unit price per lump sum, complete in place. Such payment is full compensation for furnishing and installing all equipment and materials, including service pole(s) when specified, and photoelectric relays, relay cabinets, multiple relays, lightning arrestors, fuse cutouts, and all other equipment, materials, associated hardware, and accessories, as shown on the Plans. Payment for the Control Center is full compensation for furnishing and installing all electrical supply facilities from the delivery point for electrical energy, as shown on the Plans, to the control center.

J. Class A Concrete

The Department will pay for Class A Concrete, measured as specified in **714.20.J**, at the contract unit price per cubic yard, complete in place.

K. Navigational Lighting and Overhead Structure Lighting

The Department will pay for Navigational Lighting and Overhead Structure Lighting by the lump sum complete in place including all materials and labor.”

Subsection 714.02 (pg. 781), 5-13-19; **Materials**; Revise last paragraph:

In addition to the above, include with each submittal a notarized letter certifying that all lighting system materials listed in the submittal conform to the Plans and Specifications. Also submit to the Engineer a statement from the Maintaining Agency that all lighting system materials listed in the submittal are acceptable to the Agency.

Subsection 716.05 (pg. 813), 10-8-18, Snowplowable Reflective Pavement Marker, Add the following as the third sentence:

“Contour the pavement at each snowplowable marker location to match the bottom of the marker casting. Install markers according to the manufacturer’s recommendations. For asphalt surfaces, only use the dry saw method to apply snowplowable reflective pavement markers. When using the dry saw method, provide a vacuum system to contain the dust. For other surfaces, regardless of the saw method used, ensure that the saw cut is clean, dry, and free of all dust or residue before applying the adhesive. Accompany each shipment of adhesive with a written statement from the adhesive manufacturer certifying that the material furnished conforms to the recommendations of the marker manufacturer, and stating the minimum temperature at which the adhesive can be satisfactorily mixed and applied.”

Subsection 730.11 (pg. 835), 6-27-16; Revise the title:

“AnchorRods”

Subsection 730.11 (pg. 835), 6-27-16; revise the first paragraph:

“Furnish, with anchor-base type poles, anchor rods 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.”

Subsection 730.32.A. (pg. 868), 6-27-16; revise the last paragraph of subsection 730.32 A.:

“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”.”

Subsection 730 (pg. 828-880), 11-6-17; replace section with the following:

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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, 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, 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.

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 other applicable local ordinances.

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 local entity (city or county engineer), 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
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

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 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 maintaining agency that the system is acceptable to the agency. Any material substitutions requested by the maintaining agency shall meet minimum Department standards and shall be approved by the Department in writing prior to purchase or installation. The Department 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 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 local maintaining agency an electrical schematic diagram of the cabinet and system wiring. Submit manufacturer's instructions for installation, maintenance, and operation of all equipment to the local maintaining agency 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 or County 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 government agency responsible for maintaining the signal installation all warranties or guarantees on equipment and materials that are offered by the manufacturers as normal trade practice.

730.07 Training

Provide to the maintaining agency 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 4 hours unless the maintaining agency 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 maintaining agency.

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 maintaining agency 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 by the Contractor.

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.

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 Standard Drawings or as directed by the Engineer. Additional pull boxes may be required where conduit runs are more than 150 feet long. The maximum spacing

between pull boxes shall be 150 feet, unless otherwise directed by the Engineer. 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.

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" on top of the covers.

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.

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 other 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 nor 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, or by other means approved by the Engineer.

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. Attach cables to messenger with non-corrosive lashing rods or stainless steel wire lashings.
4. 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 the necessary service for each installation.

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.

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.
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.

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.

All circular indications shall use 12-inch lenses unless otherwise shown on the Plans. All arrow indications shall use 12-inch lenses. 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. 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. 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.

B. 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 either plumb or level, symmetrically arranged, and securely assembled. Conceal all conductors within poles and mounting assembly. Secure each slip fitter to the pole.

C. 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.

D. 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 3,003, half-hard, 0.051-inch minimum thickness aluminum sheet. 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.

E. 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.

F. 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 shall be LED symbols and in conformance with the Institute for Transportation Engineers (ITE) latest 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.

G. 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

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:

NEMA TS2 Controller NEMA TS-2-2016

ATC Controller AASHTO/ITE/NEMA ATC 5.2b

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.

NEMA TS2 Type 2 controllers shall be used when downward compatibility to existing TS1 cabinets is desired.

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:

5. have all timing values entered via a front panel mounted keyboard. This keyboard shall be an integral part of the controller unit;
6. have an English language menu for programming or reading all controller features;
7. continue to operate the intersection as values are inspected or altered;
8. 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).
9. support Flashing Yellow Arrow for Permissive Left-turn Movements applications.

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 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, resealable 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 Standard Details:

1. **Material.** Provide weather-tight cabinets fabricated from aluminum sheet or cast aluminum alloy with a minimum 0.125-inch thickness. All welds on fabricated cabinets shall be internal and continuous; spot welding is not acceptable. Painting of cabinets is only required if the final finish presents an unsightly appearance.
2. **Doors.** Type III, IV, and V cabinets shall have a hinged front opening door that shall include substantially the full area of the front of the cabinet. Equip the door with a positive hold fast device to secure the door in at least two open positions: one position at approximately 90 degrees and the other at 120 degrees or more. The holdfast device shall be easily secured and released without the use of tools. Equip doors for Type II, III, IV, and V cabinets with a switch compartment, and provide the manual switches, specified in **730.26.6.k**, with a hinged front opening auxiliary door. Each door shall have a gasket to provide a weatherproof seal when closed.

Provide the main door with a No. 2 pin-tumbler cylinder lock, and the auxiliary door with a standard police sub-treasury lock. Provide four keys for each lock.

Provide a switch which is to be tied to the cabinet light so that cabinet light will be on when the door is open and off when the door is closed.

3. **Cabinet Mounting.** Mount cabinets as shown on the Plans or Standard Details.
4. **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.
5. **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.

6. 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.
- 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

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.
 3. Electrical service termination point sized to accept No. 4 AWG copper wire.
 4. Ground fault receptacle.
 5. Porcelain lamp receptacle to accept a standard traffic signal lamp. If LED lenses are utilized, the 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:
- 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.
 - Unless otherwise specified, each cabinet shall include six (6) flash transfer relays.

- Flash transfer relays shall support Flashing Yellow Arrow for Permissive Left-turn Movements 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:
 - 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:

- Four (4) signal output positions per load switch bay (R-Y-G-FL).
- Ten (10) positions per phase for vehicle loop detector harness.

- One position per phase for pedestrian detector inputs. o. Cabinets shall have SDLC communication between the controller, MMU, Detector Rack, Radar Detector (if applicable) and Video Detection (if applicable).

p. Cabinets should have an electrical outlet (Non GFI) that has 120 VAC from the OUTPUT side of the Main Power Surge unit.

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 should have an Ethernet port.

730.27 Auxiliary Equipment for Traffic Signal Controllers

Furnish and install the following auxiliary equipment in each cabinet for traffic actuated controllers.

A. Load Switches

Provide each cabinet complete, with the necessary number of NEMA load switches and Flash Transfer relays necessary to effect 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 construction are acceptable.

B. 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) – An UPS shall power the traffic signal cabinet in the event of a power failure for a minimum of 3 hours.

UPS assemblies should include off-the-shelf deepcycle AGM batteries.

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.

- B. Communications - Wireless - consist of installing a Wireless Network Communications Link with all necessary hardware in accordance with the plans and standard drawings to provide a data link between field devices (i.e. Traffic Signal Controllers).

Each link shall consist of Master ODU (Out Door Unit, Antenna) connected to a data switch within one of the signal cabinets and a Slave ODU connected to a data switch within the other signal cabinet. Each ODU is aligned to face the opposing ODU. The cable length between the ODU and its associated data switch may not exceed 300 feet.

The Wireless Network Communications Link components at each of the linked traffic signal cabinets shall include an ODU, a LPU (Lightning Protection Unit), power supply mounting hardware, and CAT 5e cabling. The ODU is pole mounted per manufacturer’s specifications. The LPU and power supply are mounted within the traffic signal cabinet. CAT 5e cable is installed between the ODU and LPU.

For the applicable frequency spectrum of the radios being deployed, perform a spectrum analysis to ensure no competing equipment in the area. Ensure the radio path site survey test is performed using the supplied brand of radio equipment to be deployed. Typically, if the ODUs can be mounted with clear line of sight between them, this is sufficient to ensure proper operation. If this is not possible, it may be determined that a repeater station is necessary to complete the intended link. Provide the test results to the ENGINEER for review and approval. Submit copies of the test results and colored copies of the frequency spectrum scan along with an electronic copy of this information. The ENGINEER will approve final locations of the ODUs and any necessary repeater stations.

Install each ODU in such a manner that avoids conflicts with other utilities (separation distances in accordance with the guidelines of the NESC) and as specified in the ODU manufacturer's recommendations. Secure the ODU mounting hardware to the pole and route the CAT 5E cable such that no strain is placed on the RJ-45 connectors. Align each antenna/radio to be perpendicular to the ground (using bubble level) and to face the opposing radio.

C. Fiber optic cables - Multi-mode type fiber optic cable shall be 50 μ m core diameter, with at least 12 fibers per cable unless otherwise specified in the plans. 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 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 8 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 be successfully crash tested to NCHRP 350 TL-3, or equivalent MASH standards. 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 contractor, 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 contractor 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

Loop amplifiers may be single or multi-channel and shall be of the totally self-contained type.

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 $\pm$ 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.

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.

VDS shall be capable of NEMA TS2 operation.

VDS shall be waterproof and weather resistant.

VDS shall 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 a removable data storage external to the video card,

VDS shall 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.

VDS shall have a minimum of 24 programmable detection zones per camera.

VDS shall be capable of:

1. shadow rejection without special hardware;
2. non-impaired operation under light intensity changes;
3. maintained operation during various weather conditions (e.g. rain, fog, snow)
4. anti-vibration, 5% rejection based on image change;
5. ability to select direction of flow parameters;
6. ability to properly detect directionally;
7. ability to configure presence, pulse, extend and delay outputs;
8. ability to set up a minimum of six detection zones per camera view to count the number of vehicles detected and store the information for retrieval;
9. variable focus providing a minimum of 4 to at least 40 degree horizontal field of view;
10. store detection zones in non-volatile memory;

VDS shall have no splices between the processors and the cameras.

VDS shall provide LED indicators to show active detection.

VDS camera shall have an internal heater to assure proper operation of the equipment during low temperatures.

VDS shall have surge ratings as set forth in NEMA specifications.

VDS shall have a two-year warranty and updates of all software shall be available without charge during the warranty period.

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.

An RVDS shall consist of the following components: Radar sensor (1), detector rack interface module (1) 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), and 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 able to operate in all types of weather conditions including: rain, snow, sleet, ice, fog and windblown dust.

Lightning and surge protection will be provided for power connections and communications links to the radar RVDS.

The RVDS shall 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 fail safe is triggered and will remain in this state until communication is re-established between the interface module and the radar vehicle sensor.

The RVDS shall comply with all applicable Federal Communications Commission (FCC) requirements. The manufacturer will provide documentation of compliance with FCC specifications.

The RVDS shall maintain frequency stability without the use of manual tuning elements by the user.

The RVDS as a minimum must provide a minimum of 4 separate RF channels selectable by the user to avoid interference with other devices working on the same frequency.

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.

RVDS 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.

RVDS documentation shall include a comprehensive user guide as well as quick reference guide(s).

RVDS shall have the ability to configure presence, pulse, extend and delay outputs.

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: In-pavement sensors, all wireless communication equipment needed to establish communication links to the controller cabinet, interface modules compatible with NEMA TS-2 V2.06b cabinet detector rack, surge protection for the WMDS and system software for set-up and monitoring of the WMDS.

The WMDS must be capable of 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.

WMDS shall have the ability to configure presence, pulse, extend and delay outputs.

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.

WMDS detection accuracy must be comparable to properly operating inductive loops.

The WMDS shall 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.

The WMDS in-pavement sensor must operate on batteries without the need for underground power or communication cable connections to the unit.

The average operating life span of the sensor under battery power must be a minimum of 10 years.

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.

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.

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.

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.

730.30 (Reserved)

730.31 (Reserved)

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 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.

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 a 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.

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 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 a 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 to make 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.

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.

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 for pick-up by the appropriate agency, as noted in the Plans.

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 Loop Detector (Amplifier)

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.

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 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 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.

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
Service Cable	Linear Feet
Pedestrian Pushbutton with Sign	Each
Pedestrian Signal Display with Pushbutton and Sign	Each
Portable Traffic Signal (Type)	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.

STATE**OF****TENNESSEE**

(Rev. 5-18-15)

(Rev. 11-16-15)

(Rev. 6-27-16)

(Rev. 12-2-16)

(Rev. 5-15-17)

(Rev. 11-6-17)

(Rev. 5-14-18)

(Rev. 10-8-18)

(Rev. 5-13-19)

(Rev. 12-30-19)

January 1, 2015

Supplemental Specifications - Section 900**of the****Standard Specifications for Road and Bridge Construction****January 1, 2015**

Subsection 901.01 (pg. 918), 5-14-18; Add the following sentence as the second paragraph of the subsection:

Provide hydraulic cement, selected from the Department's QPL, which conforms to the following for the kind and type specified or allowed:

Portland cement.....AASHTO M 85

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 alkalies is 0.60% for all cements and blended cements used in concrete riding surfaces with aggregates meeting the requirements of 903.24. This includes Class CP, A Paving, and DS concrete mixtures.

Subsection 901.01 (pg. 918), 5-13-19; **Hydraulic Cement**; Revise 1st paragraph:

Provide hydraulic cement, selected from the Department's Producer List that conforms to the following for the kind and type specified or allowed:

Subsection 903.01 - Table 903.01-1 (pg. 920), 5-18-15; Replace Note (1) with the following:

“(1)If the fine aggregate is manufactured from crushed stone and if material finer than the No. 200 sieve consists of the dust of fracture, essentially free from clay or shale, this limit may be increased to 5%.

Subsection 903.01 (pg. 920), 5-13-19; **Fine Aggregate for Concrete**; Revise No. 3:

3. Provide fine aggregate meeting the quality requirements in 903.25.

Subsection 903.01 - Table 903.01-1, Table 903.01-2 (pg. 921), 5-15-17; replace Tables 903.01-1 and 903.01-2 with the following Tables:

Table 903.01-1: Limits of Deleterious Substances in Fine Aggregate for Concrete

Substance	Maximum Permissible Limits Percent by Weight
Clay Lumps	0.5
Coal and Lignite	0.5
Material Passing the No. 200 Sieve ⁽¹⁾⁽³⁾	3.0
Other deleterious substances (such as shale, alkali, mica, coated/grains, soft and flaky particles) ⁽¹⁾⁽²⁾	3.0
⁽¹⁾ If the fine aggregate is manufactured from crushed stone and if material finer than the No. 200 sieve consists of the dust of fracture, essentially free from clay or shale, this limit may be increased to 10%.	
⁽²⁾ Determine other organic impurities according to AASHTO T 267.	
⁽³⁾ If the fine aggregate is manufactured from crushed gravel and if material finer than the No. 200 sieve consists of the dust of fracture, essentially free from clay or shale, this limit may be increased to 3.5%.	

Table 903.01-2: Gradation Requirements for Fine Aggregate

Sieve Size	Total Percent Passing by Weight
3/8 inch	100
No. 4	95-100
No. 16	50-90
No. 50	5-35
No. 100	0-20
No. 200 ⁽¹⁾	0-3
⁽¹⁾ If the fine aggregate is manufactured from crushed stone and if material finer than the No. 200 sieve consists of the dust of fracture, essentially free from clay or shale, this limit may be increased to 10%.	

Subsection 903.02 (pg. 921), 5-13-19; **Fine Aggregate for Mortar**; Revise 1st paragraph:

Provide mortar sand that conforms to AASHTO M 45, meets the quality requirements in 903.25, and that is uniformly graded from coarse to fine within the limits specified in Table 903.02-1.

Subsection 903.03 (pg. 922-923) 11-16-15; Coarse Aggregate for Concrete, modify the 4th and 5th paragraphs, update Table 903.03-1: Coarse Aggregate Sizes to the following:

“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 absorption of plus 4 material not to exceed 5%. 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.”

Table 903.03-1

Application	Coarse Aggregate Size ⁽¹⁾
Structural concrete	No. 57
Self-Consolidating concrete	Maximum-No.67
Prestressed concrete	No. 57 or 67
Precast concrete	Any size fraction
Concrete curbing placed by machine-extrusion methods	No. 7, 57, 67, or 78
Cement treated permeable base (2)	No. 57
(1) Gradation shall conform to 903.22 .	
(2) Aggregate shall meet the quality requirements specified below.	

Subsection 903.03 (pg. 922) 5-15-17; Coarse Aggregate for Concrete, add the following as the 4th paragraph:

“Coarse aggregate in two-lift composite pavements shall consist of Size No. 467 in the lower lift, graded as specified in 903.22. 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.”

Subsection 903.03 (pg. 923), 5-13-19; **Coarse Aggregate for Concrete**; Revise 6th paragraph and Table 903.03-1:

For other uses of concrete, provide coarse aggregate of the sizes specified in Table 903.03-1, or as otherwise shown or directed. If proposing to use a coarse aggregate size not specified in Table 903-03.1 or shown on the plans, submit a written request to Regional Materials and Tests explaining the necessity for the change.

Table 903.03-1: Coarse Aggregate Sizes

Application	Coarse Aggregate Size ⁽¹⁾
Structural concrete	No. 57
Self-Consolidating Concrete	Maximum No. 67
Prestressed concrete	No. 57 or 67
Precast concrete	Any size fraction
Concrete for Bridge Repair	No. 7, 57, 67, or 78
Concrete curbing placed by machine-extrusion methods	No. 7, 57, 67, or 78
Cement treated permeable base ⁽²⁾	No. 57
⁽¹⁾ Gradation shall conform to 903.22.	
⁽²⁾ Aggregate shall meet the quality requirements specified below.	

Subsection 903.03-2 (pg. 924) 5-15-17; Revise Table 903.03-2: Limits of Deleterious Substances in Coarse Aggregate for Concrete, update Material passing No. 200 Sieve and Footnote 2:

Table 903.03-2: Limits of Deleterious Substances in Coarse Aggregate for Concrete

Substance	Maximum Percent by Weight
Soft or non-durable fragments (fragments that are structurally weak such as shale, soft sandstone, limonite concretions, gypsum, weathered schist, or cemented gravel), and organic impurities as determined by AASHTO T 267 ⁽¹⁾	3
Coal and lignite ⁽¹⁾	1
Clay lumps ⁽¹⁾	0.25
Material passing the No. 200 sieve ^{(1) (2)}	1.5
Thin or elongated pieces (length greater than 5 times average thickness)	10
Other local deleterious substances ⁽¹⁾	1
⁽¹⁾ The sum of the percentages of these materials (i.e., soft or non-durable fragments, coal and lignite, clay lumps, material passing the No. 200 sieve, and other local deleterious substances) shall not exceed 5.0.	
⁽²⁾ For crushed aggregate, if all the material finer than the No. 200 sieve, as determined in accordance with AASHTO T 11, consists of the dust of fracture, essentially free of clay or shale, this limit may be increased to 2.0.	

Subsection 903.03 B (pg. 924), 5-13-19; **Soundness**; Revise subsection:

B. Quality Requirements

The coarse aggregate shall meet the quality requirements in 903.25.

Subsection 903.04 (pg.925), 5-13-19; **Aggregate for Lean Concrete Base**; Remove entire subsection:

Subsection 903.05 – Aggregate for Mineral Aggregate Base and Surface Courses (pg. 925) 5-15-17; add reference to subsection **903.05 C.** in the second paragraph of subsection A.:

“903.05 Aggregate for Mineral Aggregate Base and Surface Courses

Provide crushed stone, crushed slag, crushed or uncrushed gravel, or crushed or uncrushed chert that may be blended with crushed recycled concrete or screened reclaimed asphalt pavement (RAP), together with material such as manufactured sand or other fine materials that are either naturally contained or added as needed to conform to these Specifications.

Provide aggregate of Types A and B, as specified below.

A. Type A Aggregate

Provide hard, durable particles or fragments of stone, slag, gravel, or chert, and other finely divided mineral matter.

The Contractor may use recycled concrete aggregate per 903.05 C. or reclaimed asphalt pavement, at a maximum rate of 25% by weight, for Type A aggregate, provided the combined aggregate blend meets all the requirements specified below. Crush and screen the recycled concrete and asphalt to produce a uniform stockpile before blending it with the virgin material. Keep the recycled stockpiles free of bricks, steel, wood, and all other deleterious materials. “

Subsection 903.05 A (pg. 925-926), 5-13-19; **Type A Aggregate**; Revise Nos. 1, 2, & 3, & Remove Table 903.05-01:

1. **Crushed Stone.** Provide stone free of silt and clay and having a coarse aggregate portion (retained on the No. 4 sieve) that conforms to the quality requirements specified in 903.25.
2. **Crushed Slag.** Provide material that:
 - a. Is free of silt and clay,
 - b. Meets the quality requirements in 903.25,
 - c. Is reasonably uniform in density, and
 - d. Has a dry-rodded weight of at least 70 pounds per cubic foot.
3. **Gravel and Chert.** Screen gravel and chert. All oversize material may be crushed and fed uniformly back over the screen. The coarse aggregate portion shall conform to the quality requirements specified in 903.25. The portion of the material passing the No. 40 sieve shall be non-plastic, or shall have a liquid limit of not greater than 30 and a plasticity index of not more than eight.

Subsection 903.05 – Aggregate for Mineral Aggregate Base and Surface Courses (pg. 925-926) 5-15-17; add reference to subsection **903.05 C.** in the second paragraph of subsection B.:

“For Provide crushed or uncrushed gravel, crushed or uncrushed chert, crushed stone or crushed slag, and other finely divided particles.

The Contractor may use recycled concrete aggregate per 903.05 C. or reclaimed asphalt pavement, at a maximum rate of 30% by weight, for Type B aggregate, provided the combined aggregate blend meets all the requirements specified below. Crush and screen recycled concrete and asphalt to produce a uniform stockpile before blending it with the virgin material. Keep the recycled stockpiles free of bricks, steel, wood, and all other deleterious materials.”

Subsection 903.05 – B. Type B Aggregate (pg. 927), 5-18-15; Replace the 1st paragraph of subsection 3. With the following:

- “3. Do not use material having clay content greater than 12%, as determined by hydrometer analysis performed in accordance with AASHTO T 88. Material may be used having a clay content exceeding 12% if a plasticity index-fines product does not exceed 3 when calculated by the following formula”

Subsection 903.05 B (pg. 927), 5-13-19; **Type B Aggregate**; Revise 3rd paragraph:

Provide Type B aggregate meeting the same requirements as specified in **903.05.A** for Type A aggregate, with the following exceptions:

1. The aggregate shall meet the quality requirements in 903.25 for Mineral Aggregate Base – Type B.
2. Screen Type B aggregate. Oversize materials may be wasted or crushed and returned over the screen and uniformly blended with the other material.
3. Do not use material having a clay content greater than 12%, as determined by hydrometer analysis performed in accordance with AASHTO T 88. Material may be used having a clay content exceeding 12% if a plasticity index-fines product does not exceed 3 when calculated by the following formula:

$$\frac{\% \text{ Passing No. 40 sieve} \times \text{P. I. of Minus No. 40 Material}}{100}$$

Subsection 903.05 – Aggregate for Mineral Aggregate Base and Surface Courses (pg. 928) 5-15-17; add section C to the bottom:

C. Reclaimed Concrete Aggregate. Provide material comprised of concrete reclaimed from the demolition of a concrete structure or pavement. Reclaimed Concrete Aggregate may only be used as a mineral aggregate base course, subbase or shoulder course. The material shall be free of any materials classified as Solid or Hazardous Waste, especially asbestos, lead and mercury, with test

results submitted by the contractor to the Project Supervisor. These test results shall be certified and notarized. The percentage of wear as determined in accordance with AASHTO T 96 shall not exceed 50. Deleterious substances shall be kept to a minimum, and may not be higher than the amounts listed on Table 903.05-3.

Table 903.05-3: Deleterious Materials

Material	Maximum Permissible Limits Percent by Weight
Brick	5
Bituminous Concrete Materials	5
Weathered Rock	2
Wood	0.1
Metals	0.1

The gradations of the coarse and fine fractions of aggregate shall be such that, when combined in proper proportions, the resultant mixture will fall within the grading specified in Table 903.05-4.

Table 903.05-4: RCA Grading Tolerances

Sieve Size	Total Percent Passing per Weight
1 ½ inch	100
1 inch	85-100
¾ inch	60-95
3/8 inch	50-80
No. 4	40-65
No. 16	20-40
No. 100	5-18

Subsection 903.05 C (pg. 928), 5-13-19; **Reclaimed Concrete Aggregate**; Revise 1st paragraph:

C. Reclaimed Concrete Aggregate

Provide material comprised of concrete reclaimed from the demolition of a concrete structure or pavement. Reclaimed Concrete Aggregate may only be used as a mineral aggregate base course, subbase or shoulder course. The material shall be free of any materials classified as Solid or Hazardous Waste, especially asbestos, lead and mercury, with test results submitted by the contractor to the Project Supervisor. These test results shall be certified and notarized. The aggregate shall meet the quality requirements in 903.25. . Deleterious substances shall be kept to a minimum, and may not be higher than the amounts listed on Table 903.05-3.

Subsection 903.06 A (pg. 929), 5-13-19; **Coarse Aggregate (retained on a No. 4 sieve)**; Revise 1st paragraph:

Provide crushed stone, crushed granite, crushed gravel, crushed slag, or a combination of these materials. This material shall conform to the physical properties of ASTM D692 and the quality requirements of 903.25., The aggregate shall contain no more than 5% soft or nondurable particles.

Subsection 903.06 B (pg.929), 5-13-19; **Fine Aggregate (passing a No. 4 sieve)**; Revise 1st paragraph:

Provide limestone fines, natural sand, sand manufactured from stone, gravel, or slag, or combinations of these materials, consisting of hard, tough grains free from injurious amounts of deleterious substances. The fine aggregate shall meet the quality requirements in 903.25. Do not use fine aggregate or screenings containing calcium sulfate (CaSO₄/gypsum) if more than 5% of the material passing the No. 8 sieve is chemically composed of sulfur trioxide (SO₃).

Subsection 903.06 - C. Combined Aggregate Grading (pg. 930) 11-16-15; add the following sentence at the end of the first paragraph:

“For mixtures including recycled asphalt pavement, RAP, and/or recycled asphalt shingles, RAS, stockpiles will not be considered as contributing to the required minimum of three stockpile sizes.”

Subsection 903.11 - Aggregate for Asphaltic Concrete Surface Coarses (Hot Mix) (pg. 934) 11-16-15; add the following sentence at the end of the first paragraph:

“For mixtures including recycled asphalt pavement, RAP, and/or recycled asphalt shingles, RAS, stockpiles will not be considered as contributing to the required minimum of three stockpile sizes.”

Subsection 903.11 (pg. 934) 11-16-15; **A. Coarse Aggregate (retained on a No. 4 sieve)**, revise the 1st paragraph and subsection 3:

“Provide aggregate, consisting of crushed stone, crushed slag, crushed gravel, crushed granite, crushed quartzite, crushed gneiss, or natural combinations of these materials.”,

“3. Combined aggregate shall consist of siliceous particles processed from washed material, of which at least 70% by count of the material retained on the No. 4 sieve shall have a minimum of two fractured faces, one of which must be fractured for the approximate average diameter or thickness of the particle. Do not add pea gravel or uncrushed particles. The absorption of the crushed aggregate retained on the No. 4 sieve shall not exceed 5% when tested in accordance with AASHTO T 85.”

Subsection 903.11 A (pg. 934), 5-13-19; **Coarse Aggregate (retained on a No. 4 sieve)**; Revise paragraph and No. 1:

Provide aggregate, consisting of crushed stone, crushed slag, crushed gravel, crushed granite, crushed quartzite, crushed gneiss, or natural combinations of these materials. The coarse aggregate shall meet the physical requirements of ASTM D692, with the following exceptions and additions:

1. Sodium The aggregate shall meet the quality requirements in 903.25.

Subsection 903.11 - A. Coarse Aggregate (retained on a No. 4 sieve) (pg. 934), 5-18-15; revise subsection 2. as follows:

“2. Material retained on the No. 4 sieve shall contain a maximum of 10% elongated pieces (length greater than five times the average thickness)”

Subsection 903.11 B (pg. 935), 5-13-19; **Fine Aggregate (passing a No. 4 sieve)**; Revise No. 2:

2. Fine aggregate shall meet the quality requirements in 903.25.

Subsection 903.11 C. Combined Aggregate Grading (pg. 936) 10-8-18; Table 903.11-2 Revise Table to add TLE information:

**Table 903.11-2: Asphalt Concrete Surface Course Mixture Designation
Design Range of Gradations**

Sieve Size	Total Percent Passing by Weight				
	Grading D	Grading E	Grading TL	Grading TLD/TLE	Grading OGFC
3/4 inch	--	--	--	--	100
5/8 inch	100	100	--	--	--
1/2 inch	95-100	95-100	100	100	85-100
3/8 inch	80-93	80-93	100	90-100	55-75
No. 4	54-76	54-76	89-94	54-76	10-25
No. 8	35-57	35-57	53-77	35-57	5-10
No. 30	17-29	17-29	23-42	17-33	--
No. 50	10-18	10-18	--	10-18	--
No. 100	3-10	3-11	9-18	3-10	--
No.	0-6.5	0-8	6-14	4-7	2-4

Subsection 903.11 C. 2. (pg. 937) Grading E, add TLE to the title:

“Grading E and TLE. When using Grading E as a surface for traffic lanes, 50% to 80% of the mineral aggregate shall be composed of crushed limestone, and the remaining 50% to 20% shall be natural sand, slag sand, sand manufactured from gravel or other approved non-skid aggregates, or any combination of these materials, with the following exceptions:

The sand percentage on the Job Mix Formula (JMF) shall range from 20% to 50%. However, if needed to meet or improve the specified design criteria, the Contractor may alter the limestone and sand percentage by 5% from the percentage shown on the original JMF. If altering the aggregate percentages shown on the original JMF, submit a revision of the original design showing the altered percentages of aggregate.

b. When using Grading E for surfacing of shoulders or other non-traffic lane construction, the mineral aggregate may be composed entirely of limestone, including Size No. 10 (screenings) and manufactured sand, but in no case shall the mineral aggregate for this construction consist of less than 50% limestone.

c. Recycled Asphalt Pavement (RAP) milled from Department or other State Highway Agency projects shall be assumed to contain 75% non-skid material.”

Subsection 903.11 C.3. (pg. 938), 6-27-16; revise the 1st paragraph of subsection C.3 to the following:

“3. Grading OGFC. A minimum of 75% of the aggregate shall meet the requirements specified in 903.24 for Surface Mixtures (Non-Skid Aggregates). The coarse aggregate shall have at least 90% crushed aggregate with two fractured faces and 100% with one fractured face as determined in accordance with ASTM D5821. The coarse aggregate shall have a LA Abrasion value of less than 40% and a maximum absorption of 3.0%.”

Subsection 903.11 (pg. 938), 12-2-16; Add the following to C. as subsection 5.:

“5. Grading C, CS, CW. The mixture shall meet all requirements of **903.06**. When using Grading C, CS, or CW as a final riding surface for traffic lanes and the design ADT is greater than 1000, a minimum of 75% of the aggregate shall meet the requirements specified in **903.24** for Surface Mixtures (Polish-Resistant Aggregate) for the appropriate levels.”

Subsection 903.12 (pg. 938) 11-16-15; A. Aggregate for Slurry Seal, revise the 1st paragraph a A. as shown; delete the 2nd paragraph:

“The aggregate shall be crushed slag, crushed granite, or crushed stone (crushed stone as specified in 903.24), meeting the requirements of ASTM D692, except the gradation shall be as specified in Table 903.12-1. The aggregate shall have a minimum sand equivalent, as determined in accordance with AASHTO T 176, of 45.

Subsection 903.12 A (pg. 938), 5-13-19; **Aggregate for Slurry Seal**; Revise 1st paragraph:

The aggregate shall be crushed slag, crushed granite, or crushed stone (crushed stone as specified in **903.24**), meeting the requirements of ASTM D692, except the gradation shall be as specified in Table 903.12-1. 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 45.

Subsection 903.12 (pg. 939) 11-16-15; **B. Aggregate for Micro-Surface**: modify the first paragraph, delete the second paragraph:

“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 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.

Subsection 903.12 B (pg. 939), 5-13-19; **Aggregate for Micro-surface**: Revise 1st paragraph:

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.

Subsection 903.12 (pg. 939) 5-15-17; **B. Aggregate for Micro-Surface**: Add the following as the 2nd paragraph:

“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 stockpile meeting the job mix formula gradation. Proportion and blending equipment shall be calibrated at the beginning of production. All aggregate sources shall meet the requirements of **Table 903.24-1**. Do not blend aggregates with a front end loader. Proportion the aggregate to produce a uniform gradation meeting the requirements specified in Table 903.12-2. The contractor shall provide a Type A laboratory as defined by **106.06** capable of verifying gradation at the location where blending occurs.”

Subsection 903.13 (pg. 940), 12-2-16; modify the last sentence of the 1st paragraph:

“Provide aggregate consisting of crushed stone, crushed slag, or crushed gravel, meeting the quality requirements of ASTM D692, except that at least 50% by count of crushed gravel aggregates shall have at least one fractured face. Crushed slag aggregate retained on the No. 4 sieve shall contain no more than 20% by weight of glassy particles. Provide aggregates meeting the requirements of **903.24 except, if ADT is less than 1000.**”

Subsection 903.13 (pg. 940), 5-13-19; **Aggregate for Bituminous Seal Coat**; Revise 1st paragraph:

Provide aggregate consisting of crushed stone, crushed slag, or crushed gravel, meeting the physical requirements of ASTM D692, except that at least 50% by count of crushed gravel aggregates shall have at least one fractured face. The aggregate shall meet the quality requirements of 903.25. Crushed slag aggregate retained on the No. 4 sieve shall contain no more than 20% by weight of glassy particles. Provide aggregates meeting the requirements of **903.24** except, if ADT is less than 1000.

Subsection 903.15 (pg. 941), 5-15-17; revise the 3rd paragraph:

“The Contractor may use recycled concrete aggregate per 903.05 C. or reclaimed asphalt pavement (RAP), at a maximum rate of 25% by weight; provided the combined aggregate blend meets all the requirements specified above. If blending, crush and screen the recycled concrete and/or asphalt to produce a uniform stockpile before blending it with the virgin material. Keep the reclaimed asphalt pavement stockpiles free of bricks, steel, wood, and all other deleterious materials. The virgin and reclaimed pavement blend shall meet the quality requirements specified in Table **903.05-1**.”

Subsection 903.15 (pg.941), 5-13-19; **Aggregate for Aggregate-Cement Base Course**; Revise 3rd paragraph:

Recycled concrete aggregate per 903.05C or reclaimed asphalt pavement (RAP) may be used at a maximum rate of 25% by weight, provided the combined aggregate blend meets all the requirements specified above. If blending, crush and screen the recycled concrete and/or asphalt to produce a uniform stockpile before blending it with the virgin material. Keep the reclaimed asphalt pavement stockpiles free of bricks, steel, wood, and all other deleterious materials. The virgin and reclaimed pavement blend shall meet the quality requirements specified in 903.25.

Subsection 903.17 (pg. 941), 5-13-19; **Aggregate for Underdrains**; Revise 1st paragraph:

Provide crushed stone, crushed slag, or washed gravel meeting the physical requirements of ASTM D692, the quality requirements of 903.25, and the gradation requirements specified for Size 6, 7, 8, 57, or 78 in **903.22**.

Subsection 903.18 (pg. 942), 5-13-19; **Aggregate for Sand-Asphalt Surface Course**; Remove entire subsection:

Subsection 903.19 (pg. 942-943), 5-13-19; **Lightweight Aggregates for Structural Concrete**; Revise Subsection:

Provide lightweight aggregate conforming to AASHTO M 195, with the following additions:

1. Produce the lightweight aggregate by fusing raw shale, slate, or clay in a rotary kiln, to yield particles having a wear of not more than 40% when tested in accordance with AASHTO T 96.
2. The lightweight coarse aggregate shall conform to the gradation requirements for size 3/4 inch to No. 4, as shown in Table 1 of AASHTO M 195.
3. The aggregate shall meet the quality requirements in 903.25.
4. Concrete with approximately 6% air content made from the aggregate shall have a minimum durability factor of 90% when tested in accordance with AASHTO T 161.
5. Use material listed on the Department's QPL.

Subsection 903.24 (pg. 946), 5-18-15; Modify the 1st paragraph to the following:

“Provide coarse aggregate consisting of crushed gravel, crushed granite, crushed slag, crushed quartzite, crushed gneiss, or crushed sandstone. Other crushed aggregate may be used provided it has the chemical, physical, and performance characteristics specified in Table 903.24-1.”

Subsection 903.25 (pg. 947), 5-13-19; **Aggregate Quality Requirements:** Add new Subsection.

Table 903.25-1: Fine Aggregate Quality Requirements

Application	Sodium Sulfate Soundness Loss AASHTO T 104, %max	L A Abrasion AASHTO T 96, %max	Absorption AASHTO T 84, %max
Concrete (903.01)	10	40 ⁽¹⁾	N/A
Mortar (903.02)	10	N/A	N/A
Hot Mix Asphalt Mix Base and Leveling Courses (903.06)	12	40 ⁽¹⁾	N/A
Hot Mix Asphalt Surface Courses (903.11)	12	40 ⁽¹⁾	N/A
Slurry Seal (903.12)	12	40 ⁽¹⁾	N/A
Microsurface (903.12)	12	40 ⁽¹⁾	N/A

⁽¹⁾Applicable for fine aggregate manufactured from limestone or dolomite.

Table 903.25-2: Coarse Aggregate Quality Requirements

Application	Sodium Sulfate Soundness Loss AASHTO T 104, %max	L A Abrasion AASHTO T 96, %max	Absorption AASHTO T 84, %max
Concrete (903.03)	9	40	5
Mineral Aggregate Base – Type A (903.05)	15	50	N/A
Mineral Aggregate Base – Type B (903.05)	20	50	N/A
Reclaimed Concrete Aggregate (903.05)	N/A	50	N/A
Hot Mix Asphalt Mix Base and Leveling Courses (903.06)	9	50	5
Hot Mix Asphalt Surface Courses (903.11)	9	40	5 ⁽¹⁾
Bituminous Seal Coat (903.13)	12	40	N/A
Double Bituminous Surface Treatment (903.14)	12	40	N/A
Aggregate Cement Base Course (903.15)	15	50	N/A
Underdrains (903.17)	12	50	N/A
Lightweight Concrete (903.19)	9	40	10
Machined Riprap (709.02)	12	N/A	N/A
Graded Solid Rock (203.02)	12	N/A	N/A
Solid Rock Fill (205.04)	12	N/A	N/A
Masonry Stone (921.07)	12	N/A	N/A

⁽¹⁾Maximum absorption for OGFC is 3.0%

Subsection 904.01 (pg. 948-950), 5-13-19; **Asphalt Cements:** Combined supplemental specifications from 5-15, 11-15, 6-16, 12-16, and 11-17; Replace entire subsection with the following:

904.01 Asphalt Cements

Only obtain asphalt cement for use on Department projects from Certified Asphalt Cement Suppliers that have an approved Quality Control Plan in accordance with the Department's Standard Operating Procedures.

Asphalt cement shall conform to AASHTO M 320 and Department procedures. Direct Tension testing is not required.

Instead of PG 64-22, the Contractor may use asphalt cement graded to PG 67-22. PG 67-22 shall conform to the requirements of AASHTO M 320 when the applicable tests are conducted at 67 °C and - 12 °C, and the dynamic shear of the rolling thin film, pressure aged vessel sample is tested at 26.5 °C.

To modify the asphalt, properly blend one or more modifier(s) consisting of styrene butadiene (SB), styrene butadiene styrene (SBS), or styrene butadiene rubber (SBR), or Ground Tire Rubber (GTR) to a PG 64-22 or PG 67-22 base asphalt.

GTR used to modify asphalt shall meet the requirements of 921.17. Blending of GTR into asphalt cement shall occur only at the asphalt terminal. ”

Polyphosphoric acid may be used as a modified not exceeding 0.5% by weight of asphalt binder and may only be used when the primary modifier is one of the styrene-based products listed above.

In addition to the above, asphalt cement modified with GTR shall meet the following requirement. The temperature difference determined by the Separation Test shall not exceed 15 °F. The separation test shall consist of taking the difference in softening point, as determined by the Ring and Ball Test (AASHTO T53), between the top and bottom thirds of a specimen prepared per ASTM D7173.

In addition to the above requirements, the asphalt cements shall meet the requirements specified in Table 904.01-1.

Table 904.01-1: Requirements for Asphalt Cement

Property*	PG 64-22, PG 67-22	PG 70-22	PG 76-22	PG 82-22
Non-recoverable creep compliance at 3.2kPa, Jnr(3.2), kPa ⁻¹ at 64°C, Max	4.5	1.0	0.5	0.5
% Difference in Non-Recoverable Creep Compliance, Jnr(diff) at 64°C, %, Max	75	75**	n/a	n/a

* Tested in accordance with AASHTO T350.

** Shall be waived if Jnr(3.2) is equal to or less than 0.5

PG76-22 and PG82-22 grade asphalts shall meet the requirements for Indication of Elastic response as defined in Appendix X1 of AASHTO M332. PG70-22 grade asphalts shall have a minimum percent recovery at 3.2 kPa of 29%.

Furnish a certification to the Engineer on each project stating that the asphalt cement provided meets the Department's specification. Ensure that quality control and compliance testing are completed in accordance with the asphalt supplier's approved quality control plan and Department procedures. Identify on the certification, the type(s) of modifier used.

In addition, the asphalt cement supplier shall provide a temperature-viscosity curve for PG 64-22 and PG 67-22 asphalt cements with a recommended mixing temperature range. In order to develop a temperature-viscosity curve, it may be necessary to run the viscosity test at a higher temperature, based on the softening point of the modified asphalt cement.

Subsection 904.01 (pg. 949), 12-30-19; **Asphalt Cements**; Add to end of 4th paragraph:

The use of Re-refined Engine Oil Bottoms (REOB) or Vacuum Tower Asphalt Extender (VTAE) is prohibited.

Subsection 904.01 (pg. 949), 5-13-19; **Asphalt Cements**; Revise paragraph below Table 904.01-1:

PG76-22 and PG82-22 grade asphalts shall meet the requirements for Indication of Elastic response as defined in AASHTO R92. PG70-22 grade asphalts shall have a minimum percent recovery at 3.2 kPa of 29%.

Subsection 904.03 (pg. 951) 11-16-15; Emulsified Asphalts, Add “TTT-3” to 904.03-1 with the following requirements:

Saybolt-Furol Viscosity @ 77 °F, seconds	10-100
Particle Charge	Positive
Sieve Test, %	0.1 Max
Residue by	Distillation ⁽¹⁾
Residue, %	50 Min
Demulsibility, %	65 Min
Penetration	40-90

¹-Distill at 350°F

Subsection 904.03 (pg. 954), 12-2-16; Revise Table 904.03-1(c) to remove TTT-1, TTT-2, and TTT-3:

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

Practices	AASHTO Test Method	CRS-2P	RS-2	RS-1
Saybolt-Furol Viscosity @ 77 °F, seconds	T59	n/a	n/a	20-100
Saybolt-Furol Viscosity @ 122 °F, seconds	T59	100-400	75-400	n/a
Storage Stability Test, 24- h, %	T59	1 Max	1 Max	1 Max
5-day Settlement, %	T59	n/a	n/a	n/a
Particle Charge	T59	Positive	n/a	n/a
Sieve Test, %	T59	0.1 Max	0.1 Max	0.1 Max
Residue by	T59	<i>Evaporation</i>	Distillation	Distillation
Residue, %	T59	65 Min	63 Min	55 Min
Demulsibility,	T59	40 Min	60 Min	60 Min

Practices	AASHTO Test Method	CRS-2P	RS-2	RS-1
%				
Distillate, %	T59	n/a	n/a	n/a
Oil Test, %	T59	n/a	n/a	n/a
Stone Coating	T59	n/a	n/a	n/a
Float Test, seconds	T50	n/a	n/a	n/a
Penetration	T49	75-175	100-200	100-200
Elastic Recovery, % (2)	T301	50 Min	n/a	n/a
Ductility @ 77 °F, cm	T51	40 Min	40 Min	40 Min
Ductility @ 40 °F, cm	T51	n/a	n/a	n/a
R&B Softening Point, °F	T53	125 Min	n/a	n/a
Original G*/sind @ 82 °C	T315	n/a	n/a	n/a

Subsection 904.03 (pg.954), 5-18-15; Replace with the following:

Subsection 904.03, Table 904.03-1(c). Modify as follows for TTT-1, TTT-2:

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

Practices	AASHTO Test Method	CRS-2P	RS-2	RS-1	TTT-1	TTT-2
Saybolt-Furol Viscosity @ 77 °F, seconds	T59	n/a	n/a	20-100	20-100	10-100

Practices	AASHTO Test Method	CRS-2P	RS-2	RS-1	TTT-1	TTT-2
Saybolt-Furol Viscosity @ 122 °F, seconds	T59	100-400	75-400	n/a	n/a	n/a
Storage Stability Test, 24- h, %	T59	1 Max	1 Max	1 Max	1 Max	1 Max
5-day Settlement, %	T59	n/a	n/a	n/a	n/a	n/a
Particle Charge	T59	Positive	n/a	n/a	n/a	Positive
Sieve Test, %	T59	0.1 Max	0.1 Max	0.1 Max	0.1 Max	0.1 Max
Residue by	T59	<i>Evaporation</i>	Distillation	Distillation	Distillation	Distillation ⁽¹⁾
Residue, %	T59	65 Min	63 Min	55 Min	50 Min	50 Min
Demulsibility, %	T59	40 Min	60 Min	60 Min	n/a	n/a
Distillate, %	T59	n/a	n/a	n/a	n/a	n/a
Oil Test, %	T59	n/a	n/a	n/a	n/a	n/a
Stone Coating	T59	n/a	n/a	n/a	n/a	n/a
Float Test, seconds	T50	n/a	n/a	n/a	n/a	n/a
Penetration	T49	75-175	100-200	100-200	0-20	40-90
Elastic Recovery, % ⁽²⁾	T301	50 Min	n/a	n/a	n/a	n/a
Ductility @ 77 °F, cm	T51	40 Min	40 Min	40 Min	n/a	n/a
Ductility @ 40 °F, cm	T51	n/a	n/a	n/a	n/a	n/a
R&B Softening Point, °F	T53	125 Min	n/a	n/a	60-75	n/a
Original G*/sind @ 82 °C	T315	n/a	n/a	n/a	1.0 Min	n/a

Practices	AASHTO Test Method	CRS-2P	RS-2	RS-1	TTT-1	TTT-2
⁽¹⁾ Distill at 350 °F						
⁽²⁾ Straight-sided mold, 20-cm elongation, 5min hold, 25 °C						

Subsection 905.01 (pg. 956) 5-14-18, Revise subsection, add part C. Polypropylene Foam Type:

“905.01 Preformed Joint Fillers (Non-Extruding and Resilient Types)

Provide preformed joint fillers as shown on the Plans. When designated, punch holes in preformed joint filler to admit the dowels.

Furnish the filler for each joint in a single piece for the full depth and width required for the joint unless otherwise directed by the Engineer. If the Engineer approves the use of more than one piece for a joint, fasten the abutting ends securely, and hold to shape by stapling or using other positive means of fastening satisfactory to the Engineer.

A. Bituminous Type

Provide bituminous type preformed joint fillers conforming to AASHTO M 213.

B. Non-Bituminous Types

Provide non-bituminous types of preformed joint filler conforming to AASHTO M 153, Type I, II, or III, as specified.

C. Polypropylene Foam Type

Provide semi-rigid, closed-cell, polypropylene foam, preformed expansion joint filler conforming to ASTM D8139. ”

Subsection 908.04 (pg. 968), 5-18-15, High Strength Bolts, A. Specifications; Add the following to the first paragraph:

“Unless otherwise shown on the Plans, mechanically galvanize all bolts, nuts and washers in accordance with ASTM B695 Class 50.”

Subsection 908.04 (pg. 968), 12-2-16, High Strength Bolts, A. Specifications; revise the first paragraph:

“Unless otherwise shown on the Plans, all bolts, nuts and washers shall be coated with acceptable coating in accordance with ASTM F3125 for the respective grade.”

Subsection 908.04 (pg. 968) 12-2-16; revise A. Specifications, 1.:

“A. Specifications: 1. Bolts. ASTM F3125, Grade 325 and Grade 490 - High Strength Bolts for Structural Joints”

Subsection 908.04 (pg. 970) 12-2-16; Revise C. Testing, 3. Assemblies, subsection f., update Table 908-04-2:

C. Testing, 3. Assemblies, f. Table 908.04-2 The minimum rotation, from a snug tight condition (10% of the specified proof load), shall be as specified in Table 908.04-2.

Table 908.04-2: Rotation from Snug Tight Condition

Bolt Length	Minimum Rotation from Snug
Up to and including 4 diameters	240 degrees (2/3 turn)
Over 4 diameters, but not exceeding 8 diameters	360 degrees (1 turn)
Over 8 diameters	480 degrees (1-1/3 turn)

(Note: These values differ from those shown in ASTM F3125.)

Subsection 908.07 (pg. 973), 5-14-18; Add the following as the last sentence in the subsection:

“Furnish the Engineer a certification from the manufacturer identifying each heat number and certifying that the requirements from AASHTO M 105 and the above additions have been met.”

Subsection 909.01B(pg. 977), 12-2-16; Remove the 4th paragraph referencing a tolerance of 5% from B. Steel Posts and Braces.

Subsection 909.01 C (pg. 978), 12-30-19; **Wood Posts and Braces**; Revise last paragraph 909.01 C;

909.01 Stock Fence...

C. Wood Posts and Braces...

Treat posts, braces, and anchors with a preservative treatment, conforming to **911.02.A. All preservatives must be registered with the U.S.EPA under FIFRA.** Fabricate or frame the timbers before treatment.

Subsection 909.02 (pg. 980-981), 12-2-16; Remove the word minimum from Table 909.02-1:

Table 909.02-1: Post and Braces

Application	Material	ASTM Specification	Nominal Diameter (inches)	Outside Diameter (inches)
Line Posts	Galvanized steel pipe	F1083	1.5	1.900
	Aluminum alloy standard (ANSI Schedule 40) pipe	B429, Alloy 6063, Temper T6	1.5	1.900
	Triple coated steel pipe with a 0.120-inch wall thickness	F1043, Group I-C	1.5	1.900

Application	Material	ASTM Specification	Nominal Diameter (inches)	Outside Diameter (inches)
End, Corner, and Pull Posts	Galvanized standard steel pipe	F1083	2.0	2.375
	Aluminum alloy standard (ANSI Schedule 40) pipe	B429, Alloy 6063, Temper T6	2.0	2.375
	Triple coated steel pipe with a 0.130-inch wall thickness	F1043, Group I-C	2.0	2.375
End and Corner Braces	Galvanized standard steel pipe	F1083	1.25	1.660
	Aluminum alloy standard (ANSI Schedule 40) pipe	B429, Alloy 6063, Temper T6 (for corner posts: B241)	1.25	1.660
	Triple coated steel pipe with a 0.111-inch wall thickness	F1043, Group I-C	1.25	1.660

Subsection 909.03 (pg. 983), 12-2-16; Remove the last paragraph of the subsection.

Subsection 909.01 C (pg. 978), XX-XX-19; **Wood Posts and Braces**; Revise 2nd sentence 909.06, Revise paragraph 909.07:

909.06 Timber Rail...

Provide treated timber, when specified, conforming to 911.02-~~A~~.

909.07 Guard Rail Posts

Provide railing posts of the section, weight, and length shown on the Plans. The posts may be made of wood, conforming to 911.02-~~A~~, or steel, conforming to ASTM A36 and galvanized in accordance with ASTM A123.

Section 911 (pg. 996-999), 12-30-19; **Timber and Timber Piles**; Revise Entire Section:

SECTION 911 – LUMBER, TIMBERS AND TIMBER PILES

911.01 ~~Lumber~~ and Timbers.....	996
911.02 ~~Untreated and~~ Treated ~~Lumber and~~ Timbers.....	997
911.03 Timber Piles	998

911.01 Lumber & Timbers

A. General

Refer to AASHTO M 168 for grading and terminology. This Section primarily addresses bridge and miscellaneous roadway materials. ~~When using lumber or timbers in buildings (houses or similar type structures), use one of the preservative type treatments noted in AASHTO M 133, applied in accordance with and at the rates specified in the current AWP procedure for such treatment.~~

B. Species of Wood

Use Southern Yellow Pine, ~~of at least medium grain,~~ in accordance with Southern Pine Inspection Bureau (SPIB) Specifications or as ~~unless~~ otherwise shown on the Plans.

C. Grades of Lumber and Timber

~~Lumber ordered in multiple lengths shall be graded after having been cut to length. When shown on the Plans or specified in the Contract,~~ Provide lumber and timbers for permanent use in structures that is grade marked or hammer stamped by a recognized acceptance agency. ~~Provide timber~~ that conforms to the following:

- 1. Yard Lumber.** Provide yard lumber with a grade of C Finish, ~~when~~ a choice quality grade for finish purposes, ~~that is reasonably clear and without defects or blemishes that will detract~~

~~from a finish~~ and appearance is a requirement, especially when painted.

- a. **No. 1.** Provide #1 Grade lumber and timbers for general construction and utility purposes where strength is a consideration. ~~Sound and tight knotted stock. Size of defects and blemishes limited.~~
- b. **No. 2.** Provide #2 Grade lumber and timbers for general construction and utility purposes where strength is not a consideration. ~~Allows somewhat (approximately 50%) larger and coarser defects than No. 1. May be considered grain tight lumber.~~
2. **Structural or Stress Rated Lumber and Timber.** As specified or otherwise noted in the plans, provide lumber and timbers of a structural grade conforming to the grading rules of the Southern Pine Inspection Bureau (SPIB). Allowable stress shall be in accordance with the current SPIB grading rules.
3. ~~**Stress Grades for Structural Purposes.** Where the Specifications or Plans call for standard stress grades for various structural purposes, provide material of the grades shown on the Plans.~~

911.02 ~~Untreated and~~ Treated Lumber and Timbers

A. ~~Treated Timber~~

Treated lumber and timbers ~~refers to timber of the species called for,~~ shall conform to the requirements of 911.01 and are to be treated by a pressure method to retain the minimum ~~quantity retention of preservative per cubic foot of the specified preservative wood for the~~ designated use as outlined in American Wood Protection Association (AWPA) Standard U1, Commodity Specification A: Sawn Products. ~~Use preservatives meeting the requirements of AASHTO M 133 for the particular type provided.~~ All preservatives must be registered with the U.S.EPA under FIFRA.

~~For timber that is to be pressure treated, no heartwood requirement or sapwood limitation shall apply.~~

The Engineer will not accept treated structural lumber or timbers for use unless it has been inspected and found satisfactory both before and after treatment. Material that is grade marked and or tagged bearing the mark of an agency accredited under the American Lumber Standards Committee, Inc. (ALSC) shall be acceptable. Alternatively, the manufacturer may furnish a notarized Certificate of Compliance which includes the tally, grade, and preservative retention of material provided.

B. ~~Untreated Timber, Heart Requirements~~

~~Ensure that all timber to be used without preservative treatment shows not less than the following amounts of heartwood:~~

- ~~1. Stringers, floorbeams and flooring: 80% of heart of any girth.~~
- ~~1. Caps, sills, and posts: 75% of heart on each of the four sides measured across the side.~~
- ~~1. Bracing, struts, rails, and similar: 80% of heart on both sides measured across the side.~~

911.03 Timber Piles

A. General

Provide untreated or treated timber piles in accordance with ASTM D25 Standard Specification for Round Timber Pile.

~~Cut timber piles from live, solid, sound trees, preferably during the winter season. Ensure that timber is free from defects such as injurious ring shakes, large, loose or unsound knots, decay, or other defects that might impair its strength or durability. Sound knots are allowable provided the greatest diameter of the knot does not exceed 4 inches or one third of the diameter of the pile at the point where it occurs. Saw the butts square.~~

Fabricate round piles to meet the minimum diameters specified in Table 911.03-1. ~~for the tip and a section 3 feet from the butt, measured under the bark~~

Table 911.03-1: Timber Pile Diameters

Length of Pile	Tip Diameter (inches)	Butt End Diameter (inches)
20 feet and under	8	11
Over 20 feet up to 40 feet	8	12
Over 40 feet up to 60 feet	7	12
Over 60 feet	6	13

The diameter of the piles at the butt shall not exceed 18 inches.

~~Square piles shall have the dimensions shown on the Plans.~~

~~Cut piles above the ground swell. Peel all piles so as to remove all the rough or outer bark and at least 80% of the inner bark.~~

~~Do not leave any strips of inner bark larger than 3/4 x 8 inches on the pile. Provide a space of at least 1 inch wide between strips. Ensure that at least 80% of any circumference is free from inner bark.~~

Provide piles that have a uniform taper from butt to tip and are straight grained, ~~and meet the following requirements.~~

~~1. A line drawn from the center of the butt to the center of the tip shall not fall outside the center of the pile more than 0.75% of the length at any point.~~

~~1. Piles shall be free from reverse bends.~~

~~1. In short bends, the distance from the center of the pile to a line stretched from the center of the pile above the bend to the center of the pile below the bend shall not exceed 4% of the length of the bend or 2 1/2 inches.~~

~~1. Trim all knots close to the body of the piles. Piles shall be free from twist exceeding half the~~

~~circumference in any 20 feet of length.~~

~~A. Untreated Timber Piles~~

~~Provide untreated timber piles conforming to the general requirements for timber piles specified in 911.03.A, with the following additions:~~

- ~~1. For piles that will be below water level at all times, the Contractor may provide untreated timber piles of any species of wood that will satisfactorily withstand driving.~~
- ~~1. For use in exposed work, provide untreated timber piles from one of the following species: white oak, post oak, cypress, or southern yellow pine, except loblolly pine. Ensure the piles have a diameter or heartwood of not less than 80% of the required diameter of the pile.~~

~~CB. Treated Preservative Treatment of Timber Piles~~

~~Pressure preservative treat timber piles with a preservative specified in AASHTO M133 and in accordance with AWP A U1, Commodity Specification E: Round Timber Piling, UC4C. Provide treated timber piles conforming to the general requirements for timber piles specified in 911.03.A, with the following additions: All preservatives must be registered with the U.S.EPA under FIFRA.~~

- ~~1. The Contractor may provide treated timber piles of any species that will satisfactorily withstand driving and that will take the required preservative treatment.~~
- ~~2. Treat the timber piles with a preservative conforming to AASHTO M 133 in accordance with requirements of the current AWP A procedure~~

Subsection 912.05 (pg. 1001), 6-27-16; Add subsection 912.05 – Brick Paving Units:

“912.05 Brick Paving Units

Provide brick of the kind and grade specified.

A. Masonry Brick

1. Sidewalk: ASTM C902, Class SX, Type 1
2. Crosswalks and Roadway: ASTM C1272, Type R

B. Concrete Brick and Truncated Dome Concrete Brick

Provide brick conforming to ASTM C936

C. Truncated Dome Brick

Provide brick conforming to ASTM C902, Class SX, Type 1”

Subsection 914.08 (pg. 1006), 5-13-19; **Precast, Concrete Box Sections**; Revise 1st paragraph:

For culverts, storm drains, and sewers, provide precast reinforced concrete box sections conforming to ASTM C1577. Manufacture all precast concrete box sections in accordance with the Department’s

Subsection 914.07 (pg. 1005), 12-30-19; **Plastic and polyethylene Corrugated Tubing**; Revise subsection:

Provide tubing conforming to AASHTO M 252 or ASTM F~~667405~~ for Heavy Duty Tubing, with the following exception:

Tubing having an elongation greater than 5% but less than 10% is acceptable provided the minimum pipe stiffness requirements in Table 1 are met when tested in accordance with ASTM F~~667405~~, Section ~~89.75~~, using a 12-inch base plate.

Subsection 915.02 (pg. 1007), 6-27-16; modify the description of 915.03, remove zinc coated, iron from 915.02 A. update the first paragraph of 915.02 A., Remove subsection B. Aluminum Coated Steel Pipe, Revise C. to become B., revise D to become C, Remove 1st and 2nd paragraphs of D now C, revise E to become D, update 915.03 to match index title:

“SECTION 915 – METALLIC PIPE

915.01 Ductile Iron or Cast Iron Pipe	1007
915.02 Corrugated Metal Pipe Culverts, Pipe Arches, and Underdrains.....	1007
915.03 Polymer Pre-coated, Corrugated Steel Pipe, Culverts, and Underdrains....	1008

915.01 Ductile Iron or Cast Iron Pipe

Provide ductile iron pipe conforming to ASTM A716 for the specified diameters and strength classes. Unless otherwise specified, either smooth, corrugated, or ribbed pipe may be furnished. For pipe diameters in excess of 48 inches, conform to ANSI Standard for Cast Iron Pit Cast Pipe, or as otherwise specified in the Contract, for the specified diameter and strength class.

Provide cast iron drain pipe conforming to ASTM A74. Unless otherwise specified, provide ductile iron pressure pipe for water lines or sewer construction conforming to the requirements of ASTM A377 for the diameters and working pressures specified.

915.02 Corrugated Metal Pipe Culverts, Pipe Arches, and Underdrains

A. Corrugated Steel Pipe, Pipe Arches, and Underdrains

Provide corrugated steel pipe, pipe arches, or underdrains, including special sections, such as elbows and flared ends, that conform to AASHTO M 36, aluminum-coated Type 2 meeting AASHTO M274. Special Sections shall be the same thickness as the pipe, arch, or underdrain to which they are joined. Furnish shop-formed elliptical pipe and shop-strutted pipe only where shown on the Plans.

B. Corrugated Aluminum Pipe, Pipe Arches, and Underdrains

When using corrugated aluminum pipe, pipe arches, or underdrains, conform to the applicable requirements of AASHTO M 196. Use special sections, such as elbows and flared end sections that conform to the applicable requirements of AASHTO M 196 and that are of the same gauge as the conduit to which they are joined.

C. Structural Plate Corrugated Steel and Aluminum Structures

Corrugated aluminum alloy structural plate for pipe, pipe arches, and arches shall conform to the requirements of AASHTO M 219.

D. Bituminous Coating

When material supplied for any of the items specified above are to be bituminous-coated, ensure that the metal to be coated is free of grease, dirt, and other contaminants. Bituminous coating and paving shall conform to the requirements of AASHTO M 190. Apply the coating in accordance with the manufacturer's recommended procedures and as directed by the Department."

915.03 Polymer Pre-coated, Corrugated Steel Pipe, Culverts and Underdrains

Provide polymer pre-coated corrugated steel pipe conforming to AASHTO M 245, Grade 250/250, unless otherwise specified."

Subsection 916.05 E. (pg. 1012); 12-2-16, Add sentence to first paragraph:

"Fabricators must be AISC certified as specified in **602.04 A.4.**"

Subsection 917.02.A.6. (pg. 1023), 6-27-16; Revise the following:

"6. Anchor Bolts. Use anchor rods of high strength steel meeting the requirements of ASTM F 1554, Grade to be determined by design. Fit each anchor bolt with a hex nut and lock-washer."

Subsection 917.11 (pg. 1031), 12-30-19; **Service Poles and Wood Standards**; Revise 1st paragraph:

917.11 Service Poles and Wood Standards

Provide wood service poles and standards of the class and length shown on the Plans. Unless otherwise specified, provide poles and standards of treated southern pine, classified according to the latest American Standard Dimensions of Southern Pine Poles, and that meet the requirements of ANSI 05.1. Treat the poles with pentachlorophenol or other approved treatment at the rate recommended by the local power authority, unless otherwise specified. The treatment shall conform to **911.03.G**.

Subsection 918.01 (pg. 1033-1035), 5-14-18; Revise the 1st paragraph and 3rd paragraph of A. General, Revise Table 918.01-1, Table 918.01-2, Table 918.01-4, Table 918.01-5, Revise the last paragraph of B. Seed Groups, Revise Table 918.01-6 Temporary Seeding:

A. General

Provide seed meeting the rules and requirements of the Tennessee Department of Agriculture Chapter 0080-05-06.

Pack grass seed in new bags or bags that are sound and not mended.

The vendor shall notify the Department before making shipments to allow the Department to arrange for inspection and testing of stock.

The vendor shall furnish the Department a certified laboratory report from a Society of Commercial Seed Technologists accredited commercial seed laboratory or from a State seed laboratory showing the analysis of the seed to be furnished. The report from an accredited commercial seed laboratory shall be signed by a Registered Member of the Society of Commercial Seed Technologists. The Department may take samples of the seed to check against the certified laboratory report. Sampling and testing will be in accordance with the requirements of the Tennessee Department of Agriculture.

Use commercial grade 10-10-10 fertilizer or equivalent.

B. Seed Groups

When a seed group is used, provide mixtures meeting the requirements specified in Tables 918.01-1 through 918.01-5, unless otherwise specified.

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

Kind of Seed	Quantity, Percent by Weight
Kentucky 31 Fescue	80
Korean Lespedeza	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	5575
Korean Lespedeza	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	30

Table 918.01-4: Group C (August 1-December 1)

Kind of Seed	Quantity, Percent by Weight
Kentucky 31 Fescue	70
EAnnual Rye Grass	20
White Clover	10

Table 918.01-5: Group C1 (February 1-December 1)

Kind of Seed	Quantity, Percent by Weight

Crown Vetch	25
Kentucky 31 Fescue	70
Annual Rye Grass	5

Uniformly mix seed when forming Groups. Do not mix Group seed until each type seed that is used to form the Group has been tested separately and meets DOA requirements for purity and germination.

C. Over-Seeding

Groups A, B, and C, when sown on slopes 3:1 and steeper, shall be over seeded with Sericea Lespedeza at the rate of 15 pounds per acre. When over-seeding is performed between February 1 and July 1, use Scarified Sericea Lespedeza with an additional 2 pounds per acre of Weeping Lovegrass. Between July 1 and December, use unhulled Sericea Lespedeza. Only use Group C1 when shown on the Plans.

D. Temporary Seeding

For temporary seeding, use seed groups and approved varieties as specified in Table 918.01-6.

Table 918.01-6: Temporary Seeding

Seed Group (Season)	Kind of Seed	Percent by Weight
Group D (January 1 – May 1)	ItAnnual Rye Grass	33-1/3%
	Korean Lespedeza	33-1/3%
	SSpring Oats	33-1/3%
Group E (May 1 – July 15)	SSorghum-Sudan Crosses ⁽¹⁾	100%
	or StGerman Millet ⁽²⁾	100%
Group F July 15 – January 1	BCereal Rye	66-2/3%
	ItAnnual Rye Grass	33-1/3%

Subsection 918.04 (pg. 1036), 12-2-16; add as a 2nd paragraph:

“For small quantities less than 100 units of seeding or sod, bagged pelletized or agricultural limestone meeting the Department of Agriculture Tennessee Liming Materials Act may be utilized.”

Subsection 918.04 (pg. 1036), 5-13-19; **Agricultural Limestone**; Revise 1st and 2nd paragraphs:

Provide agricultural limestone

-meeting the Department of Agriculture Tennessee Liming Materials Act-utilized

Subsection 921 (pg. 1049), 11-6-17, Section 921 – Miscellaneous Materials, add Ground Tire Rubber to the Index:

“921.17 Ground Tire Rubber 1060”

Subsection 921.01 (pg. 1049), 5-18-15, Water; Replace subsection with the following:

“For mixing concrete, use water that is reasonably clean and free of oil, salt, acid, alkali, sugar, vegetable matter, and other substances injurious to the finished product. Water provided by a municipal utility may be used without testing.

All other water shall have quality results submitted in accordance with the frequency listed in Table 921.01-01. All water quality results shall adhere to Table 921.01-2.

Table 921.01-1 Testing Frequency for Mixing Water

Water Source	Testing Frequency ⁽¹⁾
Municipal	NA
Non-Municipal	Every 3 months; tested annually after 4 consecutive passing tests

(1) The frequency may vary at the discretion of the Department.

Table 921.01-2 Quality Requirements for Mixing Water

Maximum Concentration in Mixing Water	Limits	ASTM Test Method ⁽¹⁾
Chloride Ion Content, ppm	500	C114
Alkalies as (NaO ₂ + 0.658 K ₂ O), ppm	600	C114
Sulfates as SO ₄ , ppm	3000	C114
Total Solids by mass, ppm	50000	C1603
pH	4.5-8.5	(2)
Resistivity, Minimum, kohm-cm	0.500	D1125
Soluble Carbon Dioxide, ppm	600	D513
Calcium and Magnesium, ppm	400	D511
Iron, ppm	20	(2)
Phosphate, ppm	100	D4327

(1) Other methods (EPA or those used by water testing companies) are generally acceptable.

(2) No ASTM method available.

Subsection 921 (pg. 1049) 10-8-18, Miscellaneous Materials, Remove 921.03 Sodium Chloride from the Content list:

921.01 Water	1052
921.02 Calcium Chloride	1053
921.04 Lime	1053
921.05 Select Material for Soil-Cement Base	1054
921.06 Chemical Additives	1054
921.07 Masonry Stone	1056
921.08 Waterstops	1056
921.09 Grout	1059

921.10 Precast Manholes and Catch Basins	1059
921.11 Manhole Steps	1059
921.12 Geotextile and Geosynthetic Material	1060
921.13 Precast Prestressed Bridge Deck Panels	1060
921.14 Applied Textured Finish Material	1061
921.15 Fly Ash	1063
921.16 Ground Granulated Blast Furnace Slag	1063

Subsection 921.01 (pg. 1049), 5-14-18, Water; Remove Resistivity, Soluble Carbon Dioxide, Calcium and Magnesium, Iron, and Phosphate from Table 921.01-2 Quality Requirements for Mixing Water:

Table 921.01-2 Quality Requirements for Mixing Water

Maximum Concentration in Mixing Water	Limits	ASTM Test Method ⁽¹⁾
Chloride Ion Content, ppm	500	C114
Alkalies as (NaO ₂ + 0.658 K ₂ O), ppm	600	C114
Sulfates as SO ₄ , ppm	3000	C114
Total Solids by mass, ppm	50000	C1603
pH	4.5-8.5	⁽²⁾

(1) Other methods (EPA or those used by water testing companies) are generally acceptable.

(2) No ASTM method available.

Subsection 921.03 (pg. 1050) 10-8-18, Miscellaneous Materials, Remove subsection 921.03 Sodium Chloride:

Subsection 921.06 (pg.1051) 11-16-15; B. Bituminous Additives - 1. Anti-Stripping Additive, replace the ASTM C977 reference with AASHTO M 303.

“Use hydrated lime conforming to AASHTO M 303 or other heat-stable asphalt anti-stripping additive containing no ingredient harmful to the bituminous material or the workmen and that does not appreciably alter the specified characteristics of the bituminous material when added in the recommended proportions.”

Subsection 921.06 B. Bituminous Additives (pg.1052) 10-10-16; revise the 3rd paragraph to the following:

“When using an anti-stripping additive other than hydrated lime, use a dosage rate of 0.3%, unless either gravel is used as a coarse aggregate or test results indicate moisture susceptibility, in which case mix at a dosage rate of 0.5%.

Subsection 921.06 B. 2. (pg. 1052) 11-6-17; B. Bituminous Additives, 2. Silicone Additives, Remove description and add the following sentence:

“2. Silicone Additives. The amount of silicone added to asphalt cement shall not exceed 2 oz. of silicone per 5500 gallons asphalt cement.”

Subsection 921.07 (pg. 1053), 5-13-19; **Masonry Stone**; Revise 2nd paragraph:

Masonry stone shall meet the quality requirements in 903.25.

Subsection 921.10 (pg. 1056), 5-13-19; **Precast Manholes and Catch Basins**; Revise 1st paragraph:

Provide precast manholes and catch basins that conform to ASTM C478 and that are made in accordance with the Department’s Standard Operating Procedure 5-3.

Subsection 921.15 (pg. 1060), 5-13-19; **Fly Ash**; Revise 3rd paragraph:

Obtain fly ash from an approved source as shown on the Department’s Producer List.

Subsection 921.15 (pg. 1060), 5-13-19; **Fly Ash**; Revise Table 921.15-1:

Table 921.15-1: Fly Ash Requirements

Property	Fly Ash Class	
	F	C
A. Chemical Requirements: Uniformity Requirements		
The loss on ignition of individual samples shall not vary from the average established by the 10 preceding tests, or by all preceding tests if the number is less than 10, by more than: Loss on ignition, max variation, percentage points from average	1.0	1.0
B. Physical Requirements: Pozzolanic Activity Index		
With Portland cement, at 7 days, min, % of control	60	60
With Portland cement, at 28 days, min, % of control	75	75

Subsection 921.16 (pg. 1060), 5-13-19; **Ground Granulated Blast Furnace Slag**; Revise 2nd paragraph:

Obtain ground granulated blast furnace slag from an approved source as shown on the Department’s ~~QPL~~ Producer List.

Subsection 921.17 (pg. 1060) 11-6-17; Ground Tire Rubber, add the following subsection:

“921.17 Ground Tire Rubber

Provide Class 30-1 Ground Tire Rubber (GTR) as defined by ASTM D5603 except for as noted in table 921.17-1. The material shall also be certified to meet the requirements of Table 921.17-01. Include certification of the GTR with the bill of lading for the modified asphalt cement.

Table 921.17-1: Requirements for Ground Tire Rubber

Property	Specification
Specific Gravity	1.15 +/- 0.05
Moisture Content	0.75% Max
Ferrous Metal Content	0.01% Max
Fiber Content	0.5% Max
Ash (ASTM E1131)	10% Max

STATE**OF****TENNESSEE**

Rev: October 10, 2016

January 1, 2015

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**OF****TENNESSEE**

(Rev. 6-19-95)

(Rev. 6-1-04)

(Rev. 06-20-2011)

January 1, 2015

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**

January 1, 2015

Rev. 12-22-14

Rev. 2-13-17

Rev. 6-26-17

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

The conditions of this Special Provision apply to all construction on this 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 1200-4-10, and Aquatic Resource Alteration permits in Chapter 1200-4-7; 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

It is understood and agreed that the Contractor assumes 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."

It is also understood and agreed that the Contractor shall be responsible for obtaining any additional permits required by the Contractor's method of construction, including without

limitation haul roads, temporary channels or temporary ditches, or off-site waste and/or borrow areas.

It is also understood that the Contractor shall be responsible for implementing 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.

The Contractor by signing this contract is indicating that the Contractor has reviewed a copy of the permit provisions, including NPDES Permit provisions at <http://www.tdot.state.tn.us/construction/permits/npdes.pdf>, the site specific SWPPP, the contract plans, Standard Specifications and contract Special Provisions and finds the permit requirements and erosion prevention and sediment control (EPSC) procedures to be reasonable, workable, and binding.

It is also understood that 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 Construction Supervisor. The NOT is a certification that the construction project site is permanently stabilized and that 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, employed at the site are deemed adequate to prevent erosion and sediment transport and no other potential sources of construction-related pollution are on the project.

It is also understood that 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 **Subsection 105.15** of the **Standard Specifications**, the Contractor shall be required to supply a performance bond as outlined in **Subsection 802.15** of the **Standard Specifications** to cover any warranty for EPSC plantings.

NPDES Permit Required Action

The Contractor (or their representative) shall accompany the EPSC inspector (TDOT personnel or TDOT hired consultant) on all EPSC inspections of the entire construction project including permitted locations and potentially impacted streams as well as 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 construction sites have been temporarily stabilized, or runoff is unlikely due to winter conditions (e.g. site covered with snow or ice), such inspection only has to be conducted once per month until thawing or precipitation results in runoff or 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 Project Supervisor and the TDEC Central Office before proceeding.

An individual representing the Contractor, who holds a current TDEC “*Fundamentals of Erosion Prevention and Sediment Control Level I*” certification shall accompany the EPSC inspector on all required EPSC inspections. The Contractors 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 Project Supervisor prior to beginning of construction.

The TDOT EPSC inspector shall document all deficiencies on the required TDOT EPSC Inspection Report form (provided in the SWPPP). The Contractor (or their representative) shall sign the TDOT EPSC Inspection Report form and any supporting documentation indicating that he is in agreement with the report, recommendations and repair schedule as stated within the documentation.

Additionally, the Contractor shall make necessary maintenance and repairs relative to deficiencies in these permit conditions or requirements within twenty-four (24) hours after an inspection identifies the maintenance or repair need, and/or when directed to do so by the TDOT Project Supervisor, unless conditions make a particular activity impracticable. Any such conditions that make immediate repairs impracticable shall be documented and provided to the TDOT Project Supervisor, via the inspection report, and be accompanied by an expected repair schedule based on forecasted weather conditions.

The Contractor further agrees that he will execute two (2) copies of the Notice of Intent (NOI) form of the permit (provided by the Department), indicating his acceptance of the stipulations contained therein. The Contractor further agrees, that should he fail to execute said copies and return them to the TDOT Construction Division within ten (10) calendar days after submittal of the contract proposal to him, that the Department may at its discretion cancel the award with the Contractor forfeiting his bid bond.

Further, the Contractor agrees to review the site specific Stormwater Pollution Prevention Plan (SWPPP) that will be made available prior to or at the pre-construction conference, for any additional EPSC requirements. The Contractor shall sign and submit two copies of the SWPPP signature page (provided by the Department within the site specific SWPPP). The Contractor may submit for review and approval changes/revisions to the SWPPP to better prevent erosion and sediment transport at any time after contract execution. Rejection of any submittals does not relieve the contractor of any 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. The Contractor shall comply with the new requirements within thirty (30) days of the Department notification.

If at any time the Contractor becomes aware that sedimentation is occurring or has occurred in streams impacted by the specified project, the Contractor shall immediately notify the TDOT Project Supervisor to evaluate the EPSC measures employed. A determination of the cause for sedimentation will be made by the Department. The Contractor shall 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, the Contractor shall, within twenty-four (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 Violation (NOV) or Order pursuant to the Tennessee Water Quality Control Act or the Federal Clean Water Act is issued on this project, any and all fines will be the

sole responsibility of the Contractor as outlined in **Subsection 107.01** of the **Standard Specifications for Road and Bridge Construction**.

Failure of the Contractor to comply with this Special Provision or take immediate corrective actions required within twenty-four (24) hours (unless documented conditions make a particular maintenance or repair activity impracticable immediately) shall be reason for the TDOT Project Supervisor to suspend all other work on the Project, except erosion prevention and sediment control (EPSC) and traffic control, applying 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 Project 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 **Subsection 108.09** of the **Standard Specifications for Road and Bridge Construction January 1, 2015**, as amended.

If the Contractor does not make necessary corrections/adjustments in a timely manner as required above, the Department will implement the provisions of **Subsection 209.07** and **Subsection 109.08** of the **Standard Specifications for Road and Bridge Construction** 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 Project Supervisor as stated in **Subsection 105.01** of the **Standard Specifications for Road and Bridge Construction**.

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, the contractor shall develop a site specific SPCC Plan per EPA requirements. This plan shall be provided to the Project 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. The contractor 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.

The contractor shall be responsible complying 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 Stormwater Pollution Prevention Plan (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, the contractor shall immediately notify the Project Supervisor.

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

January 1, 2015 |

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

Reference:

Federal-Aid Highway Program Manual

Transmittal 147, June 26, 1975

Replaces FHWA Order Interim 7-2(1)

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 FHWA-1273 or PR-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, exceeding \$10,000, 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 exceeding \$10,000 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 age, race, color, religion, sex, national origin 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 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.

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.
- (c) 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).
- (d) 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 age, race, color, religion, sex, national origin 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 age, race, color, religion, sex, national origin 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 age, race, color, religion, sex, national origin 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.
 - (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) Each contractor and subcontractor shall submit to the Tennessee Department of Transportation an annual report for every July during which work is performed 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 and is to be received by the Department not later than the 20th of the month following the reporting period.
- (d) The contractor and/or sub-contractor will be required to complete other reports as instructed by the Engineer.
- (e) Current estimates may be withheld by the Project Engineer when reports are not received within the above specified time limits.

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

January 1, 2015 |

SPECIAL PROVISION**REGARDING****STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY****CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)**

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 indentifiable 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 (including goals and time tables) 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 goal 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. 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 the 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 compiled under 7b 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 on-site 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 age, race, color, religion, sex, national origin 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**O F****T E N N E S S E E**

Revised 10-19-2012

January 1, 2015 |

SPECIAL PROVISION**REGARDING****NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION****TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)**

1. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
2. The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work 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, Trousdale, 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.

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 established for the geographical area where the contract resulting from this solicitation is to be performed. 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 Office of Federal Contract Compliance Programs at the following address 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.

STATE**OF****TENNESSEE**

(Rev. 08-20-18)

January 1, 2015

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 age, race, color, religion, national origin, sex, 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 deemed appropriate by the Department.

STATEOFTENNESSEE

(Orig. 8-20-18)

January 1, 2015

SPECIAL PROVISIONREGARDINGDBE CONTRACT GOAL

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.

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 some portion of the 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 DBE Form 1247A, which must be approved by the Civil Rights Division - Small Business Development Program (CRD-SBDP) 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 project 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 DBE Form 1247A. The bidder shall list the following information on each DBE Form 1247A 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.

The completed DBE Form 1247A shall be submitted within three (3) business days after the Letting. Failure to provide a 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 Project 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 contractors and will review any lease agreements allowed as part of the DBE commitment. Information submitted shall match Form 1247A.

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 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 2 CFR Parts 180, 215 and 1,200 or applicable state law;
 - f. Is not a responsible contractor, 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 contractor 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.

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. An officer of the Contractor shall provide an electronic signature to the Prompt Payment Certification Form and return via email to DBE.Runningtally@tn.gov.

5. 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 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 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

1. 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.

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Nonsegregated 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. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

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 (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).

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.

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). 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 bid proposal or request for proposal 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).

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.

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. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 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 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, 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 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, 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 230, 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 (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 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 35 and 29 CFR 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.

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, 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 who 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.

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, 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 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. 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, 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, 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 there under. 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, 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 and 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. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor 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 contracting agency deems appropriate.

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 \$10,000 or more.

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, 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). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

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

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, Employment Standards Administration, 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 Wage and Hour Administrator for

determination. The Wage and Hour 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

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

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 at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor 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 §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, 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 Regulations, 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 section 1001 of title 18 and section 231 of title 31 of the United States Code.

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

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. 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.

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.

9. Disputes concerning labor standards. 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.

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

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.

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 of \$10 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.

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.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (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.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

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

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" 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:

(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.

2. 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. 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.

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

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 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.

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 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).

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 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 1, 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

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

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

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.

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.

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.

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.

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 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee 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 grantee or subgrantee 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.

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.

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. 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 Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

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. 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) 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;

(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; 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.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. 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)

a. By signing and submitting this proposal, the prospective lower tier 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.

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 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 grantee or subgrantee 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 grantee or subgrantee 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).

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.

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.

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 Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

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.

* * * * *

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 is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall 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 20).

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.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS
PREFERENCE FOR APPALACHIAN DEVELOPMENT
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS
ROAD CONTRACTS**

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.

TENNESSEE DEPARTMENT OF TRANSPORTATION

MINIMUM WAGE SCALES FOR FEDERAL AID HIGHWAY CONSTRUCTION

General Decision Number: TN20200147 01/03/2020

Superseded General Decision Number: TN20190147

State: Tennessee

Construction Type: Highway

Counties: Tennessee Statewide.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.80 for calendar year 2020 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.80 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 calendar year 2020. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number
0

Publication Date
01/03/2020

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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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 E0, 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 E0 is available at www.dol.gov/whd/govcontracts.

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 Regional Office for the area in which the survey was conducted because those Regional Offices have 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:

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 DECISION

PROPOSAL
TO THE CITY OF FRANKLIN, TENNESSEE

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, 2015) 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: [Signature]

Robert P. Elliott - President

Printed Name and Title

8600 Visco Drive

Address

Nashville, TN 37210

City/State/Zip

Bidder (1) being

a

S-Corporation
(Type of business entity)

composed of officers, partners, or owners as follows:

David P. Stansell - CEO/Chairman

Name/Title

Name/Title

James T. Stansell - Secretary

Name/Title

Name/Title

Name/Title

Name/Title

Bidder (2)*

By: _____

Printed Name and Title

Address

City/State/Zip

Bidder (2) being

a

(Type of business entity)

composed of officers, partners, or owners as follows:

Name/Title

Name/Title

Name/Title

Name/Title

Name/Title

Name/Title

Revised BID FORM for PIN 116144.01 / COF Contract No. 2020-0113

PART 1 of 2 - PROJECT ESTIMATED QUANTITIES (Revised via Addendum No. 1)

FOOTNOTE(S)	ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (\$)	EXT. AMOUNT (\$)
	209-09.01	SANDBAGS	BAG	42	15.00	630.00
	209-20.03	POLYETHYLENE SHEETING (6 MIL. MINIMUM)	S.Y.	1,575	3.00	4,725.00
	712-01	TRAFFIC CONTROL	LS	1	46,600.00	46,600.00
	712-04.01	FLEXIBLE DRUMS (CHANNELIZING)	EACH	100	48.00	4,800.00
	712-06	SIGNS (CONSTRUCTION)	S.F.	864	13.00	11,232.00
	712-08.03	ARROW BOARD (TYPE C)	EACH	4	2,800.00	11,200.00
	717-01	MOBILIZATION	LS	1	34,800.00	34,800.00
	725-24.41	BURN-IN PERIOD	LS	1	10,750.00	10,750.00
	725-24.55	AS-BUILT PLANS	LS	1	5,600.00	5,600.00
	725-24.61	TRAINING	LS	1	10,300.00	10,300.00
5	725-28.22	SPARE PARTS	LS	1	35,300.00	35,300.00
	730-03.21	INSTALL PULL BOX (TYPE B)	EACH	2	950.00	1,900.00
	730-12.02	CONDUIT 2" DIAMETER (PVC)	L.F.	560	20.00	11,200.00
	730-12.13	CONDUIT 2" DIAMETER (JACK AND BORE)	L.F.	165	80.00	13,200.00
	730-14.01	SHIELDED DETECTOR CABLE	L.F.	725	3.00	2,175.00
	740-11.02	TEMPORARY SEDIMENT TUBE 12IN	L.F.	210	5.00	1,050.00
4	790-20.01	POLE (30' ALUMINUM)	EACH	7	6,100.00	42,700.00
	920-20.05	MAGNETOMETER SERVER LICENSE	LS	1	19,800.00	19,800.00
1	920-20.12	MAGNETOMETER VEHICLE DETECTOR SENSOR	EACH	196	925.00	181,300.00

Revised BID FORM for PIN 116144.01 / COF Contract No. 2020-0113 PART 1 of 2 - PROJECT ESTIMATED QUANTITIES (Revised via Addendum No. 1)						
FOOTNOTE(S)	ITEM NO.	ITEM DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE (\$)	EXT. AMOUNT (\$)
3	920-20.20	MAGNETOMETER SENSOR REPEATER	EACH	45	2,500.00	112,500.00
3	920-20.28	MAGNETOMETER SENSOR EXT ANTENNA	EACH	5	985.00	4,925.00
2	920-20.36	MAGNETOMETER SENSOR SYSTEM ISOLATOR	EACH	20	950.00	19,000.00
2, 3	920-20.44	MAGNETOMETER SENSOR DIGITAL RADIO	EACH	36	1,270.00	45,720.00
2	920-20.52	MAGNETOMETER SENSOR CABINET CONTROL	EACH	20	3,300.00	66,000.00
2	920-20.60	MAGNETOMETER SENSOR CABINET CONTROLLER INTERFACE	EACH	20	1,500.00	30,000.00
3	920-20.68	MAGNETOMETER SENSOR REPEATER - DUAL	EACH	21	750.00	15,750.00

TOTAL BID PRICE (IN WORDS):

Seven hundred forty-three thousand one hundred fifty-seven dollars and zero cents

TOTAL BID PRICE (\$):

\$743,157.00

BID FORM for PIN 116144.01 / COF Contract No. 2020-0113

PART 2 of 2 – FOOTNOTES

1. ITEM INCLUDES THE INSTALLATION OF SENSORS AS SHOWN IN THE PLANS, SPECIFICATIONS, AND TECHNICAL SPECIAL PROVISIONS.
2. ITEM INCLUDES THE CAT5E AND POWER CORDS AS NEEDED FOR OPERATIONS.
3. ITEM INCLUDES THE MOUNTING HARDWARE AS NEEDED FOR ATTACHMENT(S).
4. ITEM IS FOR THE ALUMINUM DIRECT BURIED DETECTOR POLES FOR THE MAGNETOMETER SYSTEM.
5. ITEM TO INCLUDE SPARE PARTS AS DESCRIBED IN THE PROJECT TECHNICAL SPECIAL PROVISIONS.

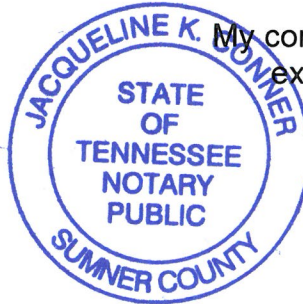
PROPOSAL CERTIFICATION

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)
By: [Signature] this 26th day of May, 2020
Robert P. Elliott - President [Signature]
Printed Name and Title Notary Public

(Seal)



My commission
expires

12/26/2022

Bidder (2) Sworn to and subscribed before me
By: _____ this _____ day of _____,

Printed Name and Title Notary Public

My commission
expires _____

(Seal)

***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. 2020-0113

Principal: **Stansell Electric Company, Inc.**

Print Name of Principal

Surety: **Fidelity and Deposit Company of Maryland**

Print Name of Surety

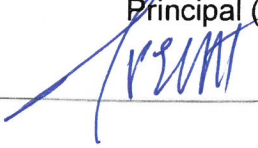
KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the CITY OF FRANKLIN in the full and just sum of five percent (5%) of the total amount bid by the Principal for the project stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

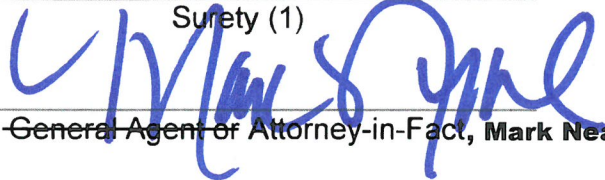
NOW, THEREFORE, the condition of this obligation is: the Principal shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the Proposal, and if the CITY OF FRANKLIN shall award a Contract to the Principal, the Principal shall, 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)
By: 

Surety (1)
By: 
General Agent or Attorney-in-Fact, **Mark Neal**

Robert P. Elliott, President

May 27, 2020

Print Name and Title

Date

May 27, 2020

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**, 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, Mark NEAL, Brent W. NEAL, Michael B. MATTOX, Robert A. DAVIDSON and Jerri BAIN, all of Nashville, 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 14th day of November, A.D. 2019.



By: *Robert D. Murray*
Vice President

By: *Dawn E. Brown*
Secretary

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND**

**State of Maryland
County of Baltimore**

On this 14th day of November, 2019, 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, depose 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.



Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2023

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 27th day of May, 2020.



A handwritten signature in cursive script that reads "Brian M. Hodges".

Brian M. Hodges, 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
www.reportsfclaims@zurichna.com
800-626-4577

DRUG-FREE WORKPLACE AFFIDAVIT

For COF Contract No. 2020-0113

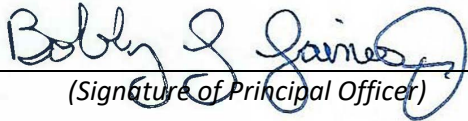
STATE OF Tennessee

COUNTY OF Davidson

The undersigned, principal officer of Stansell Electric Company, Inc., an employer of five (5) or more employees contracting with the City of Franklin, TN to provide construction services, hereby states under oath as follows:

- 1) The undersigned is a principal officer of Stansell Electric Company, Inc. (hereinafter referred to as the "Contractor") and is duly authorized to execute this Affidavit on behalf of the Contractor.
- 2) The Contractor submits this Affidavit pursuant to T.C. A. § 50-9-113, which requires each employer with no less than five (5) employees receiving pay who contracts with the state or any local government to provide construction services to submit an affidavit stating that such employer has a drug-free workplace program that complies with Title 50, Chapter 9, of the Tennessee Code Annotated.
- 3) The Contractor is in compliance with T.C. A. § 50-9-113

Further affiant saith not.


(Signature of Principal Officer)

Bobby G. Gaines, Jr.
(Printed Name of Principal Officer)

Stansell Electric Company, Inc.
(Printed Contractor Name)

(Notary on Following Page)

STATE OF Tennessee

COUNTY OF Davidson

Personally appeared before me, the undersigned, a Notary Public of said State and County, The within named **Bobby G. Gaines, Jr.**, with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence), and who, upon oath, acknowledge that he or she executed the within instrument for the purposes therein contained and who further acknowledged that he or she is the **Vice President** of the maker or a constituent of the maker and is authorized by the maker or by its constituent, the constituent being authorized by the maker, to execute this instrument on behalf of the maker.

WITNESS my hand and seal this 1st day of June, 20 20.



NOTARY PUBLIC

My Commission Expires: 12/26/2022



CITY OF FRANKLIN, TENNESSEE

PROPOSAL GUARANTEE

CONTRACT NO. 2020-0113

Bidder: _____
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.

_____	_____
Bidder (1)	Bidder (2)*
By: _____	By: _____
_____	_____
Print Name and Title	Print Name and Title
_____	_____
Date	Date

***NOTE: The signature and information for Bidder(2) is to be provided when there is a joint venture.**

CITY OF FRANKLIN, TENNESSEE

CONTRACT NO. 2020-0113

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.**

CONTRACT PAYMENT AND PERFORMANCE BOND

Note: to be filled out post-award

CONTRACT NO. 2020-0113

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.

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)

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

City of Franklin Adaptive Signal Control Technology

Federal Project No. STP-M-9305(30)

State Project No. 94LPLM-F3-065

PIN 116144.01

TECHNICAL SPECIAL PROVISIONS (TSP)

September 11, 2019

Prepared For:

City of Franklin, TN



Prepared by:



Gresham Smith

Genuine Ingenuity

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SECTION 1

GENERAL REQUIREMENTS

1. All commands and references in, or in connection with, the text in this Technical Special Provisions (TSP) document are written to direct Contractor responsibility for action unless otherwise specified.
2. This section specifies the minimum general requirements for this contract. These Section 1 General Requirements apply to all aspects of the contract, including, but not limited to, the materials, installation, measurement, and payment requirements for all contract items.
3. The Contractor is responsible for all work required in this Section 1. All costs associated with the work in this Section 1 shall be included in the contract price for the items included in the project and no separate payment shall be made.
4. All durations included herein are assumed to be calendar days unless stated otherwise.

1.1. General Requirements

For specific information about the project, see the Scope of Work in the Design Plans. The Contractor shall be fully responsible for complete construction and testing of the Project as shown in the contract documents.

The system includes: furnishing and installing conduit, magneto-resistive vehicle detection, and other required vendor software/hardware as well as all coordination with the Adaptive Signal Control Technology (ASCT) vendor necessary to complete a fully functioning detection system for the ASCT.

All the equipment provided shall comply with the applicable industry approved standards for the subsystems and communications network. Use of approved industry standards and the National Transportation Communications for ITS Protocols (NTCIP) should be utilized, where applicable, for the detection devices.

1.1.1. Adaptive Signal Control Technology System Devices

Quantitative and performance requirements for each type of equipment provided in this TSP are mandatory minimum requirements. Functional equivalents proposed by the Contractor that fully meet or exceed this TSP will be considered for approval by the City of Franklin (City) or their representative, provided the functional equivalent is compatible with the communications, hardware, and software included in the project, and provided that the functional equivalent meets all design and operational objectives of the City. Experimental devices that are not proven in at least three field installation or a total of 50 device locations at the time they are proposed for this project will not be considered. All equipment and component parts furnished by the Contractor shall be new (not used or refurbished), with warranty, meet all requirements of this TSP, and

fully functional at the time of delivery. All materials and installation of all devices shall be in accordance with this TSP and Plans and with the manufacturer's recommendations for the exact intended application. The entire quantity of any new item shall be of the same manufacturer, model, revision, and firmware version. In addition, each major component must be provided, integrated, and warranted by a single vendor/manufacturer.

Manufacturers of Adaptive Signal Control Technology system and Network Communications devices are required to establish minimal qualifications prior to equipment approval, by submitting for consideration the following years of experience supplying the general type of device indicated:

- Magneto-Resistive Vehicle Detection: five (5) years

Contractor shall be trained and certified in proper installation by the detection manufacturer prior to device installation in the field.

1.1.2. Applicable Standards

All materials and installation procedures shall conform to the Design Plans, Technical Special Provisions, the Tennessee Department of Transportation (TDOT) latest edition of the *Standard Specifications for Road and Bridge Construction*, the latest edition of the TDOT *Standard Roadway and Structure Drawings*, the latest edition of the *Manual on Uniform Traffic Control Devices* (MUTCD), and the Supplemental Specifications, as included in the Specifications package. All electrical materials and work shall conform to the standards of the National Electrical Manufacturers Association (NEMA), the Underwriters' Laboratories Inc. (UL), the Electrical Testing Laboratories (ETL), the National Electrical Testing Association (NETA), Institute of Electrical and Electronics Engineers (IEEE) and the Electronic Industries Association (EIA), where applicable. In addition to the requirements of the approved shop drawings prepared by the Contractor and these Technical Special Provisions, all materials and workmanship shall conform to the requirements of the National Electrical Code (NEC), National Electrical Safety Code (NESC) and applicable codes of governing jurisdictions. Unless specified, all standards used for this project shall be the latest edition available.

1. Ethernet and IP Standards and Protocols

The Ethernet communications system and all connected devices shall, as an entire interconnected system, completely implement and be compatible with IEEE 802.3 industry standards for Ethernet and NTCIP standards supporting Ethernet as applicable and required. Ethernet switching equipment is used to transport the digital IP-based video and control data from field devices to hub cabinets. Network equipment at the field switches routes the video and data to the Traffic Operations Center (TOC), other facilities and end users as needed.

1.1.3. Contractor and Subcontractor Qualifications

The Contractor or Subcontractor certifies to be qualified as an expert in the trade, capable of understanding the intent of this TSP and constructing the project in accordance with the prevailing standard practice of the trade. Firms qualifying as Contractor and or Subcontractors to perform traffic signal work must demonstrate at least five (5) years of experience and at least two (2) completed and accepted projects within the last five (5) years in the type of work they plan to do on this project:

1. Signal Vehicle Detection
2. Signal System Projects

1.1.4. Complete, Compatible Installations

This TSP is for materials and equipment necessary to construct the proposed Project; however, every fitting, minor detail, or feature may not be described. Any component not explicitly stated in this TSP, but necessary for the detection systems to function, shall be considered incidental and shall be furnished and installed by the Contractor at the sole discretion of the City or their representative. The Contractor is responsible for providing all miscellaneous, associated, and incidental materials to provide a fully operational and complete ASCT system by providing detection equipment at the traffic signal sites that are readily compatible with the communications technologies utilized, and compatible with the hardware, software, and communications equipment installed at the City's TOC. Such miscellaneous materials shall be considered incidental to the project and shall be included in the cost of the pay items proposed.

1.1.5. Complete Operational Systems

The Contractor shall furnish and install all necessary equipment for a completely operational ASCT system by providing detection equipment at the traffic signal sites which are of high quality, high reliability, and operational stability. Compliance with minimum requirements for individual items identified in this TSP does not, in and of itself, constitute compliance with the reliability and operational stability requirements necessary to provide for the integration of the sites into a complete, integrated system. It is the Contractor's responsibility to ensure that the components provided will work together to form a complete working detection system as described in this TSP. It is the Contractor's responsibility to notify the City or their representative in writing of any components outlined in the Specifications or Plans that would prohibit the Contractor from being able to install a completed working system. The completed system shall be fully integrated and configured into the City's TOC central software. All devices shall be configured to meet the City's network security configuration requirements.

1.1.6. Communications System/Equipment Software Compatibility

The Contractor is responsible for ensuring that all equipment and software versions provided for this project is compatible with the existing communications system, TOC software, and all other equipment provided for this project, as installed, configured and

programmed by the Contractor and while complying with all system functionality and performance requirements. This compatibility includes but is not limited to, all field devices and their respective controllers, all wired and wireless communications links, all control center hardware, and all software applications and control systems including, but not limited to, the magneto-resistive vehicle detectors, network switches, wireless communications system, and the network management system. The Contractor shall ensure that any delay in equipment response times throughout the entire system is measured and demonstrated as compatible with the ASCT operation. Any modifications to the detection vendor software, firmware, and hardware to account for system latency and compliance with the total response shall be the responsibility of the Contractor.

1.1.7. Equipment and Materials

1. All bolts, nuts, and fastening hardware less than 5/8-inch diameter shall be stainless steel. All bolts, nuts, and fastening hardware 5/8-inch in diameter and greater shall be hot-dipped galvanized.
2. All components, materials, and incidentals shall be recommended by the manufacturer as suitable for the intended application, including any material exposed to the weather.

1.1.8. Coordination with Various Highway and Bridge Construction Contractors

The Contractor shall coordinate his activities with any other Contractors, which may be in the same work area. There are areas within the project limits where roadway widening activities may be occurring during the same timeframe as this project. Conflicts will be handled at the discretion of the City or their representative. The Contractor shall notify the City promptly in writing if there are any conflicts which may impact the Contractor's schedule or construction activities. The mere presence of these roadway construction activities alone will not be a sufficient reason for schedule delays. Contractor is expected to coordinate with these other Contractors to the extent possible.

Field adjustments may be needed for conduit and device locations shown throughout the project.

1.2. Abbreviations and Acronyms

ANSI – American National Standards Institute

ASCT – Adaptive Signal Control Technology

ASTM – American Society for Testing and Materials

°C – Centigrade

DB – Decibel

dBm - Decibel (referenced to milliwatts)

EIA – Electronics Industries Association

°F – Fahrenheit

FHWA – Federal Highway Administration

GUI - Graphical User Interface

IEC – International Electrotechnical Commission

IEEE – Institute of Electrical and Electronic Engineers

IP – Internet Protocol

ITS – Intelligent Transportation Systems

Kbps – Kilobits per second

LED – Light Emitting Diode

LF – Linear Feet

MUTCD – Manual on Uniform Traffic Control Devices

NEMA – National Electrical Manufacturers Association

NESC – National Electrical Safety Code

NEC – National Electric Code

NETA – National Electrical Testing Association

NIST – National Institute of Standards and Technology

NTCIP – National Transportation Communications for ITS Protocol

PC – Intel/Windows-based personal computer

PIT – Pre-Installation test

PPTP – Point to Point Tunneling Protocol

PSI – Pounds per Square Inch

RGS – Rigid Galvanized Steel

SAT – Stand Alone Site Test

SDR – Standard Dimension Ratio

TCP – Transmission Control Protocol

TCP/IP – Transmission Control Protocol / Internet Protocol

TDMA – Time Division Multiple Access

TDOT – Tennessee Department of Transportation

TIA – Telecommunications Industry Association

TOC – Transportation Operations Center

TSP – Technical Special Provisions

UL – Underwriter's Laboratory Incorporated

VDC – Volts Direct Current

1.3. Design Summary

For specific information about the project, see the Scope of Work in the Design Plans.

1.3.1. Phasing

All work in this project will be completed in a single phase. Proper sequencing of the work is critical to minimize downtime of existing devices.

1.4. General System Requirements

1.4.1. Existing System

Details on the location of the existing devices are included in the Plans. If any additional information regarding the existing system is needed for bidding purposes, it is the Contractor's responsibility to request in writing the specific information desired in accordance with the question submittal deadlines in the pre-bid instructions. Questions shall be addressed to the City or their representative.

1.5. Project Testing Plan Requirement

The Contractor shall submit and conduct a Project Testing Plan as required below in addition to all other project testing and acceptance procedures required elsewhere in this TSP and Plans. The Project Testing Plan shall include a series of tests on all project materials occurring at various stages in the project. The Project Testing Plan includes all testing in the Standard Specifications including all modifications and supplemental procedures contained in this TSP. All costs associated with the Project Testing Plan shall be incidental; no separate payment will be made for any testing.

1.5.1. General Requirements

The Contractor is responsible for planning, coordinating, conducting, and documenting all aspects of the Project Testing Plan and providing all required equipment for the tests. The City or their representative is responsible only for attending and observing each test and for reviewing and approving the Contractor's test results documentation. The City or their representative reserves the right to attend and observe all tests. No test shall be scheduled or conducted without City consent.

Each test shall be an individual and separate event for each type of test and for each type of equipment as defined in this TSP. The Contractor shall follow the testing sequence as described in this TSP and shall perform the required tests on all applicable devices and infrastructure.

Each test shall fully demonstrate that the material under test is clearly and definitively in full compliance with all project requirements.

Test procedures shall be submitted and approved for each test as part of the project submittals programs in Section 1.8. Test procedures shall include every action necessary to fully demonstrate that the material under test is clearly and definitively in full compliance with all project requirements. Test procedure actions shall be cross-referenced to this TSP and/or Plans requirement that is the subject of the test action and shall cross-reference the applicable sections of the final approved Project Submittal Compliance Form for the subject of the test action. Test procedures shall contain test setup and block/wiring diagrams showing all materials being tested and all test and measurement equipment, with calibration documentation, and shall contain documentation regarding the equipment configurations and programming. Test procedures shall include check off blanks for each project requirement included in that test, and shall include forms for the documentation of all measured test results.

No testing shall be scheduled until approval of all project submittals for all materials covered under a given test and approval of the test procedures for the given test.

Unless otherwise required herein, the Contractor shall request in writing the City's or their representative's approval for each test occurrence a minimum of 14 days prior to the requested test date. Test requests shall include the test to be performed and the material to be tested. The City or their representative reserves the right to reschedule test requests if needed.

The Contractor shall provide the testing location and facility, which shall be in Tennessee and within a 25-mile radius of the project limits. The test locations must be approved by the City or their representative as part of each test procedure submittal. All other testing to be performed onsite.

For any series of tests on different installations of a given material (e.g., different sections of cable), the Contractor shall request in writing the City's or their representative's approval for the first test occurrence of the series a minimum of 14 days prior to the requested test date, regardless of the notification requirements for subsequent test occurrences.

The Contractor shall provide all ancillary equipment and materials as required in the approved test procedures.

The Contractor shall document all test results in writing in accordance with the test procedure and submit to the City or their representative within seven (7) days of the test. Any given test session is considered incomplete until the City or their representative has approved the documentation for that test session.

The Contractor shall repeat all tests if results are deemed by the City or their representative to be unsatisfactory, following all test requirements as given here. In the written request for each test occurrence that is a repeat of a previous test, the Contractor shall summarize the diagnosis and correction of each aspect of the previous test that was deemed unsatisfactory. Any revisions to the test procedures for a repeated test occurrence shall meet all requirements for the original test procedures, including review and approval by the City or their representative.

The satisfactory completion of any test shall not relieve the Contractor of his responsibility to provide a completely acceptable and detection system that meets all requirements of this project.

1.5.2. Pre-Installation Tests (PIT)

The Contractor shall perform Pre-Installation Tests (PIT) on all devices to ensure that the equipment will power up, operate, and was not damaged during shipment. The Contractor shall notify the City prior to PITs. The City and/or their representative reserves the right to attend any PIT as desired; however, the Contractor shall submit documentation of the PITs whether the City and/or their representative is present or not.

1.5.3. Stand Alone Site Tests (SAT)

The Contractor shall perform a complete Stand Alone Site Test (SAT) on all equipment and materials associated with the field devices at each traffic signal site, including detection devices, electrical services, conduit, pull boxes, cables, poles, and cabinet hardware. A SAT shall be conducted at every project intersection.

The SAT shall demonstrate that all equipment and materials are in full compliance with all project operational and performance requirements, is fully functional as installed, and in final configuration. SATs for the radio communications links shall include a demonstration of the radios and antennas at both ends of the link, and a demonstration of the link itself. All SATs also include a visual inspection of the cabinet and all construction elements at the site to verify that they are compliant with the Specifications. The SATs for each site type shall include the following:

- Vehicle Detection SAT: Shall be conducted at the cabinet and shall demonstrate the complete operation of the magneto-resistive vehicle detection, network switch, and the link(s) to any device that is connected to the power supply in the cabinet.

No more than two (2) SAT locations shall be scheduled simultaneously at any time unless otherwise approved by the City and/or their representative. The Contractor shall arrange, at no additional expense to the City, the attendance of a qualified technical representative of the equipment manufacturers to attend each test.

1.5.4. Conditional System Acceptance Test

The Contractor shall perform a complete Conditional System Acceptance Test on all equipment and materials in the project. The Contractor shall not request the Conditional System Acceptance Test until the SATs have been satisfactorily completed, all as-built documentation has been submitted and approved, and all other project work has been completed to the satisfaction of the City and/or their representative. Prior to a Conditional System Acceptance Test, the Contractor shall provide advance notice of and written test results documentation that the Contractor has performed a dry-run of the Conditional System Acceptance Test, and the City and/or their representative reserves

the right to require attendance of a dry-run test session.

The Contractor shall test all project systems simultaneously from the TOC in a manner equivalent to the normal day-to-day operation of the system. The Conditional System Acceptance Test shall demonstrate that all equipment and materials in the network are in full compliance with all project requirements and fully functional as installed and in final configuration, communicating with and being controlled through the control center.

The City and/or their representative reserves the right to require, at no additional expense to the City, the attendance of a qualified technical representative of the equipment and/or software manufacturers to attend the Conditional System Acceptance Test.

Upon completion and full approval of the Conditional System Acceptance Test for all equipment, Conditional System Acceptance will be given and the Burn-In period will begin.

Upon Conditional Acceptance, the City may assume operations of those devices. This use by the City does not constitute Final Acceptance or waive any other requirements in this Contract.

1.5.5. Burn-In Period

1. Burn-In Period

Following the City's and/or their representative's written notice of successful completion of the Conditional System Acceptance Test, the entire newly installed system must operate successfully for a 30-day Burn-In period. The Contractor shall be responsible for the full maintenance of the newly installed equipment as required in Section 4 of this TSP during the Burn-In period. However, no separate payment will be made beyond the contract unit price bid for the Burn-In period. Successful completion of the Burn-In period will occur at the end of 30 days of operation without a system failure attributable to hardware, software, or communications components. Each system failure during the Burn-In period will require an additional 15 days of successful operation prior to being eligible for Final Acceptance. (i.e., if there are two (2) system failures during the initial 30-day period, the Burn-In period would be increased to 60 days.)

2. Burn-In General Requirements

1. Determination of a system failure shall be at the sole discretion of the City or their representative.
2. System failure is defined as a condition under which the system is unable to function as a whole or in significant part to provide the services as designed. While a single component failure will not constitute a system failure, chronic failure of that component or component type may be sufficient to be considered a system failure.

3. Components are defined as contract items or major material elements in a contract item. For electrical and electronic contract items, components are defined as the complete assembly of materials that makes up the contract item.
4. Chronic failure of a component or component type is defined as three (3) or more failures for components with a contract quantity of 50 units or less. For components or component types that have a contract quantity greater than 50 units, chronic failure will be defined as having a failure of that component type more times than a number equal to 5% of the total contract quantity of that unit.
5. Multiple (more than 1) communication outages or failures will be considered a system failure in any case. Communication failure due to a minor component may not be a system failure. A single path/link failure (e.g. detector or controller link) is not considered a system failure.
6. Specifically exempted as system failures are failures caused by accident, acts of God, or other external forces that are beyond the control of the Contractor. However, failure of the Contractor to respond to the repair request for that failure within 24 hours may be considered a system failure.
7. The existing devices and equipment are not part of the Burn-In period; therefore, any failures of the existing equipment will not affect the Burn-In period.
8. The City will advise the Contractor in writing when it considers that a system failure has occurred, or that a chronic failure exists.
9. If multiple system and/or chronic failures continue to occur throughout the Burn-In period due to a single component type, the Contractor may be required to replace all units of that component type with a different model or manufacturer.
10. The Contractor shall document all failures and subsequent diagnosis and repair. The repair documentation shall include as a minimum:
 1. Description of the problem
 2. Troubleshooting and diagnosis steps
 3. Repairs made
 4. List of all equipment and materials changed including serial numbers
 5. Update of the equipment inventory where needed
11. The Contractor shall provide the repair documentation to the City and/or their representative within two (2) days of completing the repair; failure to provide acceptable documentation as required shall be reason to not approve the repair as complete. The City or their representative will provide acceptance or rejection of the repair and documentation within seven (7) days.

12. The City and/or their representative reserves the right to require, at no additional expense to the City, the presence of a qualified technical representative of the equipment and/or software manufacturers as related to the diagnosis and/or repair of any system failure.
13. During the Burn-In period the City and/or their representative shall maintain a "Burn-In Period Punch List" that contains required Contractor actions but that the City and/or their representative does not define as a system failure. Each Burn-In Period Punch List action item shall be completed by the Contractor to the City's and/or their representative's satisfaction within seven (7) days of Contractor notification of the action item.
14. During the Burn-In period the Contractor shall maintain the system as specified in Section 4 of this TSP. No separate payment will be made beyond the contract unit prices for the Burn-In period pay item.
15. The overall Burn-In period will be considered complete upon the successful completion of the Burn-In time period, the City's and/or their representative's acceptance of all repairs and repair documentation, completion of all Burn-In period punch list actions and a final inspection as described below.

1.5.6. Final Inspection

Upon successful completion of the Burn-In period, the entire project shall be eligible for Final Inspection. The Final Inspection will be conducted provided the Burn-In period has demonstrated the entire system is operating successfully. The Final Inspection shall include:

1. Monitoring of all system functions at the TOC to demonstrate the overall system is operational.
2. A field visit to each site to verify that all field components are in their correct final configuration.
3. Verification that all Burn-In punch list items have been completed.
4. Verification that all final cleanup requirements have been completed.
5. Approval of final as-built documentation.

The Contractor shall request in writing the City's and/or their representative's approval to start the Final Inspection a minimum of 14 days prior to the requested start date. The City and/or their representative reserves the right to reschedule the start date if needed.

An unsuccessful or incomplete Final Inspection shall require a new Final Inspection after the Contractor has made the necessary corrections. Up to 14 days shall be allowed for the City and/or their representative to conduct a Final Inspection.

The City and/or their representative reserves the right to require, at no additional expense to the City, the attendance of a qualified technical representative of the equipment and/or

software manufacturers to attend a portion of a Final Inspection.

The Contractor shall be responsible for the full maintenance of all project equipment and materials as described in Section 4 of this TSP during the entire time period from the successful completion of the Burn-In period until Final System Acceptance is granted.

1.5.7. Final System Acceptance

Upon successful completion of the Final Inspection, the City and/or their representative will grant Final System Acceptance.

1.6. Training

Prior to Conditional System Acceptance, the Contractor shall provide a four-hour training session covering, detection devices and wireless communications. Training provided shall be suitable for both system operators and signal technicians.

The training shall be provided at the TOC for at least six (6) personnel with individual copies of all training materials and manuals provided to each participant. The training must include a complete demonstration of the configuration, operation, and capabilities of each component in the system. The training shall also consist of a hands-on demonstration of all software configuration and functionality where applicable.

Each training session shall include a mixture of classroom style training in equipment operation, hands-on operator training, and question and answer sessions. The Contractor shall submit the trainers' qualifications to the City and/or their representative for approval prior to scheduling the training. The qualifications of the trainers must meet, at a minimum, the recommended qualifications of the equipment manufacturer. If qualified personnel are not on the Contractor's staff, a representative of the manufacturer shall provide the training.

The Contractor shall submit to the City and/or their representative for approval a detailed Training Plan including course agendas, detailed description of functions to be demonstrated, and a schedule.

1.7. Warranties

Each component of the Project shall be warranted against manufacturing defects and workmanship for a period of at least one (1) year from the date of Final Acceptance. These warranties shall cover complete replacement at no charge for the equipment. The Contractor will be responsible for all labor, shipping, insurance, and other charges until Final System Acceptance. Equipment covered by the manufacturers' warranties shall have the registration of that component placed in the City's name prior to Final Inspection. The Contractor is responsible for ensuring that the vendors or manufacturers supplying the components and providing the equipment warranties recognize the City as the original purchaser and owner/end user of the components from new.

1.8. Project Submittal Program Requirements

The Contractor shall develop and conduct a Submittal Management Program that shall meet the following minimum requirements, supplemented by any additional requirements regarding submittals that may appear in subsequent sections of this TSP or any other contract documents. All materials used on this project will require a submittal and approval prior to purchase and use regardless of whether or not they are called out specifically in this TSP.

With each submittal package, the Contractor shall complete a Project Submittal Compliance Form. The compliance form will list each TSP subsection and will require the Contractor to verify and check that it meets that subsection of the Specification. The City and/or their representative shall provide at contract Notice to Proceed (NTP) blank copies of the contract item specific compliance form. Submittal packages without these completed forms will be considered unallowable and returned to the Contractor without review or consideration.

The Project Submittal Compliance Form will include the following data at a minimum:

1. Contract pay item number
2. Submittal package identification
3. Submittal description with make/model/part number information
4. Authorized Contractor signature
5. Reference to TSP requirement
6. Compliance or non-compliance statement for each TSP requirement
7. Cross-reference to attached documentation for each TSP requirement
8. Authorized Contractor signature

The Contractor shall at minimum provide the following submittals for review and approval by the City and/or their representative. All submittals must be submitted electronically. The table below is meant as a guide and is not all-inclusive. Items not listed below may also be required during the submittal stage.

Item	Catalog Cutsheets and Technical Specifications	Test Procedure	Installation Procedures	Maintenance Manuals	Operational Manuals	Final Documentation	Interface Protocols
Magneto-Resistive Vehicle Detection Device	X	X	X	X	X	X	
Radio and Antennas Type (all types)	X	X	X	X	X	X	
All Software	X	X	X	X	X	X	
Traffic Maintenance Plans	X						
Training Plan						X	
Conduit and Pull Boxes	X						

1.8.1. Fifteen (15) Day Submittals

Within 15 days of NTP, the Contractor shall submit a written description of his proposed submittal program, including a comprehensive list of all intended submittals and schedule of the submittals for the remainder of the project. The Contractor shall develop an appropriate schedule based on the schedule of work, with the exception of the items identified below that have specific due dates. At a minimum, the submittals listed in the table above shall be included in the submittal program. Note that the 15-day submittal is ONLY a schedule of the submittal program. The 15-day submittal does not include any actual equipment submittals.

The Contractor shall submit to the City and/or their representative for approval one (1) electronic copy of the program including a complete list and initial schedule of all of those materials, components, and structures to be incorporated in the work for which submittals are required. This list shall form the basis for a log of submittals that will be used by the Contractor and City and/or their representative to manage the submittal process. The list shall be submitted as an Excel spreadsheet. In addition, the 15-day submittal shall also contain a letter from the Contractor certifying that all required interface protocols will be submitted from all vendors as requested.

1.8.2. Thirty (30) Day Submittals

Within 30 days of NTP, the Contractor shall submit the following:

1. **Catalog Cut Sheets and Technical Specifications:** Within 30 Days of NTP, the Contractor shall submit to the City and/or their representative for approval equipment catalog cut sheets and technical specifications for all items listed in

the above table and any related items. The catalog cut sheets and technical specifications shall include all necessary information to clearly demonstrate that the proposed equipment meets the requirements of this TSP and the Plans. In addition, the equipment cut sheets shall include manufacturer's name, model number, and any other descriptive data as necessary to clearly evaluate the item. Interface protocols for all devices and equipment should also be submitted. All materials included within a specific section of this TSP shall be submitted at the same time as a submittal package. The catalog cut sheets and technical specifications shall contain a stamp of approval by the Contractor with authorized signature and date. Cut sheets showing multiple models, part numbers, sizes, etc., shall be marked up by the Contractor to clearly identify only those products intended for this project.

Specific submittal requirements contained herein shall be supplemented by any requirements shown in the Special Provisions Materials shall not be ordered or released for fabrication without the approval of submittals by the City and/or their representative.

The review and approval of submittals by the City and/or their representative is based on the information provided in the submittal and the conformance with the design concept of the project. Submittal reviews do not relieve the Contractor of the responsibility for making the overall system conform to the requirements of the contract. Approvals at the submittal stage are always conditional upon demonstration that the equipment is fully compliant with the Contract including compatibility with all other equipment in the system.

2. **Installation Procedures:** Within 45 Days after NTP the Contractor shall submit to the City and/or their representative the Installation Procedures for approval by the City and/or their representative. The installation submittal shall include step-by-step installation directions as developed by the equipment manufacturer. The Contractor will be required to follow these installation procedures during construction.

1.8.3. Ninety (90) Day Submittals

Within 90 days of NTP, the Contractor shall submit the following:

Shop Drawings and Design Calculations: The Contractor shall submit to the City and/or their representative shop drawings and design calculations for all structural elements and attachments including, but not limited to; all support poles, structure attachments and foundations.

1.8.4. Other Submittal Timeframes

1. **Test Procedures:** A minimum of 60 days prior to each desired test date, the Contractor shall submit to the City and/or their representative all test procedures for approval by the City and/or their representative. The test procedure submittal

shall include all of the test forms for each of the required tests as required in this TSP. The actual test cannot be scheduled until the test procedures are approved.

2. **Operational Manuals:** A minimum of 30 days prior to the conditional system acceptance testing, the Contractor shall submit to the City and/or their representative Operational Manuals for approval by the City and/or their representative. The Operational Manual submittal shall include step-by-step directions for the operators to execute all of the function as required in this TSP. The Operational Manuals shall be functionally organized, and identify available (built-in) options to operational characteristics. The City and/or their representative reserves the right to request Operational Manuals during the cut sheet submittal stage if the City and/or their representative deems it necessary to adequately check the operational characteristics of the equipment. Operational Manuals shall be provided in hard copy and on CD-ROM.
3. **Maintenance Manuals:** A minimum of 30 days prior to conditional system acceptance testing, the Contractor shall submit to City and/or their representative Maintenance Manuals for approval by the City and/or their representative. The Maintenance Manual submittal shall include all of the necessary steps to maintain the equipment in good working condition, and as indicated by the manufacturer to maintain the warranty. The City and/or their representative reserves the right to request Maintenance Manuals during the cut sheet submittal stage if the City and/or their representative deems it necessary to adequately check the required features of the equipment. Maintenance Manuals shall be provided in hard copy and on CD-ROM.
4. **Final Documentation:** Prior to the start of the Burn-In period, the Contractor shall submit ten (10) copies of final documentation for review and approval by the City and/or their representative. Burn-In period will not start until final documentation is approved by the City and/or their representative. In addition to any specific final documentation requirements outlined in the individual sections of this TSP, final documentation shall include a single binder containing all of the equipment warranties and other manufacturer produced documentation. In addition, final documentation shall include an inventory list of all of the furnished and installed equipment. This list shall include equipment description, manufacturer's part number, model number, serial number, and warranty start and end date. The final documentation shall also include a troubleshooting matrix which can be utilized by the system operators to determine the most appropriate action for various problems that may occur in the system.

1.8.5. Review Process

1. The City and/or their representative will review and return submittals to the Contractor within 21 days of receipt.
2. If additional information is requested or if a re-submittal is required, the Contractor is required to re-submit within 21 days of receipt of the City's and/or

their representative's comments.

3. The City and/or their representative will review and return the re-submittals to the Contractor within 21 days of receipt.
4. Any additional re-submittals must also meet this 21 day timeline.
5. The Contractor shall maintain a file of approved submittals, shop drawings, and operating data for reference purposes and shall provide an electronic copy of that file to the City and/or their representative upon completion of construction.

1.9. System Documentation

The Contractor shall maintain a formal procedure to document the configuration of the as-built system as described in Section 4 of this TSP. That program will include maintenance of record drawings and other documentation of the actual location and arrangement of all hardware installed on the project. In addition, the program will include maintenance of records of the system integration procedures. Provisions will be made to accommodate changes to the system both during and after construction.

1.10. Payment Terms for 725 and 920 Item Numbers

Stored Materials Payment will be made for all 725 and 920 Item Numbers per TDOT Standard Specifications. For 920 items that describe payment terms based on completing certain testing or installation requirements, those payment terms will apply only to the unit price amount that is in excess of the stored materials payment. For example, if an item says that 50 percent of the contract unit price will be paid upon approval of Test results, this payment will only be applicable if the stored materials payment was not already in excess of 50 percent of contract unit price. At the point which the percentage associated with a testing requirement exceeds the amount previously paid for stored materials, the additional amount will be paid to the Contractor at the time of that particular test completion.

SECTION 2

MAGNETO-RESISTIVE VEHICLE DETECTION

2.1. Description

This section specifies the minimum requirements to furnish and install the magneto-resistive vehicle detection as shown on the Plans or as directed by the City or their representative. Vehicle detection data shall be relayed to access points which communicate to traffic control equipment in the signal cabinets at the project intersections.

2.2. Materials

All materials furnished, assembled, fabricated, or installed shall be new, corrosion resistant and in strict accordance with all of the details shown in the Plans and described in these technical specifications. The magneto-resistive vehicle detection system shall meet the following minimum materials specifications:

2.2.1. General Requirement

The magneto-resistive vehicle detection system shall be a wireless vehicle detector system consisting of flush mounted (imbedded) magneto-resistive vehicle detection sensors for advance vehicle detection, wireless repeaters mounted adjacent to the roadway on existing or new structures, digital radios connected to access point controller cards via Ethernet cable, radio isolators, access point controller cards, and contact closure cards.

Magneto-resistive sensors shall communicate real-time vehicle detection event data via low power radio transmission to digital radios. The digital radios shall relay vehicle detection data to access point controller cards via radio isolators. The radio isolators shall provide electrical surge protection and network length extension. The access point controller card and microwave vehicle detectors shall then interface with the existing traffic signal controller.

2.2.2. Magnetometer Sensor Cabinet Controller Interface Device

The magnetometer sensor cabinet controller interface devices provides an SDLC interface to TS2 controllers and shall meet the following specifications:

1. Functional Requirements

- a. Directly connects a contact closure interface card to a TS2 controller via the SDLC link and adheres to NEMA Standard TS2-2003 8.6.1 and 8.6.2.
- b. Is programmable and supports 64 channels.
- c. Mounts in traffic cabinet with DIN mount or bracket mount.

2. Interface Requirements

- a. USB port connection to contact closure interface card
 - b. Interface with traffic controller via SDLC link
 - c. RJ45 connection to EX port
- 3. Power Requirements**
- a. 9-28 VDC (24 VDC nominal) or 5VDC nominal USBport
 - b. Less than 300 mW consumption
- 4. Physical Requirements**
- a. Maximum dimensions: 4.3 in. x 3.5 in. x 1.2 in. (without mount)
 - b. Maximum weight: 7.2 oz (without mount)
 - c. Operating Temperature: : -40°C to 80°C
- 5. Required front panel controls and indicators**
- a. Power Indicator
 - b. TX LED Indicator
 - c. Link LED Indicators for rack number and 16 channel status
 - d. Push Button for rack number selection and rack enable/disable

2.2.3. Access Point Controller Card

The access point controller cards shall meet the following specifications:

- 1. Functional Requirements**
- a. Receive vehicle detection data relayed from digital radios.
 - b. Relay vehicle detection data to roadside traffic controller via contact closure signals
 - c. Relay vehicle detection data to a remote server traffic management system via IP connectivity
 - d. Process vehicle detection sensor data per-lane and per-vehicle
 - e. Provide data binning over selectable time intervals
 - f. Provide data filtering
 - g. Store up to 1 Mb of processed data
 - h. Buffer up to 500K of event data
 - i. Provide a common clock for sensor timestamps that can synchronize to NIST timing signals.
 - j. Indicate signal strength in dBm
 - k. Indicate link quality
 - l. Upgradeable via IP connectivity or a local PC connection
 - m. Can deliver upgrades to other system digital radio and magneto-resistive sensors
- 2. Interface Requirements**
- d. Interface with traffic controller via 2x22 pin edge connector to backplane
 - e. RS-422 full duplex to digital radios via RJ45 connector and CAT5 cable
 - f. RS-485 full duplex to expansion cards via RJ 45connector

- g. 10/100 Base-T network access via RJ45 connector
- h. Communications to and from a central management system via TCP/IP
- i. Internet Protocols – HTTP, PPP, PPTP, SSH

3. Data Processing Requirements

- a. Counts per lane
- b. Occupancy per lane
- c. Average and median speeds per lane
- d. Binned speeds and vehicle lengths over selectable time intervals per lane
- e. Initial vehicle detect time, gap, speed, and length per vehicle
- f. 400 MHz ARM9 processor
- g. Linux operating system
- h. Minimum 1GB Flash
- i. Minimum 64 MB RAM

4. Power Requirements

- a. 22-26VDC or 9-15VDC
- b. Maximum Power: 700mW

5. Physical Requirements

- a. Maximum dimensions: 7 in. x 4.5 in. x 2.3 in.
- b. Maximum weight: 298
- c. Operating Temperature: : -40°C to 85°C

6. Required front panel controls and indicators

- a. Master reset
- b. Channel Reset
- c. Channel Status LEDs
- d. Link Status LED
- e. Fault Status LED
- f. Port termination switches
- g. Addressing switches

2.2.4. Magnetometer Sensor Cabinet Control Device

The magnetometer sensor cabinet control devices provides control of the magnetometer wireless vehicle detection system and maintains the two-way wireless links to the sensors and repeaters. The control device shall meet the following specifications:

1. Functional Requirements

- a. Processes sensor data on a per-lane or per-vehicle basis
- b. Provides data binning over selectable time intervals and data filtering
- c. Provides a platform for remote applications
- d. Stores sensor data: buffers data (event caching) of 500 KB and data storage (processed data) of 1 MB
- e. Provide a common clock for sensor timestamps that can be synchronized to the

timing signals

- f. Provides radio communications to and from the associated radio modules
- g. Provides a relay of sensor data via the controller interface device to the traffic controller and via IP connectivity to controllers and upstream servers
- h. Provides daily diagnostic reports, intrusion detection and packet authentication, and sensor health (RSSI, battery, and downtime) monitoring
- i. Can have firmware upgraded via IP connectivity and deliver upgrades to all other magnetometer related devices
- j. Can be mounted in the traffic cabinet via a DIN or bracket mount

2. Interface Requirements

- a. 2 RS-422 full duplex to digital radios via RJ45 connector
- b. 2 USB 2.0 full speed host ports
- c. RS-485 full duplex to expansion cards via RJ 45connector
- d. 10/100 Base-T network access via RJ45 connector
- e. Internet Protocols – HTTP, HTTPS, Open VPN, PPP, PPTP, SSH, optional encryption over tunnel

3. Data Processing Requirements

- a. Volume per lane
- b. Occupancy per lane
- c. Average and median speeds per lane
- d. Binned speeds and vehicle lengths over selectable time intervals per lane
- e. Initial vehicle detect time per vehicle
- f. Gap per vehicle
- g. Speed per vehicle
- h. Length per vehicle
- i. Output formats include Caltrans, AustRoads, TTI, Marksman, and CSV
- j. 400 MHz ARM9 processor
- k. Linux operating system
- l. Minimum 265 MB Flash
- m. Minimum 128 MB SDRAM

4. Power Requirements

- a. 9-28 VDC (barrel power connector) or 9-28 VDC (pluggable terminal block for 24-13 gage wire)
- b. Maximum Power: 700mW

5. Physical Requirements

- a. Maximum dimensions: 4.3 in. x 3.5 in. x 1.2 in.
- b. Maximum weight: 2.5 oz
- c. Operating Temperature: : -40°C to 85°C

6. Required front panel controls and indicators

- a. USB B device port
- b. Link LED for radio/ethernet ports
- c. Fault LED for radio ports

- d. Power LED
- e. Link LED for EX port
- f. Fault LED for EX port
- g. USB host port for USB device connections
- h. RJ45 ports for radio connections
- i. Ethernet port for PC or network connections
- j. Ethernet port speed LED
- k. Fault Status LED
- l. Port termination switches
- m. Addressing switches

7. Required back panel controls and indicators

- a. Master reset
- b. RJ45 port to EX card or controller interface device
- c. 9-28 VDC barrel power socket
- d. 9-28 VDC power socket to pluggable power terminal block

2.2.5. Magnetometer Sensor System Isolator

Magnetometer sensor system isolators are connected between the cabinet magnetometer control equipment and magnetometer sensor digital radios shall meet the following specifications:

1. Functional Requirements

- k. Protect cabinet equipment from electrical surge
- l. Protect against electrical shock by providing ground isolation
- m. Extend communications from controller cabinet to digital radio up to 2000 ft
- n. Support up to two digital radios
- o. Source 15VDC power to radio over CAT5 cable with visual indication when active.
- p. Visually indicates data transmission from access point controller card to digital radios
- q. Visual indicate power status (on or off)

2. Physical Specifications

- a. Maximum dimensions: 4.3 in. x 3.5 in x 1.2 in
- b. Maximum weight: 7.8 oz
- c. Mounting: DIN or manufacturer recommended mounting bracket designed for the isolator

3. Electrical Specifications

- a. Minimum output power to digital radio: 2W
- b. Minimum output voltage to digital radio: 15VDC unregulated
- c. Operating temperature : -40°C to 85°C
- d. Surge protection standards:
 - IEC 61000-4-2 (ESD) +/-15 kV (air), +/-8 kV (contact)

- IEC 61000-4-4 (EFT) 40 A (5/50ns)
 - IEC 61000-4-5 (Lightning) 12 A (8/20 uS)
- e. Electrical isolation: 2500 Vrms

2.2.6. Cabling

Cabling inside the traffic signal control cabinet shall follow the manufactures recommendations and specifications. Network cables shall be terminated with RJ-45 according to TIA/EIA 568-B wiring standards.

2.2.7. Magnetometer Sensor Digital Radio

The magnetometer sensor digital radio shall meet the following minimum requirements:

1. Functional Requirements

- a. Provide a 120° field of view
- b. Maintain two-way wireless links to magneto-resistive sensors
- c. Establish time synchronization, transmit configuration commands and message acknowledgements, and receive sensor data
- d. Relay sensor detection data to the access point controller card over a CAT5 cable
- e. Communicate to the access point controller card through a radio isolator meeting the specifications in the section.
- f. Receive power from radio isolator
- g. Indicate receive signal strength in dBm
- h. Indicate link quality
- i. Include mounting hardware specific to the radio

2. Radio Communications Requirements

- a. Uses a TDMA over a 802.15.4 physical layer for wireless communications
- b. Transmits/receives bit rate: 250 kbps
- c. Modulation: Direct Sequence Spread Spectrum Offset Quadrature Phase-Shift Keying (DSSS O-QPSK)
- d. Frequency band: 2400 to 2483.5 MHz
- e. Frequency channels: 16
- f. Channel bandwidth: 2.8 MHz
- g. Antenna type: ceramic patch antenna
- h. Antenna field of view: +/- 60 degrees in azimuth and elevation
- i. Nominal power output: +3dBm
- j. Spurious transmissions:
 - 30 – 1000 MHz: < -36 dBm
 - 1 – 12.75 GHz: < -30 dBm
 - 1.8 – 1.9 GHz: < -44 dBm
 - 5.15 – 5.3 GHz < -47 dBm
- k. Typical receive sensitivity: -101 dBm
- l. Saturation at max input level: min 10dBm

3. Physical and Power Requirements

- a. Maximum power consumption: 150 mW
- b. Input voltage: 4.5VDC to 28VDC
- c. Maximum dimensions: 4.7 in x 3.5 in x 2.4 in
- d. Maximum weight: 14.1 oz
- e. Operating temperature : -40°C to 85°C
- f. Enclosure rating: NEMA 4X

2.2.8. Magnetometer Sensor Repeater

Magnetometer sensor repeaters are installed between digital radios and magneto-resistive vehicle detections sensors shall extend the range of wireless communications and shall meet the following specifications:

1. Functional Requirements

- a. Relay radio communications to/from wireless sensors.
- b. Relay radio communications to/from access point controller cards via digital radio.
- c. Relay radio communications to/from another repeater.
- d. Maximum single-hop range to digital radio or another repeater of 2000 feet with long range antenna.
- e. Maximum single-hop range of 300 feet to magneto-resistive vehicle detections sensors.
- f. Require no external communications or power cables after initial installation and setup.
- g. Indicate signal strength in dBm
- h. Indicate link quality
- i. Minimum system life: 10 years

2. Radio Communications Requirements

- a. Uses a TDMA over a 802.15.4 physical layer for wireless communications
- b. Transmits/receives bit rate: 250 kbps
- c. Modulation: Direct Sequence Spread Spectrum Offset Quadrature Phase-Shift Keying (DSSS O-QPSK)
- d. Frequency band: 2400 to 2483.5 MHz
- e. Frequency channels: 16
- f. Channel bandwidth: 2 MHz
- g. Internal antenna type: microstrip patch antenna
- h. Antenna field of view: +/- 60 degrees in azimuth and elevation
- i. Nominal power output: +3dBm
- j. Spurious transmissions:
 - 30 – 1000 MHz: < -36 dBm
 - 1 – 12.75 GHz: < -30 dBm
 - 1.8 – 1.9 GHz: < -44 dBm
 - 5.15 – 5.3 GHz < -47 dBm

- k. Typical receive sensitivity: -101 dBm
- l. Saturation at max input level: min 10dBm

3. Power Requirements

- a. Solar powered by 2 or more solar panels mounted on different sides of the enclosure.
- b. Solar panel minimum dimensions (each): 100mm x 25mm
- c. Solar panel minimum power (each): 33W
- d. Rechargeable battery: Lithium ion, 3.6V, 2.2 Ah nominal capacity
- e. Backup battery: Li-SOCL2, 3.6V, 57 Ah capacity

4. Physical Requirements

- a. Maximum Dimensions: 9.5 in. x 5.59 in. x 4.32 in.
- b. Maximum Weight: 2.2 lbs.
- c. Designed for weatherproof, outdoor operation
- d. Operating temperature : -40°C to 85°C

2.2.9. External Antennas

External antennas shall be used with solar repeaters and allow for the repeater to be aimed in two directions simultaneously and extends the range and coverage of the digital radio. The antennas shall meet the following specifications:

2.2.9.1 External Antenna with Same RF Range

1. Functional Requirements

- a. Provide sufficient gain to for wireless communications between repeater and digital radios at distances up to 1000 feet.
- b. Provide sufficient gain for wireless communications between repeater and magneto-resistive vehicle detection sensors at distances up to 175 feet.
- c. Designed for weatherproof, outdoor operations

2. Physical Requirements

- a. Dimensions: 5.65 in. x 3.54 in. x 4.80 in.
- b. Weight: 0.94 lbs.

2.2.9.2 External Antenna with Long Range RF Range

1. Functional Requirements

- a. Provide sufficient gain to for wireless communications between repeater and digital radios at distances up to 2000 feet.
- b. Provide sufficient gain for wireless communications between repeater and magneto-resistive vehicle detection sensors at distances up to 300 feet.
- c. Designed for weatherproof, outdoor operations

2. Physical Requirements

- a. Dimensions: 9.5 in. x 9.5 in. x 4.38 in.
- b. Weight: 2.2 lbs.

2.2.10. Magneto-Resistive Vehicle Detection Sensor

The magneto-resistive vehicle detection sensors shall use configurable detection parameters to transmit timestamped On and Off detection events to a digital radio or repeater as shown on plans or as directed by the City or their representative. The sensors shall be flush mount and have reliable wireless communications to digital radios or repeaters. The sensors shall meet the following minimum requirements:

1. Functional Requirements

- a. Designed for freeway, arterial, and signal control applications
- b. Uses 3-axis magnet field sensing
- c. Flush-mount with roadway
 - A maximum 4 inch diameter hole drilled in roadway
 - A maximum 7 inch depth hole drilled in roadway
 - Secured with a joint sealant meeting the specifications in this section of this TSP
 - No saw cuts required for installation
- d. Programmable parameters:
 - Z-axis detection threshold to mG resolution
 - Z-axis undetect threshold to mG resolution
 - X-axis undetect threshold to mG resolution
 - Onset filter to ms resolution
 - Holdover to ms resolution
 - Auto-recalibration timeout in seconds

2. Radio Communications Requirements

- a. Addressable, configurable, and upgradeable over radio communications
- b. Uses a TDMA over a 802.15.4 physical layer for wireless communications
- c. Transmit/receive bit rate: 250 kbps
- d. Frequency band: 2400 to 2483.5 MHz
- e. Frequency channels: 16
- f. Channel bandwidth: 2 MHz
- g. Antenna type: microstrip patch antenna mounted to top surface of sensor
- h. Antenna field of view: +/- 60 degrees in azimuth and elevation
- i. Nominal power output: +3dBm
- j. Spurious transmissions:
 - 30 – 1000 MHz: < -36 dBm
 - 1 – 12.75 GHz: < -30 dBm
 - 1.8 – 1.9 GHz: < -44 dBm
 - 5.15 – 5.3 GHz < -47 dBm
- k. Typical receive sensitivity: -101 dBm
- l. Saturation at max input level: min 10dBm

3. Power Requirements

- a. Battery
 - Lithium Thionyl Chloride (Li-SOCl₂)
 - 3.6 volts
 - 8.5 Ah nominal capacity
 - 10 year expected life

4. Physical Requirements

- a. Maximum Dimensions: 2.9 in x 2.9 in x 2.2 in
- b. Maximum Weight: .47 lbs
- c. Designed for in-pavement mounting
- d. NEMA Type 6p enclosure rating
- e. IP68 ingress protection rating
- f. Operating temperature: -40°C to 85°C
- g. Label affixed to top of sensor containing:
 - Part Number
 - Orientation Arrow direction of traffic flow
 - Orientation Arrow indicating “This end up”
 - Barcode and Hexadecimal string representing a unique sensor identification
 - Sensor Type indicator

2.2.11. Joint Sealant

The joint sealant shall be two component 100% solid silicone polyurea based sealant meeting the following requirements:

1. Functional Requirements

- a. Provide protection to the area surrounding the sensor from spralling, chipping, and breakdown
- b. Have excellent chemical resistance, water insensitivity, and thermal stability at high and low temperatures
- c. Protect against the abuse caused by heavy load transfers

2. Physical Requirements

- a. Application temperatures ranging from 20°F to 180°F
- b. Long term storage temperature: 60°F to 80°F
- c. Minimum shelf life: Six months in factory delivered unopened drums
- d. Orange in color
- e. Typical physical properties shall meet or exceed the following:

Property	Test Standard	Specification
Tensile Strength (PSI)	ASTM D412	2950
Elongation (%)	ASTM D412	350
100% Modulus	ASTM D412	1620
Tear Strength (PLI)	ASTM D412	500
Hardness (Shore A)	ASTM D2240	95A
Flexibility (1/8 "Mandrel)	ASTM D1737	Pass
Flashpoint (°F)		>200
Adhesion to Concrete (no primer) (PSI)	ASTM D4541	>400
Taber Abrasion (mg loss) CS18 Wheel 1 kg per 1000 cycles	ASTM D4060	25
Viscosity -B Side (CPS)		1200
Viscosity -B Side (CPS)		400

- f. Typical processing properties shall meet or exceed the following:

Gel Time (min)	2
Tack Free Time (min)	5
Open to Industrial Traffic (min)	15

- g. Chemical resistance shall meet or exceed the following:

Chemical	Result (25 °C)
Acetic Acid (100%) ASDASDAASD	R
Brake Fluid (DOT3)	RC
Clorox® (10%) H2O	C,Dis
Diesel Fuel	R
Gasoline	R
Hydrochloric Acid (10%)	R
Hydraulic Fluid (Oil)	R, Dis
Mineral Spirits	R
Motor Oil	R, Dis
Muriatic Acid (10%)	R
NaCl/ h20 (10%)	R
Potassium Hydroxide (10%)	R
Sodium Hydroxide (10%)	R
Sodium Bicarbonate	R
Sugar/H20 (10%)	R
Sulfuric Acid (10%)	R, Dis
Sulfuric Acid (>22%)	NR
Vinegar/H2o (5%)	R
Water	R
Xylene	C

*R= Recommended; Little or no visible damage

*RC= Recommended Condition; Some effect, swelling, discoloration

*C= Conditional; Crackling wash down within 1 hour of spillage to avoid effects

*NR= Not recommended

*Dis= Discoloration

2.2.12. Magnetometer Server License

The magnetometer server license shall manage the magnetometer detection network from a central location and be capable of supporting multiple simultaneous concurrent sessions. The server license shall meet the following requirements:

1. Functional Requirements

- Provide a connection to the magnetometer system equipment over existing IP-based infrastructure
- Provide for up to 200 individual network access points
- Ability to create arterial congestion areas and display as a color on a map that is updated in real-time
- Provide enhanced report graphics displayed to the GUI or emailed and scheduling features for future runs at specific times and/or intervals
- Support mass data storage
- Automatically collected and archive high resolution time series data
- Provide traffic data analysis via per-vehicle and/or per-lane statistics
- Provide predefined and customized reports for traffic analysis and network

- performance in a web-based format
- i. Provide real-time status of services required to access, troubleshoot, and archive data from a central location
- j. Provide a display of the wireless signal strength (RSSI) and link quality (LQI) for all devices
- k. Provide battery output displays for the repeaters and sensors within the system
- l. Email alerts when network behavior exceeds user-defined thresholds

2. Minimum Hardware Requirements

- a. Quad-core Intel or compatible 2.5 GHz, 1 MB cache, 800 MHz front side bus CPU
- b. 4.0 GB RAM
- c. 1 TB HDD
- d. Gigabit Ethernet Networking
- e. DVD-ROM drive
- f. Red Hat Enterprise 6.4 (32-bit) Operating System

2.3. Installation Requirements

2.3.1. General Requirements

All materials installed shall follow the guidelines of this section and all manufacturers' recommended procedures and specifications. All materials shall be handled and stored according to manufacturers' recommendations and specifications. Per-installation component details shall be documented on standard worksheets for each intersection to be approved by the City or their representative.

2.3.2. Access Point Controller Cards, Magnetometer Sensor System Isolator, Magnetometer Sensor Cabinet Control, and Magnetometer Sensor Cabinet Controller Interface

The Contractor shall furnish, install, and integrate access point controller cards Magnetometer Sensor System Isolator, Magnetometer Sensor Cabinet Control, and Magnetometer Sensor Cabinet Controller Interface in traffic control cabinets at locations indicated on the Plans following the manufacturer specifications and recommendations. The contractor shall furnish an install all hardware and cabling internal to the cabinet necessary to complete installation. The Contractor shall verify initial setup configurations for each intersection, document equipment to be used and setup parameters on approved standard worksheets for City review and approval.

2.3.3. Magnetometer Sensor Digital Radio

The Contractor shall furnish, install and integrate magnetometer sensor digital radios at locations indicated on the Plans following manufacturer's procedures and recommendations or as instructed by the City or their representative. The wireless

communications distance between the digital radio and devices they communicate with as indicated on the Plans shall not exceed the manufacturer's specifications. Should it be found that a field condition exists that makes the digital radio not operate as designed, the Contractor shall immediately bring it to the attention of the City with an alternative placement recommendation. Magnetometer Sensor digital radios shall be installed so that the maximum cable length between the radio isolator and digital radio do not exceed the manufacturer's specifications. Digital radios shall be mounted on existing or new structures as specified in the Plans with a mounting system designed and approved by the digital radio manufacturer. The Contractor shall verify initial setup configurations and document equipment and setup parameters on approved standard worksheets.

2.3.4. Magnetometer Sensor System Repeaters and External Antennas

The Contractor shall furnish, install, and integrate repeaters with external antennas at locations indicated on the Plans following manufacturer's procedures and recommendations, or as instructed by the City or their representative. Repeaters and antennas shall provide a communications link between magneto-resistive vehicle detectors and digital radios. Repeaters shall be connected to external antenna following manufacturers recommendations to form a repeater system. The distance between the digital radio and the repeater system shall not exceed the manufacturer's specification. The distance between the repeater system and vehicle sensors shall not exceed the manufacturer's specifications. There shall be no permanent obstructions between the repeater system and the wireless devices they communicate with. Should it be found that a field condition exists that makes the repeaters not operate as designed, the Contractor shall immediately bring it to the attention of the City with an alternative placement recommendation. Repeaters shall be installed so that at least one solar panel receives optimal available sunlight. Repeaters and external antennas shall be mounted on existing or new structure as specified in the Plans with a mounting system designed and approved by the repeater and antenna manufacturer. The Contractor shall verify initial setup configurations and document equipment and setup parameters on approved standard worksheets.

2.3.5. Magnetometer Vehicle Detection Sensor

The Contractor shall furnish, install, and integrate magneto-resistive traffic sensors using a joint sealant meeting the specifications of this section. The joint sealant shall be handled, mixed, and applied as specified by the sensor and joint sealant manufacturers' recommendation and specifications. Sensor locations on the Plans are approximate. The Contractor shall coordinate with the City or their representative and the ASCT vendor to determine precise sensor locations prior to installation. The contractor shall document each sensor location by referencing the sensor's unique identifier to a location on the Plans. Any significant deviation from the Plans shall be approved by the City or their representative and documented. The Contractor shall verify initial setup configurations and document equipment and setup parameters on approved standard worksheets.

The magnetometer sensors shall be installed flush to the roadway surface. Proper installation of the sensors is the responsibility of the Contractor. Any improperly installed sensor shall be removed and replaced at no cost to the City. Any damage to the roadway resulting from installation shall be repaired by the Contractor to the satisfaction to the City or their representative at no additional cost to the City.

2.3.6. Magnetometer Server License

The Contractor shall furnish, install, and integrate magnetometer server license on an existing City server to be determined by the City for a fully operational installation. The Contractor shall supply any diagnostic and test software and computers necessary to perform the testing for the duration of the tests. The Contractor shall supply phone and email support for a period of three years to start upon final acceptance of the system.

2.4. Testing Requirements

2.4.1. General

The Contractor shall conduct a project testing program for the ASCT equipment as required in Section 1 of this TSP.

The Contractor shall submit all test results documentation to the City or their representative within 14 days of completion of each test. The City or their representative will review test documentation in accordance with the Submittal Review Process of Section 1.8.

2.4.2. Pre-Installation Test

Prior to final installation, the Contractor shall preform a Site Survey for each intersection location. Additionally, the Contractor shall test the radio signal strength using a mobile pair of radio and repeater units for any areas of concern. No City infrastructure shall be modified prior to verification of signal strength, clear line of sight, and data quality.

2.5. Measurement

2.5.1. Access Point Controller Cards, Magnetometer Sensor System Isolator, Magnetometer Sensor Cabinet Control, and Magnetometer Sensor Cabinet Controller Interface

Access point controller cards, magnetometer sensor system isolator, magnetometer sensor cabinet control, and magnetometer sensor cabinet controller interface will be measured in units of each at a contract price of each. The price bid shall include furnishing, installing, configuration system integration, training and testing of the system and shall include the access point controller card, system isolator, cabinet control device, cabinet controller interface device, cabling, mounting hardware, and all work, equipment and appurtenances installed in traffic control equipment cabinets required to provide a fully functional

detection system. The price bid shall include all system documentation including shop drawings, installation manuals, pre-installation worksheets, operation manuals, block diagrams, test results, and other materials necessary to document the operation of the unit.

2.5.2. Magnetometer Sensor Digital Radio

Magnetometer Sensor Digital Radio will be measured in units of each at a contract price of each. The price bid shall include furnishing, installing, configuration, system integration, training and testing of the unit and shall include the digital radio and mounting hardware, and all work, equipment and appurtenances required to provide a fully functional digital radio. The mobile pair of radio and repeater units for the pre-installation test shall be included in the price bid. The price bid shall include all system documentation including shop drawings, installation manuals, pre-installation worksheets, operation manuals, block diagrams, test results, and other materials necessary to document the operation of the unit.

2.5.3. Magnetometer Sensor Repeaters and Antennas

Magnetometer sensor repeaters and antennas will be measured in units of each at a contract price of each. The price bid shall include furnishing, installing, configuring, system integration, training and testing of the unit and shall include the repeater, external antennas, cabling between repeater and external antenna, all mounting hardware, and all work, equipment and appurtenances required to provide a fully functional solar repeater. The price bid shall include all system documentation including shop drawings, installation manuals, pre-installation worksheets, operation manuals, block diagrams, test results, and other materials necessary to document the operation of the unit.

2.5.4. Magnetometer Vehicle Detection Sensor

Magnetometer vehicle detection sensor will be measured in units of each at a contract price of each. The price bid shall include furnishing, installing, configuring, system integration, testing and testing of the unit and shall include the magneto-resistive vehicle detection sensor, joint sealant, and all work, equipment and appurtenances required to provide a fully functional magneto-resistive vehicle detection sensor. The price bid shall include all system documentation including shop drawings, installation manuals, pre-installation worksheets, operation manuals, block diagrams, test results, and other materials necessary to document the operation of the unit.

2.5.5. Magnetometer Server License

The magnetometer server license shall be measured as lump sum, demonstrating a fully configured, operating software system. The price bid shall include costs of installation on ta City server and PC equipment. This shall include all software developer travel and time associated with the configuration, development and installation of the software systems. The price bid shall also include training, testing, hard copy system documentation and guides, and phone and email support for three years. The price shall be full compensation for all labor, tools, materials and equipment necessary for a full software deployment.

2.6. Payment

The contract unit price shall be full compensation for all work specified in this section.
Payment will be made under:

Item No.	Description	Unit
920-20.05	Magnetometer Server License	LS
920-20.12	Magnetometer Vehicle Detection Sensor	Each
920-20.20	Magnetometer Sensor Repeater – Single	Each
920-20.28	Magnetometer Sensor Repeater – Dual, Ext Antenna	Each
920-20.36	Magnetometer Sensor System Isolator	Each
920-20.44	Magnetometer Sensor Digital Radio	Each
920-20.52	Magnetometer Sensor Cabinet Control	Each
920-20.60	Magnetometer Sensor Cabinet Controller Interface	Each
920-20.68	Magnetometer Sensor Repeater – Dual	Each

Items will be paid per each as follows:

1. 50% of the contract unit price upon approval of Pre-Installation Test results.
2. Additional 20% of the contract unit price upon approval of Stand Alone Site Test results.
3. Additional 20% of the contact unit price upon approval of Conditional System Acceptance Test results.
4. Final 10% of the contract unit price upon Final System Acceptance.

SECTION 3 PROJECT ACCEPTANCE

3.1. Description

This section specifies the minimum requirements for acceptance procedures and tasks that must be completed prior to project acceptance. These items include the project testing program, training, warranties, project submittals, system documentation, and as-built documentation.

3.2. Task Requirements

3.2.1. Project Testing Program

The project testing program requirements and acceptance procedures are outlined in Section 1 of this TSP. Additional specification testing requirements are detailed in the individual TSP sections.

The burn-in period requirements are outlined in Section 1 and Section 4 of this TSP.

3.2.2. Training

The training requirements are outlined in Section 1 of this TSP.

3.2.3. Warranties

The warranties requirements are outlined in Section 1 of this TSP and within the Plans.

3.2.4. Project Submittal Program

The project submittal program requirements are outlined in Section 1 of this TSP. Additional specific submittal requirements are detailed in the individual TSP sections.

3.2.5. As-built Documentation

Prior to the Conditional System Acceptance Tests, all City approved changes shall be incorporated by the Contractor into all submitted documents and drawings, including the project Plans. Copies of the updated drawings shall be submitted to the City to serve as the final as-built configuration drawings. In the Project Plans, each drawing shall be identified under the sheet number block, with the words "AS-BUILT," the date and the approval. The as-built drawings shall consist of a neatly marked-up set of plans using a red permanent marker. The drawings shall indicate the as-built location of all equipment including the detection devices, electrical services, conduit, pull boxes, cables, poles, and cabinet hardware. As part of the as-built drawings, the Contractor shall use a hand-held GPS unit to determine the GPS coordinates (in a format approved by the City or their representative).

These coordinates shall be summarized in a GPS Coordinate Database in a Microsoft Excel or Access table that indicates the following information at a minimum:

- Device/equipment name and number (where applicable)
- Roadway name and station number
- Sheet number in Plans
- GPS coordinates

The information shall also be included in the equipment inventory and maintenance database described in Section 4.

In addition to submitting an original hardcopy of the AS-BUILT drawings, the Contractor shall submit a high resolution scanned image of each AS-BUILT sheet. High quality scanned images shall be submitted electronically in a format approved by the City or their representative. The Contractor shall also submit As-Built plans in MicroStation. The As-Built drawings shall consist of a neatly marked -up set of plans using a red font in a MicroStation file. The Contractor must contact the City and request the original plans in MicroStation so that they may be edited for the As-Built.

As-built documentation shall be prepared and submitted as follows:

- Preliminary As-Built documentation shall include all materials, devices, and infrastructure included in this contract. Preliminary as-built documentation shall be submitted and approved prior to requesting the Conditional System Acceptance Test.
- Final As-Built documentation shall be an update reflecting any changes that occurred during the burn-in period. Final as-built documentation shall also include any forms or information provided by the City to the Contractor during the project. Final as-built documentation shall be submitted and approved as part of the Final Inspection.

As part of the As-built drawings, the Contractor shall also submit a complete System Equipment Inventory for all equipment utilized on the project. The contractor shall create and maintain the System Equipment Inventory as a Microsoft Access database, which shall include the GPS coordinate information from the As-Built documentation. The GPS Coordinates Database and the System Equipment Inventory may be combined into one relational database as long as the required data components are maintained.

The System Equipment Inventory shall include the following:

- Device/Equipment Item Name
- Pay Item Number
- Location (Station and Device ID)
- Sheet Number in Plans
- GPS Coordinates
- Make, Model, and Manufacture Part Number
- Serial Number

- Revision ID
- Firmware ID
- Purchase Date
- Installation Date
- Manufacturer Contact Information

The Contractor shall provide project submittals for As-Built documentation in accordance with the requirements in Section 1 of this TSP. The project submittals for As-Built documentation shall include the following:

- GPS Coordinates Database (template shall be submitted for approval)
- System Equipment Inventory (template shall be submitted for approval)

Beginning with the first activities of field construction, all As-Built documentation, including updated drawings, completed installation data forms, GPS Coordinates Database, and System Equipment Inventory, shall be kept up-to-date on a weekly basis and shall be made available for review by the City or their representative upon request.

3.3. Measurement

3.3.1. Project Testing Program

Project testing shall be included in the cost of other pay items and will not be measured separately for payments, except for burn-in period as specified herein.

3.3.2. Training

The Training item shall be a lump sum item and shall include all labor, equipment, materials, travel, facilities, production and reproduction, and miscellaneous items needed to conduct the training as specified.

3.3.3. Warranties

Warranties shall be included in the cost of other pay items and will not be measured separately for payments.

3.3.4. System Documentation

System documentation shall be included in the cost of other pay items and will not be measured separately for payments.

3.3.5. As-built Documentation

As-Built plans shall be a lump sum item and shall include all labor, equipment, materials, production and reproduction, and miscellaneous items needed to produce the as-built plans as specified.

3.4. Payments

The contract unit price shall be full compensation for all work specified in this section. Payment will be made under:

Item No.	Description	Unit
725-24.55	AS-BUILT PLANS	LS
725-24.61	TRAINING	LS

1. As-Built Documentation will be paid on a lump sum basis as follow:
 - a. 90% of the contract unit price for approved As-Built documentation prior to Conditional System Acceptance.
 - b. Final 10% of the contract unit price upon Final System Acceptance.
2. Training will be paid on a lump sum basis as follows:
 - a. 100% of the contract unit price upon completion of required training.

SECTION 4

SYSTEM MAINTENANCE REQUIREMENTS

4.1. Description

The purpose of this Section is to describe the required maintenance activities that the Contractor must provide during the Burn-In period. The Contractor will provide these maintenance activities for all equipment installed as part of this Contract. The maintenance requirements described in the Section shall include all necessary labor, materials, equipment, tools, transportation, supplies, and incidentals required to complete the work.

4.1.1. General Requirements

Proper health and safety measures will be taken to ensure safety for the traveling public, City employees, Contractor employees, and Subcontractor employees.

Maintenance of traffic is solely the responsibility of the Contractor. Under no circumstances will maintenance of traffic be an additional pay item. Restrictions are included within the plans.

The City will pay all monthly electric bills.

All overhead work over traffic lanes shall include proper lane closures in accordance with MUTCD. The City must approve all lane closures in advance. Request for lane closures shall be submitted at least 7 days in advance of work.

The Contractor is required to provide all field superintendents and/or supervisors of operational crews with working cell phones at all times. In addition, the Contractor shall provide a single phone contact for the Contractor's supervisor. The Contractor shall provide a list of contact to the City and keep current all cell phone contact numbers.

The City will appoint a representative that will act as contract administrator with the responsibility for verifying that work is done to a specified standard as defined in this TSP. This representative will be responsible for verifying that the Contractor satisfactorily completes the work. The City representative will be responsible for monitoring the Contractor's work.

4.1.2. Form of Contract

Under the terms of this contract there is a requirement for the purchasing and storing of spare parts. The amount of required spare parts by equipment type is defined in this document. The initial Spare Parts will be paid at the lump sum price bid (based on the quantities shown in the Spare Parts section). The cost of storing and maintaining the inventory of spare parts and equipment should be included in the lump sum cost of the spare parts. The cost for replenishing used spare parts fall under the Equipment

Replacement pay item. A 15% markup on the invoice price shall be allowed on direct material costs.

4.2. Schedule of Work

4.2.1. Monthly Status Meetings

Each month the Contractor shall hold a status meeting with the City. At these meetings the Contractor shall discuss the previous month's repairs, anticipated work for the next month, spare purchases for the month, and other operational problems that may arise. The Contractor is responsible for taking and distributing the minutes of these meetings. These minutes must be transmitted to the City within seven (7) days for approval by the City. Progress payments may be withheld until meeting minutes are submitted to the City. Note that on some occasions more frequent meetings may be warranted for special conditions. No additional costs will be allowed for these additional meetings.

4.3. Equipment to be Maintained

All equipment installed by the Contractor as part of this project shall be subject to the manufacturer's Preventive Maintenance schedule and procedures through the Burn-In period until Final Acceptance is given.

4.4. Maintenance Procedures

It is the Contractor's responsibility to obtain and submit to the City the Preventive Maintenance procedures recommended by the equipment manufacturers, including, but not limited to, all requirements to meet warranty standards.

Upon completion of any maintenance activity, the work shall be subject to a random inspection by the City. Work that is determined to be unacceptable shall be re-performed by the Contractor at the Contractor's expense.

For damage caused by acts of God, other Contractors, or City personnel, the Contractor is responsible for photographing all damaged structures and equipment; obtaining crash reports and/or driver information; and submitting this information to the City.

4.5. Record Keeping Procedures

The Contractor shall use an existing database that will be provided by the City to the Contractor to track all Preventive and Repair Maintenance activities. The required format for each input will be provided to the Contractor prior to Conditional System Acceptance. The Contractor shall prepare a separate database to track the inventory of current spares. The database files shall be updated and emailed to the City weekly. This email shall also include a summary of the next week's planned maintenance activities.

The records for a maintenance response report on the database shall, at a minimum, include the following information:

- Date and time of failure report or date of unscheduled maintenance
- Person or source of the report
- Location of device
- Description of failure or symptom
- Name of person responding
- Arrival time at location of reported failure
- Weather and condition of the site
- Actions taken
- Schedule of initiating corrective work and estimated completion of work
- Date and time of completion of work
- Spare part details
- Any consequential events – such as, but not limited to, failure to operate or secondary failure.

Additional information may also be required as requested by the City.

The Contractor shall maintain accurate and complete records of all work activities, status reports, meeting notes, cost proposals, invoices, inventory records, etc. The project As-Built Documentation, including the System Equipment Inventory, shall be updated if any information contained therein is changed due to scheduled or unscheduled maintenance activity. As-Built Documentation shall consist of, but not be limited to, modifying cabinet drawings, wiring diagrams, or installations. As-Built Documentation during maintenance shall be in accordance to the standards and requirements in this TSP. All project records will be the property of the City and shall be returned to the City prior to final payment of the Contract.

4.6. Equipment Control

The Contractor shall maintain a sufficient inventory of spares to ensure the repair response time specified in this TSP. The minimum amount of required spare parts by equipment type is defined below. These spares will be purchased by the Contractor and owned by the City. As equipment is used from the spare parts inventory during Burn-In and device warrantee period, the Contractor shall replace at his own expense.

However, if the need to use spare parts equipment is due to acts of God or other special requests by the City, the Contractor may invoice the City for replacement spares added back to the inventory. However, the cost of the replacement spares shall be submitted to the City for approval prior to ordering. A 15% markup will be allowed on direct material costs of the replacement spares needed due to acts of God or other special requests by the City. Shipping, insurance, and purchase costs should be paid directly by the Contractor and billed to the City. The City must give prior written approval for each monthly order made by the Contractor. The Contractor shall maintain a spares record and make readily available to the City. Spares records are to include as a minimum:

- Manufacturer
- Model number
- Descriptive title
- Serial number
- Location
- Purchase date
- Date installed – when applicable
- Location of installation – when applicable

The Contractor is fully responsible for these spares. The Contractor shall ensure the inventory of spares against all hazards or loss and name the City as the beneficiary in the case of loss. A copy of the insurance documents must be provided to the City. The City has the right to audit the inventory at any time by providing the Contractor with a five (5) day notice. When items from the Spare Parts inventory are used, the Contractor shall replenish the inventory within 30 days of use. Contract payments will be held if this is not done within 30 days.

In addition to maintaining the spare parts inventory, the Contractor shall also ensure the availability and access to all vehicular equipment (trucks, bucket trucks, backhoes, front end loaders, and diagnostic equipment, etc.) and engineering/technical equipment needed to respond to and repair equipment failures and malfunctions. All equipment that is typically needed for a traffic signal maintenance contract shall be available and on-site within the required response time frame requirement outlined. If typical maintenance equipment is not available within this timeframe, the Contractor shall be considered to have missed the required response requirement. If specialty equipment is needed that is not typical, the Contractor shall notify the City of this need and the City will determine if an exception can be made in that situation.

4.7. Required Spare Parts Inventory

The Contractor shall have available and maintain the listed quantity of spare parts and modules to provide the required maintenance. Spares will be replenished as used, so that the following quantities in working orders are available at all times and will be delivered to the City at the conclusion of the maintenance contract. Note that only the major items are listed below, but each item listed below includes all equipment that was included in the original pay item for that particular item. All supporting, incidental, ancillary, and peripheral items necessary for a fully populated and complete installation shall also be maintained in the inventory. (For example, conduit would also require couplers, pull tape, tone wire, blank duct plugs, cable duct plugs, etc.). Prior to conditional system acceptance, the Contractor shall submit a full spare parts inventory list including the incidental items.

The following is a list of the spare parts needed for this project:

- Pole (30' Aluminum) – 1 Each
- Magnetometer Vehicle Detector Sensor – 20 Each
- Magnetometer Sensor Repeater - Single – 2 Each

- Magnetometer Sensor Repeater - Dual, Ext Antenna –1 Each
- Magnetometer Sensor System Isolator – 2 Each
- Magnetometer Sensor Digital Radio – 4 Each
- Magnetometer Sensor Cabinet Control – 2 Each
- Magnetometer Sensor Cabinet Controller Interface – 2 Each
- Magnetometer Sensor Repeater – Dual – 3 Each

Only replacement parts provided by or functionally equivalent to those provided by the original manufacturer shall be allowed. Functional equivalency shall be approved at the sole discretion of the Engineer. The Contractor shall provide conveniently located secure premises to store all spare parts inventory.

4.8. Safety Plan

The Contractor is required to follow all applicable safety laws, regulations, and TDOT standard safety procedures. This includes compliance to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD), OSHA, and others as appropriate. Appropriate safety attire for personnel in the field, clear markings, and functional yellow lights on vehicles must be part of the safety plan.

4.9. Contractor's Responsibility for Utility, Property and Service

At points where the Contractor's operations are adjacent to the properties of any utility, including railroads, and damage to which might result in considerable expense, loss, or inconvenience, work shall not commence until arrangements necessary for the protection thereof have been completed.

The Contractor shall cooperate with owners of utility lines so that removal and adjustment operations may progress in a reasonable manner, duplication of adjustment work may be reduced to a minimum, and services rendered by those parties will not be unnecessarily interrupted.

Should the Contractor cause a cut in any utility line it is the Contractor's responsibility to repair that cut within 12 hours of the cut occurring to the satisfaction of the owning utility.

If any utility service is interrupted as a result of accidental breakage or of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the authority in the restoration of service. If utility service is interrupted, repair work shall not be continuous until service is restored. No work shall be undertaken around fire hydrants until the local fire authority has approved provisions for continued service.

4.10. Performance of the Contractor

Throughout this Contract, the City will conduct a review of the various works performed by the Contractor. These reviews shall be to determine the compliance of the Contractor's

operations with the maintenance requirements, the terms of the Contract, and the policies and procedures of the City and TDOT Local Programs. The Contractor shall fully cooperate with these reviews. If deficiencies are found, the City shall inform the Contractor of this in writing. The Contractor shall take immediate remedial action to cure any deficiencies. No additional compensation will be due to the Contractor associated with such remedial actions. Payments may be withheld, or the Burn-In period may be extended, if the Contractor fails to take immediate remedial action to cure any deficiencies.

The Contractor is required to maintain the devices uniformly and consistently throughout the Burn-In period, meeting both the City's and, as appropriate, the manufacturer's performance specifications, as well as respond to failures identified by the City. Continued poor performance of work or failure to perform shall cause the Contractor to be declared in default of the Contract. Failure to meet the maintenance requirements specified in this Contract shall result in a written notice from the City. This information shall inform the Contractor of non-compliance, as well as the withholding of progress payments that will occur, or an extension of the Burn-In period if non-compliance continues. Progress payments will be withheld under the following conditions.

- Regarding Preventive Maintenance: If any devices are found to be behind schedule for the regularly scheduled maintenance procedures, all progress payments will be withheld until all devices are verified back on schedule.
- Regarding Repair Maintenance: All repair maintenance requests should be responded to within the timeframes outlined. A response is defined as being on site and beginning to diagnose the problem. When the response times exceed the requirements on more than two (2) requests during any given month, the current monthly progress payment will be withheld until the following month. Items where the failure to respond is beyond the control of the Contractor, will not be included in this calculation.
- Regarding Maintenance Database: If database is not updated weekly and is more than one (1) week behind schedule, all progress payment will be withheld until database is current.

It is not the intent of the City to unfairly penalize the Contractor for events beyond his control such as acts of God, vehicle hits, severe weather conditions, major power failure, etc. Failure to perform either Repair Maintenance or Preventive Maintenance during such periods will not be used to penalize the Contractor, provided the Contractor returns to standard operations after such periods have ended.

The Contractor must ensure that all warranties remain valid. To achieve this, the Contractor shall perform all the preventive work specified by the manufacturer within the periods specified by the manufacturer for all equipment. If these tasks are covered by the standard preventive maintenance then both conditions apply.

The Contractor shall provide vehicular equipment such as, but not limited to, bucket trucks,

inspection trucks, field engineering equipment, tools, materials, cellular phones, and other equipment necessary to perform the work. An approved vendor as per the equipment specification requirements shall calibrate all electronic maintenance and measurement equipment.

The Contractor shall provide conveniently located secure premises to store all test equipment. The Contractor shall provide workbench facilities to enable diagnostic testing and remedial work.

4.11. Measurement

4.11.1. Burn-In Period

The Burn-In period item shall be a lump sum item and shall include all labor, materials, tools, equipment, and engineering necessary to maintain the system as specified in Section 1.5.5. The Burn-In period item also includes all labor, materials, tools, equipment, and engineering necessary for all maintenance work as described in accordance with this TSP. The Burn-In period pay item is the only payment that will be made during the Burn-In period with the exception of items described below.

Preventive Maintenance shall not be measured separately and shall be included in the price bid for the Burn-In period. This shall include all labor, tools, vehicles, equipment, and engineering necessary to perform preventive maintenance on the System in accordance with the provisions of the Contract.

Repair Maintenance shall not be measured separately and shall be included in the price bid for the Burn-In period. This shall include, but is not limited to, all labor, overhead, bucket trucks, inspection trucks, field engineering equipment, tools, materials, cellular phones, and other equipment necessary to perform the work in accordance with the provisions of the Contract.

4.11.2. Spare Parts

Spare Parts will be paid at the lump sum price bid for Spare Parts. The price bid shall include the furnishing of the specified parts only. Any install costs are covered elsewhere at a later time. The price bid shall be full compensation for all labor, tools, materials, equipment, and incidentals to furnish the spare parts. The cost of storing and maintaining the inventory of spare parts and equipment should also be included in the lump sum cost of the Spare Parts.

Prior to the Conditional System Acceptance of the project, the Contractor shall submit to the City an itemized breakdown of the lump sum cost indicating the amount for each item in the spare parts inventory. Should changes during construction require a change in the number or type of spare parts needed, this breakdown of the initial bid price will be used to determine the appropriate change in the lump sum bid price. As spare parts are used, replacements to the inventory will be at the Contractor's expenses unless the additional

equipment is needed due to an act of God or other special request from the City. In these cases, the replacements will be reimbursed at invoice price plus 15%.

Compensation for materials requested by the City, in addition to the spare parts listed, will also be at the rate of actual invoice cost including tax plus 15% for procurement expenses. Any extraordinary costs to the Contractor will not be paid unless approved in advance by the City.

4.12. Payment

Payment will be made under:

Item No.	Description	Unit
725-28.22	SPARE PARTS	LS
725-24.41	BURN-IN PERIOD	LS

Spare Parts will be paid at the lump sum price upon complete delivery to the City.

Burn-In period will be paid on a lump sum basis as follows:

1. 50% of the contract unit price upon successful completion of 15-days of the burn-In period.
2. 50% of the contract unit price upon Final System Acceptance.



File #: 20-0773

DATE: June 9, 2020
TO: Board of Mayor and Alderman
FROM: Paul Holzen, Director of Engineering
Jonathan Marston, Asst. Director of Engineering
Adam Moser, Traffic Engineer

SUBJECT:

Consideration Of **Draft** Ordinance 2019-52, An Ordinance To Establish No Parking Restrictions On Both Sides Of East Benjamin Drive From Liberty Hills Drive To Freedom Drive.
CIC 5/28/20, referred to Work Session 3-1

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning Ordinance 2019-52.

BACKGROUND/STAFF COMMENTS:

On June 25, 2019, the Liberty Hills Homeowners Association (HOA) President Tommy Campsey invited Carl Baughman to attend a homeowners meeting to discuss parking issues on certain streets in the subdivision. The outcome of that discussion was a specific request from the HOA for "NO PARKING" restrictions on the following streets:

- East Benjamin Drive - both sides of the street between Liberty Hills Drive and Freedom Drive,
- Freedom Drive - both sides of the street between North Royal Oaks Boulevard and East Benjamin Drive,
- Chad Court - along the right side (as you are entering the cul-de-sac) of the street, and
- Liberty Hills Drive - both sides of the street between Liberty Pike and the residential properties (i.e. fronting common open space only).

As the first 3 streets involve residential properties, the Engineering Department identified petition zones for the HOA to obtain property owner signatures for 51% or more of the homeowners to concur with the requests. The Engineering Department clarified that the proposed parking restrictions would remain in effect for guests visiting a resident within the "NO PARKING" zone(s). The results of those petitions are as follow:

- East Benjamin Drive* - 10 of 19 total properties in support (52%)
- Freedom Drive* - 8 of 15 total properties in support (53%)
- Chad Court - 4 of 8 total properties in support (50%)

*NOTE: The petition statements for East Benjamin Drive and Freedom Drive request that the "NO PARKING" restrictions be established for the limited hours of 4:00 PM to 6:00 PM and 10:00 PM to 8:00 AM.

Regarding the hours for parking restrictions, at the neighborhood meeting, Carl explained that the subdivision could identify the desired hours for "NO PARKING". The HOA Board, in working with its residents, formulated the requested times and circulated the petitions with the time restrictions. In an October 25, 2019 meeting with City staff, the HOA Board explained that the reasons for the limited hours of the requested "NO PARKING" restrictions are safety and security, especially during school bus pick-up and drop-off. Both the East Benjamin Drive and Freedom Drive petitions met the requirement of a simple majority (51% or more) of adjacent property owners in agreement with the request. Chad Court did not meet that requirement.

The proposed restrictions on Liberty Hills Drive are only adjacent to HOA owned and maintained property, therefore no petition was required for that request.

Staff has the following concerns with the request for East Benjamin Drive as presented:

- "Small" majority support for the restrictions,
- Potential concerns for enforcement of "NO PARKING" with split time restrictions, and
- Limited site distance condition(s), on which the safety concerns are based, exist at all times, not just during specific hours.

FINANCIAL IMPACT:

The signage that would be required with the approval of this ordinance can be produced and installed by City staff, so the cost is minimal (i.e less than \$2,500). City crews would install the signs on standard, galvanized steel posts. The HOA may choose to provide and install decorative sign posts and frames at its own cost.

RECOMMENDATION:

Staff makes no formal recommendation at this time and seeks direction from the Board of Mayor and Aldermen.

ORDINANCE 2019-52

AN ORDINANCE TO ESTABLISH NO PARKING RESTRICTIONS ON BOTH SIDES OF EAST BENJAMIN DRIVE FROM LIBERTY HILLS DRIVE TO FREEDOM DRIVE

WHEREAS, the Franklin Municipal Code § 15-603 prohibits a person from parking at any place where official signs or pavement markings prohibit parking; and

WHEREAS, the Liberty Hills Homeowners Association desires to improve the safety and security of travel on East Benjamin Drive; and

WHEREAS, the horizontal and vertical alignments of East Benjamin Drive generate constraints in the available sight distance; and

WHEREAS, a majority of the property owners on East Benjamin Drive have petitioned the Liberty Hills Homeowners Association to request the City to establish “NO PARKING” restrictions on both sides of East Benjamin Drive, from Liberty Hills Drive to Freedom Drive, between the hours of 4:00 PM to 6:00 PM and 10:00 PM to 8:00 AM.

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

SECTION I. “NO PARKING” restrictions, with the effective hours of 4:00 PM to 6:00 PM and 10:00 PM to 8:00 AM, are hereby established on both sides of East Benjamin Drive from Liberty Hills Drive to Freedom Drive.

SECTION II. The Streets Department Director or his designee is hereby authorized to obtain and install all necessary signs and/or pavement markings within these “NO PARKING” restrictions to ensure these regulations are signed appropriately and remain enforceable.

SECTION III. The penalty for failure to obey the provisions of this Ordinance shall be as indicated in the Franklin Municipal Code and/or the Tennessee Code Annotated.

SECTION IV. **BE IT FINALLY ORDAINED** by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on second and final reading, the health, safety and welfare of the citizens of Franklin requiring it.

ATTEST:

CITY OF FRANKLIN, TENNESSEE:

By: _____
Eric S. Stuckey
City Administrator/Recorder

By: _____
Dr. Ken Moore
Mayor

Approved as to form by:

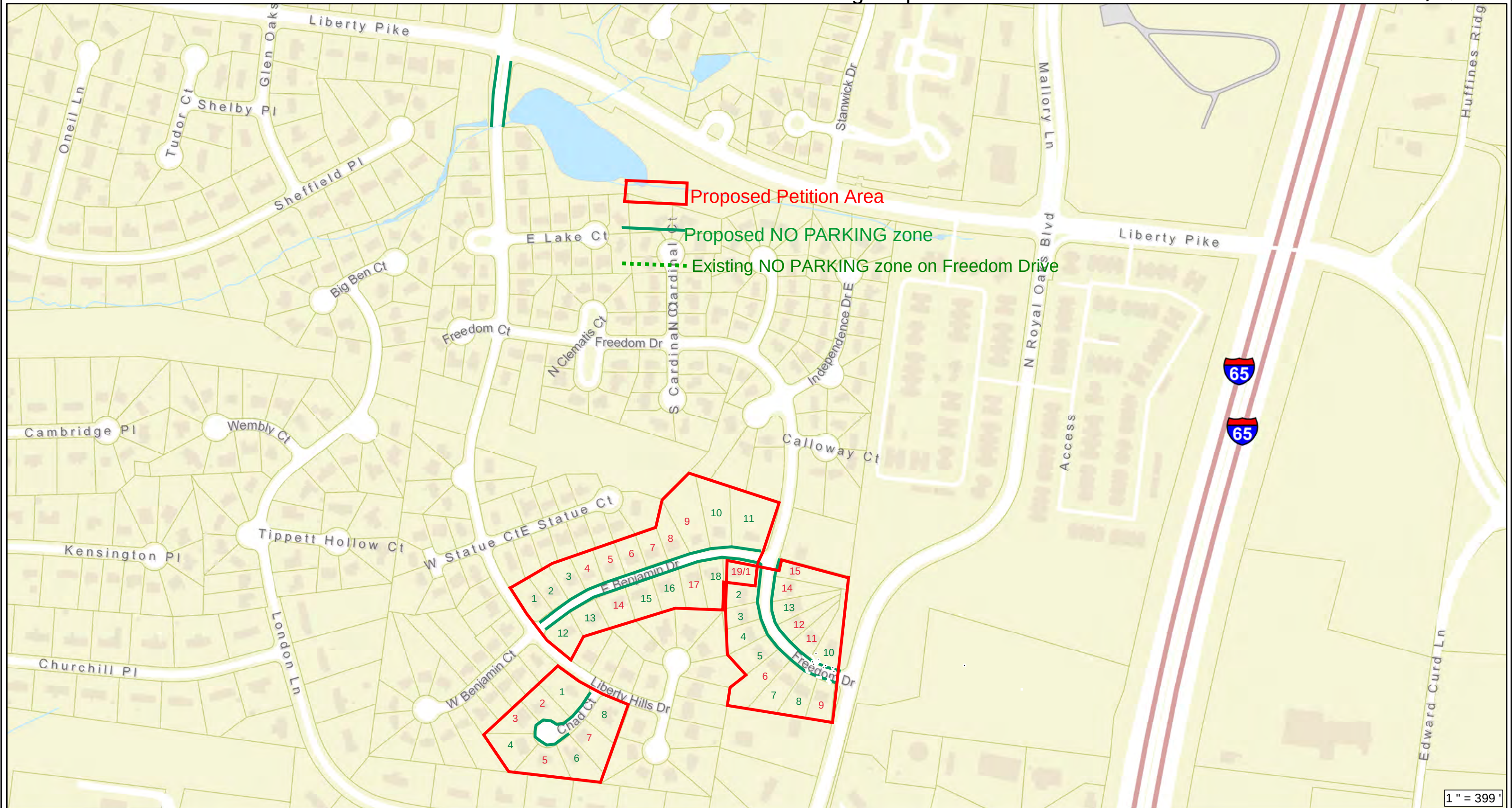
Shauna R. Billingsley, City Attorney

PASSED FIRST READING: _____

PASSED SECOND READING: _____

LIBERTY HILLS No Parking Proposals

July 12, 2019



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Petition for No Parking on East Benjamin Court ~~Time would be~~
Time would be 10 pm to 8 am and 4pm to 6pm

DAVID A. GHEE	841 E. BENJAMIN DRIVE	<u>David A. Ghee</u>
CLAY HARDIN	844 E. BENJAMIN DRIVE	<u>Clay Hardin</u>
JOSH DOSSON	845 E. BENJAMIN DRIVE	<u>Josh Dossan</u>
NEIL S. APORTADERA	848 E. BENJAMIN DRIVE	<u>Neil S. Aportadera</u>
MARGUERITE MACRAE	855 E. BENJAMIN DRIVE	<u>M. Macrae</u>
GARY ROBERT TALLMAN	856 E. BENJAMIN DRIVE	<u></u>
JONATHAN MICHAEL CARRIGAN	860 E. BENJAMIN DRIVE	<u></u>
JAYUN CHEN	861 E. BENJAMIN DRIVE	<u>Jayun Chen</u>
MARIA E. ROBLES	866 E. BENJAMIN DRIVE	<u></u>
MARTIN R. CLARLEY JR.	873 E. BENJAMIN DRIVE	<u></u>
YOSEF ELMESSIRY	872 E. BENJAMIN DRIVE	<u></u>
STEPHEN M. NUXHALL	876 E. BENJAMIN DRIVE	<u>Stephen M. Nuxhall</u>
SEAN A. MCCRAY SR.	880 E. BENJAMIN DRIVE	<u>Sean A. McCray Sr.</u>



Maria Goostree

To: [REDACTED]



Oct 15 at 10:23 am

I'm the home owner at 875 East Benjamin Dr. Frandis Tn 37067. I approve of the home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm. I was also informed my the liberty board that my house is listed as a rental by Ghertrud. It is not a rental.

My name is Maria Alicia Goostree. My contact number is [REDACTED]. Please call me if you have any questions or concerns.

Thank you
Maria.

Sent from my iPhone

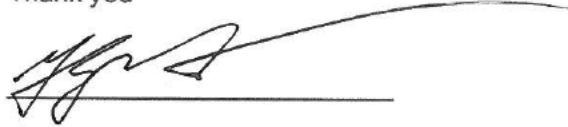


LIBERTY HILLS PARKING PETITION

I'm the home owner at 872 E BENJAMIN Franklin Tn 37067. I approve of the home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is YOUSSEF ELMESSIRY. My contact number is [REDACTED]. Please call me if you have any questions or concerns.

Thank you



LIBERTY HILLS

Meeting Minutes for Liberty Hills

Meeting Type	Board
Meeting Date	10/01/2019
Location	Panera Bread - Mallory Ln
Attendees	Board Members Tommy Campsey, Jackie Richards, Poonit Megchiani, Lisa Robertson and Stormy Mitchell were in attendance with Aaron Aguilar there representing Ghertner & Co.
Called To Order	6:00 PM
Minutes Approval	The Liberty Hills Board of Directors meeting was held on Tuesday, October 1, 2019. After establishing that quorum was present, the meeting was called to order. The board reviewed the meeting minutes dated September 3, 2019. A motion was made by Stormy Mitchell and seconded by Thomas Campsey to approve the minutes as presented. The motion was unanimously approved.
Treasurer's Report	The board reviewed the August 2019 financial reports. A motion was made by Poonit Megchiani and seconded by Stormy Mitchell to approve the financial reports as presented. The motion was unanimously approved.

The Delinquency Report was reviewed and collections will continue as planned.

Unfinished Business

- The Board reviewed a proposal from the landscaper to replace several dying trees and shrubs from the common area, near the pond. A motion was made by Stormy Mitchell and seconded by Tommy Campsey to agree to the proposal and have the project funding out of the reserve account. The motion was unanimously approved.
- The Board discussed plans to complete the parking petitions needed in order to have the City consider restricting parking on several streets throughout the community. A motion was made by Poonit Megchiani and seconded by Tommy Campsey to revised the time frames for the parking restrictions to be in effect from 4:00pm - 6:00pm and then again from 10:00pm - 8:00am. The motion also called for an additional petition to be done to restrict parking along Liberty Hills Dr. from 300 to 3032 Liberty Hills Dr. The motion was unanimously approved.
 - In order to collect the necessary signatures for the petitions, the Board will conduct a door-to-door campaign with Tommy

LIBERTY HILLS

being responsible for Liberty Hills Dr., Poonit handling Freedom Dr. and Lisa covering of E. Benjamin Dr.

- Tommy Campsey provided an update on the ongoing discussion with the City to have the maintenance responsibility of the pond sorted out. Tommy reported that there is no new information at this time, as the City has not returned several attempts to follow up. Tommy and Poonit will continue to reach out to the City in search of a resolution.
- The Board expressed their satisfaction with the two newly installed pole lights along Liberty Hills Dr. However, it was mentioned that these lights do not appear to be turning on at the same time as the other lights throughout the community. Tommy will have the timers checked and adjusted as needed.
 - It was also mentioned that several residents had expressed a desire to have additional lights installed further up the hill, toward the back of Liberty Dr. in the future. The Board will consider this request in the next budget year.
- The Community Association Manager (CAM) provided an update from Ghertner & Co. on several topics:
 - The topic of the HOA's website fee increasing in 2020 was discussed again with the CAM explaining that it was a pass through fee from the software provider and that the fee had not been increased at all in the previous 10 years. It was also noted that Ghertner & Co. is strongly considering moving to another platform in the next year.
 - The proposed 2020 budget was presented to the Board and after further review a motion was made by Stormy Mitchell and seconded by Jackie Richards to approve the budget as presented with no increase in quarterly dues being called for. The motion was unanimously approved.
 - The CAM explained that the requested contact information and ACH enrollment forms are both ready to be added to the new owner welcome folders, pending the Board's decision on the fee to be charged to have paper copies of the quarterly statements mailed out upon homeowner request. It was eventually decided that the fee will be set at \$6 and the Board requested that the CAM verify that this additional fee would be paid to the HOA and not the managing agent.
- Regarding the re-recording of the governing documents into a single, concise document, Poonit Megchiani announced that he had found an attorney who can review the Board's draft of the document and then have it recorded with the Register of Deeds Office.

LIBERTY HILLS

New Business

- The Board discussed plans to have a Halloween block party at 5:30pm on 10/31. Poonit agreed to prepare the signs to advertise the event, Lisa confirmed that she had already booked the firetruck last year and Tommy will follow up with them to coordinate their arrival.
- The Board discussed plans to establish a committee to decorate the community entrances with Christmas decorations. Poonit will put out an announcement on the HOA's Facebook page and the committee will plan to meet at the main entrance on 11/10 at 2:00pm.
- The Board discussed the need to add additional ARC guidelines and use restrictions for the HOA. Poonit agreed to work on the various additions and will then present to them to the rest of the Board for further review. Once the list of additions is finalized by the Board, the CAM will draft an official resolution to be voted on by the Board and enacted.

There being no further business to discuss, the meeting was adjourned at 7:13pm.

Next Meeting Date

Time Adjourned 7:13



File #: 20-0778

DATE: June 9, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Paul Holzen, Director of Engineering
Jonathan Marston, Asst. Director of Engineering
Adam Moser, Traffic Engineer

SUBJECT:

Consideration Of **Draft** Ordinance 2019-53, An Ordinance To Establish No Parking Restrictions On Both Sides Of Freedom Drive From North Royal Oaks Boulevard To East Benjamin Drive.
CIC 5/28/20, referred to Work Session 3-1

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning Ordinance 2019-53.

BACKGROUND/STAFF COMMENTS:

On June 25, 2019, the Liberty Hills Homeowners Association (HOA) President Tommy Campsey invited Carl Baughman to attend a homeowners meeting to discuss parking issues on certain streets in the subdivision. The outcome of that discussion was a specific request from the HOA for "NO PARKING" restrictions on the following streets:

- East Benjamin Drive - both sides of the street between Liberty Hills Drive and Freedom Drive,
- Freedom Drive - both sides of the street between North Royal Oaks Boulevard and East Benjamin Drive,
- Chad Court - along the right side (as you are entering the cul-de-sac) of the street, and
- Liberty Hills Drive - both sides of the street between Liberty Pike and the residential properties (i.e. fronting common open space only).

As the first 3 streets involve residential properties, the Engineering Department identified petition zones for the HOA to obtain property owner signatures for 51% or more of the homeowners to concur with the requests. The Engineering Department clarified that the proposed parking restrictions would remain in effect for guests visiting a resident within the "NO PARKING" zone(s). The results of those petitions are as follow:

- East Benjamin Drive* - 10 of 19 total properties in support (52%)
- Freedom Drive* - 8 of 15 total properties in support (53%)

- Chad Court - 4 of 8 total properties in support (50%)

*NOTE: The petition statements for East Benjamin Drive and Freedom Drive request that the "NO PARKING" restrictions be established for the limited hours of 4:00 PM to 6:00 PM and 10:00 PM to 8:00 AM.

Regarding the hours for parking restrictions, at the neighborhood meeting, Carl explained that the subdivision could identify the desired hours for "NO PARKING". The HOA Board, in working with its residents, formulated the requested times and circulated the petitions with the time restrictions. In an October 25, 2019 meeting with City staff, the HOA Board explained that the reasons for the limited hours of the requested "NO PARKING" restrictions are safety and security, especially during school bus pick-up and drop-off. Both the East Benjamin Drive and Freedom Drive petitions met the requirement of a simple majority (51% or more) of adjacent property owners in agreement with the request. Chad Court did not meet that requirement.

The proposed restrictions on Liberty Hills Drive are only adjacent to HOA owned and maintained property, therefore no petition was required for that request.

Staff has the following concerns with the request for Freedom Drive as presented:

- "Small" majority support for the restrictions,
- Potential concerns for enforcement of "NO PARKING" with split time restrictions, and
- Limited site distance condition(s), on which the safety concerns are based, exist at all times, not just during specific hours.

FINANCIAL IMPACT:

The signage that would be required with the approval of this ordinance can be produced and installed by City staff, so the cost is minimal (i.e less than \$2,500). City crews would install the signs on standard, galvanized steel posts. The HOA may choose to provide and install decorative sign posts and frames at its own cost.

RECOMMENDATION:

Staff makes no formal recommendation at this time and seeks direction from the Board of Mayor and Aldermen.

ORDINANCE NO. 2019-53

AN ORDINANCE TO ESTABLISH NO PARKING RESTRICTIONS ON BOTH SIDES OF FREEDOM DRIVE FROM NORTH ROYAL OAKS BOULEVARD TO EAST BENJAMIN DRIVE

WHEREAS, the Franklin Municipal Code § 15-603 prohibits a person from parking at any place where official signs or pavement markings prohibit parking; and

WHEREAS, the Liberty Hills Homeowners Association desires to improve the safety and security of travel on Freedom Drive; and

WHEREAS, the horizontal and vertical alignments of Freedom Drive generate constraints in the available sight distance; and

WHEREAS, a majority of the property owners on Freedom Drive have petitioned the Liberty Hills Homeowners Association to request the City to establish a “NO PARKING” restrictions on both sides of Freedom Drive, from North Royal Oaks Boulevard to East Benjamin Drive, between the hours of 4:00 PM to 6:00 PM and 10:00 PM to 8:00 AM.

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

SECTION I. “NO PARKING” restrictions, with the effective hours of 4:00 PM to 6:00 PM and 10:00 PM to 8:00 AM, are hereby established on both sides of Freedom Drive from North Royal Oaks Boulevard to East Benjamin Drive.

SECTION II. The Streets Department Director or his designee is hereby authorized to obtain and install all necessary signs and/or pavement markings within these “NO PARKING” restrictions to ensure these regulations are signed appropriately and remain enforceable.

SECTION III. The penalty for failure to obey the provisions of this Ordinance shall be as indicated in the Franklin Municipal Code and/or the Tennessee Code Annotated.

SECTION IV. **BE IT FINALLY ORDAINED** by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on second and final reading, the health, safety and welfare of the citizens of Franklin requiring it.

ATTEST:

By: _____
Eric S. Stuckey
City Administrator/Recorder

CITY OF FRANKLIN, TENNESSEE:

By: _____
Dr. Ken Moore
Mayor

Approved as to form by:

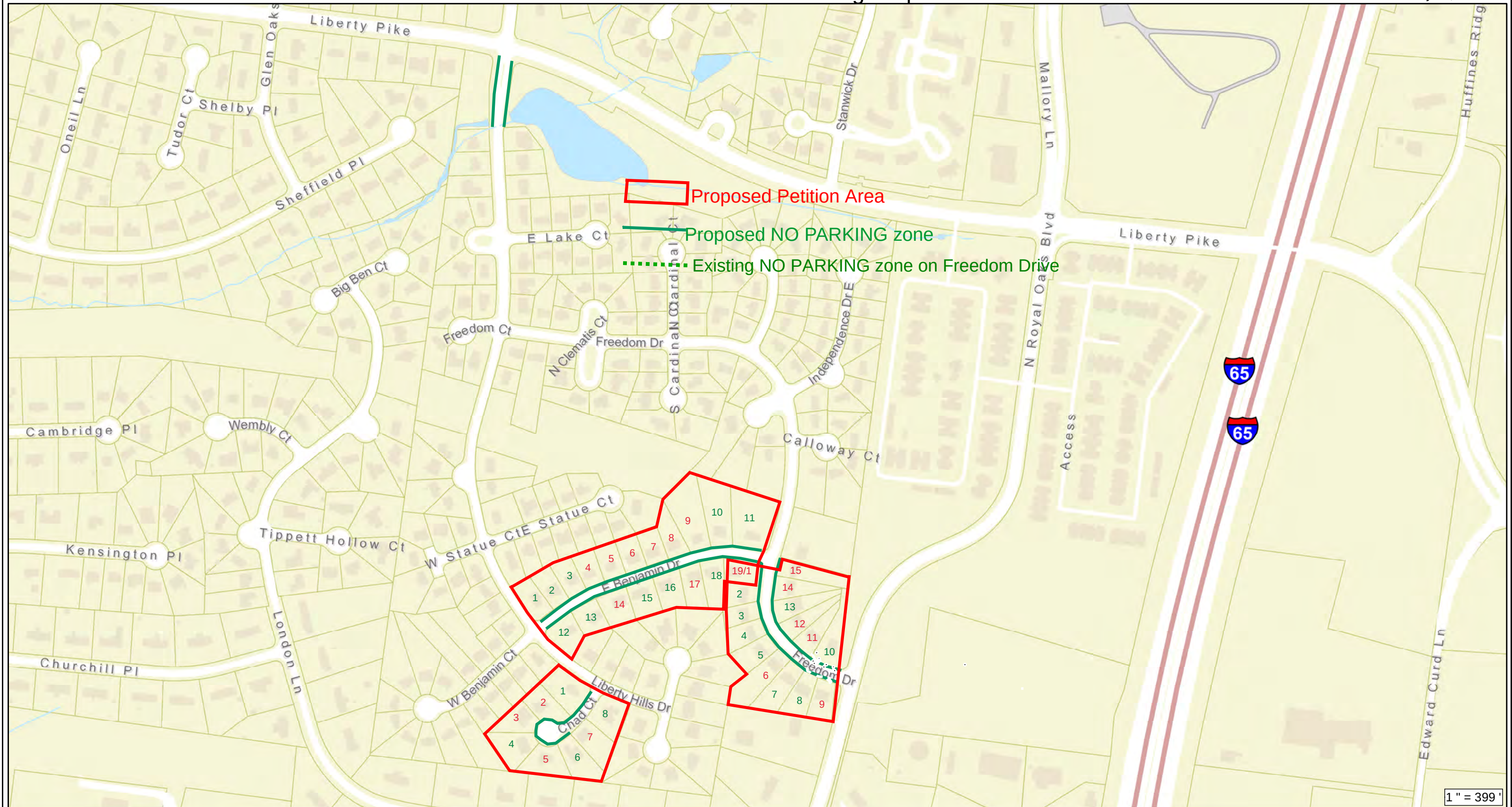
Shauna R. Billingsley, City Attorney

PASSED FIRST READING: _____

PASSED SECOND READING: _____

LIBERTY HILLS No Parking Proposals

July 12, 2019



FRANKLIN DISCLAIMER
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LIBERTY HILLS PARKING PETITION

I'm the home owner at 390 Freedom Drive Franklin Tn 37067. I approve of the home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is DAVID R DILLON My contact number is



. Please call me if you have any questions or concerns.

Thank you

A handwritten signature in cursive script that reads "David R. Dillon". Below the signature, the name "David R. Dillon" is printed in a serif font.

LIBERTY HILLS PARKING PETITION

I'm the home owner at 318 Freedom Dr. Franklin Tn 37067. I approve of the
home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is Grant Ritter. My contact number is



. Please call me if you have any questions or concerns.

Thank you

Grant Ritter

LIBERTY HILLS PARKING PETITION

I'm the home owner at 323 Freedom Dr Franklin Tn 37067. I approve of the
home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is Erin Harland My contact number is
[REDACTED] Please call me if you have any questions or concerns.

Thank you

Erin Harland

LIBERTY HILLS PARKING PETITION

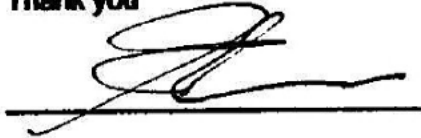
I'm the home owner at 339 Freedom Dr Franklin Tn 37067. I approve of the home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is Poonit Megchiani My contact number is



Please call me if you have any questions or concerns.

Thank you

A handwritten signature in black ink, appearing to be 'Poonit Megchiani', written over a horizontal line.

LIBERTY HILLS PARKING PETITION

I'm the home owner at 319 Freedom Ave. Franklin Tn 37067. I approve of the home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is Matt Newman. My contact number is

 Please call me if you have any questions or concerns.

Thank you

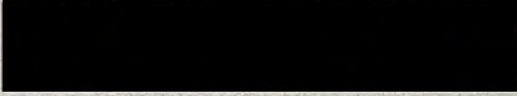


LIBERTY HILLS PARKING PETITION

I'm the home owner at 335 Freedom Drive. Franklin Tn 37067. I approve of the

home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is Kaye Lockwood. My contact number is

. Please call me if you have any questions or concerns.

Thank you

Kaye Lockwood

LIBERTY HILLS PARKING PETITION

I'm the home owner at 327 Freedom DR. Franklin Tn 37067. I approve of the home owners initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is Amir BOTROS. My contact number is

[REDACTED] please call me if you have any questions or concerns.

Thank you



Aaron, this is the new homeowner (the former house with the blue shutters). Please forward this to Carl too. Also, Could you please update his email and contact info in your records?

Thanks.

----- Forwarded Message -----

From: Jake Peay [REDACTED]
To: Poonit [REDACTED]
Sent: Friday, October 18, 2019, 01:49:00 p.m. EDT
Subject:

I'm the homeowner at _____ 315 Freedom Dr. Franklin Tn 37067. I approve of the home owner's initiative for the parking ban for the hours of 10 pm to 8 am and 4 pm to 6 pm.

My name is Jacob Peay. My contact number is [REDACTED]. Please call me if you have any questions or concerns.

Thank you
Jacob Peay

--
AARON AGUILAR, CMCA
COMMUNITY ASSOCIATION MANAGER



50 Vantage Way, Suite 100
Nashville, TN 37228
Tel: [615-255-8531](tel:615-255-8531)
Fax: [615-259-4540](tel:615-259-4540)



Excellence in Community Association Management Since 1968

You may also visit our website at www.ghertner.com to log in to your homeowner account to enter a maintenance request, review property information or your account history. If you have not yet created your account and need a security key, please e-mail [REDACTED]

--
AARON AGUILAR, CMCA
COMMUNITY ASSOCIATION MANAGER



50 Vantage Way, Suite 100

LIBERTY HILLS

Meeting Minutes for Liberty Hills

Meeting Type	Board
Meeting Date	10/01/2019
Location	Panera Bread - Mallory Ln
Attendees	Board Members Tommy Campsey, Jackie Richards, Poonit Megchiani, Lisa Robertson and Stormy Mitchell were in attendance with Aaron Aguilar there representing Ghertner & Co.
Called To Order	6:00 PM
Minutes Approval	The Liberty Hills Board of Directors meeting was held on Tuesday, October 1, 2019. After establishing that quorum was present, the meeting was called to order. The board reviewed the meeting minutes dated September 3, 2019. A motion was made by Stormy Mitchell and seconded by Thomas Campsey to approve the minutes as presented. The motion was unanimously approved.
Treasurer's Report	The board reviewed the August 2019 financial reports. A motion was made by Poonit Megchiani and seconded by Stormy Mitchell to approve the financial reports as presented. The motion was unanimously approved.

The Delinquency Report was reviewed and collections will continue as planned.

Unfinished Business

- The Board reviewed a proposal from the landscaper to replace several dying trees and shrubs from the common area, near the pond. A motion was made by Stormy Mitchell and seconded by Tommy Campsey to agree to the proposal and have the project funding out of the reserve account. The motion was unanimously approved.
- The Board discussed plans to complete the parking petitions needed in order to have the City consider restricting parking on several streets throughout the community. A motion was made by Poonit Megchiani and seconded by Tommy Campsey to revised the time frames for the parking restrictions to be in effect from 4:00pm - 6:00pm and then again from 10:00pm - 8:00am. The motion also called for an additional petition to be done to restrict parking along Liberty Hills Dr. from 300 to 3032 Liberty Hills Dr. The motion was unanimously approved.
 - In order to collect the necessary signatures for the petitions, the Board will conduct a door-to-door campaign with Tommy

LIBERTY HILLS

being responsible for Liberty Hills Dr., Poonit handling Freedom Dr. and Lisa covering of E. Benjamin Dr.

- Tommy Campsey provided an update on the ongoing discussion with the City to have the maintenance responsibility of the pond sorted out. Tommy reported that there is no new information at this time, as the City has not returned several attempts to follow up. Tommy and Poonit will continue to reach out to the City in search of a resolution.
- The Board expressed their satisfaction with the two newly installed pole lights along Liberty Hills Dr. However, it was mentioned that these lights do not appear to be turning on at the same time as the other lights throughout the community. Tommy will have the timers checked and adjusted as needed.
 - It was also mentioned that several residents had expressed a desire to have additional lights installed further up the hill, toward the back of Liberty Dr. in the future. The Board will consider this request in the next budget year.
- The Community Association Manager (CAM) provided an update from Ghertner & Co. on several topics:
 - The topic of the HOA's website fee increasing in 2020 was discussed again with the CAM explaining that it was a pass through fee from the software provider and that the fee had not been increased at all in the previous 10 years. It was also noted that Ghertner & Co. is strongly considering moving to another platform in the next year.
 - The proposed 2020 budget was presented to the Board and after further review a motion was made by Stormy Mitchell and seconded by Jackie Richards to approve the budget as presented with no increase in quarterly dues being called for. The motion was unanimously approved.
 - The CAM explained that the requested contact information and ACH enrollment forms are both ready to be added to the new owner welcome folders, pending the Board's decision on the fee to be charged to have paper copies of the quarterly statements mailed out upon homeowner request. It was eventually decided that the fee will be set at \$6 and the Board requested that the CAM verify that this additional fee would be paid to the HOA and not the managing agent.
- Regarding the re-recording of the governing documents into a single, concise document, Poonit Megchiani announced that he had found an attorney who can review the Board's draft of the document and then have it recorded with the Register of Deeds Office.

LIBERTY HILLS

New Business

- The Board discussed plans to have a Halloween block party at 5:30pm on 10/31. Poonit agreed to prepare the signs to advertise the event, Lisa confirmed that she had already booked the firetruck last year and Tommy will follow up with them to coordinate their arrival.
- The Board discussed plans to establish a committee to decorate the community entrances with Christmas decorations. Poonit will put out an announcement on the HOA's Facebook page and the committee will plan to meet at the main entrance on 11/10 at 2:00pm.
- The Board discussed the need to add additional ARC guidelines and use restrictions for the HOA. Poonit agreed to work on the various additions and will then present to them to the rest of the Board for further review. Once the list of additions is finalized by the Board, the CAM will draft an official resolution to be voted on by the Board and enacted.

There being no further business to discuss, the meeting was adjourned at 7:13pm.

Next Meeting Date

Time Adjourned 7:13



File #: 20-0423

DATE: March 5, 2020
TO: Board of Mayor and Alderman
FROM: Eric Stuckey, City Administrator
Tom Marsh, Director of BNS
Patrick Virrill, Asst. Director of BNS

SUBJECT:

Consideration Of Ordinance 2019-39, An Ordinance To Create Title 12, Chapter 13 Of The Franklin Municipal Code, Establishing Local Rules Applicable To Construction, And To Create Section 12-1301 Relating To Construction Work Hours.

PURPOSE:

The Purpose Of This Memorandum Is To Provide Information To The Franklin Board Of Mayor And Aldermen (Boma) Concerning Ordinance 2019-39, An Ordinance To Create Title 12, Chapter 13 Of The Franklin Municipal Code Establishing Local Rules Applicable To Construction And To Create Section 13-1301 Relating To Construction Work Hours.

BACKGROUND/STAFF COMMENTS:

The Municipal Code currently does not directly regulate the hours during which construction activity may occur in the City of Franklin. Construction work hours are regulated relative to the noise that is expected to be generated by the activity. "Loud, unusual, or unnecessary noises" are prohibited by Chapter 4 of Title 11, which addresses "Offenses Against the Peace and Quiet". Over the years there has been confusion about an amount of noise that might be tolerated and why certain "quiet" activity related to construction is not allowed. Confusion and conversation about noise generated by construction activity lead staff to seek a way to clearly state the hours during which such activity may be conducted.

Much of the regulation regarding building activity in the City is found in Title 12 of the Municipal Code, "Building, Utility, Etc. Codes". The first step proposed by staff to simplify understanding and enforcement of work hours in the City is to create this new chapter in Title 12 titled, "Local Rules Applicable to Construction." This chapter creates a single location within the code where staff, contractors, and citizens may find many unique requirements related to constructing buildings in the City of Franklin. In the near future, the Board will hear about other additions to this chapter related to construction site maintenance and certificates of occupancy.

In order to clarify the code regarding when construction may occur and simplify enforcement, the proposed code regulates construction activity without referring to noise that may be generated. The hours and days during which construction activity is allowed remains the same:

- Monday through Friday 7:00 a.m. to 6:00 p.m.; and
- Saturday 9:00 a.m. to 6:00 p.m.

What is changed is that the determination of whether or not an activity is allowed is no longer about noise, but just the activity. If a permit is required to perform the work, then it is only allowed during the hours stated, regardless of whether or not noise is generated.

There is a new exemption for construction activity that is located greater than 1,000 feet from a building occupied for a residential use and the exemption continues for work that is specifically authorized by the City Administrator in response to an advance request.

FINANCIAL IMPACT:

If approved, this addition to the Municipal Code will make it easier for City staff to cite violators to Municipal Court where fines may be levied.

RECOMMENDATION:

Approval of Ordinance 2019-39 is recommended.

ORDINANCE 2019-39

AN ORDINANCE TO CREATE TITLE 12, CHAPTER 13 OF THE FRANKLIN MUNICIPAL CODE, ESTABLISHING LOCAL RULES APPLICABLE TO CONSTRUCTION, AND TO CREATE SECTION 13-1301 RELATING TO CONSTRUCTION WORK HOURS

WHEREAS, for the purpose of promoting the public health, safety, comfort, convenience, and general welfare of the people of Franklin, the Board of Mayor and Aldermen of the City of Franklin is authorized to prescribe regulations and standards for the design, construction, and repair of buildings and structures within the City; and

WHEREAS, Tennessee Code Annotated Title 6, Chapter 54, Part 5 allows municipalities to adopt building codes by reference; and

WHEREAS, in its legislative judgment the Board of Mayor and Aldermen has found that building regulations and standards must be dynamic and modified from time to time to reflect changes in model codes, construction materials, recognized construction methods, and safety standards necessary to preserve and promote the private and public interest; and

WHEREAS, further defining activities during hours of construction in order to provide for times when citizens may be assured that reasonable levels of peace and quiet will prevail within the City of Franklin is in the public interest.

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

SECTION I. That Title 12 of the Code of Ordinances of the City of Franklin, Tennessee, is hereby amended to create a new Chapter 13 to be entitled Local Rules Applicable to Construction and to create Section 12-1301 regarding Construction Work Hours.

SECTION II. That Title 12, Chapter 13, Section 12-1301 is hereby created and shall be entitled Hours of Construction. Section 12-1301 shall read as follows:

Sec. 12-1301. – Hours of Construction.

(1) Hours of Construction Regulated.

- (a) Hours of construction restrictions apply to acts that constitute “Construction Activity,” as defined in this section. These restrictions shall apply only to work that requires a permit issued by the City of Franklin but shall apply to all work done on such projects.
- (b) Construction Activity is allowed Monday through Friday, 7:00 a.m. to 6:00 p.m., and Saturday, 9:00 a.m. to 6:00 p.m.
- (c) No Construction Activity that requires a permit shall occur on Sundays and City Holidays.

- (2) *Definition of Construction Activity.* For purposes of determining the application of this Section, Construction Activity includes, but is not limited to, the following:

- (a) Grading and excavating.
 - (b) Pouring and placing concrete or the presence of concrete mixing trucks or pumping vehicles/equipment.
 - (c) Operating construction-related equipment and tools, including but not limited to, pile drivers, power shovels, pneumatic hammers, power hoists, compressors, and other construction-type devices.
 - (d) Continual use of portable generators where the electric utility will connect temporary power service.
 - (e) The presence of workers performing indoor or outdoor construction, site preparation, and landscaping work, including but not limited to, demolition, alteration, or repair of any building, structure, or property. This includes, but is not limited to, electrical, building, plumbing, HVAC, roofing, siding, painting, trimming, and landscaping work.
 - (f) The presence of construction workers more than 15 minutes before and after permitted hours of construction.
- (3) *Exemptions.* The following types of activities are exempt from the requirements of this Section.
- (a) Greenfield Development and unoccupied buildings located greater than 1000 feet from a residentially-occupied building, measured in the most direct means from a construction site and/or building to a residentially-occupied building.
 - (b) Activities occurring inside occupied buildings and structures if not audible at any immediately adjacent street.
 - (c) Construction commissioned or conducted by the City of Franklin.
 - (d) Cleaning of streets (including street sweeping vehicles), trash, and maintaining/installing erosion control.
 - (e) Excavations or repairs of bridges, streets, or highways by or on behalf of the City, the County, or the State during the night, when the public welfare and convenience renders it impossible to perform such work during the day.
 - (f) Emptying and setting dumpsters and servicing portable toilets.
 - (g) Construction Activity approved in advance by the City Administrator or designee. A contractor who needs to work outside normal construction hours must submit a request for approval in advance. If the City Administrator or designee should determine that the interest of the public health and safety are served, and if the City Administrator or designee should determine that any loss of inconvenience that might result is outweighed by the public's interest in its safety and welfare, he/she may grant permission for such Construction Activity to be done between the hours of 6:00 p.m. and 7:00 a.m. upon application being made at the time the permit for the work is awarded or during the progress of the work.
 - (h) Emergency activities of the City, the County, or the State and emergency activities of public utilities by private contractors, when they are seeking to provide electricity, water, or other public utility services, and the public health, safety, or welfare is involved.
- (4) *Accountability for Violations.*
- (a) In addition to those persons actively engaged in Construction Activity as defined above, when an infraction under this ordinance occurs the owner, developer, and general contractor may any or all of them be deemed to be in violation of this ordinance.
 - (b) Those causing work to be done may be issued citations for violations committed by their employees, subcontractors, or agents.

- (c) In addition to property owners, developers, and general contractors, citations may be issued, where appropriate, to subcontractors, suppliers of concrete, suppliers of concrete pumper trucks/equipment, and supply and rental equipment delivery companies.

(5) *Violations.*

- (a) Any violation of this Section shall be punishable by a fine as specified for violations in Appendix A, comprehensive fees and penalties.
- (b) Violators may be cited to Franklin Municipal Court, or where necessary, to other courts of competent jurisdiction in Tennessee.
- (c) In addition to all other remedies available, repeat violators may be issued Stop Work Orders by the Building Official or designee until the violation or condition is abated, for a minimum of 5 business days.

- (6) *Conflicts with other chapters and sections of the Municipal Code, including those sections of the Municipal Code which adopt the International Building Code, the International Property Maintenance Code, and all other similar code adoptions.* If at any time these requirements conflict with other requirements elsewhere in the Franklin Municipal Code or the building codes adopted therein, the more restrictive requirements shall apply.

SECTION III. That Title 11, Chapter 4, Section 11-404(3)(i) is hereby amended. Section 11-404(3)(i) is hereby deleted in its entirety and replaced with the following:

- i. *Construction or repairing of buildings.* The erection (including excavation), construction, demolition, alteration or repair of any building during times that would not be permitted for Construction Activity by Section 12-1301, Hours of Construction.

SECTION IV. *Severability.* In the event that any section, clause, provision, or part of this ordinance shall be found and determined to be invalid by a court of competent jurisdiction, all valid parts that are severable shall remain in full force and effect. If any part of this ordinance is found to be invalid in any one or more of its several applications, all valid applications that are severable from the invalid applications shall remain in full force and effect.

SECTION V. *Repeal and Savings Clause.* All ordinances or parts of ordinances in conflict herewith are hereby repealed; provided, however, that nothing herein contained shall affect any rights, actions or causes of action which shall have accrued to the City of Franklin prior to the effective date of this ordinance.

SECTION VI. **BE IT FINALLY ORDAINED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE,** that this Ordinance shall take effect from and after its passage on second and final reading for the health, safety, and welfare of the citizens of Franklin, Tennessee, requiring it.

ATTEST:

CITY OF FRANKLIN, TENNESSEE:

BY: _____

ERIC S. STUCKEY

City Recorder/Administrator

BY: _____

DR. KEN MOORE

Mayor

Approved as to Form:

William E. Squires

Assistant City Attorney

Passed First Reading: _____

Passed Second Reading: _____



File #: 20-0675

DATE: May 5, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Tom Marsh, Director of BNS
Patrick Virrill, Asst. Director of BNS

SUBJECT:

Consideration Of Ordinance 2019-40, An Ordinance To Amend Title 12, Chapter 13 Of The Franklin Municipal Code To Create Section 12-1302 Relating To Construction Site Maintenance.

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning Ordinance 2019-40, to amend Title 12, Chapter 13 of the City of Franklin Municipal Code to create Section 13-1302 Relating to Construction Site Maintenance.

BACKGROUND/STAFF COMMENTS:

The City has experienced problems with routine maintenance and cleanliness of construction sites and surrounding areas. Through discussion with the Development Services Advisory Commission and staff of several departments a standard set of expectations for construction site maintenance was generated. In order to make these expectations easily accessible they are being added to the Municipal Code as a new section in Chapter 13 of Title 12 with other local rules applicable to construction.

The code requires that the contractor identify a single point of contact to be responsible for daily safe operation of the site. That person represents the developer, contractor, builder or owner and is responsible for their respective construction site and impact to surrounding area including road conditions, construction and miscellaneous trash control. They will be accountable for traffic requirements and effective signage. The representative will be summarily expected to maintain life safety measures in accordance with established requirements per the Fire Marshal's directives.

FINANCIAL IMPACT:

As with other Municipal Code violations, individuals may be cited to court where ultimately fines may be levied.

RECOMMENDATION:

Approval of Ordinance 2019-40 is recommended.

ORDINANCE NUMBER 2019-40

AN ORDINANCE TO AMEND TITLE 12, CHAPTER 13 OF THE FRANKLIN MUNICIPAL CODE TO CREATE SECTION 12-1302 RELATING TO CONSTRUCTION SITE MAINTENANCE

WHEREAS, for the purpose of promoting the public health, safety, comfort, convenience, and general welfare of the people of Franklin, Tennessee, the Board of Mayor and Aldermen is authorized to prescribe regulations and standards for the location, design, construction, and maintenance of buildings and structures within the City; and

WHEREAS, the Board of Mayor and Aldermen has found that ordinances that regulate land use, development, and building construction must be dynamic and modified from time to time to reflect changes in best practices, model codes, building materials, land labor costs, and safety standards necessary to preserve and promote the private and public interest; and

WHEREAS, the Board of Mayor and Aldermen finds that in order to effectively promote the public health, safety, comfort, convenience, and general welfare of the people of Franklin, Tennessee, guidelines should be established to ensure stabilization of construction sites and safe access and egress for inspectors and emergency vehicles.

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

SECTION 1. That Title 12, Chapter 13, of the Franklin Municipal Code is hereby amended to add the following section in its entirety as a new section:

Sec. 12-1302. – Construction Site Maintenance.

- (1) *Responsibility.* The person representing the developer, contractor, or owner who has obtained a Building Permit to develop a lot or parcel of property is responsible for the general, overall, day-to-day maintenance of the lot or parcel of property until such time that a Final Certificate of Occupancy is issued.
- (2) *Definitions.*
 - (a) *Developer/Contractor/Owner* shall mean the individual, partnership or corporation who is responsible for the construction of all improvements, hiring subcontractors, securing permits, and scheduling the construction.
 - (b) *Repeat Offenses* are deemed to occur where a contractor or permittee has received two (2) or more Stop Work Orders pursuant to this Section in a single 12-month period.
 - (c) *Lot* shall mean a parcel of land occupied or intended to be occupied by one (1) main building, or a group of main buildings, and having its principal frontage on a street.
 - (d) *Section* shall mean a portion of contiguous lots within a development.
 - (e) *Site* shall mean the contiguous street(s) or section(s) containing the parcels, lots, or any

portion of the site plan where the developer and/ or permittee responsible for the violation(s) is performing work.

(3) *Implementation.* To ensure stabilization of construction sites and safe access and egress for inspectors, emergency vehicles, and residents who reside in the area, the following standards shall be required and enforced:

- (a) A pre-construction meeting with representatives of the developer, contractor, or owner and Building and Neighborhood Services Department (BNS) shall be required before the first building permit is issued within the development or section, as applicable.
- (b) The following items shall be discussed and documented during the pre-construction meeting:
 - (i) Contact person. A single point of contact for the developer, contractor, or owner and a City staff member shall be named and contact information shared.
 - (ii) Contractor and City Contact Information Signs. Sign parameters are to be provided by BNS. Signs shall be in place at the time vertical construction begins. Signs shall include, at a minimum, the Developer, Contractor, or Owner and City Staff contact information, and shall be required on each lot, parcel, street, or entrance into the development or section, as applicable.
 - (iii) Parking requirements. On-street vehicle parking shall be limited to one side of the street. A determination shall be made which side of the street parking shall be designated for on-street parking and the developer or their designee shall install approved, temporary signage. Temporary No Parking signage where parking is prohibited shall also be installed. The Fire Marshal or designee may impose additional enforceable parking requirements for safety purposes.
 - (iv) Traffic requirements. Construction entrances and exits to and from the development, subdivision, and/or section must be determined. The Fire Marshal or designee shall determine if one-way traffic is needed.
 - (v) The Developer, Contractor, or Owner shall specify and install temporary signage that designates the concrete washout area(s).
 - (vi) The Developer, Contractor, or Owner shall specify the staging area for construction materials to provide access to all portions of the site and building.
 - (vii) The Developer, Contractor or Owner must provide a construction phasing plan for projects with multiple buildings. These plans must indicate the order or sequence of construction of buildings by building, street, and section.

(4) *Requirements for Construction Sites and Adjacent Areas.*

- (a) Silt fences or wattles shall be in place prior to commencing grading or excavating, and shall be maintained throughout for stabilization of the lot/parcel of property being developed.
- (b) Roadways shall be clear of debris, mud, trash, and all building materials at all times.
 - (i) Litter shall be disposed of daily and prior to any forecasted rainfall events and placed in an onsite bin or dumpster.

- (i) Sediment tracked onto a street shall be removed immediately.
- (ii) Streets shall be broom swept daily and truck swept or vacuumed weekly.
- (iii) The Building Official or designee shall have the authority to require streets be truck swept or vacuumed daily.
- (ii) Traffic flow shall not be restricted unless a Traffic Control Plan has been approved. For street closures on a regular basis, a Right-of-Way Permit is required, as detailed in TITLE 16 – STREETS AND SIDEWALKS, ETC., CHAPTER 2. – RIGHT-OF-WAY OCCUPANCY, OBSTRUCTION, EXCAVATIONS, AND CUTS.
- (iii) Streets shall not be blocked. All vehicles, including emergency vehicles, shall be able to safely navigate the street at all times. The City of Franklin Police Department shall have the authority to issue citations and/or tow vehicles if necessary.

(5) Enforcement.

- (a) If at any time a site is not in compliance with this Section, no inspections shall occur by City personnel in the Building and Neighborhood Services Department.
- (b) Fines may be sought on a day-by-day basis until each site is in compliance with this Section. Any violation of this Section shall be punishable by citation to the Franklin Municipal Court and imposition of a fine as specified for violations in Appendix A, comprehensive fees and penalties.
- (c) The issuance of a citation and imposition of fine(s) by the BNS Department pursuant to this Section shall not preclude imposition of any other fines which may be applicable under other state or federal laws or sections of the Franklin Municipal Code.
- (d) Truck sweeping or vacuuming of streets on demand (within 24 hours) may be required by the Building Official or designee.
- (e) Stop Inspection Orders and Stop Work Orders may be issued at the discretion of the Building Official or designee until a site is brought into compliance with this Section.
 - (i) When a Stop Work Order of any kind is issued, all pertinent departments shall be notified, including, at a minimum, the Stormwater/Engineering, BNS, Fire, and Streets Departments.
 - (ii) When a Stop Work Order is issued by BNS, grading and stormwater work may continue.
 - (iii) When a Stop Work Order is issued due to on-street parking violations, all work on the site covered by the applicable site plan shall cease.
- (f) No additional permits for the specific site in violation will be issued by BNS until the site has been brought into compliance. The area and extent of the specific site excluded from obtaining permits shall be determined by the Building Official or designee.

(6) Requirements Where Repeat Offenses Have Occurred.

- (a) A contractor that has received two (2) or more Stop Work Orders in a 12-month period shall be considered to have engaged in repeat offenses under this Section, and will be required to complete the following steps prior to resuming a regular work and inspection schedule:
 - (i) Correct all violating conditions cited in the Stop Work Order(s).
 - (ii) Inspections by appointment (to be attended by the General Contractor,

Superintendent, and Contractor) are required for a minimum of one (1) week. The completion of a minimum of two (2) successful inspections by appointment are required.

- (iii) Inspection by appointment fees shall be at the current rate of After-Hours Inspections as designated in APPENDIX A – COMPREHENSIVE FEES AND PENALTIES, CHAPTER 12. BUILDING, UTILITY, ETC., CODES.
- (iv) Training Class. Class Attendance for additional training shall be required. The class shall be a TDEC class on Erosion Control (TNEPSC Level 1), or a course taught or endorsed by the Building Official or designee.
- (v) Proof of class registration for two (2) representatives of the company engaging in repeat offenses shall be provided to the Building Official or designee within one (1) week of the violation.
- (vi) Proof of class completion shall be provided to the Building Official or designee within three (3) months of the violation.

- (b) Those persons or entities engaging in Repeat Offenses shall not be allowed to obtain additional permits for related projects for a minimum of one (1) month and the completion of the required steps outlined in item (a). The area and extent of the specific site or related projects excluded from obtaining permits shall be determined by the Building Official or designee.

(7) *Conflicts with other Chapters and Sections of the Municipal Code.* If at any time these requirements conflict with other site requirements elsewhere in the Franklin Municipal Code or any code adopted by the City of Franklin, the more restrictive requirements shall apply.

SECTION II. BE IT FINALLY ORDAINED by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that this Ordinance shall take effect from and after its passage on second and final reading for the health, safety and welfare of the citizens of Franklin, Tennessee requiring it.

ATTEST:

CITY OF FRANKLIN, TENNESSEE:

BY: _____

Eric S. Stuckey
City Administrator/Recorder

BY: _____

Dr. Ken Moore
Mayor

APPROVED AS TO FORM BY:

William E. Squires, Assistant City Attorney

Passed First Reading: _____

Passed Second Reading: _____



City of Franklin

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

File #: 20-0676

DATE: May 5, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Tom Marsh, Director of BNS
Kathleen Sauseda, Housing Development Coordinator

SUBJECT:

Consideration Of COF Contract No. 2020-0076 With Community Housing Partnership Of Williamson County For Home Rehabilitation Assistance For Low To Moderate Income Residents Of The City Of Franklin.

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning Contract 2020-76. This Contract will continue a partnership with Community Housing Partnership (CHP) for program delivery assistance of the Community Development Block Grant (CDBG) Emergency Repair Program.

BACKGROUND/STAFF COMMENTS:

The Department of Housing and Urban Development (HUD) has designated the City of Franklin as an "entitlement city". Entitlement city status allows the City to receive annual allotments to implement projects and activities that prevent/eliminate blight, meet urgent need, or principally benefit persons of low and moderate income. For the current program year the City was allocated \$353,910. In the Annual Action Plan the City designated the funds to be used for new home construction, land acquisition, and emergency repair.

This agreement is for the emergency repair portion of the program and facilitates reimbursement of Community Housing Partnership (CHP) up to **Ninety-One Thousand One-Hundred Twenty-Eight and no/100 (\$91,128.00)** for costs incurred for repair of single-family homes for low to moderate income residents. CHP has successfully assisted the City with this program since its inception.

Invoices may be submitted while the project is in progress as work is performed and the City may choose to reimburse the organization for incremental expenses incurred as work is completed and inspected for satisfactory progress. Final payment is subject to satisfactory completion of all work as determined by City staff.

FINANCIAL IMPACT:

This contract is for **Ninety-One Thousand One-Hundred Twenty-Eight and no/100 (\$91,128.00)** and is funded in full on a reimbursement basis through the Community Development Block Grant (CDBG) Program.

RECOMMENDATION:

Staff recommends that the Board of Mayor and Aldermen approve Contract #2020-0076 to disburse these CDBG Funds to Community Housing Partnership.

**CONTRACT FOR HOME REHABILITATION ASSISTANCE FOR LOW TO MODERATE INCOME RESIDENTS OF
THE CITY OF FRANKLIN
Contract Number 2020-0076**

This Contract is by and between the City of Franklin, Tennessee (hereinafter "CITY") and Community Housing Partnership of Williamson County, Tennessee (hereinafter "ORGANIZATION").

WHEREAS, CITY has identified a need to conduct a Home Rehabilitation Program utilizing Community Development Block Grant funding; and

WHEREAS, ORGANIZATION is experienced in Home Rehabilitation projects and has met the certification requirements of providing Home Rehabilitation Assistance as a contractor in the City's Community Development Block Grant Program.

NOW, THEREFORE, in consideration of the mutual promises as contained herein, the parties hereto have agreed and hereby enter into this Contract according to the provisions as set forth herein.

SECTION 1 - SCOPE OF SERVICES

ORGANIZATION will carry out activities necessary to assist low to moderate income owner occupants of the City of Franklin who are elderly and/or disabled with emergency-type home rehabilitation services. Items to be corrected must represent a health and safety hazard, with an emphasis on exterior repairs and major structural and mechanical deficiencies.

When applicable, the work will also include testing, remediating, and clearing structures for lead-based paint hazards. All structures constructed pre-1978 must be tested and cleared for lead-based paint hazards. In the presence of lead-based paint hazards, contractors/workers are required to be certified in and use safe-work practices. A HUD required Environmental Review Report will be required.

Incorporated into this contract is Exhibit A, the proposal by ORGANIZATION, which is attached hereto and made a part hereof.

SECTION 2 - RESPONSIBILITIES OF PARTIES

- A. ORGANIZATION will perform the duties described above and in Exhibit A and take other actions necessary to accomplish the spirit of this agreement.
- B. ORGANIZATION will submit regular reports (not less often than quarterly), as directed by THE CITY detailing the progress of their project.
- C. At the request of CITY, ORGANIZATION will periodically send a representative to neighborhood or other public meetings to discuss and promote their project.
- D. CITY will provide funding for the program from the Community Development Block Grant program as set forth in Section 3 of this contract.

SECTION 3 - COMPENSATION

For the services outlined above and contained in Exhibit A, ORGANIZATION will be paid an administrative fee equal to fifteen percent (15%) of the actual home rehabilitation costs (inclusive of lead-based paint testing, clearance, and/or mitigation expenses) for each home. The combined total of construction, repairs, and services shall be up to and shall not exceed **Ninety-One Thousand One Hundred Twenty-Eight and 00/100 Dollars (\$91,128.00)**, as outlined in Exhibit A.

SECTION 4 - TIME OF PERFORMANCE

- A. The Contract shall commence upon execution, and shall expire three (3) years from this effective date. At any time after commencement but before or as soon as practicable after the expiration of this Contract, CITY and ORGANIZATION may, by mutual consent, exercise not more than two (2) options to extend the Contract, each time for up to one (1) additional year, for a maximum possible term of five (5) years total, provided: (a) that both parties consent to such an extension at that time; (b) that the decision to exercise such an extension is memorialized in writing and is executed by authorized representatives of each party; (c) that the same terms and conditions that apply to the original Contract shall also apply to such an extension.
- B. This Contract and all options are based on and subject to the availability of Community Development Block Grant funds.
- C. Services shall be deemed complete upon verification that repairs to property are in accordance with standards as outlined in Exhibit A.
- D. This Agreement may be terminated upon thirty (30) days written notice by either party.

SECTION 5 - PAYMENT TERMS AND CONDITIONS

- A. CITY shall reimburse ORGANIZATION for services rendered based on submittal of valid invoices for project costs with a description and documentation of work performed. The CITY reserves the option of inspecting the completed work prior to making any payments.
- B. Based on the work write-up prepared by ORGANIZATION and CITY per Exhibit A, CITY may accept and reimburse for completed work product that is a phase or portion of an overall project.
- C. Final payment will be subject to receipt of a final report that is satisfactory to CITY.
- D. Any repairs completed under the provisions of this Contract will be made with the understanding the work must be "... in compliance with Federal Code 2 CFR 200.318, 2CFR 200.236 and 2 CFR 200.318 (c) (1)."

SECTIONS 6 - NOTICES

All notices under this Agreement shall be in writing and sent by mail to the address listed below for each party.

Kathleen Sauseda
c/o Housing Development Coordinator
City of Franklin
City Hall
109 3rd Avenue South
Franklin, TN 37064

Zabrina Gregg
Community Housing Partnership
of Williamson County
129 W. Fowlkes Street, Suite 124
Franklin, TN 37064

SECTION 7 - STANDARD TERMS AND CONDITIONS

1. COMPLIANCE WITH FEDERAL LAWS/REGULATIONS

ORGANIZATION shall comply with all applicable Federal, State and City of Franklin laws and regulations in the performance of this Contract.

2. ANTIDISCRIMINATION/AFFIRMATIVE ACTION AND EQUAL EMPLOYMENT OPPORTUNITY

No person on the grounds of handicap, age, race, color, religion, sex, national origin, disability, or marital/familial status or any other classification protected by Federal and/or State of Tennessee constitutional and/or statutory law shall be excluded from participation in, or be denied benefits, or be otherwise subjected to discrimination in the performance of this Contract.

3. AUDIT REQUIREMENTS

- A. This Contract, as well as any sub-agreement made with other participating agencies, is subject to all of the administrative requirements in OMB Circulars A-110 and A-122.
- B. CITY hereby notifies ORGANIZATION that a single audit is required for non-profit agencies receiving \$300,000.00 or more in federal funds in any single fiscal year. This requirement is in accordance with OMB Circulars A-110 and A-133. If required, a copy of the single audit report will be kept on file and made available to the CITY staff during sub-recipient monitoring visits and appropriate officials as requested.

4. CONFLICT OF INTEREST

ORGANIZATION agrees to abide by the following requirements with respect to conflicts of interest, and covenants that it presently has no interest, direct or indirect, and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required under this Agreement. ORGANIZATION further covenants that in the performance of this Agreement no person having such an interest, direct or indirect, shall be employed or retained by ORGANIZATION hereunder. These conflict of interest provisions apply to any person who is an employee, agent, consultant, officer, or elected official or appointed official of ORGANIZATION or of any designated public agencies or sub-recipients that are receiving funds under this program.

5. PROCUREMENT STANDARDS AND METHODS

ORGANIZATION shall comply with CITY's current policy concerning the purchase of equipment, and shall maintain inventory records of all non-expendable personal property as defined by such policy that may be procured with funds herein.

ORGANIZATION shall procure all materials, property, or services in accordance with the requirements of Attachment O of OMB Circular A-110, Procurement Standards.

6. VENUE

In the event of a dispute or litigation arising out of said Contract, it is understood and agreed that this Contract was executed and performed in Williamson County, Tennessee, and as such, it is agreed by both parties that venue of said litigation, including an action for Declaratory Judgment, will be in Williamson County, Tennessee, or in the federal courts for the Middle District of Tennessee, as applicable.

7. NON-ASSIGNMENT

Neither CITY nor ORGANIZATION may assign its rights or delegate its responsibilities under this contract.

8. ENTIRE CONTRACT AND MODIFICATION

This is the entire Contract between the parties and supersedes any prior or contemporaneous communications, representations, or agreements between the parties, whether oral or written, regarding the subject matter of the entire Contract. The terms and conditions of this Contract may not be changed except by an amendment expressly referencing this Contract by section number and signed by an authorized representative of each party.

If seeking any addition or modification to the Contract, the parties agree to reference the specific paragraph number sought to be changed on any future document or purchase order issued in furtherance of the Contract; however, an omission of the reference to same shall not affect its applicability. In no event shall either party be bound by any terms contained in any purchase order, acknowledgement, or other writings unless: (a) such purchase order, acknowledgement, or other writings specifically refer to the Contract or to the specific clause they are intended to modify; (b) clearly indicate the intention of both parties to override and modify the Contract; and (c) such purchase order, acknowledgement, or other writings are signed, with specific material clauses separately initialed, by authorized representatives of both parties.

9. SEVERABILITY

If any provision of this Contract is held invalid, the remainder of the Contract shall not be affected thereby and all other parts of this Contract shall nevertheless be in full force and effect.

10. TIME OF THE ESSENCE

The parties agree that TIME IS OF THE ESSENCE with respect to the parties' performance of all provisions of the Agreement.

11. NO TAXES, NO INTEREST PAYMENTS

As a tax-exempt entity, CITY shall not be responsible for sales or use taxes incurred for products or services. CITY shall supply ORGANIZATION with its Sales and Use Tax Exemption Certificate upon ORGANIZATION's request. ORGANIZATION shall bear the burden of providing its suppliers with a copy of CITY's tax exemption certificate and shall assume all liability for such taxes, if any, that should be incurred. CITY does not agree to pay any interest or other fees for late payments.

12. WAIVER

Neither party's failure or delay to exercise any of its rights or powers under the Contract will constitute or be deemed a waiver or forfeiture of those rights or powers. For a waiver of a right or power to be effective, it must be in writing signed by the waiving party. An effective waiver of a right or power shall not be construed as either (a) a future or continuing waiver of that same right or power, or (b) the waiver of any other right or power.

13. BREACH

Upon deliberate breach of the Contract by either party, the non-breaching party shall be entitled to terminate the Contract without notice, with all of the remedies it would have in the event of termination, and may also have such other remedies as it may be entitled to in law or in equity.

SECTION 8 - SIGNATURES

THE CITY OF FRANKLIN

By: _____
Dr. Ken Moore, Mayor

Date: _____

Attest:

Eric S. Stuckey, City Administrator

Date: _____

Approved as to Form:

William E. Squires, Assistant City Attorney

COMMUNITY HOUSING PARTNERSHIP OF WILLIAMSON COUNTY (CHP)

Zabrina K. Gregg
Authorized Signature

Date: 5/29/2020

Zabrina Gregg
Written Name

Executive Director
Title

COF Contract No. 2020-0076

Exhibit A

Community Housing Partnership of Williamson County (CHP)

Proposed Scope of Services

CHP has split the scope of services into two categories as the actual contracts are to be split. First is the actual construction for each project that, as per the Request for Proposals as outlined by the City of Franklin, is to be paid as a reimbursement after the work has been completed and proof of payment to the contractor has been submitted to the City. Second is the supervision of the program and construction directly by CHP with some assistance by City of Franklin staff. This follows the format that was used successfully in the first year contract that CHP had with the City of Franklin.

Section 1 - Construction:

Construction services will be performed by licensed, bonded, and insured State of Tennessee contractors performing emergency-type health and safety hazard home rehabilitation services per a work write-up specifying the necessary services (defined under 2nd section). No contract shall exceed \$15,000.00 in repair work or be less than \$2,000.00 in repair work. All construction activity shall require all necessary permits and insurance by the contractor. The contractor shall provide progress schedules to CHP on a monthly basis.

CHP is proposing to rehabilitate a minimum of 5 homes in the City limits of Franklin under this program.

Section 2 - Program implementation and supervision:

CHP proposes to serve as the program administrator for the program, providing the following services:

1. **Marketing** the program through outreach to the neighborhood associations, direct press releases, and advertising through all local media outlets, direct outreach to all social service agencies who might have clients within these neighborhoods, direct contact with the residents of these neighborhoods through flyers or other means, and direct contact with the two other not-for-profits operating in Franklin neighborhoods (Hard Bargain Mount Hope Redevelopment, Inc., and United Community Resource Foundation).
2. **Performing Intake** functions and recordkeeping of all applicants for the funding. This includes the initial application documents certifying (but not limited to) income verification (insuring income compliance per the CDBG guidelines), ownership status (verification of warranty deed showing owner-occupied), and property status (verification that owner is living in house).
3. **Inspecting** the property jointly with the homeowner and City of Franklin staff. Composing with the City of Franklin staff and the homeowner a comprehensive Work Write-Up. This includes all necessary inspections and certifications including (but not limited to):
 - A. Lead Based Paint inspections by certified inspector
 - B. Flood Plain certification with appropriate map and panel
 - C. National Park Service Standards of Rehabilitation (Historic) submittals to the appropriate agent whether it be a State Historic Preservation Officer (SHPO) at the City of Franklin or directly to the Tennessee Historic Commission.

- D. Thermal/ Explosive/Toxic/Radioactive verifications with the Fire Marshall of the City of Franklin
- E. Noise verifications through the City of Franklin Building and Neighborhood Services Department

4. **Facilitating** the contract to the City of Franklin. CHP will conduct the following:

- A. Provide the homeowner the necessary guidance in preparing for the construction
- B. Provide the contractor the necessary communications to begin the work
- C. Do initial inspections that all permits have been obtained
- D. Provide scheduled inspections to insure that the work is being conducted correctly and within time constraints
- E. Provide final inspections and certify completion of the project with City of Franklin staff

5. **Recordkeeping** will be maintained by CHP with a complete project book for each individual project and all records regarding the intake, facilitation, inspections, contracts, and draw requests that will be provided to the City of Franklin as requested. All recordkeeping will be maintained to insure that CDBG compliance is maintained by both CHP and the City of Franklin.

6. **Complaints and Grievances** will be addressed by CHP with representation of the City of Franklin where applicable. CHP will maintain an individual file regarding any complaint and grievance by either the homeowner, contractor, or interested party. CHP will act as the negotiator to address any issues arising, and if CHP can resolve the problem, we will do so. However, if the problem cannot be resolved, we would suggest that the City of Franklin have other resources, such as arbitration possibilities.

CHP has all the internal systems available to begin this program immediately as we will follow the successful format from the first three years. Inspection systems exist within programs to do all initial inspections, and staff is available and certified in all compliance and inspection areas. Indeed, this program is very similar to programs performed by CHP staff for United Way, Williamson County, and Tennessee Housing Development Agencies emergency grant program. Additionally, CHP has conducted the first three years of the CDBG programs for the City of Franklin and an individual grant in the past.

CHP will close out each project after final reporting and recordkeeping to the City of Franklin and will keep all records available for ten (10) years after the completion of each project. Additionally, CHP will be available and help the City of Franklin on all compliance reporting regarding this CDBG program to the US Department of Housing and Urban Development.



File #: 20-0762

DATE: May 20, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Michelle Hatcher, Director of Water Management
Brian Goodwin, Asst. Director of Water Management

SUBJECT:

Consideration Of Draft Procurement Award To ADS, LLC, d/b/a ADS Environmental Services Of Huntsville, Alabama In The Total Estimated Amount Of \$488,220 For Years 1-3 For Wastewater Flow Monitoring Services For The Wastewater General Division Of The Water Management Department. (Purchasing Office Procurement Solicitation No. 2020-021; COF Contract No. 2020-0172)

PURPOSE:

The purpose of this procurement is to purchase the supply, delivery, installation, operation and maintenance of sanitary sewer flow meters and rain gauges for a term of award of three (3) years, tentatively effective July 1, 2020, with two (2) options to extend, each time for up to one (1) additional year. These services would be used to assess growth and future conditions associated with wastewater flow within the collection system.

BACKGROUND/STAFF COMMENTS:

The City published on April 2, 2020 a Notice to Proposers in the Williamson Herald for supply, delivery, installation, operation and maintenance of sanitary sewer flow meters and rain gauges. In addition, solicitation documents were sent on or about the same date directly to five (5) potential proposers known or thought to be interested in this solicitation. Proposals from four (4) service providers were publicly opened at the submittal opening held on May 5, 2020. A tabulation of the proposals received for this solicitation is attached. Also attached is a tabulation of how the fee-based points have been allocated.

Using evaluation criteria included in the request for proposals, the proposal evaluation team, consisting of Water Management Department staff, recommends the City select the firm of ADS, LLC, d/b/a ADS Environmental Services of Huntsville, Alabama. The interview panel scored this firm's proposal top for all six (6) of the evaluation criteria included in the request for proposals. The evaluation criteria included in the request for proposals consisted of (a) competency, experience and qualifications (30%), (b) unique strengths of the proposer/proposal (10%), (c) thoroughness and quality of proposal (10%), (d) methodology and approach; pricing and payment clarity (10%), (e) schedule (10%), and (f) fee for proposed products and services (30%).

A reference check by staff for ADS Environmental Services has yielded favorable feedback.

FINANCIAL IMPACT:

The proposal ranked highest by the proposal evaluation team, from ADS, LLC, d/b/a ADS Environmental Services of Huntsville, Alabama, is in the total estimated amount of \$488,220 for years 1-3 for wastewater flow monitoring services. The Water Management Department Wastewater General Division proposed budget for fiscal year 2021 allocates \$73,000 out of the Wastewater Fund for the purchase of consultant services including wastewater flow monitoring services.

RECOMMENDATION:

Staff recommends that the City accept, contingent upon Law Department and City Administrator approval of City Contract No. 2020-0172, the proposal ranked highest by the proposal evaluation team, from ADS, LLC, d/b/a ADS Environmental Services of Huntsville, Alabama in the total estimated amount of \$488,220 for years 1-3 for wastewater flow monitoring services, and award this procurement to this proposer. The City's Purchasing Manager believes the prepared solicitation documents as distributed allowed for competition among multiple service providers, and that the staff recommendation appears to be made in a fair and impartial manner based upon the proposals received. Pursuant to authority previously granted by the Board of Mayor and Aldermen, Contract No. 2020-0172 has been prepared for execution by the City Administrator pending approval by the Board of Mayor and Aldermen of the staff recommendation to accept the proposal from and award the procurement to ADS Environmental Services.

Tabulation of Submittals*

Purchasing Office Solicitation No.:	2020-021 (supply, delivery, installation, operation and maintenance of sanitary sewer flow meters and rain gauges)					
Notice to proposers published in the <i>Williamson Herald</i> on:	4/2/20					
Number of potential proposers that were notified of / that submitted a proposal in response to this request for proposals:	5 / 4					
Date and time proposal due and publicly opened:	5/5/20 12:00 PM					
Present at opening of proposals:	Sarah Hembree and Luis Mijares of ADS Environmental Services; David Brown of Hach; Mark Serres and Shelia Trisnojoyo of Utility Systems Science and Software, Inc.; Brian Goodwin of the City of Franklin Water Department; and Leslie Pewitt, Suzanne Ward and Brian Wilcox of the City of Franklin Purchasing Office					
Target meeting of BOMA at which recommendation is scheduled to be considered:	6/23/20					
Proposals received from:	Does the proposal include all required documents?	Does the proposal take any exceptions to the City's procurement solicitation? / If so, how many?	Average points allocated by proposal evaluation team (out of a possible 100):	Total estimated pricing for years 1-3 based on estimated volumes and quoted proposal pricing:	Payment terms:	Proposal is valid through:
ADS LLC, d/b/a ADS Environmental Services 340 The Bridge Street, Suite 204 Huntsville, Alabama 35806 Luis Mijares Senior Business Development Manager 256-508-1628 lmijares@idexcorp.com	Yes	No	96.00	\$488,220.00	net 30 days	12/31/2020
Hach Company 5600 Lindbergh Drive Loveland, CO 80538 Richard Espy Divisional Sales Manager 301-874-5599 respy@hach.com	Yes	No	76.21	\$601,650.00	net 30 days	8/28/2020
Sauls Seismic, LLC 2879 Alton Way Birmingham, AL 35210 Mark Taylor Environmental Services Manager 423-506-0126 mtaylor@saullsseismic.com	Yes but Proposal Submittal Form was not signed and telephone numbers were missing for references	No	37.21	\$1,341,640.00	net 30 days	12/31/2020
Utility Systems Science & Software, Inc. 601 N. Parkcenter Drive, Suite 209 Santa Ana, CA 92705 Mark Serres Vice President 714-564-3494 mark.serres@uscubed.com	Yes	No	59.79	\$651,150.00	net 30 days	8/31/2020

*Shaded submittal is the submittal scored highest by the interview team

2020-021 allocation of fee-based points

ADS LLC, d/b/a ADS Environmental Services											
Item	Description	Quantity	Units	Unit Price	Extended Price	Non-recurring fees	Recurring fees (per month)	After three (3) years	After four (4) years	After five (5) years	Average allocation of points
1	Permanent Flow Monitor O&M	17	Cost/Month	\$420.00	\$7,140.00		\$7,140.00	\$257,040.00	\$342,720.00	\$428,400.00	
2	Permanent Rain Gauges O&M	7	Cost/Month	\$200.00	\$1,400.00		\$1,400.00	\$50,400.00	\$67,200.00	\$84,000.00	
3	Permanent Flow Monitor I&R	17	Each	\$600.00	\$10,200.00	\$10,200.00		\$10,200.00	\$10,200.00	\$10,200.00	
4	Permanent Rain Gauges I&R	7	Each	\$300.00	\$2,100.00	\$2,100.00		\$2,100.00	\$2,100.00	\$2,100.00	
5	Temporary Flow Monitor O&M	18	Cost/Month	\$420.00	\$7,560.00	\$45,360.00		\$136,080.00	\$181,440.00	\$226,800.00	
6	Temporary Flow Monitor I&R	18	Each	\$600.00	\$10,800.00	\$10,800.00		\$32,400.00	\$43,200.00	\$54,000.00	
	Total dollars					\$68,460.00	\$8,540.00	\$488,220.00	\$646,860.00	\$805,500.00	
	Allocation of fee-based points (out of a maximum of 30 points)							30.000	30.000	30.000	30.000
Hach Company											
Item	Description	Quantity	Units	Unit Price	Extended Price	Non-recurring fees	Recurring fees (per month)	After three (3) years	After four (4) years	After five (5) years	Average allocation of points
1	Permanent Flow Monitor O&M	17	Cost/Month	\$475.00	\$8,075.00		\$8,075.00	\$290,700.00	\$387,600.00	\$484,500.00	
2	Permanent Rain Gauges O&M	7	Cost/Month	\$200.00	\$1,400.00		\$1,400.00	\$50,400.00	\$67,200.00	\$84,000.00	
3	Permanent Flow Monitor I&R	17	Each	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00	\$0.00	
4	Permanent Rain Gauges I&R	7	Each	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00	\$0.00	
5	Temporary Flow Monitor O&M	18	Cost/Month	\$575.00	\$10,350.00	\$62,100.00		\$186,300.00	\$248,400.00	\$310,500.00	
6	Temporary Flow Monitor I&R	18	Each	\$1,375.00	\$24,750.00	\$24,750.00		\$74,250.00	\$99,000.00	\$123,750.00	
	Total dollars					\$86,850.00	\$9,475.00	\$601,650.00	\$802,200.00	\$1,002,750.00	
	Allocation of fee-based points (out of a maximum of 30 points)							24.344	24.191	24.099	24.211

2020-021 allocation of fee-based points

Sauls Seismic, LLC											
Item	Description	Quantity	Units	Unit Price	Extended Price	Non-recurring fees	Recurring fees (per month)	After three (3) years	After four (4) years	After five (5) years	Average allocation of points
1	Permanent Flow Monitor O&M	17	Cost/Month	\$1,300.00	\$22,100.00		\$22,100.00	\$795,600.00	\$1,060,800.00	\$1,326,000.00	
2	Permanent Rain Gauges O&M	7	Cost/Month	\$270.00	\$1,890.00		\$1,890.00	\$68,040.00	\$90,720.00	\$113,400.00	
3	Permanent Flow Monitor I&R	17	Each	\$800.00	\$13,600.00	\$13,600.00		\$13,600.00	\$13,600.00	\$13,600.00	
4	Permanent Rain Gauges I&R	7	Each	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00	\$0.00	
5	Temporary Flow Monitor O&M	18	Cost/Month	\$1,300.00	\$23,400.00	\$140,400.00		\$421,200.00	\$561,600.00	\$702,000.00	
6	Temporary Flow Monitor I&R	18	Each	\$800.00	\$14,400.00	\$14,400.00		\$43,200.00	\$57,600.00	\$72,000.00	
	Total dollars					\$168,400.00	\$23,990.00	\$1,341,640.00	\$1,784,320.00	\$2,227,000.00	
	Allocation of fee-based points (out of a maximum of 30 points)							10.917	10.876	10.851	10.881
Utility Systems Science & Software, Inc.											
Item	Description	Quantity	Units	Unit Price	Extended Price	Non-recurring fees	Recurring fees (per month)	After three (3) years	After four (4) years	After five (5) years	Average allocation of points
1	Permanent Flow Monitor O&M	17	Cost/Month	\$475.00	\$8,075.00		\$8,075.00	\$290,700.00	\$387,600.00	\$484,500.00	
2	Permanent Rain Gauges O&M	7	Cost/Month	\$300.00	\$2,100.00		\$2,100.00	\$75,600.00	\$100,800.00	\$126,000.00	
3	Permanent Flow Monitor I&R	17	Each	\$550.00	\$9,350.00	\$9,350.00		\$9,350.00	\$9,350.00	\$9,350.00	
4	Permanent Rain Gauges I&R	7	Each	\$400.00	\$2,800.00	\$2,800.00		\$2,800.00	\$2,800.00	\$2,800.00	
5	Temporary Flow Monitor O&M	18	Cost/Month	\$750.00	\$13,500.00	\$81,000.00		\$243,000.00	\$324,000.00	\$405,000.00	
6	Temporary Flow Monitor I&R	18	Each	\$550.00	\$9,900.00	\$9,900.00		\$29,700.00	\$39,600.00	\$49,500.00	
	Total dollars					\$103,050.00	\$10,175.00	\$651,150.00	\$864,150.00	\$1,077,150.00	
	Allocation of fee-based points (out of a maximum of 30 points)							22.493	22.457	22.434	22.461



File #: 20-0825

DATE: June 5, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Vernon Gerth, Asst. City Administrator Community Development

SUBJECT:

Consideration Of Resolution 2020-106, A Resolution Declaring An Existing Section Of City Of Franklin Right-Of-Way Known As Old Charlotte Pike Generally Located Between The New NW Section Of The Mack Hatcher Parkway Extension And Carlisle Lane As Surplus And To Be Maintained In Its Current Configuration As A Private/Public Access, Utility, And Drainage Easement.

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning declaring an existing section of City of Franklin right-of-way known as Old Charlotte Pike generally located between the new NW section of the Mack Hatcher Parkway extension and Carlisle Lane as surplus conditioned upon it will be maintained in its current configuration as a private/public access, utility, and drainage easement.

BACKGROUND/STAFF COMMENTS:

There are three properties that front on this section of Old Charlotte Pike that staff is recommending be declared surplus. The three properties include Williamson County where the new County Animal Center is being developed, Joe Melz's residentially-zoned property, and Franklin Christian Academy who is in the process of expanding their educational facility. Also noteworthy, the Tennessee Department of Transportation will be constructing a new multi-use trail head immediately adjacent to this new Mack Hatcher Parkway extension where Old Charlotte Pike will dead-end.

This section of Old Charlotte Pike does presently comply with the City's Technical Street Standards and requires costly improvements. As a condition of approval for the Animal Center, Williamson County has agreed to contribute \$ 250,000 to the City toward the future improvement of Carslie Lane. The County will also improve a short section of Old Charlotte Pike from Carslie Lane to its new entrance that will serve the Animal Center.

In lieu of Franklin Christian Academy improving Old Charlotte Pike from their property north to the Animal Center's new entrance to the City's Technical Street Standards, Franklin Christian Academy has agreed to take on the future maintenance of this section of Old Charlotte Pike permanently since their students and staff will be the primary users. Franklin Christian Academy has also agreed to provide a full, unimpeded public access, utility, and drainage easement along this entire right-of-way, and allow for Mr. Melz and Williamson County to each install up to two driveways

if this right-of-way is declared surplus and deeded to Franklin Christian Academy.

FINANCIAL IMPACT:

The financial impact is minimal. By declaring this right-of-way surplus and dedicating it to Franklin Christian Academy, the City will no longer be responsible for its future maintenance but the public will still have full access which includes the City and area utility companies having easements to install public infrastructure in the future.

RECOMMENDATION:

Approval of Resolution 2020-106 is recommended.

RESOLUTION 2020-106

A RESOLUTION DECLARING AN EXISTING SECTION OF CITY OF FRANKLIN RIGHT-OF-WAY KNOWN AS OLD CHARLOTTE PIKE GENERALLY LOCATED BETWEEN THE NEW NORTHWEST SECTION OF THE MACK HATCHER PARKWAY EXTENSION AND CARLISLE LANE AS SURPLUS AND TO BE MAINTAINED IN ITS CURRENT CONFIGURATION AS A PRIVATE/PUBLIC ACCESS, UTILITY, AND DRAINAGE EASEMENT

WHEREAS, the Board of Mayor and Aldermen (BOMA) by approving this resolution, are determining that the existing section of the Old Charlotte Pike right-of-way generally located between the new Northwest Section of Mack Hatcher Parkway Extension and the proposed entrance to the new County Animal Center located just west of Carlisle Lane as shown on Exhibit A is no longer necessary, suitable, and desirable as public right-of-way; and

WHEREAS, this existing section of the Old Charlotte Pike right-of-way is considered a non-buildable parcel, and the City desires to declare this right-of-way as surplus property in order to dedicate it to one of the adjacent properties, Franklin Christian Academy, Map # 064 0198 00009064; and

WHEREAS, Franklin Christian Academy has agreed to maintain this existing section of the Old Charlotte Pike right-of-way in its current configuration, establish and record a Public Access, Utility, and Drainage Easement on the entire right-of-way being vacated to allow unimpeded, indefinite private/public access to the adjacent properties and, to the new multi-use trailhead to be constructed within the Tennessee Department of Transportation right-of-way and located on the eastside of Mack Hatcher Parkway as illustrated in Exhibit A; and

WHEREAS, with the proposed Public Access, Utility, and Drainage Easement City staff has determined the value of the right-of-way to be less than \$25,000; and

WHEREAS, surplus property is generally disposed of equally to adjacent property owners, in this instance the three property owners adjacent to this section of the Old Charlotte Pike right-of-way have agreed that the entire right-of-way being dedicated to the Franklin Christian Academy provided certain perpetual maintenance and access conditions are stipulated, established, and recorded on the vacated property; and

WHEREAS, the City will realize an additional benefit from this property being maintained as a Public Access, Utility, and Drainage Easement with such transfer of ownership of the right-of-way; and

WHEREAS, Franklin Municipal Code Chapter 8, Sec. 5-802 allows for the Board of Mayor and Aldermen to sell or dispose of right-of-way by negotiated contract or by other means that will adequately protect the public interest when the value does not exceed \$25,000.

NOW THEREFORE, BE IT RESOLVED by the Board of Mayor and Aldermen of the City of Franklin, Tennessee, that the right-of-way as shown in attached Exhibit A is hereby declared surplus property.

BE IT FURTHER RESOLVED by the Board of Mayor and Aldermen that the right-of-way so declared as surplus shall be disposed to Franklin Christian Academy, Map # 064 0198 00009064, as negotiated by the City Engineer and approved by the City Attorney and City Administrator with the following conditions:

- 1) Require a perpetual Public Access, Utility, and Drainage Easement to be placed on 100% of the right-of-way being vacated.
- 2) Require the future and perpetual maintenance of the vacated right-of-way as shown in Exhibit A to become the responsibility of Franklin Christian Academy or future owners to maintain in its current configuration suitable for unimpeded vehicular and pedestrian access.
- 3) The adjoining property owners may at their discretion each have permission to install up to two driveway/road entrances to this vacated section of right-of-way provided such access points consider drainage and the City of the Franklin's Technical Street Standards for such access points.

IT IS SO RESOLVED AND DONE on this ____ day of _____, 2020.

ATTEST:

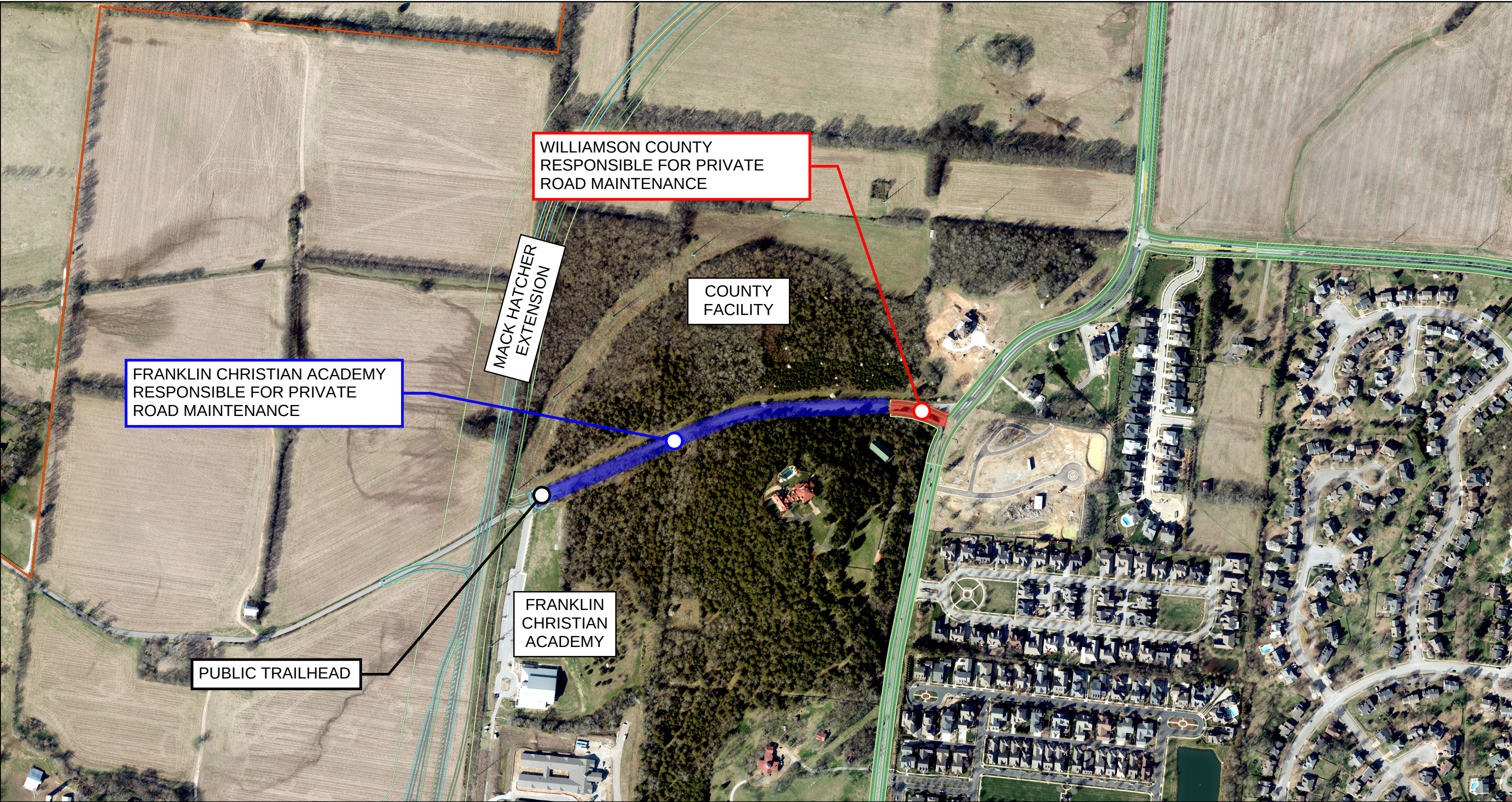
CITY OF FRANKLIN, TENNESSEE:

By: _____
ERIC S. STUCKEY
City Administrator

By: _____
DR. KEN MOORE
Mayor

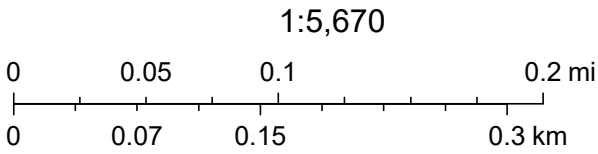
Approved as to Form

By: _____
Shauna R. Billingsley
City Attorney



May 11, 2020

GIS Functionals	P-CONC	P-ROW	P-SSWL
P-BOC	P-EOP	P-SBWL	P-SSYL
P-CL	P-FOC	P-SBWL Small	P-STRUCTURE



COF Engineering Dept., Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, City of Franklin TN GIS Dept.



File #: 20-0828

DATE: June 5, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Brad Wilson, Facilities Project Manager

SUBJECT:

Consideration Of Change Order No. 12 To City Of Franklin Contract No. 2018-0259 With Southland Constructors, For The Addition Of 45 Days In Regards To Weather Delay Days For Fire Station 7 In The Amount Of \$42,000.

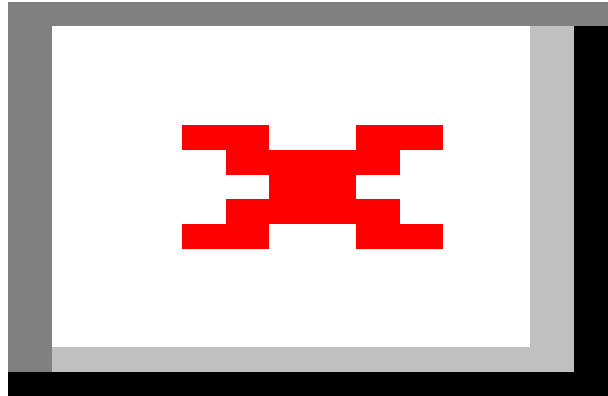
PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) to consider Change Order Number 12, providing an allowance for 45 weather delay days and the addition of \$42,000 to the construction contract

BACKGROUND/STAFF COMMENTS:

On December 11, 2018 Resolution 2018-106 was approved by the Board entering into an agreement with Southland Constructors, Inc. for the construction of Fire Station number 7. On February 18, 2019 a Notice to Proceed was sent to Southland Constructors with the approval to begin the project.

Mobilization for the project began in early March with site grading commencing at roughly the same time. Conversations with MTEMC, ATT and Comcast Communications began 18-20 months prior to the project starting to develop a plan with the utilities regarding the relocation of their utility structures. Nothing regarding the design by the utilities began until after excavation started. The southwest corner of the facility ran under the two-conductor electrical transmission lines preventing the completion of the building pad area. Not until ATT and Comcast completion of their relocations could the relocation work with MTEMC begin. The relocation work took the utilities nearly five months to complete resulting in the loss of 90-120 days of the General Contractor's schedule. During this time, the movement of approximately 5,700 cubic yards of material were relocated, the on-site roads built, building pad built as much as possible and underground utilities installed. Once the removal of the transmission poles was completed approximately 30-40 days went by until the foundation crew could re-mobilize and complete the foundation pad. There were some weather delays impacting the project timeline as well. Per the updated construction schedule, substantial project completion time is now August 18, 2020 (subject to certain weather conditions and change orders).



Per his weather delay analysis, he has up to 50 weather days they could claim but as of February 20th they were only claiming 45. There is a possibility that another change request could be coming related to weather delay.

Below is a summary of the bid received from the selected contractor on the Fire Station 7

Bidder of Record:	Southland Constructors
Location:	Brentwood, TN
Base Bid:	\$ 5,330,000
Add Alt 1- EMS:	\$ 640,000
Add Alt 2- Roadway:	\$ 350,000
Add Alt 3- Grading & Site:	\$ 341,000
Add Alt 4- 6 Parking Spaces:	\$ 10,000
Total- Base + 4 Alts:	\$ 6,671,000

project:

FINANCIAL IMPACT:

The total bid award, comprised of the base bid plus alternative A, was \$5,540,000. The additional cost associated with Change Order #12 is \$42,000. Based on the project cost sharing agreement with Williamson County, the City of Franklin will ask the County to reimburse the City 12% of the cost change order (this is the relative share of the EMS wing compared to the total project). This amount equates to a reimbursement amount to the City of Franklin of \$5,040. The county is aware of the additional days and understands the cost involved.

RECOMMENDATION:

Staff recommends approval and funding of Change Order #12 with funds from the City of Franklin Facilities Tax.



SouthLand Constructors, Inc

1587 Mallory Lane Suite 100
Brentwood, TN 37027

P: 6153090365
F: 6153090475

AIA® Document G701™ — 2001

PROJECT:

FRANKLIN FIRE DEPARTMENT STATION 7
911 Brunacini Way
Franklin, TN 37064

CHANGE ORDER NUMBER: 12

DATE: 03/17/2020

Owner:
Architect
Contractor
Field
Other

ARCHITECT PROJECT NUMBER: 17030

TO CONTRACTOR:

SouthLand Constructors, Inc
1587 Mallory Lane Suite 100
Brentwood, Tennessee 37027

CONTRACT DATE: 12/06/2018

CONTRACT FOR: FRANKLIN FIRE DEPARTMENT STATION 7, TN

Change Order Item Description

Amount

# Change Order Item Description	Amount
1 The addition of days due to weather per specifications added to the contract time through February 29, 2020. We are requesting 45 days with the backup from NOAA certified site be added to our contract. As per our agreed general conditions for extension of time by City of Franklin we are requesting additional funds in the amount of \$42,000.00	\$42,000.00

The original Contract Sum was	\$ 6,671,000.00
The net change by previously authorized Change Orders	\$ 0.00
The Contract Sum prior to this Change Order was	\$ 6,671,000.00
The Contract Sum will be increased by this Change Order in the amount of	\$ 42,000.00
The New Contract Sum, including this Change Order, will be	\$ 6,713,000.00

The Contract Time will be increased by Forty Five (45) days

The date of Substantial Completion as of the date of this Change Order, therefore, is 505 days from original NTP.

NOTE: this Change Order does not include changes in the Contract Sum, Contract Time or Guaranteed Maximum Price that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.)

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER

Renaissance Group
ARCHITECT (Firm Name)
9700 Village Circle
Suite 100
Lakeland TN, 38002
ADDRESS

SouthLand Constructors, Inc
Contractor (Firm Name)
1587 Mallory Lane Suite 100
Brentwood TN, 37027
ADDRESS

The City of Franklin, Tennessee
Owner (Firm Name)
109 Third Avenue South
Franklin TN, 37064
ADDRESS

BY: (Signature) *[Signature]*

Chad Elks

Verified *[Stamp]*

BY: (Signature)

BY: (Signature)

DATE: 3/20/2020

03/17/2020 4:58 PM
DATE:

DATE:



File #: 20-0836

DATE: June 8, 2020

TO: Board of Mayor and Alderman

FROM: Eric Stuckey, City Administrator
Eric Stuckey, City Administrator
Vernon Gerth, Asst. City Administrator Community Development
Kristine Brock, Asst. City Administrator/CFO
Mark Hilty, Asst. City Administrator Public Works

SUBJECT:

Consideration Of Resolution 2020-108, A Resolution Authorizing City Staff To Commence Contract Negotiations With OHM Advisors/Studio Eight Design For Professional Services Related To The Design Of The New City Of Franklin City Hall.

PURPOSE:

The purpose of this memorandum is to provide information to the Franklin Board of Mayor and Aldermen (BOMA) concerning the consideration of Resolution 2020-108 authorizing City staff to commence contract negotiations with OHM Advisors/Studio Eight Design for professional services related to the design of the new City Of Franklin City Hall.

BACKGROUND/STAFF COMMENTS:

On February 20, 2020 the City released a Request for Qualifications – Contract No. 2020-0041 to solicit Statements of Qualifications from professional consulting firms interested in providing design services for our new City Hall. Fifteen firms expressed interest in providing these services by submitting Statements of Qualifications. A committee comprised of City Staff reviewed and scored the Statements of Qualifications, conducted virtual interviews of the top seven (7) consultant firms, and subsequently decided it was in the best interests of the City to schedule a second virtual interview with the three finalists. City staff recommends and is seeking authorization to commence contract negotiations with OHM Advisors/Studio Eight Design.

FINANCIAL IMPACT:

In consideration of the coronavirus pandemic and the impact to our local economy still unknown, City staff is seeking authorization to commence contract negotiations with OHM Advisors/Studio Eight Design for design services. After the contract is drafted it will be presented to the Board of Mayor and Aldermen for consideration.

The current list of Capital Investment Projects adopted by the Board of Mayor and Aldermen includes the new City Hall with a cost estimate of \$24,500,000. In addition, a third Public Parking Structure is intended to be located somewhere in our historic downtown and has a cost estimate of \$ 8,000,000. It is intended that during the initial design work and community charrette, discussions regarding

the inclusion of a public parking structure on the City Hall site will be explored.

RECOMMENDATION:

Staff recommends approval of Resolution 2020-108.

RESOLUTION 2020-108

**A RESOLUTION AUTHORIZING CITY STAFF TO COMMENCE CONTRACT NEGOTIATIONS
WITH OHM ADVISORS/STUDIO EIGHT DESIGN FOR PROFESSIONAL SERVICES RELATED TO
THE DESIGN OF THE NEW CITY OF FRANKLIN CITY HALL**

WHEREAS, the Board of Mayor and Aldermen have determined the City of Franklin ("City") City Hall is beyond its useful life and have acknowledged the need to keep the City Hall at its present location on the historic Public Square in downtown Franklin; and

WHEREAS, on February 20, 2020, the City released a Request for Qualifications – Contract No. 2020-0041 to solicit Statements of Qualifications from professional consulting firms interested in providing design and professional services for the new City Hall; and

WHEREAS, the City received Statements of Qualifications from fifteen (15) consultant firms and a committee comprised of City Staff reviewed and scored the Statements of Qualifications, conducted virtual interviews of the top seven (7) consultant firms, and subsequently decided it was in the best interests of the City to schedule a second virtual interview with the top three finalists; and

WHEREAS, in March of 2020, COVID-19, otherwise known as the novel coronavirus pandemic, caused the City to review funding related to adopted Capital Investment Projects including the redevelopment of a new City Hall; and

WHEREAS, City staff has reviewed the adopted list of Capital Investment Projects with the City of Franklin Board of Mayor and Aldermen who together with City staff endeavor to be judicious in proceeding with the various Capital Investment Projects to improve existing City infrastructure which includes proceeding with only the design of the new City Hall; and

WHEREAS, City staff is recommending and seeking authorization to enter into contract negotiations with OHM Advisors/Studio Eight Design for design services related to a new City Hall with the understanding the professional services agreement/contract will be presented to the Board of Mayor and Aldermen for consideration.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF MAYOR AND ALDERMEN OF THE CITY OF FRANKLIN, TENNESSEE, that City staff is authorized to enter into contract negotiations with OHM Advisors/Studio Eight Design for design services related to a new City Hall with the understanding the professionals services agreement/contract will be presented to the Board of Mayor and Aldermen for consideration this summer.

IT IS SO RESOLVED AND DONE on this _____ day of _____, 20____.

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